Optimised DNA extraction and library preparation for minute arthropods: application to target enrichment in chalcid wasps used for biocontrol.

Astrid Cruaud^{1*}, Sabine Nidelet¹, Pierre Arnal^{1,2}, Audrey Weber³, Lucian Fusu⁴, Alex Gumovsky⁵, John Huber⁶, Andrew Polaszek⁷ and Jean-Yves Rasplus¹

¹ CBGP, INRA, CIRAD, IRD, Montpellier SupAgro, Univ Montpellier, Montpellier, France

² ISYEB–UMR 7205 MNHN, CNRS, UPMC, EPHE, Sorbonne Universités, Paris, France

³ AGAP, INRA, CIRAD, Montpellier SupAgro, Univ Montpellier, Montpellier, France.

⁴ Faculty of Biology, Alexandru Ioan Cuza University, Iasi, Romania

⁵ Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Kiev, Ukraine

⁶ Natural Resources Canada, c/o Canadian National Collection of Insects, Ottawa, Canada

⁷ Department of Life Sciences, Natural History Museum, London, UK

*corresponding author: astrid.cruaud@inra.fr

running headline = target-enrichment in minute wasps

Abstract

Enriching subsets of the genome prior to sequencing allows focusing effort on regions that are relevant to answer specific questions. As experimental design can be adapted to sequence many samples simultaneously, using such approach also contributes to reduce cost. In the field of ecology and evolution, target enrichment is increasingly used for genotyping of plant and animal species or to better understand the evolutionary history of important lineages

through the inference of statistically robust phylogenies. Limitations to routine target enrichment by research laboratories are both the complexity of current protocols and low input DNA quantity. Thus, working with tiny organisms such as micro-arthropods can be challenging. Here, we propose easy to set up optimisations for DNA extraction and library preparation prior to target enrichment. Prepared libraries were used to capture 1432 Ultra-Conserved Elements (UCEs) from microhymenoptera (Chalcidoidea), which are among the tiniest insects on Earth and the most commercialized worldwide for biological control purposes. Results show no correlation between input DNA quantities (1.8-250ng, 0.4 ng with an extra whole genome amplification step) and the number of sequenced UCEs. Phylogenetic inferences highlight the potential of UCEs to solve relationships within the families of chalcid wasps, which has not been achieved so far. The protocol (library preparation + target enrichment), allows processing 96 specimens in five working days, by a single person, without requiring the use of expensive robotic molecular biology platforms, which could help to generalize the use of target enrichment for minute specimens.

Key words : Chalcidoidea, library construction, low DNA quantity, micro-arthropods, target enrichment, UCEs.

INTRODUCTION

Enriching subsets of the genome prior to sequencing (target enrichment, Mamanova *et al.* 2010) allows effort to be concentrated on genomic regions that are relevant to answer specific research questions. Using this approach also contributes to reducing cost, as experimental design can be adapted to sequence many samples simultaneously. In the fields of ecology and evolution, target enrichment has been used for genotyping or phylogenomics of plant and animal species (Gasc *et al.* 2016; Lemmon & Lemmon 2013), to characterize phenotypic traits (e.g., Muraya *et al.* 2015) or to explore microbial ecosystems (Gasc & Peyret 2018).

However, routine target enrichment by research laboratories is limited both by the complexity of current protocols, and by input DNA quantity that may be very low for some minute species (e.g. micro-arthropods < 1mm) and /or old /rare (museum) specimens. Indeed, current protocols (DNA extraction, library preparation, target-enrichment) are time consuming and require handling expertise. They have been initially developed to work with large amounts of input DNA (e.g., vertebrates or large/medium size insects; Faircloth *et al.* 2015; McCormack *et al.* 2013) and include many purification steps that increase DNA loss. Working on hyper-diverse groups of microarthropods is challenging, as it requires one to perform the extraction on i) a large number of specimens/species to be representative of the overall diversity of the group, without the possibility of using pipetting robots that increase DNA loss, ii) single individuals because species complexes are frequent (Al Khatib *et al.* 2014; Kenyon *et al.* 2015; Mottern & Heraty 2014), iii) the whole insect without destruction for vouchering and often prior to species identification, iv) rare species that have been collected once and may be represented in collection by a few specimens or only one specimen and, sometimes, v) old and dry museum specimens used for species description (types).

In this study, we propose optimised protocols for DNA extraction and library preparation for target enrichment purposes, as well as a custom pipeline to analyse the sequence data obtained. We used these protocols and customised pipeline to capture and analyse Ultra Conserved Elements (UCEs) in minute wasps, the chalcids (Insecta: Hymenoptera: Chalcidoidea, Heraty *et al.* 2013; Noyes 2018), that are key components of terrestrial ecosystems. Chalcids are key models for basic and applied research. With an estimated diversity of more than 500,000 species these microhymenoptera have colonised almost all extant terrestrial habitats. Many of them develop as parasitoids of arthropod eggs, larvae or pupae. As such, they are both key regulators of the populations of many other arthropod species in natural ecosystems and are increasingly used worldwide as biocontrol agents (e.g., Consoli *et al.* 2010; Heraty 2009). A few of them, especially *Nasonia* (Pteromalidae) or *Trichogramma* (Trichogrammatidae) species are also used as model systems to answer challenging questions about sex determination, genetics of speciation, host-symbiont interactions or behavioural ecology (e.g., Pinto *et al.* 1991; Stouthamer *et al.* 1990; Werren & Loehlin 2009). Chalcidoidea has undergone a spectacular radiation resulting in a huge diversity of morphologies and sizes (Gibson *et al.* 1999; Heraty *et al.* 2013), but are generally small insects (< 2 mm long). Among them, *Kikiki huna* Huber (Mymaridae) at 158 µm long is the smallest winged insect currently known and the wingless male of *Dicopomorpha echmepterygis* Mockford at 139 µm is the smallest insect currently known (Huber & Noyes 2013). Notably, most species used for biological control, belonging mainly to five families (Aphelinidae, Encyrtidae, Eulophidae, Mymaridae and Trichogrammatidae) are among the tiniest wasps on earth (< 1mm).

Their small size, huge diversity and widespread morphological convergence make chalcid wasps difficult to identify to species by non-expert taxonomists, which limits their use in

biological control. Attempts have been made to resolve the phylogeny of the whole superfamily (Heraty *et al.* 2013; Munro *et al.* 2011) or a few families (Burks *et al.* 2011; Chen *et al.* 2004; Cruaud *et al.* 2012; Desjardins *et al.* 2007; Janšta *et al.* 2017; Owen *et al.* 2007) but none has succeeded. Indeed, the few markers that could be targeted with Sanger sequencing were not informative enough to solve deeper relationships. A study based on transcriptome data (3,239 single-copy genes) obtained from 37 species of chalcids and 11 outgroups also failed to solve relationships within the superfamily (Peters *et al.* 2018). As only a representative sampling in both markers and taxa will allow one to draw accurate conclusions on the history of this hyperdiverse group, target enrichment approaches appear relevant. More specifically, targeting UCEs and their flanking regions that have been proven useful to solve ancient and recent divergences (Faircloth *et al.* 2012; Smith *et al.* 2014) seems pertinent. Indeed, a set of probes has been developed to target UCEs in Hymenoptera (Faircloth *et al.* 2015). This set and an enriched one (Branstetter *et al.* 2017c) were successfully used to solve the phylogeny of a few groups of ants, wasps and bees for which the amount of DNA was not limiting (Blaimer *et al.* 2015; Blaimer *et al.* 2016a; Blaimer *et al.* 2016b; Bossert *et al.* 2017; Branstetter *et al.* 2017a; Branstetter *et al.* 2017b; Jesovnik *et al.* 2017; Prebus 2017; Ward & Branstetter 2017). Thus, contributing to the global effort to solve the Hymenoptera tree of life while addressing the challenge of the phylogeny of chalcid wasps seemed sound.

Here, we provide a detailed description of the optimised protocol for DNA extraction and library preparation, followed by a description of the phylogenetic trees obtained through target enrichment of UCEs from 96 species belonging to seven families and one subfamily of chalcids used for biological control (Aphelinidae, Azotidae, Encyrtidae, Eulophidae, Mymaridae, Pteromalidae: Eunotinae, Signiphoridae, Trichogrammatidae) as well as three

outgroups in Mymaromatidae, the putative sister group to Chalcidoidea (Gibson *et al.* 2007; Heraty *et al.* 2013).

MATERIALS AND METHODS

Sampling

Samples were taken from the personal collections of the co-authors of this paper, or borrowed from the Queensland Museum (Australia) or the Australian National Insect Collection, Canberra. Details of the samples included in the analysis are presented in Table S1. Most specimens sampled in the field were placed directly into ethanol for storage. On average, specimens spent 3.5 years in ethanol before being processed (maximum storage time in alcohol = 34 years). Two specimens were critical point dried 25 or 34 years ago. UCE data for three specimens were retrieved from a previous study (Branstetter *et al.* 2017a): *Euplectrus* sp. (empirical data); *Copidosoma floridanum* and *Trichogramma pretiosum* (*in silico* extraction of UCEs from genomes).

DNA extraction

DNA was extracted using the Qiagen DNeasy Blood and Tissue kit. All extractions were conducted without destruction of the specimens' external (and certain internal) structures, with digestion and lysis of just the soft tissues. In this way, actual or potential type specimens are preserved. An often-essential feedback to the morphology is also preserved which is critical in this difficult group. The following modifications were made to manufacturer's protocol. Samples were incubated overnight in an Eppendorf thermomixer (temperature = 56°C, mixing frequency = 300 rpm). To increase DNA yield, two successive elutions (50 µL each) were performed with heated buffer AE (56°C) and an incubation step of 15 minutes

followed by centrifugation (8000 rpm for 1 minutes at room temperature). Eppendorf microtubes LoBind 1,5ml were used for elution and to store DNA at -20°C until library preparation. DNA was quantified with a Qubit® 2.0 Fluorometer (Invitrogen). The final version of the DNA extraction protocol is available as an additional file 1. Vouchers were deposited at CBGP, Montferrier-sur-Lez, France or returned to their owner.

Whole genome amplification

DNA extracted from two specimens was subjected to ethanol precipitation and whole genome amplification (WGA) using the GenomiPhi™ V2 DNA Amplification kit (GE Healthcare) as described in Cruaud *et al.* (in press). 1µl of concentrated DNA was used as input (i.e. 4 ng or 0.4 ng, Table S1).

Library preparation.

Our starting point was the protocol described in <http://ultraconserved.org> and Faircloth *et al.* (2015). The final goal was to obtain a standardized protocol that could be implemented by one person and which, in 5 working days, would made possible the manual preparation of libraries and the capture of UCEs from 96 samples in parallel. Steps by steps optimisations were made specially to remove time-consuming purification steps and different reagents were tested. The final version of the protocol is available as additional file 2. Briefly, input DNA was sheared to a size of ca 400 bp using the Bioruptor® Pico (Diagenode). End repair, 3'-end adenylation, adapters ligation and PCR enrichment were then performed with the NEBNext Ultra II DNA Library prep kit for Illumina (NEB). We used barcoded adapters that contained amplification and Illumina sequencing primer sites, as well as a nucleotide barcode of 5 or 6 bp long for sample identification (additional file 3). Pools of 16 samples were made at equimolar ratio. We enriched each pool using the 2749 probes designed by Faircloth *et al.*

(2015) using MYbaits kits (MYcroarray, Inc.). We followed manufacturer's protocol (MYbaits, user manual version 3, <http://www.mycroarray.com/pdf/MYbaits-manual-v3.pdf>). The hybridization reaction was run for 24h at 65°C. Post enrichment amplification was performed on beads with the KAPA Hifi HotStart ReadyMix. The enriched libraries were quantified with Qubit, an Agilent Bioanalyzer and qPCR with the Library Quantification Kit - Illumina/Universal from KAPA (KK4824). They were then pooled at equimolar ratio. Paired-end sequencing (2*300bp) was performed on an Illumina Miseq platform at UMR AGAP (Montpellier, France) to get longer flanking regions and, as a consequence, more information to differentiate closely related species.

Raw data cleaning

The analytical workflow is summarized in figure S1. In the next paragraph, chosen parameter values (different from default value) are provided between parentheses. Quality control checks were performed on raw sequence data with FastQC v.0.11.2 (Andrews 2010). Quality filtering and adapter trimming were performed with Trimmomatic-0.36 (Bolger *et al.* 2014) (LEADING:20 TRAILING:20 SLIDINGWINDOW:4:20 MINLEN:180, with PrefixPE/1=AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGA TCT and PrefixPE/2 = CAAGCAGAAGACGGCATACGAGATCGGTCTCGGCATTCCTGCTGAACCGCTCTTC CGATCT). Overlapping reads were merged using FLASH-1.2.11 (-M 300) (Magoc & Salzberg 2011). Demultiplexing was performed using a bash custom script (no mismatch in barcode sequences was allowed, additional file 4). Assembly of cleaned reads was performed using CAP3 (-i 25 -o 25 -s 400) (Huang & Madan 1999). The 2749 probes designed by Faircloth *et al.* (2015) were assembled into non-overlapping UCEs (hereafter called reference UCEs, n=1432, additional files 5 and 6) using Geneious 8.1.8 (Kearse *et al.* 2012) and contigs

were aligned to this set of reference UCEs using LASTZ Release 1.02.00 (Harris 2007).
Contigs that aligned with more than one reference UCE and different contigs that aligned with
the same reference UCE were filtered out using Geneious 8.1.8.

Data analysis

UCEs for which sequences were available for more than 25% of the taxa were kept in the next
steps of the analysis. Alignments were performed with MAFFT v7.245 (Katoh & Standley
2013) (-linsi option). Ambiguously aligned blocks were removed using Gblock_0.91b with
relaxed constraints (-t=d -b2=b1 -b3=10 -b4=2 -b5=h) (Talavera & Castresana 2007). The
final data set was analysed using supermatrix approaches and coalescent-based summary
methods. Two gene tree reconciliation approaches were used: ASTRAL-III v5.6.1 (Zhang *et al.*
2018), which computes the phylogeny that agrees with the largest number of quartet trees
induced by the set of input gene trees and ASTRID (Vachaspati & Warnow 2015) which
takes a set of gene trees, computes a distance matrix (*ca* sum of number of edges in the path
between two samples divided by the number of gene trees in which the two samples are
represented) and infers a phylogeny from this distance matrix. Following recommendations
for incomplete distance matrices, BioNJ was used to compute the phylogeny. Individual trees
were inferred from each UCE using raxmlHPC-PTHREADS-AVX (Stamatakis 2014)
(version 8.2.4; -f a -x 12345 -p 12345 -# 100 -m GTRGAMMA). ASTRAL and ASTRID
analyses were performed with 100 multi-locus bootstrapping (MLBS, site-only resampling
(Seo 2008)). Phylogenetic trees were estimated from the concatenate, unpartitioned data set
using Maximum Likelihood (ML) approaches as implemented in RAxML and IQTREE
v1.6.4 (Nguyen *et al.* 2015). For the RAxML analysis, a rapid bootstrap search (100
replicates) followed by a thorough ML search (-m GTRGAMMA) was performed. For the
IQTREE analysis, a ML search with the best-fit substitution model automatically selected was

performed with branch supports assessed with ultrafast bootstrap (Minh *et al.* 2013) and SH-aLRT test (Guindon *et al.* 2010) (1000 replicates). Summary statistics for all data sets (alignment length, number of samples, number of variable sites, number of parsimony informative sites etc.) were calculated using AMAS (Borowiec 2016). Tree annotation was performed with TreeGraph 2.13 (Stöver & Müller 2010). Linear correlation between the number of UCEs and the quantity of DNA used to build the library was tested with the Pearson's correlation coefficient in R (R Core Team 2015). Analyses were performed on a Dell PowerEdge T630 with 10 Intel Xeon E5-2687 dual-core CPUs (3.1 GHz, 9.60 GT/s), 125 Go RAM and 13 To hard drive and on the Genotoul Cluster (INRA, Toulouse).

RESULTS

Optimisations made for DNA extraction are detailed in the additional file 1. The final version of the library preparation protocol is available as additional files 2 and 3. Hereafter, the range of values provided between parentheses refers to the range of data that fall between the 2.5th percentile (LB=lower bound) and 97.5th percentile (UP = upper bound). Table S1 contains sequencing information for all samples. The median amount of input DNA was 25ng (LB=1.8ng; UP=250ng). An average of 76,330 reads (cleaned and merged) per sample was obtained (LB=3,359; UP=348,326). The average number of contigs was 3,454 (LB=546; UP=14,012) and the average sequencing depth was 18X (LB=3X; UP=44.0X). The average number of UCEs obtained per sample after filtering of problematic contigs was 687 (LB=193-UP=1,082) with a length comprised between LB=315 and UP=816bp (mean=603bp). Figure 1 and S2 show the variation of the number of UCEs obtained with regard to the amount of input DNA. No significant correlation was observed (Pearson's correlation coefficient = 0.096, p-value = 0.36).

The final dataset (25%-complete matrix; i.e. at least 25 taxa on the 99 should have a sequence to keep the locus in the analysis) comprised 1,139 UCEs and 340,286bp (missing data = 47.0 %; parsimony informative sites = 72.3 %; GC-content = 42.6%).

Specimens retrieved from a previous study (Branstetter *et al.* 2017a) that were either represented by empirical data (*Euplectrus* sp.) or UCEs extracted from published genomes (*Copidosoma floridanum* and *Trichogramma pretiosum*) displayed a number of UCEs comparable to what was obtained for other specimens. Their placement in the trees (Figures 2; S3-S5) was in accordance with their morphology. Whatever the method used (supermatrix approaches versus coalescent-based summary methods), all families, except for Aphelinidae, were recovered as monophyletic with high support. Aphelinids were split into three groups: 1) a monophyletic Aphelininae + Eretmocerinae; 2) Coccophaginae; 3) *Cales* sp. (Calesinae).

The position of *Cales* was ambiguous. *Cales* was either recovered as sister to Trichogrammatidae (RAxML, low support) or as a lineage distinct from all other chalcidoids (all other analyses). Except for Mymaridae that was strongly placed as sister to all other Chalcidoidea in all analyses, the tree backbone remained poorly resolved. Statistical support was much higher within families. In all analyses Azotidae clustered with Signiphoridae, with strong support.

DISCUSSION

To our knowledge this study is the second after Sproul and Maddison (2017) to demonstrate success in library preparation from such low input using commercial kits, and the first to report successful sequencing of >1000 low copy genes in 96 specimens in parallel, from such low input and processing time. Our optimisations differ from what was proposed by Sproul and Maddison (2017). First, we tried to optimize DNA extraction itself by using overnight lysis with gentle mixing to preserve fragile specimens, heated elution buffer and increased

incubation time before elution. Second, instead of increasing the number of time-consuming purification steps we decreased them. It is noteworthy that in this library only two historical specimens were included. This may have masked challenges posed by adapter dimers (Burrell *et al.* 2015; Sproul & Maddison 2017; Tin *et al.* 2014) that led Sproul and Maddison (2017) to add a second bead clean-up prior to library amplification. However, we have already used this protocol on hundreds of chalcid and moth species, including historical specimens that were processed the same way as fresh ones and we never had such an issue. Finally, instead of increasing the number of amplification cycles prior to target enrichment, we used a new generation mastermix including a hot start, processive and high-fidelity polymerase (NEBNext Ultra II Q5 Master Mix). Our protocol also allows one to back-up DNA at several steps that allows for multiple attempts without delay in case the first attempt fails. Finally, sequencing was performed on a MiSeq to get longer flanking regions and, as a consequence, more information to differentiate closely related species.

The protocol was successfully used on minute chalcid wasps widely used for biological control purposes. Up to 1165 valid UCEs were captured from 25ng DNA (median amount of DNA used for this study). No correlation was observed between the quantity of DNA used for library preparation and the number of captured UCEs. The average number of captured UCEs validated by our quality control workflow was 687, and 685 valid UCEs were captured from a tiny aphelinid (1.8ng of input DNA). The number of UCEs obtained per individual appears to drop within the basal clades (i.e., Mymaridae and Trichogrammatidae, Figure S2), a result probably linked to the relatively long branches observed in these groups, and that could reduce the efficiency of the probes that were designed from the genome of *Nasonia* (Faircloth *et al.* 2015). Trees were well resolved at the family level, with high statistical support, showing the potential of UCEs to solve long-standing taxonomic issues. However, the tree

backbone remained unresolved, a pattern that confirms the rapid diversification of the group (Heraty *et al.* 2013; Peters *et al.* 2018). Understanding the evolutionary history of the group was not the purpose of this paper. Indeed, only a representative sampling in both markers and taxa as well as cutting-edge data analysis will allow drawing accurate conclusions. By providing suitable tools for a fast, easy and affordable acquisition of data, this paper is a first step.

Interestingly, as it has been shown previously on RADseq data (Cruaud *et al.* in press), WGA does not seem to bias the results even when input DNA used for the WGA is below the recommendation on the manufacturer kit (here 0.4 and 4 ng when the Genomiphi kit V2 requires 10 ng). This further increases the possibilities opened by our protocol as input DNA as low as 0.2-0.3 ng may be used when an extra WGA step is included after DNA extraction (Cruaud *et al.* in press). It is noteworthy that reducing the amount of DNA required for library preparation allows one to use extracted DNA for different approaches in parallel (RADseq, amplicon, Shotgun etc.). This also allows one to send DNA back to museums from which specimens were borrowed, for archival purposes. We definitely agree with Sproul and Maddison (2017) who emphasize how important it is not to waste DNA obtained from irreplaceable specimens (whether fresh or historical). It is even more important to capitalize on existing collections as collecting samples for large-scale studies may be more and more difficult, given that many countries have imposed restrictive access regulations, even to academic researchers, to reduce the risk of supposed biopiracy (Divakaran Prathapan *et al.* 2018).

All the elements discussed above indicate that this protocol may be of great help to reconstruct phylogenetic hypotheses in multiple groups of tiny arthropods, e.g., springtails,

sandflies, lice, whiteflies, mites, etc. Coupled or not with WGA, some steps of our protocol may also contribute to simplify and hasten construction of other reduced-representation libraries (RAD-Seq, ddRAD-Seq, etc). These methods may then be used to analyse species relationships, hybridization or population genomics (Cruaud *et al.* 2014; Eaton & Ree 2013; Emerson *et al.* 2010; Gagnaire *et al.* 2013; Hipp *et al.* 2014) on minute arthropods or on endangered species using non-invasive DNA sampling (Vila *et al.* 2009).

ACKNOWLEDGEMENTS

We are grateful to Nicole Fisher (CSIRO, National Museum of Australia, Canberra), Chris Burwell, Christine Lambkin and Susan Wright (Queensland Museum, Brisbane, Australia) for facilitating access to samples and to the Genotoul bioinformatics platform Toulouse Midi-Pyrenees, France for providing computing resources. AC thanks Lisa Schlée, Philippe Cruaud and Maya for their patience in the field and Jean-Pierre Rossi for his help with R. AG thanks V. Fursov (Schmalhausen Institute of Zoology, Ukraine) for his help with specimen identification. This work is part of a large NSF project (Award#1555808) led by John Heraty (UC Riverside USA) that attempts to solve the phylogeny of Chalcidoidea with NGS approaches, and was partly funded by the ANR project TriPTIC (ANR-14-CE18-0002) led by JYR and the SPE department of the INRA (French National Agronomic Institute). LF travels to France were supported by the grants IntegPar (89BM/2017) and NEVPIT (PN-III-P4-ID-PCE-2016-0233) awarded by the Romanian National Authority for Scientific Research, CNCS – UEFISCDI. This paper is dedicated to the memory of our friend Dr John La Salle, whose kindness and sense of humor will be remembered for ever.

REFERENCES

- Al Khatib F, Fusu L, Cruaud A, *et al.* (2014) An integrative approach for species discrimination in the *Eupelmus urozonus* complex (Hymenoptera, Eupelmidae), with the descriptions of eleven new species from the West Palaearctic. *Systematic Entomology* **39**, 806-862.
- Andrews S (2010) FastQC - A Quality Control application for FastQ files. Available from <http://www.bioinformatics.babraham.ac.uk/projects/fastqc/>.
- Blaimer BB, Brady SG, Schultz TR, *et al.* (2015) Phylogenomic methods outperform traditional multi-locus approaches in resolving deep evolutionary history: a case study of formicine ants. *BMC Evolutionary Biology* **15**, 271.
- Blaimer BB, LaPolla JS, Branstetter MG, Lloyd MW, Brady SG (2016a) Phylogenomics, biogeography and diversification of obligate mealybug-tending ants in the genus *Acropyga*. *Molecular Phylogenetics and Evolution* **102**, 20-29.
- Blaimer BB, Lloyd MW, Guillory WX, Brady SG (2016b) Sequence Capture and Phylogenetic Utility of Genomic Ultraconserved Elements Obtained from Pinned Insect Specimens. *PLoS ONE* **11**.
- Bolger AM, Lohse M, Usadel B (2014) Trimmomatic: a flexible trimmer for Illumina sequence data. *Bioinformatics* **30**, 2114-2120.
- Borowiec ML (2016) AMAS: a fast tool for alignment manipulation and computing of summary statistics. *PeerJ* **4**, e1660.
- Bossert S, Murray EA, Blaimer BB, Danforth BN (2017) The impact of GC bias on phylogenetic accuracy using targeted enrichment phylogenomic data. *Molecular Phylogenetics and Evolution* **111**, 149-157.
- Branstetter MG, Danforth BN, Pitts JP, *et al.* (2017a) Phylogenomic Insights into the Evolution of Stinging Wasps and the Origins of Ants and Bees. *Current Biology* **27**, 1019-1025.
- Branstetter MG, Jesovnik A, Sosa-Calvo J, *et al.* (2017b) Dry habitats were crucibles of domestication in the evolution of agriculture in ants. *Proceedings of the Royal Society B-Biological Sciences* **284**.
- Branstetter MG, Longino JT, Ward PS, Faircloth BC (2017c) Enriching the ant tree of life: enhanced UCE bait set for genome-scale phylogenetics of ants and other Hymenoptera. *Methods in Ecology and Evolution* **8**, 768-776.
- Burks RA, Heraty JM, Gebiola M, Hansson C (2011) Combined molecular and morphological phylogeny of Eulophidae (Hymenoptera: Chalcidoidea), with focus on the subfamily Entedoninae. *Cladistics* **27**, 1-25.
- Burrell AS, Disotell TR, Bergey CM (2015) The use of museum specimens with high-throughput DNA sequencers. *Journal of Human Evolution* **79**, 35-44.
- Chen Y, Hui XA, Fu JZ, Huang DW (2004) A molecular phylogeny of eurytomid wasps inferred from DNA sequence data of 28S, 18S, 16S, and COI genes. *Molecular Phylogenetics and Evolution* **31**, 300-307.
- Consoli FL, Parra JRP, Zucchi RA, (Eds.) (2010) *Egg parasitoids in agroecosystems with emphasis on Trichogramma* Springer, Dordrecht.
- Cruaud A, Gautier M, Galan M, *et al.* (2014) Empirical assessment of RAD sequencing for interspecific phylogeny. *Molecular Biology and Evolution* **31**, 1272-1274.
- Cruaud A, Groussier G, Genson G, Sauné L, Rasplus J-Y (in press) Pushing the limits of whole genome amplification: successful sequencing of RADseq libraries from single micro-hymenoptera (Chalcidoidea, *Trichogramma*). *PeerJ* **6**, e26939v26931.
- Cruaud A, Rønsted N, Chantarasuwan B, *et al.* (2012) An extreme case of plant-insect co-diversification: figs and fig-pollinating wasps. *Systematic Biology* **61**, 1029-1047.

- Desjardins CA, Regier JC, Mitter C (2007) Phylogeny of pteromalid parasitic wasps (Hymenoptera : Pteromalidae): Initial evidence from four protein-coding nuclear genes. *Molecular Phylogenetics and Evolution* **45**, 454-469.
- Divakaran Prathapan K, Pethiyagoda R, Bawa KS, *et al.* (2018) When the cure kills—CBD limits biodiversity research. National laws fearing biopiracy squelch taxonomy studies. *Science* **360**, 1405-1406.
- Eaton DAR, Ree RH (2013) Inferring phylogeny and introgression using RADseq data: An example from flowering plants (*Pedicularis*: Orobanchaceae). *Systematic Biology* **62**, 689-706.
- Emerson KJ, Merz CR, Catchen JM, *et al.* (2010) Resolving postglacial phylogeography using high-throughput sequencing. *Proceedings of the National Academy of Sciences of the United States of America* **107**, 16196-16200.
- Faircloth BC, Branstetter MG, White ND, S.G. B (2015) Target enrichment of ultraconserved elements from arthropods provides a genomic perspective on relationships among Hymenoptera. *Molecular Ecology Resources* **15**, 489-501.
- Faircloth BC, McCormack JE, Crawford NG, *et al.* (2012) Ultraconserved Elements Anchor Thousands of Genetic Markers Spanning Multiple Evolutionary Timescales. *Systematic Biology* **61**, 717-726.
- Gagnaire PA, Normandeau E, Pavey SA, Bernatchez L (2013) Mapping phenotypic, expression and transmission ratio distortion QTL using RAD markers in the Lake Whitefish (*Coregonus clupeaformis*). *Molecular Ecology* **22**, 3036-3048.
- Gasc C, Peyret P (2018) Hybridization capture reveals microbial diversity missed using current profiling methods. *Microbiome* **6**, 61.
- Gasc C, Peyretailade E, Peyret P (2016) Sequence capture by hybridization to explore modern and ancient genomic diversity in model and nonmodel organisms. *Nucleic Acids Research* **44**, 4504-4518.
- Gibson GAP, Heraty JM, Woolley JB (1999) Phylogenetics and classification of Chalcidoidea and Mymarommatoidea - a review of current concepts (Hymenoptera, Apocripta). *Zoologica Scripta* **28**, 87-124.
- Gibson GAP, Read J, Huber JT (2007) Diversity, Classification and higher relationships of Mymarommatoidea (Hymenoptera). *Journal of Hymenoptera Research* **16**, 51-146.
- Guindon S, Dufayard JF, Lefort V, *et al.* (2010) New algorithms and methods to estimate maximum-likelihood phylogenies: assessing the performance of PhyML 3.0. *Systematic Biology* **59**, 307-321.
- Harris RS (2007) *Improved pairwise alignment of genomic DNA*. Ph.D. Thesis Ph.D. Thesis, The Pennsylvania State University.
- Heraty JM (2009) Parasitoid biodiversity and insect pest management. In: *Insect biodiversity: science and society* (eds. Footitt B, Adler P), pp. 445-462. Netherlands: Springer-Verlag Press.
- Heraty JM, Burks RA, Cruaud A, *et al.* (2013) A phylogenetic analysis of the megadiverse Chalcidoidea (Hymenoptera). *Cladistics* **29**, 466-542.
- Hipp AL, Eaton DAR, Cavender-Bares J, *et al.* (2014) A framework phylogeny of the american oak clade based on sequenced RAD data. *PLoS ONE* **9**, e93975.
- Huang X, Madan A (1999) CAP3: A DNA sequence assembly program. *Genome Research* **9**, 868-877.
- Huber JT, Noyes JS (2013) A new genus and species of fairyfly, *Tinkerbella nana* (Hymenoptera, Mymaridae), with comments on its sister genus *Kikiki*, and discussion on small size limits in arthropods. *Journal of Hymenoptera Research* **32**, 17-44.
- Janšta P, Cruaud A, Delvare G, *et al.* (2017) Torymidae (Hymenoptera, Chalcidoidea) revised: molecular phylogeny, circumscription and reclassification of the family with

- discussion of its biogeography and evolution of life-history traits. *Cladistics*. *Cladistics*
inpress.
- Jesovnik A, Sosa-Calvo J, Lloyd MW, *et al.* (2017) Phylogenomic species delimitation and
host-symbiont coevolution in the fungus-farming ant genus *Sericomyrmex* Mayr
(Hymenoptera: Formicidae): ultraconserved elements (UCEs) resolve a recent radiation.
Systematic Entomology **42**, 523-542.
- Katoh K, Standley DM (2013) MAFFT multiple sequence alignment software version 7:
improvements in performance and usability. *Molecular Biology and Evolution* **30**, 772-
780.
- Kearse M, Moir R, Wilson A, *et al.* (2012) Geneious Basic: an integrated and extendable
desktop software platform for the organization and analysis of sequence data.
Bioinformatics **28**, 1647-1649.
- Kenyon SG, Buerki S, Hansson C, Alvarez N, Benrey B (2015) Uncovering cryptic parasitoid
diversity in *Horismenus* (Chalcidoidea, Eulophidae). *PLoS ONE* **10**, e0136063.
- Lemmon EM, Lemmon AR (2013) High-throughput genomic data in systematics and
phylogenetics. *Annual Review of Ecology Evolution and Systematics* **44**, 99-121.
- Magoc T, Salzberg SL (2011) FLASH: fast length adjustment of short reads to improve
genome assemblies. *Bioinformatics* **27**, 2957-2963.
- Mamanova L, Coffey AJ, Scott CE, *et al.* (2010) Target-enrichment strategies for next-
generation sequencing. *Nature Methods* **7**, 111-118.
- McCormack JE, Harvey MG, Faircloth BC, *et al.* (2013) A Phylogeny of Birds Based on
Over 1,500 Loci Collected by Target Enrichment and High-Throughput Sequencing. *PLoS*
ONE **8**.
- Minh BQ, Nguyen MAT, von Haeseler A (2013) Ultrafast approximation for phylogenetic
bootstrap. *Molecular Biology and Evolution* **30**, 1188-1195.
- Mottern JL, Heraty JM (2014) Revision of the *Cales noacki* species complex (Hymenoptera,
Chalcidoidea, Aphelinidae). *Systematic Entomology* **39**, 354-379.
- Munro JB, Heraty JM, Burks RA, *et al.* (2011) A molecular phylogeny of the Chalcidoidea
(Hymenoptera). *PLoS ONE* **6**, e27023.
- Muraya MM, Schmutzer T, Ulpinnis C, Scholz U, Altmann T (2015) Targeted sequencing
reveals large-scale sequence polymorphism in maize candidate genes for biomass
production and composition. *PLoS ONE* **10**, e0132120.
- Nguyen LT, Schmidt HA, von Haeseler A, Minh BQ (2015) IQ-TREE: A fast and effective
stochastic algorithm for estimating maximum likelihood phylogenies. *Molecular Biology*
and Evolution **32**, 268-274.
- Noyes JS (2018) Universal Chalcidoidea Database. World Wide Web electronic publication.
<<http://www.nhm.ac.uk/chalcidoids>> (accessed march 2018).
- Owen AK, George J, Pinto JD, Heraty JM (2007) A molecular phylogeny of the
Trichogrammatidae (Hymenoptera : Chalcidoidea), with an evaluation of the utility of their
male genitalia for higher level classification. *Systematic Entomology* **32**, 227-251.
- Peters RS, Niehuis O, Gunkel S, *et al.* (2018) Transcriptome sequence-based phylogeny of
chalcidoid wasps (Hymenoptera: Chalcidoidea) reveals a history of rapid radiations,
convergence, and evolutionary success. *Molecular Phylogenetics and Evolution* **120**, 286-
296.
- Pinto JD, Stouthamer R, Platner GR, Oatman ER (1991) Variation in reproductive
compatibility in *Trichogramma* and its taxonomic significance (Hymenoptera:
Trichogrammatidae). *Annals of the Entomological Society of America* **84**(1), 37-46.
- Prebus M (2017) Insights into the evolution, biogeography and natural history of the acorn
ants, genus *Temnothorax* Mayr (hymenoptera: Formicidae). *BMC Evolutionary Biology*
17, 250.

- R Core Team (2015) *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. URL <http://www.r-project.org/>.
- Seo TK (2008) Calculating bootstrap probabilities of phylogeny using multilocus sequence data. *Molecular Biology and Evolution* **25**, 960-971.
- Smith BT, Harvey MG, Faircloth BC, Glenn TC, Brumfield RT (2014) Target capture and massively parallel sequencing of ultraconserved elements for comparative studies at shallow evolutionary time scales. *Systematic Biology* **63**, 83-95.
- Sproul JS, Maddison DR (2017) Sequencing historical specimens: successful preparation of small specimens with low amounts of degraded DNA. *Molecular Ecology Resources* **17**, 1183-1201.
- Stamatakis A (2014) RAxML version 8: a tool for phylogenetic analysis and post-analysis of large phylogenies. *Bioinformatics* **30**, 1312-1313.
- Stouthamer R, Luck RF, Hamilton WD (1990) Antibiotics cause parthenogenetic *Trichogramma* (Hymenoptera: Trichogrammatidae) to revert to sex. *Proceedings of the National Academy of Sciences, USA* **87**, 2424-2427.
- Stöver BC, Müller KF (2010) TreeGraph 2: Combining and visualizing evidence from different phylogenetic analyses. *BMC Bioinformatics* **11**, 7.
- Talavera G, Castresana J (2007) Improvement of phylogenies after removing divergent and ambiguously aligned blocks from protein sequence alignments. *Systematic Biology* **56**, 564-577.
- Tin M-Y, Economo EP, Mikheyev AS (2014) Sequencing degraded DNA from non-destructively sampled museum specimens for RADtagging and low-coverage shotgun phylogenetics. *PLoS ONE* **9**, e96793.
- Vachaspati P, Warnow T (2015) ASTRID: Accurate Species TREes from Internode Distances. *BMC Genomics* **16**(Suppl 10), S3.
- Vila M, Auger-Rozenberg MA, Goussard F, Lopez-Vaamonde C (2009) Effect of non-lethal sampling on life-history traits of the protected moth *Graellsia isabellae* (Lepidoptera: Saturniidae). *Ecological Entomology* **34**, 356-362.
- Ward PS, Branstetter MG (2017) The acacia ants revisited: convergent evolution and biogeographic context in an iconic ant/plant mutualism. *Proceedings of the Royal Society B-Biological Sciences* **284**, 20162569.
- Werren JH, Loehlin DW (2009) The parasitoid wasp *Nasonia*: an emerging model system with haploid male genetics. *Cold Spring Harbor protocols* **2009**, pdb.em0134.
- Zhang C, Rabiee M, Sayyari E, Mirarab S (2018) ASTRAL-III: polynomial time species tree reconstruction from partially resolved gene trees. *BMC Bioinformatics* **19**, 153.

DATA ACCESSIBILITY

Demultiplexed reads are available as a NCBI Sequence Read Archive (ID#XXX)

AUTHOR CONTRIBUTIONS

Designed the study: AC, JYR; contributed samples and identifications: AC, LF, AG, JH, AP, JYR; optimized protocol: SN with the help of AC, JYR, PA; performed lab work: SN with the

help of AC, JYR, LF; sequenced libraries: AW; analysed data: AC, JYR; drafted the manuscript: AC, JYR. All authors commented on the manuscript.

TABLES AND FIGURES

Figure 1. Variation of the number of UCEs with regard to the amount of input DNA (ng).

Figure 2. RAxML tree obtained from the analysis of the 25%-complete data set.

Black squares indicate node supported with RAxML BP = 100, IQTREE aLRT = 100 / BP = 100 and ASTRAL/ASTRID BP > 75. Grey square indicates node with RAxML BP = 100, IQTREE aLRT = 100 / BP = 100 and ASTRAL BP > 75. White squares indicate nodes with RAxML BP > 95 and IQTREE aLRT > 80 / BP > 95. The DNA quantity used to build the library as well as the number of UCEs analysed for each sample is given in brackets. Photos ©J.-Y. Rasplus. Scale bars = 500 μ m. IQTREE, ASTRAL and ASTRID trees are available in figures S3-S5.

Supplementary material to:

Optimised DNA extraction and library preparation for minute arthropods: application to target enrichment in chalcid wasps used for biocontrol.

Astrid Cruaud^{1*}, Sabine Nidelet¹, Pierre Arnal^{1,2}, Audrey Weber³, Lucian Fusu⁴, Alex Gumovsky⁵, John Huber⁶, Andrew Polaszek⁷ and Jean-Yves Rasplus¹

Additional file 1 Optimized protocol for DNA extraction (page 22)

Additional file 2: Optimized protocol for library preparation (page 25)

Additional file 3: Adapter sequences and hybridization (page 31)

Additional file 4: Custom scripts/command lines used in the analytical workflow (page 34)

Additional file 5: Reference UCEs (page 35)

Additional file 6: Correspondence between reference UCE numbers and probes designed by Faircloth et al. (2015) (page 89)

Table S1: Samples used in this study and results of the UCE-enrichment experiment (page 132)

Figure S1: Workflow used for raw data cleaning (page 136)

Figure S2: RAxML tree obtained from the analysis of the 25%-complete data set. The histogram on the side of the tree shows the distribution of the number of UCEs analysed for each sample. (page 137)

Black squares indicate node supported with RAxML BP = 100, IQTREE aLRT = 100 / BP = 100 and ASTRAL/ASTRID BP > 75. Grey square indicates node with RAxML BP = 100, IQTREE aLRT = 100 / BP = 100 and ASTRAL BP > 75. White squares indicate nodes with RAxML BP > 95 and IQTREE aLRT > 80 / BP > 95.

Figure S3: IQTREE tree obtained from the analysis of the 25%-complete data set (page 138)

SH-aLRT / UFboot values are indicated at nodes.

The DNA quantity used to build the library as well as the number of UCEs analysed for each sample is given in brackets.

Figure S4 ASTRAL tree obtained from the analysis of the 25%-complete data set (page 139) Bootstrap supports (site-only resampling) are indicated at nodes. The DNA quantity used to build the library as well as the number of UCEs analysed for each sample is given in brackets.

Figure S5 ASTRID tree obtained from the analysis of the 25%-complete data set (page 140) Bootstrap supports (site-only resampling) are indicated at nodes. The DNA quantity used to build the library as well as the number of UCEs analysed for each sample is given in brackets.

Additional file 1: Optimized protocol for DNA extraction

Optimisations were done to the DNeasy Blood & Tissue Kit (250) protocol (Qiagen)

Consumables

Tweezers and fine brush/or forceps to manipulate specimens; 1 pot with bleach at a 1:10 dilution with osmosis cleaned water; 1 pot with osmosis cleaned water to wash tweezers/forceps, cup, paper towels, sterile gloves, 50ml Falcon™ tube, 1.5ml Safe-lock tubes (Eppendorf), 1.5ml Microtubes DNA LoBind (Eppendorf).

-----day 1 / afternoon-----

- Label 1.5ml safe-lock tubes with sample codes. Close caps. Put under UV light for 10 min.
- Equilibrate frozen specimens to room temperature before processing.
- Dry specimens on clean paper towel to remove EtOH. Place specimen in tube. Clean forceps to avoid contamination between 2 different specimens: bleach, then water, then dry with paper towel.
- Add 200µl buffer ATL (Qiagen) to each tube.
(NB DNeasy® Blood & Tissue Handbook uses 180µl; we use 200µl to improve diffusion of the DNA from the specimen)
- Add 20µl proteinase K to each tube (or prepare a master mix of buffer ATL + proteinase K and add master mix to tubes.)
- Vortex + Pulse spin.
(NB if the specimens are fragile, i.e. old and dry mounted collection specimens, dispense the master mix of buffer ATL + proteinase K to each tube and then add specimens; or dispense specimens to tubes and then add the master mix. Do not vortex at all to avoid damage to specimens and place the tubes directly in the thermomixer after ensuring that the specimens are in the liquid.)
- Place tubes in thermomixer (Eppendorf) at 56°C and 300 rpm overnight.

-----day 2 / morning-----

- Remove tubes from thermomixer.
- Vortex + pulse spin.
(NB if working with fragile specimens do not vortex. Pulse spin, transfer all the liquid to a new labelled tube leaving the specimen behind and then proceed to the next step.)

(DNeasy® Blood & Tissue Handbook, p. 15, recommends using carrier DNA or RNA for samples containing less than 5 µg of DNA. Though this was not used for this publication, poly (A) RNA (2 µl of 2 µg/µl) is added to the lysate before the next step by one of us (LF) for routine DNA purification from small or old specimens. This should not interfere with library preparation as it was used for example by Sproul & Maddison (2017) as recommended in the QIAamp DNA Micro Kit by Qiagen.)

- Add 200µl buffer AL to each tube (kit Qiagen).

(DNeasy® Blood & Tissue Handbook, p. 19, 29 recommends adding RNase A if RNA-free genomic DNA is required. We do not use it because the copurified RNA is not interfering with target enrichment anyway and because RNase A also degrades DNA; see Donà & Houseley (2015).)

A white precipitate may appear that will dissolve during incubation at 70°C.

- Vortex + pulse spin.
 - Incubate tubes in thermomixer at 70°C and 300 rpm for 10 minutes.
 - During that time, prepare DNeasy mini spin Qiagen columns and 1.5 ml DNA LoBind Eppendorf tubes (label tubes with sample codes).
- (NB LoBind tubes minimize DNA loss during storage by reducing sample-to-surface binding.)

- Aliquot buffer AE in Eppendorf tubes and heat at 56°C in thermomixer (heated buffer will improve the release of DNA from the resin.)

- Add 200µl absolute ethanol (not provided with the Qiagen kit) to each tube.
- (NB only high purity ethanol should be used; cheap ethanol may contain traces of other chemicals that will interfere with the solubilisation of the DNA from the membrane in the last step.)

- Vortex + Pulse spin.
- Pipette the liquid (including precipitate) from each tube and transfer into a DNeasy mini spin Qiagen column placed in a 2 ml collection tube (Qiagen kit).
- Centrifuge columns + collection tubes at 6000 x g (8000 rpm) for 1 minute; discard the flow-through and collection tubes. Keep the columns.
- Place spin columns in new collection tubes.
- Add 500µl buffer AW1 (kit Qiagen).
- Centrifuge at 6000 x g (8000rpm) for 1 minute; discard the flow-through and collection tubes. Keep the columns.
- Place spin columns in new collection tubes.
- Add 500µl buffer AW2 (kit Qiagen).
- Centrifuge at 20,000 x g (14,000 rpm) for 3 minutes to dry the columns.
- Rotate columns to 180 degrees in their collection tubes and centrifuge again at 20000 xg (14000rpm) for 3 minutes (this will make sure the column is well dried).
- Place dried spin columns in 1.5ml LoBind tubes that you previously labelled.
- Add 50µl of heated AE buffer. **Deposit buffer right in the middle of the resin.**
- Incubate 15 min at room temperature (**meanwhile, reheat buffer AE.**)
- Centrifuge at 6000 x g (8000 rpm) for 1 minute.
- Rotate columns to 180 degrees and centrifuge again at 6000 x g (8000 rpm) for 1 minute.
- Remove columns + tubes from the centrifuge.
- Add again 50µl of heated buffer **right in the middle of the resin.**
- Incubate 15 min at room temperature.
- Centrifuge at 6000 x g (8000 rpm) for 1 minute at room temperature.
- Rotate columns to 180 degrees and centrifuge again at 6000 x g (8000 rpm) for 1 minute.
- DNA (ca 2 x 50µl) is ready for use.

- Add distilled water to the extracted specimens and incubate at room temperature for 30 min.

(NB water is used to eliminate the residual salts left by the buffers. Otherwise they usually crystallise on the specimen upon storage in ethanol.)

- Remove water and replace with ethanol. Keep specimens in the dark in a freezer until mounting.

(NB if the specimens are stored at room temperature under ambient light they will become sun-bleached very quickly, much quicker than unextracted specimens.)

- Use a critical point dryer, hexamethyldisilazane, acetone or amyl acetate to dry the specimens before mounting. Do not air dry as they will collapse.

References cited:

Donà, F., Houseley, J., 2015. Expect the Unexpected - RNase A may still catch you by surprise Labtimes 1, 46. Available online at http://www.labtimes.org/labtimes/trick/tricks/2015_01.lasso

DNeasy® Blood & Tissue Handbook: <https://www.qiagen.com/it/resources/resourcedetail?id=6b09dfb8-6319-464d-996c-79e8c7045a50&lang=en>

Sproul, J.S., Maddison, D.R. 2017. Sequencing historical specimens: successful preparation of small specimens with low amounts of degraded DNA. Molecular Ecology Resources, 17(6), 1183-1201.

Additional file 2: Optimized protocol for library preparation

1. DNA quantification

Qubit® 2.0 Fluorometer (Invitrogen); dsDNA HS Assay Kit.

2. DNA normalization and shearing

Bioruptor ® Pico, sonication bath-based rotor 12 samples in parallel.

Transfer 100µl of input DNA in tubes adapted to the Bioruptor ® Pico that will be used for DNA shearing (Diagenode tubes 0.5ml). [now we shear 30ng DNA in routine but you can use as little as 1.8 ng, see main text]

Set up the following program for DNA shearing to obtain a mean fragment size of ca 400pb:

15sec ON / 90sec OFF for 8 cycles.

You can STOP here for up to 1 week (store tubes in a freezer at -20°C).

The NEBNext Ultra II DNA Library prep kit for Illumina by NEB will be used for End repair, A tailing, Adapter ligation and PCR enrichment of adaptor-ligated DNA.

3. End repair + A tailing

To keep a backup, only 50 µl of the sheared DNA is used [you may want to re-concentrate DNA on beads in 50 µl when you have a small amount i.e. < 5 ng]

Transfer 50 µl of sheared DNA into a strip / plate.

Thaw NEBNext Ultra II End Prep Reaction Buffer. Vortex + pulse spin.

ATTENTION: Pull out NEBNext Ultra II End Prep Enzyme Mix out of freezer just before use. LIGHT vortex + pulse spin.

	Master Mix:	x1 reaction	x 96 reactions
NEBNext Ultra II End Prep Enzyme Mix		3 µl	288 µl
NEBNext Ultra II End Prep Reaction Buffer		7 µl	672 µl
Master mix to add to each tube		10 µl	

Vortex master mix gently + pulse spin.

- Add 10µl of master mix to tubes containing 50µl of sheared DNA.
- Vortex (**mix well.**)
- Pulse spin.
- Place in a thermocycler. **Enable heated lid** and run the following program:
 - 30 min at 20°C**
 - 30 min at 65°C**
 - Hold at 4°C.**

PROCEED WITHOUT DELAY TO ADAPTER LIGATION

4. Adapter ligation and cleanup

See **additional file 3** for adapter sequences and hybridization.

Thaw adapters (1.5 μ M). Centrifuge to avoid cross contamination. Open carefully.

For 96 samples use the following tagging scheme:

P1-1	P1-9	P1-1	P1-9	P1-1	P1-9	P1-1	P1-9	P1-1	P1-9	P1-1	P1-9
P1-2	P1-10	P1-2	P1-10	P1-2	P1-10	P1-2	P1-10	P1-2	P1-10	P1-2	P1-10
P1-3	P1-11	P1-3	P1-11	P1-3	P1-11	P1-3	P1-11	P1-3	P1-11	P1-3	P1-11
P1-4	P1-12	P1-4	P1-12	P1-4	P1-12	P1-4	P1-12	P1-4	P1-12	P1-4	P1-12
P1-5	P1-13	P1-5	P1-13	P1-5	P1-13	P1-5	P1-13	P1-5	P1-13	P1-5	P1-13
P1-6	P1-14	P1-6	P1-14	P1-6	P1-14	P1-6	P1-14	P1-6	P1-14	P1-6	P1-14
P1-7	P1-15	P1-7	P1-15	P1-7	P1-15	P1-7	P1-15	P1-7	P1-15	P1-7	P1-15
P1-8	P1-16	P1-8	P1-16	P1-8	P1-16	P1-8	P1-16	P1-8	P1-16	P1-8	P1-16
P2-1		P2-2		P2-3		P2-4		P2-5		P2-6	

Thaw NEBNext Ultra II Ligation master mix. Light vortex + Pulse spin.

Thaw NEBNext Ligation enhancer. Light Vortex + pulse spin.

	Master Mix:	x1 reaction	x 96 reactions
NEBNext Ultra II Ligation master mix		30 μ l	2880 μ l
NEBNext Ligation enhancer		1 μ l	96 μ l
Master mix to add to each tube		31 μ l	

Vortex (mix well) + pulse spin

- Add 31 μ l of master mix to tubes containing the 60 μ l end prep reaction mixture obtained in the previous step.
- Add 1.25 μ l of P1 adapters (1.5 μ M) and 1.25 μ l of P2 adapters (1.5 μ M) to each tube.
- Vortex (**mix well.**)
- Pulse spin.
- Place in a thermocycler. **Disable heated lid** and run the following program:
15 min at 20°C.

(NB samples can be stored overnight at -20°C.)

Clean-up adaptor ligated DNA (remove dimers of adapters):

Purification was conducted with the Agencourt AMPure XP Purification system (Beckman Coulter) and a ALPAQUA magnet plate.

Pull Ampure beads out of fridge. Make sure they are at room temperature (RT) before use.

- Vortex Ampure beads.
- Add 0.8 vol. of Ampure beads for 1 vol. of DNA (i.e. 74.8 μ l of beads for 93.5 μ l of DNA => vol. tot. = 168.3 μ l).

- Vortex + pulse spin.
- Incubate for **5min** at RT.
- Move strip to magnetic rack and wait for **2 to 5min**.
- Remove and discard supernatant without disturbing beads.
- Do not remove tubes from magnetic rack and add **200 µl of 70 % ethanol** without disturbing beads (use freshly made 70% ethanol to ensure accurate concentration.)
- Wait for **30s** (leave cap open.)
- Remove and discard supernatant without disturbing beads.
- Add again **200 µl of 70 % ethanol**.
- Wait for **30s** (leave cap open.)
- Remove and discard supernatant without disturbing beads.
- **Make sure to remove all traces of ethanol** (use a 10µl micropipette if necessary.)
- Dry for **5 min** (leave cap open.)
- Do not remove tubes from magnetic rack and add **15µl of buffer EB**.
- Close cap.
- Remove strip from magnetic rack.
- Vortex + pulse spin.
- Wait for **2min**.
- Move strip back to magnetic rack and wait for **2 to 5min**.
- Transfer the **15µl** of DNA to a new strip.

5. PCR enrichment of adaptor-ligated DNA

Thaw NEBNext Ultra II Q5 Master Mix. Homogenize by pipetting + Pulse spin. DO NOT VORTEX. Leave on Ice.

	Master Mix:	x 1 reaction	x 96 reactions
NEBNext Ultra II Q5 Master Mix		25 µl	2400 µl
Primer F (10µM)		2 µl	192 µl
Primer R (10µM)		2 µl	192 µl
Master mix to add to each tube		29 µl	

With

Primer F = AATGATACGGCGACCACCG*A

Primer R = CAAGCAGAAGACGGCATACG*A

(synthesized by IDT (Integrated DNA Technologies, Inc.), HPLC Purification, * = Phosphorothioate Bond.)

Vortex + pulse spin master mix

- Add 29 µl of master mix to tubes containing the 15 µl of adaptor ligated DNA.
- Vortex.
- Pulse spin.
- Place in a thermocycler. **Enable heated lid** and run the following program:

	15 cycles				
Time	30s	10s	75s	5min	∞
Temperature	98°C	98°C	65°C	65°C	4°C

6. Quantification, equimolar pooling and re-concentration

Qubit - quantify 2 µl of each library.

In our experience, a clean-up step of the libraries is not necessary.

Prepare 6 pools of 16 samples in 1.5ml LoBind tubes.

Pool 100 ng of each library (you want a final quantity of 100-500ng DNA per pool after concentration to fit with the requirements of the MYbaits® protocol.)

On beads Concentration of DNA (Agencourt AMPure XP Purification system (Beckman Coulter)).
Concentration of DNA is required, as MyBaits require 7 µl of starting material.

Remove Ampure beads from fridge. Make sure they are at room temperature (RT) before use.

- Vortex Ampure beads.
- Add 0.8 vol. of Ampure beads for 1 vol. of DNA.
- Vortex + pulse spin.
- Incubate for **5min** at RT.
- Move tubes to magnetic rack and wait for **2 to 5 min**.
- Remove and discard supernatant without disturbing beads.
- Do not remove tubes from magnetic rack and add **200 µl of 70 % ethanol** without disturbing beads (use freshly made 70% EtOH to ensure accurate concentration.)
- Wait for **30s** (leave cap open.)
- Remove and discard supernatant without disturbing beads.
- Add again **200 µl of 70 % ethanol**.
- Wait for **30s** (leave cap open.)
- Remove and discard supernatant without disturbing beads.
- **Make sure to remove all traces of Ethanol** (use a 10µl micropipette if necessary.)
- Dry for **5 min** (leave cap open.)
- Do not remove tubes from magnetic rack and add **9µl** of buffer EB.
- Close cap.
- Remove tubes from magnetic rack.
- Vortex + spin pulse.
- Wait for **2min**.
- Move strip back to magnetic rack and wait for **2 to 5min**.
- Transfer the **9µl** of DNA to a new 1.5ml LoBind tube.

Qubit quantify 1 µl of each library (dilution 1:2).

Check library profile on an Agilent Bioanalyzer with a High Sensitivity DNA Analysis Kit (load 1µl of library dilution 1:2).

7. Capture of UCEs

UCEs were captured on each pool using the probes designed by Faircloth et al. (2015) and synthesized by MYbaits®. Capture was performed with the MYbaits® kit following manufacturer's instruction (<http://www.mycroarray.com/pdf/MYbaits-manual-v3.pdf>).

8. PCR Enrichment of captured libraries and final clean-up

At this step of the process we have obtained libraries and Streptavidin beads mixed in 30 µl of 10mM Tris-Cl, 0.05% TWEEN®-20 solution (pH 8.0 – 8.5).

Here we want to release the bead-bound UCE-enriched library from the baits and amplify the resulting fragments.

PCR enrichment of the captured fragment is performed on beads with the following mix. We performed 2 PCR reactions for each pool of samples.

Post-capture PCR Master Mix:	Final concentration	x1
H2O up	-	5µl
2X KAPA Hifi HotStart ReadyMix	1X	25µl
Primer F (10µM)	500nM	2.5µl
Primer R (10µM)	500nM	2.5µl
Enriched Library (on-bead)	-	15µl
Master mix to add to each well		50µl

With

Primer F = AATGATACGGCGACCACCG*A

Primer R = CAAGCAGAAGACGGCATACG*A

(synthesized by IDT (Integrated DNA Technologies, Inc.), HPLC Purification, * = Phosphorothioate Bond)

Program:	14 cycles					
Step	Activation	Denaturation	Annealing	Extension	Final Extension	End
Time	2min	20sec	30sec	45sec	5min	∞
Temperature	98°C	98°C	65°C	72°C	72°C	10°C

Remove Streptavidin beads:

Pool the 2 PCR products obtained for each pool of samples in DNA LoBind tubes (1.5ml.)

Move the 6 tubes to a magnetic rack and wait for 2 to 5min.

Transfer supernatant to new tubes.

Final Cleanup (Agencourt AMPure XP Purification system (Beckman Coulter))

Remove Ampure beads from fridge. Make sure they are at room temperature (RT) before use.

- Vortex Ampure beads.
- Add 1V of Ampure beads for 1V of DNA (ie 100 µl of beads for 100 µl of DNA.)
- Vortex + pulse spin.
- Incubate for **5min** at RT.
- Move tubes to magnetic rack and wait for **2 to 5min**.
- Remove and discard supernatant without disturbing beads.

- Do not remove tubes from magnetic rack and add **200 µl of 70 % ethanol** without disturbing beads (use freshly made 70% EtOH to ensure accurate concentration.)
- Wait for **30s** (leave cap open.)
- Remove and discard supernatant without disturbing beads.
- Add again **200 µl of 70 % ethanol**.
- Wait for **30s** (leave cap open.)
- Remove and discard supernatant without disturbing beads.
- **Make sure to remove all traces of ethanol** (use a 10µl micropipette if necessary.)
- Dry for **5 min** (leave cap open.)
- Do not remove tubes from magnetic rack and add **25µl of buffer EB**.
- Close cap.
- Remove tubes from magnetic rack.
- Vortex + pulse spin.
- Wait for **2min**.
- Move strip back to magnetic rack and wait for **2 to 5min**.
- Transfer the **25µl** of DNA to new LoBind tubes.

9. Final quantification and equimolar pooling prior to sequencing

- Qubit Quantify 2µl of each.
- Check library profile on an Agilent Bioanalyzer with a High Sensitivity DNA Analysis Kit (1µl undiluted library).
- Perform KAPA quantification.
- Equimolar pooling of the 6 libraries.

References cited:

Faircloth, B.C., Branstetter, M.G., White, N.D., S.G., B., 2015. Target enrichment of ultraconserved elements from arthropods provides a genomic perspective on relationships among Hymenoptera. *Molecular Ecology Resources* 15, 489-501.

MYbaits® kit, Instruction manual: <http://www.mycroarray.com/pdf/MYbaits-manual-v3.pdf>

NEBNext® Ultra™ DNA Library Prep Kit for Illumina®, Instruction manual: <https://www.neb.com/-/media/catalog/Datacards%20or%20Manuals/manualE7370.pdf>

Additional file 3

Adapters (Ultramer Oligos, TruGrade synthesis, Standard Desalting) were synthesized by IDT (Integrated DNA Technologies, Inc.)
/5Phos/ = 5' Phosphorylation; * = Phosphorothioate Bond, F=forward, R=reverse).

Adapter were hybridized as follows:

25 μ M oligo preparation:

- Thaw 100 μ M oligos. Vortex and spin well.
- Pool each pair of oligos (F/R) in DNA LoBind tubes (1.5ml) as follows:

	Initial Concentration	Final Concentration
P1 F or P2 F	100 μ M	25 μ M
P1 R or P2 R	100 μ M	25 μ M
AB Buffer	10X	1X
Ultra Pure H2O		QS 100 μ l

- Vortex and spin well the oligo's pools and split each pool in tow PCR tubes (0.2ml)

Adapters hybridization:

- Place the PCR tubes in a thermocycler:

Program:		15 cycles (with -1.7°C/cycle)	40 cycles (with -1°C/cycle)	
Time	2min	1min	1min	∞
Temperature	95°C	95°C	69°C	10°C

- Vortex and spin well the tubes.
- Qubit quantify 2 μ l of diluted adapters (1/20e.)
- Adjust adapters concentration to 1.5 μ M if necessary and make aliquots.
- Store the aliquots at -20°C.

Adapters (1.5μM) were stored in tube strips for usage comfort.

#id	barcode	sequence
P1-1_F	AAGTG	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTAAGTG*T
P1-2_F	ACAAT	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTACAAT*T
P1-3_F	CTAGA	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTCTAGA*T
P1-4_F	GATAG	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTGATAG*T
P1-5_F	GCCTC	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTGCCTC*T
P1-6_F	TGTGT	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTTGTGT*T
P1-7_F	GTATT	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTGTATT*T
P1-8_F	CGGAC	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTCGGAC*T
P1-9_F	AAACAA	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTAAACAA*T
P1-10_F	ACGTCA	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTACGTCA*T
P1-11_F	CGTCTC	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTCGTCTC*T
P1-12_F	CCCAAA	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTCCCAAA*T
P1-13_F	GTTCGG	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTGTTCGG*T
P1-14_F	TGCCCA	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTTGCCCA*T
P1-15_F	TTGGGC	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTTTGGGC*T
P1-16_F	TACGAG	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTTACGAG*T
P1-1_R	AAGTG	/5Phos/CACTTAGATCGGAAGAGCGTCGTGTAGGGAAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-2_R	ACAAT	/5Phos/ATTGTAGATCGGAAGAGCGTCGTGTAGGGAAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-3_R	CTAGA	/5Phos/TCTAGAGATCGGAAGAGCGTCGTGTAGGGAAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-4_R	GATAG	/5Phos/CTATCAGATCGGAAGAGCGTCGTGTAGGGAAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-5_R	GCCTC	/5Phos/GAGGCAGATCGGAAGAGCGTCGTGTAGGGAAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-6_R	TGTGT	/5Phos/ACACAAGATCGGAAGAGCGTCGTGTAGGGAAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-7_R	GTATT	/5Phos/AATACAGATCGGAAGAGCGTCGTGTAGGGAAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-8_R	CGGAC	/5Phos/GTCCGAGATCGGAAGAGCGTCGTGTAGGGAAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-9_R	AAACAA	/5Phos/TTGTTTAGATCGGAAGAGCGTCGTGTAGGGAAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T

P1-10_R	ACGTCA	/5Phos/TGACGTAGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-11_R	CGTCTC	/5Phos/GAGACGAGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-12_R	CCCAAA	/5Phos/TTTGGGAGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-13_R	GTTCGG	/5Phos/CCGAACAGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-14_R	TGCCCA	/5Phos/TGGGCAAGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-15_R	TTGGGC	/5Phos/GCCCAAAGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P1-16_R	TACGAG	/5Phos/CTCGTAAGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGTAGATCTCGGTGGTCGCCGTATCAT*T
P2-1_R	ACCTA	CAAGCAGAAGACGGCATACGAGATCGGTCTCGGCATTCTTGCTGAACCGCTCTTCCGATCTACCTA*T
P2-2_R	TAGGTC	CAAGCAGAAGACGGCATACGAGATCGGTCTCGGCATTCTTGCTGAACCGCTCTTCCGATCTTAGGTC*T
P2-3_R	CGTAC	CAAGCAGAAGACGGCATACGAGATCGGTCTCGGCATTCTTGCTGAACCGCTCTTCCGATCTCGTAC*T
P2-4_R	GTACGA	CAAGCAGAAGACGGCATACGAGATCGGTCTCGGCATTCTTGCTGAACCGCTCTTCCGATCTGTACGA*T
P2-5_R	AGTCA	CAAGCAGAAGACGGCATACGAGATCGGTCTCGGCATTCTTGCTGAACCGCTCTTCCGATCTAGTCA*T
P2-6_R	GACTCG	CAAGCAGAAGACGGCATACGAGATCGGTCTCGGCATTCTTGCTGAACCGCTCTTCCGATCTGACTCG*T
P2-1_F	ACCTA	/5Phos/TAGGTAGATCGGAAGAGCGGTTCAGCAGGAATGCCGAGACCGATCAGAACAA
P2-2_F	TAGGTC	/5Phos/GACCTAAGATCGGAAGAGCGGTTCAGCAGGAATGCCGAGACCGATCAGAACAA
P2-3_F	CGTAC	/5Phos/GTACGAGATCGGAAGAGCGGTTCAGCAGGAATGCCGAGACCGATCAGAACAA
P2-4_F	GTACGA	/5Phos/TCGTACAGATCGGAAGAGCGGTTCAGCAGGAATGCCGAGACCGATCAGAACAA
P2-5_F	AGTCA	/5Phos/TGACTAGATCGGAAGAGCGGTTCAGCAGGAATGCCGAGACCGATCAGAACAA
P2-6_F	GACTCG	/5Phos/CGAGTCAGATCGGAAGAGCGGTTCAGCAGGAATGCCGAGACCGATCAGAACAA

Additional file 4

```
#scripts tested on a Linux ditribution (Debian/Ubuntu)

#=====
#demultiplexing
#=====

#you must create a barcode.txt file in which you store the barcodes and the sample codes
#see example below (field separator = tab)
#column1 = sample code (avoid special characters except underscore)
#column2 = barcode P1 (forward read) + T (complement of the A added after shearing) [see additional file 2 for barcode sequences]
#column3 = barcode P2 (reverse read) + T (complement of the A added after shearing)
#column4 = reverse complement of P2-barcode (required for demultiplexing)
#column5 = term (required by the script)


sample barcode_P1      barcode_P2      barcode_P2_rev term
JRAS07752_0101 AAGTGT ACCTAT ATAGGT term
GDEL06009_0101 ACAATT ACCTAT ATAGGT term
JRAS07754_0101 CTAGAT ACCTAT ATAGGT term
JRAS07766_0101 GATAGT ACCTAT ATAGGT term
GDEL07010_0101 GCCTCT ACCTAT ATAGGT term


#ATTENTION IF YOU HAVE CREATED YOUR barcode.txt FILE IN YOUR PERSONNAL COMPUTER (e.g. excel ...)
#Remove potential troublesome end of lines characters before used

mac2unix barcodes.txt      #this will change format from Mac native to full UNIX
dos2unix barcodes.txt      #this will change format from Windows to UNIX
sed -i '/^$/d' barcodes.txt #this will remove extra spaces introduced by Mac


# A perfect match between the barcode sequence and the read is required to keep the read

#cd to datadir (in which the reads merged by FLASH are stored)

#use the barcodes.txt file to generate grep commands to find occurrences of barcodes at the beginning and end of each reads
#and redirect output to fastq files named after your sample codes

awk 'BEGIN{FS="\t";RS="\n"} {if (NR>1){print "grep -B 1 -i \047^\047$2\".\*$4\"$\047 input.extendedFrgs.fastq > \"$1\"_fq\"}}'
/AbsolutePathTo/barcodes.txt |bash

# remove barcodes from beginning / end of reads

awk 'BEGIN{FS="\t";RS="\n"} {if (NR>1){print "sed -i \047s/^\047$2\"//g;s/\"$4\"$\"//g\047 \"$1\"_fq\"}}' /AbsolutePathTo/barcodes.txt |bash
```

Additional file 5

[illegible]

```

ACTGGCAAGCCACTTGC
>locus0025
TCTCTCCGTCCTCCTCTGCCTCCTTCTTCTCCGCTGCCGTTGCCGCGCTCTGCCCTTAGGGCTCCAGACGGAACGCTTT
TAAATTTATTTGACAATCATAAATTCGAAAATAAAACCTTATATCTCCGCGCGACTCTCTGCATCTGTGTAGGCTCC
CTCGCGGTATGTGCGGCCG
>locus0026
ATTATCATAGCGGCTCTCGAGCGCACCCCTTCGCTGACCCCGCTCTCCGAGACACCCCTCACGCTGACTAACTAATTTCAAT
CCGCAAGTCTTTAATTAGTATTCGTGCGCGCAGGAACGAAGGCCGAACCTTTTCACTTGCCTCCGCAAAAAGAGAGAGC
TTTTTGAGGTAGGTGA
>locus0027
TTTTGCTTCTCACTTTTGTAAAATCGATCGGAGCAGTTGATGTGGTCTAAATTAATAGCAGGGCGTACCTTGGAATAGTT
CACGTTCTTCTTGCAGCACAATATAAACGTCGCAGATACACGACACGCTTCTCTCTTCTCTCATCTCTCGCAGCA
CACAAATATCTATATAT
>locus0028
TTCGTGTTTTTATATTTTGTATATAGTTATATAACCATTTTCCCAACGACTACACACTAAATAGTTCAAATTTTTTG
CACTTTTTACCAACAACAACCTGGATTGTTGCGCCGAATTTCTTGAGCGCCATTTCTCTGTAATCAAACCTGCATTCTGT
GCTTGCTCACTGTACCGG
>locus0029
CAGCCACGACGCTCGGCTCTTGCCATATATGGGCATAAAACGAACGCGGCTCTCCGATTGGTCGGCGGCGCGGCTGCCG
CTAGATTCTCAAATGCCGTTCAAACCTGCAGATATCGCGACGCGGACAACGACGCGCTATATCTCTATAGCTGAGCGA
GCTCAGCGCTGTAGGTG
>locus0030
GATCGAGCACGCGGGGAACAGGTATTTCCCGCATTGAAATAAGGTAACGTCGCGATATGAAATATGCCCTTGTACAAC
TTGATAATCCGTGGTTACCATAAATCTGACTGATTATCCGCGTGTCTATTATAAGCCCTCTCTCCCTCTCTCCCTCTC
ACGCGCAAAATGCGGCA
>locus0031
AGAGAGAGCCGCGTGTAGCCAGAAGCAATGGGACGTAGGATTGCGCTGCCCTCGCTCGCGCTCTGTGTCAATAGGCTCG
ATTTCCCTTTCAAGTTCTCACTCTTTTTGTGTACTCGGCAATTGTCGCCAAGGGGACGAAGCAGCGGCTACTGAAAGT
CGTGGGTGGCGGGCGG
>locus0032
GGAGACAGAGCGAGGATAAAGCGAGAGGGAGAGCGAGAGAGAAGCCTGCTGCGGGGATGGATGTGCGGCGATTGGTTTC
CAATCATGGGACGACGGGACGCGCTCTATCGAGCGAGCCAAAGGCCGCTCTACAGCTCCCCCTCTCGCTCCTTTTG
CTTGGCCTAGCGCTGCT
>locus0033
AGAGGAAGAGAGGTAGAGAGGTAGAGAGCGCTCCGCGAGAGTACAGGAAGGGGTTGTGCATTGCCGGGACACTTGAGGT
GAATGTTTTGCGAATGTCGGTAGATGTCTGGTTTGTCTCTCGGGACTGCAGCCACCGCGACGCGCTGATATCGACC
TGCCCCCCCCCTACCC
>locus0034
TAATAGCCTACGAGCTCCAGAGCGGCAGTGTGTGCCAGTATGTGCTGGCGAGGACGACTGCAGCCCTGCTGGACCTG
GACCATGGCGGCAAGCCTGAGCAGCGCGCTCTCATTCAGGCCCCACGACGAGCTCCAACAGCAACAGCAGCAACAGT
TGTGACCCCTTCCGCA
>locus0035
TTGACTGTCCGCTGATGTATAGCACGCATAAGAGATGTAGTCAGATCAGGTTCCCTCATGACACCCGTTCTTTCTTA
CGATAAATCTCTCGGGAATGTAAACCTGCGGCCGCGCGCACCCGCGAGCAGCCGCGGACAAAACCGAGAGATAACCGA
GCGTACGAGGTACGGC
>locus0036
AGGAGGAGAGAAAGATAAGACCCGAGAGATAGTCCATTGAGATCCGAAAGGGTTGATGCAGCCTCGCTCGCATCCTTTAA
AATTGGAATAATAATGTTCTTTCACTCTCGAACTCGAAATGATGACTCGACGGCTTTCAATATTGTGGGAACGAGAATC
GGTAAGTCATTGGCTGAGAG
>locus0037
CCCACGCTACACACGGAATATTATTAGTGTACAAGAGTGAGCGAGCGAGAGAGATATCCCTCGCTGGAGTGTACCCACCG
TGAAACCGCCCCGCTAAACAGTGCCTTAACCCATGATTTACGAGCGGACCCACCTCCTATCTAATATACAGCGCAGCG
TAGGCCCCCGACACCG
>locus0038
CAGGCGATTATCTGCAAGAGGCGAGCGTATGTTTCGCTCGGTGGCAGTGCAGCGAGCGCGCGCTGTCCGAGATAAT
CCGCGCGTGATTAGACCATAAATCCATCGCGGATAGTATGACGCCAGCTGAGCGCAGCCTCTCCCTCTCCCTCTCCC
TCTCTTTCTGCGGATA
>locus0039
GCAGGCGGTTGGTGTGCTCTCCGAGGAAAGCCCTCCATCACCGTGAGGAGGAGAGAAAAAGAATAAAACCAAGGCATG
ATGTCCAGCTGAATCTTGAGGCGGTTTGGCGGAACCACTACACGGAAGAACTCGCCCTAGGAGGGATCGTCGGTCACTG
CAGAGATAAAGACAGC
>locus0040
TCACGTATATAAACTGCCGAAATTCGAGGTATCGGCCGTAACGCGAGCGCAATCCCCCGAAAGAAAGAAATCGCGG
GCATAATTAGCGAATGATTGATCGATGCGTGTGCTCTCTTAGGTAGCTATGCATGCGAATTTCTCTCCGCGGCTCTT
TCTTCTGTTGTTCCGA
>locus0041
AGTGCCGAGAGCGAGCGCAGAGAAGAAGAGAGAAAGAGGTATAAGGGGGCCGTGATGCTGCGGCTTTCTATGGTTTAA
TTGGGCGCAATCATTTCCGATGCAATGCGCTCGGGATGCAGAGAGGGGCGAGGGTGGGGGGGGGGGGGTGTAATCA
TCGTAAAGCGCGCCTT
>locus0042
CATACATAGAGCAGCGGAGAGGGTGGGAGCCGCGTATTCGCGTGCCGATGGAACGCTGGCTTCTCGTGCCAGCGAG
AAGTTAATTATAAGCGATACCAATCTCTCCGAGCTATGTGTGTGTGTGTGTGTGTGCGCGCGCCACTGGGGGGAAGCCC
TGACAGCCAATTACCA
>locus0043
GTCGCTTCTTTCTGCGCTGCTGCCGGGGGAACAAGCGGCTGAGCGCAAGAATAAGAAGAGAGGGCTCAGAGGCCAACTG
ATCATCGATGCATTAAATTTGGTTCATTAAAGCCCCCGAGCTGCCGAGCAGTGTACCAGCCCCGCTTCTCTCTCGCTC
GCTCTGTTGTGTTATAT
>locus0044
GCGTATTCTAATTAGGCGGACGCTGGCGCATCAGGCAGCGCGCTCAGCTGAGTAAGGCATACGCGGCCCTCTGAGCCA
CTGTGCCACTGACGGCTCGCTAATTGCTGCTCTCCCTCCCGACCACTTCTCGCGTTCTCTCTATAGTCTGCCGCT
GCTGCGCTGCTGCTGC
>locus0045
CGTCGTGCGCGAGAGAGCGGGGTGAGAGCGAAAAAGAGAGAGAGAACGAGGCACAAGTTGCGGGGCGCTGATTGCAC
CACAAAGGGTGCAATTATGCGGCCCTCCGGCAATCACCACGCATTTCTGGCCGCTATTTGACCCGATGGAAACTCACCTC
TCTCTCTCTCTCTCT
>locus0046
TTTCCCGAGCGAGCGAGCGAGCGGTCGCGAGGGGGTAAGGGGAGGCAGAAGCTTTATATTAATGATCCAGATATATTAT
CGGACGTGACCGAAATTTGCTGTCAAAAACTCGGATATTGGATCGAAGGAGATTGCGAAATGCCAGCTCGTGTCTCTCT
TCTCTCTCTGCTCTCT
>locus0047
GCGCGGGGCGAAAGGGCAGAGTCCGCGAGTCGGTCTGTGTGACTCCACGATGGCTCTCTCATTTTTTTACTTTCAAAAAAT
CATGACGATGCTCATTTTTCTGACTCGTGAAGAATTTCTCAGAGTGACGTCCAACCGAGCGCGCCACGAGGCCCTTTTCG
ACGCGACAGACAGAACTAC
>locus0048
TGCAATGTGCGCGGTGCAAGCAAGGCAAGATAAAGGATAGAGGAACAGTAGCGGCAATCAAGCCCGACATCGGACAGT
GACGAATGCCGCGTATCATCGGTATCATTAGCCGCGACTTAAGGTGCTCTCTTGTCTCTGCTCGTCCGCTGCTGCTG
TGCTGCACATAAACACG
>locus0049
GCCCCAACGGGTAATGGGCCGAGAGAGAGAGAGAGTGCGCCCGGCTCGGCGCTATCTACGTCATATATCGTCGGTTA
ATTAATCGTTAATGAACAGTAGTTAGCCGCGATGATTGTGATATTTTATTATATCCGTAACCGGGGAGAGTGCATAAG
CTGTACACTCGACGAT
>locus0050
CATGTATATAAGGGAGGACCAGAGGACTGCGCTGCCGCTGTGCCCGCTCGCTCATTTACTGGATAATGGGTATTTTCGAT

```


CTCTCTCGAATTATACCGAGTGCACAATGAGGGATTCTGGTGCTCGGCTGCCCTTTAAAGATCCGGCGAGAAAAAGCGGAG
>locus0051
CTTATTAGCGTAAACCCGAGCGCATACGAGGAGCAGCGGCGAGCGCGCGCTCCGCGACTCGTCTAGTCTCCACC
TGCTTAGACAAAATCAATGCGACCTCAACCTCTCTCTCTCTCTCGCTCGCTGCTCGCTTCCCACTGCGCGGA
GAGTGTACTCCCCACTC
>locus0052
CGATTGTATAGTAAGTAATGGTCGTCCTGAGAAAGCCTCGTCGTCGCGCGCGCGGCCGCCCGCGGCGTAATAACAACAAT
CTTGCTATATAATTAATGCTTCCCTGACGGACATAACTCTCGCCCTCTTCTCCTCTTTGCGCTTTTGCCGCTGCTTTTTCCGCTC
CGAGTAGTGACTGCACA
>locus0053
GAGCAGCAGCGAGTGAAAAATGGGGGTAGGGGGTGGCTAGCTCGTTGCAGCAGCGCGCGCGGAAGCAAGTTGTATCTCACA
GATCTGTCGGGTGATTAAAGCTTATTAAACGCTTAACCTCACAGCAGGCTGCTGCTGCTGCTGCTGGTCTGTTTCCCTACTC
TCTCGCTCCTATCTGCT
>locus0054
CGCGGGTCTGCCTAATGAAATAATAACAGTTTCTATGCGCGCGCGGAGTTCGCTGCGAGCAGCAGCGGCATCAACCTG
ACACATAAATCTTATTATGCTATACGTTAAAGGCGACTATGAGACGAGGAGGAGCAGCAGAGAAAGGGGGCAAGG
AGAGCGCTAATGGAGC
>locus0055
TCGCGGGGGAATAAAAAACGAGACGAGAACCGCGCGGTATAGCAGCGGAAACGAATTCGGAACAAAGTTTCGTCT
TCGGAATAGACACGAGTGGTCTTTATAGCACCGAGCGCGCGCGCGGTGTATTGACAAAAGTGTGCTCTCCGATCGT
TCTTCTTTTCCCTACTT
>locus0056
TCGCTCGCGCGCGCTTGATACCGAAGGTCTAAATATTGAGACGCGCTTATTAGCGGCAGAGATATATGATATGACG
GGACAATATAATCTGATTCTCAAATACGGGAGCTCGCTCGTTCGCGCGCGCGAGCGGAGCCAGCTGACCGAGGA
GGCTACGAGAGATTGCT
>locus0057
AGAGAGAGAGAGAGAGAGCGGTAATGCGGTTGTTGAAAGCGGAGCTCTGGCTCTCGGAACCTTTGTGAAAAATCGTG
TTATAACCCCTAATTTTATTTTATGCGCGGCTACGCGGGGATAGCCTCATGCGACTTGTCATGAGTGTGTGTGTATGTGT
GTGTATCTGCTCGTGC
>locus0058
AGCATTAACAGGAGGCAAAATTCGTAGTCGGGCGCCAGGCGCGGGGTGGCCAAAGTTTAAATGATTTTCGCCGAAGT
TGCTCTTAATGTTGATTTATTATGAGAAAAGTCAATTTGCCACGAGAGCGGAGAGCAGCAGAGATAGAAGAAGACGGGCC
CGCCGCGGAAGGAGAGAA
>locus0059
CCGCTCGAGTAGCATACGGCGCTCCGTCACGCGCGTCTTATTGAAAAATGCACAAAAGAGTTCGATTGTAGCTTTATCT
CGAGTTTGTATTGTAGATTATTGATTGTTCTTGGCGGTTCGCTTAGCGGGGATGCGAGCGATGAGCGGGCGCGCGCG
TGCTGCTGCTGAAAAA
>locus0060
AGGAGCGAGCGCGCGCAGAGCAGCAGAGGAAACATAGATTACAGGCGCGCGGCTGCCGTCGTATTACGTTGTTGTTTT
CGAGCCTTTTGTGTTTAAAGACACGTGTAATCATCTCCCGCGCAAGAGCGGCGTCTGCTGCGAGCGATACGAAGGA
AAAAACGCGCGTGGCGC
>locus0061
CCGACCTCAACCCCCCTGGCGCGCGCGCGCAACGCGCGCGTGGCGGCTCTACCTACCTCCCGCATTCGTATGCTGGC
TTCGATGGGTATTGATATATTATTTCCCAATAGTTCGTACTCTCCTCTCTCTCGCGCTGCGCTGCTCCTCTCGT
CGTGGTCGTTTTTTTT
>locus0062
GCAGCGAGTGTTTCATTCCTTCCCCCGCGCGGTGACGCGGAGGAGAGAGAGGAGCGGATGGTGGCACGTCGCTC
ACTAGCTCATCTGCCCTCGACCAATCGACGTGCGCGCGCATTTTTCCTCCGCATCAGAACGAAAAAGGAGACAA
AAAAGTCGAGCGCGC
>locus0063
ACACACACCAATTTAAAGTCGGTGGCGAGAGAGAAAGCCTGCAACGCGTCCCGCTCCAAATGACTCACGCAAAA
GTAAATATACATTTGAAAGGGTTTAAATATAATGAAATGCTCCATATGCATGAAAGGCGCGCTGACGCTTTGCGCGACA
CACACACACGCAACTT
>locus0064
CGAGTGTTATATGGCTACGTAGGTCGTATTGCGCGGTGAGATAGTCCCGGCATGGAGAAATGATCAAAATCAGGCGCGAG
GTGTGTTTATGACGGGACGCTGTAATACGCACCTTCGCTAGGCTCTCTCTCGCTGCTGCTGCGGACGATGCCGACAC
TTGCAAGAGCGAGAGA
>locus0065
CTAAGTTGGGCTCGCGCTCCTGACGCTCACGCTCGCTCTCTCTGCTGCATCGAGCATCTCTAGAACAGTAATCTTATTA
AATTTACATATTAAATCAACGATTTTAAATATCCCCAACCCCCGAGAGAGAGAGAGAGAGAGTAGGAGAGGCTCC
GTAGTGGAGGTGAGAAA
>locus0066
AAGGGCTGAGGCCAAGCGATCGGTGCGAGCGGGTAAAAAGCAGCGCGAAATAGCATCACGAGTGATATTCGTC
GAATCCCGCAAAAACAATGCTAATGAGGAGAAAGAGAAGGAAAGAGCGAGCGCGTAAATATATACTAGCGCGAGC
GCCCTCGGCTTTTCGCG
>locus0067
CATTTGGAATTCGCTCGCTCTCTTCTCTCGTTTTCTTTTTTTTTATAGTTAACTAATAAAATCTTTAAGCTTAATGGCA
TGAAATGCTCGTTGGAATTGACTCGTGTGACAAATATTACATTTTTTTTTTGGCGCATACGCTCTCTGTTAAGCTCAA
CGCCTTATCGAGTTCT
>locus0068
GACGACGACGAGCAGTACCGCGAATGGAATGCGGATGCGCGCGCGCGAGCTCTCGCGTAATTTCTCGGGTCGCGGA
AAATCAATAAAGCAATATACCTCGGCTGCTTGCGGAGGAGCCAGTCTCTCTCTCTCTCTCTCTCAACCTCTT
TCTCCAAAGCTTACCG
>locus0069
GCTTCACGGTGACCGCGGGCCCTGAGCTTACCTCCAGCAGCTTGTAACCAACAGAACACAGCAACCATGAAAT
TCAGTTACTACTGAGACGAGTGAGCCCTTGAGCAGCAGGACAGTACAGCTCCGCTCGCTCACTCCATGGACAGCTTG
CACGCGCAACGACGAGTT
>locus0070
TCGCGGTCGCGAGTATTTAAGTAGCGTTAGCCGCGCAGCGCGAGAGCGTATTTAAACGCTCTTATTATCATAT
AAATCAAGTTGGACGTTCAATTTACGCGACGCTACAGCGCGCTTCTCTCTCGCGCGCTCGCGGCGCGCGCGGAGT
TACAAAGTTTATTATTG
>locus0071
CTTCCCTCTCCCTCTCGCTCTAGCCACACATCTACTCAACGTAATTCGTAACTCTTGCTCGCAGCTCCATTAGAATA
TTAAATGCGAATTGATGCACACGCTGCTACTGTAATGAGTGTGGACCTGTCCAGAGTAGAGACCGCTCGCTCGCT
CTACATTTCTCAATAC
>locus0072
GATGTTTCTGTTCAAAAATATTCTTTCTTAATATTCTTCTTCTGAGCGAGTGAACCTGCAAACTTCCCTCTATCAT
CAATACCTCTCTGTTTCAAAACCTTATAACAAGAAACATGTTAGAGAGCTACATCTATTGATATATATATTATTAT
TTGTTTGTCTGTTTCTG
>locus0073
CTCGCGCGCAGCAGGGGGTTGGATGATTCCGGCGCTCGCGCGCGAGGTACCCGCTCTAGCTCTCGGAGTAATGAC
CTCACCCAGTCGACGTGCAATGGCATCGCGCGCTGCTGCCAAGGCCCCCGACTCTCGGCGACTCTCGCTCTTCTCT
CGTTCGCGCGCGAGT
>locus0074
GAGCGGCGCGCGCGGCCCTCTCGCGGACTCTCTGCTCTTCTCTAAGCTGCTGCTGCGAGCGCGAGGAAGTTTATCG
CGCAAACTTGACTGAATTACCCGCGAGCGCGCGCAAGGCATGCGCTGCTGCTGCTGCTGCTGCTGCTCAGAGAGC
AGTCAGCGCGCAGCCA
>locus0075
GCCGGGGTTACCATTATGCTACAGGCTTAAATTTAAATGCCATATAATGACCCAGCTAGGCGGCTGTATTAATTTAT
TGATTCGAAATTAATAATCATTAATACAGAGTGGCCGACTGCGAAAGGGCGGTAATAACATGGCTTCGCGCGCGCGG
AGTTACCTCGTCTGCTG
>locus0076
CGCGCGCGCGCGCGCGCGCTCTCGCGGACTCTCTGCTCTTCTCTAAGCTGCTGCTGCGAGCGCGAGGAAGTTTATCG
CGCAAACTTGACTGAATTACCCGCGAGCGCGCGCAAGGCATGCGCTGCTGCTGCTGCTGCTGCTGCTCAGAGAGC
AGTCAGCGCGCAGCCA
>locus0075
GCCGGGGTTACCATTATGCTACAGGCTTAAATTTAAATGCCATATAATGACCCAGCTAGGCGGCTGTATTAATTTAT
TGATTCGAAATTAATAATCATTAATACAGAGTGGCCGACTGCGAAAGGGCGGTAATAACATGGCTTCGCGCGCGCGG
AGTTACCTCGTCTGCTG
>locus0076
CGCGCGCGCGCGCGCGCGCTCTCGCGGACTCTCTGCTCTTCTCTAAGCTGCTGCTGCGAGCGCGAGGAAGTTTATCG
CGCAAACTTGACTGAATTACCCGCGAGCGCGCGCAAGGCATGCGCTGCTGCTGCTGCTGCTGCTGCTCAGAGAGC
AGTCAGCGCGCAGCCA
>locus0075
GCCGGGGTTACCATTATGCTACAGGCTTAAATTTAAATGCCATATAATGACCCAGCTAGGCGGCTGTATTAATTTAT
TGATTCGAAATTAATAATCATTAATACAGAGTGGCCGACTGCGAAAGGGCGGTAATAACATGGCTTCGCGCGCGCGG
AGTTACCTCGTCTGCTG
>locus0076
CGCGCGCGCGCGCGCGCGCTCTCGCGGACTCTCTGCTCTTCTCTAAGCTGCTGCTGCGAGCGCGAGGAAGTTTATCG
CGCAAACTTGACTGAATTACCCGCGAGCGCGCGCAAGGCATGCGCTGCTGCTGCTGCTGCTGCTGCTCAGAGAGC
AGTCAGCGCGCAGCCA
>locus0075
GCCGGGGTTACCATTATGCTACAGGCTTAAATTTAAATGCCATATAATGACCCAGCTAGGCGGCTGTATTAATTTAT
TGATTCGAAATTAATAATCATTAATACAGAGTGGCCGACTGCGAAAGGGCGGTAATAACATGGCTTCGCGCGCGCGG
AGTTACCTCGTCTGCTG
>locus0076
CGCGCGCGCGCGCGCGCGCTCTCGCGGACTCTCTGCTCTTCTCTAAGCTGCTGCTGCGAGCGCGAGGAAGTTTATCG
CGCAAACTTGACTGAATTACCCGCGAGCGCGCGCAAGGCATGCGCTGCTGCTGCTGCTGCTGCTGCTCAGAGAGC
AGTCAGCGCGCAGCCA
>locus0075
GCCGGGGTTACCATTATGCTACAGGCTTAAATTTAAATGCCATATAATGACCCAGCTAGGCGGCTGTATTAATTTAT
TGATTCGAAATTAATAATCATTAATACAGAGTGGCCGACTGCGAAAGGGCGGTAATAACATGGCTTCGCGCGCGCGG
AGTTACCTCGTCTGCTG
>locus0076
CGCGCGCGCGCGCGCGCGCTCTCGCGGACTCTCTGCTCTTCTCTAAGCTGCTGCTGCGAGCGCGAGGAAGTTTATCG
CGCAAACTTGACTGAATTACCCGCGAGCGCGCGCAAGGCATGCGCTGCTGCTGCTGCTGCTGCTGCTCAGAGAGC
AGTCAGCGCGCAGCCA
>locus0075
GCCGGGGTTACCATTATGCTACAGGCTTAAATTTAAATGCCATATAATGACCCAGCTAGGCGGCTGTATTAATTTAT
TGATTCGAAATTAATAATCATTAATACAGAGTGGCCGACTGCGAAAGGGCGGTAATAACATGGCTTCGCGCGCGCGG
AGTTACCTCGTCTGCTG
>locus0076
CGCGCGCGCGCGCGCGCGCTCTCGCGGACTCTCTGCTCTTCTCTAAGCTGCTGCTGCGAGCGCGAGGAAGTTTATCG
CGCAAACTTGACTGAATTACCCGCGAGCGCGCGCAAGGCATGCGCTGCTGCTGCTGCTGCTGCTGCTCAGAGAGC
AGTCAGCGCGCAGCCA
>locus0075
GCCGGGGTTACCATTATGCTACAGGCTTAAATTTAAATGCCATATAATGACCCAGCTAGGCGGCTGTATTAATTTAT
TGATTCGAAATTAATAATCATTAATACAGAGTGGCCGACTGCGAAAGGGCGGTAATAACATGGCTTCGCGCGCGCGG
AGTTACCTCGTCTGCTG
>locus0076
CGCGCGCGCGCGCGCGCGCTCTCGCGGACTCTCTGCTCTTCTCTAAGCTGCTGCTGCGAGCGCGAGGAAGTTTATCG
CGCAAACTTGACTGAATTACCCGCGAGCGCGCG

AATTTAGCCGCGAGCGTTTATGGCATTGTTGCGCGAGTGGGAGAGAGAGAGAGAGAGACGGCGTCTTATAAAAC
CAATTCGCGGGTATTATGCAAGCTGTCAGTCCCATTAGTTAAGTTATGGCTACGGCGTTGCCTGCGGCACAAACATGCAT
TACCTTATACCTCCAGCG
>locus0077
GGGTTGAGGGGGAAGTCGGGCAATTTATCAATCCACGAGCGGGAGAGAAGCACTTCTGGCCAGGCGGTAATTTAACAA
GATTGATGCGAAGCCGACATGCCACAGTTTCGGTGGCTCGACGCTTGAGTTCTGTAAACGCGAGGAACAAGCCAACGCTGGC
GCGCGAGCGAGCGAGAG
>locus0078
ACACACGCGGCCCATAAATCGGCCGCGAGTGCAGCTGCCGCCGCCGCCAGCTTACGGCTAGGAATTACCGGCTCGCAA
CTTGCGAAATATGACGGTCTCATAAATCCGAGTCCGCGCTGCCGACGCCGATCTGCCCGGGTGTGCTGTTACCGCTGT
CTAGCACGTCGCTGTGG
>locus0079
TAATAAGTATGTGATGGAGAGTATAAGAGAGAGAACAACAACAAAAAGAATGATGCTACGATACCGATGCTATTCTGA
GTACTGAGTTCCAGTCTTTTCATGAGGATTTCTCTGGCAGGTCAGGATGACGTCGACGTGGGTGCACCTATAATGCAGAG
AGCGATTGTACAGTTAC
>locus0080
ACGGCGCGGAACGCGGAGGTGCGCCCGTCTGTCGAGCTGCTTCGAGACAGGAGTGCCAAAAAGCGAGCAAGCTGCGCCGGA
AGGGGGTAGCCCGGGCTTCTCGCGAAGGCCTCAAGATTTCGGACGCGACGGCGGCCCTGGACCTACGCGCCGACATCGCAA
GCCCAATCGGAATTTGGCCT
>locus0081
TTTTTCGTATCCGAGCCGGTCCGTTGGCGTCGGCGCGGCCGCCGAACTCGCGGGTCCACGGTGAGGAAATGGTGTG
GGCTGCAGCCACCGCACTGCCTGTAAACAGAGAACGCAAAACGCCGCTTTAATATCACTCGTTCAATATCGATGTATATGA
ATTATAATATAATGTGT
>locus0082
ACCTCCGACTCCGGTGTTCATCGTGTGCTCTTGTAACTCTCGTCTTGCCGCCGGGACTCGTTCCGACGCCTAGAATGA
ACATTGTCACTGCAAGCCTCATAGATATGGTTCAACACAAAACAAAGCAAATAAAACATGAAATAATAGTCTTTTT
TTTCTTTAACGAGACAA
>locus0083
TACCAGCAGCAGCAGCAGCCGTAGTTCAACGAGATGACCACCGCAGTTCGTGCAATTTAACAGATCTTGGCGCGG
ACATTTCTTTGGTTATCTAGCTGTATGAGTTTGGTTGTACATCATAAAGCTAGGTTACCGGAGTTGAGATCCTCGCCAT
ATCAACAACCAATCGG
>locus0084
AAAGGACGTCGCTCTCATTTATCGTCTCTCATATATCATATAATTTTTTTTCTTTTTGGGAACGATACAGATACCCCTC
CGTTATGCTTGAACGTCAGAAAGCCGGACAGTCGACCCGACGAGCGAGGCTCCGGGGTGTGCCGCCGCTACAGCTCTG
CCAACAACAACAACA
>locus0085
GTACACTTTTCATTGGATTGCGATTGAGCATTAAGACGAGCGGGAGACTGTATCGAGGGCATTAGCGCGTATTAGCATT
AGGAGGCATCATCTCGAGTGTAAACACTGCGTGGCGCGGATTTTCGAATCGCGCGCGCTCGCTCACCCCGCGGGAGC
TCCTTTTTTCTCGCTCT
>locus0086
AATATACCTTTAAAGAATAATGAAAAAACAACACTAAAAATAAACTAAACTAAAAATAACAACCAAGCCTGTGCGCCA
GTATAATGACAAGCAACTGCCATGGGTATAGGTAGATGAGCTAAGAAATCCAATTTTAAGCAAAACAAAAATCAAGCT
AGCTATCGAGCGCTTAT
>locus0087
ATATATATATATATTTTATATATATAATTTGTTTTCATATATATAAGTGTAGGTAGTTCTTTATATAGTCTCTGTACT
GTCTCTACGTATCACAGCCTGGGTGCCCTTCGCCACTGCCCTTTACGTCTTTTCGCTTATCTAAGCTTATATTTTTCCCT
TCTTATGCGTTTTCTAT
>locus0088
CAGAGTGTTAAAGTTAGACTTGCAGGATGCGAGTGCAGGGGAAAGGTTACCTGCCGATACCTTAGCAACAACCTCTCA
TCAATGTACTGCAATGAGCTCCTGTTGGGAGAAATATGAAAATTAACAAATCATTCGAACGAATCAAGGCTGCTGAAA
GAGCAGAAAATTAATA
>locus0089
AGCAAACTTTGCGCACAGATTGCGATGCTCGCGCATCCTCATATATACACACGGAACGGAAGCTAACGGGAATTCGAAG
GTGAATGCTCGGCAAAATTCGAATTACGATATATACGCGAGCTTCGGAGGTGTAAGTGGCGCTGCTGCTCTGCTGCTGT
ACACGCGGACGAGACTC
>locus0090
AGCGGCTGCGCTACCCCTTCACCGCCTCCGCCGCGCTACACGCGACCTCATCGTCCGTTTAGCCCGGAATTATAATG
TTTGTCTTAACAAATTACCATGATAATGCGCGACTGCGCGTGAACCTGACGAGAATGCCCTCTCTCTCTCTCTCTCT
CCCGTGCTTCGGTGGC
>locus0091
ATCTCCGCTCTCTCTCGGCTGCGAGCAGCTCTCGGACCGACACTCTCGTTCGCGTCTGCTTTTCTAGCGCGGCGAGTTT
TTCTATTAGCTTCAATTTGTTCTTTTCATTGCGTATGCGTCGACCGGACGCGAGCGCTCATCTCATCTACTAGTGCCG
CAGCGGCGCAGTCGAGCAC
>locus0092
GAGAAACGCTGAGCGCGGTGGAGGAGAAATTTACATCGGGAAGGTTGGCACCGATATAAAGGGGGTGATAATGATCT
TAAATTATCGATCCAATTGTTATACGCTTGGCGGATTCTATTTAATGCCGTGCTGCTGCTGCTCCGTATAGTTGAAC
GAGCAAGAGAGAGAGAG
>locus0093
AAGTCGAGCGAAGCACTGCAGGTCACCGTCCCGTCCGACGACGATTGCGATTAAATTAATTTTACTCCGCCGAGACACTTAG
TTCCGTTCTGTTTAAAGCTCGTTAATACGCTTCTCTCTTCTCTCCCTCTCTTCTACTCGCTCGCATCGCCGCCCGC
TGCCGCCGCCGCTCGTT
>locus0094
TTATTGTAGTCCGTAGACCTAGTTGATAAGCTGCGACGAAAGCCAAATTTAAGAACGCAACCGAAGTCTGCTCACCCG
TAGCTATGTTTACGCAAGGAGCAGGCGATGCCCGCTTTGCGCGCGTCCCCAGGAGCCCGCGCAGGCGGTAACGGC
AACAACGGCAACAGCAG
>locus0095
CGGTCGAAGGATAATACAAACCAAGGATAATCCCGATACGGGACGAAATCCGAGCGAGGGCAAAAACTCTTAT
TTAAAAATGTATTTACGCTTGGCTCGGCGCGGAGAGCAGAGCAAGGATCGTCTGCCAGCCCGCTGGAAGTTGCG
TCTGCATCCAGCTCAC
>locus0096
CGCTATGAGCGAGATTTAACCCGCTCACTCGATGGGCGCGCGCGAGAGAGAGAGAGAGAGCGGCACTTTAAAA
TGTTATGACGTGGAACCTCGTATTTCATGCAACATTTAATCACTATATTGGTAAATACACGCCGAGGACTGGCGCAGT
TCCTGTCAAATCGCAT
>locus0097
GTAAGACTATACCCGCGCTGAAGCGCTTCTCTCGTTGCGCGACGTAATAGACTTTGCGCGCTCCAAATGGATTTG
AGATTTATGCTAACACCGCGCATTTGTTGCGCGCAGTCGCGAATTATACGTGCGGTGTCTAAAGCCCCACCGCGCGC
CCGTTACTAGTACTCT
>locus0098
GAGGGACACGTACGCGTGCAGCGCGGGGACGAGTGCATGTGAAGCGGAGAGTCTGTGAGCAAGATAATGCGTCCA
CCTACAACCAATCTATTAGCGCCATCTCTCTCATTCTGTGCGCACTTACTGCTCACTTACATCGAGGCCCTCTCT
GTCTCCCGTCTCTGCA
>locus0099
CGCGCATATTTTTCTTCTCCGATGCTTCTGTTTCCCTTCTCGAGCCCTCTTCTCATCTCTCTTTTATTGCAAT
TGGACGTGAAAAATGACGCTTGATTAATCTGGCGGATAATTTAAAAACGAAGGGTGTGCTGCTGGGTGCTGTTACCGA
CGAACGCTGAACGCA
>locus0100
ACTCCGGGAGAGAGAGACAGAGTGCGCCGCGCGCAGCGTATCCTCTACTACTTTTCGTATTCCGGATGGAATTA
TGCAGGAGATTTCAATTTGTTATATATGCGTGCAGCGCGCGCTACAAACGAGCACATTTTCGCTTAGGTTAATCGAAT
ACCGGCGGACTATGCA
>locus0101
GAGACGAGCGCTGCTGCGCGGTGTCTGCGGGTCCGCTGTCTGCTGCTACGCTCAATCCCGCATCTTCAATTAATG
AAACTCGGTCAGTCGCTGCGATGTCAAATAAATATGTCTCTGCTCTCTTACCCATAGCGTCGGTGGCTTCTCTCC
GCGAGTCCCTCTGTACA

```
>locus0102
TCTCGCTCCGCTCTCTCTTTGTAACGAAGATTGTGTGTTAATGTATGGCTGGCATTCCGACGACAAGCGTGACAAATTGCT
TTATTAGGTTGGCAGCCCGGGAGCCTTTCCACATTGCTCTCTTTGCGTTCCTCGCTCTTCGCACCTCACACGTATACATG
CTTCTCTTTCTCTCTACTCC
>locus0103
TCCTCGCGGTTGAGTCTATAAATAGTGGCACCGATGATGGAAGGCTTTAAACGAGATGAGATGGCCCCGTATCGACCCAA
TCAATGCATCCACTAAATCATGCTTAAGCTGACGGGCGCAACGGCTCGTAGTTAAGCTGCCGCCGCGCGCCGCTG
TAAGCGAGAGTCCGTGG
>locus0104
GGAGCTGGGAGACGGGAAGAAACGCGGGGCTGAAAAATCGCGGCTGGATATACAGCCAGCAGAGAGGCGAAGCAAGAA
ATTGATATAGCATACGAAATGAATTGCCCTTTTCTCTCTCTCTCCCCCTCGTGCTTCGCTTGAGTCGACGCTT
TGGCCGTGCACGTCTGT
>locus0105
ACACGGGGGAAGGCATCGGGCAGTCTATAATATATTACAAAAATGCATCCCCACACGCTCGATGAGTTGATTGTCTGCT
TGTCCGATGCCAAACGTCGGAATCGTGATTTTCATATCGCTTGCATGCGCGCGCGCCCTTACGAATATATTGCT
CCTTCTTTGTACACCG
>locus0106
AGGACAATATTTTAGCGGATAGCTCGTGAGCGTATGTGTGTATATACAGTAGCATCAGGGCGACATATAAACATCAA
TTCAATGATGAAATCTGTCAAATGAATTTGCCCGGGAGCGCGAGTGCGCGGAAGCCCTGGAACAGTACGTGGCTGT
CATTTTCTTGGCGCG
>locus0107
TGATCTATGCCCGGTATATCCACGAAGCGAGGCTATAGTTGTGCGCGGCTCCTCCGGGAATCTCCGTGACGTATGTG
GCTACCTGACGAGAGAAAAACAATCTTCGAGAATATATCGTTGCGCTTCTCTCATCTCTCTCGCTACTGCTGCTCGCTT
TCATTATTTATCCCGAAT
>locus0108
GCAGTTGAGAAATTTAGATATGTAAACGCGCGCGCGCTCGCGCTACTCGGGCGGCTTATTAAACTTAGTTATGA
ATGCCCATTAAGACTGTAAAGAAATGCAATTAGCCGCCGTGCGGAGAGAGATGCCCGCCGTGTCTCTGCGCTCCC
TCGGAACCAAGTTACAA
>locus0109
GCGCAGACAGCGGCGCGGCGGAGCGAGCGGAAACGAGAGGCTTCGCGGCAAAATTAATAAAGCGCATCGTTAGG
ATTATCATCTGATTTTAATTTCCATTTCCAAATGATTGCGCATTAGCTCCGAGCGCGCGCTTAAACCGTTTCTGGAT
TTATTGCCCGAGGCGC
>locus0110
TTAGCTGGCTATATCAGAACAAACCTTTAAGCGCGAGCGAGAGAGAGAGCGCTTTCGCTAGTGAGCGAGAGTGGCAA
TATAGTTTCCCTAATGGCGCTTAAAAATCTTAAAGACGATATTAAGATGTGACTGGGCTATAAGACAGGGCGGG
CTGAAGATAAAAGGAG
>locus0111
AGAGAGAGAGAGAGAGAGCTTGCCATCGAAGTGAGCGAAGAGGGAGTCAGGAACGAGCTGCGCTATGCAAAATATT
ATCGGGGCGATAATTTAAATGCAATTTGCCCTCCTATATCATTTCGTTATTGCGGACGCCGAGCGCGGGAACGCTT
TTCTCGGTATGGGAAG
>locus0112
CCTCTCTCTCGTCTCGCTTACTCGCTCGTGTTCTATGTAAACAGTTAATCTAAATCCAGAGCAAGCAGCGATGTAATGT
TATGCGGCGCGCAAGACTTATATCTTGTAAACGAGCCGCTTGGCCGACCAACAAACCCCTCCGCGGAGCTGG
CGTACATGCATGCACAC
>locus0113
ACTAATAAATAAATCAAGTACTAAAAAAGGACTTTTAAAAACGATTAAAAAATGGCAGCCACCCTGAGGCTGCCTG
CCTCTCCCTCGGAGGTGGCGAGGCGCGCGTAATCGAAATAGAAATCTTCGTATCGATAACAGTCTCGTAATATGG
TTCACTAGCGCACCTCGATAATCCCGTAACCGTAATAGTCGTAATCATAATCTATAAAAAACACACATTACAAATAGAC
CCAAATTTAGCCACGCTGATATATGCAATAACAAACAAAAATGTTGTACGTGATAAACCGAT
>locus0114
AATACTTGTCTGGCGCAGGTCTGTAAAAAAGTCAGTCAAGCTGTACGGGCACAGGGAAGAAGCATGCTCACGATGGA
GACGGACCTGAAGGGCGCGAGCTGCACGCTCAGATGCCGCGCACCCGCAACAGGGTGCTCTCGCAATGGGCCATCACG
GGGGGTGCTCTCGCGTAC
>locus0115
ATCGTAGCTGCACCGCGCGCGCTGCCGCGCAGTTAGCGCTAGCTCACCTCCGCCACTTCTATTCCGTTCCAGTCTG
CGCGCTGAATTATAAGTTGCGAAGGAAGACGCGAATTAGGCTGTTGCGCTACCTACGCTAATTCCGCCGCGCTGCGG
TGCGGTGCGAGCGTCT
>locus0116
CTGGCGCTGACCGAGCGTCGCGACGCGCGCCCTCTGCCGCGGCTCGCGTTGCCATGCCGACCGCGCGCTGTATTAA
AGCATCGCTTATCATAAACGACGCGCGCTCGCGCGGTTTCCCTCGCGCCATCTTTACCACCCCGTTTCTCTTTTCT
CTCTCTCTTTTCTCTC
>locus0117
CTTCGTCCTGTGTCGCTGTGCGCACATTTACCTAACACAGCTCGGCCGAATGCTCGCGGCACGGAAATGACTGTTAT
AAATAATTAGAGAGTTTAAATTAACCTCCAGACGCGCGCGCGCGCTCTACTGTACCTCCTTGCAGTACTGCCCGC
GCGCGGAGAGAGCTTG
>locus0118
TTCAGAGCCGAGATCGGAGAAAGAGACAGCTGGAAGAGAGAGAGGGCCGAAGCGCATCGACGGATGAGAATGAAAA
GTAACATAACGAAACGTCGATCCCATTAACCTGAAGTCTCGCTTCTTGTCTCGACCTCGTTCTTCTTCTTCTTTC
TACAGTATTCTCCCTT
>locus0119
TTTCTTTTACACCCGTAGCAGCGCGCGCAGCGGCGAGCGGCTCCGCGAACCGCAAGCCGAACCGGCTACTGCCTTGT
TAAACGCGCATAGACCGCCATTATCGCTGATTGCGCTAAACATTAACGGACTGAGCTCTCTCGCTCGGTGTCTGCGCT
CTCTTTGTATGTGTACG
>locus0120
CGCCTCGGAGAGCGGAGCGCGCGGCGGAGAGGGGGAGGTTATACGCTGCCCGCGCGCGAGTATTGACAGACGCGG
AAAGATCGGATGTTTGGATGTTTGAACCTTGGAGTGCTGCGTACGACTCGAGAGATGTCGAGTGCGCGGCTCTCG
CTTATCTCTCTATTTT
>locus0121
CGAGCGAGCAAGAGAGAGAAGGAAGGAGGAGGCGGAAGACGATGCGGTGGGCTGAGGAAAGCCGCGGCTTAAT
AGGGAGGAATTTAGTGCTGCTGAGCAATATTGAGGAGGATTCGGGATTCGGGGGATGAGGAGATCTCGCCCTCCCTC
TCTCTCTCTCTCTCT
>locus0122
GCGCATCTGCACACGAGTGAGTAAAGAGAGAAAGAGCAGCAGCAGCAGCAGCGCTGGGTTTCCGCCGCGCTTGG
AGCCACTGAACCACTCCGTGGTTCAACGATTGATGCCAGTGACGCTCAACTCGGGAGACACGACTCGGGCCAGACT
GCATCGCGCGCGCGCG
>locus0123
CCCCCATCCCCGCCAGGCTCGCAACCGTCTATCTTCCAGGACGCGAGCAGCGGCTGCCAGGGGCGTACGTCGTTA
TTTCCGGTGGATGCTGCGGGTCAATAGCTCGGAGAGAGAGGGGCTGAGGGCTGAGGGGTAGACACGAGAGAAGAC
AAACGAGGAGGAAAAA
>locus0124
CGCACGGGCATGTCTCCGACGAGAGAGCGCCCGCGAGTGTAACCTGCAGCGGATCCGCCGTCACGCTGGATTAAATTA
ATGCAATTTAGCATCCATCCATCATCTCGCGCTGCGTCCGTTTTTCCGGCTAACGAGTGAGGAGCGGACGCGGCGAGC
CCTGCGGCACTTTGATC
>locus0125
CTCTTGGCCCGTCTCATAGCGCGCGGCGCTCGTCCAGTGATTTCTCCCCCTGGAACAATATCGGGCCGGTAATAATTCG
AATTTCTTATTACGGGTAATGCCCCGTCGACGACGAGTCTCTGCAACTGCGGCGGCTCGCTCGTTAGGGGAGAA
ACAGAGATGCCACGCGGA
>locus0126
AGCCGCGCTCGCTCCCGCGCGCTTGGGAGATCCATCCACGTGCATATATCAGGCAATTTGAGGCAATTTGTCATAGCTGC
CTCACCTCAGTTATCTTAATTACATCTGTAAACGACGCGCAAGCGCGCGGCTCCGCTGCATATTCGCGCTGTCGCCG
CGACTCTCGGACGCC
>locus0127
CACTAGAGCGAGTGAGACAGCGAGACACCGAGAGAAGAGCGCGCTCTTTCGCTCTCTCGCTAACCTTGGTGAGAGAA
```


GCCGCCGCGGCTCAGACACA
>locus0205
ATTTTAAATACGGAAGGAGTCACATAAGATCTTCATACACTATACAATTAAGCGTGGGCATCTTATTATTTATGTTAATC
AGTCTGGTTGTCTTTTTCAGAGGCATGATGCACAGATTATGATGAGTGTGCGATGAGCAAGCAATTGATGAACAG
CATGAAATATACCATGGCTC
>locus0206
AAATTAATAAGAATAGAGGGATACTTTTCCAAGCTGGGCATGATCAAACTCTAAGTATTGTCTAAGCGTGTGTGCTT
TCTTTGTTGGAACTCTCAGATAATGCTGGACAGCAGCAGGAGGCTGCTCAACCACAAACAGCGCCGCGACGCCGCCGCG
ACGAAACCGAGATCCACAGACGCTACTTCCCAAGGCTAAGTGTGGAGGCTTTAGCTGCACTCAGGCATGCCAAGTGTT
TCAGGTTGAATTCACACTCAACCATTCAAACAGACAGTTTTTCTTAGAAAAATGAACAGATCGAAT
>locus0207
GAGAACAGCCAAAAACAATAAAACATTTCACGAAAGCGGTTGGGAGGAAGTACTTAAAAAGGGTATTATGTGTTG
TAGGGCTCGTGTAGCAACTGTGGCGTTGCTTGTACAGCGTTCGTTCTACGCCCAAGGGACACGCGTGTATAGCTGCTA
TCTGCATTGGAGGTCAGTGT
>locus0208
AAATTTAGTGCTCATGCCCTTAATAATCATCACTAATGCTGAACAAATATTTTTTTAGATGTATGCCATGGTGTGCACA
TTGCAAAAGATTAGAACCAATTGGGCTCATGTAGCTCAATATCTCCATTCACTCTCTATCAGAGTTGGCCGAATAGATT
GCACTAGATTACAAAGTGTA
>locus0209
GTCGGGTGTACACGCGACTGGAATTATCATTTTAGCTGATAATAGCTAATGTAATGATGCAGTTTTATCTCTATTATC
ATGGGAAACGAGATAAATCGCGATAGTGGCGTTTATTTTGACAGCGGGAGTAAGAGTAATTTCTCGCGCGGAGTCGCGC
CCCTCCGACACATATACACG
>locus0210
GCCTACGAGAGCGTCCGGAGAACGTGCACGTGCGCAACTGCAGATAAACTTATTCATGGTGGACCACGTGTGCATGATGGA
AAGTACCGGCACTGGTCACATGTGCTTCTGTGAGGAAGATATGTGCAATCGTGTGCTCTCTCCCTGCTCGCCAATCCTC
TGCTTCCTGTATCTCGCG
>locus0211
CAGAACTGCCAATTTTGTACAGTGGCGACAACGAGGATAAGCTGCTGCTGTGACGGCTGTGATCGCGGCTATCATAC
TTATTGTTTCCGTCGCAAAATGGAAACATTCCCGATGGTGATTGGTTAGTATATAAACCCAGATTGTTATTTCTTTCT
TCATCGATGCGGTTATACAC
>locus0212
GGCGTGAGGCCACCGCCAGGGCTCACACTTCTGCTCAGCTCGCTATGGCGTTGTACATGCTTGAGGCCAGCATCGCTTGG
GACAAGAGCATCATGAAGGCTGTGAGTCTAAAGAATCCAGCTAGAAAGTCGGTCTGCGTCAAGCTACGAAATCGCAGCGT
TCACTCAAACTGCTACTC
>locus0213
CGATTACTCAGAAATGAATGTAGCGTGGTTTGAGCACTGGTGGACTGGATGTGTTTTCTGCCGAGATGTACATGCAGGA
GCTCACCAAGCAGCGGAGATGCTCTACACCGTCGAGCTGGTATGTCTCATACCTAACTTGATTAAACCACCTGATGTC
CTCTCTTACACACCTGATC
>locus0214
GGGCCAATCTGCTCTCGCACAGTTGATCTCGCCCTTGTCATGAACTCGACGGCGGCTTGAGCTCCGGCCACTTGAT
GTCTTTCATGATGACGATCGGGTGTGCTGGCAGGGGTTGTCGAAGAAGAGCGCCTGGAAGTAGGGGCTCAGGCGGAGAGGA
CCATCTTGTGGGCTTGACC
>locus0215
CGGATAGATAGGATGCACCGAAAGCCGCGCTCTCCACGCGTATCGATGATGGGTCGATAAACACGGCGGTATTGTGCAAT
CAACCGCGCTATTGGTGTCAATTGTGCGGACAGTTAGGAGGCGAGCTTCGCTCTCTCCCGCTCTGAACACCGCGTGAATCT
GCCCGATTGTCTCGTCTC
>locus0216
AGCGGAGAAACAGAGAGAAGGAGCGAGTGAATGCTTAACAGCCGACTTGAAGGGCGTCTGCCATTTTGAGTCAATA
CTTGAAAGCTTTGCTCATTAAGAATATTTTACGTCGAGCGCGCGGCTATATAGCTGCTCTGCCGAGCTAGAGAGCGA
GCCCTGGAATCGGGGCGGC
>locus0217
AGCCGTAGAGCGCGCCGCGAGAAAGGACGGCCGCGAGCTAAAGTTCGGTATGCTCGAGTAACTGTTGCGCGGCTCGCGG
CGCTCCACCGCTGTCTGGTGGCTTCTGCTTCTCAGGAGTTGCTGTTGCTTGTATCCGTTGGTGTGCTCGGAGAGGC
GAAACAGTCGGTCTCCTCCTCCGATGACATCATCGGCCGTGTTGGTGGCGGCCCGGAGGCCCTCCGCTTCCCTCCC
CGCCAGGGCTTCTTCGGACCCCTCTCCGCGCGGTTGCTGCTCGTCCGCTC
>locus0218
AACGTCTTAACGCCTCATTATAATTCTAACATTCGCGTTACGCAAGCGGTGCTCACATTTGAAACCTAAGATATTTA
GACAAGAAATAAACAGCGGTATAAAAACTTCTCAACACTGAAAAATACAAATCTATCGTTTAAATGACTACCAGTGTCT
CAATTATCCCGTTCTCGTCC
>locus0219
GCTAAGTGGGGGAGCTGGCAAGCACTAGTCAGGCTTTGGGTGGGCGTTCGGTCTATGTGGGGCCCCTTTGATATAATTT
AGTATTTTTTTCGTATAAAATCAACACTGAAGGCACATTTCTATCGGACGAGTCGGCCAGTGTGTGCTGTGAGTGAGATA
GGCGCGGGGCGGCTTCGAC
>locus0220
AGCAGCAGCATAACTACCCCGGAGCGCGCGCAAGTGTGCGAACTCTCGCGGCCCGGTCCCTGCATTTTGATTATATA
TCGGCGGCTTAGCATATTTTGTAATTTACTGTTTGAGAACGTCTCAACGTACGAATTTCAAAGCGACTGCAGCCGCGCG
TGCACAAAAAGAAGCGAGT
>locus0221
TGACCACGGCAGCCAGTACGATGCCGAGGTACAGTTATCGTCGTTGGGTCCTCGCTCGTCGACGCTGGATCGAGTAC
GCGATGAAGCAGAGGATCGCGCGGATCCACAGCAGCAGGGCGAAGCCTCCGAACAGGTTCTTGACAGAACTTTACCCACTC
GGCGCTCTGCTCGCGGCG
>locus0222
GTGTGTATAGTAAAGTAGAAAAAGATAGTGAGAGTGACGAGTCGTTGGATGAGCTTACCATGTGCGTTCCAGATCGAT
GCAGAGAATGTTGACGTTGCCGAGGGCAGGGGAATGTCACAGAGGATGAAGSCCAAGAAGGCGAGATCTCGGGGATGT
TGGAGGTGAGGTTGATGGC
>locus0223
TGCGCTATCCCGATGAACCTTAGGAGCTCGACGCGTTATATATTCCGCGTGGAGATTGTGTTATCGTTTACCTTTCCG
TTAACTAGCTTGTCAAGTGAAGGGTTTCGTGGTTGACGCTTATAATATCACTCTCCGCTTCTCTGATAGCTAGCGAGAT
GGCTGGCACCTAACGTCACA
>locus0224
GAGCGAGAGTAAAGCAGAGTGGTAGCGGAGAGAGCTCGGACGCTATGGGAAGGGTAGTTGCTTGTGAGACAGCGGAA
GAAAAATAGCGGAAGTCAACCTCCAAAGGGCTATATATCACGCGCTTGAATGGCGGAGTGTGCTGGTATACACGT
ACACGTGTGCGTATGCGTGT
>locus0225
AGCAGCAGAAAGCGCGCGCGCAGCGTGTCTGCGTGCAGTCCGTCGCCGCTACGCGCAGTGGCGGTGATTAATGT
TGCCGAACAAATTTGTCTAGAAAAACATGTCGTGATGGTGTACAAACCCCTACGGCTTCCCGGCTCCCGCTTCTCTCCCTCT
GCACCTTTATCTCTCTTCC
>locus0226
AGCCATCTCGCGAGCAGCGCGTTTACCGCTCGTTGCCGATCGCATCGCGCATTCTTCTATTTTATTGTGAGAAAAAC
CAATTTCTGGTACCTAAATTACGCGCGCTCGCCGACGAAAAAGCTCCGCGCTGCGCGCGTAAATACAAAGTTTGTCT
CACTGCCTCTACCCGACGGA
>locus0227
TCTAGAGCAGCTTCTCCGCGCGGAAAGTCGATTGGATCGGCAGATTCGAGGCTCGTTCCGCCACGATGCAGTGTGCA
CATAAATGGCGGGATGTGCACTTGCCGAGGAGGAGCAATTTATTCGATACGCGCTCCGCTCTCGTACGTGCGCGCAC
TATCTCGGCTGCGCATCTGC
>locus0228
CTCACCATCTGTGATCGAGTTTTCACGCGTATACATAATGATGCGGAGGAGCGCGCGACGTTCCGCTATGATTTTCA
GCGCTTTGCTTTTAAATAAATGCAATCTATCGCTCGCTCGCGCGGATAGGAGGAGGAGGAGATCGGGAGGTAAGA
CGGATTACGCTTAGGGGCGCCACGACAAACACCGGAATATGATTAAATCAACGCAACCCATCTCTCTGTGTGTGTGAGT
GAGTGTGTCTCGCGTGAGACGAGCTTGACGCGGTGCGGGAGGACACTTTTC
>locus0229
CGAAAAACAACGCTATACTGGTGAATTTCCACAAAAATATTGCTTAGTAGCAAAATGGACACTCAAAAGTCAACTAACCAT
GTCTGTACAAAGTGTGCTCTGGCATCTTAAACGGCCACCTATACTGACTCGGAGGTTGAGACGGGTTGGATGACGACC

TTCAGGAGAATTCAAACACT
 >locus0230
 CCGTTGCGCTTGGCGCGAGGTCAGACAGAGTCGAGACGGCTGGCTGCGCTCGGTGCTGCTCTTAAAAATACGATGAAAT
 GGCGTGGCAACCGCAAGAGGAAGGACTTCGGCAGATCCTGACGCTGCTCGGGAATCGCAAAGCCCCAACCCGAGACTC
 AACGCGCCGTCCAACAAGTA
 >locus0231
 CGAAGTCGTATATAAGCCAGTGATGTTCTCGCGGTGGGATGTATAGAAAAGCGCTACGCCGCTGCCGGTAATATGCATAAA
 CGGATTGTCGCCAACAACTTGTAAGGGTTAAGTTTAGCTCTCGCGCAGCGGCTAGGCCGCGTACGTATATAGCCGCACAC
 CTGCCCTGCGCAAGTCTTCGC
 >locus0232
 TATACACACCTACGTACGTATCTATCTACATATTTTCTCTGCTGTGTTCGACGGTATGCGGCAAGTGTTCAACAACGC
 ATCGCGCTCACGAAGCACAGCTGACGCACAGCGACGAGCGGAAGTACGTTTGACAGATGTGTGGCAAGGCGTTCAAGC
 GGCAGGACCACTTTGAGTT
 >locus0233
 TTAAAGGTGTAGAAGAGATTAAAAATCTATCAATAGAAGGACTTTTACATGGGGTCATACTTTTTTAGAGTACTTACTGT
 CACAGGGATGTACTCTATTTTCGACCAGCTTGTAAGATTAAACGATATGCAGTTGCATTAGGTAATGGAACCGTTGAATA
 CATTGCAATATCGATTGAAG
 >locus0234
 TGAGTGACAAAATTTTGAAGATTGTCGAAAAAAGAAATGGTGCAGAACGTATGTTGACCCATACTATTCGGTACTCAT
 ACTCACTGTTTACTTACTAGCACCAGCTAGTCGCTGCCCATAACTGTATCTCCGTAGGTCGCTGGAATACTGGG
 AGTACGCGCGCTATACGCG
 >locus0235
 GCGGAAGAATAAGAGAGGAAGTCGCGAGCTCGCGAAGCAGGAGGGGAAGGAATTGCGATCAAAGCCATCTGTTGCATT
 GTCCCGCAATTAGGAGGCGACAGCTGAGTCCAGCGTACTTACTTGCCACAGTGACGCTCAACCGCTGGAGAGCTTGCG
 CGAGAGCTTTTTCGCTGCTT
 >locus0236
 TTGCGGATGAAGGTGCGACACATCTTCAGGCCCTTGGCGGGATGTGCGACAGCGCGTCTTGACGTTGTTGGGGATCCA
 CTCGACGAAGTACGAGCTGTTCTTGTCTGGACGCTGAGCATCTGCTCGTGACCTCTCTCATGGACATGCGACCGCGGA
 AGACGGCGCGCAGCGTCAGG
 >locus0237
 TACAAGTGAGGAGTATTGAAGAAGCCAGAATTATTACGAGTACTGCCGCTGTTTTCAAGATTACATTGGAGGCTGCAT
 GTTAATTGTACTTTCATCAGTGCTCTGGTGATTGTTGATACCCGTCCTGTTGGAGCGCAATTTCATATGATTGTGCCCTTG
 TCATACACGCTGCTGATACA
 >locus0238
 AAAATATTTGTACATTAAACGTGGGGCACACATCCTCTCGGTTTCAATATCGTTACTTTTTTAATTATGCAGCTA
 TGGTACAAATGTTATCTGTAACCGCAATGTCTCATCACCATATTTTTTTTGCATATGTTTCCACTGCTTTGTTCCGATATT
 ATCATTTCCTCTTTTTTTGTT
 >locus0239
 CGCTAATAAATATTTAACCTTTAAATTTGCAACAGTCCTTAACGTGTAGCCATTGCGATAAGGCTTCTATTTTACATTTAC
 ACATCGCATTAATTGAATATTAAATTCATTTGCGCGCTCCCCCTTCTTCTCTCTTACTCCGTCTGCTCTCGCAGCA
 GCGCGAGCGAGCGAGTCCCGCAGCGCCGCAAACTGCAGTAAACTTGTAAACGGGGCGACTTTCCTTCCAGAAATAAGCC
 ACCCTCGTTTTGCGAGTCGGCGTACACTATACACAGAGCACTCTCCGACAT
 >locus0240
 CCGTGGCAGTCGCGAGGAGGAAACAGAAATGCCGAAAGACAAATGCCGGGCCATCAGTGCAGGAGGCCATTTCTGCCTC
 ATTGTGGACTCCATTTGCGACTCTTAGATTGCCGTTGAAATATCTCGCGAGCGCAATGAAAAATTCGTAACGCGAGGGGA
 ACCACCGCAAAATAAAGT
 >locus0241
 ACGTATAGCCTCGGCATAGAAATCGCTATCGGCGGCCATTTCATCAATCCGTGGAATCAATACGCTGGAATTAATGAAAGCG
 CCGCGGAACAGCGAGTACGCGCGGAATGTTAATCGCGATCGTCCGAGCCTCCGCTCTCCATGTCGCTGATATATA
 CACATTGCGGGCGGCGCGC
 >locus0242
 GAATCCTCCCGAAGCGAGAGCGCAAGAGGTCGCGCCACAAATCACCATTACTCGATGCGGTATCGCGACGCTATATAAT
 TATACCTATAACGCCAAGCACAGGTAATGGCTCAATCCCGCACGTGTACGCGATGATAACAGTCGCGAGAGAGAAGTT
 ATTGCAGAGAGTTGCGCGC
 >locus0243
 AGCTCTCCCCCGGGAGCAGCGCGACAGTCTCCGGCATCACACCTCTACTGGCTCCGAGCATCGCGCCGCTGTCGTATC
 GCTGCAATAATAACCGGTAAGCGATACCCGAGTCCCGCAGCGTCCACATTAGGGGTGCGACTCGGCATATCATCTCCTTG
 GGGCCGATTCTCCTCTCTT
 >locus0244
 GCACACGTACACACTCTGGCGAACCCGACTCGGCGGGAGCGAGAACCAATAAGCAGCTGCCGGCTGGTGGGGGCCATCA
 AAAATTTCAAAACGTACGCGGCCCTTTGCGCTCGGGGATAAAAGCCAGCATATCGTGATTCTTTTCAGTCAGTACCGA
 TACGATCGTCGTGTTGAA
 >locus0245
 GCGCGCGGGGTGGTAGGGATGGGATGCGCGCTGCGCGCGCGCTGGGGGTAGGGGAAAACGCGGGGGATTCCATT
 ATTTAACCGAGGTAGTTTAGCGAGTATTAGGGTTTGAGTTTATGACACCCCTCGGCTGCCCGGATTGCCATTATATAC
 GATATGAGCTTCGCTCGTTC
 >locus0246
 TGTCAAGTGACAAACGGGCCCTGCAGCACAGTAGGCGTCTGCGGGCTGGATATAATTTGTCAGGAATCACCCAATTAG
 CCTCCAGTTATGCGGCCCAACAGATTAAACCAATTAGTTTAGCTATGCGAGAGCCCAATACATTTTCGCTTTCGCGCAA
 GCGAGCAGAGGGCATCTCTG
 >locus0247
 GGCCCGGTACACTCTCCCGGCACAAAGTGGATGGGACGTACTGGCAATCGAGAGAGAAGGTTTACGCCGTAAATGGGAT
 TTGTATCTCGTTAACGCGGATCGTTCTTGTGCCCTGCTAAAGCGGAGCATCTCTGACAGCTCTCTTCTCTTTTCC
 TCCCTTATTTCGCGCGACT
 >locus0248
 TGTGGCATGTTCCACAGTTCAGGAAGCTCCTGGTCTCTCCCGCAGCCCCGCGAGTACCCGCCGTGGGCCCATAGCC
 CCTGAAGCGGCCGTGCGGGCCACCTGCGATCATTAACACACAAACATAGTTACACCACTGCACTCTACAAACGCC
 TTCTTCCCTTCTAACTTTA
 >locus0249
 ACGAGAGCAAGGCCTTAAAGCCTTGGCGCTTGTGAGGTCCGTGAAGACGGAATTTTGGTTGAAATTAATGGTCATG
 AGGTGGGCACTCTTTGAAATCAAAGCCTTGCTGGCCGGTTTAGGAGCGCTGGCGGCATACCCACCTTGGCTGCTCTCG
 CCGCCTGATAAGAAGCTG
 >locus0250
 TACCAGGAAGCCCGTAATCCTCGGGCTTCTCCTCCGCCACTCGTGCAGCGCGCGCGGTACACCACGCGATGGTACAT
 TTTTAATTACTTACACCCACGAGCTGCATCGCGCGGATGACTATAAATCAAGCGGAGCCACCGCCACCGCAGCCCA
 GCCAAAGTAATTACAGCTTGAATTTAGATAATGTTGCCGAAGCAGCGCCCTCTTCTTGTCTGCGCGCGCGCTCTA
 TCTCTATAGCTATAGATGCGCACGCGTATATAGA
 >locus0251
 ATACGAGCGTGCTAATAAATAAGAGATCCAGACGATAAACACCTCTCAGCGACGCTCAGAGCCGTGTAATCAGTAA
 TCAATTTATTAGTTTCTATTGCTTGGGGTAGCGGCGAAATTTCTTCCGATTTTATGACGTGGAAGACGATATAAT
 AAGGAGAAAAAGACCGCG
 >locus0252
 CTCCTCCTGTACACATACACCACGTACACGTATAGCGGACGCGCTCGTTCGCGGAGGTAAACAAGCCGTGAAATTAC
 CTTTAAATATTAGATTATGATTAATGTGTAGCTACGCTCGGCTCCGCTAAATGTTGCTCGGTACCCCCCTATATGTG
 CCCATACACAGTACACAC
 >locus0253
 AGAAAGGATAGCCCGCTCGCGCTCAGTGGGGTATCGTCTTCCAAATCGCGCGAGGAGATCAAGGATCGGGTTATTA
 GGATCGAAATGAATGTAATCCCTTAAACAGGAGCCCGCGGCCAAAACAGGCTACTCGCTCAACCTCTGTAATATT
 TTTTATTACAAATTCAAAT
 >locus0254
 GCGACTCAAGAGGGAGCGCAACAAGGAAGAAAAGACAAGTGCAGCGGGGGGAAGCTATATAGAGAGCGTAACGGATGAC
 CGCTGTATCTATTGTTTCTTCTTCCGGAATGCCGCTGGCTGTAAGACGCGGAAATGAAGTGCAGCGCGGGTTGTG
 ATCTAGAGACGGGATTAT

>locus0255
TATTAAGGATGTCAGCGCGCTTAACCTGCGACTATAGCACCAGTTATCTTCCACCGTAACATTACGAGATAATCATGT
TACTAAGACTCTGCGCTTTTAAATATCAGCGAGACGAGACTCGGCCAGGTATGTGCGGCGGACAAAATGTTTCAATAA
ACTGTTACATTACCTGAATT
>locus0256
AACATCGGCCTCTACAAGGAGATCTTCAACGGCAAGCGCAAGAACCCCAACGGCTGCGACATCAAGGCCACCTTCTTCGT
CTCGCACAGTACACCAACTACTCGGCCGTCCAGGAGATGCACAGGAAGGGCCACGAGATCGCGGTTCACTCCATCTCGT
GAGTATGAATTTTCCGCTTC
>locus0257
TTCGGATTTCCGGCCCGAAGCCGCTCCACGCTCTGCGCTCTTGGCCTCGCTCTGCCAAGAGACGCGAAATTTTCTA
AGTCCCAAAATGGCGTCTGCGACTAAGTCCCCACGTAAGCGCGGCGAGCCGCGCGCGGCTATGTTCTTTCAGCAGCA
GCGCTGATGCTGGCGTGTG
>locus0258
ATACTAAAAATTATAAACAAAGCCGATTTTTTCCGTTCAGGGCAGTGAAGGCATTTCACAGGTGCTATGGTGGAACC
AGGATTTCCACGAGCCTGCGAGGTTACCTACGGTCGGTTTGATGCTGAAGTCCACGGTGATTTTCAGCGCGGCTCTCA
AGCACCTGACACTCGCCCTA
>locus0259
TTACTCCAGTGTTACAGCGCATCTGTACGCCATAATCTTAACTCACTCGTTAATGCCGCCACATCGCTGTCCAGCATC
ATGCTCCAGGCTGTCTGTGTAATCATATCTCCGGGCGGCACTCACTCGGTGCTCACATGTCTCTCCACCTTCGGCG
GCTACTTTGGCGCGTGTG
>locus0260
ATTATAGGGGAGCACCTCGGTACATCGCACTCCCCTAAGCCTCGAGTCGAGTCTCTCAACGCTCTCTGACCCCTCCCGCT
CAATTGGTTCGCAATTCTTAAAGACCTTAATTGGTTCGGAATAATATACCTTATTTAGAGTACCCCTCAACGAGAGACCAG
CTCAGGGACTTCATTCTAG
>locus0261
TTAAATTAATTGCGTATTAATTAAAGTTATAAACGACATATATTCGCTGAGTTCAGTGTGGTTTCGCTATCAGTTTGTG
TTATTGTTTGTGTTTCCGGTCACCTTCACTACACTTCACCTGCTTACCGAAATGAAATGAAACCGTAGCCATAACGA
TCGGTCGCCTAGGTTATGTGTCTCCACGACGCTCGCCCCATGTTACAGCAGTTTGTCCGACAGTGTGTGTAATTTTC
TTTATTATTCTATTACTTCTATTCTATTTTTTATTA
>locus0262
CAAGCCACATAACTCACCGGCTGTGACCCATATCCAATAATTTTCAGATAATTAATATTTTAGTCGCGGCTTTGTTACG
CGCGAGTTAATTTGATTTGCGATTGGCCACGTTTCAGTTTCCCTCTTCCCTTCCAGCTCTCTATCTATCCCGTCGACGTTTTG
CCGCGCGCGCTCGTTGCAG
>locus0263
AAAGTAGGATAAAAAAGAAAGCGTAGCTCGAAAGCTCGCTCAAGAAACAGAGAGAAGGAGAGAAGCGACGGGATAGCGT
GTCTGTTTGTGATTATAAGAATTGCGCCAGAACGCCGAGTCTAGATCGCGACCGCGCGTGAATAATAGTCAGATATA
CACCTCTCACCCCTCCCG
>locus0264
CAAGAGCTGCTTCTCTCCCTCTTTTCCACACCGCGGAGGAGCAGCAGGAGAGTTGTTATCTAATTTTACTCTCAACG
CTTCTCGATTTATTCGCCAATCTCTCGGCGCATTACAATATGCTGCCTAACGTTCTTCTCTCCCTCTTCTGCGCTGC
TCCGCGCTCTATATTTGTCT
>locus0265
TTAGGGGCTCCGCTCTTAAGTAATCTTCCCTCCGAATTGACTTTACGCGGCATCATCGTCTTTCTCTTGTATAAATTA
GTCCACGCGCCACATAATGGCGTGTGATGCGCTACTGTCTCGCGCGGCTTCGCGGGCTCACCTTTTTTCGCTTTTT
CTCAGGTAGTATCTTTCTCT
>locus0266
AGGAATAGACGCGCTCTCGTAAACGCGGAGAGTTGTGGTGGCGGTGGACAATGCGAAACAGGTTCCATTGAGACAAT
TGGCAATTTTCGACGCGGAATATCCGTGGAAGCGTGTAGCGCCACGATTTTTTCGCCCTTCTTCCGCGCAATTGCG
ATCGTCTAATCGCCTCGTTT
>locus0267
GATCAAGAGATTCAAGTATAGAATGAATAAGGATCGAAGAGAGACGAGATTTTCATGAAAAGTGCCAGGACATTTATC
TTGTGCCGAAGACAGTGAATCCAGCTATGCTTTACATTGTATCATGTATATACTATATAGAGACATTGACTTTTCAATT
TAGTCACAGAGATATTACA
>locus0268
ATCTTTGCTACGTGGCGGTTTCTCAATCACCCGAACTAAAAGATTGATGCTTCCAGGGACGATAATCGCTCCCTATC
CACTGAGCAACGCTGGATCCCTCTTCACTATTAGACGCGATGCGCTCACCCCGAGAAAGCAGAAATGATGTCATCTTTA
GAAAGTGGCGGCAATTCTT
>locus0269
GCAGCACGACCGTGAACAGCGGTGAGTGAGGAAGTCAAGAAAGAGTGCAGCAGCCAGCGCGCTCGAGACCTTCA
CCGAGACCCAGTTGCTCGACATTGCCCTGAAGCTATACTTTGTGCGGCACCCCACTAACGCGCCAGAGGCTCAACCCCA
CCCTGCAAGCTTTCGCTCTC
>locus0270
TGTAATATATGATCCGCGTGGACGACTCGCGAGTTAGCTGCAGAGTCGCTCGGGTCGCAAAATGTGGTTCTGTGAC
CGTGGTAACGCCCTTCTTCTCGTTGGTTTCTCCACACGTAGTAGCTTCTGGAGTTCCTTGAACCGCGTAAGTTGC
AGCTCAGCTCTCTCGCTAAT
>locus0271
AAACAACCCCACTTGGCGGGTGTCCCCGATCCTTCGACAGATACAAATGAATCCAGCCGATGTAATCCTTTAAA
GGGATATTGGCGCTGTGTTTCGCTTCGGTTAAGCTATATAAATATACGCGGGATGTCGCAATCAGCGCCGAGCTCCCT
TTCTGCTGACTGCTCGGT
>locus0272
TTTCCGGAGCGAGCTTCCCTCTCGAATTTCCACGAAACAAGGAGGAATCGCGAGAGAGCGTCCATTGATTGCGGTATCA
TCGTAATTTTACGGCGCGTTTACCTACGCGAAATAACTCGAGGGACCTGTGCTGCCACACGGCCAAACCTCCCTCTTTT
CCTTCGCTTTAAACAAGCCAGCAAAATGGTTTACTTTTGAGAGACGCGAACGAGAAGCTACTCGATCCACCGCTGCTTT
TTCTTCAACCTCTCCCGGACGCTTTGACAGAA
>locus0273
CGGACAAGAAAAGCGACAACAAGTGGTGTGTCGATATTTCGCACTGCCTTACATGAAATCATCTGGTGACAGCAGG
CTGATTTATAATAAATTATTGGGTTTCTGTAATGTTAACATTCTAGGTTCTAGTATGTACAGATTACCTAATCGTCA
TCGATTAGAGCAAACTATAT
>locus0274
CGTAAATATATCAGACACAAGCTCCAGGGCATTGTTAGAGACTCCTACCTGATATGAGCACCAACACAATCCACATGAT
CCCCACAGGCTCTTATCATGTATGTTGACGTCACGTCGCGCTCATTCTCCGCTGCCGCGTGTCTCCCGAAGCTTC
AGCGTAGCGCAGGCTACTCC
>locus0275
TGATTGATAAATGGCATTTAGGCTGGGACTGATGGTGGCGTACAGATGTTGAGGTTAACGGATATTGGCGCATCACATGG
CATACTTGGCGTCCATTACGTGCCAATTCTGTTGATTTTCTCTCTGCGGTTTTGATATATCTAGCTATCTCTGGCAG
AGCGGATCATCTGGGTTCCG
>locus0276
TCGAGTAACAGCTTTGTTGTTGGCTCATTTTCAGCAGGGTTGTGGGAGTACAGACATGGGAAGTGAGCATTACTGCC
TGAGGTGGAACAATCATCAGAGCAACTTGTGGGTGTGTTACGTACGTGCTGGAGTCGGAGTCGCTGTGGACGTGACG
CTGGCGTGCAAGGAGGCC
>locus0277
GCAACAATGGCGGGCGGTGTTTTTCAATATTTAGCCATCATGACTTCTCGACGGGTGCGGCCCGTGAAAATCTCCGCG
TCGAATTGGAACATAGATAATTCAATTAGACGACAGCTGCTGCCGAGTTTACGCCGTCGTCGGAGAGCGAGTGCGAAG
GTTTCGGAGGTTCTGCTGCT
>locus0278
CTCGTCACAACTGAGTATTGGTCGCGCAGCATCGACAAAGTTTTCAGCGGGCCAGCGCGTCAGTTCCGCGCGGCTTC
GAGGTTAGGCATGCACTGACATGGCGCACCTGCGCTCGTCCCTTCCCTCCGAGTTGCTCGGTACGGAGACCGCT
GGACCCGGCGGACGCATCT
>locus0279
AAAGAGGAGCCAGTCAAAGTCCGGGCGAGCTCTTTCTCCCTGCAGCCGCTCTCTGGCCGGGCGAGCATTAAATAT
GATATATGCTTATTGAATTTGTAAGTAAATGGCCGGGTAGTAGTCGCTCTCGGTAGGACTCGCTCGTTTCTTCTTCT
CGCTCGACGCTCGTTCTGCT
>locus0280


```
>locus0305
ACCGTTAGTGGTCTGCAAGTGACTTCTGGATCAAGTAGAAATGAAGAAGAGAGTAAACTAACAGAATTAGTAATTTGGTT
TACATGGTGTCAAACATGTAGACATGGTGCCATGCAAATCATATTACCACCTGGTTTCAGTAAGTATTTTTTAATATCT
TTAAGATTAAATCTTTGGTT
>locus0306
AGACGCGAGAAGGTGCGCGGCTGTGAGTTAGGCAACAATTGATTGAGTGACTTGTCTTGTGTTGATGTTGCAGGTTCAAA
AGCCTGGCACATGCGGGTGTACCTTTGACCGGGTGCCAGGCGGCTGCAACCTACACAGGTGCAAGCTGTGCGGCAAGGTCG
TGACGCATCATCAGGAACCATCACCAGTCCACTTCCCGCGAGGTTTGAGTGTCCGCTCTGTCTGTGCGACGTACACGCGC
AGCGACAACCTGCGCACGCACCTT
>locus0307
GATTGATTTTGTGCTGATCTGCATACAAAATTGTACCTGAACACTTGAGTCCCTGATGCGCGATGCCGTGAAGCATCG
AGCCGCAGTGGTCCGAGAAGGTGCGGCTCAGGAACGAGAAAACATCCCATTGTGTGCGACGTTACGCGCTGAGAACAG
CAAAACGTCGTCGCACCGA
>locus0308
CGATAATTAAGTCATTATAATAATTTGTTTATTGTATATTAGTGGTGCTTTTCTGCTTGGCAGCAGTTATATTTCC
AATGGGATTCCATATTGATGAAATTGGTGCCAACTTACCAGCTACCCAATTCTCATCAAGTAGGCATTTCCTACATTT
TGTTTGTATTAGCATTATGG
>locus0309
GTCTGTGCCCGCTCCATGTGCGTTCCTCTCCGCGCTGCGCGCTCCTCTCGGCGCCAGCAGAGCCACCTCGTCTT
CGTTGTAGATCTTGAAGTAGGCGATGGTGAGGTAGATCACCAGATTATGAAAGACGGTATTGGGATGGCATCGCGTAG
ACGAGGTTCATGTACACCTG
>locus0310
GAACTGACCTTGACCAAGCCCCAGACATGGCAGTATCCTTGCCGAAGAAGCTGCGATCGAGCAGCTCCATCGTCGCTC
CTACGATACGGACAGCAATTCAGAGCAAGATTCTAGCCATGAGCGCGACTCTGTTGTTGAGTTGGGCCAGGCTGAGGACT
GGACGAAGCAGCCGCTCAGT
>locus0311
CGCCTATTTTCGATTGTTTCAGTGACCAGAGGTGTAGAAAGGCCGAAGATTTGCGCTGCGAGCAGCTCGGCGCTGCGGT
CGCTCCATGCGCGGCGCCACCGGCTCCTGGCTCCGCTACCGCTGACGACATGGCACACAAGGGTGAGTTTATGCACT
CTCTTTCTAGCTCCAAATGT
>locus0312
TCCCGAGGCCGAGCCGCTTTTACCGCGCTCTGCCGTGCGCGCGACGCGGCGAGATATGAGCATCGAACCGGTAGGGGCC
TAAAAATCGATATTTTCGGTCTTTGCTCCATCCGCGCTCCTTTTCGCGCTCTCTCCCGCGTATATATGATATCGAGCGCG
CGCTTTACCGCTCTGCGGTTG
>locus0313
TCTTAATTTACTTAAGATGTTGCGAGCCAAATTCACCAACCAGATATCCGATCAGGCGCCAGGTGAGGGACCGTCCAACA
GTTGGAAGAAGGTTTATATCCAAATCAGATCGCTTGCTGTGTGCGCTGTGTAGTTCGTGATCTGTCTCTGCTTATTTT
TTCGATCCTCCTCTCTTTT
>locus0314
CATAAAGCTAATCATATCAAATGAATGTGTAACCTACTTTCAGACGAGCAATAGAATCTGGTGCGAGAATGTATCTGTGA
CAGGCAGATCCCCCTCTCAGGATTACTATATGGTTAGTCCGCAAGTCTCCAATCTCCGCATTGTTTGGCGCTCTATTAA
TACTTATTATTAATCATGGT
>locus0315
TTTCTTCTCTCTTGTCTTACTCTCTCGTTTCTCTCAACTACTCACATTTCGATACTTGTGATGTAAACGGCTAGGTTGT
TGCTGTTTGTAAATGCTGCTCGCACTACTAAAGTAAAAACATCAATAAGTTACTCACCTGTTGCTCCTGATTAAGCTCCG
TATTTCCATGCGATGGCCCA
>locus0316
TGATATGGAATATATAGATGGTTTTTCTTAGAAAGCATCAGTTGAAGTCACTAACGTGCATCGGGCGCTCGTCCGCGG
CTCCAGAGCTTTGCTCGCAGATAGTCAAGATAGGAACGTACGCGGACCTGTGGATGTAAACGCGGATGGACGAGGGCCG
CGTGTGTAAGGTCCCGGGC
>locus0317
TGGCTATATCATAAAATGATAGAAAAAATCATAAAGTATACCCAGACCCAGCTCAGTGCCCCACCTGTGTCTATCTTTTC
CTTGTGTTTCTCGACAGCGCGCTCCGCAACATCTTTGTTAACAACTGAACGTAAAGCTCCCCAGTACTGCGGCCGCTGT
AGTCTGTCCGTAGTGAATCCCGTTCGGCAATATCTCAACCTTGACCCACACATAATCAAGAAGCAGATTGTAGCTTAG
AGCCCATTAATTTATTTCTTTT
>locus0318
CGTCTTTGGCGAGGCTGTCTCGGAGATCTCTGGATAGGACTCGGTGAATTTCCGCTTACGTTGACCTCACATGCCGTTGA
TGTGATCTTAAGTTGCGCGTCTTCTCTCCTTTGGATCCCTGCGAACAGAGGAAAAACAGCGTTACAAACTCTTTCTC
AGTTGTGCGTCTGCTCTA
>locus0319
TTCATTATCATTTCACTCGGACCGAGTAGCCGCTGGTGACGGGCGCTGCATGTATAGCAGTAGTAAAGGCCCATTCAT
TGATCGGTGATTGTCTAAATTAAGATTGCCATACAATGGCTCTCATCTCGACCTATTGGGGTCCCGCTCTGACGCGC
GAGCGCACGCGCGCTGAA
>locus0320
ACGACGGCACATCACGTTGGGATGACCTAAGCGGCGCGCTATAGTTGCGCGCTAACTGCCGCAAAATTAGCCAATTGAG
GGCTTCGAGTATCCGCGGATATCTTATTACACACTCGACCAATGGCGCCGACCTTAAAGCCTATCTAGTCGCGCAAGC
TGCCGTTAGCGAACGATCCT
>locus0321
GGAGCGAGAGAGAAGCGGTGGAGAAGAAGCGAGAGCAAGGATGAGCCTGGGAGCGAAGTGAAGTGAAGTGAAGTGAAG
CACCTCCACGCTCCGAAGAAATTAACATAATATAAGGATAAACGGTTTATGCCAGAGCCTGGCAACCTTCTCGCGA
CGGATACTAATACTCGGCTC
>locus0322
TTCAATGAGCAGCGCGAGCCTTGCGTCTCATCGTTATGTCGATCGAAAGATGATGCGAAAGAAGCTGGCGGAATCTATATA
ATCGATTCTGATTGCAATTGAAGCCCGGTAGTGTCTGGCGCTGATTGGCGCATTCATAAATATCATTAGCGCACAAATGT
TGGTAATGATCTGCTGCGAG
>locus0323
AAATGTCAATATGACAGACAGTCGCGGTTGCGTCTGCGGGTCTTACCGCCGCGCGCTCAAAGTGAATCATTAGTTTG
CTTAAATCAATGCGCGGTAAACGTCGAGTTATTATGTCCGCTATTACGAGGACGCTCTCTCCCTCTGCTCAGCC
GCACGCATCTTTCGACAC
>locus0324
AGGGAGGGTGAAAAACCGTTGCGGTGTCGCGAGGCGAGAGGTGCGGGAGATCGAAGGGGACATGCAACAAGTAGTTTCGG
TTTTCAAAGCCATTGAAATTTGATGGCTTTCCCATACCATGACAAACTCTCGGCTCCCTCTCGCGCAGTCAAGCTCTC
GCCGTATCCGCGCCGTGCT
>locus0325
TAGAGCAAGTTGGCCGAATCTCGGCAGGAAGATGCAGCGCGTTGCTCGGAAAACCTTTATTAGATATTTTCTTCAATAGG
ATAGAAATGCAAAATACAGTTGTCAAGTAACCTCTTTCATCGGGGAGCGAAGCGCTGTTGGAAGGAGTGAATGAGCG
AGAAAGAAAGAGCGCAGAC
>locus0326
GCGTGTTCGCTCTCTGTTGAGCAGTGATAAAATATTGAGGCTGCGCTCGGGGACTATATTTACGAAGGAAATCGGTGCG
GTTGATTTTATAAATCTGTTCAAAATATAGCTGGGAGCGCGGAGAGCGGGAGGGCAAGTCCCGGGCGGAGAGC
AGAGCGCACAAAGGCCGCTG
>locus0327
GGTGGCATGTGCGGCGCGGGCAAGTGGCTAATCAAGGCGCAGTTGCGCGAGTGGCTTCTAATACGGCTGGAAGGCATT
TAATCTCGACAACCTTGCTAACGACCTGACCAAGGCCACACTAGCGCGCATTTCCGATAAGCGCAGAGCTTGTACCGCGA
CTGTCTGCTCACTCTCTCG
>locus0328
GGTCTTATCTGTATACAGAACGCGATCCGCACCAATCTATCGTTGCACAAGTGTTTTGTGCGCTATGAGGACGACTT
CGGGTCAATCTCGATGTTGAGCGACGCGGAGTTTCGTAAGCGCGCGCATCTGTGCGCGCGCGCCCGCAGGAATATGACC
CAACCCCATCACCACTCCACCCACCTCTCCGCACAGTAAGCACTCTACCACTACTTTTAGAAAACAAAAATTTATCT
GCGCTGCTGGCTGATTGATAA
>locus0329
GGCGCTGGCGACGATGCTACCGAAGGAGAGATGACGAGGGGGAGAAGATCGCGCGCTGGCGCGCGGACACGAAGGG
GTTTGACGTCAACCTTTTCATCGATTGTACTCCTCGCCAGCTCTCTCCCTTTTATCCCTTCGGTGCTCCTTCGCGCT
CTCCGCTCCCTGCTGCTCT
```

```
>locus0330
TCCAAAGAGACGAGAAGAGGCTGGATTTCTCCTGTATAGGGGTATTAATCCCTACCCCTCAATTACCCCTTTGCTCTTGGGCG
CAGCTTGGTCCACTTGTTAAGACACCCGCACTGTTTGTCTTAGGGGGCAGCCACCCGCACCCGCGGCTTCTCTC
AAACCGTCCGCCCTTCTTC
>locus0331
CGGAGAAAAGGCCAGGGCTCAAAGTTGCTGGCGAGGCGGCGGCGCAGGGACTTTGCGTCTGAGCTAGCTGCTAATTTAAG
GGTTAATTCCTTAGGAGACAGTTGGCAGAGTTACGAGAAAAATATTCATGGCATTATGCATACGCTTAGCGCGCGGTCG
CGCGCACTAATAAAAAATTA
>locus0332
AACCCTTCGCAACGAGCTACGATTTTCGTAATAGGGCTAAATACCGCTGACGTTTTTTTGTGCTTGCATATATATCATAT
TTAGTATGCGCACTTAGGAAGCCGCTTAAATAAGCCGAGGAGAAGCGCGCTCGCTGCTGAAAGCAGCACTCTAAT
AAGTTCCAGTGGCCGACGAC
>locus0333
TATCGCGGAGAGACTCGGACTTAGCGGACGATGAGTTACGACCGCTGGGCGGAGCCCCGAACTCGCGGCACTAAAAATCC
CGACTGATATATTTATACGTATTATGCTCTCGTTCGCTTATTTATACCCATATAACTTAATGCTCCGGTCGCGCGGA
GCCTGATACGCTCACTCTA
>locus0334
ATGTGGATAGCCACTCGACGTCCTCAATCCACGCTTCGCGTGCAGAAACGAGTATAGAGAGGCCAAAGTCGAGATGAT
TGAGTTGCAAAATGGGCAGTTTGATCAAGGAGCGAGCTGCTCGGTGTACTATCTCTAGCTCTGCATCTGCCCGGGGA
CAACATGCAACGCGCTCCGC
>locus0335
ATATACGTATACTCGCAGAGCGAGGCGCCATCGACCGGTTTCGCTGCCGCTGCAATATCCCCCGCACCACGCGATATTGC
CGTTTTATGATAATGTTATCAGCGCCCGGGCTTTCGATGAGCTAACCGCATATACACGTGTGCGCGCGGCACACAGCA
GCATAGAGGCTCCGTCAAAC
>locus0336
ACTTAGACACATCCCGCACTCGGTACATGGCTTTACGCTTCACGGATTAGCATGCAAAATTTGCTGCATTTGAATTTTATA
GTTTCGACAGCTGTAAACAACCGAATAGATTCGTTGGCACCACCTCAGTGCAAACTCCTTAATACCTCGCAGCTCTATAC
TGATGCTCTGCATAGGAAA
>locus0337
AGTTGAGGTAGGTTGCGATGATGAGGAGATTCGAGAGGATAATGGTGACGCCGACCACGAAGATGAAGCCCGCTGCATG
AGAGCTCCAGCGAGGGCTCCTCCATGCCCGCGCCCTTCGCGCTGCATCCCCCGCGAGCGAACTTATTTGAGGTTGCC
GCGCGCAGCCTCTCCCTCCT
>locus0338
TAATATAATTTATTTGCAATTTGTGATGATGATATTATTAACAATTTTCGTTATTTCTTTTGAGATAGAATAGTGGCATGA
GTCCGATTAACTATGCGAGATCAACAAGATCAGTCGTCGCCGGGGTCTGTAGAGAGGCCAGTGTTCAGCAGACGC
CTCTAAGCTTAAGGGGAAGA
>locus0339
CAATAGCGAGACAAGTATCGGCTGAAAGTAAGCGCCTCCGACAGAGGTCACCGCCCTCGTGTGCCGAAGTGGACGTTGA
GTTAGACGCTGTAGACAGAAACAATAAACCTCCTGTGTGGGATAAGAAATGTATACGGCCCCATTACATCAAAAGAAATG
TCACAGTGGGTACTGTAGTGACGTCGTTGAAAGCCAGGTTTGTATGTCGATGAACAAAAAATAAATTCGCCT
AACCAGAGAGAGAACC
>locus0340
GACCGAGCGACACGAATATCCGAATTTATTTTCGCTCCAGTCCTTGATCCATTACTTACTGGTGATCTTTCACTGGA
ACGGGTGCTCTATCACATTTATTAAGAACAACGGTTTCGGGAGCAAGAAGTGGGTATTACGACCTCCGAGACGGCG
GACGTGCTCAAGCAGTACCT
>locus0341
CTCGCCCGCTACTACAGCCCGCTCGCGCGATGCAAAATGCGCGTGACGAGTCTCTGACCCGATAAAAACCTGCATTTGGGT
CATAGAAAGGGAATAACAACCTACAACGGGCGAAGGAGGAGACCGGAGCGGAGCGCGAGGGCATTTCGCCGGA
AATGCGATTTTACGGCGGA
>locus0342
CCACGCGGAGTGTGAGGAGCAGGAACGGGTTGCTTTGTTGGAGTAGAAGAAGCATGCCTCTCTACAGTCCCATCAATC
TCAGCCGAATCATGCCCTGACCCATCCAAAAGAGGACACGGACAAGAACAGGAGAGCAAGGACATAAAGCACATTTGATAC
ACACTAAAATTTGTTAAATC
>locus0343
GGTGGCGGACCTCGCTTCAAGCCGTCGCGCTGCTACTTTGTTTCTTTCTCCGCGCTGCGCCCTCACTTTTATATCCA
CCTAAATCCATCCATTTTAAATGACGGATATTTTCTGAGCGCGCGAGGAGCGCCAGCAGCGAGCTCTACTCGCGGC
TCCAGACCGTATGGATTTT
>locus0344
AATCACGTTGACATCGCTGATGGATGTGCTCTCCGGCGTGCGAAAAATCACCTCAGTTTTTCCACCAATAAAGCCCAT
TGTAATGCGAACTATTCCGAATATTAGAGCGGGAGAGAGATAGAGGACGATTACCGGCGCTCCGTCTATCGCGCTTGAC
GCACCCGTAATCCTTTTCAGC
>locus0345
CGGCGACGCGCGGCTTATAAGACTCGCGCTGTGTCTCGGTCATTAGCATAGAAACAGCGGTAAACTCGGCTAGCTTACCG
AGCTAACAGCGTGTAAATAACCCGCTAAGTTGCCAAGACAATGTGCGCGCTCCTTGCGGACAGAACGCCCGGGATTACTT
CCTCGAGTTGCCGCGCGGT
>locus0346
GCTTGGCGATGGCGCTTTTCAAGGGCTGCTCGCGAATCATCCCCCTCCTCTGCGCATGCGGTTACGGCTAAGAGCCCTC
CATTACCGGCAATTTGCATTGTATAGCGAGCGAGCTCGAGTTCTGAAAAGCGGTGCGAGAGCCGCGCTTTGTTATCTCGC
GCCGGGCTGCAGCTGCAGA
>locus0347
CTCCGCGCGGACAGTCCGCGCGAGGGGCGCGGCGCCGACCGCCACGTAATTTGCAATGTGCTTCAGCGGTAATTCG
ATATAAAATTTAGTTAATATCTTTTCATTATAGCGCGCGGAGGCTCCTCGCGCGCGGCTCTGATGGAGGGGCGCGC
GCACCAAGACGAGGCTATC
>locus0348
TGTGTCGTCAAAGGACGACAGCCGCTCCTCGCGTCAATCCCCCGGAAAAATACAATTTCTAATCCTCGCGGAGATCTAAAC
GGTTGCCAATCATTTCCGGTTCTCGGATTAGTCCGCGAGAGAGAAGTCACGAGCAGGGCGTGAACCTTTATTTTCGGCT
GGCTGCCGCGGTAAAGG
>locus0349
CGCAAGTGTACGAGCACGCGCGGATTTATATAGAAGAGTAACCGCGGCTGTAGATGTGCGCAGCGTCAAAAGCAAAGCT
CAGAGGCAATCATGAGCTTTTGAATGCAAAACAGCGAGCGCGCGCAGTATGGCACTTTTACATTTAAATGTAAACTC
GCAAGTGGCGCGCGGAGA
>locus0350
CGGTGCATCCCGTACTGAATTCGACCAATGGTAATGAAAAATAAAAAAATACCTCGAACACTGCCTCGTTTGTGTCAT
GTGGATCGCCTTAGCAGCCTTAGCCACTGTGCGGGCCCAAGTGGTCCCTCAAAACGCTCACTGTGCTGTACACAGACA
GCTGCGGACAGGTAGACTCATTTATGTAACAGTTTTTATCTTGATCTCAGACCTCGCTTGTAACCTCATTGTCAGTTAG
TAGTAGTGTACGTG
>locus0351
GAGCGCAAAAGAGGAATGTATTTGTAATCGGCAGACAACTACAATGTAGTTTGTTCGTACCGTCATGAACAAACGG
AAACACTTGTGTAATAAGTAGATATCCATAGATTAAAAATCCGTATTTTATTAGAAATGATCTTAAGAATCTATTG
TTACTGTACAAACGTCGTCA
>locus0352
TTTAACTCTAAACTCGGAGCGCGGCATCGTCGTCGACGTCAGCGGACGAGCACTATTGTTTTACAGTAATATAATAC
ATAGGTATTTATATAGAGCAATATTATACAATAACACATACATAACGCGCGCTCTGACCCGCATAAAAACACAGCGACCT
TCCTTATGTTTTTCCCTTT
>locus0353
AAAGAAAGAGATAGAGAGAAAGAGTTTCCGAGGGCGCAAGTTTTTTCTCGGCGGATACTTTTTCAAAATGAGTGAGT
CAAAGTTACCAATTTCTACCTACGTTTAGGGAAGTACTTTTATTTATCTCGTTTTACCTTCGACTATTCCTTTGTAAAT
GAGATTGGCCGCGCGAAGC
>locus0354
TGATGACGATGGCTTTATGTGTACTGATGAAAGTTTTCTGCTGTGTTTCAGGAATTATGACCCCTTACGAGCAGCCCGT
GTGAGCTAGACAACATGAGCTGTTTCAAGACCTCAAGTTGAAAAGGAGAAAGGTCGACTCTCGATGTAGTAGCGACGGT
AAGTCACGATGTTCTCAATG
>locus0355
```

TGTATTGTGACATATTAATTTTGAACAATTTTGAACATGTCCCCCTGGTTATAGACCGAGTCAGAATATGCCGAACCGTTCA
GAGAGGCAAGTCGATGGTTTGGATCTTTGTAGTTTTTTCACACCCCATCATCTCAAAGCGATTTTTCTTCTGCGATCTCT
ATTAATGAAAAGAGGATCA
>locus0356
GAGGCAAGCTCGCAAAGAGAGGACATGAATTCGGCGTCAACGGAGTGCCAGGTTCAGCCAGTTCGAGCCGCTGAGCGACTC
CTGCGGCGAGAGCGACATGGAGGCGCTCGACCTCTCGCTGTTTCGAGCCTCAGGCCAGCGGAATTCGTGGTGCAGACGCC
GAGTTCACGCCGGCTTCCTC
>locus0357
CTACTACTCAATTATTATGCGTGGGAGCAATGATGTAAAGCTGAGGAAAAATGACTAGGTCGATGACCGTGTTCGCCGAA
ACAAACGTGGAGCTCGACCTGCGTATGCTACGTTCTTCAGGGTACTCAGACCGTTAAAGCTGGTTTCGAAAAATCCAAAG
TGAGTCAAAGCCTCTGGAC
>locus0358
GACGCACTCGCAGCCACATAGAAGAGAAGGGGACCGCTAGCGCTCTTGCTCCGGCTTCGACCAGTAGATTAGTTTTGT
TCGAGGCAATTTGAATTTAGATTAGTTGTGCGAGATTGGCGCCGAGCCGATCGCCACCAGCGCACGCTCATTATAC
TTCTACCGTGCCTTCGGAC
>locus0359
GTATGTGAGGATTTTGTATGTAAACCCGAAAAAGAAACACATAGAAAAAGTCCGAGTACGTCAGTCCCTTACCTTCAA
AAGTAAATGTTCTCCTCAAAGCTCAATGACAGGAAGGAGCTGATTGTGATCCCAAGATAAACAGAAATAGATTATTTTT
CATCATATTGGCGCTGATCC
>locus0360
TCGCACTCAACTGGGAAAACTTAGGCCAAAGAGATGACGAAGACTACCGTCACGAAGAAGCAGTATCAACTAGGGCGGAG
TAATCTACCATCTACCTAAACCTACTGTCTCTTAGAAACGACGCTGCTGTACACTGTGTTTATTATAGAGAATAGTGT
TATCCGTGGGACGATTATC
>locus0361
TTCTGTAACCTTTTTTCTCTTCTTACTATGTCTTGTCTATGTCCCGGCTTTCTTTTGTCTTAGATATTGCAGAACCTA
CAAAAAAACGCACTGAGCGGAGGGGGCGCTAAGCTCTGACAATATGAATAAAAGAAAGTCTGGTTTCAGCAAAAGCGA
CCTTATTTTAAAGGTAAACCGCCCTTGAAACGAAAAGCAACAAACAAAAAATTTTTTGGCGTCAAGCTCTCTAC
CCACGCACTTTCG
>locus0362
CTGGCAAAAAGCGAAACCGGAGAAGGAAAGCGAGCCAGCCACCGCGCTTGTCTATACCAGCAGGGTAATTATGAGGAT
TAATCTTAAGTCCCGTAAAGTCCACCACTTGTGGAGCCTCGGCCGCTTACTTTTACAGCTGTGTACTGCGATGAGAAAGT
CCGATGCTGATGCTGGGATC
>locus0363
ACTAGCATCAGCGGAGCATTAACCGCGCCACCGCATGAACGTGTCGGAATTAAGTAGATTAGGGAATTCGAGGATCATT
TAATGCTTGGTTAAATGCGTAATGTGACGCGCAGTGGGAGAGATCGAGTTTAGGGATTATAAAGGTGTATGCGGGT
TTGAGCGCAGCCTCCGTGT
>locus0364
GTATAACGCGGAGAGGAAGAGAGCTGCGAGCGAAAGTGTGCGCTGCTGCTCTGCGGGACGCGCGCATTACATTTGG
CAGCGATTTCACTCAGCGAGATTAAAGCTTATTTACGCTGGCCCTCTCCCTTTTGAGCTTTTCAAAGCCGCGCTTCTT
CTTTCTTCTTCGGGCATCT
>locus0365
TTGCGCGCTATACACTATAGCGCGCTACGGCGAAACGCGCGTGTCCCAAATAATCCGAATTTCAGCGGACAAAGTGGG
CGGACCTGGCCAGGTCCAGTGGTACTTTCCGCGCTCGCACGATGAAAAGTGTTCCTGATTTCCCTAGGTTCGCGCGCG
ATTTCTTCTCCCTCCAGCA
>locus0366
CCGGCGCGTATTAGTTATCGTTTATCAGAGCGGAGCCGCAAGCACAGGATCGCAGCCGCGGAGCGAGAATTGGGTGAG
CCATCTGTTGCCAGACATGATCGATAAAAGTACGCCAAGTGTATCAGTGTAACTACCACCTTTCGGCACGATGCCGTC
GTATTTCTCTATGTGTATG
>locus0367
GCGCCGGCCATCCCGCACATCTCTCGCTCGCCAGCGCAGCGTACCACCACTTGGCGCGTTCCTTGTCTTACTG
GCAAACTTAATCGATATTTACAGTTTCTTACCCCAACAGCGCTCTCGTGTCCAGCCGAGAGGGGCGGCACATCT
TCACCTCCCAATCGCACCAAG
>locus0368
TACGCTCCAGTTGCTTTTTGTAGCTGAGGTGTAGACCGTCCCATTTCCAATCTGGTCGGAACGCGCGCAACATCTGGG
AGAAATAGTATGACGTTTCAACGCGAGAGGGTACCACAGCGCGGACTTGTGGTCTCTCGCCCGCTGTAGTAGAG
CTCCAGGAAGCGGTACCTGC
>locus0369
TTATTTTATCATTTTCATAAGATCGGTTTTTATTACTTCTGTTTGTCAATCAGTTTTCGGTGTGTGTGTGTACAGT
GCAGTGCAAAATGGACAGTTTCAACGATTGTGACAAACCCAGCTAACAAACAAGAACAGTCTTCGCGTAAGTTGTACATGC
ATCCGATTTTTGTGTTTGT
>locus0370
CTAAGGATTGCACTGGTTGAACCTACCGGGCTGCTTGTGGGATCTTATTGAAGCAGTTTGAACCTCGTAGAGAT
GCATCGGCTCGTCTGCTGCGCGCCATGTTTCCGAACGAACGTCCTGAAGACAGCGCGGCTTTCGCGGAGCACCGCGG
AGCGGAGCTAGCGTACGGTG
>locus0371
GTCCGAGCGCGCTTTTGACAAATCAGGCTTGATGCCAGTTTCTGCCCCCACTCCCATCTCTCACCCCGTGGGATT
GGTTGGCAATTACAAGATGCGGATAATCCCGCAGACTTGGCACCGAGCACCACTCGCGCAACCCCTCCGGCGAGAT
TAACACTTAGCCGTTGCCAC
>locus0372
GGCGGTTGCACTGGGTGCGGCGAGCTCTTGACACAACACGCGCGCGCGGGACACACACATCCTAAGATGTGATT
TCAAAAATGGCGGATTGCCCTATGCCCGCTGCATACAGGAACGGAACACATTCGCGTGAGCTGCTGCGATGGACAAA
GAATATGGTCTTCGTAGTCCGTGAGTGTTTTTTTCTTTTCGGACGTATAGCTGTATACATATGGCTTTACTGACGTG
TCATAGCGTATG
>locus0373
CTATCCCTAGACCGTGGCTCATCGTCATCTCCCTCCTTCTGTCTCTGCTCCTCTCTGTAGGCACTTGACCTGACAA
CGTCAAACACTGGCAAAGTTCAGATCAAGTTAAAAATAAGACAGACAAATTAACCGGAAGCTTTTAGTAGTACCAAGTGT
ACTACTATTTTTTTGACTG
>locus0374
GCTATGCAACGAATATCAAGGGTGAATTTGTTGGTAAAGCAAAATGCATCTAGCTCTTACCTTATTGTAAGCATTGAACT
GGCATTTCTAACACCATTTGCTGCTATCCATGTAGGTTTTTACCTGGTTCTCGCTGTCTATCGTTGAGATTTCAGAAGTGC
AAGCTCCGCGACGCTTCCCT
>locus0375
TCATGAAATCTTGCAATTCGTCAAATTTATAACGTATTCATTTTTTGTCCAGAACTCGGACGACGGATCGATACCTTTGA
ATCTTCTACCCCAACCCCTTGACAGTAAATGTGAGTTGATGTTTATCTTGAATTTTATTTTAAATAGCCTGCTTGA
CGTTTAGCGAATTAACACT
>locus0376
ACGAGAAGATGAATTTCAAAAATGAAATAGTCAATACGTAAAGATTGCATGAACATTTTGTCTCACAGGCTAGCAGTCAT
TGAGTTTCGGGTAAAGGTTATATCGTAGTATTTTCGTTTCTTTCTGGAAAAATGCACTGATTATACCGCTTTTGAT
AACAAACCGCTTATACTAG
>locus0377
GTCTACCCCCGCTTCTCTCTGCCCTCTCGCTCGTTCCACTCGTTGGATCATCGCCGCGCGCTTCGACGAAAAATTCGATC
ATTATGATTGCTTATGATGTAAATGATGCCCGCGCGCAGCAATTGTTTCCACTAGAAGACCCAGTGTGTGGAGAGGCTG
CTGCAGGCGCGCGCGCGCA
>locus0378
GTTCTGTTCTGTTACAGTGATAAATATAATTGATCGGTGACCAAACTCGCTGTGATATTGTTGTCTTGAGATATGTACCT
GGTTGAGTGTGTTGATGTGCTGGCTGAGCATGTTTTTCATGTAAAAAGAGTATTTTCAGCGAAAGTATATTCTGTGACT
CTGAGGTGACTGACTAATAG
>locus0379
GCTATTCTGTACTGCAGAATCAGGCGATTTTTTGTGGTTCGGCGCAACACGGAAGCTGGCGTTCCGCCACGCAAAACG
AATATTGCCAATAAACTGCCAATTCGAATTTAGTTACGAGAAAAATCTGCAGCTCGCTCGGCTCTTATACGGCTCAAATC
CAATCGTCGACGGCCCTTTG
>locus0380
TTTTTTTTTGTACGAACAGCCAGCCAGGTACGGTGTATTGACTCTGCTTTTGCCATATTTTCTTGCACTTACTGGACA

CCCTCCCGGTGTGCCAAGATTTTAAATCGACAACCTCTGCAACCGTCCC GCCTGCAAGTTTCATTTCATCTCCATGACGGTGAG
TTTTCGATTACCCCTCACAT
>locus0381
TGGCCGAGGGGGCGGAGGAAGTGTCCGGGCGCCCGCTTGGCGTGTTTTCGCCTGCGAGGCCGTACTTGTAGTTCGGA
TGTTCTTGCATGTGTATGACCCCTCAGCCTCTCGGCCCTCTCGACGAAGGGCCGCTGTCTGAGGCGTCAGGCCCTCGCA
CTTTTTCTTGGAAACGCC
>locus0382
ACCAAGCAAAAGCTGATGACTGAGGCCCCATATTTTGTCTTCTCCGAGTATAGAACAACCTTCTTAATGGTACTAATAAA
CCCAAAGTGCCCTCTGGTAGATTTTGGGCATAAGATTGAGTAATAAAAACTATCGATATAACAAATTTTTTACTAGCCGA
AGGGCAAAAAATGAAGCGA
>locus0383
TTCTGTTTTACACGAAACGGGCGCATCGTCGTTTGTCTGCTTCTGTTTCAGTCCCCCTCCCAAGGTGCCACGATCCCT
TATCGCCCCAAACCCCAAGTTGGTGGCCAGTGATCCTGGCTGCTGGGCGACGCTTACCATCCAGGTAATTACGCGGT
GCCCGCCCACTCGGACGTAAGTACAGTAATGCCTATGTGCGCGCGCCCGCTGCCGGGACAGCCCCCACC CGCCTCGC
TCAACGGCCAA
>locus0384
CTAAATGGCTGCAGCATCAGAGCTTCCCTCCGACAGCGGCCCCCAATTAGGCGCGCGGGAGAATCCCAAATGATCG
CGAATAACCGCTCACTTATATCAATTACAGGGGCGCAGGCTTTATGAAGCGCATTCACGCTGGCGACGACTGCGAA
GCTCGAGCGCCCACTAAAC
>locus0385
CGGGAGCTTTTTTTTCAGACGATTGCGCTACTTTCCGGGGGCTCTTAGCGACACTCGTCTATGTACCTATTGCGCAAA
ACGGGAAAAAGAGCCTGACCCATGAATGAATGGTCGAAACGAGGGGATGAGATTCTGAAGAAAGAACATCAATTCAATT
CCTTATACGATTGCCATTAT
>locus0386
AAAGCGAGAGTGATGGTATTGCACGGGAAAGCCGGCGATAAGTCGTTAAAAACATGTAAAGCGTACCTAATCCAACATT
GGAAACACGTAGACCGCTTTTGCCCAAGTTGCGGTAGCGTATACCTGGCGAGGGGTTGCTGCTGTTGAGTCGTCGACT
GGGCGGCCAGACAGCTTGCG
>locus0387
CAGCCAGTAGCAACCGCACACCGCGCTCACCTTGCAATTTGCAGTTGTATATCTCCGAGGGATACCTTTTGTGTCGT
ATGTCCATCCAGAACTCAACACATTGCGTAAGTTAACATTTACCCAAATCTATATTTCGTACTTTCCGCATCATATT
TTGCGCAGAAGTTTTTGCGC
>locus0388
TGGAACGTGCCAGTCGAGCTGGCTAAAGCTCAGGCGGCGACGACAAGAGTCAGGAAGAGCTCGGTAGGATGCAACTG
GAGATCGAAGAGATGTACGAGAGACGACCGGCGCAGGCGAGGTACGCAAGGCACAGTCCGAGGCCGAGAGACTGAG
GCAGGAAGCCGAGAAATGCCA
>locus0389
AAGAAGGAGCAATGAAAGCCTATAGAAGCATCAGGAGGCTGGTAGTAAACCGTTTAAAAATTTATGATTGCAGGAGGGCGG
GGGGGAAGTGACAGACATGAAGCGCAAGTCCGGGGAGGCGAGTGCCTGTCAACCAGTTGCGCCCCAAGGAGCCTCCCCCTA
TGGTCATTCAGGGAGACTTC
>locus0390
TCAGAAGCGCGGGAATAATCAACGGTCGCACGCGCGCGCACCGCCTCTTCGCGTTGGGGTTACGCCCCGCGAGTTTGAC
GGCTTGCCCTCCGCGGGAGCCGCCCGCGCTTTTGACGAGAACTCAGGAGTCCGTTGGAAGCTGAGCCGAATGAGACGA
CCGATTGCTGATAGGGACAG
>locus0391
GGCGAGGAGAGAGGCCTCTATCAAAGTAGAGTACATTTAGCTTGGTTTATTTTTTACCTTTGGGCGGGGTCCAAATTTGT
AAAAATCAATACTTCTCCTAAATTTAGAATGCCTTGCTCCAAACATTGGCTTTTGCTTACCACCCCTGCATGTGCTCAC
TCTCGCTCTTCCCCGCGCT
>locus0392
GATGTTTTGTCATGCACCGCAATTTGAGTAAGGTAAGCCGACGATGTCCGCGAGCCATGACGAGCTGCCGTGTCCT
TGTAAGTGGTCCCGTGTGTCCAGAGGTGCGCTTCAAGGTCCAGACCCAAAGCACACAGCAAGGTTGGCACCCCTCGA
GAACACCATCAACGGCAGGG
>locus0393
CACTCTAGACCGTTGAACTAATGCCAGTTCCCTTGTTTTGCAAACTCTACGGCGATCAGGCAACAGGACTTCACGCT
GGATTTTTACTTCCGGCAATTTGAGAGGATCCGCGACTGGCTTTCAAAAGCGAGCCGCGTGCAGATACTCAGCGTCG
GCTCGAGTTTCATCAAGAAC
>locus0394
AAGCGTGTGTGTGTACCGTCTGCGGGGAAAAGGCTGCAGCGAAGCGCGTCGGAAAAGGCGAGCGGAAGTGCGAAGTGGA
AGAATTAATTCGATTTTCAACGTCAATGCCGCTGCAGCAGCAGCGGCGCAGCAGCAAGGGCTTTGGGAATACTCAGTCA
CGAGCGGAAATCCGAACCTCCGCGCTCCGAGGCACTCTGGAACGCAATTTAACTTTTAGTCGCTCGCGAGGAATCCACC
TCTCTCTCTC
>locus0395
GATGTGGAAGGTCCGGCCGAGTAGGCTGCCACTGCTTGTGCGCGTACTGGGGCAGTCCCTCAGGCCGTTGAACAGCT
GCTTGCTCTTCTCGAGCAGGTGGCAACTCGACGACGACTTTCGCGCTCGTGTCTGCTCATGCCGCCATCATGACCATG
ATGATCCTCGGCCGCTCCTC
>locus0396
GCCGGATATCGACGTCAGGAGAAGCGGCCCGGCGAGGTCTGGGCCCGCGGAGTTCTCCAGGCTCTGACTCAACTCCT
TACTCATGCACACACACCAAACTCCACCCTATGCTGACCACATATAGTTGGAGTATGCAATACAGTGTACCATCAAAA
TGCTTTTTATTTCTTAATT
>locus0397
GATAACCATTTTATATCATCTACAGTACGATTCAGAAAGTCATTAATAGCTCTGCAAAATCCAGAGGTCAATGCCTTC
TTCTTCGTGTTTTTGAATTGTATACCACTATTTTGACAGCATGTCTATACTATCTTGAGCATACATATCTTCCCTGCAGA
TTGACATTTTGAAGTATAG
>locus0398
TACACGCATACACAGCACTGGCAAAACAAGCGAGACAGGCTCGAGACCAGAAAGACAGGGCGCAGGAGCGGAGGAGTC
TATTTTCATGGTAAATTTGGCTAACTCGATTTCGCGCGCGGACCGCTACGCGTACAGGGTCACCGGAGCCGCTAAACTGG
CTATGGCCCCCCTTATTC
>locus0399
CTTCAAAGTAAGAAGGAATTAGAAGAAGGTGAAAATCGAGCACAGAGATGGCTCAACGCTACAAATATTACCAAGAGTT
GCGTGGGTATGTCACTGACTGTTGGTAGAGTGTCTTAATGAGAAGGTGGGTTACAAATTAGAAAAAATCAAAAACGATGT
TAATCGAGAACTCAAAATT
>locus0400
TCGTTGGTTAGGTGATCCGGAAGCACGCGTTTGCTCACTTCCTCTTCCGGCATACCGTCGAACCTGTGCTGCTTCTCCT
CTCTTTGTACGCTTTTGCCCGTTTCTTCGCGCTCGGCAAGTTTCGGCCCTGTCAACAGTCACATGCTCGTCAGTCGACGCTT
CTCTCGTGCAGCATAGGG
>locus0401
CACTAACGTTGAGTCGTTACGAATGTCTGCGTATGGTGCCGCTGCCAGACTCGGGGACTCGTCAAGAAATACAATAT
GGCTTGCTCTTTGTAGCGCTCTCGATGGCCTCATCGGGGCGGACTTCGACCCAAGGACCCGGGCTTCTCCGACGAGGA
GCTCAAGCCCCAGCCCCATGA
>locus0402
TGAACCGGAGATGCTGTTAGGCGCGATTGACCGTACTGCGCGTTTCGGGTGCTGTTGCAACAGGAGACGTTCTCTTCGGCC
ATAGTCGTCGTCGTGCGGCATCCTGGTGGCCGGGGCCCACTGTGAGGACATCTGTAAGAAAGAAAAACGAGAGCTTTGC
TTAGTGAACGAACATAATC
>locus0403
GGCCACGCTACATTCTCTTTGTTTTCTCTTCTGTATTACAGAGTGCATGATGGACGACGGGAGCGCCAGTGCCATCTT
CTGGAAGTAGGAGGCACCGGTGGCGGCCGCTGCGAAGGTAACCTCGACTTCAGGAGATAGCTAGAGAGTCGCTTCTCTAT
ATCAATATCTTACCGTCCCA
>locus0404
AAAAGTGAGAAGAGAGAAAAAGCCTGTTCTCTATAGTCATGTCAATGTGATTCAATTTGCTGGGTTGCTTCTACCTTGCC
ACCTACAAATTTCCAGCTTCGCCTGAGGAACACAAGAGCACACATTAGTACGGCAGGTAGGTAAGTCAAGTCAATCA
ATGGCGAAATACAAAAGC
>locus0405
GAGAAAGTGAAAGCGAGAGCAAAAAAGGCGGGGTGGAGGCGGTAACCTACGCTGCGAGCCTTGTAGAAGGGTAGCCATA
AAAGTTTATGCTCTCCATATGTTGTAATATAGTTTCGACCAAGAGCGGGAGAGAGAGAGAGAGAGGCTTGGGGATCG

GTAAAAATATCGGGCAATAAGTATGGATTGTTATTAAACCGGTGCGCGGTGTGTGTCCGCCGCTGCGCTTCTGAATCCAT
TACCTCGCATGGCGGCTGAAATACCGCGCATATATCCGAGCGCGCAGCTGTGTATACGTGTATACATCGCGCGCGCA
CCGCTGCTGCTACTGCCGTGCGCG
>locus0406
CACGCCAACGAGAAGCCCTACGCGTGCGCCTATTGCGAGCGCACCTTCAGGCAGCGCGCATCCTCAACCAGCATCTGCG
CATCCACTCGGGTGAGAAGCCATACCAATGTCCGGAGTGCGGAAACACTTCCGTGAGAAGCGATCCTGAATCAGCACG
TCCGCACACACCAAGGCGAGCATTTCTCTCTGCTTAACCCAGACTCCCCGAGGAGACCGAGGCCGACAGCGCCGATACT
ACTACTGC
>locus0407
TCATCATTTATCTCGCGAGCGCGCGGAGATCGGGCCCGCGCATACAGTGGGACGTTTAAATGGCCGAACCATGTTGGAA
TTAACCAAAACAAAGACGAAGCATCAATTAGCGCACTTTTCTTCCACTTGACTTCGCCTCGCTCCTTCTTCTCTGCA
GTTTCTCTCGCTCGCTTT
>locus0408
AGGCATGACATCGGTTTGAAGGTTGTACACACACAGTATACGTACGCTAACTCGGTATCTCCAAGATCTATCTGAAT
AATAACGTGTACGACAACATGTCAAATTATACGGAACCCATGAAACACTGGTTATACCCAGTCTCGGATTTCAAAGCGT
GCGTGTCTGACGCTGTATGT
>locus0409
GCAGCGCGTCTGGGTGTTATACATTGAGTACATAAATGTATGTAACTTTGCAGCGCGGTAGCTTCGCGTTGGAGTGGGCG
TCGGCCATCTTGTCCGGTGGGTATTGACCGAGCGCGCTATACATATATACATCGTGTGTCGCGCGGACATACGTATAT
ATACCGCAGAGATCGCGAG
>locus0410
AGAGACAATGCAAGAGAGGCGGAATGCCCCGAGACGTATACAGATATAGATAGACACGCTCGAGATCGAGGCATTACG
GATGTATGGGCCAATTTGTAAAGCAATCAAATTATGCTCGATCCGCGGAGGAGGCTGCAATATTGTATTTTACCAGCT
TATATTTCCCTCTGCCACTAC
>locus0411
GCTGGGAATATAATAAAACAGATGCTTTCGACGTGGGTAAATGAAACCTTCAAAGCGCAGGGAATAGTAAGCAAGA
TGCCTTGAAACAGTACAAAGGTGGTTAAACAAAAAATTTGGTCAAAGGCGAGGCACTTTTGTCTAAATAAGTAAA
GCTATTTTCTAATACTTAG
>locus0412
CAAGCAGGCTCTGGTTCAGCTCCTGTCACTCCTCAGGAAAATTTGTCTCCTGCCGTTCCGACTCCCAGTATCTCCAGGAA
CCCTCTCAGAGGATCTAAATGTAACTGCTTTCATGTTTCATAGCATCTTTAAACGAAATTTAAACACCACACAAACGC
TTCTCTGTCACTGTCTCC
>locus0413
CTGATTAAGACATGTTGCCGAGAGAGCGGCGCCACCGCTTAAATGCAGATATGTGGAGTTTGTCTTCTGAATGGCATTCA
TTTTAATGGAATTTGTAATTAATGAGCTATACGCCCCGCGAAAGTCTTCTCTCTCTCTTTACTGGGCTCTGCT
GTACCCCTTACCCTTTGTGA
>locus0414
ATGATGGTTTATGAATACCCCGTAACGAATGCGGCGTCGCCCCCACAAGGTATAATGCGAACTATGACGCGTGATTT
TCTATGCTGAAATTTGTTTACGCTATAAACGCACGTGCGTGCATGGGACCTGCAGCAGCGACAGTTGGCGCGTAAAA
GTATAATGACCATTTTGCCG
>locus0415
TTAAATGCCTCATACTAACTGGCTCCCGGTAATCCTCTCTACTCTCTTCTCCTCGTGATGCTCTAGTCTAATTAAT
ATCTATCGTTTAAATTAAGATGATTTACCGCAACTCTTCTCCTCTACAGCGCGGCCAATCAATGCAGGAATTATCC
TCATTAGGTCGAGTAGCTAC
>locus0416
TCGGCCAAAAGTTTGTCCGGCTAGTCCACAATGCCTCCACTCCTTGCAGGAGGAGGAGGTCTCTCGAGACTTCCATT
TTGACTCTGGGATTAGGCGTACTCCGCCCCCGTAGCCCGGCTGAGAAAGTTTGTGCGCGCAGCTGTATGTGTACAC
GTCTGTGTGAGGATACCC
>locus0417
GTGCCCTTGAACCTTTAATGTTTCTCTCGTAAGCAAACTAATGTGATTGTTTTTCAAAGGGAAGTGATTTTTTGA
CTTCCAGGAGCAGGTGGGAACGACATTTTTTGAGCCCGACGTACGGGTACACCAACCTCTACGATTTTGTGGTGCATC
AGACATAAACAAATTTTGAACATGCTTGCATATTTTATATGAATGTGTTTTTGAATACTTTACAGGAACGGATCTCGCT
CTCTCTC
>locus0418
GGTCTGCGGGGTGCGGATGCGTGGATTTTGAAGCAGCTCCGAAGGCCAGCCGACGCAATGCGTCGACGCTGCTGACG
CAACGCGCTGGATGCGTCTCACTTTAAGCACGTGAGTGTGTTTATATACACTTCTCCTTCTTTTCCATTGTTTTCG
CTCTACTATTTTCTCGAGCG
>locus0419
AAAAACGAAAAAAGATTAATAAAGACGATAAACTTCTAACCTGGAATGGGAGCATAGGTTTAGATTAGTGTGATACA
AGGTACGACAAAGCAATAATTTAGTGATTGTACGATATTTGATTAGTGATTAGCTAAAGTTGTATGGTAATACTTTCCG
AATCTATAGATATTACTCG
>locus0420
AAGCGCGCGGAACGAGCGCCTTATCTGCGCGCGCCGAGATTGACTTCTTCTATCCATTACGCCGCTCAAATGAGTTC
CTTTGATACTGTTGTGTGATCGAGTGTGCTGAATGCCGAAGGCATAGAGCGCCGAGGGGATGACTGGATTTTCTTCG
GGGAATTTTCGCGACGCGC
>locus0421
TGCAGAGTCCCGCTGAAGACCTTAATGTTGGGCATTCTGCTCTGTAGTACCCGCTACTGCGAGGCTTCTCCAAGTTGC
GCGTAACAACTCTTGGCACCGCACTGGCTGCGAGACGGGCATCACTGGCTCAGCGCGCAGCACACATACACATCGCA
CGACACGACGAGTAGCCAG
>locus0422
TTCACTGGAGGAGGAGACAAGAGAGCGAGTGGCATGCTTTTACCATCAAAGCTGGTTTGTATAGGGCTTCGACTATCAC
AGCCAGCTTTGATGAGCAAAATTTGTGTCGCGCATCGTGTGTTTCCCGTCTTTCCGCTGCTGATGGTCACCGGCCCGG
AGAGCAGAGACATGGAACCTT
>locus0423
TCATCGGCGCTGTATACCCAGAAACCTCTCCGGCGCTCTCTCGCACCTATTGTGCGACCCCGCTAGCATAATGCATCT
TAAACGCGCGCCTCAAAGATCGACGCCTCTCTCCCTGCAGCTCGCTTCGGAATTTCTCAATATAAATTAGATTCCCG
AATGAGTATCCGGTGTCTGCC
>locus0424
AGAGAGAGAGAGAGAGAGAGAGAGAGAGGGCGAGGGCAATAAATAAGAGGGAGGGCAGTCAGCGTAGCTAATGTCTC
GAATCATTAAGAAAAACATGAAATCTAAGACGCGCTTCGCGGATTACATTGGGAAGCGGTATACATGATACGATCTCTC
TAGCTTTCTTGACTGCTTCT
>locus0425
AGATCGCGCGCGCGCGCTGCTGCTGCTGCTGCTGCGAGGCGGTAGACCGCTTGCAGCGGACGACGAACGTATGAAA
ACAAATACGAGGCGCGCTGTTTGTGTGCGCGCATCTTCTTCTCTCTCTCTCTCGCTTCTTCTCTGCTGCTG
TGCTGCAGAGGTGCACGTAA
>locus0426
TCAATGGAGGTGGCGCGCTCGCTGCTAGCGTTTCGAGATTCTGCTGTTCCCGAGAATTGCAAGGATGGGGAAATGATGCG
CAGATTGGCCGATCATCTCAAAACACACACCGCCCGGAATCGCAGCGCGCACCACTTCCATCCCACCCCTTAAT
GCATGCTGCTGCTCTCTCT
>locus0427
CAATGAGGAGAAAAAACAATGCCACATGAGGAGTGATCATACTTCTGAGAGTACCGTCCGCGCGATTTCTGATTG
TTTACATGCGAGGGCATTTGCCGGATGCCGCTTACCTTACGGCTTACATTCCCGCAGGAGACTCCACCTCCAACGCGATA
TTGCGCGGCTCACTGCTC
>locus0428
TAGAGACAGAACAGACTGATGAGGAGAGAGAAAGGGAACGGTGGTACCTGAAAGACGGTTACAAGTGCACGAGCATGTC
GTTGAATGTTTGGCATCACAGCGACACAAATGGGTGGCGGAGACCACTCGGCACAGGTGCAGGGCTGACTCCGTCGG
CCCACATGCAAACTTACCCCCGAACAGGTACATTCCAAGGATACGCAACCGAGACACAAATCCCCAGGCGCTAAAG
TACACA
>locus0429
AGAGAGGAGAGAGAGAGAGAGCAAGCCCTTTTTTCCGGGATACGATCTGCCGGCGCAGCAAGTGTCTCATGAG
TTTTCAATGAGATTAGCGGCCATCTGTGCCGCGCAACCTCGGTAGTCATCATCGAGCCTCGAACCAATGCGCGAGAG
CCAGTCAACCTGCTCGAGCT
>locus0430

CTTGTCAAATTAATCACGGATGACCAATCCATCAGGAGGCATTCCCTAGTGTACGCACACACACACACACAGCTCCCGCT
CTCGAGATCGCGAGAGTAGA
>locus0456
CTAAACGAGAATATTTGTTTTTACTGCTGATCATGTTGGCAGTATGGGTGCACGTGCGAGTTTGCTTCTGATAAACAGT
ATCGCCTACAGGCACAACCTTGCTCATGTTGTAAGTAGAATAGAGTTTTTTTTTATTTTACTCCCTTAGCACTTTTATTT
TTCTTTTTAATATTCTCAGA
>locus0457
CAGTCTATAGCAGTGCAGCGCCTCGGCGTCTACACGCGTCTTCACGCGTGCGGATCACTGTCCGAGCCTCCGTGATTAA
AAACCGGAATAAGTTGTTTCAATGTCCACTATATAAAACGGGAGCCAATAGTTGTTAAGACGGCGGGTCTCTGTGTCTTC
TTCTTTTGCCCAATCACTCT
>locus0458
CGCCAAGAACCGCGCTCCAGTGCACATCTGCGGCAAGGCTTCGCCACCGAGTCCAGCCTGAGGACCCACACGTGCA
AGGTCACTCATGTATGTACCAATCCGACGTCATGATTTTTTATTTTTTAACATCATTAAGCTCTGTGTGTACATATAC
ATATATGCGACGACGAGCTC
>locus0459
GAACGACGTGCGAATAGGGCTTGCCCCCACTCGAGCACACGCTCGCCCTCGCTTCCTCTTTGCAACAGTCATTTGTTAT
CGGCCATTTTATTTTAAATGATTTCCATGCATGCGTGAAACGCTCCGCCGCACACGGCTCTGCGCCCGCTGTGCGTGC
GTGTGTGGCGCAATGTACCT
>locus0460
TACGAGAAATTCGAGACTAATTTCTCCGGCGCGCTTTCAGCGGTAGCTCCGCTCCGAGGCAAGCGGCGTCTGTTAAT
TCTGACGTTAATGTCAAACCTGAAGTTTCTAGAAATTTCTGCCAACCCCTCGGCTCTTAACCTCATATCCCGGCTC
TGCTGCTGCTGCTGCTGCTG
>locus0461
GAGATCAACGAAGACGAAGAAGAAGAGAGAGCGAAGCGCGCAAGGACTAAAGCCATAAGTGGAGGTTTAGAGGGAT
TTCATTAAATCATATGGATTGGGATAATGTATGTTATTGAGCCGAAGCGTTCAAATCGCGCTCTATAAGTTGTAATAAG
TCCAATTTTAGGGCCCGGTACAGAGTATAAGAGAGACCGAGAGAGATGTGCAGTGATTCTCCACCTGCGGCTCATCGCA
G
>locus0462
TATACGACGCGCGCAACGCTCGTTAATGCGAACGAGTGCAAATGAGGCCCGCGCGTTTCCACTGACTGATGACGTCATT
ACTGTCAGGCTTAATGAAATTTCCGGAAGTTACCGCGCGCTGCGGCTGCGGCGCTCCTTCTCGCTTGCTCTCTCTG
GTCTCTAGTCTTTAGTCTCT
>locus0463
GAGCAGATCGCGCAGCGCGCGCGCTCCTGGGTAGCGGGGCGGGGCGAGACAGCGCGCGGCGAGAAATCCACGATG
TTAATTTTAACTTAATTAAGGCTTAATGTAGAGAAAACATTATAGTCCGCGCGCGGGGCCCGAGCGGCTGGCGACAGA
CTGCTCTCTGTTATTCTCGG
>locus0464
GTGCGCGAGAGAGGAGAGATAAAATGAATGAGAGAAAAGATACGCGCGGGAGAGATGGCAACCTAATGGCGGCAGCAA
TTAACACAAACACCGCTCATTAATTCGCGGAGAGTCTTGCTTTCTCTCCCTTATCTGCGCTCTCTCTCACACACAC
ACACAACCCCCAACGTACAA
>locus0465
CGCGGAGCGGAAGGCTCGCTCGTCGGAAGCTAAAGTGTTAAGCGGCTTTAATAGCGCGCAGATCACTACGCAGTAAAC
GACTGACGAGCAGACAGAAGATTAAAGTTGGCCCCGTTAACTCGATCTAATTGTCTCCCTTCCCTCCTTCCCCCTCTCT
CTCTCACTCTATACATAGAT
>locus0466
CGTCGCGCGCGCGCGCAGCGCGGCTCCCCTCGAGCTACTGCTATATACTACTGCGCGCGCGCGTTTCTTCAATTCAATTG
AATTCTATTCCAGCGTGCAAGTTGATATCATTGAGTCAACACTTAAATCCTCATTTGCTGTTTCTCTCGCTTATTGTTTCA
CCCTTCGCGCGCGCGCGCG
>locus0467
CTCAGCAGCACTACTTTCTTCACGTTGCAAGTGCATCGTCCAAGGGACAGTCTTCTCTGTTGAGCTCGGGCTTCGACA
ACTTTCAGGGATTCGTCACTGGGCTTCTGCTGCTGGGCATCGCGGCAATTCGCCCTCTATTGGAGAACTTTATAAAG
TAAGTTTCTCTCTCTCTCT
>locus0468
CCCAGGCCCTCGCGCGGCCCTTTGTTTCCCCCTGCGCTGCGTGTGGTTCGACCCCGAGACTCCTGCGGCAAAATAACGC
GACGCAAAAGGATGATACATCCGGGCGCACGAGGCTCGAGGTAAACAATCCCTACAGATCCTCCTCTGCTCCATCTCC
GATCAGTGGCTGCTGCTTC
>locus0469
TAGACGCGAAGGCGCGGCTCCTCGTCTGCCAAAAGGGCGACGACGGCGAGCGCCGCTAGGCTACTAATTAATTACTG
TGATTATCAGAAAAGTTGCTAATTAGAAAAGTTTCGCGCTGAAAATTAATAATGGCGAGGTGAGTGACGCCGCCCGGAGA
GCGAGGAGCGCGCCTCCA
>locus0470
ATAATTCAGCGACGGCAGCAGCAGCACAACGTGGCTCTATATAACGCGCGCAGAGCCGCTGCAGCCGACGCTAAACGCT
TTAATCAATGTATCGGGCAATTTCCGATGGCGGCTTCTCACCTCTCCCCGAAGCTTATCGCGCGCGCGCGCAGC
AGCTCCTAGCAGGAAATTGC
>locus0471
CAGAGAGGAGAGAAAGAGAGGAGGAGGGGTGAACCGTGTCGAGCGCTGCAGACTGGTCAGACTAGCTTCGGGGTCAGTT
TATCGCAACAAATGGGTACGCTTGTTTCGGCGCGGTATTTACCGGAATTTATTGTTTATTATTCCTGGGCGGTGCGT
CGCGGCTCCGAGAGCGAGCG
>locus0472
CAAACCTAAGAGAGTGTGTACAGGCTTTTTCGTTTGGATTCTGAGAATGAAGCGGCTTACCTGGGTGGACATCATCTGC
GAGTGTGGGGGGGGGGTGGCTGGGGGTGCTGGGAAGATGGCTGTGATGAGGGGTGTGGGCGGAGATGGTCGCATTGT
CGAGTTGTTCTGCAACAAGCAACGCAAAACGCCGACATGTAGCAACACTGCGATTACAGGCAATAAACAATAAAAC
A
>locus0473
AGGCTCACGTACGTGCATATCTCCTCTCTCTCTCTCGCTCGCTCGCTCGCTCAGCAGACACCGGAGAGGAGCGTA
ACCTTTCTTGACCCGCATACTGAACGGCTCTGCGCTGCGGCTCCAACCGTGGGAACACTACTCGCCGGCGACTCATCCC
CCTCTCTCATCCCCCTCTC
>locus0474
CGCCGACATTGTTCCCGGATGCGCGCGCGCGCGCGGCTTTTTCGCGGCTTAATTCCAACTCTCTGTAATAAATTA
GCGGCCGATCAGGTGGCATTTGTCTCCTCCGTAATTTATCTCCTCCTCCGCTACTTTCTTCAGCGGCGCAGCAGCAGC
TTCGGAGTGTCTCTGCTCT
>locus0475
TATTTGAATTCTGTATAACAAAACATTAGACATATGTACCTGGGCAATGATTGCTTGTAGCTAGATGTGGTCTCGTGTT
TCTGTTACACTATCTCTGCAAAAAGGATATCATGTGAACAGAAATATAGGTTAAAAAAAATTTATGAGAAAGTAGGGT
TGTGAATTTTTTCTACAGTG
>locus0476
TGAGCCCGCGCGCCGAGCGGCCACGCCACCCGCTGAGCCACCCGAGCTCGTACTGCCGTTTCTTTTCTTCTCCAA
GTTAACTTGCAGTAGAGCGGCTCACCGGTTTCGGCTGCTGCAACACACACAAGTCAACGGCTCGATTAGTTAGTCTTT
CTCGAGCTTTGTTTGTAC
>locus0477
TAAAAGATTGGTGTCTCTCCCTCGGCGACCGAACGAAGCCCGCCTCCGAGTGAGCGAGCGAGGCTGAGGACAAAAAT
CAATATGAACGTGTAGCCATTCTCTTTAATCTGCCCCGCGCGCACCGAGTACGAGAGACTCGCGTCGCGTCTACCTGCG
CCTCTCCCCCCCCCTCT
>locus0478
CGTCATTACAACAATATCATATAATTTGGTAGTAATATAATAGTAGTTTTTGAATATATAACGAACCCGAACTGAGA
GACTCACAAGCAGGAAGAGAGGGGTGTTTTCTTCTTTTAGAGTTGACTGATCGACGTTAAACATTGCGCATCTGGCAGT
CTGCAATGCAAAACATAATT
>locus0479
TCCACCCCTCAGCTAGCAGCAGCAGCCTCTCGCTGAGCGTGCTACACTCGGTCGCATTGGATATATACTTAATGAA
GCGTAATAATTGAGTAATGTGCTCCAGGCGTTCGATCGCGCGCATTCCTATTGGTCAGAATTAACTATTCCGAGCG
ATTAGCGAGCAGCCTCT
>locus0480
GCGAGTGAGCGAGGGGAAGGCGAGCGCAACACGCCCGCGCTTCGACACGATTATACGTTTCAATACGAATGCATACG
AGCACGTTAGATTGACGTTAGTGCCCTGTAATAAAATATTGTAATGCTGGCTACTTCTGTGCGAGCTGCGGCGCGCT

CGCGCACTCGGCATAATATC
>locus0481
CCGAGCTTGGGGTTCTTCTCGCAGAACGGCGGCGAGGGCTCGAGGTAGACGAGGTCCTTGACGCCCGGGGGCTTGTGCTC
CGGGTTGTACGGCTTCAGCTGGAAGTTGTAGCGGTGCCGCCGGGAGAGGCCCTCGCGGTGCGCGTGACCCGAGTTGCTCG
CCGAGTTGCTCGTGATGGCG
>locus0482
GGATGCCCTCCGATTGGCCGCGCTCTTTTCGCTCTGAAAGTCCTGGATATCAAGATCGTTTCGTATAAACTATCGTA
TCGTTTAAATACGCACTGAAAGGTGAGGCGATGCATCAGTCGAGATACGCGGCGCGGTGGCAGGAGCGAGCCTCGCTG
TATGCGAAGAAGAAGCAGGA
>locus0483
GTTAAGTAATGGACTCTACGAAGCAGATGGTATGAGGAAAGGACAGAAGCGAGTAAAAAAGATTAAACAGCCTGGTGC
GAAACTGACCGTAGTGGGACATGTAACGTAGTTTACACATGCTATTGAGTAGGAACACATACGGGTCCATATACTCCA
GGTAAAAATTATGAATAGGCTCCTGTAACCAAACGTATCGCGCCCCATTATTGTTGTTTACATGCAATCAACCA
>locus0484
GAAAGCTTTTTCGCGGGAGGTGGGGGACGGATGCGCGTACAGAGGAGGAGGAGTGGGGCGAACGCGCGCTCTCTCGTC
ACTGTCTATCCGAGCAGACAGCGTGGAGCTCGTCTCGGGCGCGAAGTGAGTGCCTCTAATGAGGCAATAAATAAGTCG
AGGCCGGCTTAACCGGCTC
>locus0485
CGGCACAGGGGTCCCCGTGTAATAATATACCGTAGCGAGAGCGGGCTCCTGAGCTTCGGGCTCCCTCTCTCTTCCA
CGCTCATAAAAAACAGCTATATTCTAATTAGCCGAGCCGCTCTATCTCTCTATCTCTATCTCCTATCCGCGCGCGT
TCGAGCGCAGCAGCGTGGCT
>locus0486
AGAGGTATTATGATTGTCTATAGTTTAAACGATGGCTTACTTTAGGTAGCCTATCATTGCTATTTAAACAGACTTAATTA
ATGTATTGCAAAATGAATTAATAAGTGAAGCGAAGCGTGTAAACGAATAGAAGACTCTTATTACTCTCCCTCCACTC
TCGTTCCCATCTTTGTTCTGA
>locus0487
CGAGAATTCTCTTTTTTCCGTTTTCGTTTTTATTGTCCCTCTCGGACGAAGATTTCGGCACGCTCGGGCATAGCTCAAAAATC
CGACTTGATTAAATTTTGTATCAAACTACTTCGAGCTAAATAAACATGACGACGGTGTGGCGCATCGAGGGGTGAGAGT
ACGTGCGTGCACTTTTCAAC
>locus0488
ACTCTGCTCCGCTCGCGCACATCGATAGCTGCAGCAGCGGACGAGCAGCGGAGGGCGAGGGAGAGATATCGTTAGC
ATGCTTGTCTAATACGGACTCGATAATAATACCTGATTGATAGGACGAACGTATACCTCGAGCGAGAGAGTAGTCGGC
TCGTCCCTCTTCACTGCTCT
>locus0489
CCCCGCAGCCCGCGTGCAGGCCGAGGAGAGAGGGGGGGGGGGCGAGAGACGAGGACGCGAATATAATTGTA
TCTAAATTATAATATACAAATAATAACAGCTATAACGGCAGTCTGACGCCAGTACAGCCGGCTGGAAAGTTTTTCAATC
GCTCGCTTGCCAAGGCTGCC
>locus0490
AGTTTCTCAGCATTTTCAGGATTGTTTGTGTAGACAGAATTACTTATGTTAGTAAGTAAGATTAGGGTTGGGGCTAGGA
CAGGTGCTGCGCGCCCGCGGATACGACAGTCATCGAGCCAGCTACTTCCCCCATCATATCTACGGGCAACAACA
ACAAGTATGGTTAGTTTGT
>locus0491
GAGCCCCACACATACATACAGTATATAGAAAGCGGAGGACGAGCTGGCGTGCAGCCGGCAGCAGTTGCTATCTTAG
CCACCACAAGCAGTGATAACATTTTCCCTCCTGGAATAGAAGCTAGCAACCTCCCGCGCGCGGCGCAGCAGGTCGATA
TCCGATAAAGCTGACGCGT
>locus0492
GAAAGAGAGGAGGGTGGGAGGGAGAACGGGTTTCAGCGGCTACCGGCTCCGCTCGCTCTCTGCTACTGCAATATGTA
TAATGACGCGCCCTGAAAGGAATGCATAATGAGTTCCCTCTCTCGCGCTGACACCTACGCGCTCTGCTCAGCTCTCTCT
CTCTCTCTCTCTAATAGC
>locus0493
GCGGACACAAAGGGGGCGGACCGTGCAGTAGCGGTGCGAGGAGGTGAATCGAGAGTGCAGAGGGGGTTGGCGATTG
GCATTTAATTAGCGCGGATGACCGCGCCACCGCGCTCCGATCAATACGGCGGCCCGGAGGCAAGTGTGAGGT
GGCAGCGCACACAGCAGCG
>locus0494
CTGCTGCTGCGCGCGCGGCGAGCCGAGTAAATTACAGGCTCGGCGCGCGGGCTATTTTGGTGTGTTTGTGTTT
TCAACGCGCCGAAAGGAATGAGCGAGCAACGCGTCACGCCAGCCGAACCTGCTAATTTCTATTATATTTATGGCT
ATTAATTTCTTTGCTCTTACGCGAGCAGCTCCTTCTTGTGCTGCTCTGCTCTCACTTCCATCCCGCAGCTCC
>locus0495
GAGAGAAAGGAGAGAGAGAGAGAGAGAGAGGGGCGACGAGAGGACGAGCTGCCGATGCGCTCGCTACTCGTTTATCC
AATCGATCGAGCTGAAAAATTCCAACCTTGATTAGATCGCAAGGCGACTTGAGTTTTCATCAAAAAAGAACCCGCGC
TACCTCCGCCCTTCTCAC
>locus0496
GCAGTAGTACTCGATAGAGAAATGAGAGCGAGACGTGCGGCGAGGAGAGCGAAGGCAACGCCACTAATTAGTGCCAGA
GTAATTAGTAATTTTAAATTAAGTGACTGCCGTTTACGCGCTCTGACGCGAGGGGAGGAGTGACACGTGTATATGTA
TACAGTACGGGGCGGCTTCG
>locus0497
ATACAGCGATTACGTTAAACGGGAACGGTATATCATTTATCCCGTTCGCGCGAGATCGCGAGATTTCCGGCTTCAACGA
CGGTGCGATCAAGGACACTTGCTCCCTACGCTTTTCTGCACCATCCACTTTAGTCGAATGAAAAATCGACCCCAACCTC
TCCCTCTCTTACTCGCGC
>locus0498
CAGCGGTGAGGATGCGCTCGGCGCGCCCTTCATGACGAGCAGGTGACGCGGTCGTTGGGGTCGTGCGACTCGTGGAT
CGAGACCTGGTACTTGTGTGTCGAGTTGAAGGCGACCTCGCAGACCTTCTTGTGCGCCTTCGAGTGCCATGACGTGCG
CAGGGCGAGCTCCATGCAC
>locus0499
GCAAGCCTCTCTCTCTCATCTCCAGATGTGATCGTCTCGATTCTCTCTCATCGTCGTTAGCGCCCTCAGAAAA
CTGAGATACCCAGCTGTGTTCAACCGCTTCTTTACCTACCGAGTGAAACGAGAGTGGCTCCCTGTTCTCCGAGCAGA
GTCTCTCTCCGAGATTAG
>locus0500
GTGCAGAGCTAGGTGTACGCGGAGGAGAGGGCGAGACAGAGAGCGCGCGAAGGGTGTAACACTGCGAGGGCAAGACAGC
TCGCTTAAATATGACAGGATGGCGCGCGCGTTCGCAATGCCGCTCAAAGCATTTGAGCGTGTGTAGCGCGAGAGCAA
AGGGTGCACTAAGTGGGA
>locus0501
CTCTTTCTCTCTACCCTTATTTTGGATCCGCCAGCGCGGCCATCCCTTTGGCGCGCGTCCGCCATCAATCAAGCTTG
TCAATTTGTAATGGCGATTCTCTGTGTCATCTCGCGGGGCCGAGCGGCTCTATCTCCCTCTCTCCCGAGCTCTCCCTG
CGCTAGAGGGCTACTGTTCC
>locus0502
GGCAAGAGAGCGAATGAGAATTCTGGGGCCGAGAGCTGCGAGTCGATATCTAATTAGCGGGGCTGATCGGTAATTA
CTACGATTAAATCAATCCGTTTCCATTTGTGCGCCGAGCGAGAGCGAATGAGAGCACAGTTTCAAGCTCGGAGCGGGAGC
GAGAGAGACGCGCAGACTCC
>locus0503
TTCCATTCTCTCTTTTCTCTCGCGCGCGCACACGCGCACAGTACACGCTGCACGCGCGTAATATTCTACGCG
TTGAATATATTAATGCGCCGAGAGATATGTAAGCGGTACACGCGACTAGGAGAGTGAATATGAGTCTCTTTGTCTCACTC
GCTCTTCCCCCTTTCTCGC
>locus0504
GGGGAAGCAAGGGGGGAAGCAGCCTAGAGAAGATAAGTAGAGCGAGTGGGGCTGCGGAAGGAGAGCAGGTGCAAACTT
GGCTGTGAGGAAGTCGCTTACAGCTCGAGGACAAAGCCTCCCCGAGTGTGTGTGTGTCGCGCGGGCGCCGAGA
AGCGTGAGATAGATATAGAT
>locus0505
TAAATAAATTAACAACGATTATGCCCACTGTCAAGTGTATTGATGCGAGTGTGTATTCTGTTTTTTTCTATCAGTGGT
GTAGGCCATATTGCGCAGTTGTATCCCCGAGATTATTGACCTGATCGGGACGCGAAACAGTATGGCGGCACTTTGAAGA
ACGAGCGAGGTGCGAGGTGAGCACAAAAAGCCAAATAGCTATCCAGAGTTTATATACATATGATCCTCTGTCTA
>locus0506
CGTTAGTCGCGTGTGATTGCGAGTCGGTCGGCGGGCCTTTGAGTGTGCGTTTTTAACAGCCTTCGTTGCATAAATTAA

TTCGGAAAAATATTGGAAAAATTTCACTGGGATTCTGTTCATAGCTTACC GTTTAAAAATGCTCTCGTATTCGATCCTCTCGG
ATGTTTTCCGGCAGATTTCACCCACAGGTGACGTGTCTCTTAACCATTTTGCTCCGAACCTCTCATTTGGGATCGGA
TGTTGTGTTATCGTTTGGCGGCACGTACACACGACACAACTCAGCAATCCCGGTGTTCGGTGCAG
>locus0584
AACGCGGAATGAAACGGCAGACTGGCGCTGATGAAATTCATATTTAGATCCAATGCGCTCTCTCCGTACCTCGTTTA
GAATACACTGCTATTTATAGTCGAAATTTTCTCCTTCGGAACGATCTTTCTCTCTCATCTCTCCCTTCTGCTTTTTTC
TCCTTCTTGCTATACTGCCG
>locus0585
ACGCGAGCGATTTCGCTGCTGGAGGAAAGAAAAAGCGCGCGCAGGACAGAGTGAAGGGGCGGCTGCTGCTGCACACAA
CTTGATAATAATAAACTGAAAAAGGAGCAAAAGACGTTATTTAAAAAGGAAATGCAGAGCGTCCCGCATTTTATGTCT
TCGCCAGAACTTTTCATCTC
>locus0586
CGCGAGCAGCCGAGCCGTATATATATACGCGCGTGAGCGCGGTATCCAGAGTTCGGCTGCCGAGCGCCGTAAAAACG
TCAATTAAGTGTTTTATTTAGTCTTCGTTAAAAAGTTGAAATGGAATTTTGATTTATGACAGAGCGCGCGCGCGCGG
AGAGAGAGAGAGAGAGAGAG
>locus0587
GTCGCGGTATAGTGC GCGCGCGCGCGCGGCTCTTGCCATTATACTCAGAGTCCGCGCGCTCGCTCGCGGTGCGGTGG
TTTCAAGGACAAGGCAAGGTTGACACGCGCGCGTCTCGCGACCGAGAGACGGCTGGTGGGGGAGCCACTCGAGTTCTC
TGCTCCGTGCGAGCGTGGAG
>locus0588
GTATGTGTGTGCGCGCGCGCGGAGTGAAGTAGCTCTGGCTGCTGATTAGTTTGAATGACCGAGGCGCGAAAAACAC
ATTAACAACTTGAATGAGTACAGATGAAATTTGGTGCCTGGGAATCAAGTACCGCGGAGTAAATGGTCTGGCGGTGCGG
AGGTGCTTCTCGTGGGCTT
>locus0589
TTTTTTTTCGCGTTCGCTGCCGCGCGCGCACTCTCCGTGCTCGCTCGCTCGCTCGCGTTTTTTTTTCAATTATAATTCTTT
TTCGTATCCAATCAATCATTTAGTATTTCCATTGTCTCTCGCATTTTCATTGGCGCTCGGCGCTTCTCTCTCTTC
GCCGCTCCCGATATATAGC
>locus0590
ACAAGAAAGAGAGAGAGAGGCGGTGCGTGACTCGATATACGAGGCCGAGTCAACATATATCCCGTCAGATTTTTAAA
ATGCCCTGATTTACAATGACCATTTGACTGTCCCGTCGGATATCTATGTCTCGACCGTGTCTGTATAAGCTCTTTCTACT
GCTCCCTATAACCTACCTGT
>locus0591
CCGGTCTCTCTCTCTCCGCGCCACGCCACGCCATCGACGAACCCCTCAACCTACTTTTTTTCATTCCGTCCTATCA
ATTGATCAGGTTTTAAATTTCCGCTCCATCCGAGCGCGCTCTCTCTACCCATTTTCTCTCTTCAGTTTTTATCCCC
TTCTCTATCTCTGCTCTC
>locus0592
TTTCAGTCGATAAAAGAGGATGCAGCAGCAGTAGCGGGGGCGCTCACACAGGCCACGGCGTGCATACAGAGGGAAGA
AACAAATGAACAAATTCGCGTTTCAGAAATATGCTGGCGATCCCATCTACCTGTACCGAGTACCTCTTCAGCCCTCG
GCCCTTTGCCATCCCCAC
>locus0593
AGAGAGAGAGAGAGAGTTCCACCCCTTGTCGCGCGGTGGCGGCGCGGAGACCGAGCAGCTCTCGTAATTTACATTAATCC
AATAATTGCATGGAGGTTTCCATAATTAGAAATTCAAATGAGTGGTGGCAGGCGAGGCTGGGCTCTGCACAGGGCTACCAA
CTCAGCAGCAGCAGCAGTAG
>locus0594
TAAAAAGCAAATGATCAGCGTGCTCCGACTGAGAAATATCGGAAAGTACAAAGTAAGCTCTCTGACCGCGCGCAGCGCCC
AGAACCCTAAATGTGCTCGCTCGCAGCGCGGACCGGAACTTCGAGGTGACCTTGGCCACGAAGGCCACCATCTACCAACA
GGGCTTGGTCGAGTGAAGGCCACCGCGGATATACAAGTCTTCTGCGAAATCGACGTCGAGTACTTC
>locus0595
GAGAGAGCAGAGCAAGTCCATGAGAACCGCTGCTCAGGAGAGAGCTCACGACATTTATGCAAGCAGTCTACATATTATA
CATTCGAGCTGGGATTCAATTAAGTTTGGTTAGACCGTTTCTATGGCCGTGCCCCGACGCGGCTCTCCCCGCGACGC
ATATAACCCAGCTCGCGCT
>locus0596
GTAAAAAGAAAGCGAAAGAGTGGGAGAGTATACGGCTATCGGAGATGGGAGCGTCGAGGGGGAGGCAAAATCAGAAACCT
GATTTTAATTTAGTCCACAGTTTAATTTACTCAGCAGATAAATCGTGCACGTGCACCGCATAAACAGCGCGCTTCTATTTT
CGCGGCGTGCTGGCACCTC
>locus0597
GCGGAAGCGCTGCCCGCCGCTGCCGCGCAGAGACGGGAATGTAGCAGTAGCGGCAGCCCGGAAAAAGAAATAATCTGCG
AGCTGTATTGACGTTTCTAGTCTAACTCTGATTGAATTATGCATGAAGCACACCGCGCGCGCGCTTCTCTCTCTGCG
CCAATTATGCTCGATACT
>locus0598
ATAGCCGAGAGAGCTCGAAGAAGAGGGGGCAAGCCGACGCCCGCTTGCCGAGCGGAAAGTTGGCGATGACGGCGGA
TGTTATTGGCAGCGGGGCCATTTCGTCGCGATGATGGATGCCTGACAGGCGCTCGCTCGCTCGCTCTCTCTCGCCAGG
CAGTTATAACAAGTAATGGG
>locus0599
GAGAGAGAGAGAGCAGAGATATCGGGAGGGGTAGTGC GCGCGCGAGTGC GCGGACGGTGCCCGAGGCTTTATAAACT
ATTCCTGTTGTCTCTCTGGGTATTATTCCGACTGTTGATTTATCGGCTGCCATTAAATACCGCGGGCTGCGCCTTTATT
CGTTCCGCCGAAGGACGAA
>locus0600
GAGATCCTCCGGTTGAAGTGC GCGCGCGCAGAGTCAAGCAACGGTTATCTCGGCAATTAATATGATTGAGGAGAC
ATCTCTCAGCTCTCCGTAATTCAGCAATGGCCCAAGTTCTGATTGCTTCTCTGCTGCTGCGCGCGCTCGCGCTTCTG
CTCTCCGCCGCTATCTCC
>locus0601
CGAGGTCTTCCCTTATAATGGCGGGGACTACTGCGTTAGCGCAATCCAAACCGAGAGCGTTACCGCGCTGTTTTGTAAT
TTAAATTAATTGAAAAATATGCACGTGTGTGCTTGTGTACGTTGATTGCGCGTGGCTACAACAGCAGCGGCGGCGGAA
TATAACGGGACACACGTACA
>locus0602
CCTCTCTCTTGTCTCGGTATTTCGCAATTCGAAGCTGAGTGAAGGAAAGGGGGAGGTGGTAGGGGCTCGGATTCAAT
TATCCGATATTAACCTGCCCCCTAACCCAGTCCGTGTCGGTCCGGCTCTCTGTGAGTGTGTGATTTGTGGCTGTGGGTGT
GCGTGGGTCAAAATGGCTG
>locus0603
GCGCGCGCGCTCGCTCTGCGATGGCGGATAAGGGGGTTTATTAGAGGCAGTTTATTACTGCTTTGAAGTCTCTCGCGTGT
TGCGGTTAAGTCGCTCGATATCTCGTAATATCTCGCTCTAATCTCGCGAGGAGAAGTTAATGCTACCGCGCCACCTTCC
TCGCCGAAGGCACTCTCT
>locus0604
TGATTTTAGCGCGAAGCTTTGTGAAATGAAACCTGGCTGAGCGCGCGCGCGCGCTGCCATTAAACAACAATAAAAAATAAT
CCAATCCGACGTTTGTGTTGATCTATCAGCGACTATATTGCTTCCTCAAAGAGGCCCGCGGCTTTGTATCGCTGGTACACAC
GCACACACACACACATTT
>locus0605
TAGCAGAGCGTGGCTATTTAAACTCGCGGCTCGTGAGCGCCACCGCGCGCGCGCTGATTACGTGTTTGAAGTT
AAATGAGGCTTAAATGGCAGATAACAAACGACCTGTTCCGATTACGGCATTGTTGTTCTTACCATTATGCGCGCT
CGACGCGTTCGCGCGGCTCCCGGTTATGGTTTACGATCTATTTATTGCCACCGCGAGCGTGCAT
>locus0606
CAGCTTATGAGTAGCCACACATATGAATTCAGTCTGTCATGAGTCACTATTGGTATATCTGCTTCTGTGTTTTA
GCAGTGGCGGTGGCGTGGTGTATACAAAGGTAAGTGCACAGACTCTCTGTACAAGTCTGGTGCTATTATCATGCATT
CACTCTAATTTTATGACTT
>locus0607
GGGAAGAGAGAAGTTGCACGCGCGAGCGCGGAGATTAGCCAAGGTGGAACGAACCTCGAGGACCGATGCCAGTGAACTC
GGTTGGCCGGTCACTAACCGGTAACCCACACTAGCTCTCTCTCGCTCGCGGCTTCTCTGCACACAACGCTGCTATGC
AGCCCCAACGGTTATAAGCT
>locus0608
GAAGCTCGCTGCTATGTAGGAGAAAGTATATAGAGGCAGCCAGCAGCAGCGCGCGAGGCAGATATTGAGCTCTATA
TTTCCATAAGCTGATATTTACGCGGCAATATACGTGGCGGTACCGCTACTTTTATGAGCTCGTAAATATAGCGGCCCGC
CGGAATTGGCTGGCAAGGC

```
>locus0609
GGCTGATATATTGGCCGCACACATTGCACCTGGATGGAACGCAATATGTCGGCCCCGAGAAAGGCAATAACCATTAGGTCC
CGAGAAACCTGCCCCATTTCAAACGACACGAACGGTCGAATATCAGAAAATTTATATCCGCCCTGGTCGGGAGCGCGCGC
AAAAGTGGCCGCGCGTTAT
>locus0610
GAGGAGAGAGAGAGAGAGAGAGAGAGAGGATGTTGCCGGCCGCAGAGTAGGGAGCGCGCGGCGTAAAGCGGTGAA
ATATCAAAGCCGGGATGGGAGCTGTCATCTGTCGAGCCAACATCATGGGTGGCGTGTGAATTAGAATGCCTCCCCACCGT
GCCACAGCTCTGCACCTCCC
>locus0611
CGGGGTGTTTTATGGCCGACGCGCGCGGTTCGCGTGTTCGTGGTAGGCATTATTTTTCCCTCCTAAACTCCGTTATACC
TGGAAACAATGGAGAGATTAAACATATAAATATGATCTCCAGGTGATACGCGCGCGGCCGAGACACTAGTATATAT
GCATCAGAGAGAGAGAGA
>locus0612
GCCGATTACAAATATTACC CGTGCCTCGCTATGTGCATCATGTAGAGCGCGGAGGGGGCGAGGCGGTAATGATTGAA
AATAACAGGAATCGCGTAAACGTGCAATCATCCGCAGGCGCTCATCCACAGTCGCGGTGAGTGATCATGCGTTTTTTTC
TTCTTTCTCGTATTTCTAG
>locus0613
GCGCGAGAGAACGGATGATCGTAGTCGTGCTGGTGGTGGCGCGCGGAGCGGCTCTGTTTTGGTATGCCAGGAATG
GCACAAAGAAATCTGGACAACGCACACGCTGCTGCGCAGCCGGTCTGCGCACAGCTCGCTGGTCTGCTGTCACGGAGC
GAGCGCCGCGCGGAGAAGTG
>locus0614
TTATCGTGCAGCGCGAGCGAGAGAGAGAGAGAGAGAGAGCTCTAATGATGATCTACGCGCGGCTACCGCGCACAGCTT
CTATAACCTCCTAATTTCTCCTCTATAAATTCGTCGCTGTTTATTATGAACAAAAAGAGAATATAACGCTCGCACAC
TGCCTCAAGGCGACACCGGG
>locus0615
CGGAGGAAGCGGATCAAAGCCGCTCAAACGCGCGCGCGCGCAGGACGCTTCTGAACCTGTTGTGGCTAAGATTAACTG
TTCTTTAATGGCCCGTGAATATTCATACGCGAGCGCGCGCCGAGCAATTAATTTCTCTCGCCTGCTGCTGCGCGCG
CTTTTGCAGCGTGTGTTCTT
>locus0616
GCGCGTCACAGAAATTCGGATGTGTACTTCTAGGTGCGGAGCGTGCAAAATCGAAGCCACGAAGATGTTTCGGCAAGTCC
AAGAGCACGGTATGAAGTTCCTACTTCTGAAATCTACGTAGGAACCTCTATACCTCGCTGCTGGATCTCTACCATATTCA
TTGAAATACCTGTTCGGTAATCTCTCGGCGCTGCTGATCCACGCGCTCGATGTTCTCTCACTG
>locus0617
CTCAGATGACGCTCGACCATACCAGCAGAGCGCTACTTTCAGCAACGTCCTCGACTACCTGAATATGATATTCATTGT
GATATTCACGAGCGAGTGTCTCATGAAGATCTTCGCGCTGCGCTACCATTAACCTCAAGGAGCCCTGGAACCTCTTTGATT
TTGTTGTCGTTATATTATCA
>locus0618
TAACCTTCGTAGCGTCGCTCTGTGGCGGGGCGGAATCCAAGCCTTCAAACAATGCGGACCCCTAAGGGCCCTAAGGCCAC
TCAGGGCGATGCTAGAAATCGAGGAATGCGGGTATGTAGCCCTACGCTCAGCCGACCTTCAATGGACACATACTACC
GACTCTTCGTTTATTATTAT
>locus0619
AGACGAACAGAAGAAGAAGCAGCGAGAGACAGAGAAGCAGCCAGCAGCAGCGCGCGGTAGATTGTTTAGTTGGCTGCA
ATTAAGCCACTTGGCGGCAATGTTTGCCTCAGCAGAGAATTCTGCCGGGAGTGCCTGTCGCGGTATACGTTCTCTA
TCTAAGCCCATAACTATACA
>locus0620
AAAAAAGAGCTGTGTTACTCTCCGAGAAGGCAGCGTGATGCGAGTAATATGAAGAACTTTGGTTTAATGTTTTTTAAAA
ACAGATGGGCGCGCGGCCGCGGATGATATCGGCGCTATCAATTTGGGAGACGAGAAATTCGACCCGAGCTCGGATAAA
AAGCCTCGCGCGGACAAAT
>locus0621
AGGATATGTATACGTGCGGGGTGGGGTAGGGGGGGGGGAGGAGAAACCGCACAGCGGAGCCTAGCGTAGCATGGCAT
AATGATAACACGCTCGAATAATAAGGATAGAGCCGCGCGCGCGCGCGCGGGCTGTATACGCCCGAGTAGCGTAGAG
GAGACAGGGTTGGATACGCA
>locus0622
CTCTCCTCTCTCCGTCGGTGCCTGCGAGCGACTTCGTTGGTTCTCGTTGGTTTCGAGGGGTTTCGGAGCCGACCGCGCC
TACTCGTAGTGCAGCACCCTGCTGCTTCTGATGGCGCGCGCGCGCTCATGGCTCCGTCAAATTCACGAGCGCGCA
TGCGCGGTAGATCTCCGCGA
>locus0623
CTCTCTCTCTCTCTGTACGACCTGATAACAGCCGCGCGCGGAGCGAGCGAGGACCTGGAATTTCTTAACGCTGTTA
AGATATGTTAATTTTGTGTTTACCTATAAGCTATTAAGGGGCTCTAACGTGCTTAAAGCTAAACAGTTTAGTTTTCGAG
AGAGATGTGTTACCGGCTGC
>locus0624
GCAAGCTCTCTTCTCTGCTCTGCTCTCTCGCGCAAGCATTCAGGAATAGGCTGTACGAGCGGTGCCAATGCAGC
CACTAACCTATAACTATTATTCACGTATCGTTGACGTATGCATTTCGATCCAATAATATCTGCGACCGGCGAGCGCGCGA
CGTATCTTGTGAGCGCGAC
>locus0625
GAGATCTCGGCTCCGCCATCCCCACCACATGAGTATAACCTCCTCCAGCCAATGCATCGGTCTCCGGTAGCTCTTAG
TTTCAGGTTAGGAGCCTGCTAGGAGGGTCTCTCTTTCTTTCTCTCTGGAAGAGTGTCCGCTCGTCCGAGGCAA
ACTCACTCGCTCAGCCGCA
>locus0626
CGCGCGCGCTGTACTACGTAGGTTACTCCTTCTCTGTTGGCGCGGAGGATATTGTGATTTAGCGTCTGTGTAATT
ATGGAATTAGCGACATGGAAGCCTAGGATAAAAGGTTGATTATAATCCAGGCGCTGGAGAGAAGGGCGGGCGGGAG
GGAGTCTGCGCGCTGAGAT
>locus0627
TACAAATGCGCGAGCGCGAGACTTTAAATGAGACTCGCTTGCGCACAGGCGAGTCGAAAGAGCAATTATAAGCAAT
ACAACAGGTGCTGTTAACGTCGCTGCCAATGCGCGCGAGGCGCGAAAATAAATAACAAAGTAGCGCGCTATTCTCTCTC
TCTCTCTCTCTCTCT
>locus0628
TATACACTGTCTCTCTTCTCTGACGCGGAGCACACTGCACGCTCGCATATCAGCGGGCTGTTGCGGGCAAGGAAGGTT
TAACGATTTCGCTAGCTGCGTCGATTTACGACCCCTAAACACATCGAATGCGCTTTATATGTATGTAATTAGGTACAG
CTTTCTCTCTCTCTCTCCAGCAGCAGCTCTCTTGCTAGCTATACTCTGACATTGCGCATTA
>locus0629
TTAGCACTCGCCGCGGCCAGAACATAATCCGCTCGCAAGAACGCGCAACCGGGATGACCGCTCCGACGTATTTGCAT
ATAGAGAGCGTTAGCTAAGGGAATAGAAGGTGAATACGTGACAGACACTCACTCAGCCCTTCCCTCTCCGCTCC
GCCTGAGCGCTCAGAGACT
>locus0630
TATCGGACACATCGGCGCGCTGAAAGAGAAGATAGTGTCCGCGTATGGCAATAGCCGCTGACGGCCGCGTAAACGCG
TTTCATGGGAATAACGTATAAAATGAATTGGCTATAAAGCTGTTAGCGTGGCGAGAAATCTGCGGAGCGAGCTAGCGG
GCTCGCACTCGTTGTAACGC
>locus0631
TGCTCGAGCCTTATAGTGGCGCGCGCGCAGTGGCGAAGTGAGAGGTGGGAGCACTCAATTCATCAAGAGTGCACGGCA
CGTAATTTAAGACTGCTTTTAACTCTTGGGTGTCGCAATTTATGTAGGCTTCTTATAAAGAAATGGCGCTCGCTAGCTA
GCTAGTACCACTGCACCCC
>locus0632
CGGGATAGTGAGGGAGAGGGATGGAATATTGCGCGCTCCACCGCGCGCGCGCGCGCAATGCAATCCAGCTACCGACT
GCTTTCAAATATTAAATGTACGTGACTTATTATATCCTAGCTGCGCGCTCCAGGCTTCCAGAGAGCGAGAGAAATAGA
AGTAGAATAAGGGGGAGGT
>locus0633
AGCTATAGAGATCAGGGGAGAAGAAGTAGCGCGCTAGTTTCGCTGCTGGTGTGTTTCGCGCGCAGAGTGCATTTGGCCA
TCAAATAACATCGGCGCGCTTAAACCGCTTACGTACGGACATAAAGTCGGCTTGGCTGCTCTGCTCTCGCGCGTC
TTCGCGCGAGCCACAGCTTT
>locus0634
TTCCAAAGCGGTGCTGCTGACGTCGTAGACTCGAGTCTGCGCAACCTCCGTTATTTCCCTTACCGTGAATAACCAT
TTGTATTTCCAATTAGCTTTGCTAATAAGAGATGGAGGCATTGCGCCACGCTGTTAAAAAAGAGAGAAAGAGTCCG
```

CTCGCGCGCGCGGGTGGCGGA
>locus0635
TTGGTTGGTTTCGTTTCAGCTTTTAAATGTCGCGTCTCTCGGGGGCCGCGACAGGATTACCCCGGCTAAAAAGGAAGTTT
TAATAAATTTTTCATTTTCTCTATATTATATTCGCGCTCGCTAACCATTTGCTGCTTTTACTCGCTCGCGCTCTGCTTTGCG
ACCGCGGCAGCAATGGCCGCG
>locus0636
CTTTCTTTTACTCTCCCGTTTCGTTCTGTTCTTCGTCACCGGCAATGCGCGGATAAAAAGTCACTTCGCGGATTGGGTAATA
AAGCTCCAATCAACGGCTTAATTATTTCGATTACCGCGGGGCGTGC GCGCAGGAGAAAAAGTGGATCGACCGGCAGATCAG
TTAAGTGAATGCAGATCGACA
>locus0637
GCGTCCGGGACCAAAAGCCTCCGAGTTCTCCGCGGCGAGCAGCGGGAATACAATGCCTCGAACCCGAGACTCTATCGCGA
TATCATCCGGTTATAAATTTGGAACACAGCTTCGCTCGGCATTATGATGTCTCTAAATATGTCTTTTTCCCGATGCTGCT
GCTGTGACGTGTGTGTGTA
>locus0638
TAAGGCTTCGCGCCGCTGCTCCACACAGACAGAAAACTTTACGAGCGCTCATCCGCCCGCCTTTTTTTTTCGTCGTATATC
AGCCGCTCGGGTTTGGAAATTATTTTACGCCCGCGGTTCAAAGGCTGCGCGCAGCGGATATCGAAATCGACGAGAC
GCCGCCCGCGCCGCCGCT
>locus0639
ACTCGTCACTACGCTACGCTCCGAGATTCAACATCGCGGGACTGGGACTTAGTTCTTTAGCAGGATCGCGGAGGAAGTAGA
GTGGGAATGACCGAATGAGTAGACACAGCCGGCTCGTTTATACCGTGGCTGCATCTGCCAAAGATGCAAAAGTACTT
GTTTTCCCGCAACACCATTAATGCAATGGCTAATTTTTTGTGTGTGTTCTTTTTCGTTTGGTAC
>locus0640
CGTAATAATCTGCGCTAATTTAGCTTCGCGAATACGGTAAGTGTATCGTTAATATTCGCGACCGGTGAATAATGGATGT
TGATGCGCCATTGGGCGCATGAGATTTCCGAGGAGCGAGCGGGCGAGCGAGTTCGAGCGCCGAAGTGGACCGCGGTCT
CTGACGCGGTTGCGCGCGC
>locus0641
CTCGCTCCCTCTCGTTCCGATGCAGCAGCGCGCAGTCCCTCCGATGCCTGGAATCGAATGCAACGCTGACCACACA
TCAATTCACGTGCAATGAGACATAACTAGTATAATTAATACATCGCGCCTCTCTACTCCCGGCACTTTGCTCGCTCTCT
CCCTCTCCCGCTCCGCGTCG
>locus0642
GCCCTCCGAGCGTGGCGAAGCGCGCTGGAAGGAACACGCGCTCGCAAAACGAAATAAAATGTAAGTGGAAATTTATCGCC
CCGGCGCATAGGAGAGGTTTCCGCTACTTTTAAATATTTTATAAACTTTCTCTCTTGTCGCGCAGTTCCCGAGAGCGG
CTGAGCACCGGATGGCGGACG
>locus0643
GCGCTAAACATCGAGTATGTATATTTCCATTCGCGGTTACGAGAGCCGAGTGGCGCGATTATTTATGCAAAAGAGTAGT
TTAGAGCTATATTGTTAATAATAGGATTGGTAAGGTGGGAATACGCCCTTGCGCGCGCGCGCGCGCAGCAGCCACTACCT
GCTCTTTCTCTTTCACGCGT
>locus0644
CTCTCTCTCTCGCTCTGAGCTCTCTGCTCTTGCTTCGGCAAGCGCTGCGCGCATTTAGATAAGTTAAACTATAAAATTA
GAGCGATCATCTGCTAGCTACTCGAGGAACGTTGTCGGCGCTGAATATGTATGATTATTACAAAGAGACCGGCTCTCT
CGATATAATTCAGACGCAAG
>locus0645
AGAGACAGCGGAGCGCGGATGCACGCGTTCGCTCGTCGGGCAATGGAATATGAGACGAAGTGGCGAATACGAATATGA
GAATTAAGCGCGTGAAGGAATTAAGCGTATAAGCTGGCTGGGAATAACGCGCGCAGCCCGGACGCGCGGTTCGAGT
CTCTCTCTCTCTCTTTCT
>locus0646
AATCACGGGCGGAGAGGAGGAGGAGTAACGCCGCTCGCTTTAGATGTTTCGCGCGGGCGCTGGTACAAAGATAACTC
TATGCAATAAAAAATGATTACAAAGTTTCCGCGCGCGATGCGCGTTTCGATGGCGAGCGCGTTCGACAAATGCGCGCTCT
TGCTCTCCCGCAGCGCGCG
>locus0647
GCGCGCTTATGAGACGCGGCTCAGTCGGCAGAATTTCGCCGAATACTGCCGAGCGTAGTCTTCGCGCATATAAAGC
CATAACGGTAATCCTTAAACAAATAATTAGCCCTGCGCGCGCGACCCCACTTATACCGGAGGTGCTGCACCTCGTTCC
GCCGCGCGGATTCGTCGCC
>locus0648
CGGGCTCGTTTATCCATCTCTCCGGCGACTAGTCCCTCCTAGAGTCTCGTTGTCGGCTCTGCATCGGCCGATTGGCTAA
TTGGGAAACCCATAGTTCTTAAATTAATCGGCATCATTATAGCAGCGCGAGCTCTCTCAAATATAGTTCGACTCGAAG
AAGAGCGCGCGCGAGAGAG
>locus0649
CCACGACGACGACGCGCGAGCGGTGGCGCAGCCGTAGTAATCAAGCGGAATATCTCGAGCGAACCGGATGACAAACACA
ATAAGTCCCAATTTCCGTCATTATATACGCTAGACGCGGATAATATGACGCGGAGCCCTTGTCACACATGGGCGTG
CTCCGAGACGACGGAGATA
>locus0650
TAGCTATATATATACCTGCGCAGCAGCACACGAGGGGCGGAATCTGCGGGTGGTTGCTTCGCTTGATATACCTGCCGCTG
CGATAATTTATCGTGGCTGATTAAACCGCGCGCGGTTTCGCGCCCATAACTCTCGAGCTCCGATTATTTTGGCCGCTCC
CTCCACCCCAACTCTCTACCCCCCTCTCCATGCACCAATTCGCGCGCGGCTCTCTCGCCTC
>locus0651
GAGCTGACAGAGCGCGCGCGCTCAAGAGAGGGAGCTAGCGCGCGGCTCTTTAATGCGCGGATCTCGGAAATTTGCGCA
CATATATCTCTGCGCAGATTATGAAAGTGCTTTTCTCTGAAGTGGGGAAGCTGCGCGCGCGCAACTGTTGCTGCC
GCCCGGAAAAATCCCGCTCC
>locus0652
GCGAGAGGAGGAGGAGGAGGAGGAGACGGAAGTCGACAGAGCGCTCTCGAGAGCTGGCTGCTGCTCGAGGCCACTGA
AACCACTGCATCTCCCGCGCATTAGAACTCGGCGCGCGAGGCGGTAGTGAATAATTACTGTCGTAATCCAGTCTCTAAT
GCAGCTGCTGCTGCTGCCG
>locus0653
ACCGACGACATCTCTGATGCAGCGCGCAGCCAAGTCGAGTTGCCATTACGGGCGAGTAGATTGCTAACTTAAGTTGTT
AGCGGTTTATAGCGGTTATGATTAGTTAGTGAATTTCCGAAGCTGTCATCGCGCTCGCTGCTCGGCTACCAAGCTC
CATCGGTATATAGCTGCCT
>locus0654
AGCTGCCCTGCCGTATAGTATAGTGTCTATCGCGCGCGCGCGCAGAGGAGAAGTGGAGTGGGTAGAGGCCACCC
ACTCTTTCCACAGCAGAGTTTTCCTCCACGCCCCCAGGCTAACCCCAACATCCTTTTTCGCGCAGCAATTCCACGGGCGG
CGGTGGAGGGGGCGGCTCGC
>locus0655
CGAGTCTAATGATAATCGCACCTCTCGCGGGACGTGCGTCTCTTTCGACAGAGGCTGCGGGGAATCAAAATGCAATTT
GTATTGTTGTAATTCGAGTGTCTGCTTAATATACTCGCGCGCGCAGAGAGAGAGGCGCAACGAGAGCGAGGAGGATGG
TTGAAGCGCGCAAAAGGGTTG
>locus0656
GAATGAATAAGCGCGCTAACCGAATTTGATTTTTTGGGAAGAAGATACTTTTTCTCTCGTTAAACCAAAAAAGTATATTA
TATAGATATGATATTTTGGACCAATCTTCGCAACAAACCGGAAATGACGTTCTTTCGTTACGAGCAGCAACAAAAA
AATAATAAAAAATCGGAGC
>locus0657
CTCTCTCTCTCTCTCTCCCTCCGCGCGCAGTCGGTAAGTCACTAGTTATCAGTGGACACCCCGGCTCTCGTACAATGGCTAT
CACACCGCATCAACATAACGATCAATTAAGTTGAACAATAACCGCTGGCGCGCTATACCTAGTCGAGCGAGTGC
GAGGATGTCGAAATGGTTT
>locus0658
CTGCGGCGGAAAGCTCGGATGGGGGAGGGGAGAGACCGCTCAACGATCGAGTTCAATGAGATTCCATTGTCT
TCGATGAATTAATATTGATTACAATAGGTTATACCTGGCCCTTCGCGCTGCTCGGCTATGATATCTCGCGCGCA
CGAGCGAGCGCATTTTCGTT
>locus0659
CTGCGCTCTAGTATCCGAATACGCTGATGTGTATGTGTATATGTTGTACAGAGGATAAGAGGGCGGTGTCGACCGGAGCA
CGACGGCTCATCCGAAAGAACCCGAAGGTAATAAAAAAACTCGTCTACACCAACCAAGCAACAGACTTTATTTTCTTTG
ACTTATTAGTTTCGCTTAAC
>locus0660
GCTCTCTTACTCTGCCCGGGTACATTTTCACTGTGCCAGGACACTCATGCACACCTTCGCTCCATTGTTCAATAAT
GCTCTCTTACTCTGCCCGGGTACATTTTCACTGTGCCAGGACACTCATGCACACCTTCGCTCCATTGTTCAATAAT

ATACAATACGGCTATTAAACAGACTGATGCGACCGCCGCTTCCGCCAGTCGCGTCATTCGTTGGGATATATGCGCGAGCG
AGCGAGGGCATGACTCGCCT
>locus0661
TCAAACTACTGTATATTTAGTTATACGCTCATGTCCGTGGTAGGGGTGTATTTCGTAGTATTTGCAATGATGGCTCTCTG
CTACAGGTCACTCGTAGTACATAAACTCTCCCTCTGTCTCAGGTTAGTGTGCAGAAACATACACGTAGAACTCTTT
ATTTGCCAATAACCTGCTACACTTGGTCTTTTATCATCTTATAGCTTTTGTTTTTCGAATT
>locus0662
GGAGGGAGAGATTGCCGCCATTTTACAGAGCGCGCGGGGCGCAATCTGCATAACGATCAGAGACCGTCGTGTTTATCA
AAGCTTTTCTCCGCCATCTGCATAATTTTCTGTCTCGCCAGCAGCAGCAGCAGCTCCGCTAAGAAGCGCTTTGCAG
CTCGTAGGTATATAACACGA
>locus0663
GCGCGAGCGAACGAGCGAGCGAGCGAGCGAGCATGGCGCTTATATACGTGTGTGCAGAGTGCAGAGGAGTGGTTGGCCAC
CCCTGGCCTGGATACCGCGCGTGTGTTCACCTCTCCGCGTGTGAAAGTACTCGCTGCAGCGCAAGCGCGTGTGGGCAG
TCGCTACGCAACACACACA
>locus0664
GACTCAGAATATACGAGAAATAATCCTCGCGAACGCTCATAAATGTGCCTGCTTATATCTTGGCTGTATCCAAGTTTGA
ATGGCAAGGACGAGTGTGTTGGTGCCATTTTACTTTGAGATGTCTATTCTTTTTTAAATTCAAAGTAAATGAAAGGA
AATCTTCAAAAGTAATCTAA
>locus0665
CGATAGTGGTAACTGTAGTCCCTCCCGCGCGCGCGCGTGTATATTACGAGGATTAGTTCGAGCTCGCATGCTCG
GAGACTGATGTGACCACGGAGACCGCTCTGTTGAGACATGCGAGCTGGCTGTATCGCCCCGAAAGGGAAAAATGACCGG
AGATCGACGAGATTCTCCGA
>locus0666
GACAGCAAGCCGTACCTTCTAGTTTAAATATTCTCGTAACTTGAATAAGAACTTGTAACTAATAACGATACGTAC
GACTGTGGTAGCTATGCTAGTACCTGCTATTATTAATAAAAAACAAAATAAAACACAAAAAGAGTGAAGGGTTACAC
ACAAAGACGACACGTACGAT
>locus0667
AGATAGAGAAAGCGGACTCGTAGCCGAGGTTGAGCGGCACTGTAGAACATAAATTCGGCCAGCGTGAGCTCTCAAAA
TGGCTGCTCTCAGCTATTATTACTTCGGGGAGCAAGAGAGAGCGAGCGAACGGGGAGGGAGAGAGGATGATAGCAAATA
TATATATATATATATAGAGA
>locus0668
CTCTCGGACCTACATTACACTTCGATTTTACGTTTACGTTTACGTTTAACTTTTGTTCCTTTAACTTCTACACTGT
ACATATGCACACGCTCTTTTACACTGTACACGCACACGCTCCACGAGTATCTCTCGCTGCTGCTTACGAATTTATCA
TTTTTTTCTGTTACGTTT
>locus0669
CGAGCGGATTGCGCAACTTTTTTTTTTGTCTTAAAGACTGCGAGGGGCGGTTCAAAACGACACCAAATACAAGATGT
ACTGACATTGGATAGACTGAAGGCACTTTAGTAGTAACCTAAAAAGCGAACCATTCGCTTCTGCTCTGCGGAGCCATT
TTAATTATCATTTGTGCC
>locus0670
AGGCGGCGCGCGCGCGCGAGGGTTTATAGATAGCGGCGAGCTGGCTAGAAACCATGCCACTCGGTGTTTTGACCTT
TCGCTAGCTACCGCTTCTGGGCCATTGCAACACGACGACGACGCGCTCGGCGACGCGACGCGCTGCTGCTGTTTATAA
AGCTTCGTTCTATAACTATGG
>locus0671
GGCAGCGCTCGCTGCAGAAAGAGAAAGAGAGAGAGAGAGAGACTCGACTCGCGCGCGCATATACGACCTTCTCTA
TGGAAGGATGGATCTGAAATAGCAACGACCCGTATATGGGTGAGCTGTCATTGTCCGCGGACCCCTCTTACGCGAGGGC
GGTTTTACGCTCGAAATA
>locus0672
GGGTCTGGGGCCCTTCAACACTACTGTATAACGCTGGGTGTGGGGCTCTGTGGTGTCTGATGCGCCCCATGCCGAT
TGCTGTATCTACAGTCAACACAGAGAGCGCGCGGTGGGATCAAGCAGAGTACGCTCTCTGTGAGCTCCACATTGTG
CAAGTTCGTATACCAAAATAATTCGTATAATGTATGCATTGATTCTGAATGTTGACTTT
>locus0673
AATACTTGTCTCGGAGGTAGAGCAATGCATAAATAATTTATGTAACGATACGATATGCAACCCATAATATGAGGTCAAT
GTTGATTGTTTAAATAAATGTAAAGTTTGAATAACGAGACGAGTTATTCATTTTTATCATTACTATGAATAGAAAGCTT
TGTTTTGTTTTCTCGGCC
>locus0674
CGGCACAAGTACAGAGAGAGTATAAGCAGTACCGAGAGCGGAGCATCAGGACTCCGCGGCATGCCAGACACCGGGACC
TGTGCTGTGAGTTTACGCTGTTTTTACGAGCGACGTTACAGTCGCGCGCCCAAGTATGCTGTACATAGACACACAC
CGCACCAACAGTACACGT
>locus0675
CGTGTGTTTGTGAGTGTGCTTACAGTACCACAAGCAGAGCGACGTGTACAAGAACACACTAAAGTACATGAACAT
GTGCTTACGGGGATGTTACCGCTGAGTGCATTATGAAGATCGCCGCGTTCGGCGTCAGGTTAAGAGTCCATACCTC
AAGAAAAACCTAAAGCTCCT
>locus0676
GGTCCCATACAAAATTTTCGTATTGAAATGTCCATATTCTACATAGTCTACTTCATCGTCTTTCCATTCTTCTCGTCAA
CATCTCTGGGCTTGATTATCATCACTTCCAGGAGCAAGCGAAGCCGAGCTACAGGATGGGAAATTGATAAAAATC
AGGTGAAACGCAACAGCCGA
>locus0677
CATAGAGCCAAAAACACAAAAGAGAAAAAGTACACCTCAAAAACGTCCAAATATACTGTCCGATTTTCATTTCGAGTT
GTTTGGTTTGTGACGCGCCTGTTACACACCCACCTCAACCCCATTCATGGTAAGCATTTCTTTTTATTTATTTCAA
ACTACTCGTTTTTATACGT
>locus0678
GCGCATTAGTGTGTAGAGAGAGAGAGAGAGTCAACGGCGCGGTGCTATGAAAGCGGTTCCGCTTTTCTGAATATAT
TCCAAATTAAGCTCGGAGCTTCGTTACACTCCGCGCTTACTCTCTCTCTATCTCCCGCAACCTCCTCTCTTTT
TCACCCCTCCACCTTGCG
>locus0679
GCGCGAACGAGCGAGCGGAGAGAGAGAAATGGAGAAAACGAAAGATGTAGCGGCCGATAGCGCGAAGATGAA
GAAGCAATTATTTCTAATGGAGGCTTTGGGAGGATTGTGGCCGAGACAGTAGGTAATCCATGAATAATACCCGCGTTC
CCTACGCTCGGCGGTGT
>locus0680
CGCATCGCATCGCCTCGCCCATCCGCGGTAGTCTTCTCTCGATCCGCGCTTAGACTTTCCATGCGCGCAATCTCC
TCTCAATAAATAAACTTTTGAATCGCGCCACCGCCACCTTTCGATTCCCTCCTCTCTGAGCTGTGCTGCTTCCGCC
AAGAGACTTTGTGTGCTCCG
>locus0681
TAATTTGCTTACGCAAAATTTCTAGCATCGAAGAGAGGGTGGTAGCAGCAGCAGCAGCAGCAGGAGGCAATTGATTCGGC
GGCAATTAAAGCTCGGATTACACTGGATAGGCTTTGGGAGGGGAAGAGGGGCTACGTGTCCGACTAAATGGATACAC
ATAGCTGAGATTACTGCGG
>locus0682
ATACAGTAGATCGGAGCGCGCTCGAATAAATAGTAGAATAATAATCCGCGCGGATTTCTCATCTAGCATTAGCGAT
TCTTTGAGCGAGTAATGAAGGAATTTAAATATTTTACAGAGAGCGAGCGAGTACCGAGTTTCCAAGTCAATTA
CCAGATTCACTGCTGCTCC
>locus0683
TGCAAGTAAAGAGGAGTAAACAGGTGCCGTTTGAAGACGAAGAAAGCTGGAATAATACATCGGAGACCAGTTGGCGA
CGCGTATTCTGGGGAAATTAACACACATACGCGCTGTTATTGCTTGAGAATACAGTAGTTTGCCTGCTGATCTCTGCA
ATGAAAAATACCTCGCTCGTACACACGCTGATGATTCTATGTAAGTGTATGTGCGAGC
>locus0684
TCCTCCAAATGGAGAGCTGAGGTAAAAAAGAGAGCGAGAGAGACCGAGTCAACAATAACAGAGAAAGCGTCCATTGTC
GAATGCTTTTAAATTTGAAATACAACCGCTGCTCATTCGCGCTTTTCCATTCTATCTCTGCTGCGCTGCTGTGA
CTAATCTAGCGCTCACTGA
>locus0685
GCAGCAGCAGTGTGCGAGGAGAGCGCGCGCGCGAGGTATTACCTGGAATTACGTCTCAATCTACCATTGGCGTCGACT
AAACTAATAATAAACTTTTAACTAGTTAGCAGCGAGCAGCGAGCGGTTGCTGCTGCTGCTGCTTAAACCTCAGCTA
CCCTCCCTCTCTCGCCCCG
>locus0686

CGCGAGCTTCTGCGCGCGCGAGATGTAGCACACCCGCGGGAGGTCCTAGGCACTACTGAACCTGCGGCCCATGGCAAACC
TTGTTAACGGCAGTCGACAAACCAAGTTTAAACTTTGGGTAAACAATCCCCCTACCGAATACCTCTGCCAAACTCGCTCTC
ACTCTCCGACAGCTATGCAT
>locus0687
AGAGAAAGCGAGGGGAACGACCGGAGGAGAGAGCAGAAGAAGAAGAGGGAGCCAGTGAAGTCTGTAAATTTTCTTACA
TTTTATGAGCCATCAGAATTTTCATAACCTCGAGCCAGTCCGTGTGGTACTTTGCACAAGAAAAGTTTCTCGGCTCCGACG
TAGCTCTCTCGTCTGTTGCTT
>locus0688
GACTGAGTATGCGGCGGAGAGCGAGAGAGAGAAAAAGGAGAGCCCGTCTGAGGGAGAGGGAAGGGCCGCTTAATTAGAG
CCAGACTTCCGTAGGATGCTTGAGGCTTCCCTGCAGCGCGTGTGCTCTAAACTTCGCTCCCTTCTCCGCCGAGGCGGTTAT
CTACGCGCGGCTAAAGTGGC
>locus0689
CTCGCTCTCTCGCTCCGCGCAGCAATCGCGTCTCTCTTTTAGACTTCGAATTCTAATTAAACATTTGGGTTCTCCATTAG
TGTAATTAAGTGCCATTCCATAATCTAGGAGGTGGAGAGGGCCACCTTATCTTTCAGACTTCAGCCCCCTCTAGCTTTC
TCTCTCTCTCTCTCTCTC
>locus0690
ACAAAGGCGGAGAGCAAAAGAGAGACCGAGAGAGAGACGCTCGAGGGCAAGCCTGAGAGCCAGTTCAATTTCTCAAACCT
GTCCAATCCGTGTGCTATGCAAAATCAATCACGACGCTCCCTCCCTCCCTTCCCTCCCTGGAACCTGGCACCGCTGCGG
CCTTTGCTCTCGACGCGCG
>locus0691
GGCAGGAAGAGAGAGAGAAAGAGAGAAAGTGCCACGGCACGCACGTTGAATTTGCTAAACGTTCCGCGCTCGTGCGTGAAA
TGCTCTGATATCACTGTTTTATTTCGGCTCGTTCTCGCCCAAGCTACTGTACACCACCTACGCTCGCGAAATTTTATCT
CACTTCCAGCTCTCGATCGG
>locus0692
GGTATTTATCCGCTCGCGAGGAAGTGACACGAGAGTAAGGGGGAGAGAGAGTGGCTGACGACGCTAAGAGCATTAAA
GAGACGTTTTCCGCCCGACACTTAGGTTTTCGCTCCCATAGATACTCGGCCTATCGGCTTAGCACTTGCCACCGCGGGT
GGTCTCTTCCGAAACTGTC
>locus0693
TTTTTCTCTCTGCTCACTCTTTCTTCCGCTAGCCCGCGCGCGCGCGCTCGATTTATATTGAAACCGCTCGTAATCG
CGCAAAGTACGGAACAGCAATCAATCCCTCTCCCGCAGCAGCAGCAGCATCGAGTAAATGGCCGCGCTGGGCGGA
ATCTTGCGAACTTCCACCG
>locus0694
TGATACGCGCACAGCGAGATGGAGATTCGACGGAGGTAAGGCGAGAGATTTAAATGCCCTCGCGCAAAAAGCATTAA
GCTATTTCCCGTGGCAACAGCAATGGCGAAATGCGCGCCAGAACATACTTTAAACAGATTCCCTTTGCCGCTGCTCTCT
CTCTCTCTCTCTCTCTCT
>locus0695
GCGAGCGAGCGAGCGAGCTAGCTCTCTCTTTCTCTGTGCTCTTCCCTCTCTCGCGCTCTCTCGGTAACGAGAGGAGAA
ACACCCCTCGCTACTTTTAAATCGACCCGCGCTTCTTGTGCTTATACATACACCCGCGCTGCTCCGCCACCCCTCGCGC
AGCTCATATATACGCGGGTG
>locus0696
TTTACCTTTATCGTTTTAATATGTAGCTTTTTCTTTTTTTTTTTATTTATCGTAGATTGTGAGTGGCTATCCCTGATGTGT
AGTTACCTCGCGCTTCGCTCTGTTGTGCAAAATATGTTGTGCAAGATTCTGCTTATAATGCGATTTACAAGCAGATCT
CCCAAGCGGCTGGCCCTCG
>locus0697
CGCCGTGATGATGATGATGATGATGACCGAGGACAGGCGCCCGCTCGCTGCCACCGCCACAGGCTTTCTCTCTCC
GACGAGGGCATCACTGCCACAAACATCTGCAATGCGAAGCTGCGCTTTTATAGATTGCTGCATGTAGTTATAGGTTT
GTAAGGGATCACACGTCT
>locus0698
ACGTGATGGTGGTGGTGTGGAAGGGAATGATGGTTGGGGCTGTGGGATGAGGAAGGGGGTTTCGGTTGACGAGGGGAGAC
AACACCGCATTAACGTCGAGCTGCTGTCCACCTGAGCCTGCGACGAGTCTCTCTTTCCCGATGGCGTGCTCGCGG
CCGTCTCGATGTCGCGCTC
>locus0699
AAACGGCAGGTAGGCAACGGAGAGGAAGATTCTGTATAGAGAGGGGGGGAGAGGGGAAGGGATGAACCGTCACGAACT
GCGGGCTAATTGTCCGGGAGATTGCTCCTCGCGCCGCGCTGTCTGTGCAACTCTCTCTCGAGAAAACCTGCTTTGAGG
GACTGCTACTTTTCTCTCTC
>locus0700
CTACCTCCAGCTCCCCCCCCCCCCCTACCGCGCTCGGTATCTCTCTCGGGGATCCTCGAGAGAGTTTAGGGCATCGCGC
CAAACAGTTTTAAATGCGCTTTAAATTTCCGCCAGCGCTGCTGCGACGAGAGACCGTAAGCATCTCGCCGGCGG
GCGCGGCAGGCTCTGCCAGA
>locus0701
GGTTATCCTGGTGTGGCTCACAGGGAACAAAGAAGCGGCCAGGAAGCGAGGGCAGCGGGCTCACAAATGGCACAGT
TAGGGTTACAAGCTTTTGTACAGATTGCCAAAGTTTCGAGGCGCGCGCAGCATCGTAGACGCGACTGTGCGGGCGCGGCG
GCGGCCTTTGTAGCTGCTGG
>locus0702
TCAGGGTGATTACATCAGACACCCCGTCTGCTACGAGCTGTGCGACAAGTATGGAGTGGCTGGCAGTGACAGGTTGCCCT
TGCGGCTCGCTCGACGAGCTCCGGGAGACATACGTGCGAGATACGCAAGTACGTCTCTCTCTCTCTCGCGGTA
TTTAAATATATTACTCTCTC
>locus0703
GTATAGAGAGAAAGAGAAGAGAAGAAAAAATAGAAAAAGAATAAACGACTGAATTATATGTGCTCTTTACCAGGGCGA
CGACTTACGATATCATCAATAGAACATACCATCTTGACGCGCTTGGTTGGGTTGCAGCTTAGCTTATCTAAAGATGTATA
GATTGAAGGAGGAAGGAGA
>locus0704
ATCTCGCGCTCGAAATACACAGTAGCAGCAGTGGCAGCATAACGTTTGTATTATGCTAAGCCGCATCAACAAGTGTAT
ATTATCATTTCAAATAAAATGTTTTAATCTGCATACGCTTTATCGACCCCTTCCCTCTTTCTGTGTCGCGAATGTGCAG
CAGCAGCAGCTGCGCGCGG
>locus0705
GCTATCTAAGCTAATAATTATATACCACGCAATACGAGGTCTTTTAAATCATGTTTGATCTTTATTTATTGGATATTTGC
AGAAATTTGTGGTTTGTCTGAATCTTGTCAGCACTTTTGAATGTGTGGAACCTTGATATATACATATATTATACATATT
CATCGTACCACTGTACTCATTGTATAAATTACACATTCACCGCTCGAACACAACTTCTCGGTCAATCTCTTGAATCAAA
TAAATTTTCTGCTGGTTAAAGAAACGTACCA
>locus0706
GCCCTTTTCTCTAACGCACGCGCACGTACGCGCACACAAACACGCGTTGAGACGAGTGGAGCCAAACCCATAATTAGAGG
CTTTTGCAAAATATATGCGCGAACGTGTGTCCTTTGGTAAAAATATCGGCTTAATAATAACAGTCGCGGAGCGGACACAC
CACGCAATTATCGCGAGCGG
>locus0707
GAGAGACTTGTCTAGTGTCAATGGGGGAGGACGAGAGCGAGCGAGCAACGCGTGCAGGATTAACGGCCGCTGTCTAAAC
ACACTTTAAAGATTTGAAACGTAATGGCGCGGGCTTTAACGAGATTGTCATGTACGGGCGCGCATATATATCTGGA
TTAGCGCAGCGGAGACTAC
>locus0708
GAGTCAAAAAGAGAGGGAGAGAGAGAGAGAGAGGCAAGCGATCGATCCCGTACACCTTCCCAACGGCCGCTATGGCG
GCGCATGCAAAATCAGCATGGCGCGGAGACGCCCGCTACTGCTCTCTCCACCTCTGGCGCTACCCCTCACTTCTCTCT
ACTACCCCTTTCTCTCCCTC
>locus0709
CTTCAGTGGCGGAGGAGGTCGAGAGGTTGAGGGAGAGAGAGAGAGAGAGAGAGAGAGGAAACGCGGGGGTAACTCATCG
CTTATGGATACTGATGACTCGCGCAATGAACCTCGCAGACCTTCTGTACGAGGGAAGCCGCACTGTATATAGCCAGGCGC
TCTCTGCTCTCTCTAGCTT
>locus0710
GCGCGCGCGCGGAGCGGTGGGTCTGTGCTATCTTGGCTTTTTCTACTGCGAGAGTAGGGAGCCGCGCGGTAAATGATCA
TTACCTCCGGTATAGTGACAAAGTGAGAGCGCGCGCGCGCTCTGAGGAAATGGCCGAGATAAGGCTGTCACATTC
ATTTTATATATTGACGAAT
>locus0711
GTAAGCGCGCGGACGCCACCCCGGGTAGGGGTAGCCGACGTCCTGCCGAGTCTTCTGCTCATCTGCAAGTCGTATAAC
CGAGCTAATTATCAAGTTAATATGGCCATTTCTGTATGGAAGCGCGGAGCGTCTGAGCGAGCGCGAAGAGAACGAGGGTAG

ATAGGTGTGTGCGAGGGAGC
>locus0712
GAGGACGAGGACGGGGGAAAGACACAGAATGCGCGCCGGTGACGCTGGCAGTGCGCAGCTCTAAAGGATTATGCACGC
GGATTTAACTGATGAATCACATTGTCGTCTTGATTGTCGCGCGCGGCTTAATTTTCCTCGCTCAGCCTGGCTGCGGCTATAT
ACACAAGGCGGCGACCTTTC
>locus0713
TCCCTTGATTCTAGACCCGAAAGACAAAATAACAACAACAACGAAACCTTGCTCTTACACGAGTTGAAACCGATCCTG
TCTTTGTTGCGAGATGGACATGAAGTCTGTGCGATCGCTACTACTACGAGAACTTTGTAAGTGCAGACTAAACATAGAATCA
TACTTCCCGCCACCTCATAT
>locus0714
CGCAGTCTCGGCCAACGCGGTACCCGGAGGACTCCAGAAGCGCAATATGGCGAGCATTGAGCTCGGCAAGAAGCGGATGC
GCGACTCCAATGATGATCTGCTAATGGTACCACGGCTTTGCGATGATTACGCTTTTTTTCATTTTTTATTTCTTTCTTCC
AAAAAGAGAAAGATCGGTCA
>locus0715
GTACATCGATAAGAGCCGCGCTCGCGCGCAACCGAGGAAACTCTCGCGCGGCGGCGGCTTTTCAGCGTCAGAAAATCTC
AAATAAATCCTTTTCGTAATCCCGCATCGCTGCGTTTCAGGCGCGAGCCGGAATTACAGCACTCGCTTTCAGTGCAGTGTGTG
CGGCTTCTCTGCGAGCCGA
>locus0716
GGGAATCTAGCCCCGAGTTCAACGTCTCCGCTCGGCTGGCTTCGGCCGTAGCGGCTCGGCCAAGTCTGGCACTAGGT
CAGTGATGGAGTCACTGGCGCCCCGAGCGCCGAGGCAATGACACCGACGACGAGCTATACGCGCGAGAGAGAGAGAG
AGAGAGAGAGAGACCT
>locus0717
AGGGAGGGAGCGAGAGGGAGATAGCGCCGCCCTGGCGGGCGCCGCGGAGCCTCGCCGGCTGGCTGGCCGTAGTTTTAGT
TACCGCACACATAAAGGCATTTGCGTTGTAGATACCGTTAAACCCGCAATATTATTATCTCTTCAATTTTATAATAATATC
TTTCCGTTCAAGTTCGCCGT
>locus0718
TTAATTTCCGTAAGCCGACAGGAGTTTAATAGTGTATCATTTTTCAACGCTGCACAAATAGGGTTAATCTCGCTCGAC
GAGCTAATATTTCGAGAGTTAAACAGATTTCAAATGCGGCCAGGCGCCGCTCGCCGTGCGGCCACCCCTCTTTTGCT
CTCCCCCGTTTATACACGAC
>locus0719
CTCTCTCTCTCTCTCTTGAGGAATATAGTGTTAATAGCGTGAATGGCGAGAGAGGGGGATACAACATCCCGCTTCTAT
TAATTGCACTTCAACCTAAATGCAAAATTGACGAAATGAGCGAGGCGCCTCCCGAATATTGGAACCTCCATTACGAA
GGGAGAGAGAGAGAGAGAA
>locus0720
GAGGCGGAGGAGGAGGAGGTAGCTTCTCGTGGCTCTCTGTGGTGGGCCCTGCGACACGAGGGGGGGTGGTATTAAATGG
CTTACGAGCGGACACTCATTAGCACTTTGAGTATACGAGGGGACACGGCGACGAACCGCACCGCGCTGATACCTCTCCG
GCCAGCCGAGCTGAGAGAAA
>locus0721
ACACGCACACACACATGCGGCAAAACCGAGCTAGCAGCGCGGCTGCCGAGTCTGTTGGGTTGTATTATCTAGTT
TATACGACGTACATTAGACATGAATGGCATCTACTCTGCGCGCTGAATGAGAGCAATTTAAACTTCTTTAGGGTGCTTA
ATCGGGTAGGAAGTCACATC
>locus0722
CTTATTTATCTTTTCGAACTACTGTGCGGCATCGGCCCTCGAAAAACAAGTACGACCCCGGGAAGCGAGAATTACCCAC
TGATGTTATAATCCTCTCGTGTACGCCGTCACACACACACACACGCTGGATTCTTTTTTTGCGCGCCATATGCAC
ACTTGCCAGTCCGCGCTCAG
>locus0723
TATTACAAGCCAAGTATCTGTTCTGTGGGTTACGACACCTGTACACCATCACAGAGTCCCTCGGATCGCACTATAGGAAT
CCCTCAGGCAAGCTGTTATCAACCGTTATTAGAGTTTGCGCCACACGTTTTTTTTTCTTTCTCTCTCTTTTAAATAT
TTATTTATCTGTTACATGCG
>locus0724
TTTACTAATGCCGTAATGTTACTTTGCCCATATTATAGCTAGAACGCACTCCAGACGGTAGCTAGAAAATTAATTCGG
TTTAAATGCACTCCCTGGTTAGCATTTGCAAAATCTCGGCCGAGCTCTTGGCCCTTTCTTTGCTCTCTTTCTCTCTCTCT
GTCTTCAGCCAGCTCCCGCC
>locus0725
GACTTTTTGGGGACTACTGTACGCACGGCGAGTCCAAGTGGTAAGTACGGTAATGGACATAGTTTGGCGGTAATGTCCGA
GACTAATTCGCCGTGTTATTTCAATTAACGTCCCAACAACGAGCAGCAGCAGCGGCGAGTCCCGAGGGTCGTAGGCTCGAG
GGAGAGGTGCGCTAGTCGAG
>locus0726
TGCTCGTTTTATTTTCTCGCATCTTCTCAGTTTCGTTTCGTCGCCCTCCTCCGCTTGGCGGTGTCCTAACTCCTGTTTA
TCCTGTTACAATGAGATGTATCGACCTGTTTCGCTCCGCGCGCGGCTCCGAGAGGGAGTCCAGAGGATTATTTAATTA
GCCCTGAACGTTGCGTCTCT
>locus0727
CAGGGCCGCGAGAACATCTTGCCGACAGCGCGCAGCTGTGGGCCAGCTTGTGGGTGAGGACGTGCATCGCCAGGGCGGG
CATGCTGAGCTAGGCCCTTGCCGAGTGGATGCACTTCTTGCCGACTGCGAGTCGAGGCTCCGTTGGGTCTGCTTGTGCG
GCGACAGGTTGACGAGGTGCGTACTGCTTGCCGCACTCGGTGACGTTGAACCTTGGCGGTCGCGGTGCGCGCGCGCC
TCCTTCTCAGGGACCGCGCGCTTG
>locus0728
ATCTTGTGCGCGCTCATACATTACATTAATTTCTATTTACTCGCTGACTATTGACTGGACTCTGTCTGTTCTCTGTGTA
GATGGTCAGGCTGACGCTCTCTTTACCCTGTTTGGTACGCTCCACATTTATATTATTAATTATATTACATTATGAATT
ATTATATTACACTCACATT
>locus0729
ATATTGCTATGCCCTTTTCGATAAAAAATACGACAAGTATTTTAAAGCTGAATGTACGAGACTGGACCCAGGTGTTGAGC
CCTGTGCGGAAACCAATCAAGTCGACACTGTCACTGGACGTAAGTCTGCGCGATACGCATATGTTGTAATTTTTTTTT
TTATTTCAAAACTCCCCCT
>locus0730
ACAAAAAATTTACGGCGCTCAGGCGGACTCAGTGAACCTTAAACCTTCAATTTAGGTCTCCCGTCGAGGTGGGCGT
CACCATGTACGTTGAGTATCAGCTCGCTATCAGAAGTCAAAATGGTACTATTACTAGGTCTTACGAAGTTATTCGCG
TCAAAATATTATATTATAT
>locus0731
GTGGCCGAGCGGAGATTACCGACCGCGAGCGTAATTACCGAGCGAGCGAGCGAGAGAGTGGGGTCTCTGTTTAA
TCTGCAATTAATGTTTCAAATTGCATAAAGCCTATGGGTGCTCTGGCTACGTACAGATGCCACTTATCAATGCGCAC
ACCGGCTCTGCTCTCGCTC
>locus0732
TCGCCTCGAAGGTTTTTCGAGCAAAAGCTGGCGATTTTCGGGCGTGAGGAGACTCGGAAAACCTCACCACGACAGCAC
AGCACTGACGACATGCCGCCATGTTGAATGTCAACATTACGCACTCGCACACTAGTTTTGTCTCCCTCCATCCGCGGTT
TCGCGATGTTGCCATGTGTT
>locus0733
TGTGTCGATGGCTTTGTGACGCCACCCAGCATATTATATACTTATACTTAGAAATTTTGTCTTTTCAATTATTTAAGTGT
TAAATAGATATCACAGAATGTTTCTTGGTACCTTATATCTTCGTTTATTTATTATTACGACTTTACGAGAACTTGACA
AAGAGGAAGAAAGGCTCCTT
>locus0734
GATATTTCCCGCAGCTGTCCCAAAAGTTTTTCTTACACAAATTCGCAACCAATAACTGATTTGTGATAAAGTAAAGA
CAACGAGTCCAGGTTCAATGTTCCATGAATCCGACCTCGAAAGCTTCAAACAGGTTTGAAGCTTTCTTCGGTGTCCACGA
ATCCTCGCGCGCGCTCCTT
>locus0735
GGAAGAGCGCGCGCTAACGGGTTGGCTGCTGCGCTGACGAGAGAGAGAGAGAGAGGTTGCGCTCCGGCTCCACGTGCC
GGCGTAATCAGGAATATCATTAACCTCTCGAGTCTGAGAGAGGGAGAGAGGGGAAAAGTTCCGCACTCGATATCTCTGC
CGCAGGCGCGCTCTCTCT
>locus0736
AAGAGATGAGAGGGAAGGAAAAAGCTTAGTGTTTAAAGATTTAAACGTTAGAAGTTAAGAGGTAGGTCTTAAGGCTGAAC
CACGTATACGTATGTCTGCGCACGACGACAACCTGTGATAACTCGGTGGGCGGTGCCAGCCTCCTACTTCAATAATA
ATTGTATACTTGAATAATGA
>locus0737

[illegible]

TTGCTGGCGAGTTGACATGTCGACTGCCTGTGTTGATCACTTGAAGTGCCAACGTCCTCTGCCTTCTCGCCCCAGAA
GTGCACGCTGAGGAAGGGCCAGTCTGTCGAAGTTGAGAGTTGAGCACGTCGCGCGGCTCTCGAACAGCAGCGCTCGACGTCG
TTCCCATCGCGGAAGTC
>locus0763
ATTTCGGCTGTGGAGCTCGCTGGTGAATTTATGCGCGCAATTAGGCGCCTCTGCGCGCAGAGGCTCCAAATTAATTGGG
AAGATGGTAGTAAAAGTTAATTTGGTAGGTGGCCGCCAGGAGGATGAGGAGCGTCGTTTGGCTCAGGTGGTGTGTGCC
GAAAACCTGTTAGGATA
>locus0764
TTTGTACTGATGACGTTTCGACCCGGGCTCGAGTACAGGCCCAGCCGCGTCCCGAGGCAAGGACGACGCTCTGACT
GTTGCTGTGTAGCGCCCTCACCAGCGGACCTACTCTACATCTAAGCGCGATACCTGCATAAAGGTCGCGCCAACGTA
GACGTGCAATTCTTTG
>locus0765
TTTGTTCGACCTGAACGTGACATGATAGGAAGCCGCGGATCTCGAGCTGGAGGACTGTTCAAGCGGCACTTACCAC
CGTGGAGTTCTTTTCAAGGGACCATCATGAATCCAATCGATCTGCAGCGGGTCAAGGTGAGTCTCACGATCAGAGTCCCA
CTGAAGACACGATCGCA
>locus0766
ATTTTCGGTGTGCTTTTATGTTACAGCGAGGAGGTGGAGCGTTGCCAGAAGTGAGCAACAACATTACTCAGCAGATAGAC
TTAGCTTTCAATATATTTTATGTGCTACTTTTTATACGCGTAAGTATACATTTTATGCGCCGAGGAACCTGTCTGAG
CCTCCCGTGTACTTTAC
>locus0767
GAGTTTCAGTCATTTTCAAATGCAAGGCCAGCGCAGTGCAGGTTGTTCTTGTGTTTAAAAAATTATATGGAACCAG
TGTGACCAGAATGGTTGCTATGGAAGAGTTTATCCGGAGTTGACCGGGTTGCTGTTTATGATCTAGCTCGAGGACTCAA
TTATAAAAAATATTAT
>locus0768
CCTAACTTGCCGATCAATTGAATGTGTGAAAACAATCGTTACAGGAAAAGAAGGATAAAGAGAAAAACGCATAGCCTTCTA
ACTACAGCAGTCCAATCACACCAGATCAAGTGGTGGTACTTACTAACACTGGCAGAGGCCATCTCTGAACAACCTAGAGT
GTTGAAGAAACGAAAA
>locus0769
GGTGGATCACTTCAACGCGGTACTGGATCAGTACCCCTGATGCGCCGTACCATGGAGAGCGTTGCCCGCGAGAGGTATA
AGCTTTGGTTAGGTTTGTCTATCGAGTTGGTGTGCTATAAAAAACAACGAACACTAGATGTGATCGCTACCCCTCTCCC
CCCATTTGTTATTTATAC
>locus0770
CAAGTGTGTAGTAAGAGCGAGGAGCTCTTGTGTTTATTCAGTCGGCATCATAAATAACAGAGTTTAAACACACAATGAAAG
ACGCTTAACAAGAAGCTAACCGGAGATTGAGAGGCTCCGCCACGCGCGCTCGGCCGGGCCGAATCGCAGCGACCTATG
AGTGCTCCGACTCGGG
>locus0771
GAATAAGTTGGAAGGATGATGGAGGAGGCATAAATAAGGGCCGATTCAGCTAGACCAACACGCGTTTTAGTTATAC
TAACGATATTTTATATAGAGTATATAGTTAGAGAATTAGAAGTGTGCTAGTTTGGCGAGAGAAGAACGGATGTAAGA
AGACACGACTGGGGTCT
>locus0772
CCATCGAATCGACTGGAGGGTTAATTTTCTGGTCAGTTGGTGCCTTCTGGCTTATACAGCGAGTGAGAGAGATAGCCGTA
TATACGGCGATCTCGAGGCCGCCGCTAACAAACCCCTACTTTACCCCTACATAAATATCCGGAATTAGCCATTTCTCCT
GTCTCCCTCTGCTCTCTTTCTTCGAGAGCGCCGCTCTCTCACTGTACTCGCCGTTTTCTC
>locus0773
CGGAAGCGTTGGGTCTCGGCCGTGATGTCGCTTAACCCGGCTACAGGTTGCTCTGCCCGGGGCTCGCTGCCAAGACC
ACCCGCTGCCCTTGATTTCGACCAAGGTAGGCTACCAAGCATCTTCAATTATGCGCTGTGCAACGAGCTTACTTTCTTAT
GTGACGCTCTTTTTTTC
>locus0774
AGTCGGTTCTGCATGCACTTTTGTGCGCCTCTTCTCTCAATGTTGATTTCTCTTTTAGCAGTTTCTTTACAACATC
TATACACTTATTTATATGGGATTGTGCTGCTCTATCGCTTTCTGCTGATTCGTTATCTGTCGCTCAGCTCCTCTGCG
TCTGTAGGAACGCAAAA
>locus0775
TTTGTCTCGACTCTTCATCTTTTTTAAATAACACTATTATCAGTCAACCCACTGTTCTTTTCGATACAAGGAACGATAAT
ACAATTTGAATTTTACGAACACAACATTTTTGTCTTTTGTCTGCTTGAATAAATGGTTTCGACGCAACTCTGCGATGTT
CCAGAAAGACGCAATTT
>locus0776
GGAAAACTCAAGTCTCGCCGAGGACTTTTTTCAGTCTCTCGGAATACGCCCATCTCTCGCCGGGATCCTTAATAATACA
GAGGCCTAATACCTGATCACATATCTCAGGATGAAAGTAATCTCTTTCTCTTCTGCGCCGAGCGAGGAGAGC
CGAGAGACGGAGAAAA
>locus0777
CACGATCTGTACAGAAGAGGAAGGAGATTGCTCCGGGGCGTGTGTACGCGGGTTCGAGAGCTCGAGAGCATATTGAAT
AACTCGCTCGCTGGACCGGCAAAATATCTGGCACAGCGCCTCCTGCGCGAGCTAGTTCTCTCTCTGAGCGATGAGTC
CCGGATCGACCTTCTTG
>locus0778
AGAAGTGTGCTTTACGTCGCTACTGTATGTGAATATGTATATAATAGCTGCAAGCAGATGTTTGTGTATCCAGCTA
TGACAGGCACTTCGTTTCCGTCGAGCGTTGGCTCTCTTGACTTTGCGCGCTATATGCCGCGGAGTAGTTTTCGTTTCT
GGACGATGATGTGTG
>locus0779
AACGCGAGAGGCAGATGCAGCTCTCGGAGTATATAGCTGAGGAGTGAGTGCAGGGTCCGCCGCGCTCAACCATGG
CCTCATTAACAAAGCAAAATTTTATAGTCAACTCGGAATTGCCGACGAGTAGGAGGAAGACGGTAAAGAGGAGGAGC
ATAAGCGAGCAGTTCT
>locus0780
GGATAAAGAGGGAGCATACACGCGGCTCAGATAGCGGCTCCTCGTAAACGTAATGCAAGACATATCCAAGTGTGAAATA
TTTCAGTCTAATCCAGCAATATCATAAAGACAGTCTCGTCCGTGAGGACCGGAGTTTCCGCTGCCAAAGTCGTAAC
CAGGCATTAGAGCTGTT
>locus0781
TCAGATGTCTGCTCAAAAAATTTATTTCCAGGCAAAAGCTCATTGCGCGACTGCTCGCCGAAAGCCAGTAATTAACA
ATTTGCCCTACAGATGGAGTTTTTACCGGGGTATTTTCATTGCGCATTTATCGCTCGCGGACGAGCGTATAATCGCATA
GCTCCTGCTATATATA
>locus0782
TTCGCGAGTGAGGGCCGGGGTCCAACTAAAAACAATAATGGCGAAACATAAACGTTGAGCGCGCGGAGCACTTAACAC
TTGGCACTTAAACAACCTGGCAAATTGCTCCCTTGCTGAGGGGCTGCGGACGTTGAACGGAATGCCCGAACGATGACG
ACGGCATGCCCCGAGAGC
>locus0783
ATAAATGAACCTTGTAACTATACATAGAGTCTTTCAGGAAGAATTTGTACAAACAAAATCCGTCGCCCGGGGCTCCGTTA
TCCGGGCGGCGCGGCAAGTCTGTGATTTAGCTTGGTTAATTGATTTTTTTAAAAATATAACAAAAACGAAAAA
AATCGAGAACGAAATCAACCGGATGAAACGTAATTAACACGAAAA
>locus0784
CTCTTTTCTCTCTGCTGGCATCGCTCGGATCGTAGAGTCTGTGACCCGCTCTTGTCAAGGAGTGTAAGTCTCGGCA
CCCTCGGCTTAAAAAATGTATCCGATATCTCGCTGTGTTAGCCCGCAATCCCAAGGAGCTGAAAAGGACAATGCGCGAG
AGAAAAGGAGAGGAGC
>locus0785
GAGCAGCCGCGCCCTCGTGGATATAAGGGGTGAGCCGAGCCGCTGCGGTTTACGATCGCGCCGAAATCACTGGCGAGC
TGATAATAAATAAATCTGGGCTTTTCGAGTCATTAGCTCGGCCCTCGTTACTAGCATGGCGAGTTTGTAGCCCGTAGTT
TATGCGCCGCTCGTTGT
>locus0786
AATAATAATCGGATGACATTAGTCAACGACGTAATTTATGACGTTGTAACGTTTACAATATTATAACTATATAAAGTGA
AAAAATCTGTACAATGAAGACATCGGGGTAGCGGAGAGATGCCCTGCCCCGTGTGATCATCTAGACATATCGCTTTT
CTTCTTTTATTATCG
>locus0787
TATCCATGCTTATAACACGCGCGGCTGAGACGGCAACGTAAATTTACGGGAGGGGGCGAGTAAAGTTTTGCGCGA
AAAGCGAAAACCTCTCGTAATGGCTGTTTTTCTTGGCAGGAATACTTAAAAAGGTGAAATAAAAAATGAAAAAGTTTCT
TCTCGGCTCCGCGCG

>locus0788
TAAAGTTTCGGAGCGGAGTAGGAGGGAGAGCGCTAGCTCCGCGGTCCAAGAATAAGAAACGCTGAGCATACATAAAACAA
GGAGGTTGGGGATGACGCAATTAAACACGTAGCCCCGGAATTCCTCCCCGAGGAGCGGTAGAGCGGCCCTCTGTATTACG
AATTCTCTCCCGCTTT
>locus0789
AGAGGAGAGCCGAAGAGGATGAGGTGGAGGATGAGAGAAAAATAGCCTCCCCTGCCCCGGGGCCGTATACAGAAGTGAT
AATTTCTGTGATTGAATATATCGAAGGGGGCCCCATGCTGACTCGAACTCGCTCCCAAAACCAAGAGAGACGCGAGGCTTG
CAACACCGCGCCGTAAA
>locus0790
AGGAGGGGGTATATGCAGCCCGGAGTGAGAGGCAAAAGTCCGGAGGCCCTCGGAGCGCGCTTGATATGTTGGTATAGCAAAA
CACTGTCCGGTGATGAGCGTCATTACCCCCACCTGTGCGAGAGCGGCCATTTTGGTTCCCTCGTTATATTGCCCGACGA
GTGAGAGGAGTATATAT
>locus0791
ACTCCAGCACCAAGAAGCTGAACCACTACCCGGAATACACAACCTCTACGCCGTGTCAACTGACAAAAAAGTGCCTGT
GATAGTAAGCTTATAGTAGATCATTCGAGCCAGAAGACTCAGCAACACAAGGATAAATTCGCGGCCGCCGGCGCGCGG
TGTGGCCTGGCGTCGC
>locus0792
GGCTTAGATTAAAGTAGTTAATATAGAATAGAAAAATATAATATTTTATTTGTGCTTTTTATGTACAGTGGACTTACGGTC
ATTTCTGGAGTCATGTTGCCCAATTTCTGTAAACATTGACAGCGTATATACAGCAGTGGCTAACTCTAATATTTACAAA
TTTCAAATAACACCTAA
>locus0793
TTGTCCCTTGGTCTTGAGATTGAAGTCCAGACGTAGGTGGGGCCTCGCGTACGCGCTTTGTACACCGGGCACTCGTACAT
GTTGCGCAGATCCTGTTTGTCTGGGTGATGGCGCGGATGTTGATGACAGGCATCGCGGGGAACAGTTCTCTGGGTCCGG
AGTCCACGATTATACCG
>locus0794
TGTAAGAGTGGCGGTGCATACTTACGTCCAGTTAGAGGGTGCATCAGAGCGGGGTGCGAGGTGGTGTGTCAGCGCGCTGG
TTGCTTGGGTTTGTCTAACCTTTGTGTTACTTTTGCAAATTCCAACGTTATGTTTGTGGCATATCAGGATCGAATCTAA
CACCTCTCTGCAAAATATAAATTAGTAAATGAAGA
>locus0795
GAGAGAGAAGACCGTTTTAAGAGCCGGAGCGCACTAAATCTCCGCGCGGAACGTTTACGGGGTTTTTCGGGAATGTTGAA
CAAACTATTGACGGCTAATAAGAGCCGATGTTCCGCGCGGGCGTCACGTGGGAAGATATCAGATTAAAGAAAGCTGAGA
GACCTTAAATATTAACG
>locus0796
TAATATTGTTTCGAATGAAGTTATTGTTTAAATGACACCGATCTGCAGCAAGATATATGAGCGTATGACTGGATAATTG
ATAAACTAAGTACAAGTAAGACAAATGTACCTCATCATGAAATCAGTACTAGTGAACATATGGATTGCCGATGTTTCTT
TGTCATTCGACTTCCA
>locus0797
GGGGCTTCAAAAAGTTTCATTAGGAGAGATTTCCTCTTGGACGAAGCGAACGGTCTGCTGCCAGATGACAACTCACGATA
TTCTGTGAGGTATATACCTTTGTATGTTGTGTTATTACCTTCATTTTCGAAATGATAAGAGTACCTGCCAATTCGAAGCT
TCTCACACTGCAAAACC
>locus0798
CCGTATAGAGAGAAGGGTATACGTACGAGAGAACGCGAGCCTGCGATGCCACGGCGGAACGTATAATAAGAGTGTGATTA
GCATTATTTACGGCCGGTTAACTATTAAACCCATAAATCAAGCCGGGACGACGTTATTTCTCTCGCTCCCTCTCGACTTTG
CTTCGTGGTTCTCTTT
>locus0799
GCAGATCATGTGGCCCCGATTTCAGTATACACACAGCGTAGCGAGTCTGCTGTGCTGTGTCCTCTCTCGAGAT
GACCGTTCCCATCATCGAGTATTAAACCGCAGCTCCGCGCTCGCTCTCGTCTCTCGTTCTGTGAGCATATAGCCCTG
GCATTATTAGCCCTCCA
>locus0800
TACACAAAGTTGATTCCACGGGATCTGCTCTCTTTTCTCCGCCAGCAAGCTTGCCCTCGATTTCCTCCCAATAGTTTAA
CTTACGCGCGGATTACTGCGCGAGATAGGAGCGGGACGGAGAAAAAGACAGCTGCGTGGGTGTAAATGTATGAAG
AGGGGACGAGTTTGGCG
>locus0801
GCGGCATCAGAGGCCGTGCGTAAATATGGGCTTCTGAGCTCGCCCTTCTTTTGCCTACTGGGGTGGCTCTCATCCATTT
AGGTCCATCACATGACTGGATGGGTGAGACTTAGCCCCGAGAGTTCTCACGTAGATTACCATCGCCTGTGCTCGCG
ATCTCTCACGCCGCTGC
>locus0802
AAAGTGACGCTTGGGTGGGGATAAAAAATCGCTGCAGAGCCCCCTCTAAATAGATGCGCCAGTGGCCCGAAAACTAGA
ATCCGCTCAGCCGGCATCGAGTGGCGCTCGGCCTCTCTCTCGGCTTCTGACGCTCCACGCTTCGTTCTGATGCGCGCA
GCAGCCCCCGTAAAGTG
>locus0803
GGCTTTACGCGTTTCGTGCGATACACACGAGGCTTCCGTCGCTTCCCTCCCCGCGCTTACTTTATTGGAATATCCGCCC
ACAGCATATGCGGAATTATCAAGGAAATGGGATGATGCTCGTAGGTTCCCTTTTATTCTGCTCTCCGAGAGCAGCAGCG
ACGATGAAAGGGAAAAA
>locus0804
AATAAAGATGAAATCGCGCTCGCTCGTCTTTTCTCCGCCAGCGCAGCGCGCCAAAAAGGACGCGAAGAAATGTGAT
ATTAATAAAGTTAAATTGAGCCAATCGCCGTGGAATTACAATGGACTCGCGAGTGAAGGATGGGAAAAACGCGCGC
GCGAAGCAGAGAAAAA
>locus0805
AGGCGCACAGGATATCGGCGGACAAGCCCTCTCCCTCTCTCAATTCCGTGTGACCCGCGCCACCGCCACCTGTTTGTGA
TTCAATTAACCTACCGGCTTATCGGGATAAGGTAGACTTATCCGGGGCTCGAAGCGCACACCGGGCTAAACCGGATCTTA
TTCCAATGGCATCCACCTATTCCCATTTTCAGT
>locus0806
TTTCGAGCAGCGCGCAAGAGAGCGACGACGAGCGGGCTGGGATGCAAGCGGGCCAGGCCAATTTTCAGCAAGAAAAAT
CTGATTCTAATTTATGCAAAATGGCCCGCGCTGGCTCGGGGTTTCGCGACTCCGTGTTGTGGGCGTCCGCGTGTGCGTG
TGTACACGGGGTCGGGA
>locus0807
GCAGGCTGTACTCCCTCTCTCTTAATTCGAGTCAAGATTACAAATTGATTCCGTATAGCCGCGCGAGTCTGTGTATGAA
TCAGGCGTCAGGTGTTCCGGAGCGACCCCTCGGAAAAGCTGAACTCGCGCGCGAGTTTCCGATATATATACATGCCGTA
TCGCGGCGCGAACGGAG
>locus0808
CGGGGGAGAGTGTCTGCTGTACGTGGCCGTGGCGCGGCAAAAGGGCGCGTATGCAGATGATCGGGAAAGTGGAGTAC
AAAGGGCCCATAGTCTCACGCTATTGTGGGCTCAGGTAAGATAAAAGGGTGGATTCTCCAGCGAGCGCGTGCATGAT
GGCTAAAAACGGCACGG
>locus0809
AGGGCGATGACGGCAGCGGAGGCGGCTAACAAATGCGCGAGCGAGAGGGAGAATGTCAAGTGGACATTGTTGACGGTGACA
ATGCGGCTGAAATTGCCGGAGAACAAGAGGTCTTATGATGACGCTGCTGGCGAGCGAACGAGCGAATTGAGCGAGAGAG
CCGGGCTCTGGGCACAA
>locus0810
CGCCCGCTGCGACCGCACCAACCCCGGATTGTCGACGAGCTGTGTAGCCCTTCTCTGTGTGAGAGTGGGAAACCGTGA
CCACCATCTCATTACCGGTTCCCATGGGTGGAGTGTCTCTGACGCGATGCGAGATGATATTATTTACGCCCTGGATAGA
GGCTGGCCGCTACTGAT
>locus0811
TACGTGGGCATGTTGTGCGCGCTCTGTGCGCCCTACGGGGGCTACTCAAACTCGCCCTGCCGGTGCCCGTGATCGTCAG
CAACTTTGCGATGTATTACAGTCACACGCGAGGCGGAGCCAAAGCTCCCGAAGAGAGACGTGAGTGTCTCCAGTGGAGC
AGCCCCGACGAGAGCG
>locus0812
GGGACTCGAAAAACACTTCTGCGCGCTGGGCGCACGTGGCGAGGGTTTCGGCCCGGCTCGAATTCAATGGGATCGGTGTAA
TTAAGAGCCATTTCTACACGATTTTCCCGTGTCTTCCCTGGCGCTCGGTTTAAAGCGCTGCGCCCTGTGTATAGGATG
CAATGGTATATAGGGG
>locus0813
CCGCGCTGAAAAGCGCCGGGGGAGAAGTCGTAGTCAGGTTCCAGCAATGTGCCATCGAGCGCAAGGGGATCATTTCTA
ATTGCCCGGACTTCTTTTCATCCCTTTGTGCGCGCTACTGCCTCGCTTCTCGCCCGCGCACCCCTTTTCACCTCCG

```

AGCTCTTTTCCCGGAGA
>locus0814
CAGCAGCGGCAGTCTGACAAGGACGCGATCGCTAGTCGGGGGTCTGCGGGCGGGAGAGGGGTGCTCTTTCAAAGACTC
AAAAATTACTTTCTGGATAAGCTGGATTAGGCTCGCTGCCGCGCCCGAGATTAGACCGGTGACACTCTTCCCCCTCCGCGC
CAGTCCACTTTTCAGTA
>locus0815
AAGGCGAGAGTCGTGAATAATCGCGGGAGAGACATTAACCCATTCCCGCTTTGTGCGCTTTTCTCCGCAATTTTCCG
CCACATTTGCGTTTGTCTCGGACAAACATGCGCGATGACATAAAATATGCGGCCGCTCGTTTCTCTCTTCTCACGC
CGCTCCCTCTCGTTCCG
>locus0816
CAATTGTCAAAGTGAAGTCTGTATAGCGCATCAGTATGTGAACTGAGTTTAAATGCATGTTGTTTGTCTGTCTTGC
ATGCAAGGATTCGGTTTTGTAAACATTCGCAAAATAGTCTGACGCGGACCGACAGTGAAGGCTACACGGCACCGTGGT
TGAGGCGAGAAAGATTGAGGTGTCATGATTT
>locus0817
CGACGCTCCTTACTTCGCTTCTCGGTTTTTTTTACTCTCGCTTTCCCGGGGGCGAGCGCGCTACAATAAAAAATTT
AATCAAAATGCCCTCTTGGTAATTTACAGCTCGCAGGCTCAACCTTCCCTCGAGAAACCGCGTATATACGCTGCCGCT
CCTTTTTCTTGCAGC
>locus0818
GTGTATAGCCGCGTGTACAGCTGGCTCTGTCTTGTGCGGACATTAATCATCGAAGTATCTAAATGACGGGATTCGGAT
GTATTACCATATAAATGACATCATATTTCTGGTCAGGTTTCCCCAGTTTGTGCGCTCTCGCCCCGCTGTGATGTATGGA
CGACGGCATATTGGCGC
>locus0819
TGTGCGTGAGAGTGAGACCAACCTGCCATTCCGTTCCATATCCACATTCCATTATCAACGGAGATGGTAACCAACAA
TCAGAGAGAAAGGGGAGAGGGCAAAATGGTTTGCCAAGTAAAGAGAAGTGCATTTTTTTTGTATTATTTAAAAATTCA
TTCTATACGCGCTTATA
>locus0820
AGCTACTGGGACAGGCGCCGCGGAACAACGAGGCGGCAAGCGCTCGCGGAGAAGAGGCGCTTCAACGACATGGTGTCT
CGAGCAGCGCTGATGGAGCTCAGCAAGGAGAACCACATCCTGAAGGCCAGCTCGACGCGATCCGCGAAAAGTTCGGCA
TCTGCGCGGAGTCGGTG
>locus0821
CGCTCGCTCTATCCACTTGC GCGCTGAACTCCCCCTCGCGGCAAGGATGTTGAATTCGAAAAGTGTATTCCGCGCG
TCTATCTCTGAATGATATGGAAGGAACGCCTCTCCACGTGGTGCCACGTGTGCGCTCGCGCCAACTCGTCCCGCGAT
CAGTCGCACTGACATTG
>locus0822
ACAAGGCATAGAAGAATAAAGCAGAAATGCAGCAGCAAGCATGCCATCGCAGGTTAGAAATAGAAATCATAGCAAAAA
AGTTTACCATCTTCCAGAGATTGGTCTTTGGGCAATGGATCGACATTGGCAGTCGATTGCGAATTTGGGATAGTGATGAT
GTTTGGATCAGTGGGAC
>locus0823
CCGGCAGGGCCGTATTCTCCGCGCGGTCCAAGATTCTCCGAGGACTCAAAGTCCAGCGGTCCCCCATGAGCAAGTAAG
GCACCGAGGAGCTGCACACCCATTTTCTATACGCCTCTGCAAGCAATGGGAAGGATGCATCGTTAGAAGGAATTGC
ATTTTACTTTCAAATTA
>locus0824
GCGCAAGATCAAAAGAGATAGCAGCAAGAGGGCTCGGTAAAAAGAGACGAGAAAAGGGATACCTCAGGTACAACAGCCA
CAGGCAAAAGTAGATCGTATATCTGCGGACAGACCAATTGATGTCAAGAAATATTGAATGCTTTTACCGTCTTTCACTCT
TTCTTATTACGAGTATA
>locus0825
CTCATAAAGTTTGTCAACCGCGCGAGCCGCTCGTACCTCAGGCATTTTATTAGGGTCCCGTGGAAGGACGTTAAATG
TTCCAATCTTAATTAGGTAGGTGTTTACAGCTGGATAATCTGCGACGAGCTCGTGCAGATTCCGCGAGGCGCGCTCTC
GTTATGCGGCTGCGCGC
>locus0826
AGAGAAACGATATAAGGTGTCCCTCGGCGTTAGGACAATATCTTGGCGGACCCCTCGGCGCCCGGTAGCTATTAGCCGAC
GTTATGAGCTGTTGATTCTGGCCACGTAGTGGTCTCCCCCTCCCGTATATAAGCTGCCGAGCTCCTGGCGACTTGATTTA
TTGATATCGCATGCAAA
>locus0827
TCTTCATAGCGACCTCCTTGATTCTACCATATTTCCGGAAGAAGTCTCAAGTGCAGCTCTCGCACCCCGTAAAGTTAAT
CCACCACGAACTACTCGGGTGTCTATTCTTAAAGGAAAATATAAAAAACACCATACATAACAGGCTTCTTTGGAACCTG
CGCTTTTTTATTTTAAAGAAATTTAAATTA
>locus0828
GAACCTGCGTCTGGTCTTGTAGGGCCATCTTCTCCGTAAAGGATTAGTGCCGACACGAGCCGACCAAGAGCCTCCAGCCC
GTACGCGTCCATGTAACCCACGTCCATGATCGCATCCGCATCCAATAACACCTCTGCAACCAACAACGATACTACTCAG
TCCCATTTTATCTAACA
>locus0829
TTCAAGTTGAACAAATGCTTTTCGTCTTCCAGTTTGTAGGTTTGCCAACTCGAGGAAGACACGCCATCTTATCACACAC
GTTACGATTCTTTGTATGATCAAAATACTCTTCGATGTGTCTACTCCAACAATGATGATTCCACAGTTTCAAAACAGATTGCG
CTTGAGGGGATCAAGG
>locus0830
TGTTGGTGTAGTGGCTATAGAACGAAAAAGCAACATCTTTTTTTCATAATATAACATTTCTTATTCAAACGTATGTT
CTTACATTTACACAGTACAAAAAATATATCTCAGACCCGCGCGCCGCGGTTTCAACATGAAGTGTATGACTTGGGGA
CGGCCGACGCGCGGGT
>locus0831
TCGTACGCGAAGCAGCGAGTACGCTCCTTAACGGGCTCTGTTATGCGCAGCCCTCCGGGTTTAAACGAACCGCAAAATGCGT
TGTTTTAACGACGTCGTATAATATTTAAACCAATATCGCGGAGGCCCGGCCCTATAGCACTGCGCAGACGGGAGCAGCGCT
ATGCTGTTGTGTGACCT
>locus0832
TGCTTGAAATTTGGCGCAAAATTAGTAAGGAGACGAGAGCGCGAGAGCAACTGCCGCGCTCGCTGCCTTGGGCTGC
GTGACGCGAGACATTAAAGTAACCTCTGCGCTCGCTCTCTCACTCGCTCTTTCTCCTCTTCTTGACCTCCTCGCGCG
CATACACACCTTACGTA
>locus0833
AGGACTCGAGAGCGCGCTCGGAAGAAAGGGATATAGTCCGCGCTGTGAGCGAATCTGCGCCCTTAATATTTTACAG
ATTTAGTAGATCGTTATGGCTTGTAAATTTACTACCAATTTACGCCCCTAAACTTATTTATCGTCCGCGAGCAGCTCG
CGTTAAGCCGAAGCTGCT
>locus0834
GGAGTATATAGGTATCCCTCTCACTCTCTTACTGGCAAGGATATCCCTTGGCGACCGTAGCGCGCGAGCAATACCTAAC
GGAGTTTATTCGACATTGTTGAATGGCTCAGTTGTAAATGATAACGGATGACCCGGGAGAGGCGCGGGGCCACTG
GGTAATGAAGTACGGTC
>locus0835
TTATTATTAGCTGGCTGCCGCGCGGGTCCCGCGGAGAAACTGTTACTTTTATGTGGCGGTATTTTGTATCGGGTTGCCT
TCCTCTATTGCGTCGGGTTTTGGGGTTCAGTTCACTTTTTTTCGCTTCTCGTGAAGTGGTATTTTCAAATTTAGAGCCG
GACCAGCGCTCGCCCAA
>locus0836
GCGAGTTATTTTTTATTAAGTTTATTTTATATATCGACAACAACAGTCAATATTAGAAAACAGAAGGTTTCTTGAAG
CAAACTCGAATGAAAAGTTTTGTGGAACAATCCGAGAGACACTATGTGAGTGTGCCGCGCTTCTATCTATGGAGTCGTAT
ATATATAATATCGTGTG
>locus0837
AGTTCTGTATTATATTAGTCGGCTTGAATGGCCGTCGACCAATGGCGAGGATCGTAAAGCAGGGTTAAACATTCGGTCG
GGTTGTCAAGTGAAAGAGTGGCTTGAATTTTCGTTGCACAGGATCATTTGTGAGAGCCGTTTATGCGAGAGTGAAGCCTT
ACCGTCTCATTCGCTC
>locus0838
GAGGAGCGATGGTAAGAGAGGGAAGGGAGTGAACCTCTCTCGCTGTATACGAGAGAAGGAGTGAAGATGATGCAAGTT
GTGCGTTTGAAGGAAGGCGGAAGGAGGACCGACGAGCGCGAGAGAGCGGAGGGAACCGGTCCCGGTCACTGGGCCACC
AGCCGCGCTCGAACCCGCCACACTTGC
>locus0839
CACTTTACGCGACTAGTCGCGCTTGTCTCGATGCGTGCAGGCTTCGCGCGCGCAGCAGTGGCGCGCTCAATTACG

```

ATTAATTAGAGCGGAGACTGACAGCGGACGCGCAACTACTCTGTCTGCGTGCGCCGAAGAACGAGCAGCCGTTGACGCTT
TAATGCCTTTTAACTTG
>locus0840
GAAGCGAGGGACAAATATATACAATAAAAAATTCAAATTGTACCAAAATATCCATGGTTGCTTATAAATATAATAAATAATA
GAGATACAATGCATAGATTTATTCCGAGCTGTGCTCCACCGGCCACCATAAAAGTGTACGTGGGATCGTTTTTAAACA
TTTCTTACCAATGCATA
>locus0841
CTTGTACGCTACAGCGAACGCTGGCGCGCGTTAATTAGTTTTCGCTGAGTTAATGACTTTTTCCCTCCTAATCAGGTAAT
TCCGTATCTCTTTAAAAATAATCTCGCCGCCCTGCCGGCTAATGAAATTCGAACTCGTTACTTACACTCGTGACGACGA
ACGAGCCACCTCTCTCG
>locus0842
CGAAGAGAAAAATTAAAGGATGACGATGTCACGGTGGTCTATGTGTAGAAGAGTGCCATTGTATAGTGTTTTTGAAACG
TGAGCATTAAATGCTACATCTTGTGTACATACGCTGTTTTCGAATTATTTCAATCTTCCCACCTCCTGTGATCCCACTTA
TTGTTTTCTCCCTTTTA
>locus0843
GAGACATCGACTACTGCGGCAGTAGGAGGCCGAGCGCGCGTAGTCTGGCCCGCGTATAGACGGCGATCGTAAACATTT
CGTAAATTTGCTCCACAGGTGTGCCATCCGCACGCTAGCCTATTTACTCCGTATACGCCCTCGAGCCGACACGCTCTTGTG
TAACGCGTATACACGCG
>locus0844
GTCGCTGCTGCCAGTGCTGCACGGGGCTGCGAGCAGAGGCCAGCGGGCTTTATTATCAGGGCCAGGCTCCCAATTAAG
CGGCAGCAGCTGTGAAAATTAATGGAGCACGCTTTAAGATGTAATTGGGCACATTCACTAGTGAGTGGTGAGAATGGG
GCGGCATCGCGCCACAG
>locus0845
GTCTCCTCACGGGCTCCTCGTGGGCAAGCGCCGACGCCAACCTCGCCGATAATGGAGGCTGCTAATAAATTCACCCGT
TAATATAAAATAATCGTTAAATGCATTAGGACACACTTACGGAGCCGCTTGGCACCGCGCGGCCATCATTTTTTATT
GGAACCACTTCTCCCCG
>locus0846
CGGATGAATTTGGTATGTATAGCCCTGGGGCTGGCGTTTTTTCGCTGATATTTTCATCGTGCAAAATAGCGGACATCCATC
GCATTTCCATCGAAATGGCAGCTGACGTGGCGGCCAATGGCGAAGCGCGAGCCGAAGACGCTCTCGGCCCTCAACGCTCTT
TTCCCTCCTTCGCTCG
>locus0847
ATGGTTCTAGATATTGGATCAAGACAAAGGACCTGCCATTGAACTTACATTGGATTATTGAAAATTATAGAGATCCA
GCAGGTCAAGAGGAGAAATTTGAAGATTCTGTGCAATGGTAAATCGTGATATGTCCAAAAAGTTTTTAACTCTTGTTTAA
CAATGCTGAAAAACTAT
>locus0848
TAATAACGTAATGAGCTCTTTAGTTGATAAGTTGTACGAGTGGCTAATCGGTATACGAGGAGAGTCGCATAGGTGCCGCA
AGACGTGCTAGGCTGTTGGAAGGGAAAAATCATAATTTACGTGCGTGACAAACACAGTCCACGCGCTTCTCAACTCGAAC
TAGTGTATATATTAGA
>locus0849
GAGATGGAGGGAGTAAGAGCCACTGCTGCTGCTGCTACATCCGCAAGGCTATTATAACCGCTCAAGCGAATCTCTATTAA
AACGTGTTTACACTGGCTTAGGGTTGACTCAAGCCAGAGCAGCAGCAGCCCTTCTGCCTCGACGGTGGCGGGAGGCC
AAGTCTCTCTCTCTATCTCAGTCGAGAGCTCTATAGCCCGGTATACAGCCGAGTAATGCCTATCTAATTTGCGCGTGT
ATGAATAGTGAATCCCGAAGCAGCTCGAGGCTATGAACAGATCCGAGCTAACACAAGGGAGAGCCATATGAGCTAATTT
ATAT
>locus0850
TAGATACGCTAGCGTTTTTATCAATAAAATTTTACATACTTTTGATACGCAGTATGATGGTTCCAAAAACGGTCACCGGCCAA
CCAAATTTTGTTCACACATCAATACACCTACGCTCAGTAATCGAAGTAATTTGTACTTTGTAGCCATATACTATAAATATT
TTTTTTTAGTAGTTCCGCCCTCACCT
>locus0851
TCCGAGACTTACGAGGAGGCGACTTGTCTGCGTCCGCTATGGACGATGACGTGACGGCCAGCTCGCCGCTGCAGGTTG
GCAAAATCAACACGCTAATGGTGATTTCCATTTTTTGTCTTTTCGAAACGCCACATGCCCTCACACCAGCGCCAACCTT
GTAATTTCTCATCTTTT
>locus0852
GGACGAACGAGGAGAGCGAATAAGACGAGTATACACGAGGAGGGGGATTGCGGAGGCCCTCATTCAATTCAATTACG
TAATGAATTTGCTGCTCTTGAGTAAACACCCCTTCTCGCGGCGACTGCTCTACTCGCTGTGTGTATATCTATATATATGT
ACATCGAACCAGGGGAG
>locus0853
CGTAATGCGTCTCCCTCGTGAGTTTTGAGACATTGTGTACTAATTACATTATTATACTTATATAAAACATCTGTGAGTCT
GCCTCGTCTTTTATAAAGTCTTGTCTATATTTCAAAAAATTGCTTCTGGCGTCAAACCTTTATTACACACATCCCTATCTCG
TATTAACCGCAACAGCG
>locus0854
TATCTCTGACTGTTTCGATGACGATGTCGAGTAATGCCCTCTCTATCTCCCTGTCTGATTGGTCGGTTGTGCTGTTTGA
GCCACGAGGTGCGGATGAAAACCCCTCGTTATGCTGGACGAGCAAGGCGGTAAAGCAATCTATCTTAGCCTTTTCTCTAT
TAAAAAACTTTTAATA
>locus0855
AGGAACGGTAGGGTATGTCAAAATTACAAAACAGTGTAAGTCTGAAGAGGAAAAACAAAGCGTGAATTACCCATAGTCTCT
TGTTGTAATTTCTACCTTTGAGGAGGGATTGCTGATAGCTGACGTGGTTTTTTCGGGGCGATATGTCAGCCTTGCTGCTCGT
TCTCCTTTTCATGAGCA
>locus0856
TTAAACCTATGTGCTCGATGAAGAGTATTTTGCAGAGGAGATGATGTGACGCGTTTTTGTCTATTGTATTTACGGGGCTT
GGGCAAGCAGGGCTATCAGTGCTAAGTGAGAAAGACACAAGTCACGTTATTGTGCGATTACTAATTGTGTTTTACCAG
GCTTGGGCAATACCTTT
>locus0857
GGACACATGCATAGTAAAGATGGCTCTCTCTACTAACTTACCCCTTTGTGTTTTTTCGATAGAGGTTATTAATACTCGA
GGATGCAATTTTGACTTTTGACTCAATCTGTAATAATAGAAAAAGTAGAACATTAGAATTTTGACAGTGGTTTTTGGCTC
TTCTTTCTGCCATGCCA
>locus0858
ACACACAGGCACCTCGCGCGTTTATGTACACAGACACAGGAGAGATCAAGCGCGCATACGCTGCATGAAACACATGTGCA
TACGGCCACATAATGGGAACATAACCCCGCGCAGACCTGATGCCCGTCCCGAGTATTTAGTGTCTATGGTGTACAGAG
TTAATTGCACATGATTG
>locus0859
TCGACTATCCTATCCGCGAACGCGCGAGCTCTCTGCGAGCTCGGCCAACTTTACGTAATCATAATACGAGTGAAAGAAT
GTGGTTTTCCCTTTCAAATTTACAAAATACTCCGCGCACCGGCTCTATATATACACCTATACAGCGCGCCCGCCACCAAC
ACTACTACCGAGCGCAC
>locus0860
TCGATGGTATCAATCTGCCTTTCTGTTGCTGCCTCTTCCTGATCATCTCCTATAATTTGTGACAGACTGTGCTGTTCTTC
TTTGATTTCTTTCTGAAATTTTCCCATTTCTTCTTCGATAGGCTCTTTATACTCAACATTACGTGCCTAGAAAAATGGTGT
TTGCAATTGTAAAAAAT
>locus0861
CACTGTAATCTGTGTGATGTTCCGGTGTATTGCAGTTATGTGACGATGGGAATAGATCTAGGCAACCTTGCCTCTC
AGGACATTTTCGAGTCCCTCCGAGCTTGAAGACTGTCGCTATTGTACCAGGTATGCTTTAGAAATTAGAAAAATAACAAAA
AGTGAGAAGTACTTGATCCTTTG
>locus0862
GGCAGCGGAGAGCTGTTAATGCCAGCACGCCGAAAGCCATAAGCGCGTGTGCGTGCGGGCTTGTGTGCGCTGGTAAAT
TACTATAATTGTGAAGTTCGGCGATTTTATGATTAGTTCTGTCATCAAGCGCATACCTACCCACCTATACCGAGCTC
GAGTGGGGGAGGAGAG
>locus0863
CTCTCTCGGCCCTGCTGCTTCCCCGTCGCCGAGTCCCGCTCCCGCTTCGTCGCTCGCGGCTCGACATCATGATGAAAT
TCCTAGCATTCAATCGCAGCACCGCGCGCAGCTACATACGGCCCCCGCCCCCTCGGCAACGCTCCGAGCAAGGCTAGCG
GCGAACGCGCGCTGCA
>locus0864
GAGGAAAAAGTCGTATAAAAGAATGTGTGGATCGAGGATGTGAGTACCTCCAGGATCACTGTTTGTGTCTTGTTTGGCG
TTCCTCTCTTAGTTTCGGTTGGTATTTCGCGGGAAGACAGTCAGGGTACAACTGCATGTGCAACTGTCTCTCCGCTCG


```
CGCCATTTTCATAATACT
>locus0865
ATATCTCTCGATTTCGCAGACGCCCTTCCAAAGCTGTCCGTGCCCTATGCAGTCGTGTCCAAAAACGCGGATACTGGGCCC
CTTATTGGTAATGGTAAGGGAGCGCCAGTAGTATCGGGGCGCGTCTGTCTATGCCACCAGCGCCTTGGTGGGCGGCC
CTCGCGGCGCGGGGTC
>locus0866
GGCGAAGAAACAAGTGCTCCGTAGCGCTGGCGCGCGATGAACTTTTAATAAATGGTAGAGTCGATATGAAGTATAGGAC
TTTGACATATCGTGTGTCTGTAATGTATAGTTAAATCTCTGGCGGCAGATGTGGCACTTCAACCGCGCCCGTTCGCTGT
ACTCGCTCTCTCCCTAT
>locus0867
GCAGAGCAAGACTTCAGATCGTCTCGCGTGCACACTTTTATGTACGAAGCCTGAATAACAAATCTGTCCAATTACATG
TCGACATCAAAGAAGATAATATAAACACTACATCGATACATCGTCTACAAAACCCGGCTGTATGTTTATTAATGCGTCC
TCCATTCCCGACGTTTG
>locus0868
CACGCAAAATATGCGGCTTTTCGTCTAGCCCCAGTGAGAGCCGAAATCTGTAACCTCCTGCTGTGATAATTAGCGCATCC
ATCAGCCGCGAGCAAGCCGCGCTAATGCCGATCGTACGTTATCGTTATCAGGGCCTTCCATTTTGTCTCCCTCCAC
TGATGTCGTCTCTCTC
>locus0869
GGGGCTCAGCGTGCGCAGGGATGCGAGAGAAACAGCAGCGACAGCAGCAGGGATGTGTATAGATATGTGCGGTATCTCTA
CTGCACGGCCAAATGGGTTTGAATGGCCGTGATAAAATGCTATGCGTTCGAATGTTGACTAAAGCTGCAGCGTATCCAG
TGCAAGTGGAAGCCAA
>locus0870
GAAAAAAGCGGATCATCCCAGGAGTGGTCCATCGTTGAGCGGTGAGCCCTCTGTTTACGTATATACTGAAGGTATACCGGAC
AGAAATACACTCAGGATACATTCAGTATACGTACAGGGGGTTTACATTTCTCTGCTGTGAGAGTGAGAGCTGGCCCCATC
CATATACATGCATACGC
>locus0871
ACAAGACGACAGCTCGAAAAATCGCAGTGAGCCGAGAGGCGAGGAATAGTACCGGAACTAAATGGTGTGTGTGCGT
GACCGTGCCCCACAGAGCTCTGACAGCTCCGCGCGAGTGGCTCGCTTAAGTCTCTCGCTGTGCTGTGCTCGCGGAAGC
GCTCGCACGGCTTATCC
>locus0872
CATGAGTTATAAGGCGCTGCTGTTCTAGCACTGGAAGTGGTACCTCCGCGGGATCCGCGGATCGCTCTTTCTTCCTCT
TCTTCTTCTTGTGCTGCCGTATCCGTAGTTATCCCTGGCGCTCCATCCGGGATATCGCTGTTGATGCAAGTTGGCGTTCCGTC
CTGGCGCGCTCATATATCGC
>locus0873
GGACAGCATGTGCGATGGAGAAGATGCGCGAGTGCGAGATACACACGCAACCGCCGAAAAAAACTGTGCAAGTGTGTCG
TGTCCAAGTTCGCCAGCAGGTCCAAGCGCATCGACGTATCGCGCGGATAATATTTCCCCCTCGTTTTCGCGCTGTTCAAT
CTCGCGTACTGGTCAAC
>locus0874
TACGGCTGACTGATTAATTTCTTGATTCTGTTTTATGCTATGTTAGATGGGCGCGGTTGTCGCTGTCAACATATTTGT
TCGAAGTATCTCAAAATATAGATGACGTTACCATGGTAAGTCTGAATAAATGACACACGCCCGGAATATATTTATATATA
CAACCCACTACTACTAC
>locus0875
ATCAAACTGCCATCGATATGTCTCCTGAGAAATGACTGATTTGTAAGAGGGGCTCTATTGTTTTGCCCCTAGATGGGC
CGGCCATTGTCCGGGTAAACCTGTTTGTGCGAAGCATGCCACAATAAGTGACATCAAGATGGTAAGTATTATTGAACGA
AATGCTAAGCAAGCAA
>locus0876
TTTTTCCCTCCTCCTCTTTCTCCGCTCCTTTGAAAAATTTTCTCCCCAACCGCTGTTCGAGAGGGATGAAGATTAATTC
GTTCCGCTTTAATCGTATCAAAGTTTGAGAGCCCACTCGGAACGGCCGGCTGAACCTTTCTACTCTCGGCCCTTTATTT
TTCCCGCCCGGTGCTAC
>locus0877
AGCCCGACTACTACTCGGAGAGAGTCGGTTCCGCGCGTGCCTCCAGGCTCTCGAGCTTTCCACCTTAAATCATATATT
TATCGCGACATTAATTCACACCTTTTAGGGGCTGCCCGGCCCTTTTTCGCGGTCCCGGACAGTCAGTCCGCAGCTCC
TCCTCGCGCGCGTCTAA
>locus0878
CCGAACACTGCTGCCAAGTCTCAGGCCAAGACTACTCATACCCAGCGAGAGACTGAGCCAAGAGATATGTATATTAATG
GGGCAATCTTACATAGTTTGTGTTACCTTGCCATTCTCAGGCGCGCTTGCAAGCTTCTGGAGCTGCGTATACAAATTACCA
GGCCCGCTGAGGGCGCG
>locus0879
GAGTCTGAATGACAAAAATGAAGCGACGCGCCGCTGAGGGAGAGAGCGAGGGAGGCGCTTATATACGTGTTTGCGCATAT
TCCTCGCAATATTCTCTGTTTATCTCTATTGTCGCCCTGTTTATCCAGACGCGCGAGTCCATTTTCGGGCTGTCTTCGT
CGCTTTAAACCGCTTT
>locus0880
CACACGGGCGCCAGGCGGTTCTGCTGCAAGATCTGCGGCAAGGATTCGACAGGCCAGCACACTCTGCAGGCACAAGAT
CATCCACACGGCGGAGAGCCGCACAAGTGCCAGACCTGCGGCAAGGCCCTTCAACCGCAGCTGCACCTCAACACCCACA
CGCGCATCCACGCGAAC
>locus0881
GATTCTGAATATTGCGCTCCGGAGAGACGTCGCGTCTGTCGAGACCAAGCAGGACGCGGAATTGCACCTTTAATCAAG
ATTTCTACCAATTTGCGAGCGCGCAGCGCGCAAGACAAGCCCTTTGTTGCGCTAAGTGGTGGACTTCAAGTGTTC
AATCCACACAGAGAGC
>locus0882
GGGACTGGAAGAGGACCACGCTGTGTGCTGCTGCTCGAAAGCAGAGCTCTGCGAGGGGGAGGCATGTGCTAATGAACGC
CATTAAGCAGCGTTAATTAGATTGCGCTAATCTGATTGTCCCGCTATCTTTCTGACCGCTACACTCCCTCTTCC
GGGCACACTTTTCTTTT
>locus0883
GCGCTGATGCCGCTTTCTGACGCATACGTGGTCATGGACAGGTATGGCGCGCGCGCGCGCTTGTGAGCGGATAAATC
ATGGGTTACCACATTGTAGCCAGTAAATCATCGGACGCGGGGAGAACGCGAGAGCTTCCAGCGTGAATGAACGAAT
TCATCTCTGTCAAGGCCCC
>locus0884
TCGTTTTTCATAACGATTTTTTTCCCGTCTTTCCAGGATGAGTCCATCCGTTTCATTGAGGCTCTCCTACCATTCGTGAA
GTCTTTCTCGTACAGTGTTTCAACCTACAGGCAGCGAAGAGCGCTACTACAAAGAAGCAGAGAGCGGATGAGCCTCG
AAGAGGAACGCCAGTGC
>locus0885
TGTCCTGAAAAGTTTCGGCGAACGGAATTTTTCAGAAAAATGTCGGCTCCCGAGCGAACGAGAAAAAAGCGCAATAATC
TGCTGCCATCTTTCTATTACTAATGGATGACAGCGGAAAAAACAATCGAAAAATTTGCCCGGACACTGCTCACAGAA
AAAAATTCGCGTCTCGA
>locus0886
TTGTCAAATTGCTTTTACATTTATCATTTTCTGCTCTTATTATCGAACTACGAGGCTGCTGACGACATTAGGCTTGCTAG
CACTTGTAAATAATGCCAGCAATGTGCTATTTTGTAGTATCATCTTCTCTATCTTTTAACTATTATTCAAGAA
TAATTTATCACATTTTA
>locus0887
TOGTCGTGCGGTTATAAGCCACTGCGTCATAATGGCGCGGAAAAAGCCCCCTTTTTCGCGAGGACAATGCCGTTTATTTAA
CATCGTTTAAAGTACAAAGCCTGTTAATTAAATGAACGAGCTTGAAGCGCAGCAGTAGTCTTACGCGATAATAATAGTCA
AAGAGTCGCTTCTATCC
>locus0888
ACACCCTATATGTATATATAAACGAAGGGAAGAAAGAGCCGGAGAGCGAGAGAAATCAGGCACAAATCCTTTTAAATCCAC
ACAATTGCGACAAATGGGCTTTATTTGTTATCTCGAGGGCCACATTGTGACTCGCGCGGACAGATTACGCCGCGCGCCA
GTGTACGCGCGGCTCT
>locus0889
CGTACCTTGGGCGAGTGCCTCTGTTGCTATCTTCTGCTGCTGAGGCTGCTGAGGTGTCAAGTGTCAATGCCGAGTCTTTGGT
CGCGCTGTCTGGCTACCCTGCGGATCGGCTTCCCAAGACCAATCTTCTGGGAGTCAACACCGGCATTGGTCCCACCGT
GAAAACGACCGTCTTT
>locus0890
GGGAGCGAAGAAAGAGCGAAAAAGCCGCTGGAGGGGAGAAGACGAAGTTAAAGCGGTCTCTCCGAAAGACAGCTTCCACGA
```

TCTCATGAATGAACTCGCGTGGCTACTCGAGCCTCGAGTGGGGTCCCCGACTTCCCCTCGACCGGCCGCCGAGCGGC
TCACTTCTTTTCGCTCG
>locus0891
AGAGGGAGACGAAGCTAGAAAGCCCTATTAGGCGACGCGGCCAACGTCGCGCGGTATAAAGCATAACTACAATTAGCG
GTAATCCGCGTGACACGGGATGGCACCCCTTTGCGCATATTAGAGCATTAGCCGGCCGACGCGAGTCAGCGGAGAGCCGT
GTGTCAATCCGAGACGC
>locus0892
AGAGATCAGGGACCAAAAAATGAACTTAACCAATGCGTTTCTGTGTGTTCAAATTCGTAAGTGTGTTCTTGGTTGCG
GTCCAGCTAGCGGATGAGGACTGGCTGACGCCCTAGCCTCCTAGTGTGATGGTAAGCAAGCGCAAGACAAGCCCCATCG
ATGACAGGACTAATCGC
>locus0893
TCCCGGCAGGCCCGAAGATATTACACTTTCATGCCACAGCGCTAAAGTAAGTATATAAAGCAATTCGTGTGTGGCCC
GGAGATGGCCGTTTCTCACCTCGCGAAGGAGAGTGGTTCCTTTGATCTTGCTTGCTGACCAGTCGCTGGTGGGGG
CCCAACCTCCTCCCCC
>locus0894
AATGAATACGCGAGAGTAGGGGGCAAGAGAACGCGCAGGGAGAAGGCAGAGGGGAAGAGAAATTTACGCGGCTTAATA
ATATAAATGCCAGGCACGCGAATTACCGCGCGGAGTGACTGAATTGCGCTAATTTTAATTGTACCCCTTTTCTCTCGTT
GTACTGACGCTCGCAAGC
>locus0895
CGCGCAATCGCAGAACAGTAAGTGAGAGAAAAATTTGGCAAAAAACAATTAATGATTAAACGCAATGATTGTGCTGT
GTTGTACTACGAAATGTTGGCCTGTGACTTATATTTGTAGCTATATACACGCAATACGTGCATAGACACAATATATCGTA
GGTTGTGCCATACGATG
>locus0896
CTTCCGCACTAGAGGACACATCCCTAGCCACCTATCGATCTATTACGTGTTGAACAAGCAGTGAAAGGGTTCCAGCCCAA
GAAGCAAACTAATACGATGCAAGGCTTAAATAAATGCTCGAATACACCTACGCTAAAATCAGCTCGCTACAAAGGTGAG
CTATATATAAGTAATAA
>locus0897
TTTATTTTATATAATCCCAATAGTCTAAAGTAGTAGTCTTTACGTGCTGTGACGTGAGAGTGGTCTTGCACAATACAATG
GGAATAAATATAATACTTTGGCTACGCTTGCGGGGTACGGACACTCCAAGTGTCCGAGTGAAACGAGGCTCCTCTCT
CTCATCTCATATTGAGC
>locus0898
TCATCTAACCATCCACAGCAACACACATCGCGTGGCACTCTTGGCACCCATTGCGCGCTGCATTCTTTACTCCAAGCAG
AGTCATGAGAATGAACGAACCTCGGTATTTGTATATTAATCGTAATCCTCGTTACTTCATTCAAGAACAACAAAATCGGAT
AGTCAACACCAAAAAG
>locus0899
TGGGCAATATACTATGCCAATATGACGTCGAGGGCTTGTTCACAGCGAGGGTGGTGGGTAGCCATGGTAACGCCGCCACC
CGCGAGTGTGCGCTCCAACGCCAGCCGAATCCCTCATCTCCTCTCTCCCGCGCTCTCTATCTGCTCTCTGTGCGCCCCG
TCCGTCCCTCTCTCTCT
>locus0900
CGTATAAGTATAACCCAACGATGTATACTCGAGGCACAATGGGGGCGTCCATCCAATCGTCGTCGCCATCGTCACCCGG
AGGTGGCTCTGATAGAAATATGATTGGAGCGTGCAGCGCTCGCAGCAGCGGCTAAATCGGACACTACGTCCGAGTGCCG
GCACCCGAGACTCGCGC
>locus0901
CAGGGGAAAGAAAAAGAGGAAGCAAGAAGAAATGCCCTTAACACAGCACACAATCCGGCGCGGCTTCGTCTGCTTTCGA
TGGATTTTAAAGATCCCGGAGATTATTACTTTTCCCTTTTCTTTTCGGTTTTATTCTTCTATTATGATTGCCGAGAAG
AGCGCTATATATCTATA
>locus0902
CAACACAGCCGCTATAGAACAGAGAGCGAGAGAGAGGGATGACTATACGGCGAAACGGAGGATGTGGATGGTTGGGTC
TCGCTCGGCTGGCGAGCGCTCAATAACGTGCGAACCCAAAGGGGAGGAAATACGGGAGGAGCTACTAGTCTATCTCA
CTCTTCGCGGGCTCTTG
>locus0903
GCGCACAGCATAGAGACAAGCGAGCCGGGTAAATTTATTCCTCGGCCGCGCGCAAAATAAATCCAGCTTAGCGTATT
GTTTTCAGATCAGGAGAAAAATATATGTACCCCGGAGCGCTATATAGCGCGGAAGAAGAGCTGCAGTAGCAACGAGTC
TCCCGCGCAGCAGTCA
>locus0904
AAGCAGCGATACAAAGCCGCGGAAGGGCCCAAGTCAGTGTGTGTAAGCGCGTTTGACGATGAGAAACGTGTTTGTCAATAG
CCTGTTAATGCGCTAAGCCATTATCATTTGCCGAGAGCGCGCCTATGCTGCGAGATTGCGCGCGAGTCGACGAAATA
ACCTCGCCGGGGTTCTC
>locus0905
TCTCTGGCGCAATTTCGATGAAATTTCCAACATTAATTGTATCACAATGGTAATTGAATCTGCGGAGCTCCGCTCTATTTGA
ACAATAGTTGGTTATATTATGTAGATTTCCCGTCGTGGTTCCCTTCGCGTCGCGGTTTCCCTTTGCCACCCCTAGTGCG
CACCCCTTTATCGTCG
>locus0906
CTTTGTTTCTCTCTTTCCGCGCGCTCTTTAATCCCGCGAGCAAAGCCGCCCTTCGCGGTGTGTAACGCAATTACGAT
TGTGTTTGAATGAACCAATCAAGCGCCCTCGAAACGCGCCCCAATCATTCAATTTCTGTTCAATCGACTTCTGCACGCGC
CGCGCGCGAGAACCTC
>locus0907
CGCAGTTGTATACGCGGTACAGCCCCCGAAAGACTGCTCACTCTCGACAAAGCTCGCCCTCTATGCAAAATTAATGCT
GTTTCCATAAACCATTGCTCCGTTCCATTGAGTGAGCTTCGGCCGCGCTTTGTCATCTCTCGCGCAGCGGAGAGGGAAT
TTCACAAGCGAGCTCTC
>locus0908
CGCAAGAAGTTGATGTTCTTAATTTTGGTTTGGTTGCGAGAGTTGATGGGTATGGATGAGCGGGTGTTCGCTGCATGTAC
TGCGGTGCTCGTTCTCTCCACAGAGCAAGCTGACGCGGCACATCCTCTCGCACAGCCTCGAGTCGCTGAAGTACCGCGA
GCAGCGGCCACCTGC
>locus0909
GGCTGTACCTGCGGGCGCGCTCAGCGCTCGATTGAATATCGCTCTTCCGCGCGTGTGGGTAAATTGGGTGTGAAATGAA
ATCTAACGAAAACCTTTTAGGCGTGTGCACAGTCGCCCTCTCGGTATACGACTGAGCGAGCCAGAGTTTATCTCTGCTC
GCTCTCCCCACTCTCG
>locus0910
GGAACACGAAGAGCGCAACTTGTATAACGACACCTCTGATTGGATCGTAATTTGTAAAAATACCTAATGGACTTCCTAA
TTATATGCTGGTATATGATAATACATGTGTTCTGCCACAATAAAGCAGTTTTTTTAACTACGCTGTGTTCTGCCTTCAT
TCATTTACGGTATCCCT
>locus0911
GCGACGACCCCTCACCACTTGTGTGCCACTGAGCGATGCGCGTAGTTGGGGCCGAGGCCAGCTAGTGAGCATGTGGC
TCACTAGAGAATGAAGAAGCAAAACGTCGCGACTTTATCGTTGATGCTGTCGACGTTTACCTATCTCTCGTTGGCGCAG
CAATCTTCGACGCTCCTC
>locus0912
TGAAAGAAACCGCTGACTCCGGAAGGAAGTGTGCGCGCAGCGTCGCCGCGTGAAAGACGCTGGCGCTTTTTTACGCG
ACACAAGTAGCACTTTGCCAAATGACCCGAATCTTTCCGAGCGTCTCTCGCTCTCACGCAAAATCGTGACGCGAGCCA
AGGATTCCTTTCCATT
>locus0913
ATGGGTTATGTGCGAGAGCGCAAGACGGGCACATAGCAGAGAGGAGCGCGCAGCAGTATCGCCACCCCGGGCTCGTTA
ACCCACGCTCTGTAAATTTGAAATACCGGGACGCGCGCGCGGAGCACAGCGCTGTAAAAAATGGCGGGTTATCAAC
GCGAGCGCGCGTCTGTT
>locus0914
GGAGCGGAGGAGATGCAGAGAAACGCGAAGGAGACGACGAAGGAGCTTGCAAGGGCCCTGCGCCGATACAATGCTT
CGATTAAACATTCGCTGCCTAAATAATCAGACGCTCGCTCGCTGTGACTCTCCCCCTCGCGCGGTGTAGCTGCTGCTGCG
CTGCAGAGAGACACAGA
>locus0915
AAGCACACGCTCGAATTCACCTTTACCTGTTAATTTACCAAACTCGTCCAAGATCTCCTCTTTGCCCTTTGACTTTGGTA
TGTTCCCCACGAAAAGTCGTAGATTAGGAACGCTAATGTTTACTTTTACAGACTCTTGCCGGGTTTTATTTCGTAATTATCG
AGCTGTGGGATGAAGAA
>locus0916


```
>locus0942
TAGCAAAGAGAGGGTCGGCGGAACGGACTCTGTCCACTTCGGAGGACGCTGCCGCGGCCAGCGGGTATTTGTCTTGTCTC
CTTGTTTATGAGATTCAACATTGTTATTTGGCAACCACAGGAGTTTCTCCGCTCGCTGACGATGCCGCGCCTTTTCGCC
TTCTCTCGACTCTGCTA
>locus0943
CAGAGTCTACATACTCTCTGGGTACGTAAAAGCACGGGCTGCACACGAGAGAGCGAGCTAAAGGCCAATAAAACTTAAC
TCCTAATTAAGAAGCGTGAAGGATGAATCTATTATCCCGGAGCGAGAGGGTCACTGGCGGCCATAGAGGAGTTATACGG
CTACCGAAGCAGACGCA
>locus0944
TAGCTATGGCTTCATCCATTTTCATGGCATTACAAGATCGGAACAAATAGAGTGTGCACGTCGCCAATTACGAATGCATTA
TGCAATATAAATATTGATGCTTCCTGCAAAACTAAAGCCGGGTGATCGAGCCGAGCGCGAACGAATGCAAAAGCAT
CGGCTACGCGCGGACTC
>locus0945
CGCGGGTGTAAAGTATAGCTCGGTCTTGCTCGCACCCCCAGCTCAGAGCCGATTCTATCGGGCATAATTACCTTTTCGCTG
TCCCTCTCGGATAATCATTGTAACACCTAAGCACCTTACCTAACCTAACATCAGCCAGCAGCAGCCAGAGCTTTCCACGT
TATTCGGTGTAGCGA
>locus0946
CAGGTTAGCGCAGACGATGGCGTCTGCGCGGCAGCCAGTAACGTGTGTAATTATATTAGCGACTAATGGATATAGTTAA
TTGTCTAATATGAGGCTCGCGAATGATCGATAGTAGCGAGATAACGTGCAGCAGCGGTGGTGGTGTGTCGCGCGCGG
TCGAATCTCTCAGGAGC
>locus0947
TCACGAGAGCGCAATCTACAACGTTGGCAATCATTGAAAGGGGTGTGGGTCTTATACCTTCTTGTAAATGTCAGTGTCTT
TGCGCTTTCTGCCCTCCCCCTTGGCACCTGGTCGCTACTCACAGGATGATTGGCTGGTGGATCATTGTCTGACGAG
GCCGGGACGTCCTTCGG
>locus0948
CGAGTTCAGCCTCGCGAAGATTATCCTTAGGCCTTCTCTCAGGCACACGGGACAAGCCTCCTTCGAATCTTCTGACGAC
GATCAAAAAAACCCGTGAGCTCCCCACGTCCCTATAGCAGCTCCCGCTATACCCGCGCAGCAGGTTCCTCCACTAG
GTAAGTACTCGATCTTT
>locus0949
GCCTGCACGGCGGCAGCGCAAAAGTTCGGAGTGAGAGTGGCGCTACTGCTGCTGTTGGGCGCTCTCCCTCTGGAATAT
TAATATGACCGGAATATTATAAGCCCGCAGCGCGCGCTGGGAATACTAAATATGATCCGCGGAGCAGCGCGCGG
CCCTTGAGGTGCCGAGCGA
>locus0950
GGGTCTACTGCTCGCGAACTCCCTGATGACCCATATCTATACCTATCATAAGAGCAGACCCGGCGATATTGACATTAAAG
TTCTTTTGAAGTTTAGATAAGGTAGGCGCCATCATCTCTCAATCAACAAATCGACACTGATCACACACTAAGTACTTGC
AATTTTTTTAACTGAT
>locus0951
TCTGGCTGGCGAGTATAGGAGAGAGCACTTATCATTAGGCCGTATCTTCGCGCGCGCGCTGCACTCGCGGGTAATTGTTT
CCTCCGTTTATAGTTTTTATTCGACTCCCGGATGATCATATCGCCCCCTCCCCCTCTCTCGGATTTTATACCGCTCT
GCACCGGCTCTCGTTTT
>locus0952
GGCACC GGTGCGGTTACAACTCGCTCTCTCCGCGACACCCCTACTACCCCTCTCGTTTCGTTATTTATCGCACGG
AAATTCGCTGATTAGTATCGTGCGACTCGCTAATGCGTTGTCTCGTAATTCATCGATTTTAAAGCAGCAGCGAGAGCT
CCTGACGCTCCATTGAA
>locus0953
GGAGAGAGTAGGACGCGAATTTCGACGGGAATCAACGCGCAACCAATGAGTAAAGAGCAGAGGGGGCAACTGCAATT
TGTAACCTCTTACTGTCCGCGGGAAGAATGCTATTGTCTTGCAAGGAGAGAGACAGAGAAAAAGCAATCGAGCCTCTAT
GAAAGCCCGGCGAGCG
>locus0954
TGTTTTCGCGAGGAAAGCTCGGCCGCGCGGCTACTGCTAAAGTGAAGCGAGAGCTTTTAGCGAGTGGCTGATTTAT
CAATGTATTTATTCGAGATATTGAATTCATTTAGTTAAGTAGTGCAGGAGCCGAGATCTCGGCTACGGCTGCTCCAC
TTAGCGGCGCGCAATCT
>locus0955
ATACTACAGCCCACGCTATAGCGTATGTACACCTATATATACAGCCTAGGGCCTCCGTTAATTTAGCATTATAATTGAT
TTGCATATAGATTGAATCAGATAAATCCAAGGCGACGCGCGGATTATCACAGCCTGGACAGCAGCGCGCTTCTATATTAT
ATAGGTACGTGTAGCAG
>locus0956
GCTCGAGCTCTCCGCGCGCTTCTCGTCACCTTGGGATTGATTGAATTTTTTTTACACAGCCGAGAAATGTTTCCACCA
AATGAATCCGTCGAAATATTGCATTCGACACAGCGTTTCCAATTTTTCGTTTAAATAAAGAAATTTCCCCGCGTCTAT
ATACATACGCGCTTCT
>locus0957
ATTTTTCGCTTGATGTTGCTGTGGCCAGCTCTACGTAGCCTGGGTATCCGTTAGAGCTGTGTAAACTCTGTGGGCCG
GTTGAAAGTGATACCGGATCTCGTTTCCGACACATTATTCGCCGCGATAGTCGCGAAGCCCTTGACCTGCGTGTGCG
CCGGGCTGCACAACTGT
>locus0958
CTAGTGAACCACGTCAGGCAGCACAGGGTGAGTCACGCGACAAGTGCCAGTATTGCACGAAATCCTTCACGAGGAAGGA
ACATTTGACAAATCACGTGCGTCAACACACAGGCGAGTCGCGCACCGCTGCCACTTCTGCTCAAAGTCTTTCACCCGCA
AGGAGCATCTGACGAAT
>locus0959
AGCACCTGCTCAATCACGTCCGGCAGCACACGGGTGAGTCACCACACCGATGCGGCTTCTGCTCCAAATCGTTCAACCAGA
AAGGAACACCTTGTTAACACATCCGCAACACACAGGTGAGAGCGGTTGGCAGAGATGTTCACTTCGGCTAAACAAAT
ACCAACACCTTGCTA
>locus0960
CATTTACTTTAACTCCAATCTCTTCTGGCTTATTAATTGTGAAATTTGTTGGAGAATAGATGGAGGGCTGGTGGCGG
AGATGCAAGACCTGAGAACGGGTACCCGTGCGCAGCCAGAAGCTATTCTTACCTCGATCCCTTCAGCGTTCATGGGT
GAGTGCCAACGGTACCTGCGTTGTGGCTAAGCCTAAGTGCCAAACAGGTGAGGACACTACAGTAGGCTGCGTGGCTGTG
TGCAGGTTACGACCTCATCGATGGCTGATGGAGCGGCTCAACATTGAAGAATCAGGTACGGAACATAATGACTAACAA
GG
>locus0961
GACTCTTGACACCCACAAGCACGCTTACTCAATCTTTAATTTGTCAATTTGTAAGCCCTAAACCTTAAATTTTTTACTT
GGCATACCCCAAATATGGCAGGAAGCAATACTTAATAACGCGTACTTTAATCTTTCTTCAATTTCTTCCACAGAAATATT
GTTTGTCTCATCTGTTATT
>locus0962
AGAGAGCCGCAACGAGGAAGGATTCTCCGGTAGTCTCGACGAACCATTTTCCCGTCGTCAAACGGATCAAGCTTTTGTG
TGAGACTTGGATCGGTACAAAAAGCGGATTCGCTTTTCTGATAGGAAGATTGGCCCGGTAGAGTATTCGCCACAGC
TAACGGAGAAAAGTCGC
>locus0963
ATCATCGGGGCTTAGGCAGGGAATAACGAAGTCGCCGAGAGAGCTGGTGCACGGGGCTGTCTCATGTTTAAATCAGCGA
TAACGAGAAGCCTCGGTGACATATGTCACTGTCGCGTCACTGCTTACCAATCAATATAGTCACTCGCGGTGCCGCGC
CCACGACTCGACCTTT
>locus0964
TATACGGTTTATACGTGTGTACGTATGGCTGCTGGCGGTGGTGCAGAAATCGTCAAGAGGCCCTTAAACGCGAACGGA
AAGCGGATGCGAGATCGCGTTGATGAATGTCCCATACACGAACACCGCTAGTTACTCCGCGGAGATAAACCGGTTCA
TTATTCACTACGGCTG
>locus0965
GGCATATTGAAAAAAACAGGATGATCGATAATGACGCGAGAAGAGCAGTCCGTTCTGGTTCTTACCTTTAAGCTCGTCA
AAGTCTACCAAGACTCAGCTGAAGGTTACCTTTCTCTCTCCAAAAGTGCAGCTGATTTCACAGCTTAACCAATCTGCG
GTTCTTATCGGACACCT
>locus0966
GTTGGTTACAAGCAGTTAGAGTGTCCGAATGCGATGCGCTATCTAAGACAAGAACAGTAAGTAGTAAGGTGTTATGTACA
TACTGGCAGACTCACTTATCTCTTGTGATCTTTGTAATCAGGCTCTGGTTCTAAGTACGGTTTCAGTTCGTCGCTCTCG
TAACCCATGTTCTATCCA
>locus0967
```

TCCACAACTTTTCTCCGTTTCGCCTAGAAAAACATCTCGTCATATAGAATATATCACATATGCGTTACTTCTAAACACA
CTGAAATAAGAAGCACTTTAAGATAGATGCTACATGCACCATCCGGCCCAAGATAGATGGACTAATTTTTCGTTTTC
TTACTCGTTTTCCTTA
>locus0968
GAGTGCAGTTCGCTGGCGCGTTTTCGCGCGATATTCGCGCGGTGGCTCCTCTCCCTCACTCTCTCCGCGCTCATACAA
TTTATTGGTAACTTTGCTAGCTTGTAGGCTGGGCCCTACGTGCGCTGGGATAAGAAATATCCTGGCGAAGGTGCGGGTT
GAGGAGCTTCTCTTCT
>locus0969
GAGAGGGGAGAGAGACCGCGAGGGAGGAGGATGGCGCACGGCCAGCCTCACGGTGTCTGGCTTAATATCCGCCACT
AACATTATTTTATATAAAGTATTACTATAAATCGCGAAGTCGCGCGTTATTTAAACGTCCTCCGCGACCTCATATAGA
TAGGCGACTGCTCTCT
>locus0970
TCTATTGCGGCTCGGCTTGTCCTCCCGATCCATTCTGTGACTTCACCCCTCCTGCCCGCGCTTCACGTACACGCATG
ACGCTCTTAACTAAATATGGACAAAGTGCGCCGATTCCGACTATACACCCCGCGGCCACCTCCCTCTCTGTTCGCGTC
TCTCCCGACGCACCAA
>locus0971
CCAATGGGACTAGGTCCGGGAACCGAGGAGCCAGGTGTGCTCCGCGCCACCGGACGACTGTTGCTGCGGCTTACCTG
CGGGGAACCGAGCTGCGCATCAGGCAAGAGTCAGCGTTTCCACACGGGACATGATCAACGATATATTTTATGATTAT
AATCACTCTATTGCCGT
>locus0972
GTGGTCGTCTGCGCTTTCGCGGATCCGGACTCGCCCTCATCGGGCTGAGAAACCTCGTCATGCGCGTGCAGCTTCCAA
TTTTATTACACAGAGCTTAAACACGTAGTAGTAGTCGGATCTGTGAGTACATAGGCGCGAGTGGAAAGATGCTCCAGA
ACTTGCCCAAGATCTCGGT
>locus0973
GTTTTCTGATTCCAGAGTCATATTACGGGCATCTACACATTTAGTCCGCGTTAAGGTGATGGCGAGGGGTTTCATT
CTGCAGCCTTTTACCTATCTTAGAGATGCATGGAATTGGCTCGACTTCGTAGTTATAGCTTTAGCGTGAGTAGTTACAAA
TATATTTCTATATTATG
>locus0974
AGCCACTTGAACAGCCTGTGCAACATAGCCTTGGACATGGCACCGGAGTAGGCGACCTGGTCTTGTACGACCCCTG
GGTGACGAACCTGTTACCGACCTTGATCCTTGGCTTCAGCAAGTCTTGATACATGTCTTGGCAATCGACACCAAGAACT
TAGCCACGCGCTCACCT
>locus0975
CAAAAGCAAGAGATACACTTGGCGCGCGGAGCCGAGCGCGGTCTGCGAAGTCAGCCGTGGGAATAAGTTATGA
ACTCTATGCAATTTAAATGACTAAATCTCTGGACCGAACATGCTCTTTGCCGAGACTCTCTTTTCGAGAGAGGTGCATT
ATTGGCTTGACATCTC
>locus0976
AAATAAACGTGCTCCTCGCCCGCGGATGTATATACGGGAGGCGTCACTCACACGTTCCTAAAGTTTAAATGATCAATG
ATAAAGTTTATCGATCATTTCGAATTCATTAACTTTAGCGCTCGCTCGCGAGAGACTCGACGTACTCCAGCGAGGTATG
CGACGCGCTCTGCTCA
>locus0977
CCTTCGCACACGTCCAGAACGCTCTCCTCGGCCGAAATATCTGGTAGCGCTACTCGGGGAGGATATAAATGAGCGGAG
GAGTCGACAAATCAAGAACTATCGACATAAATAAATTTGTGGCCCGCGGGGTTTCTTTTCGCGCGCTCGCGAGA
CATACCGACGTAGCTT
>locus0978
TTTCGGGCGACACAGAGCGGAGGAGAAGAGCAGAGAGCAAGGTCGCGAGAAGCGCCGGATGTACAGTTAATCGTTGGG
AAGCTATTAACCTCGGACTGGAATGCCCGCTATAGCGCTCATTCGCTCCAATGCAAAATTACGCCCGCGCGGACATAC
TAGGGCCGTATATAACG
>locus0979
GAGGCGGCTCTCGTGTAGTAGGTAGACACGGAGAGGCGGATAGAGAGAAAGAGTGGCGGAGCAACGAGAGTCATTGAG
AGGTGTCACTCTGTGGCATATTCGTTTGTATTCGCCGCGGAGCGTATAGTGTACAGCTCGTCATTATCTGCTCTGCCCC
CGAGCTCCCCCGACTC
>locus0980
GGCTGCGATGACAGCGGGGCGAGGAGGGGAGACTGCACCTACGCTCAGCCAGCCGAAGAGAGAAGGCACAAATTAAC
TGACGCTCCTAATGGCAAGTCAAAACCGCGAGGGCTCGAGAGATTCTTGACTTTCCAATGAAGCGATTGTTTCATATTCC
TCGGCGCGGCTCTCCA
>locus0981
GCGACAAAGAGTAGCGCAAGAAGTGTGCGCGCGAGGCCCGCTGATTGCTCGTTAGCGTGGCCACGGCCCGTGTCTGT
CACGAAATCGCTGATTATCATGTTCAAGGAAAGACCGACGCGTACCGGAGTTACAGGACCGCTATGCGACTCTGCC
CTTAACAACTCTTCACG
>locus0982
GAAGAAGGCAAGAGACCGGAGCGACTGTAACGATCAACATACCGGCGACCTGCCGAGAGGATCACAACGTGCCCTGATA
GATTCATCGAATACTATCGAAGGAATTTCCGGAACAATCCGACCAATCGACACACCGCGCTCGACGCTTGGGAACGATC
ACCGGTCCAGCTCTCAA
>locus0983
TGATGACGTGGTCGCCATGGTTGGTTGGTGTTCAGTCGCGGACACTCAGGCGTGGCAGAATGATTACCTGACGGGAC
GGGCTGCGAGATGTACACGGAAACCTCTCCCGTCTTTACCGGATGACATTCCCCAAGCCAGCGAGTAAGTTGCTC
GCTGCCAACGGCTGCCACAC
>locus0984
CAGGTCAAGTATGACTCGGTCTGCTAAAAGGATTTTATTACACGGGTTCCACGCGGATCGCGGCTCGAAATCTTTATTT
GGAATCATTCGAAGACAATAACGTATCTCTGAACGTGTCTCCTCTGCGCGCTCACTAGTTACGCTTGCCGCGAGAG
CCTTGTCTCGGCGCGCT
>locus0985
CAAAATCGGGAATAGGATGCCTTGAIAAAAAAAAAACGGATTTACAACTGTTGCTCGCGGGTGTCTACCCACTTAAAGAT
TCCCTCGATATTGAAGAATATCCGAACGGCAGCGCGCGCGAATAAGCCACTGTGGCTGCCGTTCCTCGCGGCTGC
GTGTTCTGACTGTTCTCT
>locus0986
AGAGGGAGAGACTTCGAGCGAGAAAGCTCGCGAGCGACCATGATACACGAAGCCGCGGATCTTCCATCGAGAGAT
TAGCATTTCCGCTTTTCTCTCAACAATTTCTGTTTCCGTACGATTAGCCGTTAAGCTGCCGAGCGAGCTGACGGCGCC
GCGAGAATTCAGAGCTC
>locus0987
CGTACCAATAAACTTCACTCTCGCGCGCGGACACGACCACTCACTCTCGCTCCGGCTTCTTTTATCTCTTATTACAA
CTCTTTTATTGCGGATTCATCTCAATCACATCTGACGGCCGACGCCGTGACACGTPGACCGGACCGATATGGCTCGTC
CGTAAAAAAGAACT
>locus0988
AGAGCTAGGAGAGTAAGAAGTGTGAGGGGTTTCGAGGCTCATTTGGCCGTGAAATATAGAGTAAAAAAGGTTTCGATAA
TTGATTACACAGATTTTATGCGCGAAGAGACGTTAATCTCGCGCTGCTCGGGTCCACCCCTCGCTCTGCGTATAAT
TCCGCTCGAAAAATCC
>locus0989
GCTCTATCAGATTTTTCAGGTATGAAGGAAGCCTTAAGGCTGCTTACGGCGCGAAGCAGGCAAGGAGAAACAGAAA
TGAATATTGAGAAGTTATTAGTCTGTAGTGAATGTGACGGGTTTACCCTTCTTGAAGCTCCCCACCTCTCCCGAG
CCTTTCGACGCCAGAGA
>locus0990
CCGGCGGGTGGTGGCGCGGATATGGGGCTCGACTGCTGCAAGAGGAAGCTGGCTGCTTGTTTTATGGCCCGCATCT
GTTTCGACGATCGTCTGTTCCGATACCACTTTATCCTTGGCGTTAGCCTTAGCCGCGCACTGCTACTGCTGTTTTCGA
AACAACCTCTCCCTCCG
>locus0991
TCTAATAGCCGCTCGTCTCGTCTCCCGCTCGTAACCTTCAGGCTAGGACGCGGATATATACACTTGATGGGAT
TCCTAGCCGATGGTGGGACAACTCTATTGGACCCCTCTCGAAATCACTCGCTTACGCTCTCCGAGCCGCGATCCGTT
TAGCCGAACGCGCGCG
>locus0992
CGACGAGGAGCTCCACTGGTGGTGGTCTGCGGTTCTCTCTGCACCGCGAGCTCGCGGAGAAGGCATGTGTCCAAACG
ACGTATGCACGCCGAGACGTAACGATATATCAGAGGGTTAGCCGCTGGGACCGGATGAGCCGAGCCATCTTTCTTCT
ACTTAGATACACCGG

```
>locus0993
GTAATATTGATTAAACGCGCGAAGGTCCCGGAAGGCTAATCCGACGCGGCCATAAACAGCTCAGGTCCAGACTAAATCCGG
CGCAAATTGTACTAATTTCGCATCTTAAATATGTCCGCGTCAGAGGCGTCACCGTATCTCAGAACTGGCAAATTAGCCG
CGATGACTAATGACAGC
>locus0994
ATTGTGGGATGTGTAGGCGGTGTTTGCCAGCTGGATACCCGAGATCACGGAGCTCGCCGCGAACCGCAGCAAGTACGGTG
GCCAGTACAAGCGCGAGCGGTGGACGCAGGTACCCCCAGATTACAAATCCGCCGCGGTTCATCACGCCTCGGCGGATAATA
TCTCTCTCACTCTCCAATTA
>locus0995
AGGGCGCGGAAAAAGGAAGAAACGGGAGGGAAGGGCAGCATAAACCGCGCGAAGCGCGGTGTAACATTTGCAATGGAT
TTGCGAGCTATTCAAACGGTTAAATCTCTTAAGAAATTTGGTTTGATAGGGCGGTGCTGCCGGCACCCCTCGATTCTTTC
TCCTCGCTCTCTCGCT
>locus0996
GCGCGGGTACGCGGCGGAGTGGTGGAAAGCGCGGAGGAGAGGGGAGAGTGTATGCTCTCTGCGCTCCGGGTGAGTGGCGA
AAGATACATGTAAGTTGACCCCGCCCTCGGGACCTCTCTCTGGACGCTTATGAATATTAATTTCTGGCCTCCATCCCCAC
CGCCTCCGCGCTCATC
>locus0997
TTTCTCTCGTCTCTCGCGCTCCAGATCCACATGAGAACACACACCGCGCGACAAGCCCTTCCAGTGCACCGCTCTGCCAGA
AGGCCTTCACACCAAGGGCAATCTCAAGGTACCCGCATCATCTGTGAGCGCAATCAGACTAAAGGAAATCTATACGCA
ATAAAAAGGAAAAAGAA
>locus0998
AAGAGGAAGAAAAAGGCTCGAGGACGGGAAAAATAGAAAAAGAGCCGATGGCAAGGAATGAGAGAGGGCGTCGATGG
GCGTTTCGCGGTCCCGCGATGATTACAGGCTCCGCGCAACCTGTAATACTCTCGCGCGCACGCGCGGCGATGTAGTA
TGTGCTCCTCTCTATCT
>locus0999
TATTAGTGTTAGGTTTATTGAACTAAACAAAAAAGTCAAAATCGGAATGTATCACATTAGGCACGAAGATGAGCGAATGT
CTGGAAGGATTGTGTCTGCTCAAAGCGCTTTTTCGATATCAGCAACAACCTATCATCAAGAAGTAAGCCTGCGGT
ATAACCTAATTCTATAAT
>locus1000
GTTCTACGACCTCAACCCCAAGACCGACGCGCCAGGATCAACATGATCTACGACGAGGCCAAGTGGCAGCTGCTCGCGG
AGGAGATCGACTGCACCGAGGAGAGATGCTCGTGTGCGCGCGCTCCAGGTGAGTTGGCCCGCCTCTAGCTCCCGCCC
CGCCACGACTCCAACG
>locus1001
CGCTGCACTGGCCGAATCCCCGGGGTGGATTCCCTGGAATCTCTCCTCCGCGCGGTGAATCCGGCCTAAATAATGCGG
ATTATCCCCCGGCAATTGTTTATCGAGCGAACAAACAAGCAGTGATATAGCCGGGCGCGCTGGCGACTATAAAGAC
GGCAGGAAAAGAGCA
>locus1002
GTCATGATAATGTTTAAACAAACAGTGGTGGCCTCATCGTTAAAGTTATTTTATAGAAGGAACATTAGTGATTGTCGGCA
CACATACAGCACTTGGAATGCTTACTATGAACACAAAGTCAACCTACACCCGATTATCTTCAGCACACAAGTTTATAC
ATTCAAGAAATCCATGCA
>locus1003
CACAGCTGAATTCATAATGCAGATAAACATTGGACTCATATAACTTGTATATCATCTACTTTTTGTGTGCCCTCTA
GTCCAAGCACTAATTTTCCGAACTCGAAGGTCTCGGTAGGTTCAATGTAATTAGCTTGTTCACGATTTTTATTGTG
CATAATATAATATTGTG
>locus1004
ACAATTATTGCAAGATACCTTTACTGCTATTGTGAGTGAACTCGGCAGGGTGGGTGGTGGGTGCGTCCCGTCCGCACA
GACTTTGTTACGACTGTGGTGACGGTTTGATGTGCGTGAGGTTGAGAATGTGATAAGCTAGTACTAGAAACATCGCTCGA
TACTATCGTCACCGATT
>locus1005
CTCTCTCGGGAGGGGAGAAACGGGGCTGCGGAGAGAAAAGAGGATAGAGCATATCCACGCGGTAGTGGCGATGTCCTA
GCGAAGGTACAGGCCGGGAATCGCGTTTTCGCTCCTCTCTCTCCTCAGACCAAGAGAGCACCAGAAGCGGTATAGTA
GTAGCAGTAGTATGATA
>locus1006
GCGCAGGGGAGGGAAAAACGCGCGTCTGTCGCGACGGCGCGCGGAGAGAGGAGCGGTAAGTGCTCTGCGGCTCCAGATG
CGCCCAATATTATGTTTAAATGATATTAACTTCTTACTTAATGGCGCGGTTTCGATTCTGAGGTGCGAAGAGCGCGCGCT
ACACCGCGAAACCGGAG
>locus1007
AAACGAAAGGAACGGAATATGATATTGTAGCGCGCGGTAACGGCGCACCGCGAGTAGCTCGGAAAAGCTATTGTGCGT
CTCTTTGAATTTTAAAGTCAACGATCGATAGTAGGAATGGGAGCGAGGACTAGCAGCGAGCGATGCGCCTTTGGCCATA
CATTTGAGCGCTCCTT
>locus1008
AATCTTAACTCTAAGTCTTGTATGCTAGTAAATAGTTCGTAAGTTTAGGGTGACAAGCTGTGAAACTCACTTTTTCAAAGG
CACTGTTCCCTGGGGCCCTGCGCTGCGCGCTTTCGGCGCTCTGTTACCGCGCAGGTCACCATGTTATACGCTGAAAGCA
GTTCTATAATATTACAA
>locus1009
ACTTAAATGTTCTCTGTTTTCATTGCTTAAAGAAAATATTGTGCGGATAATATGGTGGGTGCTAGCGAAACCTAA
ACAGGCAGTCAGTACGAGTGAAGTCTTAAAGCAATCTCGAGGCAAGCTTCGGCCTAATATACGGTTTCAGTCCATTGCG
CATCAATATCTTTGTT
>locus1010
GTGCACGTGACAGCGTATAATATACCGGCTGCGCGGAGATCGGCGCGCGGATTACGCGGACGCGATGTGGGTGTGA
CCTGGTTTCCGAGAGTTTCACTTCTCTGTACGCGCGCGCAGCGCGCTGCATACGAGGTGGCGGCGCAAAGGAGGA
TCCGACCCCGCGCGCGC
>locus1011
CGCTGCTGGAAGGAGAGGGATCGAGCTTTCGGGGGAAAGCAGCTCTCGGCCAATATCGGCTAATTTGCACAACAAATA
AAGCTTATCTCCGATTTGCATGTGTTTGAAGTGCAGTGAATTTGCTGCTCGCGGACGTTCCGGCGTTGTCCTCTTA
TCCGTTCCGAAATGTA
>locus1012
CGCGGAATACGGAACGCGACGCGCGCGCAGTTATAGAGTGGGTCTGCCCCGTTACCAAACTCGCTATGGCGTAACATTTT
GCTTATTACGTTTCGATTATACAATCCGGCACACTTTTACTCGCGCGCGCTGGCTCGTCGAGTTTCGAGTTCTCGGCATT
GTGATGTTGCGGATTA
>locus1013
AATTAAACCAATTACCGCGAGAGGAGAAATGGAGGCGGTGCGGAGGGTTGCGTAAAGTAATTTGGATTTCGCGGATTTCTT
AAAACGATAAATAACGAGTTATTAAAGCGCCAGCCAGCGCGCTCTTCGACGCTTCTCGTCATTACGGGCGGTTTCGTAGGA
TGCGATTCCCGTAGTGG
>locus1014
AACTGATAATGTATCGTTATGTGAACGTGCAAGAAGTTTCAAAATATAAACAGCACACTGAGCAAAATTTGACACCAAAA
CGGAACCTGAACCTTTGATCGAACGACTTGGAAATGTACCAAGAAATAAGATAAACAGCTTTATTTATTTTGTTCATAGC
AAGGAATATTTCAATTA
>locus1015
TTGTAAGCATATAACGATAATGTCTATCCGAGAGAGATACATGACACACCTACACATGCAAAACATGTTTATTGCAATAT
AAATGTGTATATAGGAAGTAACATGTTATCATAGAATATATGAATGAATAAGATTAAACGACAAAACCTTACGTGAGACCGG
CTGAATTAGCGGGTACG
>locus1016
TTTGAAGTTAAAGATGTGAGACTGGTATTTAATAATGATAATGGCAATCCCATATTAAGGCCAACCCCAAAAGTGGGGGT
GGCGGGGGTAGGCCCATACAGTCCAGATGAATTAATGGGACCTTGATTTAATTGATTGAGTTGGTTACGTTAGAGTA
TGTGATTTCTGTTGTAGAG
>locus1017
CTCTCCGACGAACGACCGGTGCGCGAGCTCGTGGGGGCTTATGACACAACAGCTCGCGCGGCCAGGAAAAGTAAGGT
AAGGCCAGTGGTATAATAGAACTTTCACTACGAAAGTTCAACGTCCTCGTTCACTCGCGCTCCGCGACTCTCACTCC
CGGTTGCTACCACTGCT
>locus1018
AACATGTGAACAGATTAAAACTTTATTTTGGTTTGTCTCATAAATGGGAAAAATATATGTAATGTTGCGTGTACCTGT
AGGAACTTTGGACTACAGATTATGTCGAGGACAATCGTCGATGAGATAATCTAGCGTTGAGGCGGTGTCCTCTACGACGC
```

```
AACACATCATCAACAAC
>locus1019
GACGATTCAAATTTCTGTAATAATAATCCCCGTTTGACTGAATAGAATGTATGACTCACAGTTAGATGAGGAGCGAGAA
AGGCTGTGTAATATACCGAAGGTGAGATGCCCTGATGATTATCGACTGTTGTAGATTATGTCCGAGGATATATTATATAGC
AATTTATTTCCATTTGAT
>locus1020
ACTTGTGAGAAATAAAATTCATACCTTGTTTGTGTAATCTGTACAGTCGGGGACGTCGAGTCTTCTCTTCTGCTAG
AAGATCCAAAGAACTCCATTTAGCTAATGACGAGTTATCTTGGAGTTCAAATTTCTGTGTGATCAGAAATGTCAACCT
GCTTTTATCTGACTTT
>locus1021
CAGTCCGCGAGGCAAGCCGGAAGAGGAGAGGCCAGCGGAAGCAGCGGGTGTCACTGCACGGTGGATCGCCAGCAGGGC
AGAGGCTCGAAGCATGTAGGAACATGGCTCATCCAGCCCTGCCTCCCACAGAGGTGAGCCAAAGAGTCGAGAGCCT
CTCGACTCTGCACCTCGC
>locus1022
ATTTATGACATTTAGAACTCGTTAAAAAGTTGAAGCAAGCTCGGGCGAGCTGAGCGGCGACGTTGAATCGGGATTATAA
AAGTTTGATAAGGCGATAAATAATTATCCGCGAATCATCGCCGCGTGCAGCCGGCTAGATATCGCTCGCTCGGTTTAACT
TAACCTTTAAATTTGTC
>locus1023
ATACACGCTATGTACAGCTCGGCGTGCTGTGTGCACAGGCACTTCTAGCTTCCATCAGCGGAGTAATTAATTTTAAAT
GTACTTTGCCTGCTTATTTCTTTCGTATCATGGCTTTCTTTTTTCCCCTTACCCCGTCCCTCGCGGAGAGGGAAGGA
GCGCAGGAGCCGTACAC
>locus1024
TCTCGCTCTCACACTCTGTCTCTGTTGTGTGGCTGCGACGACGATGGGGGTATAGCGCGAGACTTACAAGCTGGAGGCGA
TGGCCCAAGACAAGGGCTTCCGCCCTTGTGAGAACGCTGGAGGTACAGATTGACGTTGTGGACCGTGTCTAATAATCCG
CCCGTATGGGACCAAT
>locus1025
GCTTGTCTCAAGCGATTTTTCTTTCTTAAATTTCTATCACATTTCTTTGAGAATAAAATTTGCGTACCCCGTCAAAT
ATGTCATGACCTCGTCCCACCACTAGAAAAAGGATTAACCAATGCATTATACCTATGCGCGGTTTCTATGTGGTTAT
ACTTTATAAAGTTAAT
>locus1026
CTGTTGGCCGAGCCGGTGAGCTTCTTGTCTACGTTGTAGCCCAAGCTTGAATAACTCATCTGTCCGGAGATACTGTG
ACGGTGGCGCCTTGTCTGTGACAGTAGGGTCAAGTTGAATGATCGAAGTTCGCTGTCTGGGATGAGAAGGATCGTTGCT
GCTGGAGCTTGTGACGG
>locus1027
TCTTTAGAACGTAGAGATCGAATCGAATGAAAAAGCTGGGTGAAAGTATAGAGACAGTAGAAATGTTATAAAATGAAAT
GCTCTGTTACCTTTGAAAACGTGTACATTTAATCATCGAGGCGATGATCCTTTTTTCCAAACATGAGCCGTACTACTTT
GTTTTTCGTGTTTCCCTTTT
>locus1028
AAAAAAGAATCTTCGGGCTGGTGGTATTTTGACGCTATGCTACTTACCTACGCTCTTCAAATGAGTCTCGGCTGAAG
TCCTCGTACATGCCTCTACTATAACAGCATTATAAATCAATATCGATTCTATCTTACTTTTGATAAATGCATTTTTT
CAAGAGCTTACTGTACT
>locus1029
CAGGAGCATCCAGCCGAAGATGAGCATCGACAGGGTGTCCATTGTGCGCTCGCGGACGAGTCGAACTGCATATCAGAT
CGTCCACCCGCTCGGCCAAGTCGGCCATATTGCCCATCTCCTGCCAGCCAAGTCCAATTTGACGCCCTGAGCATTCTT
CGGCTATTTTACCCCGC
>locus1030
GCGAATTCCTGAACTATCGAACCTGCCTCCATGAACAAAATCCACTTAAACCCCAATGAAACAATGTACACAATCGCCT
GCTACTACAGGACTAGTTGTGACCTACAGTAAGTCTTCTCCAACACCTAATTTTGACTTTCCATCAAACCTATGTATAG
ATTACTAGCTTGTCTTT
>locus1031
AATGCTGTGCAAGGAGATTAACAAACAGAACAGGCTAACGCATAATCGTATTATTTCTAGCTAAGTCGCATTTAAATTA
GATAGAAATTCATTTAACGAAACATGCCGAGATGATGAGTCACTATCCCGCCGCGGATTTGAATAAAGTGTACGTATA
CCTATATTCCTGCACGG
>locus1032
TTCCGAAGTTAGCCCCCTCGCGCATCGGCTGTACGAGCTGCCAGAGGTGCGGCCAGATAATACTATTAATTTACTTCAA
GAATCGTAAATTTACGATGAACTTTAAATTTGGATATTTTATCGAGCCGCGCATCTCGAGCGGGAGCCGTAATTTCCGCT
TCGGCTGGCCCGCTTT
>locus1033
GTCCTTGCAGAACGAAGTTCGTGTTTTACCTGCAGTAGGTCGCAACATGTGACTGGCCGAAAGCAGCTCCTTGCACTTAC
CACCCCTCGCATGGGACACAACTTATCTATATACCACATAATCTCGTCAAGATTTACGTGCAAACTAAACTTTCCCAT
CTATCGCGCGGACGATG
>locus1034
ACCTCCTTGGCATTGACCAAGTGTCTCGTCCCCAGTTACACTGAACGAACCTCCAGGAGCCAGCGACGTAAACGGCGTT
CCAACCTGTTCCGGAATCGATTGTCTCGGAACCTGACACAGGCTGATAGCCGCGGATTTACTGTAGCCCTTGATGACGA
CGAGTGAAGACCGGCG
>locus1035
CGGGAATATCCGACTGATTACATGATGAATTCAAAGTAATAAGAACAAATGTCGTTTGTTCAGAGCTGTGTGATGATGA
AATGTAACCATCATCTACAGCTCAGTAAGTAAATCTGAGTACTGCATGCGAGCATTTTGAAATGTGTTAAATTTCAATGTT
TTACGTTTTGATCTACT
>locus1036
GTCCCGCTTGTACAAGGGTCTCTCCAACCATCTCGCTGTATAATACAAGCCGCTTGGGGTCTCGCGATAATACGTAG
ATGATAATCGGATATTAATATCGCATTTGAAAGGGCGCACACATGCGTGCAGCGGCCATTGGTCACGCGGAACACTT
GCAGCTCTCTATCTCG
>locus1037
AGAGAGAAAGAGAGCTCGGAGAAAAGTTTTACTACGTGTGGGTGAAGCGTCGCGTCGCGGTAGCCGAGGAGATGGGATTG
CGCGATAGCCCGCGTGTGCAAAATAGAAATTAATCTGATAGGCTCATTTGTGCCCTGAGCCGCTACGTATATGTATATAG
CCTGGCTCTGCTATCTG
>locus1038
TTGTTCAAACACCGTTTTTTCAAATTCCTCTCTTGGTACAATATTCCTTATGACTCCCTATAACCATAGCTACCAATTTTC
TAATTTGATGTAACATAAACTTTGTCTTTGACTTTTAGAGTGATAAATTCATGTTATTTACAGAAATGGCTCCTCT
GCAATGAACTCATAATGTA
>locus1039
AACCAGAAAGGAAGTAGGATAGTGAAGTTGGCGCGGGTATGTCGCCCCGTGTAATGGTTGGAAATGGAAGCAATAGGGA
TCAACTAGTATGCAAAATCGCATGTAAATATCGCTCACTCTACTCGCTCCAAGAGTCTCTCGTTCTCTCTGTCTTTTCC
ACTTGCGCCATCGCCA
>locus1040
GCTTTTAAAGCTCGCTCCGAGCGTATATGGGACTTTCTCTCGCTCTTTGCCCGAGCCATCCGGAAGCAATATATCGAT
GTTTAGCAACCAATAAAGCGATCCCTCAAAGAGAGCTTTTACGAGTAAAGCGAAGCTCGCTCTCTATTGACGCGAGTT
TTCGCGGACTGTCTGT
>locus1041
TTTGCGCATGCACGCTCGCGGGTTTGTAAAGAGTCAACCCAGTATTTGTAATAATAATGCTTGAAAAATGCATGAATATT
TGTTTTATTAATGCTTCTTCTTATTTCTCTTCTTCTCGAAAGAGAAAGCCTTACCCTCCTCTAGTACCATC
AGCTATATGAGAACTTT
>locus1042
GTCCGCGCTGCCGGTCTACCAAGCCGACCGGCGCAACGACCTACCGAGAGCTCATGAGCTCCAGCAGCCCTCTCGTGCCTG
TGTATGTGAGTACACTGGAACACCAACCCCTACCCGGGTCCCAAACTCGAGTCAAGTCTGTTGATAGGCGCGGTGCAAAAT
TCGATACAAAGCCAGCG
>locus1043
CCGTGATCGTAGTGTGTAGTGAGTAGTACGAAAGCCAGTAATCTTTTTATCGTCACCGTCACCACTGTTCTATTTCTCT
CTTTCTAGCAGCTATCGCAGCTATCCAGGTGCAAAATATACTTATAGACGCAATATACACCAATCACCAGATCGCGGGT
ACCTAGAACTGTATAAA
>locus1044
TGTTGCAGGGTTCGGTTTTCGATAGGCTGGTCGACAGTCTGTTGGGTGTTTGAGCAACAGCGGCAACTGGAAGTTGGCC
```

CTGAACGCAGAGCCCCCGTGGCTTTGCTAGCACCCCTAACAGAGAATTCGTATCACCTCGCCTCCACACGACTCTCATCA
TTTTAATTGACAGCTGC
>locus1045
ACTATATACTCACCAAGAGACCGGAAGCGGATACGAAAATTCGAGCCGATCATAGTCCCGACGATTAGAGCCACCCCA
CTGACAGTCCCACCCGCTCTCTTGAGGTGAACAGGTCGTCCTTCTCTGGGTCTGCCCTCCAGCCCTCGGCACCCCTCC
ACTCCCGTCTTGGTCAT
>locus1046
CCTGGCAGGTACCTCACGCCCCAAGCGACTCGGCGCTTCGGCGGCCGATCCACCATCCGACCCGCGCTTCAGGTACA
TCCACTGTGCGCACTATCCAGGTACCTACTCGCCTCTACTCGCTCTACCCACAGAGACTGAAAGAACAGAGAAACCGAC
CAATCTTCGTATATATA
>locus1047
TCGTACAATACCGTACGAGAGTGTAAACAAACGGAACGTTGCATATTATTGCAGATGCGCAGGAACCTCAGCAACAGG
TTAGAGCGAGCCTAAATACCCGAGTTACCAAACTTTAAGGGAAGAAAGTCTAGTTTATTGATGAATCTGTGCGGTAAG
GAGCACCCAGTGACTTG
>locus1048
TGCCGCGAAATTAAGGCAAATTCGCGGAGGCGCTCGGGCCGACGTGCAGGCCTGCGCGCACTCTCCGTAAATCGATATG
CAAAATCTACGCGCAAATCCTAGTAATCTCGCGCGGCTCTAGCCTCGCTACACACTACTCGCTCTCCCTCCCGCCTATATA
TAACGCCGTATAGTCCC
>locus1049
GCCGTAAGTCGCCCTGCAGTCAGTATGACAAGAAATTCCTCGGCAAGGCGCAGCGAAGCGAGAAATTAATCATCGT
TCTGATTGAGGTTAAATTAATTAGATAATTAAGTCTCCGCAACAGCGAAGCAGCGAACCTCTGCATCCTTGACTCTTTAT
TTCTCCCTCTCTTCGTGCTC
>locus1050
ATAAACAGTGGCGTTTGAAGCTCAATAATGTGATCCGTGTGTCGAGAGTGTGCTAATCGGTTAATTGTGCTTTGTCTGT
TGTGTCTGTCAGCAAGAGCAGCAGGCTTGAACCTCACCGAGTCCATGACACGCGCATGATTAGTGACGATAATATCGCC
CGCCAGTCCGCCCTTGG
>locus1051
CTGTTATTTTTCCAGGAGTTCGCATGCAATGGGACTGTAATTGAGCACCCGAGTACGGGGAGGTGTTGCAGCTCGAGGG
GGACCAGCGAGAAAATATATGCCAGTGGCTAACAAAATCTGGTCTGCGGAAACCTGACCAACTGAAGGTTACCGGTTTCT
AACTGACAAAACAGACA
>locus1052
ATAATAATTTCACACTTTCAGAGGAGCTCTATACTAATCAACTAATTTCTTCTGTTCTTTGCAGCGATTACAGCTTCATT
CATGACAGCCATTACATGTAAGTGTAGTACCATGCATATCTCTGGCATGAAACAGTCAAGTATATTAATTTTCCATAT
GATTTATTTCTGATCTT
>locus1053
TCCCTTGGGTTCCAGCGGCTGGTGCAGCTGTAAGTGTGCTGCTGAGCTTTCCGCCCTGAGACAGGCGATGCTC
TCGTTCTCTCAGCTGCTCCGTGCTGTAACCCAGCGCGCTTCAAAACGAAAATTCGAATCGCAGCTGTATTATGGTAGGT
ATTGACATTTCACTACG
>locus1054
CCCGGACTGTACGCCGCGGAGTCTCGACGACTGTCTGGGCGACTGTACCACCTACTGTTGTTAGGGGGGAGACTAGG
GGTGGTATATGATCGTGTATATACGCCGCCGGGAAAGTATTGTGCGCGAGCTCCACCTCTGGGTTTCGGTAAAAAATC
GTTTGGCCGGCTGGACC
>locus1055
TACAAACGCTTGCACAGTACATCTTTACGCTAGATTCTCCTTACAATATTATACTTCATTTACTCTATTAATTATATCAA
TACTGTTGACGGATAGAGATTCAATCAGAGCTCCGACCCAGAGCGTTCCGATAAAATCGTCCCTGCCCGGTGTGACGATA
TTTCTTCTTATTTTCTT
>locus1056
AATAGCCCGCAAAAGTCAACGTCAACTGACGTGAAAAATCACGTCTCTTCTCTGCTCTTTCTCCTCTAGGTGATAGTCT
CGTCTCCCGGTTTACCTAGCAGCGAGGATTCCAGCAGCTATCAGGAGTCAAGTAAAGTACGCGCGAGTACCGGCTACT
ACGACTACGCCACGAC
>locus1057
ATTGAATAAAGCCTGCCCGCGTCCCGGTTCCCTGAGACCTAACTTGTGACGTGCGGTACGATATCTCACAGGCTAG
ATTCCTCGGTATTGGCGATGAGTGTGCTTGTGACAGATCAAAAGTCAAGTCTTACATCATTATTTCTTACCTAAAGAC
GCATAATTAGAAATGTT
>locus1058
AAATTGTCAATAATCAGCTACTTGTATGACACTAACCCGTAGATCCGAACTTGTGGGCTTTTTTATATGCATACCGCAAGCT
CCTATCTACCGGTATACATGTAAGTACGCGCGGTAATAATGACAACGAGACTAAAGACCTTCGATGCAGTCTTAACCAAG
ATTCAATCATAAATTTGA
>locus1059
GCGCGCGGTGAAAAAAGCTAAAGGTAGAGAGCTGTGCTATCGTTTTTGGTTCTACTCTTTATTTATTGTCTCTAGTGGTA
CGGACTGCAGAGTTAGCGGAGGATGCATGCACCTTGCCCGGACCATAAAGTAGTACTTGCCCTTGATTCAAGTGTGCTGCC
GTCCCTGTGTCTCTCTG
>locus1060
CAAGATGGACAACCTGAACCCATACAAAAGCTGCAAGATCTTGTCAATAAAACAACATGGAAAAATGCTGTTTTTCTGG
AGATGGAGAAATATGTTGTGCTGGATCTGTAGACAGCTGCTTTATATATATGGAAAAAAGTGTAGGAAATTTGCAAA
AAATTTTGCAATGGTACAAAG
>locus1061
GACGTTGATAAAGAGCTTGACTACGCTGAGCCAGTCGGCTCGGACGCCGAAAAGGCGCAATAATCGCTTATTGATTAAAC
TGTTTGACTGCGCAAGTCCAGTTAACTACGGCTAATCTCTGATTGCAACGCCAGCGGACTAGCGCGGTGGCTCTCTC
CTCCTCTCATTCGCACC
>locus1062
CGAGGAAGCTCACCACGACCATGAGTATACCGAAGCGCAGAGCACCAACTCGACCATCACCAGTGTCAACAGCATC
AGCAGTTTGTCTCAAGGAGAACTCCAGTGAGTATACCCGCCGCTGAGGAGCAGCAAGAACGACAGAAATGCTGATTA
CAGGTATTATGTGGTTT
>locus1063
GTGGGGGGCAGTGAGAGGCTGGCTCTCTGTTTTTTCGAGGAGTTAAGGGGGGATCAGGAGTGAATTTCAATTTGAACAC
CTCGTACATGGACGAGGACATTCTCATATCTGTAAAAACAATCGGCCGACACGCTCGATGTCAGAACTCTTCCCTCGT
CTTTGCTTTTTTGTGTT
>locus1064
GTAAGAGGAATGTATCGGGGGCAAGGGATAGCAGTCTTACCTGAAGAGCTGAACGCCAACGACGGCGAACACGAACTG
CAGGAGGCTGGTACGAGGACTATGTTTCCGATAGTCTTTACGGCTACGATGACGCATTGTACTACGTGCTAAGGGCGCC
ATATGCAACATTTCACT
>locus1065
GCTTCGTCGATGTTACCTTCGGTTTTGATTTCGAGCGATGTCGTAACCCGCAAAATGTCGCATTGAACAGCACCGT
ACCGTCGCTGTTCAATGGCATGTTCTATCGACACGAGCTCTGCGAATTTTCCCGATTACGCGTTAATTCATTCAGTAG
GACGTTTAATGGATGAG
>locus1066
GCTCGCGGCGGCGACCGAAAAATCCGACGAGCGAAACGAATCGAAACGAGAGCAGATCGAAGGCCCATAAAGTACGTAT
CGCATTAGCGCGTTAAGCCCAATGCGTTAGTCTGAGTGACGTTCAATGCCCGCTCCGCGGGAATGAACGAGAGGAC
GAAATGACGAGGAGGA
>locus1067
ACCCACCCGTAATACTTGGGGCCGATCGCTGTAGTCTACCGGCTGACACCTTAGAGAATAGTCGCCCCTCAGCCATCCGG
ACATTCCTATCTGCAACCAACACCGCCCAAAGGCCATCGTACCGAGATCAGAAATATCGCAATCGAGGCAATTTGCAGC
AGAAATAACAAGGTCAA
>locus1068
AGAGAAAGAGAGGAAAGGAATGAATCACCGAACGGTGCCTACGATGAACCTTGTACGAAGATCGGTGGCTGCTTTGACG
AGTTAGCGAGCCATGCTCACCTGCTGCTCCAAATCACGCGAAATGTATATACGATTTTTCTTTTTTACATTCATTTA
CCAATAAATCGATTTTT
>locus1069
TACATCTCGGTGAAAAAATAGTCAAAATCCGGAACGGCTGTGCAAAAAACTTGACCGCCCGGGAATCGAACCAGGGTGC
GCAAGAAATGGGAATCTTGATGATACCACTACACGAGCGGTGCTCTCGCAAAAGTAAGCGCCACTTGCGCAGTACAAATG
AGGAGCATCGCTAAAAAT
>locus1070

CGAGGCAGGCGCGGGGCTTCTAATTGAAAACTAAAAGCCGCGAAGGCGACGGGCGCGCAGCTTGCTTAATTGCAAT
TAACAACCTCGCCATTATTAGAATATACGATGCCCTACAATGAGATAATGCAATAAAATGAAAGTTTAAATTACTTTGCC
TGACGCGCTCGGCTCT
>locus1071
CCTGCGTGATCTCTCGTCGCGGCGAGAGCTCCTGCTGCTGCTGCGGCATTCTAATCCAGCGGGACGTGACGCTCATATTG
CATAACAATTAATCAACGGGCGATAACAGCTAGGCTAGAGATTTGCGCGGGGCGGAGACAGAGAAGAGCAGAGAGCGG
ATGAGGCAGAGGAGGATGTATATATATAGAGTGGGAAAGCCGATAATCTTTACCGGGCAGCTTAAAGTGCCACTAGT
TAACGCTAAGCGGATTTAAAGCGGTTAATATCCCGAATGTTATACTTGTAGGCGTTATATAACGCGCGCGAGAGCTCG
TA
>locus1072
CAGGGCTTAAGTCGCGCCCAACGCATCGACGTAAAGGGGAGCTCGTCCTTTTATTGCTGATTGCGTTGCGATTGTTTC
GTGATTTAGCATAAATGTTTGATTAGATTGAGGAGGCTGCAGTGTCCGCGATTGTTTGCCCGGAGTAGATTGGGCGTC
GAGTTGCGAGAATCGAAGCG
>locus1073
CTCGAGGGTCTGCTGGCTGCAGGGCGAGCGGCGGTGTGAACTTTTAATTGCGGTGTCCGCGCCAACCAATCTGTGT
CGTGCGCGCTCCTATTACTCTGATAAGCTAAAGTAATTTATTGCCAAGCGAGGGGATGCCATCACGCGACTTTCTCTC
TTTCGCGCTGGCTTTT
>locus1074
GACACGAGCTACGCTAAACTACATGGACGACGGTGAAGATTTATGTATGTTGATGATGACGATGATGCACAACCTTATT
ACCTCATTTCATTACGGTTAAAGATTTAAATAATGATGATACGATGATTGATGGAGCGTGAACAAGATCGTCAGGATT
AAGCTATAGCTCTAATA
>locus1075
AGTGCCCGCTGCCTAGTAATTTTCATTTGGTTTTCTTCGAAAAGCGGGCCCCGGCTCGGTAATTGGTTAAATTGCCAATC
CTGCCAATCAATCGTTAAATATCAAGGACCCCCGTGCCATAACCTTCGCTCTCGCGCCCTCTCTTTCTTCTTCTCCGGT
TTTCATTCTCTTATGGCA
>locus1076
CGACAAGCCCTACAAGTGCAGATCTGCCGGAACAGTTCAACCACAAGACCGACCTCAGGCGGCACATGTGCCTCCACA
CCGCGCAAAAGCCGTACGCCCTGTGATAAATGCGGCAAGGCGCTTCATACGCAAGGACCACATGATGAACACCTCGAGACG
CACAAAGAAAAGTCCAA
>locus1077
CCTCACCATCATCCTCTACACCCGAGCTCCCTACACGCCAGCGTGGCAGGCCTCGCGACCCCTGCTGAAGAGTGGACA
CTTGCGAGGACGCCCTCCCGCCGCACACCTCGTGGCAGACGCGTAAGTCTTTTGTTTTTCGTGACTCCAACGAGCCACC
CCAACCTACCCCTCTA
>locus1078
TAAACAATTTTCGATTTCGAGGACGCGAGTGCATCGAGCTACATCGCTCTCTCGCTCGTCGATTAGTATCGACAAC
GATATCTGCTCCACATTCCGAATAATAGATTCCGGTGCACGCGAGCAGCAGCAGCTAGAGCTTTTTTCGAGGCTCTCAT
CTCCTCCGTATAGCAAT
>locus1079
TCTTGTCTTTGGTACAGCGCTGTGGCTGCTGCGGCAATTAGTACATTCACTATGCCATTGCGAATTCCTGAACCTGCCT
GATATGATAGGTTGTATGTGTGGTAAGATCCAGCATACAACAATTAATTAGAGTCAAATTGCCATTATCTTAGAAC
AATAATACTTTTCTTAA
>locus1080
GCGCGACCTCGTTGGTGTCTGGGTAAGATAACAGGAAAGGCTGCGGGTAATAGGCGGCTGGCGAACATACGCTTCATTA
ACGGATCATCTCGTGTTAATATCTACTTTATCCGAGGCTGACCATATCAGCGTTGCCAGGCGGAACCTGCCGCGCTG
AGCCAGCTATGGTTGCC
>locus1081
CGCGCGCAAAAAATAAAAGGGAGCTGCAGCGAGCGAATGAAAAGCTTCGAGCAAGCGCGAGCAAAACATCGAGCGTGTA
TTGCTCTTTAAAGAACACTTGGACGATAATTACGGGCGCTGGTGCTTATAGGTAGCGTCAACGCGAGACCTAGAGACT
CGTGTGCGTTATATACA
>locus1082
TTCAATTTGCGCGCTGGTAAAAACAGACGAGTGCATCACGCGAGCATCGTTTGGCGGTACAGGTAAAAAGGCGCGAGACT
TGTGTCGCTGGGTAATCGCGCGTGTGAAGTCTGCTTATTGTTTAAACAAAAGAACACACTTGTTCACCCATTGCACA
GTTTCCATATGAAATGT
>locus1083
CCATCAGCACAAAGCAAGCGCGTGTAGGAAATTGCTGTTGCGGCAGAGTCGAGCGGAGACGCCCCAAGTGAAGGATAG
CGGCAACGACGTTTACGGGTTGACGCGACTCATTACCAGGCGGTTTGCATATATAGACGCAACGCGCTCGGCATGAGCCC
CGCGTGTTTGGCCGACGGA
>locus1084
ATATTCAAATCGACAACCCCTTTGCGCCCTTGGCGCGGTGAAGGACTCGGCAGTACGTGCGGCCCCGACCCCTTCGATCGG
ATTCAATGGGCATCGATATCAAATTTATTTGACGAAGGTGCCGCTACTGCAGCAGTGCCCTTTTCCCTATTCTGTTTT
CCCATCCCTCTTTCAA
>locus1085
GCGCAATATGGCTTCGAGACTCGGATGGAATTCGGCAACTCTCTTACCTGAATAATTTCTTAAAGCTCCGGTAGCCGG
ATGTAATCGCGACAGCTAGTCTTGTGGAATCCAGCTTGACTGTGCTAGCCACACTGAGCCGAACGAATCAAACGCG
CTGCAGCAGATGGCTGC
>locus1086
CATGCATCCAGAGATGGATAGTAGACACCGTCCGCGCTGGCGCGGTAGCGGAGCAGCCTCTCGCAAGATCTATCGATT
TATGCAATGCGAGGAGTTAGAGTCCGGAACAGCCGGAACCGCCCTCCTCTCTTACCCTCTCTGCTTGAATAATGCCT
TGATAAGATAGGAGAGA
>locus1087
AGAATCGCGAAAGTTGGCGTCGAACCAACGCCAGTCGGGCTTGGAATCCGAGAGGCGCTTATGACTTAAAGTCTCCTTAC
TCCGTTAATTCGGAACATTAAACAAAGTCTCGCTAAAACTCGCCAATCTCGCGCCTCCTGGGAGCGCGCCCTGTGCC
CGGACTTGTTAATGAAA
>locus1088
CAGGACAACCTGTCCCCGATCGTCTTGATCGCGCTAACCATCCTCTCCTCTCACTGCGCGCTCTATGGTAAATGGA
GGGCCAATCATGCGGTAACAGCAACCCAGGGGATACTCCTGCTGCGAGCGGTGAGCTCCGCTCAATGTGCTACTTAC
GTTTCGCGTGCACTCCC
>locus1089
AAGGGGTGAAAAGGGGTAGAACAGCGGAATGGAAAGCAGAGGAGCTGCGCGGGGAGGAGAGATCGATGGCGATTTTCA
CTCACTTAGCTCGGCGCATCAATATGCATTAAGCCGATCGGTTCTCTCTCTCTTCCCTCTTTGCGCTTTAGGTTTC
GCTCGGAGGAGGCACTC
>locus1090
CAGCTATATACTGCAGCTAGCGTACGCGCAGGCTATAGGTTCTCTCGAGCGCGCGGAGCGCGGCTCACATCACATT
TAGGCTATTCCGCAATCTGTTCCCGCACTCGGATAGCCTCTCCAATTTCCATGACCACCTGGATCGGCGAGCGGAGAG
AGGCTGGAAAAGCCGAG
>locus1091
ATTCGCGCGGACTGCGCGCTGAAAATACAGCAGCGGGGAAATGCTGTACTCGCTGCCGCGGCCATATTAACATTTCTC
CGGGATTGAGGCGAGATTAAATTGACAGGGAGGATTTGCGAGTCGTTTGTGGCAACACGCGCTCGCGCGCGCGGACT
CCCCCTACTCCGTGCT
>locus1092
AGCATACATACACAGGGGTGGTACGCGCAGCAGCAGCTCTCCGAGTGTATGGCGCCAGCCGATAACGGTAATCCAAT
TTTTCGGAATAATATTTGTCTTGAAGATCGACGACGACCGGCGGCGGCGGAGCGCTTGGCGSTTTCTCTCTATCTGA
CACCTTATGCGAGCATC
>locus1093
AACTCACATATTTTCCGAGGGTTCGATACGCGGCAAGCGGAAAAATTTGGAAAACTGAAAAATCAAGACTCACCATGAAA
ACCATGAACCTTGATTGAGGTTGGCGCTCCCGATGTAATTCAGCGTGTGTCCAGCCAGCGCCTCTCTCGCCGAGCGCC
TCCGCGGCGCTGCAGC
>locus1094
ATGTGAAAAGGGGAGGAACGTTACAATATTTAATACGATTATTCTGTTATTATAATTAGATATCTATTAAATAATTACGA
GATCACAGTGACGCTTTGACGCGCGGGGATCTCAGGTGGCGGGCTGTACTTTATTTTCGATTTTTCTCTTTTCTCTAT
TACGTTTACTTATTGATTCT
>locus1095
GGCAAAAGGCGAGAGAAAGAGAGGAGTAGTGTAGTCTGGCTCGGCGCGCGCGGGGCTATTAGCAATTCAAATTGGCG

CGCCCGGTCCACCCCCGAGCCACGCCGTGGCACAGCATCTGCCCATCCCCGTTCCCGGTTTCATAATATCCTGCACG
TCAGACTTTGAAAACCTCAAACATTTCTCTGCCTTGGCGGCGGCGGTGGCGGCGCAGGAAAGCCGAGCGGGGTGCC
GGCGGAGGAGCTCGGAA
>locus1122
CATTAGCGCGGTATAGCACGGAGCGGTGAGAAACTGCGCGGCGGCGGCGGAGTTCTCTCGCAAGTTTGTGTGTGAG
AAAAACAGGAGCTGATTTGAATTTATATTACTTGTCTCTCGGCCCTTCGCGCAGAGGCGCGCAGCAGCCCCGCGTAAGGC
GGGAGCAAGTAGAGAG
>locus1123
TATAGGCGCGGCATAAATCCTGCGCGGAGTCTCGAGAATCCATTACGGGCTCTCGCGCATTCGCTCGAATAAATTTCC
ATAATATTTGGCAGTTGACACGCCTCGTCGGAAGAAATGGAACCCCCCCCCCGACTCGCTCGCCATCTTTCGCGCG
CGGATTCATTTTCTCTC
>locus1124
GTCTCTGGCAGTACTTGACAGCAACTCAACGGTGCATTTGGCACGCATCTTCTGCGGCGGCCGAACCTCCCTGCCGTGC
CCCTCTGTCTCCATCGCATTATCGCGAACATCCTTATAAATTCACCGCTGACTCGCTGCTCGAAACAAGACTCTCT
CTCTCTCTCTCTCTC
>locus1125
TTTTCTGGTACGGGAAGAGGATAGGACTCGGGATTGAGGGACGTGGGGCACTGGCGATAGTCGGCCGGATGGCTTCTAG
TACCTAGAGTAGCCATTTCGAATAGCCATTTCGAGTAGCCGTTGGAACCCCTGTAGGGAACGGAGTGTATGCTCCTGGAACA
GAGATCGTGCCAAAACG
>locus1126
CCGGACTGTGTGTATGTGTGTGTGGGGGGGGGGGGAGGTGCGGTAGGGGATAAGCCACGATGCTGTTGATTAAAT
ACGGTTTACCAGTAAGTGTAAACGGAGTGTGCAAAACGCCAGTAGCACACCGCCATCGCCGAGTTTCTCCCTTCCCAGG
GGCGCGACGAACCAAC
>locus1127
ATAAGCCGCGTATAACGATCACACCCGGTTGTTGGCGCTCGGCAATAAACGACGAATATGTGCAGCCAACAGTGTGTTA
AGTACTGGCATTAGGGTAATAAGCGTGCAAAAGGATGCTGCGTGCAGCCCTGCCTGTACACGTGTATATGTATACCGAG
TCCGCGTATAAGAGAGAGAG
>locus1128
AGAGAGAGAGAGAGAGAGGGTCGCCATTAAAGCATGACCCCTGCCGCTGGCCCGCGGCAAGTCTTACAAAAAACTG
TAATTGGAATACTTTTCTCTCTTTTCTCTAAAATAATTTATGAATCCGCGCAGCAGCACACAATATCTCTCGCTCGTA
TGTATATCGCGCGCTGA
>locus1129
CAGGGAAGGCGAGCGAGGCTCATGAATATTACGCGAACAAGTTGTCCGCTTGTCTGCTGCCAGTGACGTACACCCCTGTG
ATCATAAGTGGTTTGTTCGCTGATTTGTGTCGCGCATCGCGCATCGCGAGGGGGAACCGACTTGGGCCCAGGGGGTCC
GTTGAATATGCATCGAG
>locus1130
AAGAATCCACTGCGGACGCGCGCTCGGGAAGCAAGCGAGAGAGAACCGGCTCGCCACCCGCTGACTAGCTCCGC
TGATTGCTGCTGCATCTTTGATGACCTCATCGACAGCGCCGCTGCCGCTGCAGCGAGAGGGTTCGCGCTGCTGCCCTTG
CGCGCCCCGACAAGCG
>locus1131
ATGCTCTCTCTCTCTCACTCACACGGAGAACCCTTAGCAGCAGCGGTCGCAATAAGGCCGTGCCAGTAGTCTCTCA
TTTGATTAAATACCCGCCACAAATGAGCCCTGGGCTGCCGCGCTGCCCTCTGAGTGGCTCTCACTTGATTAAACGACGAG
CTGCTCCGATGCCACAA
>locus1132
AAGAGGAGGAGGTGGAGGCTACAGAGAGGTTACGGGGGGATGTATTGTCCCGCATTTGCTGCCCTATTGTGTGACATC
ACGGCCCGATAACTGCCGATAAAGACCGCGCTCGCGCAAGTCGCGTCTCTCGTATACCTTTTCTTTGTATATGTGTGCT
GTGTGTGTGTATGCATT
>locus1133
CGAGGCGCGCACACAGGCAAGCGCGAGCTTAAAGAGCAGAGCGGTCGCCGCGGCGGGCGGCGCTTTTGGTGAATGGAA
TATTATTGGGGCATCTTTTACGCGGACTCGACGGAAGCTAGAAAGCTCATCTGCGGGGGTGTGCTGCACTGCTCTCT
ATGGATGGCATTCCGCT
>locus1134
CACGTCGAGAGGGGCAAGCGCGAGCGCGCTCTTTTATTTCGCAAAACAATGGAAGGGCGCTTTGTTTCAGGCATTGTGAG
GCGGACAGTAACGCGCGCACAAAGTTATAATGAAACGCTATTATTTAAATGCATAGAGGAGCGCTGCTGCTCGCTCGCT
CGCGCTACCACTTTTCA
>locus1135
ATGCAATTGATTGATAGTAGAACTGTACTAGATCCGCGGCTTGTACTCGCATGCACACGCTAGATAATTTCGAGGTCAG
TCGCTAACGCTATCGAGCTATCGAGATTTCGACGTGTTGCCAAGCAGTTGATTCTGTAATTCTAGCCTTAAGAGCTCAA
GTGATCATTTTTTTGCA
>locus1136
ATTCTCGCGGAGAGAGAGAGAGTAACTCGAAAGCAAGTTCGCGGATGTATATATATACTCACTTTAAAAATAGCCTG
TAGAGTACGGCGCTGAAGGTCTGTGAAAACAGTTCGGGTTTCTTGGGGCGGGTTCGCTGGTGTTCGGCTGGCTCGACA
TCTCGCTCTTCTCTCTG
>locus1137
AGAGCGGCGGCGGCGGCGGTGTTGGAAGAGAGAGTAGGAGAAGTAGGGGAGAGAGAGAGAGAGGCTCAGGAATGGATC
GCTGAATTTCTCGAATAATTAGTTAGAGCTCGGTGAGCTAGGGTGGCCGCTTACCTACCAACGCGGCTCATACATTA
TGTACCGGCTGGTACAT
>locus1138
GACAGCGCTCCATCATTTGTTGAATGTAGTTGTGGTGTGTCGAGGCTGAGAGCGGTCGCGGAGGAGTTGATGGGCGG
TAGGAGATGGAAGCAATATCAGGACACCCCTGACAGCGGCACTCGCAGCAGGACAACCGCTCAACGGCGACGAGGCCAGC
ATCACAGCAACAGCTTCAA
>locus1139
GGGAGAGCGGCGAGGAGGGAGGGGGGAGAGATGCGCGGCAAAATTTCTAATCAGATTACCGTGGATTAGCAAAGTTCTG
TTGTTCTAATGAAATTCGTCTAAATTAACCTCGCGCGGCGGCGGCGGCGGCTTCGAGGAGAAGACGAGAGAGGG
CAAGGGACGAAGCGAGG
>locus1140
AAAAAACAGTAATTTACTTAGTAAACATAAAGCCGCGCAGCGCGGCGGCGGCGGCTAGTGAAGGAAGGCAAA
CACATTAACATTAGAGGGCATAAATACTCGCGTATACGCGCGGCTCGCGCGCGCTCTATGTATGTGTGCGGTATA
TATGTTATAGATGTGTA
>locus1141
CAGCAGGTGACGCGCGCTCTCGCGAGGGGACGCGCGAGAGAGCGCGAGAGAGAAGGTTCTTTAGACAAAGAGGTTG
CGCGTACAAAACAGTTAATGAGTCTACGGCTGGGTGGTCCAGCCAGGGCTCCGTCTTAATAACGTCGAGAGGTAAGTGC
GAGCGAGAAAAAGAAGA
>locus1142
CGTTTCATATAACCGCGCGGCTTCTCGATATATAGGCTGGCTGGCTGGCGCAGTGATCCGACAGTCTGCAAGTTAATTTA
GAGGCCATTTCTCTCTGTAATAGCCAATAAAGCTCGCTTCCCTTGCAGAAAGGCCAGAGCGCAGCGCAGAGAGGGAGC
TGTGTATATCCGCGCGC
>locus1143
GTAACCGCGCATCTCTGTAAATTAACCTAGCAGGAGCTCTGCTCGCGCGCTCCCGCCAAATATTCAATTTAAAAAG
GTAAATGCAATTTTCCGCTTTTACGTGATTGAGATAATGCAGCCGATTAAACGGCTCTCTGCGCTCTCGACTCTCTCTC
TCTCTCTCTCCCTTT
>locus1144
GACAAAACCTCGCAATAAACTACTACTCGCTATTGTCTTGGCGACGCAATTAAGTGGACCTGCCTGAGATTAAAGGGGA
ATCATCGCAAATTCGTAACCTCGTCACAGCTACATAGGTAACCTACTCTGCTCTGCTCTGCTGCTGCTGCTGCTGCTAA
TCAGTCTCTTTGTTCTG
>locus1145
TCGAATTCGCCCTCTCTTTAGACCGGCGCGGCTATTACCCCCGCGCGCTAGCTCCTTCTAGCACAGTCGAGGAATTC
GAGTTGCTATAAATCTCCCTTGACGGGCGCGATGCCAGGCAGCCAGGCAGACTCGAGCGTCGACACGGGGTGTGCTACTCT
GCTGCTGCTGAGCGCAA
>locus1146
CGCATAGTACGCCAGTGCAGCGGAGCGGAGGCTAAAGAGGCAAGAGCGGGAGGGAGGGAGGGAGTGGCGCAAAACATT
TGCTGCGCGCGGTAAATTAAGACACACAGAGCAGCGGCTGCAGCAGCTCGAGAGATCGAAACTACTACTCTTCTAT
CCTGCGCGCGCAATGCA

GCTATGGGGTAGTAGAC
>locus1173
CGGGCAGGCACCTCCGACTCCGTGAGATCGATGAGGGAGCTCTTCTCCTCGGTGAGGTTCTCCGAGGACCTCTTCTCGTC
CTCGCCCTCATCTTGAAGACCTTGACCTCGTCTCGTCCGAGGTCTCGCCGCCCGCGCTGCTGCTGACGTGCGGCA
TCGTGTCGGTCTCTCTC
>locus1174
TCGCGTGGAAAGACGGGGTGAGAGGGGGGGGGGAGCGAGCGGGATAGCCGATAGCTAGCACTCGTCTTTAGTCAAA
CCTCCGCCCTTTTCAATCGAGACTTCAAACGCTGCAGCGTGAATCATGATTGGAACGGCGCGTGTCTGTAAGCAAGGG
GCTGCTCTGCTCGGGGG
>locus1175
CAGCAGCGACTTGGAAACAAAGCGAGAGAGGGAGAGAGAATCGTCGTTCTCTACCGCGGAAAAAAGAAATGAGGGCGCTG
TCAGTGGTGGAATATTCTGATTATGCTAATTCGCGAGTTCTGTTCCACTCCTTTAACTTCCCGCGCGCTCTCTCCCA
CTCTGTATACTCGGCGC
>locus1176
TTCGCGATCCAGAGCTCGCTCGCTCGGCACTCGGCCATTACTCAAGCATTCACTCGGTAACGCAATCATACGTCACAAA
GGCCTTTCAATTTGCAAGCGCATTGTTGAAACCCGCGCATATTAATTGCCGCGGCTGTTATCTCTGAGCAGCCCTTCAGA
GAGGGAGTGCCCTCTCC
>locus1177
CTCTCGCGGGTGCGCGCGCGGTACATCCCTTTATAGCATCACGTTTACGTTTACGAGCAGCACCGCTGACGTTTACG
AGCCACCGGCTGACGTACGAGCCACTTGCTGCTGCGTTTGCTGCTGCTTTTCATTGCTCGCGCTCAGGCTCTCTCCAC
TCGCTCTTTCTACCGGC
>locus1178
GGTGAATATCCCACTCTTCTCTTTCGTTTCGGGGCAGCAGCAGCAGCGCGGAGTGACTGCCGACATTAGTCCACT
GACACCATTTGACACTTTTATTAATGACGGCTCGGGAACCTCCCTTACGCGCGGATTGCTCTGCTCGTGGGATTGCG
TACTCTCGCGCGGAGGC
>locus1179
CAACACACGCGGATCGCGCTGTGTACAAAAAGGGCGCAGGCGCGGAATCGCCGAGCGATTGTGCCGCTGTGTAATTA
GTGAAAAACGAGTATGAATCTCGAGCGATCGTATATTACCGCTCTCTCTCTCTCTCGCGCGCGCGCGCTGCCCG
TAATGGATGGGATTACA
>locus1180
CAGTCCCAATCTGTCAAGCGCTCCCACTGGCCGCGAGCAGCGCAAGAGCTGCGCGTCTCGTCTGTTGTTATGTAAA
TATGAAAAAGTTTGTGATTTCATGATGAGCCGAGCATGAATCTCTCTCGCGTTGTCTGTGTCGCGAGCCGTGAAACTG
ATGCATTGCAATCGCGC
>locus1181
CGTGTATCGCCGCTAGAGAGAGAGAGAGAGAGAGGACTCCATGGAAGCCGGGAGGCGCGATACCCCTAATTCCTA
AATCTGTCGCGATAAGTCTCGTTACAAATAATATCTACCAGCGTCTGCTGGCTATACCTCTCTCTCTCGCTCTCCACT
GCGCTGGGGGGCTTTGG
>locus1182
GCAGTAGCAGCGAGACAAGGAGCTGGCAGACGCGCAGCGTAAGGCGCGCAGCACAGAGACGACCTCTGCATTGCCGGCA
TGATTGCTCTATGCGACATCGAGGCAATCCCGTGGCTA
>locus1183
GAACGTAACGTATCACATTTTCGAGAAATATATGTATTTGTTATTTGTTAATTGAATACTCGCACTTTTTCTTTGTCGT
TCCCTCCACGTATCACAAACAATAATCTAGGATTTTAAA
>locus1184
TTATGTGCGCTCTCGCTCGCGTGCAGGTGTCCCATCCCCCGCGGAGGTGGTAGTAGTCGGGCCGCTTTACGAGCAAC
CTGGGTAAACGAGAGCGATAGATAATAACCGTTGCTCCCT
>locus1185
TCGCGTGGATGCCCATCCCGCTCCATGCTCCACTGGGCTGCCAAAAACCAACCACGACCTAAAGGGGCGCTCTCGCA
CTAGTCTCCATCTGTTACTTTCTTGTCTTCTTTCTTT
>locus1186
AGAGAGAGACACTCGATCGCAGGACTCCATTTGCGGTTAGCATAAATGGTAACCCGAGGAAGGCAGAGCTGGGGACA
CGCTGTGCAGGCCCGGGCCACGCTTGCTCTTTCTATT
>locus1187
GGAGCGATTCTTCCACGCAACAATTTACAGTTTACATTTTATTTCCATCGCAGCTTACCACCGCACCACTACGAGGGG
CTGTTTTGTAGCTTCTTCTCTTCTTCTCTCGTCCGCG
>locus1188
GCGTGTAGGTAAATCGTTGTTATCTGGACAGTGATAAACCCGTGAATGGAGTTCTCGCGCGCGGAGAGAAAGCGAGAG
AATGCAAGAGGGAGAAAAAGACCGGCCATTCGCGCGAG
>locus1189
CGGGCACCGCTGGGGCAACAGCAGCCCCACCGCGCGCTGCTCGGCGTCGACCAGAATATTATGGACTTATCAAGCCA
TCCTAATAGTCTCATCAGGATGCAAGCCTGCAGATCTCAT
>locus1190
GGCTCGGCATCTCTCCGTCTACTTTTGTCTGAAGCAACAACCTCTGCCGCTGCCGCGCGCAGCAGCCCGGTAAGCAAGC
AAACGACCTTCGCTGGAATCTGGAACAACCTGTCTGCACCG
>locus1191
CCTCTCTGTGTGCTGGGTGATCGGTATCTGGGTGCGGGTTTTGGCAGTAGACTCGCCGCGCTGTACTGCTCCCG
TGCCAGAGCAGCTATATATCCGCGAGCGCAGCCGAGCTC
>locus1192
ACACTTTCAGAAGAAAACGAACAATGGTCAACCTGACGATGTGACATTTTCGGGACCTACAGAGACCTCAGAGTGAC
AGTATTAAACAACAATTATGTTTGTACTAAGATTAAATA
>locus1193
AGTACCAATGGAGTGATAAACAATTAAGCGACTAGCACAGGTAATATATTGTTGATTTTTATTATTGTTGTTGTT
GCATGAGACTAGCGTAATAGACTGAGCCATACACATGGTT
>locus1194
CCCCGAGACACTTGATTATATATAATTATCGGCATTTTAATAACTAATCATTTTGGGACCGCTGCTGCTGCCGTTACCGC
TTCCGAGATGCGATACGAGCGCTACCGTATGCAGAGAGAG
>locus1195
GGCCACGGTGATGCTATGTTGATGTTGCTGCTGCTTATTTTCAACCCGGTGCTGCTGATACCTGCAGTTAGATCCGA
GAGAGGGATCTCTTCTCTCCGCTCTCTCGCACTTTCAT
>locus1196
GCGGCGACGGCGGCAAGAAGAAGACGACGAGAAAGTAAAAAGGACTCGCGCGGCTGGAGCAACGTGGGTACAGTTA
AAATCTTCATTGCGGTGCGCCATTCTCTCCGCGCGTTT
>locus1197
AAAGGGTCTGATATGCATATGAGTGAACGCAATGACAGCGACGTGTAAGATTCTTTTCTCCATTTATTTAAAAAATCGA
TGTCTGAGAAATGGTGTTCACATAATATGGTACAAACGAC
>locus1198
AGCGGAAACCAATCACTTCCGCGCTGCGCCCATTAGGGCGCGCGACGCTGACGTCGCGTGACGTGAGAGGAGCTT
CTCCGCCACCCCGGATATAGCTACCGACTCGATCTCCT
>locus1199
CGCGCATGTAATGATTGACTGGCTCGCTGGCAGCCAACAGACAGACGTTTACCCGCCCGCGCCACCTCGTCTCGG
CTGCTCGCTCCACCTTCGCGTGAATGCGCGGAGAGAAC
>locus1200
GCGGGCCACGTTTCCCTTATTTATCGTTTCCGATGCTTATGTTTTACTAGGCCAGGCTCCGCCGCGGCGTGACGCG
CGTACACGATAAGGCTGCCAAGGTTGGAATCACTGAAGGA
>locus1201
GTGGCTCCAATGATTAAATGAACAAGTGTTTTTTCTCATATATATAACGTGTTCTCGTGTATGTGATAAGCCCCG
TAACGTGGTGTATCACAGAACAAATGTAGTAGTTTATACT
>locus1202
GAGGCGGAGAGAGATGTCGTACCAGATAGTGCAATTTACAGTATTCAGGGCTCTCGTGTAAACGCGCATCTGGCACGAG
CCCCAGCTGCTTCTATATAGTCTTTTTTACATCTATAT
>locus1203
CCAACCCGAGGGGTACGAGTGTGATACAAGGCTCCGCGAAGAACAGATGCCTCTATTAATATGATTTTTTATTAAAC
ATCAAAAGTAATGACACTTGGGTTGGCAATGTCTCTCGT

```
>locus1204
GTGTGCGGCCCTGACACACATTGACTCGTTAAATAACGACATAATGGCTAATTTAGCGATAATGAGCGGAACCGTA
TCGTTCAAATTAGCGTCGAAGGTGAGACGTAAGCTGTCTGC
>locus1205
AGAGAATTGGAACGAGAACGAGAAATGTGAACATTTTTCGAATAAACTATGAGTATGATGAGTGGACAACGCAAGGAGTT
GCTTGGGTTACTGTGGTCACCAAGCTCCGATTAGTCGCCG
>locus1206
CGAAGTTTCAACTCCAATTGGCCATTTCGTGACTCGAGCGAATCTTGCAATTTTCTTTCCCCAACAAACGTCATCATTT
TATCACGAATCGCGGGAACCTTTACGGCTCGACCTACCTG
>locus1207
TCGGCGAGCCGAGCGAGGGCGCCTGCAGTGACTAGCCTCCATCGATTTACCATGCGACGCCATCTTGCCACCCCTACACTG
CTGCCCTCGCTTGGGGTTGATCACCCCCCTCCACCCCTGCG
>locus1208
TTGCCAGCCCGCGGAGTGGGGGAGGAAAAAACAATGGCGATCGGAGGGAAGGAAGCCGAACAACGCAAGTCAATCGTGC
GTCTCTTAATAGAAAAGTGGGGTCGATTATGGGTTATAG
>locus1209
ACCTGAAGCTTGGCCGTGTACCTGACCTCGGCGCGGGGTTTCGCGGCGACGCAGGTGTAGTCGCCGAGTGCTCGGCGGC
TAGATTGGATATGCTAAGGAGGCTCGAGTAGGATCAAGC
>locus1210
CAACGACTCTGCCACCTTATTGGATATGTTGAGCAATTTATTTTATTTTCCCCACTACCACGCGCAGAGAGCTACTCTA
CTACTCCCGGGCGAGTCAGCGCCCCCGGAGCGCACCTCT
>locus1211
AGGAACAAGCCAAAAGCAGGGTTAAGTACAATTTCTGGTGGCGGACACAAAGTCAGTAAGAATCGTAACGCTTTATTAGT
CACTTAATGCACAATGCAAAAAGACCATGTACTATTTTC
>locus1212
GCCGCGGAAAAGTTTGCTTAACGGTAAAGCGATGAGTTAACATTAATATATTCGGTCTCAAAGTTTATAATATTTCTCG
AGGCATTGTCTGGCGGAGCGGAGCGCCGCAACAATAAAA
>locus1213
GCAGAGCCTATCATTATAGAGAAGGAATCATTGGATGATCTTAATCATGCGAACCTCTCTCCGTGCCTGCGAGTCGGCCA
ATCGCCGAGGCGGATTCAAATAATGGTTCCATCCAGCCC
>locus1214
CGGCTCTATATACGTGAGTGCACGGAGGAGATGCTCTCTGTACGCCACAGTTCGAGCGTCAGCGCGGTAATGACATGG
TCTAGGAGATGCCAGTCAGTTTGTAAATAACCCCGGTAA
>locus1215
CTCGGCGTCACACGCGAAATCAAGAGTAATGCCAACACGAACTGCACCTACCCCGCGCGCTCGTGCCGCCCTATACGCC
AACCTGTAGAGAGACACTGTATGAGAGCGAGAGAGAGA
>locus1216
TGTTAAGCTGGACAGCTTAGCCCCGTCTATTACGAGCAATCACACTTGATTATTTTGTCTACAGAGTAGTCCATACACC
GCGCGCGATTATCCTTCCCTCCTTTTCGCTCTCGGACTCT
>locus1217
GCGAGAGCTGAACCGAATAGCTATAAGGGATCCACCGGTTGAGCGTCGCTTTGGCCACACACACTCTCCTCGGTGGCTCC
AATTAAAGCGGGCAACATTAATTTCAACACCCGGCGGTTA
>locus1218
CATAACATCCGTGATATTTTGTGACCATGAAATGTCATGAAATAAATGGTAATTTTGAACCTCATCCGCATAAGACT
CAAATTTATTTAAATTTCTCTTAAAGGTACACCGCAT
>locus1219
ACTCAAGCTCAAGCTCAAGCTCGCGAGTACAAGTTGGCCTCTCTCTCTTGAATTGCAAGGGCGCTTTGGTGATGTACG
ACAGCGCTAGCTGTTGCTACGAGGTGCGCTCGACCTCAA
>locus1220
GAGTACACTCGGTTAAGGTGACGCATTTACCTTGGGCCAGGCACCCTTGCTTACGGACAGACTGAGAGGAGACAGA
GGCCACAGAGTACACCTTACTGACCGGATTGAATGACTCG
>locus1221
GGGCGAGTTGGGGGTTGGTTGGTTGGCTGGCTGCTACGTCGCGGATTTCGCGATCGCGGGCACGTGCGCGTCAGAC
GAGCGTACGTGCGACACGACTACGCTTTTACGCTGCTACT
>locus1222
TAAGTCATTTCTGCGATTAATTTTCTCTCCAATTTGCACGCGCGAGTAATTAAGGGACCGGAGAGCGCAGTACATCAT
CGGGCAGAGGGTGGGAGAGTCTTGGTTCTCTCTCGGAGC
>locus1223
AGGATAAATTTTGGTGGAACGCAACAATTTTATCGGCCGTTGTTATGTGAGATCAGTTGGAGCCTACTGCCGCTGCGCG
TTACACCTGCTCTGCGCGGCTGTGCGCTTTGCTCGTTCT
>locus1224
CAGTACATTAAAGACACCCCATACCTACACGATGTTTAAAGAGCTAAGCAACTACTCAAAGCGAGTGAGTTGATGCGAGCC
GCGTATCACGAGAAGGAAGTTCAATTTAACCCAATAAAAAG
>locus1225
GCGATAATACCAATCATTATCATCGCTTAATAACAGGCATTACTGCCAACATTGAAATAATGTGTACCCCGAACGACGGA
GGAAGGAAAAGGGGTGTGTGTGTGTGTATGTGTGTG
>locus1226
GTGCTCGAGCGACAGGGGTCGCCGCCCGGAATGGGCTCCCCAGGTCCGTGAAATTGAGCGTCGTCGTGGCGCCCCGAG
CTCCACCTTAGACGCGACCGAGTCGACAGCCCCGCAACCTC
>locus1227
TTGCTCGCTCAGTTGTTAACTACTGCTGCGAGCGGCCACACAAACACACAGTGCACACCGCGCGGCTGGACCGGTATA
ATGATACATAATGAAGCCCGAGCCTCTCCCTGAGCCCGC
>locus1228
TTGACTGTTGTAGGATCTGAGCAGGCGAGGGCACTGCGGAGAGAACATGGACAATGTGAATGTCAAATGATCGGCAC
TAAATACAGCGCATCAAGGAATACTTATATGTAAGACCA
>locus1229
TGCGAGAAAAAAGCAGAGAAATAAACGAGCGCAGAGAGAGAGAGAGAGCGGGGCAATGTACACCACAATATATTACATCCTACAAC
CGGGCATGCCCTGAGAGTACGAGAGTAGAGCGCTTGATCG
>locus1230
TGTGTAATGTTTCGCTAGGAATCCCTCGGATTCCTTTCCGCGGAGCGCGCGCGCAACCGCGCCCTGTTTGCCACT
CACTACCCCTGATTAGCTGGACTTCTGTCCGCGCAGTC
>locus1231
GCTAAAGGTGGGAGGGGAAAACGAGCGGGAGAGAGAGAGAGAGAGCGGGGCACTAATACATAAAGTAGCTTAAAGTAGAA
AATTGTGGAAGCGTCGTGATGCTGGTGATTGCGTTACCT
>locus1232
TATATTTGCGTCGTCGCTGTTATCGTAGCTGAAAACTGTCATAAATATTAAGGTACGACTATTGCCTACTCAATGT
ACAATATGTAGTATTACCTGTTGTTACCCACGAACCGTC
>locus1233
GAAGCGTGGCGCCTTTCCCTGGCTGCAGAAAAGAGAGCGAGGGAGACAGACAGTGC CGCGCGGCTTCCGCTTCTCTTA
TGCTCCGCGCGGACTGCATCAACCAGTCGCGCGGTTCCG
>locus1234
GAAAGCAGGCCGGCTGTAGTAGGCAGCGCGCGCGCGGCGGATGGAATCCGCATCGGAGCGGCTTCTCCATCTTGCCGAT
ATTATTGACGTTTTTTGCCACCCCTATTTTCCCGCCGTC
>locus1235
AAGAAAAGTTCAATTTGTTTCGATCGGGTTTTAATTTTTTAAATGAAATAATCTTGCAAGTAAACGAATACGCGAGCAGCGC
GCACCGGTTCCCCCAGTTTCTCAGCGGTGTCTGACAGA
>locus1236
CTGAAGGGGGCGGTGAAATATAAGCTAGATCTACGGGAAAGATAAATGAATCCGCCCCACCTCCAGCCTGCGCGCTCG
CTATATACCGCGAGCCTTCTGCTTTCTTCTGGGACAGAG
>locus1237
TCTCGGCTGCACAGAGAGAAAGCGGGCGAGCGAGCCGCGCGGAGGAATAATCCATTTTCTTGCGCGAGTACAATTTTG
CTTTCAATTTATTTTCCCCCTTTTCTCTCTCAAGC
>locus1238
```

CTCTCGCTCTCCCGCTCGCGCGCTCATACAGACTAGCTCCGCGCGCCCGCTAATCTCGTTCTAAAACTAATTCCGCCA
ACAATTTCTAAGCCGGTCCATTAAAAATTTCTAAGCACAGAG
>locus1239
CGGGGGGCTACTGTAGTTTCGGAACACAGCCATGGTCTCCCTACCTCCCAGGTACATACCGACATCATCGTGCTTTATA
TTTTCTTTATTGCCCTTCGTTCTGTACGTTCTGTTCTTTCT
>locus1240
ACGCTGCGAGAGAGAGAGGGGGTGGGGATACAGAGGAGAAGCGGGGAGCCAGAAATATATGTGTTCGATCGGCCG
TTTTTGAATTTTGAAGAGACAGACCCCTCGCTCGCTC
>locus1241
CCCTCGGGGTCACGGGGTGAATACCGTTTACCGACTTAATCACTTTTACCCTCTATTCCCGGTACGCTCCCTCG
TCGGCGCGGAGAAAAAAGAATTTGGCGGTGTTTTTCA
>locus1242
ATCAATATATACGTGGCAATAAGAACAGATTTGTACTTGCATTGAAATTGTTTAACTCAACTCCAATCACTTCGCACAG
CCAGTGTAGCGTGTATGTTATCAATATTTTTTGTTCCTA
>locus1243
CTCTCTCTCTCTGCTCTTTCTCCGCGTCCCCGTGTCAATTAACCGCTCCGGGGGCTGGAAAAATCGCGACCCCT
GTTTCAATAAGGTGGCTTTTACCTCATTTGGGGGAGAGA
>locus1244
CCCATCGCTCGAAAATTCACCCCGTAATCGACGGACAAAAGTAATTTCCCATCGAGAGCGGGACAAGGGTGATTTTGC
ATGGGGTCGCGCGGAGCGGTGTGCGCGGACTCGATAGC
>locus1245
CTCGTGGCGGGCGCGGAGACCTAGAGAGGCAGAGAGAGATGATGCGACAAAAATCAGATGCACGGCCATTGGC
TGTTCTCAATTCGAATTATTGGCTTCCCGGTGCGCGTTC
>locus1246
GATTGGGCTGCTTCGCAGAGAGTATTCACTGAATTGAACAAAAGAAGATCAGTACGTGTAATGTTTGTAAACAAATAT
GAAACATTATTTGTTCACTGCTACATATTACACAGTAA
>locus1247
AATGTTTTATTCTTAAATTTATGCACAAATGCAATCAATACAAATGTATCTGAAACAAGCAAGTTGGGGGATATCTCAGT
TTTTTTTGGCGCTTACAATAATATAGCATATATGTCTCA
>locus1248
GTGTATGTGGAAGAGTACAGAAATAGAGCGACCGGTTAGGTAGAGAGGCTGCTACCTGGGGTAGAATCATGACGTGC
GGCAGCTGGCGCGCTCGCCGCGCACTGACTGCTCTCCG
>locus1249
CTGCCGAGCTTCGGCTGTTTTTCATGGCCGTCAATTTAGTAGGTTGTTTACCCCTCGAGGTGCTCGCCGGGCTGTGCGC
TGGTGGGGAGCCCTTCGAGCATGGCGCGGGGGCAACG
>locus1250
AAAGGACGCTTACCAGCTACTACCTATTGATCGCCAATTCTTTTCTCTTGTGTCATATTAGCGAGAGCGCGCTGCG
CTGTGTCTACTCTCTCTCTCTCGATTTTTCCGCGC
>locus1251
CACCGAGCTAGTGTAGGAATGTGGTACCCTGCTTGTACAGTCAAGCGCGGTATACGCTCGCGTATACACACACA
GCCACGCGCAGACTCAGGCTACCTTACCTTCGACTCTCG
>locus1252
TCTCTCTCTCTCCGACTCCTATGCGCTGCGGGTAGGTTATCGTTTGGCAGCCTCGGGAACGTAGCAATTATCAGCCATTC
CTCGAAATAGCTGATGGTTAGTGATAATTATCTGCCGCC
>locus1253
GGGAGGGTGAGCTCTCGACTACTATACGCCGGGGTGGCTCTACGTACACGCGCCCCCTCGGGACAGGGCGCTCTTTA
TGCTCGATATAATACCGCTCTCAAAACATACACACTTCAC
>locus1254
GAGAGAGAGAGAGAGAGAGAGGAGCATAGAGTCGTTTCGGAGGGATGTTGCGAGAGAGCGAGCTGGAAGTTCCCGCG
GGCTGTGTTATCGCCTCGGCAGGATGACCAGCCGCGCGC
>locus1255
AGGCCGTAACAAATCCGTTTCCGATACCTTTGTAAATTTGAGATGATCGGCTAGAAGCCTTCTCTCTCTTTCTCTCTA
TACGGAAGCACATGTGAGCGACTCGTAGTCGGAGGAAAA
>locus1256
CAATAAAGATCTTCGACAGTGGATGTGACAAAAATGAATTTTATATTTGTCTCAACAAATGAAGCGGCTCCTCCTTTT
CCCGTGTCTGTCTCGCTCGGAGCGCGCGCTCGTATATCG
>locus1257
TGATAATAACTTCCAGGCCTTATAAACGTTTATTATTACCGCGTAACGTAATGGCAGGCACGGCAAGCAAGCTCCGC
TTCTCCTTCTCTCGTATACATTGGCTCTCGCTCGCTCGCT
>locus1258
CAATCTGCACTCAATTTGTTCCAGCTAACTGTTTGCCCTTCAGTCGGCACCCCTTTTGGCGCTCGCGCGAGCGGGAGC
ACTATTTGCTCCGTTAAACGCGCTTGAAGAGATCGAGT
>locus1259
TCATGAATTCTCTCTGATTCTTTTTTCATCATCTCTAGTACTCCCAAAGCTGCGATTGTTGCAACAGACGCGACTATA
TACAAAGCAAGGCACTTGATAAAATTAATCTAGTCTTCTA
>locus1260
TCGTGGGCAGTATATCAACAATGATAGTTATACAGTACGTTATAATCGTAAATAGTCGCGGCAACATAATATATTCGC
GGCGGGGCTTGCTCGCTCGCTCTCGCTCGCGCGTAT
>locus1261
AGCAGGATATGCCGTGGGGGATTTGCCCAACATTTTACGTTAAGTATAAATCTCGAGCTTCAAGGGGAATTGGCAT
GCATGAGAATACCTGGCATTCGATTAAATACGGGTAATA
>locus1262
AAAGAAAAGAGGATATTTCTCATGAATGTTTCAAACGAAATGCGGATCTAATCCCTGGCGGGAGTAAATCATTCAGGC
TCTCTGGAATTCATCCCTTTACCTAAATCCTCCGCTATT
>locus1263
GCAGAGCGTACGCCACCTTTAATGCCTCATTTGAACCTCATTAATGCTTTTTTATCTGTACATTACAATTTGTGTACCA
ATGAGGAACGTTGTTAATCATGTTGTTGATGTTATTGTT
>locus1264
GAGAGACGACCGGGCGTCCGCGGAGCGTGCCACCAAGGGGATGAGAATTTGCGCGCGGGCGGAAACTATTGTCCGC
TCGTGCCGCTTTTAAATCTCCGTAATTCAGCGCTGA
>locus1265
AAAAAATGACATACCTGACAAATTAACAAACATCTTCTAAATCATGAATAACGCTCTGCAGTAGTTTGTATCCACTAT
TAACCTCACGTTCAAAATAACGATATAACGGATCTTTGAT
>locus1266
CAAAGAGGAAGTGGCAAGTTATTAGAATGGTCCGGAAGAGATGGCGTGGAGACGCTCCGTATTTTCTACTGTATGGCC
GCTGCTTTGCATAATCCCGCACTTAGCTCGCGCTCGCGGA
>locus1267
GCACAATCAGAGCATACCTTAGTTGTCCGCTCGTAAAGCAACCCGATGTCGCGAATACCGCGAGAGCGTACCACGCTG
CTGCTATTTTCTCGGACGTGCAAGCAGTCCGAGTCTCGG
>locus1268
TATTATTATACTCAAACTCGTACAAACGCTCGTGATCACGATCATTCGGATAGTTTTTTTATATTTTGTAACTGAGCA
TGCTAAGTCCCAAGCTCCGTACCGGAGTCTTATATAAT
>locus1269
GGAAGAAAAATGAAATAATCGACTCGTAAATCGTTTCAGGAAGAGGGCATGACGGGCCGAACATGCACTGGCGAAAAAC
ACGTGCGCATCAAGTACGGTGGTCGAGTCTGCTGCTCGGTC
>locus1270
ACCAAAAAATAAACAGCTGGAATATAAACACTACGCTTATAAACGTCCTCCACATTCGATGAGCATATCCATCCACCAA
ATTCTTTTAAATCTTCCAATGTCATATTTTTATTTGGATC
>locus1271
CCGGAGGCGCGCGCCAAAAATCAGATCGAGTGTAAAAATCGCATAAACTCGTCTGGCAGACTCTCGCCGGCGAGCTA
TGTCCTTTCTTTGTTGAGCGCGCTGCGCACGAGCTCCACC
>locus1272
CCCATCTTTTGAATCTAACACAAGGATGAAAACTAACATCATCAATAATCTTGAGTTAACGAAAGATAGCGTTAGATCT

GGCATACCACTTAGTTTGATACAGCAATCAATCTATAAAG
>locus1273
ATGCTTATTTTTATGGAATTTTGTGCTGAAGGAACCTTAGAAAAGTTTAATAGCTGGTAGTGGGAATGGACTTCCAGAATC
CCTATTAGAAAATATACTCATCAACTTTTAGTAGCAGTT
>locus1274
TACAATAGTGACGAATTCACGTTATCTACTTTATCTTTTGTGTTGGGCACGTATTCAGAGCAAACGCAAATTCGCCGCTCT
ACCAAATCGCTGACAGCACAGAGACGCCGCTTCTTGACACA
>locus1275
CAGCCGGGCATGGCATGCACAGCCATTTACTTCATTATGCTATTAAGCTTAATGGCTCCCGCCCGCAGCCGCCCTAAC
ACGGCTGTAGGCTATAGCCACTCTTCGCAGTGGCGCAGTT
>locus1276
GAAGTGTCTGTCGCGAGATGGCGGATCCAAGCCGCGAGGAAGAGCAGGTGACACTGCTGGCGAGGAGGGCTCCGCGCT
GGCGGCCAGGCTCTCAAGCTCGGGTAATTAAATTAACCAAC
>locus1277
TTTTATACCTCAATATACTTTTATACAAAAGGCTACTTTATAATCTAACATTAAGACATACCATAGCATGTGCGCCCTCCA
CCGTATCGTAAGACGATAGGTGGGATGCACGCATGTTTGT
>locus1278
ACATTATTATACCTTTGTTTTTTTTTATCATTATCTGTAGAACTATCACTTGAATGGTTGTGCATTGTTGAACCTAATGGAG
GCGATGGTATAGGCGAAGTACCAGAATTAGTTGATGTTGG
>locus1279
TGCTGCTGTGCGTCCAAGTAGGAGAAGCTCGGCGCAACGCATAAGAGGGAGGAACAGACGGAATAGCCAAGTTGCTATTG
AACCGATTTTGAGCAAATATCACTTGAAGCCTGGTCTCTC
>locus1280
GGCTCACACACAAGCCCTTCGGCAAATTTTATAACCGAACTTGTGCTATTGCGCGAGATTATTTCAATATATTCGACTCA
AGCTGGCAAATCTGTTTGCAGCTGGTGTATGCGTGAATG
>locus1281
CTCTGGCACGGGCACAGCGCGGCCCGGTCCGCTCTACTGCCAGGCAAAGTGAGAAACCACGGTTCTGACGGGTAACCTA
TCCACAATAATCTCTCTCTCTCTCTATCGTTATAAAT
>locus1282
GAATAATGTAATAATTTTGTATGTTTATTGAACCAAAAAATAAATATTATTGATGAACAACGTCATCTTTGTTTAGCGGCA
CTGCTGCAAGCTCCACTTCTTGTGTCATTTCTACGTCCT
>locus1283
AATCATGCAAGCCCTTTTCCCTCCCTCCCTCCCTCCCAACGAGGAGAGCTTGGCGGCCCTATATTGCAATATTTGTACT
TTTCCATGTTGAAACCTCGATATACAATAAATATATATA
>locus1284
GCGAACATAGCTTAATTTAGATTGTATCGCGTGAGAAGCAGGAAATGACGAAATATCCTGAGTGTGACTTACGCCGCGCG
CGCGCGCGCGGACTTCTCGCGACCTCAGCCGAGAAAAA
>locus1285
TGCGAGTGAACAACCGAGTACATAACTACTGTGCAAGTATGGTCGACCTACTGTTATTAAAGCTAAAAACAAAGACTAAGT
GTTCAATTGTGATTTTGTATTATTAGAAATATTTCTAAGT
>locus1286
GTAGCGAGTGGTGTGTGTGGACCAAGTGCGGTGGGACTGAGTGGTGGTGGTGGGACTACGGGGGCGAAAGCACTGCT
GTCCCGGACGAATAGAAAATTCCTACTGTTCTGTCGCT
>locus1287
CTACACAGCGTAGAGGAGGAAAGAGAAGGAGCAGAGAAGGACGGGGGAGAGAGAGTACAGTAACCGGGATCAATACTCC
CGCTCTTTCGATCATTCACTTTCGACGCGCCCTCGGCTC
>locus1288
TCTTGTTCGATGATCGCCGCACTCTCGATTGAACCTGGCTAACACGTAGCTTTGGGGAGGTTTCCCTCACGACTGCTCA
CCGCAACTATAACTGCGAATAACCACTGCCTTACCTGGTG
>locus1289
GGGGGCGAGTCTTTCAGAGTGCCTGTTAGCGCATCGCACTATGACTAATTATGAACACGAGAATAAGAGGCACCTTGC
CTCGATCTCTTTCTTTTACATCTTTTCACTTTTCGCGCGC
>locus1290
TTTTGCAAAATATTTACACAGATAATACTATACATACGTGACTCGAGTGCCTTGTCAAATGGGTCCAAATTTGGTCGATT
GGGCACTGATTTCATGTGTTTATAGGCTTAAGCGTTTTTA
>locus1291
GAAGGGGTTAGCTTCTAATGTTTTTGTAAATGACGCGCAGTAAGAATCCTCCACGGAAGGACTGTTTGGGCCCCGT
AGCTCCCTCCTCCCGCTTTTCTCCATCTCGTCCGCTCT
>locus1292
CCGCAAAAGAGAAGGAGGTAAGGAGACGAGGCCGCTGGTTCGGGGGTGGCTGGTAGCGCGCGCTATATTATTATTAGAGT
CCCTTAAGTCTAAGAGCCTTAAATCTCGGATAAGTTATGG
>locus1293
TTACTGATCGGTATCGCCATTAAACAAAGAGTTGATGACCCCATATGGACAACATGGGGTCTTTTATGCCGTGTTTAGTAG
TCTGAAAACCTGTTAGAGATTACAGAGACAGGAGGACAGTG
>locus1294
CCTATACTATATAGAGTGAGAGAGAGAGAGCGAAAGCGGGTGGCGCGAGCGAATGTTGTCAGGCAATTTTCTTGCCCA
GTGCCTCTGAATGCCGAGATTTCCATCTAGCCCGCGGT
>locus1295
TTGCCTCAATCGCTGTATTCACTTTGTAAACTAACCAGGCTAAATGTATTACACAGCGAGCGCGCGCGATAGCGGAGC
CACCGAGCTCTCTCTCTCTCTCTCTCTCTCGTCGACG
>locus1296
GGTCTGTCTGTTGTGCACTCTTTATCGCGCCCCCGGTGAGTCGTCTTATGCATCTTTCATGAGGCTGGCATCCAAGGGGT
CCATTGCGCTCGCGACGCGCATGTGTATGTGTATATAC
>locus1297
TTAGGTAACCCGGTCGATATATCAGGGCTCCGCTGCAGCTGTCTGTGAGCCAAGCTGAACATACATCCTTCTTTTCTC
TCTCCATTCTCTTCTTCCGCTCGCTCTAGGTATGTGT
>locus1298
TGTCAGTTGTCTATCAGCCGATGTATATATGTGTGTATATAAGGGAGCTGGCGGAGCGCGCGCGCAGCTGCACCTGC
CGCGAGAGTCCGCGTCGTAATGGGAGCGGGCCGAGGTAG
>locus1299
CAGTCCGCTCCAGTGTCTGCTGCTACGTCGCGGGGCGAGTCCGCGCCCCGAGATAACTATGAATCCTAACAG
TTTCGGCTTGCTCGTACATGTTTGCCGAAGCGTGCCCG
>locus1300
ATTTGAAAAAAAATCAGTAAAGCATAACCTAGTTACAGCTTAGTAAAACAGCCCTTCTCTTTTGTCTTGGGCTAATTC
TTTGTGGTTTTGGTTTTGTGGTCTTTTGTGCTGGGTACTG
>locus1301
GACGGCGGCGCTTTAGTATGGTGCAACCGGCGCAGCGCATGGCCCTCGGATTCCCGGTCTGGTAAAGCAGAATCAAT
TTTTTCCACGTAGTCAAACGAGATCGGGAAACAACCGTAG
>locus1302
GGGAGCGAGTTCATAATTGCTGCTCACTACGCGGGGATGAAACTTATTAGCTCGGGTCGGCGGAAGGTGTATACCGGCT
TATGGCCGGTGCAAGTATATATAGCTATACCTGTATAC
>locus1303
TTTGTGCGGACAAACCGTTGATTACACCGGATCATCTCGGCAGTTCCTCGCCACGCCCTACCTCGATGAGAGGAGC
ACATGTCCATTGTGCGCTGAAAATGCAGGGTGAAGTACT
>locus1304
ATCCACTGGCACATCGATCCGCTTAATGAGTGAAAAGAATAAGACAGCCGCGCTCTCGCGCGCAGCCCTACCCCCCG
CGCACACCCCCACCCCGTCGAGCCGAGAGTTTCGTAG
>locus1305
CTCTCTCTCTCTCTCTCTCTGAGCGCGGTGTCTCGATCGATAGCACCGGAAAAATTCGAAAGTAAGATGCAA
TTAAACAGCGAGCGAGGGTAAGCAAGAAAAGGGGTGAGTT
>locus1306
GTGGATCGGGCCAGGCTTAAAGGCGTTCGGCGCGAGCCTGCAGCCCGCGAGAGTCAGCCACTCACGGCGCGAGCG
GACCGGAAATCGACGCTACATATGAAC'TGGGAACGGAG


```
>locus1307
AGCATTCACCGGACACGCATTGCCGACGCTATTTGCAGATATAACGCAATAAACCTCGGGTGCAGGCTGAGGGAGAGGA
GAAGCTCCGAACGCTGTTGCTGCACATGCTCGTAATATTC
>locus1308
TCCGTGTCCTCTTCCCGTGTGCCGGCGGCGGGCTGCGCGAAACTTTTTGTTATAGTCGCGCAAACCTCTTTAATAATG
CAACTCTTTATATTACAGGGCGCTTTTAAACAAGCGCGCGC
>locus1309
TCTAGCGCGGTGGGTTCGCTGCTGCAATTTCCGCGGCACGCTGATTGGGGCAGCCTCCTCGGGAGCAAAAACTCCATCTA
CAAAATGAACAGCCGTGACAAGAGCCATAATTTCTCGGAGC
>locus1310
TTTATCCTCGCTAATCAAGGGACGTATTTGCGTTTTATAATCCTTGGTCGGCGGCTAAGAGGGTAAAACTGAAAGCTTA
GTGGAATATCCTTTTCGCTCGGCTGCGCAATCTTGTCTCTC
>locus1311
GAAATTCGCGCTTCTTAATGAGCAATCCCACTCTGCTTATACTGGCGGCTCTCCGCTATATACCGCTGCCCTCTTAATTA
ATGCAACTTTTATTATTGTTTCTTGAACAATTC AACCGC
>locus1312
CGAAATCAAGTGCAGCTCTTTTCATCGTCGCGCGTCGCGCTCCCTCCTCGGAAGAAGAACCCCGCTGAAGTTGGAAGC
AATCGAGAAGGTTTAAATCCCACTCGATTGCGTTCTCTGCG
>locus1313
TACGCGTGTCCGCCGAGATTTCAGACTCCTAATTAAGACGAGGGTGCAGAGGGGTTTCGGCCGAGAGTTTGTGGGCT
CTCGGGGCTTCTCGAGCGCAATGTTTCGCAGATGGGG
>locus1314
AATGCAGCATCAATATTTTCATGTATGCTAACACGCCAGAACTAATAATGCTCGCCGGCGTCGAGGCGCGAGCTGAGAAGA
CCCAAGAAATAATACGACTACTGCCGTATTCCGCGGTTTT
>locus1315
AGTGAAACAAGCTCAATGTGTCAATCGATGTAATAAGTTTTCTCGTTCTGTTCTGTTATGCGCTACACAGACTATTACG
ACCACTGCGACTATTACGACGATGTAATCTTTTCACCA
>locus1316
GTATAGAGAGTGCACGGCCGCGCAGGGGTGAGTCGAGCAGGCGCGGAGGACCTGGCAGGCGGTCTCGAGTGTCTTGTGTC
AATATGTATAGTGTATCGATGTCTCTCCAACGGAGCACT
>locus1317
ATTTTTCGACATACAAAATCATTTATTCATATAAAAGGACACTTTATACTAGAAGCTACTGTTCTTAATTCTAGCCTAAGG
TTTCCGCGAGCCGGGATAACCGAGTTGCGAGCGACTCGCTC
>locus1318
TGGATGTTTTATCTCGATGCAAAATTTGGTCAGACACATGGCTGCCAAAGGGGATTTCCACTTACTTAACTGGTTTATATG
CAAAAAAATCTTTTGAAATAATGAATATCGTGAATGGGT
>locus1319
TAAGAACAGAGGTGAGCTAGTGGAGTGCAGACTGTGTTTAGAGGATACCATATTATGCCATGCCAGCTTTGTTTAAACGA
TTATTATATGTTTAAACAAATCATATATAGAGCAGTTATT
>locus1320
GAGAATACCTCGGTATGAAGCGCTATATAGAGAATACACACTTGACTACATTGTGTAAGTGTGTTACGATTTTCCGGTT
TTCATAAGTTTGTACTTTATGTAAATTTGAAGAGAGAAAT
>locus1321
TAGAGAGAAAGATTAAATACAGAAGCATGTAGTAAAAGCGGGGAAATAAGCGTATTGGATGCGCAAGAGTTGTGTACAT
TTAGTTAAGTTTTATATTTTTTCCACATTTTCAGTCATTGAT
>locus1322
GAAAGGGAGAAAGTGAAAAGAGAGCAGCAGCAGCAGAGTCTTTTTCTGACGCTGGGTAGAATTAGTATATTTTATATG
CACTGATTGTTGATTATGACTATCGATAATAAAAAAAGA
>locus1323
TATACTATTTGTATTTGTTTTTATCTAATTGTAGTTTCTTGTGAACCTTTGTGATATACATTGCAATAGTCTATATTCG
ATCGAGCGTTTCTGTATCAATGACCACAGCCTTCTTCAA
>locus1324
TTCGTAAATTTACTGTACGAGACCATAGGTACATATTATATATATATATATATAGCGATGGTACAACTAAGGCA
AGTATGTACTGTACATAGCTGTCACTTACCTCTGCCCCAC
>locus1325
AATCGCGTAAAAATAACACAGGCATATACGATATGTGAACCCCGGTAGTACCAAAATCCAACAGTAATTTTAGTTCTGTG
TGGTACAGATTCCCTTATATTTCAATAAAATCATTTACTTGA
>locus1326
AGGTTTACTGTTACTCTGGTATTACTGTACTTGCATGCACAACCAACGTACACTGGCCAGTCTACGGATCAACCAGATAC
CCACTTTCGCCATCTGCGCTTGGATAACCTTGGCGACCAG
>locus1327
AACATGATATATTACTAAGCACCTTAGGTACAATCTAGTTCACTTTTTCACAGCCATGTGGATAAATTTGCTTCTCTCAGT
GAACAAATATAAATACATATAGATATACGTACACACACGC
>locus1328
GGCTCGTGCTCGGCGGGCGGGCGGCATGGCCGCGCGCCAGCGGTACGCGCTCCTTCTCTCCTCACCTGTAAGCAA
GTGTTGAAGAATAGAGATTAGGCAATGTTAAAGAATTTTT
>locus1329
AGGAAGAGACGAGAGAGAAGCAGCAGCAGCAGCGCAGCGCAAGGGGAGAGTTGACCTTCAACAGCGTCGGGAAAGTCAGG
CAGTCACTGACCGACAGACTAATCTTAATGCTCTATCCCC
>locus1330
GCAAAAGCCTCGGGGTGGGCGCGCTCGTCTGTTTCGGTGTATGTACTCTGCGCTCGGCCGGCTACGGATAAAACAAAGGT
TTACATCAGTGTCACTCGCAACAAGTCCGATTTTCGTCGGG
>locus1331
GAAGTTTCAAATGCGAGATTACAGTCCGCGATCTTTGATCAGCAGTTATAATAGTAACTAACTATTCTACATTTA
TCTATAACCTATAATAAATCTGTAACAAGTGATTGCGG
>locus1332
AAGCCCCGCCGCTCAAGCTCTCCCCCTCTCGCGGATATGCACGTAATATATAGATGGGAGGAGGCGGTATAATAAAAC
GCCATCTGAAATATGCATCCCTTAATAAAAAGCGTCCAATT
>locus1333
CGTCGCGCGCGGTTGACAAAACGGATTAGGGGCGAAAGACGCCCGGAAATCTAAGGAACGGGACGCTGTCCAAACAAC
CCTTTTCTTAAATCATTTAAGTGATTTCGGTAAGCGTTCTC
>locus1334
AGTTTGCAGCGCTAATGAGCTGGCAAGATAATTAGCATTATGTTAATGCGTGACGTGCTCCGCGCTGAGCTCTGTAATG
CATGCGGAGGTTGCCCAGGCCAAGTTGCATGACGTAAC
>locus1335
ACAATACGCAAGCATTAAACATGAATCACACAAGATATGTATACAACATGATAATCAACAAGATGTTTTTCTATGAA
AAAAAGAGTGTGCGCCACTCGCAATAGCCGCTCATCCCA
>locus1336
CGCCCGCCTCGTCATACCTTCTATGCGATCAGACTAGCACCCACCACCATAGATAGATGCCAGTATTTATAGCGTT
TATACATTTATACAATACTTTATATAAAAAATAAGCATCA
>locus1337
TTATTTATTAATTGTTGCGACGGAAGTCATCAAATTTGAAATTTAATAAAAAATATTACAGTGAGCATCTTTCACTCA
TTTGCTCTCTCGCGCTCTTTCGCACAATCTTCGCTTTACC
>locus1338
GGGTATATATCCCGGAATCAGCTGCCAGATTATTTATACCGCTATCAACATGGGGCTTGTTTGGTCTGAAACACAGC
TCTTGCCACATTGTTTTCAGCCAGATAAAGAAATTTAACGT
>locus1339
ATAGTTCGAAAAATAAATAAAAAATAAACCGGGCATTTAGGTATTAATATTTTGTATCAATAATTTTCTTCTCTTTG
CACCACCTCCATCCATATCCCGAGCGATAGATCGCGCTG
>locus1340
GTTTCTCAGGCAAGTCAAGTTCGCGCGTCAAGTTGAAGCCAAACACCCCAATGCATCGCGCGCGCGCGCGCGCG
CGCTTCCCCCACCATGATTCACGCGCGCGCGCGCGCGACGA
>locus1341
```

GGATATAGTCGGGAGAGAGAGAGAGAGAGAGAGTGTGTGTCAGTGTATGTGTCGCGCGCAAGCGGATGGCAGTGGGGGT
CACACTATATTAAGATTGAACCTCCACTGACTCCGCGACGT
>locus1342
GAGAGAGAGAGAGAGACGGCTGTATTGGTGTGTAGTAAGGGGTGCCCTATGTGAATATCGCGCGGCACACAGTCCCA
AGCAGTTTCCTACTTGATTGCCGCTATCGTCTGTGTGCT
>locus1343
GAGTTCGAAGTAGGTATAGAGGTGCGGCGAGGCCACGGATGAGGGAAGTCGTGGTTTCGCGGTTCGATCGGTTGCGGCTT
AGGCCAAATTGAGATAGTTTCGCAAAACCCGACCCCGCCG
>locus1344
CCACGCAAAACAGATCAATGCTCCGCGTTCCAATATAAACAGTATTATTGAAACAAAGCGCGCGAGCTTCGCTGTGCGG
CCGAACGGCTGCTAGGATTTTCGATAAGGCTCGTACGCATC
>locus1345
AGGCGCGGATAAACCCCTAATTTCATGTTCGATTTTACGCTCGTTCGCGAGCGTCCCTTAATACCGCGCGGCCAAATATT
TATGAAGATGTAACCGTTATTTTGATAAGCGTGCCTTCCC
>locus1346
GAAGGAAGCCAGGGGCTTACGGACATTAGATTGGGACACGGGCACAATAAACCTATCTGTATAATCTGCCCTGCAGGAA
TTAACAGCCCTCTGAAGGTAGCCACTAACGAAGTAATTCA
>locus1347
CTTGAAATTTGATATCGGCATCTGTATGGCCATTAGCATACTGGAACGTACGTATCTCCAAATGTTCTCATTAGCCGAAATT
CATGGGCGGCTTCTCTGCCCGGAGCTGGGAATCTCGCTC
>locus1348
TTACCTCCCAGATAATGCGGCATAATTAAAGCAAAATGTAACGTGCTGGCAATTAACCAAAATTTATGCGAGCGAGATC
CGCATCGGGGGCTCGCGCGCGCGCGCGCATCAGACAC
>locus1349
AAGTGAAGAAGAGTAAGAGAAATCTGCGACCGCTGCGAATTTCTCCGAAATAGCTGGATATTTCCCGTTGGTTAAGCCG
ATCATTGTGCGGTAACAAGCCGGCTATTGACAGGTCTGA
>locus1350
CTCGCCCGGATGCGGATTCAATTAACACACGCCCTTAAACAAATCATTACGCGAAGTGTCTCAGGCGGGGAAGAGAG
CGAGAGCTTGCAAGCTCCTTCGGAGGTGGTGCCTTTTCCC
>locus1351
GAGAGTTCTTTATAGTGGAACTTATTGATCCAAACAAACTCATTTCAAGATACAGTGCAAGGTCTCCAAGATACTGCTCCT
ACTCCTCTGTCTTTTCGCGCTCTCCGCTCTCTCGAACTCTCC
>locus1352
CGGCGCTCGGTGTCTAATGATGTTTAAGAGGGGCTTTAATTTTTTATTAGGAGCGCGCGCAACATCAAAGGGTTTCT
TCATTTTTTAGCCCGGATACGTCGGGGTGGCGACTCG
>locus1353
ATAAGCTGGTTGCCAGCAGTACAAAATCGCACCGGAAAAGCTCATGAGGACCGCGGCTACGCGGCCCTGCCTCGTAAG
TTTAACAGGTCAATATAGATGTTTGTACTTTATTTA
>locus1354
GGCGTATAATGTTTTATGGCCCGCATCAGCCGTAGAAGTATGAAGTGTGATAGAACCGGCAGAACGAAGCGGCAAAAG
ATCAAAGGCCCATAGAGAGCGCGGTAGCTGAGACACA
>locus1355
TTACCAATTGTACGCGATAATTATAGAATAAATAAATTTACGTCGCGCGGTATGCGTATAATATCTACGTCTGCCAA
ATGGTACCGAGATACAGTCGTATATACCCGCACGAGTTAT
>locus1356
GCCGCGGCTTACGCAAGCTGTTGCACCCGCATCTGCGCATTATGCAAGTCAAAGTCTCCATCCGTCTGTCTGTGCGGT
GCTGCGTCGCCCTGTGCGCCGCGGTAGCTTCTAAGTCT
>locus1357
AAGTAGTACGTTTTTATGATACCGTGTGTAAGTAATTATATATGATGTAGATTAGCGATGAATGATTGTAGATACTT
CCTGTACCTTGAAATTTATATGAAGTAGCTGGTAACCGG
>locus1358
ATACCTAGTGGATGAAGCCACCATGAATTAAGCAGGATGATTGATGATTGCTGGGGCGGTGCCGACCGGGCGTACAT
CCTCCTCCGACTACGTACGCGCGCTACTGTGCGCGCG
>locus1359
GTTGATATAATCTTGTATTTTCTAGTATGCAATTTATCAAGCTCAACAACAATCAGCCCTGTGGATGAATGAGGCTAA
GGTATGTCAAGGTGCATTGGATCAACGTTACCAGCCATT
>locus1360
CAGATATAGCGTGTGCTCGGCTTAATCGCTTCCTATGCACTTGGCCGTGCCCATTTGTCGGGCTCCATAAATTTAATG
CCAGATATAATAAGTTACTTGCTGTCTGGCAGGCCGCCAG
>locus1361
AACAGGTGAGCCGCATACACAGTGCACACACAGTGAAGCGAAGCGCCCTTCCCGTTTCATCATCGATTTTCCCGG
CTACCAATCGCAGCATCCATTTATCGCATCGATCGCGCG
>locus1362
AGAAATGAGTGAAGGAAAAGGTGCACTGAATAAAAGAACATAATTAGACGTGGTCAATCGTTTATTAAGCAAAAATT
TATTATAGCAATAGTAACAATGGATAACTATTAAAGACT
>locus1363
CGGCGAAGAGTTAAATCGGCTTGCCTTTAGCCGATCCCATTATAACAACCTCGGAGCGCGCTAAGCTTCCCGAGTCTG
CTGAGTGTGTCAGCGGGCCAGTTGCGCGACGATTACTCC
>locus1364
GCGGGCGCTCGGCTCTGTTCACTAATTGCACATTTCTCGCATAGTTTCGCCACCCTCTCTCGGGGCGGGGGTGGCCTGG
CAGTAGCAGCGCGCGCAGCGGTAGAGAGAGAGAGAGAG
>locus1365
GCCGACACTAAAGGCTTAACGAGCATCTTTGTCTATGCCGTGTGACGCGCGCTCCGAGAGAGAAGAGAGTAACAGGA
CGTGGCTTATCTTGTACGAAAAATCTGCCCAAGAGAGAG
>locus1366
GAAAAGGAGCGACCGCTATGATTTATTACCCGCCGCAAAATCTGTTTCTTCGTCGGCGCAAGCTAACCGGCTTTCGCTTC
ATCCATCTTTTTCCCTTTCACGGCTCACCGAACAGCAGCA
>locus1367
TCCTCCTTAATGGATAGAGAAATATATACATACTTTATGTATCGTTTACTATAATTATTATTATGTGTAGTTTATGCATAA
CAGTATACGAGGATTTTATCAACGCTAGTCTCCTGCACA
>locus1368
TTTTTCATACAGTAGAATGGTTGATGGATATAACACACGAAAAACGTTTTCAAGTGATACATAATCTACAAGCTATACT
TTGCATAGAATTAGTGGAGGTTTTTCCAATAATTGCATAAT
>locus1369
AATATTCTGTATCCCGATTGTGACACAATATACACTGGTGTATGTTAAATGTGAGAAATGTCGTGTTTTATTTTTTCTTCC
GATGTAATACCTTCCAGTGTCTTTTGTATGAAAGGAATC
>locus1370
TACTTCTTAACCTTAATCCGTAACCTCCGACGCGCGGCAATCTGACATCCTTTTTATTTTTTATTGGCTCGATCGTCGCTC
GCTCCGAGCTCGTGCCTCGCTCGAGCTTCCCATAGGATT
>locus1371
AGAGATAGAAACCGGAACCGGACATAACCTCCCTAGCAGCTACCTCCCTTACTCCACACATATATACACGAGTCGCG
CTTTGTCGGTCTCTCGGACGCAATTAGGTGGTTCTCTC
>locus1372
GAGAGAGAGAGAGGGGGGGGAGAGCTGCCTAAAGGAGGAGGAACCTCGCGAGCGGGACATATCAGGACGACTATCTATC
GCTGCCTTTTACGCTAATTGATAAATCGTGTGCGTTAAAT
>locus1373
TAAGCGGGCTTTCTCGCAGTATTATTTCCCGCAAAGTGTATTAACTGCTCCCATATTTTGGCCCCCTTTTCTCTCTGTT
TTCTTGTTTTCCCTGCTATCTTGCATACCTACCTCATCC
>locus1374
CTACTACTGCTGACGCGGCACACTGGCATCGGCGAGCGCCCTCTCTCTTTTAGAGGTTCTATGAATTTTGGGACAC
TCAATAAAAAGTGGTTCCACGAGGTTAACATTTTCGTTAAC
>locus1375
AGTTCTCCTCTCTCTCCGAGCGCGCGCTTATATATTTTACTTTTCTAGTATAGCGAATTAACACGGCGTTCATGCGCAGC


```
>locus1410
GAAAGTGTGGAGATGCGAGATAAGTGCCTGAAAAATAGACGGTGGAGGAGCAACGATGGAAAAACGCGAAGATATACAAA
TTCTCTGCACATAGTACAAAGCATTTAAACTCTTTTCAAT
>locus1411
AGGCAACCCACCTTAACCGAAACCATAGCCAAAACCTAACCTTTATTTCTAATTAGGAGCCGACGCGCGATGCGTCGCTG
CTTTGCATATTTTCTCGATTAACTCCCCCGCGACTCGGC
>locus1412
GAAGGAGGACGAGAGGTAGATGGTTATATACCTTGGTAGGAGATATAATGTAGCCAGCTGTAGGACGCGGTAAATCACATG
TTTGTTTAACTCCGAAACCCCTCATCTATACGCGCTGGA
>locus1413
TTCTCTCTTGTGCAACAAATCGGTACAAACGATCGTCGTAAAGCAGTTAAGGCCCCCAAGGGCCTTATAATACTATGCGC
CGGGCATGGAGCTCTCCGTCGAAAGCCAAGATGAGGAGG
>locus1414
TGTCTGCAAGCTTCGCCCCATAGAAGACATAGCGCGACGGCAGATACGCCCAGAGAACTCCCAAGCCGAAACTCCATTA
TCCTTAATTATAATCGCGTTTAAATCGCAAACCTCATCGCTG
>locus1415
TTTGCATCGCGCGCAGAAGCGAGAGCGCGAGGGTATAAGAAGGGGAGGAGCGGGTAAGCCGAGCATTGTAATTCAGT
AATGTAAGCTTTATGCAAAATACATGTTAGTTAGGAGTGC
>locus1416
CGGCCGCAATCGAAAGATAGCGAGTGCTTAATGGCTCGAAATTCCTGCCGCTTTGCGGAATGTCCCAGTGAAGATTAA
GTCAAGTGGCATCTATAGCCCTCTCTCTCTAGCGGAGA
>locus1417
CTAAGGGTTGCGAGGGTGGCGTCCACCACCTCCGTCGAGCGCCCGCTACGCGCACTCCAGCATCAAGGACTGGGAAC
GGAGTGCAGGTAATTCGTCTCTCTCGTGCCTCGACGCGG
>locus1418
CGTAATAGTAATTCGTTTCAGTTTCGCCGCTCGACCGGCCAGCAGCAGCAGCAGCCGAGGTTCTAAATCATCAGA
TAATTACTTTGGTAATTAATTAACAATCCGTTGGGCCGTG
>locus1419
ATTCTGAATGCATCTGCCCTATTATGCTCGCCGAGAGAGAGAGAGAGAGAGCTACTCCCGAGACCATTAAATCTCTC
GCTAAACGACAGCCATTTTGTACCTAAACTGGATTGCCAA
>locus1420
ACAAATCCAATTACCAATAAGAGTTTCTCATACGTAACATCATTCGATCTCGTCTTGTCTAAACATTATGTCCTTAC
AAAAATACATTACATCTATAAGCAGTTTATACATTGTGT
>locus1421
CGGTTGACGCGCATCTTATTTATGTTTTTAATTATATCAGAATATATCGTTAGAAGCCGTGTGAGCCCGCGAATATCCG
CGAGATTTATGCGCCCGCGCGCAGCTCTCTCTCTCGATTG
>locus1422
TCTTTTATATCTGGTTTTCCATTTGTGGCAATTAATACATGCTTTTAAAGGGTTTTTCGTTCAAATATGGTGGTTCTCC
TTCTATCATTTCAATAGCCATTATACCCAATGACCATATG
>locus1423
ACAACATTATATAAAAAACAACAACAACTACCGCTGTACCGTACATCGCGTGACGCGCACGTTTCGTATTTAAACG
ACTATAAATTAAATGTTAATTATCTTATACTTCGTAAAT
>locus1424
CCTCTCTCACACTCAGCCTGACGGCCATTAAAGCAATTTAACGCTTCTCTGCTCGGCAAAAAATACGAGTCGTTGCGCT
AGACTGAAGAATGATCGGAGAGGCGCCGACCGTCGTCATT
>locus1425
CCCCAAGGGCTGCTGTGTGTGTGTGTGTGTGCGGTGTGGAAGAGAGTAGAAAAAGAGAGGGCGCGAGATAACACATTT
TGACGGTATAAAAAATGAGTGTTTTCCCTGGCCTATCTGG
>locus1426
CAAAGCAAACAACGGCATCCGGTTTACTTGTGAATAAACAACATATTTATTTTAGAGGCGCTCGCGCAGTGCAGAGCG
AGGCAGGCCTTGACTCGCTTATAACTCGACGCTCTCGACG
>locus1427
CGCTCGGCGAGGTAGTTAGGGCTTTTCATCGGAGGGCTTGAGCTTAGCGGAGCTCGAGGGATTACAGCAGACAGTTGGAA
ATCCGATCAAAACAAATGGACTGCGAAAATAGCCCGGATC
>locus1428
GAGACTCGGCGAAAGCCGTAAAGTCGCCGCAATCCCGTGCAGACTCGGGTGTGGGTCAAAGGGTCGGTAAACAAACAG
TGAAAATAATATAATTTACAGAGGATTAGGCCGAGACTCA
>locus1429
TGAGCACGGAGTTATCTGTAATGGAATAAGTTGGCAACAATGGCGCATTGTTGAGCGCGGACGGTCGCGCTGACGGACA
CTATCGCGGAGGTTGCGTTTTCCGCGTTTCGTTTTCTCTG
>locus1430
ATTTCTCTGGAATTTTCCATTGCATAAAATCTTTTCTTAGCCATCTTCAACTTGCAATGGGTATGGAGCATTATAGT
ATCTTGATCAAGTGTCTAAGTCCTTTAATCCAGAGTTCA
>locus1431
TAATGCAGCCCGGGTAATGGCGTATCTCTGCGCATCTTTTATTAAACGCTCGCCGGCCTCTCCCGCGCGTGTGTATA
GAGCCTTGATTCGCGCGCGCTGCTGCTGCCGCTCGGGCG
>locus1432
GGAGAGTCAGGGAGGTTTCTCGTGTTCATTTCTGAGTCTCTATATAACTTTGCGCTCAACTCGACACCAGATTAATAA
CGCCCCACCTATTCTATATATCCGCGCAGAGATGAGCA
```

Additional file 6

my_locus_nb	probe1_name_Faircloth	probe2_name_Faircloth	probe3_name_Faircloth	probe4_name_Faircloth	probe5_name_Faircloth	probe6_name_Faircloth
locus0001	uce-428_p1	uce-428_p2	uce-429_p1	uce-429_p2	uce-430_p1	uce-430_p2
locus0002	uce-1041_p1	uce-1041_p2	uce-1042_p1	uce-1042_p2		
locus0003	uce-1366_p1	uce-1366_p2				
locus0004	uce-1022_p1	uce-1022_p2				
locus0005	uce-1019_p1	uce-1019_p2				
locus0006	uce-1015_p1	uce-1015_p2				
locus0007	uce-1013_p1	uce-1013_p2				
locus0008	uce-1008_p1	uce-1008_p2				
locus0009	uce-1007_p1	uce-1007_p2				
locus0010	uce-1005_p1	uce-1005_p2				
locus0011	uce-1004_p1	uce-1004_p2				
locus0012	uce-966_p1	uce-966_p2				
locus0013	uce-957_p1	uce-957_p2				
locus0014	uce-1345_p1	uce-1345_p2				
locus0015	uce-953_p1	uce-953_p2				
locus0016	uce-947_p1	uce-947_p2				
locus0017	uce-946_p1	uce-946_p2				
locus0018	uce-932_p1	uce-932_p2				
locus0019	uce-931_p1	uce-931_p2				
locus0020	uce-928_p1	uce-928_p2				
locus0021	uce-927_p1	uce-927_p2				
locus0022	uce-916_p1	uce-916_p2				
locus0023	uce-913_p1	uce-913_p2				
locus0024	uce-912_p1	uce-912_p2				
locus0025	uce-1344_p1	uce-1344_p2				
locus0026	uce-909_p1	uce-909_p2				
locus0027	uce-893_p1	uce-893_p2				
locus0028	uce-888_p1	uce-888_p2				
locus0029	uce-882_p1	uce-882_p2				
locus0030	uce-861_p1	uce-861_p2				
locus0031	uce-859_p1	uce-859_p2				

locus0032	uce-844_p1	uce-844_p2
locus0033	uce-841_p1	uce-841_p2
locus0034	uce-840_p1	uce-840_p2
locus0035	uce-832_p1	uce-832_p2
locus0036	uce-1343_p1	uce-1343_p2
locus0037	uce-822_p1	uce-822_p2
locus0038	uce-815_p1	uce-815_p2
locus0039	uce-805_p1	uce-805_p2
locus0040	uce-804_p1	uce-804_p2
locus0041	uce-801_p1	uce-801_p2
locus0042	uce-800_p1	uce-800_p2
locus0043	uce-785_p1	uce-785_p2
locus0044	uce-784_p1	uce-784_p2
locus0045	uce-781_p1	uce-781_p2
locus0046	uce-779_p1	uce-779_p2
locus0047	uce-1342_p1	uce-1342_p2
locus0048	uce-774_p1	uce-774_p2
locus0049	uce-773_p1	uce-773_p2
locus0050	uce-772_p1	uce-772_p2
locus0051	uce-770_p1	uce-770_p2
locus0052	uce-761_p1	uce-761_p2
locus0053	uce-759_p1	uce-759_p2
locus0054	uce-749_p1	uce-749_p2
locus0055	uce-744_p1	uce-744_p2
locus0056	uce-743_p1	uce-743_p2
locus0057	uce-735_p1	uce-735_p2
locus0058	uce-1337_p1	uce-1337_p2
locus0059	uce-723_p1	uce-723_p2
locus0060	uce-721_p1	uce-721_p2
locus0061	uce-715_p1	uce-715_p2
locus0062	uce-713_p1	uce-713_p2
locus0063	uce-711_p1	uce-711_p2
locus0064	uce-699_p1	uce-699_p2
locus0065	uce-691_p1	uce-691_p2

locus0066	uce-687_p1	uce-687_p2
locus0067	uce-684_p1	uce-684_p2
locus0068	uce-679_p1	uce-679_p2
locus0069	uce-1330_p1	uce-1330_p2
locus0070	uce-658_p1	uce-658_p2
locus0071	uce-656_p1	uce-656_p2
locus0072	uce-646_p1	uce-646_p2
locus0073	uce-642_p1	uce-642_p2
locus0074	uce-640_p1	uce-640_p2
locus0075	uce-635_p1	uce-635_p2
locus0076	uce-632_p1	uce-632_p2
locus0077	uce-631_p1	uce-631_p2
locus0078	uce-630_p1	uce-630_p2
locus0079	uce-621_p1	uce-621_p2
locus0080	uce-1325_p1	uce-1325_p2
locus0081	uce-620_p1	uce-620_p2
locus0082	uce-616_p1	uce-616_p2
locus0083	uce-610_p1	uce-610_p2
locus0084	uce-609_p1	uce-609_p2
locus0085	uce-606_p1	uce-606_p2
locus0086	uce-597_p1	uce-597_p2
locus0087	uce-584_p1	uce-584_p2
locus0088	uce-580_p1	uce-580_p2
locus0089	uce-571_p1	uce-571_p2
locus0090	uce-567_p1	uce-567_p2
locus0091	uce-1324_p1	uce-1324_p2
locus0092	uce-564_p1	uce-564_p2
locus0093	uce-561_p1	uce-561_p2
locus0094	uce-557_p1	uce-557_p2
locus0095	uce-556_p1	uce-556_p2
locus0096	uce-552_p1	uce-552_p2
locus0097	uce-551_p1	uce-551_p2
locus0098	uce-547_p1	uce-547_p2
locus0099	uce-544_p1	uce-544_p2

locus0100	uce-533_p1	uce-533_p2		
locus0101	uce-531_p1	uce-531_p2		
locus0102	uce-1287_p1	uce-1287_p2		
locus0103	uce-528_p1	uce-528_p2		
locus0104	uce-523_p1	uce-523_p2		
locus0105	uce-518_p1	uce-518_p2		
locus0106	uce-514_p1	uce-514_p2		
locus0107	uce-506_p1	uce-506_p2		
locus0108	uce-499_p1	uce-499_p2		
locus0109	uce-498_p1	uce-498_p2		
locus0110	uce-497_p1	uce-497_p2		
locus0111	uce-492_p1	uce-492_p2		
locus0112	uce-483_p1	uce-483_p2		
locus0113	uce-825_p1	uce-825_p2	uce-826_p1	uce-826_p2
locus0114	uce-1278_p1	uce-1278_p2		
locus0115	uce-481_p1	uce-481_p2		
locus0116	uce-478_p1	uce-478_p2		
locus0117	uce-471_p1	uce-471_p2		
locus0118	uce-470_p1	uce-470_p2		
locus0119	uce-468_p1	uce-468_p2		
locus0120	uce-467_p1	uce-467_p2		
locus0121	uce-466_p1	uce-466_p2		
locus0122	uce-465_p1	uce-465_p2		
locus0123	uce-461_p1	uce-461_p2		
locus0124	uce-459_p1	uce-459_p2		
locus0125	uce-1273_p1	uce-1273_p2		
locus0126	uce-458_p1	uce-458_p2		
locus0127	uce-453_p1	uce-453_p2		
locus0128	uce-436_p1	uce-436_p2		
locus0129	uce-431_p1	uce-431_p2		
locus0130	uce-424_p1	uce-424_p2		
locus0131	uce-416_p1	uce-416_p2		
locus0132	uce-415_p1	uce-415_p2		
locus0133	uce-413_p1	uce-413_p2		

locus0134	uce-406_p1	uce-406_p2
locus0135	uce-401_p1	uce-401_p2
locus0136	uce-1261_p1	uce-1261_p2
locus0137	uce-397_p1	uce-397_p2
locus0138	uce-369_p1	uce-369_p2
locus0139	uce-349_p1	uce-349_p2
locus0140	uce-348_p1	uce-348_p2
locus0141	uce-345_p1	uce-345_p2
locus0142	uce-339_p1	uce-339_p2
locus0143	uce-337_p1	uce-337_p2
locus0144	uce-335_p1	uce-335_p2
locus0145	uce-333_p1	uce-333_p2
locus0146	uce-330_p1	uce-330_p2
locus0147	uce-1258_p1	uce-1258_p2
locus0148	uce-320_p1	uce-320_p2
locus0149	uce-319_p1	uce-319_p2
locus0150	uce-304_p1	uce-304_p2
locus0151	uce-296_p1	uce-296_p2
locus0152	uce-295_p1	uce-295_p2
locus0153	uce-275_p1	uce-275_p2
locus0154	uce-269_p1	uce-269_p2
locus0155	uce-242_p1	uce-242_p2
locus0156	uce-241_p1	uce-241_p2
locus0157	uce-240_p1	uce-240_p2
locus0158	uce-1257_p1	uce-1257_p2
locus0159	uce-237_p1	uce-237_p2
locus0160	uce-235_p1	uce-235_p2
locus0161	uce-233_p1	uce-233_p2
locus0162	uce-228_p1	uce-228_p2
locus0163	uce-217_p1	uce-217_p2
locus0164	uce-200_p1	uce-200_p2
locus0165	uce-199_p1	uce-199_p2
locus0166	uce-182_p1	uce-182_p2
locus0167	uce-180_p1	uce-180_p2

locus0168	uce-170_p1	uce-170_p2
locus0169	uce-1249_p1	uce-1249_p2
locus0170	uce-157_p1	uce-157_p2
locus0171	uce-148_p1	uce-148_p2
locus0172	uce-143_p1	uce-143_p2
locus0173	uce-139_p1	uce-139_p2
locus0174	uce-115_p1	uce-115_p2
locus0175	uce-110_p1	uce-110_p2
locus0176	uce-104_p1	uce-104_p2
locus0177	uce-98_p1	uce-98_p2
locus0178	uce-87_p1	uce-87_p2
locus0179	uce-86_p1	uce-86_p2
locus0180	uce-1248_p1	uce-1248_p2
locus0181	uce-79_p1	uce-79_p2
locus0182	uce-78_p1	uce-78_p2
locus0183	uce-77_p1	uce-77_p2
locus0184	uce-75_p1	uce-75_p2
locus0185	uce-74_p1	uce-74_p2
locus0186	uce-68_p1	uce-68_p2
locus0187	uce-67_p1	uce-67_p2
locus0188	uce-64_p1	uce-64_p2
locus0189	uce-59_p1	uce-59_p2
locus0190	uce-54_p1	uce-54_p2
locus0191	uce-1244_p1	uce-1244_p2
locus0192	uce-49_p1	uce-49_p2
locus0193	uce-44_p1	uce-44_p2
locus0194	uce-43_p1	uce-43_p2
locus0195	uce-41_p1	uce-41_p2
locus0196	uce-34_p1	uce-34_p2
locus0197	uce-29_p1	uce-29_p2
locus0198	uce-11_p1	uce-11_p2
locus0199	uce-9_p1	uce-9_p2
locus0200	uce-1387_p1	uce-1387_p2
locus0201	uce-666_p1	uce-666_p2

locus0202	uce-1243_p1	uce-1243_p2		
locus0203	uce-1080_p1	uce-1080_p2		
locus0204				
locus0205	uce-1237_p1	uce-1237_p2		
locus0206	uce-456_p1	uce-456_p2	uce-457_p1	uce-457_p2
locus0207	uce-1235_p1	uce-1235_p2		
locus0208	uce-1233_p1	uce-1233_p2		
locus0209	uce-1232_p1	uce-1232_p2		
locus0210	uce-1225_p1	uce-1225_p2		
locus0211	uce-1213_p1	uce-1213_p2		
locus0212	uce-1212_p1	uce-1212_p2		
locus0213	uce-1211_p1	uce-1211_p2		
locus0214	uce-1200_p1	uce-1200_p2		
locus0215	uce-1188_p1	uce-1188_p2		
locus0216	uce-1182_p1	uce-1182_p2		
locus0217	uce-1164_p1	uce-1164_p2	uce-1165_p1	uce-1165_p2
locus0218	uce-1181_p1	uce-1181_p2		
locus0219	uce-1160_p1	uce-1160_p2		
locus0220	uce-1151_p1	uce-1151_p2		
locus0221	uce-1149_p1	uce-1149_p2		
locus0222	uce-1147_p1	uce-1147_p2		
locus0223	uce-1146_p1	uce-1146_p2		
locus0224	uce-1134_p1	uce-1134_p2		
locus0225	uce-1131_p1	uce-1131_p2		
locus0226	uce-1128_p1	uce-1128_p2		
locus0227	uce-1124_p1	uce-1124_p2		
locus0228	uce-419_p1	uce-419_p2	uce-420_p1	uce-420_p2
locus0229	uce-1110_p1	uce-1110_p2		
locus0230	uce-1099_p1	uce-1099_p2		
locus0231	uce-1088_p1	uce-1088_p2		
locus0232	uce-1074_p1	uce-1074_p2		
locus0233	uce-1066_p1	uce-1066_p2		
locus0234	uce-1065_p1	uce-1065_p2		
locus0235	uce-1052_p1	uce-1052_p2		

locus0236	uce-1051_p1	uce-1051_p2		
locus0237	uce-1050_p1	uce-1050_p2		
locus0238	uce-1049_p1	uce-1049_p2		
locus0239	uce-1115_p1	uce-1115_p2	uce-1116_p1	uce-1116_p2
locus0240	uce-1036_p1	uce-1036_p2		
locus0241	uce-1029_p1	uce-1029_p2		
locus0242	uce-1025_p1	uce-1025_p2		
locus0243	uce-996_p1	uce-996_p2		
locus0244	uce-991_p1	uce-991_p2		
locus0245	uce-990_p1	uce-990_p2		
locus0246	uce-988_p1	uce-988_p2		
locus0247	uce-987_p1	uce-987_p2		
locus0248	uce-976_p1	uce-976_p2		
locus0249	uce-975_p1	uce-975_p2		
locus0250	uce-311_p1	uce-311_p2	uce-312_p1	uce-312_p2
locus0251	uce-962_p1	uce-962_p2		
locus0252	uce-960_p1	uce-960_p2		
locus0253	uce-958_p1	uce-958_p2		
locus0254	uce-955_p1	uce-955_p2		
locus0255	uce-948_p1	uce-948_p2		
locus0256	uce-942_p1	uce-942_p2		
locus0257	uce-937_p1	uce-937_p2		
locus0258	uce-930_p1	uce-930_p2		
locus0259	uce-920_p1	uce-920_p2		
locus0260	uce-914_p1	uce-914_p2		
locus0261	uce-1100_p1	uce-1100_p2	uce-1101_p1	uce-1101_p2
locus0262	uce-907_p1	uce-907_p2		
locus0263	uce-906_p1	uce-906_p2		
locus0264	uce-905_p1	uce-905_p2		
locus0265	uce-901_p1	uce-901_p2		
locus0266	uce-897_p1	uce-897_p2		
locus0267	uce-892_p1	uce-892_p2		
locus0268	uce-877_p1	uce-877_p2		
locus0269	uce-866_p1	uce-866_p2		

locus0270	uce-864_p1	uce-864_p2				
locus0271	uce-858_p1	uce-858_p2				
locus0272	uce-1310_p1	uce-1310_p2	uce-1311_p1	uce-1311_p2		
locus0273	uce-852_p1	uce-852_p2				
locus0274	uce-851_p1	uce-851_p2				
locus0275	uce-848_p1	uce-848_p2				
locus0276	uce-846_p1	uce-846_p2				
locus0277	uce-836_p1	uce-836_p2				
locus0278	uce-835_p1	uce-835_p2				
locus0279	uce-831_p1	uce-831_p2				
locus0280	uce-828_p1	uce-828_p2				
locus0281	uce-823_p1	uce-823_p2				
locus0282	uce-820_p1	uce-820_p2				
locus0283	uce-83_p1	uce-83_p2	uce-84_p1	uce-84_p2		
locus0284	uce-816_p1	uce-816_p2				
locus0285	uce-812_p1	uce-812_p2				
locus0286	uce-787_p1	uce-787_p2				
locus0287	uce-778_p1	uce-778_p2				
locus0288	uce-764_p1	uce-764_p2				
locus0289	uce-751_p1	uce-751_p2				
locus0290	uce-750_p1	uce-750_p2				
locus0291	uce-745_p1	uce-745_p2				
locus0292	uce-739_p1	uce-739_p2				
locus0293	uce-720_p1	uce-720_p2				
locus0294	uce-729_p1	uce-729_p2	uce-730_p1	uce-730_p2	uce-731_p1	uce-731_p2
locus0295	uce-970_p1	uce-970_p2	uce-971_p1	uce-971_p2		
locus0296	uce-719_p1	uce-719_p2				
locus0297	uce-710_p1	uce-710_p2				
locus0298	uce-707_p1	uce-707_p2				
locus0299	uce-702_p1	uce-702_p2				
locus0300	uce-690_p1	uce-690_p2				
locus0301	uce-661_p1	uce-661_p2				
locus0302	uce-654_p1	uce-654_p2				
locus0303	uce-650_p1	uce-650_p2				

locus0304	uce-649_p1	uce-649_p2		
locus0305	uce-644_p1	uce-644_p2		
locus0306	uce-164_p1	uce-164_p2	uce-165_p1	uce-165_p2
locus0307	uce-643_p1	uce-643_p2		
locus0308	uce-638_p1	uce-638_p2		
locus0309	uce-615_p1	uce-615_p2		
locus0310	uce-614_p1	uce-614_p2		
locus0311	uce-607_p1	uce-607_p2		
locus0312	uce-601_p1	uce-601_p2		
locus0313	uce-594_p1	uce-594_p2		
locus0314	uce-589_p1	uce-589_p2		
locus0315	uce-582_p1	uce-582_p2		
locus0316	uce-577_p1	uce-577_p2		
locus0317	uce-890_p1	uce-890_p2	uce-891_p1	uce-891_p2
locus0318	uce-576_p1	uce-576_p2		
locus0319	uce-554_p1	uce-554_p2		
locus0320	uce-548_p1	uce-548_p2		
locus0321	uce-542_p1	uce-542_p2		
locus0322	uce-541_p1	uce-541_p2		
locus0323	uce-537_p1	uce-537_p2		
locus0324	uce-535_p1	uce-535_p2		
locus0325	uce-522_p1	uce-522_p2		
locus0326	uce-512_p1	uce-512_p2		
locus0327	uce-507_p1	uce-507_p2		
locus0328	uce-972_p1	uce-972_p2	uce-973_p1	uce-973_p2
locus0329	uce-504_p1	uce-504_p2		
locus0330	uce-501_p1	uce-501_p2		
locus0331	uce-496_p1	uce-496_p2		
locus0332	uce-495_p1	uce-495_p2		
locus0333	uce-488_p1	uce-488_p2		
locus0334	uce-486_p1	uce-486_p2		
locus0335	uce-476_p1	uce-476_p2		
locus0336	uce-460_p1	uce-460_p2		
locus0337	uce-455_p1	uce-455_p2		

locus0338	uce-449_p1	uce-449_p2		
locus0339	uce-283_p1	uce-283_p2	uce-284_p1	uce-284_p2
locus0340	uce-446_p1	uce-446_p2		
locus0341	uce-437_p1	uce-437_p2		
locus0342	uce-432_p1	uce-432_p2		
locus0343	uce-427_p1	uce-427_p2		
locus0344	uce-407_p1	uce-407_p2		
locus0345	uce-395_p1	uce-395_p2		
locus0346	uce-394_p1	uce-394_p2		
locus0347	uce-393_p1	uce-393_p2		
locus0348	uce-392_p1	uce-392_p2		
locus0349	uce-390_p1	uce-390_p2		
locus0350	uce-209_p1	uce-209_p2	uce-210_p1	uce-210_p2
locus0351	uce-379_p1	uce-379_p2		
locus0352	uce-374_p1	uce-374_p2		
locus0353	uce-367_p1	uce-367_p2		
locus0354	uce-366_p1	uce-366_p2		
locus0355	uce-360_p1	uce-360_p2		
locus0356	uce-359_p1	uce-359_p2		
locus0357	uce-342_p1	uce-342_p2		
locus0358	uce-334_p1	uce-334_p2		
locus0359	uce-329_p1	uce-329_p2		
locus0360	uce-327_p1	uce-327_p2		
locus0361	uce-1455_p1	uce-1455_p2	uce-1456_p1	uce-1456_p2
locus0362	uce-307_p1	uce-307_p2		
locus0363	uce-303_p1	uce-303_p2		
locus0364	uce-301_p1	uce-301_p2		
locus0365	uce-299_p1	uce-299_p2		
locus0366	uce-297_p1	uce-297_p2		
locus0367	uce-291_p1	uce-291_p2		
locus0368	uce-278_p1	uce-278_p2		
locus0369	uce-267_p1	uce-267_p2		
locus0370	uce-265_p1	uce-265_p2		
locus0371	uce-258_p1	uce-258_p2		

locus0372	uce-1389_p1	uce-1389_p2	uce-1390_p1	uce-1390_p2		
locus0373	uce-257_p1	uce-257_p2				
locus0374	uce-253_p1	uce-253_p2				
locus0375	uce-251_p1	uce-251_p2				
locus0376	uce-250_p1	uce-250_p2				
locus0377	uce-236_p1	uce-236_p2				
locus0378	uce-219_p1	uce-219_p2				
locus0379	uce-213_p1	uce-213_p2				
locus0380	uce-212_p1	uce-212_p2				
locus0381	uce-195_p1	uce-195_p2				
locus0382	uce-189_p1	uce-189_p2				
locus0383	uce-80_p1	uce-80_p2	uce-81_p1	uce-81_p2		
locus0384	uce-185_p1	uce-185_p2				
locus0385	uce-173_p1	uce-173_p2				
locus0386	uce-171_p1	uce-171_p2				
locus0387	uce-162_p1	uce-162_p2				
locus0388	uce-155_p1	uce-155_p2				
locus0389	uce-150_p1	uce-150_p2				
locus0390	uce-144_p1	uce-144_p2				
locus0391	uce-136_p1	uce-136_p2				
locus0392	uce-132_p1	uce-132_p2				
locus0393	uce-131_p1	uce-131_p2				
locus0394	uce-1153_p1	uce-1153_p2	uce-1154_p1	uce-1154_p2		
locus0395	uce-122_p1	uce-122_p2				
locus0396	uce-121_p1	uce-121_p2				
locus0397	uce-117_p1	uce-117_p2				
locus0398	uce-116_p1	uce-116_p2				
locus0399	uce-114_p1	uce-114_p2				
locus0400	uce-108_p1	uce-108_p2				
locus0401	uce-100_p1	uce-100_p2				
locus0402	uce-99_p1	uce-99_p2				
locus0403	uce-96_p1	uce-96_p2				
locus0404	uce-60_p1	uce-60_p2				
locus0405	uce-755_p1	uce-755_p2	uce-756_p1	uce-756_p2	uce-757_p1	uce-757_p2

locus0406	uce-247_p1	uce-247_p2	uce-248_p1	uce-248_p2
locus0407	uce-55_p1	uce-55_p2		
locus0408	uce-53_p1	uce-53_p2		
locus0409	uce-48_p1	uce-48_p2		
locus0410	uce-46_p1	uce-46_p2		
locus0411	uce-38_p1	uce-38_p2		
locus0412	uce-35_p1	uce-35_p2		
locus0413	uce-33_p1	uce-33_p2		
locus0414	uce-27_p1	uce-27_p2		
locus0415	uce-21_p1	uce-21_p2		
locus0416	uce-20_p1	uce-20_p2		
locus0417	uce-281_p1	uce-281_p2	uce-282_p1	uce-282_p2
locus0418	uce-18_p1	uce-18_p2		
locus0419	uce-17_p1	uce-17_p2		
locus0420	uce-10_p1	uce-10_p2		
locus0421	uce-6_p1	uce-6_p2		
locus0422	uce-5_p1	uce-5_p2		
locus0423	uce-3_p1	uce-3_p2		
locus0424	uce-225_p1	uce-225_p2		
locus0425	uce-2_p1	uce-2_p2		
locus0426	uce-1508_p1	uce-1508_p2		
locus0427	uce-1500_p1	uce-1500_p2		
locus0428	uce-1255_p1	uce-1255_p2	uce-1256_p1	uce-1256_p2
locus0429	uce-1492_p1	uce-1492_p2		
locus0430	uce-1487_p1	uce-1487_p2		
locus0431	uce-1485_p1	uce-1485_p2		
locus0432	uce-1481_p1	uce-1481_p2		
locus0433	uce-1475_p1	uce-1475_p2		
locus0434	uce-1468_p1	uce-1468_p2		
locus0435	uce-1466_p1	uce-1466_p2		
locus0436	uce-1465_p1	uce-1465_p2		
locus0437	uce-1462_p1	uce-1462_p2		
locus0438	uce-1461_p1	uce-1461_p2		
locus0439	uce-1270_p1	uce-1270_p2	uce-1271_p1	uce-1271_p2

locus0440	uce-1460_p1	uce-1460_p2		
locus0441	uce-1446_p1	uce-1446_p2		
locus0442	uce-1443_p1	uce-1443_p2		
locus0443	uce-1429_p1	uce-1429_p2		
locus0444	uce-1410_p1	uce-1410_p2		
locus0445	uce-1409_p1	uce-1409_p2		
locus0446	uce-1407_p1	uce-1407_p2		
locus0447	uce-1378_p1	uce-1378_p2		
locus0448	uce-1376_p1	uce-1376_p2		
locus0449	uce-1372_p1	uce-1372_p2		
locus0450	uce-667_p1	uce-667_p2	uce-668_p1	uce-668_p2
locus0451	uce-1352_p1	uce-1352_p2		
locus0452	uce-1351_p1	uce-1351_p2		
locus0453	uce-1350_p1	uce-1350_p2		
locus0454	uce-1348_p1	uce-1348_p2		
locus0455	uce-1346_p1	uce-1346_p2		
locus0456	uce-1335_p1	uce-1335_p2		
locus0457	uce-1333_p1	uce-1333_p2		
locus0458	uce-1329_p1	uce-1329_p2		
locus0459	uce-1326_p1	uce-1326_p2		
locus0460	uce-1319_p1	uce-1319_p2		
locus0461	uce-417_p1	uce-417_p2	uce-418_p1	uce-418_p2
locus0462	uce-1318_p1	uce-1318_p2		
locus0463	uce-1315_p1	uce-1315_p2		
locus0464	uce-1307_p1	uce-1307_p2		
locus0465	uce-1296_p1	uce-1296_p2		
locus0466	uce-1286_p1	uce-1286_p2		
locus0467	uce-1284_p1	uce-1284_p2		
locus0468	uce-1282_p1	uce-1282_p2		
locus0469	uce-1281_p1	uce-1281_p2		
locus0470	uce-1280_p1	uce-1280_p2		
locus0471	uce-1279_p1	uce-1279_p2		
locus0472	uce-61_p1	uce-61_p2	uce-62_p1	uce-62_p2
locus0473	uce-1253_p1	uce-1253_p2		

locus0474	uce-1252_p1	uce-1252_p2		
locus0475	uce-1247_p1	uce-1247_p2		
locus0476	uce-1242_p1	uce-1242_p2		
locus0477	uce-1240_p1	uce-1240_p2		
locus0478	uce-1239_p1	uce-1239_p2		
locus0479	uce-1231_p1	uce-1231_p2		
locus0480	uce-1228_p1	uce-1228_p2		
locus0481	uce-1220_p1	uce-1220_p2		
locus0482	uce-1218_p1	uce-1218_p2		
locus0483	uce-439_p1	uce-439_p2	uce-440_p1	uce-440_p2
locus0484	uce-1217_p1	uce-1217_p2		
locus0485	uce-1215_p1	uce-1215_p2		
locus0486	uce-1214_p1	uce-1214_p2		
locus0487	uce-1203_p1	uce-1203_p2		
locus0488	uce-1201_p1	uce-1201_p2		
locus0489	uce-1199_p1	uce-1199_p2		
locus0490	uce-1196_p1	uce-1196_p2		
locus0491	uce-1193_p1	uce-1193_p2		
locus0492	uce-1184_p1	uce-1184_p2		
locus0493	uce-1175_p1	uce-1175_p2		
locus0494	uce-444_p1	uce-444_p2	uce-445_p1	uce-445_p2
locus0495	uce-1169_p1	uce-1169_p2		
locus0496	uce-1163_p1	uce-1163_p2		
locus0497	uce-1162_p1	uce-1162_p2		
locus0498	uce-1148_p1	uce-1148_p2		
locus0499	uce-1144_p1	uce-1144_p2		
locus0500	uce-1136_p1	uce-1136_p2		
locus0501	uce-1133_p1	uce-1133_p2		
locus0502	uce-1127_p1	uce-1127_p2		
locus0503	uce-1121_p1	uce-1121_p2		
locus0504	uce-1120_p1	uce-1120_p2		
locus0505	uce-1470_p1	uce-1470_p2	uce-1471_p1	uce-1471_p2
locus0506	uce-1119_p1	uce-1119_p2		
locus0507	uce-1111_p1	uce-1111_p2		

locus0508	uce-1106_p1	uce-1106_p2				
locus0509	uce-1104_p1	uce-1104_p2				
locus0510	uce-1095_p1	uce-1095_p2				
locus0511	uce-1094_p1	uce-1094_p2				
locus0512	uce-1093_p1	uce-1093_p2				
locus0513	uce-1083_p1	uce-1083_p2				
locus0514	uce-1077_p1	uce-1077_p2				
locus0515	uce-1076_p1	uce-1076_p2				
locus0516	uce-1412_p1	uce-1412_p2	uce-1413_p1	uce-1413_p2	uce-1414_p1	uce-1414_p2
locus0517	uce-1000_p1	uce-1000_p2	uce-1001_p1	uce-1001_p2		
locus0518	uce-1063_p1	uce-1063_p2				
locus0519	uce-1061_p1	uce-1061_p2				
locus0520	uce-1058_p1	uce-1058_p2				
locus0521	uce-1053_p1	uce-1053_p2				
locus0522	uce-1048_p1	uce-1048_p2				
locus0523	uce-1037_p1	uce-1037_p2				
locus0524	uce-1034_p1	uce-1034_p2				
locus0525	uce-1031_p1	uce-1031_p2				
locus0526	uce-1030_p1	uce-1030_p2				
locus0527	uce-1026_p1	uce-1026_p2				
locus0528	uce-1043_p1	uce-1043_p2	uce-1044_p1	uce-1044_p2		
locus0529	uce-1024_p1	uce-1024_p2				
locus0530	uce-1020_p1	uce-1020_p2				
locus0531	uce-1016_p1	uce-1016_p2				
locus0532	uce-1012_p1	uce-1012_p2				
locus0533	uce-1010_p1	uce-1010_p2				
locus0534	uce-998_p1	uce-998_p2				
locus0535	uce-993_p1	uce-993_p2				
locus0536	uce-989_p1	uce-989_p2				
locus0537	uce-985_p1	uce-985_p2				
locus0538	uce-984_p1	uce-984_p2				
locus0539	uce-286_p1	uce-286_p2	uce-287_p1	uce-287_p2		
locus0540	uce-978_p1	uce-978_p2				
locus0541	uce-963_p1	uce-963_p2				

locus0542	uce-956_p1	uce-956_p2		
locus0543	uce-952_p1	uce-952_p2		
locus0544	uce-950_p1	uce-950_p2		
locus0545	uce-949_p1	uce-949_p2		
locus0546	uce-941_p1	uce-941_p2		
locus0547	uce-940_p1	uce-940_p2		
locus0548	uce-936_p1	uce-936_p2		
locus0549	uce-934_p1	uce-934_p2		
locus0550	uce-703_p1	uce-703_p2	uce-704_p1	uce-704_p2
locus0551	uce-925_p1	uce-925_p2		
locus0552	uce-923_p1	uce-923_p2		
locus0553	uce-918_p1	uce-918_p2		
locus0554	uce-915_p1	uce-915_p2		
locus0555	uce-899_p1	uce-899_p2		
locus0556	uce-898_p1	uce-898_p2		
locus0557	uce-886_p1	uce-886_p2		
locus0558	uce-875_p1	uce-875_p2		
locus0559	uce-873_p1	uce-873_p2		
locus0560	uce-870_p1	uce-870_p2		
locus0561	uce-1039_p1	uce-1039_p2	uce-1040_p1	uce-1040_p2
locus0562	uce-856_p1	uce-856_p2		
locus0563	uce-850_p1	uce-850_p2		
locus0564	uce-849_p1	uce-849_p2		
locus0565	uce-837_p1	uce-837_p2		
locus0566	uce-833_p1	uce-833_p2		
locus0567	uce-830_p1	uce-830_p2		
locus0568	uce-824_p1	uce-824_p2		
locus0569	uce-819_p1	uce-819_p2		
locus0570	uce-811_p1	uce-811_p2		
locus0571	uce-803_p1	uce-803_p2		
locus0572	uce-622_p1	uce-622_p2	uce-623_p1	uce-623_p2
locus0573	uce-789_p1	uce-789_p2		
locus0574	uce-786_p1	uce-786_p2		
locus0575	uce-777_p1	uce-777_p2		

locus0576	uce-767_p1	uce-767_p2		
locus0577	uce-997_p1	uce-997_p2		
locus0578	uce-754_p1	uce-754_p2		
locus0579	uce-753_p1	uce-753_p2		
locus0580	uce-752_p1	uce-752_p2		
locus0581	uce-747_p1	uce-747_p2		
locus0582	uce-746_p1	uce-746_p2		
locus0583	uce-376_p1	uce-376_p2	uce-377_p1	uce-377_p2
locus0584	uce-738_p1	uce-738_p2		
locus0585	uce-737_p1	uce-737_p2		
locus0586	uce-736_p1	uce-736_p2		
locus0587	uce-722_p1	uce-722_p2		
locus0588	uce-718_p1	uce-718_p2		
locus0589	uce-716_p1	uce-716_p2		
locus0590	uce-714_p1	uce-714_p2		
locus0591	uce-709_p1	uce-709_p2		
locus0592	uce-708_p1	uce-708_p2		
locus0593	uce-692_p1	uce-692_p2		
locus0594	uce-1448_p1	uce-1448_p2	uce-1449_p1	uce-1449_p2
locus0595	uce-689_p1	uce-689_p2		
locus0596	uce-688_p1	uce-688_p2		
locus0597	uce-678_p1	uce-678_p2		
locus0598	uce-675_p1	uce-675_p2		
locus0599	uce-673_p1	uce-673_p2		
locus0600	uce-672_p1	uce-672_p2		
locus0601	uce-665_p1	uce-665_p2		
locus0602	uce-663_p1	uce-663_p2		
locus0603	uce-657_p1	uce-657_p2		
locus0604	uce-655_p1	uce-655_p2		
locus0605	uce-1488_p1	uce-1488_p2	uce-1489_p1	uce-1489_p2
locus0606	uce-645_p1	uce-645_p2		
locus0607	uce-641_p1	uce-641_p2		
locus0608	uce-634_p1	uce-634_p2		
locus0609	uce-633_p1	uce-633_p2		

locus0610	uce-629_p1	uce-629_p2		
locus0611	uce-627_p1	uce-627_p2		
locus0612	uce-625_p1	uce-625_p2		
locus0613	uce-624_p1	uce-624_p2		
locus0614	uce-611_p1	uce-611_p2		
locus0615	uce-608_p1	uce-608_p2		
locus0616	uce-1186_p1	uce-1186_p2	uce-1187_p1	uce-1187_p2
locus0617	uce-596_p1	uce-596_p2		
locus0618	uce-595_p1	uce-595_p2		
locus0619	uce-590_p1	uce-590_p2		
locus0620	uce-588_p1	uce-588_p2		
locus0621	uce-581_p1	uce-581_p2		
locus0622	uce-574_p1	uce-574_p2		
locus0623	uce-566_p1	uce-566_p2		
locus0624	uce-560_p1	uce-560_p2		
locus0625	uce-553_p1	uce-553_p2		
locus0626	uce-550_p1	uce-550_p2		
locus0627	uce-765_p1	uce-765_p2	uce-76_p1	uce-76_p2
locus0628	uce-724_p1	uce-724_p2	uce-725_p1	uce-725_p2
locus0629	uce-543_p1	uce-543_p2		
locus0630	uce-540_p1	uce-540_p2		
locus0631	uce-539_p1	uce-539_p2		
locus0632	uce-536_p1	uce-536_p2		
locus0633	uce-529_p1	uce-529_p2		
locus0634	uce-526_p1	uce-526_p2		
locus0635	uce-524_p1	uce-524_p2		
locus0636	uce-521_p1	uce-521_p2		
locus0637	uce-517_p1	uce-517_p2		
locus0638	uce-515_p1	uce-515_p2		
locus0639	uce-894_p1	uce-894_p2	uce-895_p1	uce-895_p2
locus0640	uce-513_p1	uce-513_p2		
locus0641	uce-511_p1	uce-511_p2		
locus0642	uce-509_p1	uce-509_p2		
locus0643	uce-508_p1	uce-508_p2		

locus0644	uce-505_p1	uce-505_p2		
locus0645	uce-503_p1	uce-503_p2		
locus0646	uce-500_p1	uce-500_p2		
locus0647	uce-491_p1	uce-491_p2		
locus0648	uce-480_p1	uce-480_p2		
locus0649	uce-479_p1	uce-479_p2		
locus0650	uce-25_p1	uce-25_p2	uce-26_p1	uce-26_p2
locus0651	uce-475_p1	uce-475_p2		
locus0652	uce-472_p1	uce-472_p2		
locus0653	uce-8_p1	uce-8_p2		
locus0654	uce-441_p1	uce-441_p2		
locus0655	uce-422_p1	uce-422_p2		
locus0656	uce-409_p1	uce-409_p2		
locus0657	uce-404_p1	uce-404_p2		
locus0658	uce-403_p1	uce-403_p2		
locus0659	uce-400_p1	uce-400_p2		
locus0660	uce-391_p1	uce-391_p2		
locus0661	uce-585_p1	uce-585_p2	uce-586_p1	uce-586_p2
locus0662	uce-389_p1	uce-389_p2		
locus0663	uce-388_p1	uce-388_p2		
locus0664	uce-386_p1	uce-386_p2		
locus0665	uce-383_p1	uce-383_p2		
locus0666	uce-380_p1	uce-380_p2		
locus0667	uce-375_p1	uce-375_p2		
locus0668	uce-373_p1	uce-373_p2		
locus0669	uce-370_p1	uce-370_p2		
locus0670	uce-364_p1	uce-364_p2		
locus0671	uce-363_p1	uce-363_p2		
locus0672	uce-1264_p1	uce-1264_p2	uce-1265_p1	uce-1265_p2
locus0673	uce-350_p1	uce-350_p2		
locus0674	uce-347_p1	uce-347_p2		
locus0675	uce-344_p1	uce-344_p2		
locus0676	uce-343_p1	uce-343_p2		
locus0677	uce-340_p1	uce-340_p2		

locus0678	uce-338_p1	uce-338_p2		
locus0679	uce-332_p1	uce-332_p2		
locus0680	uce-328_p1	uce-328_p2		
locus0681	uce-326_p1	uce-326_p2		
locus0682	uce-325_p1	uce-325_p2		
locus0683	uce-1370_p1	uce-1370_p2	uce-1371_p1	uce-1371_p2
locus0684	uce-321_p1	uce-321_p2		
locus0685	uce-317_p1	uce-317_p2		
locus0686	uce-316_p1	uce-316_p2		
locus0687	uce-315_p1	uce-315_p2		
locus0688	uce-313_p1	uce-313_p2		
locus0689	uce-310_p1	uce-310_p2		
locus0690	uce-309_p1	uce-309_p2		
locus0691	uce-308_p1	uce-308_p2		
locus0692	uce-305_p1	uce-305_p2		
locus0693	uce-302_p1	uce-302_p2		
locus0694	uce-1418_p1	uce-1418_p2	uce-292_p1	
locus0695	uce-293_p1	uce-293_p2		
locus0696	uce-288_p1	uce-288_p2		
locus0697	uce-274_p1	uce-274_p2		
locus0698	uce-271_p1	uce-271_p2		
locus0699	uce-261_p1	uce-261_p2		
locus0700	uce-260_p1	uce-260_p2		
locus0701	uce-259_p1	uce-259_p2		
locus0702	uce-256_p1	uce-256_p2		
locus0703	uce-254_p1	uce-254_p2		
locus0704	uce-243_p1	uce-243_p2		
locus0705	uce-1363_p1		uce-1364_p1	uce-1364_p2
locus0706	uce-239_p1	uce-239_p2		
locus0707	uce-234_p1	uce-234_p2		
locus0708	uce-232_p1	uce-232_p2		
locus0709	uce-230_p1	uce-230_p2		
locus0710	uce-229_p1	uce-229_p2		
locus0711	uce-226_p1	uce-226_p2		

locus0712	uce-224_p1	uce-224_p2		
locus0713	uce-206_p1	uce-206_p2		
locus0714	uce-205_p1	uce-205_p2		
locus0715	uce-201_p1	uce-201_p2		
locus0716	uce-362_p1	uce-362_p2		uce-705_p2
locus0717	uce-191_p1	uce-191_p2		
locus0718	uce-186_p1	uce-186_p2		
locus0719	uce-181_p1	uce-181_p2		
locus0720	uce-174_p1	uce-174_p2		
locus0721	uce-172_p1	uce-172_p2		
locus0722	uce-169_p1	uce-169_p2		
locus0723	uce-167_p1	uce-167_p2		
locus0724	uce-160_p1	uce-160_p2		
locus0725	uce-159_p1	uce-159_p2		
locus0726	uce-146_p1	uce-146_p2		
locus0727		uce-15_p2	uce-16_p1	uce-16_p2
locus0728	uce-145_p1	uce-145_p2		
locus0729	uce-130_p1	uce-130_p2		
locus0730	uce-129_p1	uce-129_p2		
locus0731	uce-127_p1	uce-127_p2		
locus0732	uce-126_p1	uce-126_p2		
locus0733	uce-125_p1	uce-125_p2		
locus0734	uce-120_p1	uce-120_p2		
locus0735	uce-118_p1	uce-118_p2		
locus0736	uce-95_p1	uce-95_p2		
locus0737	uce-88_p1	uce-88_p2		
locus0738	uce-178_p1	uce-178_p2	uce-179_p1	uce-179_p2
locus0739		uce-943_p2	uce-944_p1	uce-944_p2
locus0740	uce-73_p1	uce-73_p2		
locus0741	uce-72_p1	uce-72_p2		
locus0742	uce-71_p1	uce-71_p2		
locus0743	uce-70_p1	uce-70_p2		
locus0744	uce-69_p1	uce-69_p2		
locus0745	uce-65_p1	uce-65_p2		

locus0746	uce-52_p1	uce-52_p2		
locus0747	uce-47_p1	uce-47_p2		
locus0748	uce-45_p1	uce-45_p2		
locus0749	uce-42_p1	uce-42_p2		
locus0750	uce-202_p1	uce-202_p2	uce-203_p1	
locus0751	uce-39_p1	uce-39_p2		
locus0752	uce-28_p1	uce-28_p2		
locus0753	uce-23_p1	uce-23_p2		
locus0754	uce-22_p1	uce-22_p2		
locus0755	uce-13_p1	uce-13_p2		
locus0756	uce-1223_p1	uce-1223_p2		
locus0757	uce-734_p1	uce-734_p2		
locus0758	uce-1510_p1	uce-1510_p2		
locus0759	uce-1497_p1	uce-1497_p2		
locus0760	uce-1495_p1	uce-1495_p2		
locus0761	uce-1017_p1	uce-1017_p2	uce-1018_p1	
locus0762	uce-1484_p1	uce-1484_p2		
locus0763	uce-1478_p1	uce-1478_p2		
locus0764	uce-1476_p1	uce-1476_p2		
locus0765	uce-1472_p1	uce-1472_p2		
locus0766	uce-1467_p1	uce-1467_p2		
locus0767	uce-1464_p1	uce-1464_p2		
locus0768	uce-1463_p1	uce-1463_p2		
locus0769	uce-1457_p1	uce-1457_p2		
locus0770	uce-1452_p1	uce-1452_p2		
locus0771	uce-1450_p1	uce-1450_p2		
locus0772		uce-1355_p2	uce-1356_p1	uce-1356_p2
locus0773	uce-1442_p1	uce-1442_p2		
locus0774	uce-1439_p1	uce-1439_p2		
locus0775	uce-1438_p1	uce-1438_p2		
locus0776	uce-1433_p1	uce-1433_p2		
locus0777	uce-1431_p1	uce-1431_p2		
locus0778	uce-1428_p1	uce-1428_p2		
locus0779	uce-1427_p1	uce-1427_p2		

locus0780	uce-1423_p1	uce-1423_p2		
locus0781	uce-1422_p1	uce-1422_p2		
locus0782	uce-1421_p1	uce-1421_p2		
locus0783		uce-1435_p2	uce-1436_p1	uce-1436_p2
locus0784	uce-1420_p1	uce-1420_p2		
locus0785	uce-1417_p1	uce-1417_p2		
locus0786	uce-1415_p1	uce-1415_p2		
locus0787	uce-1408_p1	uce-1408_p2		
locus0788	uce-1403_p1	uce-1403_p2		
locus0789	uce-1399_p1	uce-1399_p2		
locus0790	uce-1397_p1	uce-1397_p2		
locus0791	uce-1392_p1	uce-1392_p2		
locus0792	uce-1383_p1	uce-1383_p2		
locus0793	uce-1382_p1	uce-1382_p2		
locus0794		uce-578_p2	uce-579_p1	uce-579_p2
locus0795	uce-1381_p1	uce-1381_p2		
locus0796	uce-1380_p1	uce-1380_p2		
locus0797	uce-1379_p1	uce-1379_p2		
locus0798	uce-1375_p1	uce-1375_p2		
locus0799	uce-1361_p1	uce-1361_p2		
locus0800	uce-1360_p1	uce-1360_p2		
locus0801	uce-1359_p1	uce-1359_p2		
locus0802	uce-1358_p1	uce-1358_p2		
locus0803	uce-1349_p1	uce-1349_p2		
locus0804	uce-1328_p1	uce-1328_p2		
locus0805	uce-813_p1	uce-813_p2	uce-814_p1	
locus0806	uce-1322_p1	uce-1322_p2		
locus0807	uce-1314_p1	uce-1314_p2		
locus0808	uce-1313_p1	uce-1313_p2		
locus0809	uce-1308_p1	uce-1308_p2		
locus0810	uce-1305_p1	uce-1305_p2		
locus0811	uce-1298_p1	uce-1298_p2		
locus0812	uce-1293_p1	uce-1293_p2		
locus0813	uce-1275_p1	uce-1275_p2		

locus0814	uce-1274_p1	uce-1274_p2		
locus0815	uce-1266_p1	uce-1266_p2		
locus0816	uce-1505_p1	uce-1505_p2	uce-1506_p1	
locus0817	uce-1262_p1	uce-1262_p2		
locus0818	uce-1260_p1	uce-1260_p2		
locus0819	uce-1259_p1	uce-1259_p2		
locus0820	uce-1245_p1	uce-1245_p2		
locus0821	uce-1241_p1	uce-1241_p2		
locus0822	uce-1236_p1	uce-1236_p2		
locus0823	uce-1234_p1	uce-1234_p2		
locus0824	uce-1222_p1	uce-1222_p2		
locus0825	uce-1219_p1	uce-1219_p2		
locus0826	uce-1208_p1	uce-1208_p2		
locus0827		uce-1250_p2	uce-1251_p1	uce-1251_p2
locus0828	uce-1207_p1	uce-1207_p2		
locus0829	uce-1194_p1	uce-1194_p2		
locus0830	uce-1191_p1	uce-1191_p2		
locus0831	uce-1178_p1	uce-1178_p2		
locus0832	uce-1177_p1	uce-1177_p2		
locus0833	uce-1174_p1	uce-1174_p2		
locus0834	uce-1173_p1	uce-1173_p2		
locus0835	uce-1161_p1	uce-1161_p2		
locus0836	uce-1156_p1	uce-1156_p2		
locus0837	uce-1155_p1	uce-1155_p2		
locus0838	uce-994_p1	uce-994_p2	uce-995_p1	
locus0839	uce-1142_p1	uce-1142_p2		
locus0840	uce-1140_p1	uce-1140_p2		
locus0841	uce-1139_p1	uce-1139_p2		
locus0842	uce-1135_p1	uce-1135_p2		
locus0843	uce-1130_p1	uce-1130_p2		
locus0844	uce-1129_p1	uce-1129_p2		
locus0845	uce-1125_p1	uce-1125_p2		
locus0846	uce-1114_p1	uce-1114_p2		
locus0847	uce-1113_p1	uce-1113_p2		

locus0848	uce-1112_p1	uce-1112_p2		
locus0849	uce-1299_p1	uce-1299_p2	uce-1300_p1	uce-1300_p2
locus0850		uce-1157_p2	uce-1158_p1	uce-1158_p2
locus0851	uce-1109_p1	uce-1109_p2		
locus0852	uce-1108_p1	uce-1108_p2		
locus0853	uce-1098_p1	uce-1098_p2		
locus0854	uce-1097_p1	uce-1097_p2		
locus0855	uce-1092_p1	uce-1092_p2		
locus0856	uce-1091_p1	uce-1091_p2		
locus0857	uce-1086_p1	uce-1086_p2		
locus0858	uce-1078_p1	uce-1078_p2		
locus0859	uce-1073_p1	uce-1073_p2		
locus0860	uce-1072_p1	uce-1072_p2		
locus0861		uce-592_p2	uce-593_p1	uce-593_p2
locus0862	uce-1062_p1	uce-1062_p2		
locus0863	uce-1060_p1	uce-1060_p2		
locus0864	uce-1055_p1	uce-1055_p2		
locus0865	uce-1047_p1	uce-1047_p2		
locus0866	uce-1046_p1	uce-1046_p2		
locus0867	uce-1038_p1	uce-1038_p2		
locus0868	uce-1014_p1	uce-1014_p2		
locus0869	uce-1011_p1	uce-1011_p2		
locus0870	uce-1006_p1	uce-1006_p2		
locus0871	uce-992_p1	uce-992_p2		
locus0872		uce-1056_p2	uce-1057_p1	uce-1057_p2
locus0873	uce-983_p1	uce-983_p2		
locus0874	uce-982_p1	uce-982_p2		
locus0875	uce-981_p1	uce-981_p2		
locus0876	uce-969_p1	uce-969_p2		
locus0877	uce-968_p1	uce-968_p2		
locus0878	uce-965_p1	uce-965_p2		
locus0879	uce-964_p1	uce-964_p2		
locus0880	uce-961_p1	uce-961_p2		
locus0881	uce-959_p1	uce-959_p2		

locus0882	uce-954_p1	uce-954_p2		
locus0883	uce-1002_p1	uce-1002_p2	uce-1003_p1	
locus0884	uce-945_p1	uce-945_p2		
locus0885	uce-939_p1	uce-939_p2		
locus0886	uce-938_p1	uce-938_p2		
locus0887	uce-935_p1	uce-935_p2		
locus0888	uce-933_p1	uce-933_p2		
locus0889	uce-929_p1	uce-929_p2		
locus0890	uce-922_p1	uce-922_p2		
locus0891	uce-911_p1	uce-911_p2		
locus0892	uce-910_p1	uce-910_p2		
locus0893	uce-902_p1	uce-902_p2		
locus0894	uce-322_p1	uce-322_p2	uce-323_p1	
locus0895	uce-900_p1	uce-900_p2		
locus0896	uce-896_p1	uce-896_p2		
locus0897	uce-881_p1	uce-881_p2		
locus0898	uce-880_p1	uce-880_p2		
locus0899	uce-879_p1	uce-879_p2		
locus0900	uce-878_p1	uce-878_p2		
locus0901	uce-876_p1	uce-876_p2		
locus0902	uce-872_p1	uce-872_p2		
locus0903	uce-867_p1	uce-867_p2		
locus0904	uce-863_p1	uce-863_p2		
locus0905		uce-726_p2	uce-727_p1	uce-727_p2
locus0906	uce-862_p1	uce-862_p2		
locus0907	uce-860_p1	uce-860_p2		
locus0908	uce-847_p1	uce-847_p2		
locus0909	uce-845_p1	uce-845_p2		
locus0910	uce-843_p1	uce-843_p2		
locus0911	uce-842_p1	uce-842_p2		
locus0912	uce-839_p1	uce-839_p2		
locus0913	uce-838_p1	uce-838_p2		
locus0914	uce-834_p1	uce-834_p2		
locus0915	uce-827_p1	uce-827_p2		

locus0916		uce-853_p2	uce-854_p1	uce-854_p2
locus0917	uce-821_p1	uce-821_p2		
locus0918	uce-818_p1	uce-818_p2		
locus0919	uce-809_p1	uce-809_p2		
locus0920	uce-799_p1	uce-799_p2		
locus0921	uce-797_p1	uce-797_p2		
locus0922	uce-793_p1	uce-793_p2		
locus0923	uce-792_p1	uce-792_p2		
locus0924	uce-791_p1	uce-791_p2		
locus0925	uce-790_p1	uce-790_p2		
locus0926	uce-783_p1	uce-783_p2		
locus0927	uce-451_p1	uce-451_p2	uce-452_p1	
locus0928	uce-780_p1	uce-780_p2		
locus0929	uce-776_p1	uce-776_p2		
locus0930	uce-775_p1	uce-775_p2		
locus0931	uce-771_p1	uce-771_p2		
locus0932	uce-769_p1	uce-769_p2		
locus0933	uce-766_p1	uce-766_p2		
locus0934	uce-763_p1	uce-763_p2		
locus0935	uce-758_p1	uce-758_p2		
locus0936	uce-748_p1	uce-748_p2		
locus0937	uce-741_p1	uce-741_p2		
locus0938	uce-762_p1	uce-762_p2		
locus0939	uce-728_p1	uce-728_p2		
locus0940	uce-717_p1	uce-717_p2		
locus0941	uce-706_p1	uce-706_p2		
locus0942	uce-701_p1	uce-701_p2		
locus0943	uce-696_p1	uce-696_p2		
locus0944	uce-695_p1	uce-695_p2		
locus0945	uce-694_p1	uce-694_p2		
locus0946	uce-693_p1	uce-693_p2		
locus0947	uce-686_p1	uce-686_p2		
locus0948	uce-683_p1	uce-683_p2		
locus0949	uce-1502_p1	uce-1502_p2		

locus0950	uce-682_p1	uce-682_p2		
locus0951	uce-677_p1	uce-677_p2		
locus0952	uce-676_p1	uce-676_p2		
locus0953	uce-670_p1	uce-670_p2		
locus0954	uce-669_p1	uce-669_p2		
locus0955	uce-664_p1	uce-664_p2		
locus0956	uce-662_p1	uce-662_p2		
locus0957	uce-659_p1	uce-659_p2		
locus0958	uce-652_p1	uce-652_p2		
locus0959	uce-651_p1	uce-651_p2		
locus0960	uce-1453_p1	uce-1453_p2	uce-1454_p1	uce-1454_p2
locus0961	uce-1482_p1	uce-1482_p2		
locus0962	uce-647_p1	uce-647_p2		
locus0963	uce-637_p1	uce-637_p2		
locus0964	uce-636_p1	uce-636_p2		
locus0965	uce-618_p1	uce-618_p2		
locus0966	uce-617_p1	uce-617_p2		
locus0967	uce-613_p1	uce-613_p2		
locus0968	uce-605_p1	uce-605_p2		
locus0969	uce-604_p1	uce-604_p2		
locus0970	uce-600_p1	uce-600_p2		
locus0971	uce-598_p1	uce-598_p2		
locus0972	uce-1474_p1	uce-1474_p2		
locus0973	uce-591_p1	uce-591_p2		
locus0974	uce-583_p1	uce-583_p2		
locus0975	uce-573_p1	uce-573_p2		
locus0976	uce-570_p1	uce-570_p2		
locus0977	uce-569_p1	uce-569_p2		
locus0978	uce-568_p1	uce-568_p2		
locus0979	uce-565_p1	uce-565_p2		
locus0980	uce-559_p1	uce-559_p2		
locus0981	uce-546_p1	uce-546_p2		
locus0982	uce-545_p1	uce-545_p2		
locus0983	uce-1473_p1	uce-1473_p2		

locus0984	uce-538_p1	uce-538_p2
locus0985	uce-534_p1	uce-534_p2
locus0986	uce-532_p1	uce-532_p2
locus0987	uce-530_p1	uce-530_p2
locus0988	uce-527_p1	uce-527_p2
locus0989	uce-525_p1	uce-525_p2
locus0990	uce-520_p1	uce-520_p2
locus0991	uce-519_p1	uce-519_p2
locus0992	uce-516_p1	uce-516_p2
locus0993	uce-510_p1	uce-510_p2
locus0994	uce-1469_p1	uce-1469_p2
locus0995	uce-502_p1	uce-502_p2
locus0996	uce-493_p1	uce-493_p2
locus0997	uce-489_p1	uce-489_p2
locus0998	uce-473_p1	uce-473_p2
locus0999	uce-450_p1	uce-450_p2
locus1000	uce-448_p1	uce-448_p2
locus1001	uce-443_p1	uce-443_p2
locus1002	uce-442_p1	uce-442_p2
locus1003	uce-438_p1	uce-438_p2
locus1004	uce-433_p1	uce-433_p2
locus1005	uce-4_p1	uce-4_p2
locus1006	uce-423_p1	uce-423_p2
locus1007	uce-421_p1	uce-421_p2
locus1008	uce-412_p1	uce-412_p2
locus1009	uce-411_p1	uce-411_p2
locus1010	uce-408_p1	uce-408_p2
locus1011	uce-402_p1	uce-402_p2
locus1012	uce-399_p1	uce-399_p2
locus1013	uce-396_p1	uce-396_p2
locus1014	uce-387_p1	uce-387_p2
locus1015	uce-368_p1	uce-368_p2
locus1016	uce-1447_p1	uce-1447_p2
locus1017	uce-365_p1	uce-365_p2

locus1018	uce-361_p1	uce-361_p2
locus1019	uce-355_p1	uce-355_p2
locus1020	uce-351_p1	uce-351_p2
locus1021	uce-341_p1	uce-341_p2
locus1022	uce-298_p1	uce-298_p2
locus1023	uce-290_p1	uce-290_p2
locus1024	uce-285_p1	uce-285_p2
locus1025	uce-279_p1	uce-279_p2
locus1026	uce-276_p1	uce-276_p2
locus1027	uce-1445_p1	uce-1445_p2
locus1028	uce-273_p1	uce-273_p2
locus1029	uce-270_p1	uce-270_p2
locus1030	uce-266_p1	uce-266_p2
locus1031	uce-263_p1	uce-263_p2
locus1032	uce-255_p1	uce-255_p2
locus1033	uce-252_p1	uce-252_p2
locus1034	uce-249_p1	uce-249_p2
locus1035	uce-245_p1	uce-245_p2
locus1036	uce-244_p1	uce-244_p2
locus1037	uce-238_p1	uce-238_p2
locus1038	uce-1444_p1	uce-1444_p2
locus1039	uce-222_p1	uce-222_p2
locus1040	uce-221_p1	uce-221_p2
locus1041	uce-208_p1	uce-208_p2
locus1042	uce-207_p1	uce-207_p2
locus1043	uce-204_p1	uce-204_p2
locus1044	uce-197_p1	uce-197_p2
locus1045	uce-194_p1	uce-194_p2
locus1046	uce-192_p1	uce-192_p2
locus1047	uce-188_p1	uce-188_p2
locus1048	uce-175_p1	uce-175_p2
locus1049	uce-1434_p1	uce-1434_p2
locus1050	uce-168_p1	uce-168_p2
locus1051	uce-163_p1	uce-163_p2

locus1052	uce-161_p1	uce-161_p2		
locus1053	uce-156_p1	uce-156_p2		
locus1054	uce-154_p1	uce-154_p2		
locus1055	uce-153_p1	uce-153_p2		
locus1056	uce-152_p1	uce-152_p2		
locus1057	uce-142_p1	uce-142_p2		
locus1058	uce-141_p1	uce-141_p2		
locus1059	uce-128_p1	uce-128_p2		
locus1060	uce-1432_p1	uce-1432_p2		
locus1061	uce-124_p1	uce-124_p2		
locus1062	uce-119_p1	uce-119_p2		
locus1063	uce-113_p1	uce-113_p2		
locus1064	uce-111_p1	uce-111_p2		
locus1065	uce-109_p1	uce-109_p2		
locus1066	uce-107_p1	uce-107_p2		
locus1067	uce-106_p1	uce-106_p2		
locus1068	uce-103_p1	uce-103_p2		
locus1069	uce-102_p1	uce-102_p2		
locus1070	uce-97_p1	uce-97_p2		
locus1071	uce-1493_p1	uce-1493_p2	uce-1494_p1	uce-1494_p2
locus1072	uce-1424_p1	uce-1424_p2		
locus1073	uce-93_p1	uce-93_p2		
locus1074	uce-92_p1	uce-92_p2		
locus1075	uce-91_p1	uce-91_p2		
locus1076	uce-90_p1	uce-90_p2		
locus1077	uce-82_p1	uce-82_p2		
locus1078	uce-63_p1	uce-63_p2		
locus1079	uce-58_p1	uce-58_p2		
locus1080	uce-57_p1	uce-57_p2		
locus1081	uce-51_p1	uce-51_p2		
locus1082	uce-50_p1	uce-50_p2		
locus1083	uce-1419_p1	uce-1419_p2		
locus1084	uce-40_p1	uce-40_p2		
locus1085	uce-37_p1	uce-37_p2		

locus1086	uce-36_p1	uce-36_p2
locus1087	uce-32_p1	uce-32_p2
locus1088	uce-31_p1	uce-31_p2
locus1089	uce-24_p1	uce-24_p2
locus1090	uce-14_p1	uce-14_p2
locus1091	uce-12_p1	uce-12_p2
locus1092	uce-1504_p1	uce-1504_p2
locus1093	uce-1499_p1	uce-1499_p2
locus1094	uce-1416_p1	uce-1416_p2
locus1095	uce-1496_p1	uce-1496_p2
locus1096	uce-1486_p1	uce-1486_p2
locus1097	uce-1483_p1	uce-1483_p2
locus1098	uce-1479_p1	uce-1479_p2
locus1099	uce-1451_p1	uce-1451_p2
locus1100	uce-1440_p1	uce-1440_p2
locus1101	uce-1426_p1	uce-1426_p2
locus1102	uce-1425_p1	uce-1425_p2
locus1103	uce-1406_p1	uce-1406_p2
locus1104	uce-1398_p1	uce-1398_p2
locus1105	uce-1405_p1	uce-1405_p2
locus1106	uce-1394_p1	uce-1394_p2
locus1107	uce-1393_p1	uce-1393_p2
locus1108	uce-1377_p1	uce-1377_p2
locus1109	uce-1374_p1	uce-1374_p2
locus1110	uce-1373_p1	uce-1373_p2
locus1111	uce-1365_p1	uce-1365_p2
locus1112	uce-1362_p1	uce-1362_p2
locus1113	uce-1353_p1	uce-1353_p2
locus1114	uce-1340_p1	uce-1340_p2
locus1115	uce-1334_p1	uce-1334_p2
locus1116	uce-1401_p1	uce-1401_p2
locus1117	uce-1331_p1	uce-1331_p2
locus1118	uce-1327_p1	uce-1327_p2
locus1119	uce-1323_p1	uce-1323_p2

locus1120	uce-1321_p1	uce-1321_p2
locus1121	uce-1317_p1	uce-1317_p2
locus1122	uce-1316_p1	uce-1316_p2
locus1123	uce-1306_p1	uce-1306_p2
locus1124	uce-1304_p1	uce-1304_p2
locus1125	uce-1303_p1	uce-1303_p2
locus1126	uce-1301_p1	uce-1301_p2
locus1127	uce-1396_p1	uce-1396_p2
locus1128	uce-1297_p1	uce-1297_p2
locus1129	uce-1283_p1	uce-1283_p2
locus1130	uce-1277_p1	uce-1277_p2
locus1131	uce-1272_p1	uce-1272_p2
locus1132	uce-1269_p1	uce-1269_p2
locus1133	uce-1268_p1	uce-1268_p2
locus1134	uce-1267_p1	uce-1267_p2
locus1135	uce-1254_p1	uce-1254_p2
locus1136	uce-1238_p1	uce-1238_p2
locus1137	uce-1230_p1	uce-1230_p2
locus1138	uce-1391_p1	uce-1391_p2
locus1139	uce-1229_p1	uce-1229_p2
locus1140	uce-1227_p1	uce-1227_p2
locus1141	uce-1216_p1	uce-1216_p2
locus1142	uce-1209_p1	uce-1209_p2
locus1143	uce-1206_p1	uce-1206_p2
locus1144	uce-1205_p1	uce-1205_p2
locus1145	uce-1197_p1	uce-1197_p2
locus1146	uce-1192_p1	uce-1192_p2
locus1147	uce-1190_p1	uce-1190_p2
locus1148	uce-1189_p1	uce-1189_p2
locus1149	uce-1369_p1	uce-1369_p2
locus1150	uce-1183_p1	uce-1183_p2
locus1151	uce-1180_p1	uce-1180_p2
locus1152	uce-1176_p1	uce-1176_p2
locus1153	uce-1171_p1	uce-1171_p2

locus1154	uce-1167_p1	uce-1167_p2
locus1155	uce-1166_p1	uce-1166_p2
locus1156	uce-1159_p1	uce-1159_p2
locus1157	uce-1126_p1	uce-1126_p2
locus1158	uce-1117_p1	uce-1117_p2
locus1159	uce-1107_p1	uce-1107_p2
locus1160	uce-1368_p1	uce-1368_p2
locus1161	uce-1105_p1	uce-1105_p2
locus1162	uce-1102_p1	uce-1102_p2
locus1163	uce-1096_p1	uce-1096_p2
locus1164	uce-1085_p1	uce-1085_p2
locus1165	uce-1084_p1	uce-1084_p2
locus1166	uce-1082_p1	uce-1082_p2
locus1167	uce-1079_p1	uce-1079_p2
locus1168	uce-1075_p1	uce-1075_p2
locus1169	uce-1071_p1	uce-1071_p2
locus1170	uce-1069_p1	uce-1069_p2
locus1171	uce-1367_p1	uce-1367_p2
locus1172	uce-1067_p1	uce-1067_p2
locus1173	uce-1064_p1	uce-1064_p2
locus1174	uce-1059_p1	uce-1059_p2
locus1175	uce-1045_p1	uce-1045_p2
locus1176	uce-1035_p1	uce-1035_p2
locus1177	uce-1033_p1	uce-1033_p2
locus1178	uce-1032_p1	uce-1032_p2
locus1179	uce-1028_p1	uce-1028_p2
locus1180	uce-1027_p1	uce-1027_p2
locus1181	uce-1023_p1	uce-1023_p2
locus1287	uce-1_p1	
locus1182	uce-1009_p1	
locus1183	uce-101_p2	
locus1184	uce-1021_p1	
locus1186	uce-105_p2	
locus1185	uce-1054_p2	

locus1187	uce-1068_p2
locus1188	uce-1070_p2
locus1189	uce-1081_p1
locus1190	uce-1087_p1
locus1191	uce-1089_p2
locus1192	uce-1090_p1
locus1193	uce-1103_p1
locus1194	uce-1118_p2
locus1197	uce-112_p1
locus1195	uce-1122_p2
locus1196	uce-1123_p1
locus1198	uce-1132_p2
locus1199	uce-1137_p2
locus1200	uce-1138_p2
locus1201	uce-1141_p1
locus1202	uce-1143_p2
locus1203	uce-1145_p1
locus1204	uce-1150_p1
locus1205	uce-1152_p1
locus1206	uce-1168_p2
locus1207	uce-1170_p2
locus1208	uce-1172_p1
locus1209	uce-1179_p2
locus1210	uce-1185_p2
locus1211	uce-1195_p2
locus1212	uce-1198_p2
locus1213	uce-1202_p2
locus1214	uce-1204_p1
locus1215	uce-1210_p2
locus1216	uce-1221_p2
locus1217	uce-1224_p1
locus1218	uce-1226_p2
locus1219	uce-123_p1
locus1220	uce-1246_p2

locus1221	uce-1263_p1
locus1222	uce-1276_p2
locus1223	uce-1285_p2
locus1224	uce-1288_p1
locus1225	uce-1289_p2
locus1226	uce-1290_p2
locus1227	uce-1291_p1
locus1228	uce-1292_p1
locus1229	uce-1294_p1
locus1230	uce-1295_p1
locus1231	uce-1302_p1
locus1232	uce-1309_p1
locus1233	uce-1312_p1
locus1234	uce-1320_p1
locus1239	uce-133_p2
locus1235	uce-1332_p2
locus1236	uce-1336_p2
locus1237	uce-1338_p1
locus1238	uce-1339_p1
locus1242	uce-134_p2
locus1240	uce-1341_p1
locus1241	uce-1347_p2
locus1245	uce-135_p1
locus1243	uce-1354_p1
locus1244	uce-1357_p2
locus1246	uce-137_p1
locus1251	uce-138_p2
locus1247	uce-1384_p2
locus1248	uce-1385_p1
locus1249	uce-1386_p2
locus1250	uce-1388_p2
locus1252	uce-1395_p1
locus1256	uce-140_p2
locus1253	uce-1400_p1

locus1254	uce-1402_p1
locus1255	uce-1404_p2
locus1257	uce-1411_p2
locus1258	uce-1430_p2
locus1259	uce-1437_p1
locus1260	uce-1441_p2
locus1261	uce-1458_p1
locus1262	uce-1459_p2
locus1264	uce-147_p2
locus1263	uce-1477_p1
locus1265	uce-1480_p2
locus1269	uce-149_p1
locus1266	uce-1490_p1
locus1267	uce-1491_p2
locus1268	uce-1498_p1
locus1270	uce-1501_p1
locus1271	uce-1503_p2
locus1272	uce-1507_p2
locus1273	uce-1509_p2
locus1274	uce-151_p1
locus1275	uce-158_p2
locus1276	uce-166_p1
locus1277	uce-176_p2
locus1278	uce-177_p2
locus1279	uce-183_p1
locus1280	uce-184_p2
locus1281	uce-187_p2
locus1286	uce-19_p2
locus1282	uce-190_p2
locus1283	uce-193_p1
locus1284	uce-196_p2
locus1285	uce-198_p1
locus1288	uce-211_p1
locus1289	uce-214_p2

locus1290	uce-215_p1
locus1291	uce-216_p2
locus1292	uce-218_p1
locus1293	uce-220_p2
locus1294	uce-223_p1
locus1295	uce-227_p2
locus1296	uce-231_p2
locus1297	uce-246_p2
locus1298	uce-262_p1
locus1299	uce-264_p1
locus1300	uce-268_p1
locus1301	uce-272_p2
locus1302	uce-277_p2
locus1303	uce-280_p1
locus1304	uce-289_p2
locus1305	uce-292
locus1306	uce-294_p1
locus1309	uce-30_p1
locus1307	uce-300_p2
locus1308	uce-306_p1
locus1310	uce-314_p2
locus1311	uce-318_p1
locus1312	uce-324_p1
locus1313	uce-331_p2
locus1314	uce-336_p2
locus1315	uce-346_p1
locus1316	uce-352_p1
locus1317	uce-353_p2
locus1318	uce-354_p1
locus1319	uce-356_p2
locus1320	uce-357_p1
locus1321	uce-358_p1
locus1322	uce-371_p1
locus1323	uce-372_p2

locus1324	uce-378_p1
locus1325	uce-381_p1
locus1326	uce-382_p2
locus1327	uce-384_p2
locus1328	uce-385_p2
locus1329	uce-398_p1
locus1330	uce-405_p1
locus1331	uce-410_p1
locus1332	uce-414_p1
locus1333	uce-425_p1
locus1334	uce-426_p2
locus1335	uce-434_p2
locus1336	uce-435_p1
locus1337	uce-447_p2
locus1338	uce-454_p2
locus1339	uce-462_p2
locus1340	uce-463_p2
locus1341	uce-464_p1
locus1342	uce-469_p1
locus1343	uce-474_p1
locus1344	uce-477_p2
locus1345	uce-482_p1
locus1346	uce-484_p1
locus1347	uce-485_p2
locus1348	uce-487_p2
locus1349	uce-490_p1
locus1350	uce-494_p2
locus1351	uce-549_p2
locus1352	uce-555_p2
locus1353	uce-558_p1
locus1356	uce-56_p2
locus1354	uce-562_p2
locus1355	uce-563_p1
locus1357	uce-572_p1

locus1358	uce-575_p1
locus1359	uce-587_p2
locus1360	uce-599_p1
locus1361	uce-602_p1
locus1362	uce-603_p1
locus1363	uce-612_p2
locus1364	uce-619_p2
locus1365	uce-626_p1
locus1366	uce-628_p1
locus1367	uce-639_p2
locus1368	uce-648_p1
locus1369	uce-653_p2
locus1371	uce-66_p1
locus1370	uce-660_p2
locus1372	uce-671_p1
locus1373	uce-674_p2
locus1374	uce-680_p1
locus1375	uce-681_p1
locus1376	uce-685_p1
locus1377	uce-697_p1
locus1378	uce-698_p2
locus1394	uce-7_p1
locus1379	uce-700_p1
locus1380	uce-705
locus1381	uce-712_p1
locus1382	uce-732_p2
locus1383	uce-733_p1
locus1384	uce-740_p1
locus1385	uce-742_p1
locus1386	uce-760_p1
locus1387	uce-768_p2
locus1388	uce-782_p2
locus1389	uce-788_p1
locus1390	uce-794_p1

locus1391	uce-795_p2
locus1392	uce-796_p1
locus1393	uce-798_p1
locus1395	uce-802_p1
locus1396	uce-806_p2
locus1397	uce-807_p2
locus1398	uce-808_p2
locus1399	uce-810_p2
locus1400	uce-817_p2
locus1401	uce-829_p2
locus1404	uce-85_p1
locus1402	uce-855_p1
locus1403	uce-857_p1
locus1405	uce-865_p2
locus1406	uce-868_p2
locus1407	uce-869_p1
locus1408	uce-871_p1
locus1409	uce-874_p1
locus1410	uce-883_p1
locus1411	uce-884_p2
locus1412	uce-885_p1
locus1413	uce-887_p2
locus1414	uce-889_p1
locus1415	uce-89_p1
locus1416	uce-903_p2
locus1417	uce-904_p2
locus1418	uce-908_p1
locus1419	uce-917_p1
locus1420	uce-919_p1
locus1421	uce-921_p2
locus1422	uce-924_p1
locus1423	uce-926_p1
locus1424	uce-94_p1
locus1425	uce-951_p1

locus1426	uce-967_p2
locus1427	uce-974_p1
locus1428	uce-977_p1
locus1429	uce-979_p2
locus1430	uce-980_p2
locus1431	uce-986_p2
locus1432	uce-999_p2

Table S1

sample code	source	collection year	Family	genus	species	preservative method	identified by	WGA	q of input DNA (ng) for library preparation	nb raw reads	nb contigs	average contig depth	average length of UCEs	nb UCEs after filtering	nb UCEs in the 25% complete matrix
JRAS07732_0101	this study	2017	Azotidae	Ablerus	sp 1	96% EtOH	Polaszek A.	no	5	4536	800	4.3	447.5	522	509
JRAS07826_0189	this study	2009	Azotidae	Ablerus	sp 2	96% EtOH	Delvare G.	no	25	29290	3157	6.0	532.5	739	713
LFMM00018_0689	this study	2015	Azotidae	Ablerus	sp 3	96% EtOH	Rasplus J.Y.	no	12.5	11157	982	2.7	265.5	139	131
JRAS06864_0689	this study	2016	Mymaridae	Acmopolynema	sema	96% EtOH	Rasplus J.Y.	no	25	61132	2536	21.6	725.6	682	656
JRAS07790_0401	this study	2012	Eulophidae	Acrias	sp.	96% EtOH	Rasplus J.Y.	no	7.75	33085	1497	20.7	550.0	990	933
JRAS07597_0189	this study	2017	Encyrtidae	Aglyptus	rufus	96% EtOH	Rasplus J.Y.	no	100	391096	10490	24.0	816.5	1064	958
JRAS07777_0189	this study	2015	Mymaridae	Alaptus	sp.	96% EtOH	Huber J.	no	22.85	23725	1168	17.2	697.3	262	253
JRAS07824_0189	this study	2011	Eulophidae	Aleuroctonus	vittatus	96% EtOH	Delvare G.	no	25	28486	2174	9.6	553.7	775	746
JRAS07787_0189	this study	2010	Mymaridae	Anagroidea	sp.	96% EtOH	Huber J.	no	25	51511	1931	25.3	665.8	619	597
JRAS07625_0389	this study	2015	Mymaridae	Anagrus	sp.	alcohol	Rasplus J.Y.	no	50	20265	1288	13.4	509.9	393	380
GDEL06009_0101	this study	-	Encyrtidae	Anagyrus	sp.	96% EtOH	Delvare G.	no	25	108502	2198	30.2	645.9	1042	977
JRAS07782_0189	this study	2015	Mymaridae	Anaphes	nitens	96% EtOH	Huber J.	no	25	110238	2097	49.8	784.3	623	589
JSTR01594_0189	this study	2015	Aphelinidae	Aphelinus	abdominalis	96% EtOH	Rasplus J.Y.	no	25	57538	2867	17.9	667.8	940	896
JRAS07609_0289	this study	2017	Aphelinidae	Aphelinus	mali	96% EtOH	Rasplus J.Y.	no	100	60941	2647	13.7	602.5	370	341
JSTR01583_0189	this study	2015	Aphelinidae	Aphytis	melinus	96% EtOH	Rasplus J.Y.	no	25	94733	3052	29.1	671.6	932	879
JRAS07736_0101	this study	2017	Aphelinidae	Aphytis	sp.	96% EtOH	Polaszek A.	no	5	30646	2557	10.7	586.5	840	806
JRAS07817_0189	this study	2005	Eulophidae	Aprostocetus	sp.	96% EtOH	Delvare G.	no	25	26019	2785	6.7	540.0	738	717
JRAS07776_0189	this study	2014	Mymaridae	Arescon	dimidiatus	96% EtOH	Huber J.	no	25	18469	2268	6.5	555.2	428	415
JRAS07827_0189	this study	2007	Encyrtidae	Arrhenophagus	chionaspidis	96% EtOH	Delvare G.	no	25	49555	1625	28.9	554.6	620	589
JRAS07815_0189	this study	2015	Eulophidae	Astichus	solutus	96% EtOH	Rasplus J.Y.	no	25	90220	2374	35.9	645.9	981	918
JRAS07786_0189	this study	2010	Mymaridae	Australomymar	sp.	96% EtOH	Huber J.	no	25	23748	2011	10.5	533.2	836	803
JRAS07766_0101	this study	2015	Eulophidae	Baeoentedon	balios	96% EtOH	Polaszek A.	no	5	852	165	2.6	336.0	122	119
JRAS07837_0189	this study	2001	Eulophidae	Baryscapus	servadeii	96% EtOH	Auger M.A.	no	25	76712	3364	20.8	703.4	903	860
JRAS07739_0101	this study	2017	Aphelinidae	Cales	sp.	96% EtOH	Polaszek A.	no	10	11919	1575	3.6	481.9	410	399
LFMM00028_0189	this study	2015	Encyrtidae	Ceballosia	sp.	96% EtOH	Fusu L.	no	25	78255	2425	30.1	685.3	930	880
JRAS07600_0389	this study	2015	Aphelinidae	Centrodora	amoena	96% EtOH	Rasplus J.Y.	no	100	442931	16406	18.1	837.0	395	355
JRAS07600_0201	this study	2015	Signiphoridae	Chartocerus	sp.	96% EtOH	Rasplus J.Y.	no	9.9	33997	1582	20.4	625.4	955	904
LFMM00028_0289	this study	2015	Encyrtidae	Cheiloneurus	longiventris	96% EtOH	Fusu L.	no	25	81297	8009	5.5	528.8	827	784
JRAS07593_0101	this study	2017	Eulophidae	Cirrospilus	diallus	96% EtOH	Rasplus J.Y.	no	18.35	51149	2387	19.7	449.2	846	793
JRAS07820_0189	this study	-	Signiphoridae	Clytina	giraudi	96% EtOH	Delvare G.	no	7.5	85324	4148	16.7	726.4	1004	937

sample code	source	collection year	Family	genus	species	preservative method	identified by	WGA	q of input DNA (ng) for library preparation	nb raw reads	nb contigs	average contig depth	average length of UCEs	nb UCEs after filtering	nb UCEs in the 25% complete matrix
JRAS07742_0101	this study	2017	Aphelinidae	Coccobius	sp.	96% EtOH	Polaszek A.	no	10	111940	2913	37.2	687.7	976	905
JSTR00692_0189	this study	2014	Aphelinidae	Coccophagus	scutellaris	96% EtOH	Rasplus J.Y.	no	25	51925	2740	16.8	627.1	756	729
JRAS07595_0189	this study	2017	Encyrtidae	Copidosoma	aretas	96% EtOH	Rasplus J.Y.	no	100	134565	6815	11.3	718.1	895	836
GENO00013_0101	Branstetter et al. 2017	-	Encyrtidae	Copidosoma	floridanum			no	NA	NA	NA	NA	NA	NA	833
JRAS07868_0189	this study	2002	Mymaridae	Cosmocomoidea	fasciata	96% EtOH	Triapitsyn S.	no	25	106354	2757	36.2	767.7	404	386
JRAS07832_0189	this study	2012	Eulophidae	Diglyphus	isaea	96% EtOH	Rasplus J.Y.	no	25	71682	2947	22.6	718.4	508	472
JRAS07727_0101	this study	2017	Aphelinidae	Dirphys	sp.	96% EtOH	Polaszek A.	no	5	41322	2206	16.8	610.3	630	610
JRAS06480_2689	this study	2015	Eulophidae	Elasmus	sp.	96% EtOH	Rasplus J.Y.	no	100	115944	2600	29.2	777.8	881	828
JSTR01585_0189	this study	2015	Aphelinidae	Encarsia	citrina	96% EtOH	Rasplus J.Y.	no	25	82030	6402	11.0	612.4	501	479
JSTR00475_0189	this study	2013	Aphelinidae	Encarsia	formosa	96% EtOH	Rasplus J.Y.	no	25	51437	1753	27.5	654.0	745	724
JRAS07747_0101	this study	2017	Aphelinidae	Encarsia/Coccophagus	sp.	96% EtOH	Polaszek A.	no	7	74566	4502	14.6	639.7	813	778
JRAS07830_0189	this study	2010	Eulophidae	Entedon	spareetus	96% EtOH	Delvare G.	no	25	48985	3293	12.9	615.8	659	631
JSTR00476_0189	this study	2013	Aphelinidae	Eretmocerus	eremicus	96% EtOH	Rasplus J.Y.	no	25	60775	3504	15.5	687.3	687	665
LFMM00028_0301	this study	2015	Encyrtidae	Ercydnus	sp.	96% EtOH	Fusu L.	no	5	58772	5503	5.5	551.9	906	872
JRAS07780_0189	this study	1983	Mymaridae	Erythmelus	sp.	96% EtOH	Huber J.	no	25	19917	1843	9.0	560.4	358	345
JRAS07856_0101	this study	-	Mymaridae	Eubroncus	sp.	96% EtOH	Gumovsky A.	no	10.3	24380	1330	16.2	641.3	615	596
JRAS07829_0189	this study	2007	Eulophidae	Euderus	sp.	96% EtOH	Delvare G.	no	25	59521	1782	31.5	669.9	915	885
JRAS07575_0389	this study	2017	Eulophidae	Euderus ?	sp.	96% EtOH	Rasplus J.Y.	no	100	51724	1697	19.5	641.5	851	816
JRAS07602_1001	this study	2015	Pteromalidae	Eunotus	acutatus	96% EtOH	Rasplus J.Y.	no	7.5	27785	1989	11.9	528.4	1046	963
BRAN00055_0101	Branstetter et al. 2017	2013	Eulophidae	Euplectrus	sp 1			no	NA	NA	NA	NA	NA	NA	811
JRAS06864_1089	this study	2016	Eulophidae	Euplectrus	sp 2	96% EtOH	Rasplus J.Y.	no	25	143918	3104	44.4	749.2	847	799
ANIC00100_0199	this study	1992	Aphelinidae	Eutrichosomella	sp.	dried	Rasplus J.Y.	no	25	42124	1671	23.6	409.2	975	917
JRAS07740_0101	this study	2017	Aphelinidae	Euxanthellus	sp.	96% EtOH	Polaszek A.	no	10	71869	2781	23.9	632.2	931	884
JRAS07784_0189	this study	2014	Mymaridae	Gonatocerus	sp.	96% EtOH	Huber J.	no	25	17096	2101	6.5	544.9	330	324
JRAS07894_0101	this study	-	Encyrtidae	Hexacladia	sp.	96% EtOH	Rasplus J.Y.	no	25	15294	1388	8.0	336.5	621	586
JRAS07785_0189	this study	2014	Mymaridae	Ischiodasys	sp.	96% EtOH	Huber J.	no	25	61925	2242	25.9	576.9	312	285
JSTR01580_0189	this study	2015	Encyrtidae	Leptomastix	dactylopii	96% EtOH	Rasplus J.Y.	no	25	52771	4013	11.5	581.7	989	930
JRAS07625_0289	this study	2015	Mymaridae	Litus	cynipseus	96% EtOH	Rasplus J.Y.	no	87.84	16966	1102	9.0	581.7	407	396
JRAS07825_0189	this study	2015	Aphelinidae	Marietta	sp.	96% EtOH	Delvare G.	no	25	224864	5027	43.2	775.4	1021	947

sample code	source	collection year	Family	genus	species	preservative method	identified by	WGA	q of input DNA (ng) for library preparation	nb raw reads	nb contigs	average contig depth	average length of UCEs	nb UCEs after filtering	nb UCEs in the 25% complete matrix
JRAS07895_0101	this study	-	Aphelinidae	Maudia	sp.	DNA	Polaszek A.	no	1.8	28055	1834	13.2	585.8	685	666
LFMM00027_0301	this study	2015	Encyrtidae	Mayridia	fomosula	96% EtOH	Fusu L.	no	15	161521	3895	39.5	782.8	924	855
JRAS07818_0189	this study	2006	Eulophidae	Melittobia	acasta	96% EtOH	Delvare G.	no	25	134156	7216	15.3	708.9	742	690
JRAS07823_0189	this study	2008	Pteromalidae	Mesopeltita	sp.	96% EtOH	Rasplus J.Y.	no	25	195850	7280	22.8	778.1	1165	1033
JRAS07597_0489	this study	2017	Encyrtidae	Metaphycus	insidiosus	96% EtOH	Rasplus J.Y.	no	100	151469	4634	20.4	797.0	812	742
JRAS07597_0501	this study	2017	Trichogrammatidae	Mirufens	longicauda	96% EtOH	Rasplus J.Y.	no	24.65	51012	2247	20.9	624.7	699	681
ANIC00046_0189	this study	1983	Pteromalidae	Moranila	viridivertex	dried	Rasplus J.Y.	no	39	2654	521	3.0	211.9	359	341
JRAS07603_0889	this study	2015	Mymaridae	Mymar	regale	alcohol	Rasplus J.Y.	no	25	73337	5242	12.2	658.9	486	469
JRAS07601_0189	this study	2015	Mymaromatidae	Mymaromma	anomalum	-	Rasplus J.Y.	no	29.88	216429	3064	48.4	888.6	506	472
JRAS07882_0189	this study	2014	Mymaromatidae	Mymaromma	sp 1	96% EtOH	Fusu L.	no	5	2175	292	6.3	303.1	242	230
JRAS07883_0189	this study	2014	Mymaromatidae	Mymaromma	sp 2	96% EtOH	Fusu L.	no	8.1	15163	590	24.5	513.0	427	415
JRAS07828_0189	this study	2006	Eulophidae	Neopomphale	aleurothrix	96% EtOH	Delvare G.	no	25	54638	3024	16.0	601.0	762	729
LFMM00003_0189	this study	2015	Aphelinidae	New Genus	sp.	96% EtOH	Mitroiu M.D.	no	25	21302	1737	10.6	570.8	798	775
JRAS07781_0189	this study	2015	Mymaridae	Ooctonus	hemipterus	96% EtOH	Huber J.	no	25	58731	2189	24.6	662.6	560	539
JSTR00645_0189	this study	2013	Encyrtidae	Ooencyrtus	kuvanae	96% EtOH	Delvare G.	no	25	37148	2186	15.7	527.7	936	893
JRAS07816_0189	this study	2005	Eulophidae	Ophelimus	maskelli	96% EtOH	Delvare G.	no	25	36855	4103	6.0	511.6	916	871
JRAS07871_0101	this study	2012	Trichogrammatidae	Paracentrobia	sp.	96% EtOH	Gumovsky A.	no	10.8	18770	1126	14.6	502.7	640	616
JRAS07313_0289	this study	2017	Encyrtidae	Paratetracnemoid	sp.	96% EtOH	Rasplus J.Y.	no	25	91306	7326	9.5	335.1	254	216
JRAS07600_0489	this study	2015	Eulophidae	Pediobius	eubius	70% EtOH	Rasplus J.Y.	no	100	95338	5132	11.5	654.2	463	432
JRAS07594_0101	this study	2017	Eulophidae	Pnigalio	sp.	96% EtOH	Rasplus J.Y.	no	25	75129	2304	30.9	564.9	905	839
JRAS07859_0101	this study	2015	Trichogrammatidae	Poropoea	sp.	96% EtOH	Gumovsky A.	no	25	39892	2835	11.8	526.8	580	558
JRAS07738_0101	this study	2017	Aphelinidae	Prococcophagus	sp 1	96% EtOH	Polaszek A.	no	10	12301	1842	5.2	440.8	671	650
JRAS07744_0101	this study	2017	Aphelinidae	Prococcophagus	sp 2	96% EtOH	Polaszek A.	no	15	34952	1995	15.5	647.8	841	812
JRAS07625_0489	this study	2015	Trichogrammatidae	Pseudoligosita	gracillor	alcohol	Rasplus J.Y.	no	100	87834	4029	12.5	757.1	415	397
JRAS07730_0101	this study	2017	Aphelinidae	Pteroptrix	sp.	96% EtOH	Polaszek A.	no	5	7325	980	5.9	480.7	511	504

sample code	source	collection year	Family	genus	species	preservative method	identified by	WGA	q of input DNA (ng) for library preparation	nb raw reads	nb contigs	average contig depth	average length of UCEs	nb UCEs after filtering	nb UCEs in the 25% complete matrix
JRAS07752_0101	this study	-	Aphelinidae	Samariola	sp.	96% EtOH	Polaszek A.	no	12.5	38874	1848	19.3	538.5	985	935
JRAS06497_0201	this study	2015	Pteromalidae	Scutellista	cyanea	96% EtOH	Rasplus J.Y.	no	250	180452	7376	22.1	761.6	1153	1040
JRAS07626_0389	this study	2015	Pteromalidae	Scutellista	obscura	96% EtOH	Rasplus J.Y.	no	25	31944	1774	16.3	604.1	1093	1018
JRAS07789_0189	this study	2014	Signiphoridae	Signiphora	sp.	96% EtOH	Rasplus J.Y.	no	10	26963	2907	7.4	416.2	693	673
JRAS07788_0189	this study	2014	Mymaridae	Stethynium	sp.	96% EtOH	Huber J.	no	10	61669	2076	27.9	636.1	284	265
JRAS07884_0189	this study	2014	Encyrtidae	Tachinaephagus	zealandicus	96% EtOH	Fusu L.	no	25	191956	9167	18.7	704.2	924	851
GDEL07010_0101	this study	-	Eulophidae	Tamarixia	pubescens	96% EtOH	Delvare G.	no	10	31963	3399	27.0	672.8	758	711
JRAS07628_0189	this study	2014	Signiphoridae	Thysanus	sp.	alcohol	Fusu L.	no	36.54	147810	11231	6.0	589.3	731	699
TRIC00029_0199	this study	2014	Trichogrammati dae	Trichogramma	brassicae	96% EtOH	Rasplus J.Y.	yes (0.4 ng input)	250	340094	15682	20.0	816.6	425	404
GENO00028_0101	Branstetter et al. 2017	-	Trichogrammati dae	Trichogramma	pretiosum	-		no	NA	NA	NA	NA	NA	NA	626
TRIC00001_0199	this study	-	Trichogrammati dae	Trichogramma	sp.	96% EtOH	Rasplus J.Y.	yes (4 ng input)	250	353266	16954	18.8	688.5	206	187
JRAS06864_1401	this study	2016	Trichogrammati dae	Tumidiclava	sp.	96% EtOH	Rasplus J.Y.	no	22.95	29994	1630	16.2	618.1	535	521
LFMM00029_0101	this study	2015	Aphelinidae	Umairia	sp.	96% EtOH	Rasplus J.Y.	no	12.5	28887	3133	4.5	457.4	646	625
JRAS07858_0189	this study	2014	Trichogrammati dae	Uscana	sp.	96% EtOH	Gumovsky A.	no	25	126025	3420	34.8	544.5	186	169
JRAS03390_0389	this study	2011	Eulophidae	Zagrammosoma	mirum	96% EtOH	Rasplus J.Y.	no	25	6729	859	6.5	407.1	560	534

Cited reference

Branstetter MG, Danforth BN, Pitts JP, Faircloth BC, Ward PS, Buffington ML, Gates MW, Kula RR, and Brady SG. 2017. Phylogenomic Insights into the Evolution of Stinging Wasps and the Origins of Ants and Bees. *Current Biology* 27:1019-1025. 10.1016/j.cub.2017.03.027

Figure S1

Analytical workflow – Step 1. Pre-processing of the data: from raw reads to raw UCEs

*The 2749 probes designed by Faircloth et al. (2015) were first assembled into a set of non-overlapping loci using Geneious. This set of reference UCE loci (N=1432) was then used to align sample-specific contigs obtained with CAP3. The reference UCEs are available in additional file 4.

Reference cited:

Faircloth, B.C., Branstetter, M.G., White, N.D., S.G., B., 2015. Target enrichment of ultraconserved elements from arthropods provides a genomic perspective on relationships among Hymenoptera. *Molecular Ecology Resources* 15, 489-501.

Figure S2

Figure S3

Figure S4

Figure S5