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Title:

A high content microscopy screening identifies genes involved in cell width control in *Bacillus subtilis*

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Abstract:

How cells control their size is a fundamental question of biology. In bacteria, cell shape is imposed by the extracellular cell wall, in particular by the continuous polymer of peptidoglycan (PG) that surrounds the cell. Thus, bacterial cell morphogenesis results from the coordinated action of the proteins assembling and degrading the PG shell. Remarkably, during steady-state growth, most bacteria maintain a defined shape along generations, suggesting that an error-proof mechanism tightly controls the process. In the rod-shaped model for Gram-positive bacteria, *Bacillus subtilis,* it is well known that the average cell length varies as a function of growth rate but that cell diameter remains constant throughout its cell cycle and across growth conditions. Here, in an attempt to shed light on the cellular circuits controlling bacterial cell width, we developed a screen to identify genetic determinants of cell width in *B. subtilis*. Using HCS (high-content screening) fluorescence microscopy and semi-automated measurement of single-cell dimensions, we screened a library of ~ 4000 single knockout mutants. We identified 13 mutations significantly altering cell diameter, in genes that belong to several functional groups. In particular, these results highlight a link between cell width control and metabolism.

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Introduction:

The bacterial landscape is surprisingly filled in by a variety of shape that, at the single bacterial species level, are usually highly conserved (*1*). The rationale behind a specific shape and its selective value remains speculative in most cases (*1*), as are the molecular mechanisms enabling a specific shape to be determined and maintain across generations.

The shape of the cells directly depends on that of their cell wall (CW). The CW is composed of a peptidoglycan (PG) scaffold that forms a rigid shell responsible for the mechanical properties of the cell envelope and, in Gram-positive (G(+)) bacteria, of PG-linked glycopolymers, the most abundant being the wall teichoic acids (WTA) (*2*). The PG sacculus is a contiguous matrix of circumferential sugar strands crosslinked by perpendicular peptide bridges (*3*). Rod-shaped bacteria like *Bacillus subtilis* and *Escherichia coli*, the models for G(+) and Gram-negative (G(-)) bacteria respectively, use two different PG-synthesizing machineries: the divisome and the elongasome (*4*, *5*). The divisome is required for cell division to build the septum that, upon cell separation, will become the new polar caps of the resulting daughter cells, while the elongasome synthesizes the cylindrical sidewall. The latter comprises two machineries working independently or semi-independently: some involving aPBPs (class A penicillin binding proteins), bifunctional enzymes with transpeptidase (TP) and transglycosylase (TG) activity, and some called "Rod complexes" containing the TG RodA and bPBPs (class B PBPs) carrying mono-functional TP activity such as PBP2A and PbpH in *B. subtilis* (*5*, *6*). The prevailing model postulates that the Rod complex processively builds the bulk of the organized PG meshwork, while aPBPs would perform limited and localized, potentially unoriented, strands insertion (*6*, *7*). In *B. subtilis*, and consistent with this model, aPBPs are dispensable (*8*, *9*) while most proteins of the Rod complex are essential such as RodA (*6*, *8*, *10*) or co-essential as the bPBPs PBP2A and PbpH (*11*). This reflects that a failure in the proper establishment of the PG mesh compromises the cellular integrity.

In addition to the TP and TG enzymes, the Rod complex includes other essential morphogenetic proteins: MreC and MreD, presumed regulators of the activity of the complex (*4*, *12*), and the actin homolog MreB and in *B. subtilis* its paralog Mbl, putative coordinators of the complex recently suggested to orient the direction of the synthetic machineries (*5*, *13*). To note that the *B. subtilis* genome encodes a third *mreB* paralog, *mreBH*, that becomes essential only in absence of the other paralogs,

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under stress conditions or at low Mg concentration (*14, 15*). RodZ, a protein of unknown function, is a suspected member of the rod-complex as well. However, despite its critical role for rod shape maintenance in both G(-) bacteria *Caulobacter crescentus* and *E. coli*, the protein is essential only in *C. crescentus* (*16-19*). Its involvement in shape control and its essentiality are even less clearly established in G(+) bacteria. Described as essential in *B. subtilis* in an early report (*20*), several insertional or deletion mutants have been reported since then, displaying minimal shape defects (*21-23*).

It has long been known that rod-shaped bacteria vary their cell size depending on the growth conditions and in particular on nutrient availability (*24, 25*). Cells growing fast have a larger volume that in slow growth condition, a relationship often referred to as the (nutrient) growth law (for a review on this topic, see (*26*) or the very detailed (*27*)). However, while *E. coli* cell width varies greatly (up to 100%) and concomitantly to its length (*24, 28-30*), *B. subtilis* cells adjust their length but maintain a virtually constant diameter regardless of the growth conditions (*30-33*). Only limited variations of the width (in the 50 nm range) have been recently reported, presumably linked to the growth phase (*34*). This remarkable consistency suggests that cell width is a physiological parameter somehow encrypted in the genome of *B. subtilis*, and that it must be carefully monitored during growth to correct for potential deviations to its nominal value. Yet how rod-shaped bacteria check and balance their diameter remains unclear.

Recently, Garner and co-workers showed how the balance between the Rod and aPBPs elongation machineries influence cell diameter (*7*). They proposed a model in which the activity of aPBPs introduce disorganized materials into the PG meshwork, enlarging the tight cylinder imposed by the Rod complex (*7*). Still, in the absence of PbpA (*B. subtilis* main aPBPs, encoded by *ponA*), albeit thinner, cells remain perfectly rod-shaped indicating that the 'check & balance' process is still in place (*35, 36*). Conversely, alteration of the Rod complex leads to increase cell diameter, either because of the raise of the aPBPs/Rod ratio or because of the rounding of the cells consecutive to the absence of elongation, the two intertwined causes being difficult to differentiate. Indeed, depletion of each essential (or co-essential) part(s) of the Rod complex, RodA, MreC, MreD, PBP2A/PbpH or MreB/Mbl/MreBH, leads to spherical cells following the absence of PG elongation (*11, 37-40*). It is thus not surprising that all mutants reported to display an enlarged width are involved in CW homeostasis, a phenotype frequently

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accompanied by more or less dramatic shape defect such as uneven diameter, bulges, swelling and frequently lysis. This can be observed for example with the single deletion of the *mreB* or *mbl* paralogs (*41, 42*), or with the partial depletion of the essential MurB and TagD that catalyze key steps in the synthesis of the PG and the teichoic acids (TA) precursors, respectively (*34, 43*).

In contrast, a limited number of mutants of *B. subtilis* display a reduced cell diameter to our knowledge. In addition to the previously mentioned *ponA*¸ deletion of *ltaS* (*yflE*), *yfnI* (*yetP, ltaSA*) or *yqgS,* encoding lipoteichoic acid synthases (*44, 45*), or the simultaneous inactivation of the cell division genes *ezrA* and *gpsB* (*35*) drive to reduce cell width. Similarly, the absence of MreBH or the PG hydrolase LytE, two proteins shown to interact in a so-called "LytE-system", was reported to lead to a slightly reduced diameter (*14, 44, 46*). To note that curiously the simultaneous inactivation of *mreBH* and *lytE* was reported to widen *B. subtilis* (*44*) while a *lytE* knock out displayed a wild-type width in a separate study (*47*). Overall, the mechanism(s) at stake for cell width maintenance remains mysterious.

Here, we aimed at identifying at the genome scale level the determinants involved in cell width control during rapid exponential growth. We screened a complete organized collection of *B. subtilis* deletion mutants (*22*) using High-Content Screening microscopes (HCSm). Our protocol for mid-throughput analysis allowed us to uncover several new genes that may work to maintain cell diameter. These are involved in cell wall synthesis, cell division, metabolism, and translation, suggesting that cell width homeostasis results from the combined action of several cellular processes. Finally, our analysis suggests that two main routes are leading to cell width alteration of the cell.

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Results

Bacillus subtilis displays limited width variability during rapid exponential growth

It has long been accepted that, in contrast to *E. coli*, the cell diameter of *B. subtilis* cells remains virtually constant regardless of the growth rate (*30, 31*). We wondered how variable the cell diameter could be in isogenic *B. subtilis* populations during fast exponential growth. We used MicrobeJ, a FIJI plugin (*48-50*), to perform cell segmentations and quantify their diameter (see M&M, Sup. Table 1, Sup. Information). We first compared six independently acquired datasets of wild type *B. subtilis* cells grown exponentially in rich LB medium (Fig. 1A). We observed that the average width remained remarkably constant between experiments (below 2 %; Sup. Table 2). Also, the cell-to-cell variability of the measured width in each population (standard deviation to the mean, sdm) remained low, ranging from 0.071 to 0.089 µm across the different replicates (Sup. Table 2). These variations might reflect potential -true- differences of cell diameter or just the error of our measurements, but in either case variability was low. This reproducibility allowed us to expect the detection of potentially small variations of cell diameter between mutant strains. We next compared the diameter of *B. subtilis* cells exponentially growing in two different media, rich (LB) and poor (S), and thus supporting different growth rates. In agreement with previous reports (*30, 31*), we found no significant difference of width between cells grown in rich and poor media (Fig. 1B). The cell-to-cell variability was similar in the two media, indicating that this variability is independent of the growth rate. Taken together, these experiments indicated that *B. subtilis* exerts a tight control over its diameter, whose variability remains below 2 % in average across conditions and replicates.

HCS microscopy allows screening for small phenotypic variations of cell width

We next defined conditions that would minimize false positives in a microscopy-based screen of a genome-scale deletion library of *B. subtilis*. First, cells were fixed to obtain snapshots of their dimensions during exponential growth. Fixation induced a slight reduction of cell width relative to live cells (Fig. Sup. 1A), but prevents issues resulting from the time required for the preparation of 96-well

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plates and the image acquisition inherent to the HCS method. Second, the growth medium was supplemented with 20 mM of $MgSO_4$ to prevent perturbation of growth and/or the estimation of the cell width in mutants defective for CW synthesis that might display irregular shapes or lyse. In *B. subtilis*, high levels of magnesium are known to reduce the activity of PG hydrolases (*51*), limiting the defects of mutants affected in CW formation and allowing propagation of otherwise lethal mutations (*52-54*). Importantly, while magnesium rescues most morphological defects, such mutants still present an abnormal width (*52, 53*). Again, we noticed that the addition of Mg^{2+} to the growth medium slightly reduced the average width of wild-type cells (Fig. Sup. 1B), as previously reported (*35*). These slight width differences detected either when cells were fixed (Fig. Sup. 1A) or when grown in high magnesium (Fig. Sup. 1B) confirmed our ability to detect small variations of width between populations.

Next, to demonstrate the sensitivity of our assay, we tested in our conditions the *mreB* and *ponA* mutants, known to be wider and thinner, respectively, than wild-type cells (*36, 41*). As shown in Figure 1C, the altered width of *mreB* and *ponA* mutants was unambiguously detected when cells were grown in high Mg^{2+}, fixed and observed in either our conventional epifluorescence microscope or the HCSm. The cell-to-cell variability and the average cell widths noticeably increased when measurements were performed on HCSm-acquired images but the relative difference of width between the two mutant strains relative to the wild-type were perfectly conserved (Fig. 1C). These control experiments showed that mutants affected for the control of width could be identified in our medium-throughput HCSm approach.

Following up our promising preliminary controls, we screened the complete *B. subtilis* kanamycin-marked ordered deletion library (BKK) (*22*), which contains 3983 single-gene deletion mutants of the 168 strain (GenBank Al009126), thus ~93 % coverage of its genome open reading frames (Fig. 2, see M&M for details). In order to prevent plate-to-plate fluctuations and to compare the widths of the mutants across plates, each mutant's width was expressed relatively to the average cell diameter per plate (ADP (see M&M; Fig. Sup. 2A). The average of the ADPs of the 48 plates and the average cell width of the wild-type strain grown and imaged in the same conditions showed no significant difference (Fig. Sup. 2B). For each single mutant, we calculated the delta between its average width and the ADP of its plate (Sup. Table 3). The 3983 Δwidth obtained present a Gaussian distribution, spreading from -

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13.9 to +23.4 % but with 90 % of the values comprised in a narrow +/- 5 % variation to the mean (Fig. 3A). Next, we arbitrarily setup a cutoff of the 1 % most affected strains (0.5 % largest and 0.5 % thinnest) (Fig. 3A). The 40 mutants selected displayed a difference in diameter > 8 % to that of their ADP (Sup. Table 4). Using low-throughput epifluorescence microscopy imaging and the wild type *B. subtilis* strain as a reference, we checked the phenotypes of the selected mutants (see M&M), while the deletion in each mutant was verified by PCR.

In only half of them the wider or thinner phenotypes could be confirmed when using a low Δwidth cutoff of 4%, suggesting the presence in our selection of several false positive (Fig. 2 and Sup. Table 4). Nonetheless, all mutants with a confirmed deletion were kept to the next step and backcrossed into the wild-type background before attempting further characterization, in order to prevent the possibility that some phenotypes might be unlinked to the deletions (Fig. 2, Sup. Table 5).

Cell wall and central carbon metabolism genes are linked to cell width control

Next, we carefully measured the diameter of the 40 backcrossed mutants, using low-throughput epifluorescence imaging (Sup. Table 4). Confirming the trend observed during the previous step, several mutants presented only a limited width difference with that of the parental strain and were rejected. Choosing a cautious Δwidth cutoff of 8%, we selected 12 mutants significantly and reproducibly, over 3 independent experiments, wider (7) or thinner (5) (Fig. 3B, Table 1 and Sup. Table 4). We also kept the Δ*minJ* mutant despite its non-significant Δwidth (-1 %) because it displayed an unusually large distribution of widths (Fig. 3B, 3D, Sup. Table 4). The width phenotypes were conserved for all 13 mutants when grown without magnesium supplementation (Sup. Table 4), confirming that at the contrary to the bulging, swelling and lysis observed as consequences of CW synthesis impairment, magnesium cannot bypass the alteration of width. This might suggest that the width alteration is not a result from uncontrolled autolysin activities.

Thus, we identified nine new genes affecting cell width of *B. subtilis* and we confirmed the phenotype of four out of the ten genes previously reported to affect cell width, present in the BKK library and

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expected to be found with our method (Sup. Table 6): *rodZ, cwlO, ftsE,* and *ftsX*. To note that despite not being in the top 1 % of genes retained for further analysis, *ponA* still displayed a significantly reduced width in the first step of our screen (Sup. Table 3), as expected (Fig. 1C). However, *mreBH, lytE* and the three recently spotted genes encoding lipoteichoic acid synthases (*ltaS, yqgS, yfnI*) did not display a significant width difference in our experiment (Sup. Table 3).

The genes identified in our screen belong to different functional categories and, interestingly, a majority are not directly involved in CW homeostasis (Table 1). In addition to the previously reported *ftsE, ftsX, cwlO*, and *rodZ*, only *dacA* belong to this group. This gene encodes the bPBP PBP5 involved in PG maturation (*55, 56*).

The second most represented functional category among our selected width-deficient mutants is the metabolism (Table 1). One gene, *guaA*, is involved into purine nucleotide synthesis (encoding the GMP synthetase (*57*)), while the four others are part of the central carbon metabolism (Fig. Sup. 3): *pyk*¸ specifying the pyruvate kinase acting in glycolysis (*58*); *ptsH*, encoding HPr, a component of the sugar phosphotransferase system (PTS) (*59*); *panD*, involved in coenzyme A biosynthesis (*60*) and *yloR (rpe)*, probably encoding Rpe (ribulose-P-epimerase) of the pentose phosphate pathway.

Noteworthy, while most mutants involved in CW synthesis are larger (Table 1 and Sup. Table 6), four out of five of them were thinner (Fig. 3B, 3D; Table 1). Only the *rpe* mutant displays a wider diameter but intriguingly, the phenotype was opposite in the mutant strain from the BKK collection, a point we will return to below. This observation might suggest that a common mechanism could be at play for each functional category.

The three remaining genes selected are involved in cell division (*minJ* (*61, 62*)), translation (*yaaA*, encoding a ribosome assembly factor (*63*)), or have an unknown function (*ybzH)*. Using the prediction HHPRED tool, YbzH was predicted to be a putative transcriptional repressor of the ArsR family (*64*).

Δ*minJ* and Δ*rpe* display a unique phenotype of diameter instability

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The mutant strains selected in our screen displayed a thinner or a larger mean diameter relative to wild-type cells. Although their mean width differs, these mutants still control their diameter to maintain it constant over generations. Interestingly, two mutants, Δ*rpe* and Δ*minJ*, displayed a distinctive high dispersion of width values among their population (Fig 3, Sup. Table 4).

The Δ*rpe* mutant (BKK15790) was first selected based on its slim width (-11.4 % relative to wt) during the systematic analysis (Sup. Table 4). Surprisingly, once backcrossed into our 168 background, the *rpe* KO strain (RCL856) displayed the opposite phenotype with an increased average diameter (+11 %) compared to the wild type (Fig. 4A; Sup. Table 4), nonetheless indicative of a defect of width control. The most striking difference between the two mutants is however not their average width but their dispersion (Fig. 4A). While the BKK *rpe*- shows a SD similar to the control strain with cells harboring thin and regular diameters, the backcrossed mutant presents the broadest width variability (SD 0.179) of our selection (Fig. 4A, 3B), and arguably the most dramatic loss of control. This mutant also forms small colonies, indicative of a growth defect, a characteristic not shared with its BKK parent (Fig. Sup. 7). This suggests that the BKK strain might have acquired some suppressor mutation(s), partially restoring its growth and shape control and reducing the width dispersion to the price of a smaller diameter.

The second strain with an instable diameter is Δ*minJ*. This mutant of the "Min" system, a complex in charge of controlling the placement of the divisome, is known to present a reduced septum formation leading to long cells (*61*, *65*). Although its average cell width was marginally affected (-1%), the standard deviation was unusually large, and extreme widths ranged from 0.6 to 1.5 µm (Fig. 3B). As observed on Fig. 4B, some filamentous Δ*minJ* cells displayed unusually large and small diameters. This phenotype affected only a fraction of the population (~15 %), which could explain why it was not previously reported. A unique trait of this mutant is that the diameter varied within single chains or even single cells as well (Fig. 4B). This loss of width control was not randomly distributed along the cell length but presents a polarity, with cells progressively widening or thinning from a given diameter, suggestive of some kind of gradient between the poles.

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RodZ: a non-essential protein involved in cell shape control

We next brought a special attention to *rodZ*, encoding a putative component of the CW machinery, whose mutant appeared wider and longer than the wild type strain in our screen (Fig. 3, Table 1, Sup. Table 4). *rodZ* was reported to be essential in *B. subtilis* (*20*) as it was shown beforehand in G(-) bacteria (*16-19*). But another team reported more recently that the inactivation of the gene led to robust growth and only mild shape defects (*23*). In addition, two collections to our knowledge include a *rodZ* inactivation mutant (*21*, *22*). Facing an apparent discrepancy, here we decided to construct by homologous recombination a fresh, independent *rodZ* deletion mutant (CcBs351; see Supplementary Information). Similarly to the backcrossing of the Δ*rodZ* from the BKK library (BKK16910) into the wild-type 168 strain (RCL828) in which countless positive transformants were obtained, the mutant was readily constructed, confirming the non-essentiality of the gene in *B. subtilis* 168.

We assayed the various *rodZ* mutants to our disposal for growth and shape in different conditions. In rich LB medium, *rodZ* KO strains (CcBs351, BKK16910, RCL828) displayed no difference of growth with their parental wild type *B. subtilis* strain (Fig. 5.A). Similarly, their shape could not be easily discriminated (Fig. 5.B), and only the quantification reveals the difference of cell diameter (Fig. 5.C). We confirmed however the presence of minicells (Fig. Sup. 5B), indicative of the perturbation of the division process (*65*). When grown on the slightly poorer MSM, a casamino-acids-based medium, phenotypes of *rodZ* mutant cells worsen: cells widen, frequently divided asymmetrically (Fig. 5.B, D; Fig. Sup. 5A) and shown a solid but slightly reduced growth rate compared to that of the wild type (Fig. 5.A). This reduction of growth in MSM might not be directly linked to the richness of the medium since all strains grew almost identically in the much poorer citrate/glucose-based S medium (Fig. Sup. 6A.). Noticeably, a difference appeared between the mutants, with the BKK16910 displaying a growth lag and a reduced maximum cell density compared to the others. Since the backcrossed deletion of the BKK16910 (RCL828) showed no difference with our independently constructed deletion mutant CcBs351, we inferred that some unknown genetic differences in this strain rather than the deletion itself could be at play.

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Pursuing on the idea that the genetic background could affect the phenotype of the *rodZ* mutant, and realizing that the original mutation attempt from Muchova and coworkers was performed into the distantly related PY79 wild type *B. subtilis*, we transfered our *rodZ* deletion into the PY79 strain (CcBs628). However the shape defects (cell widening, asymmetric division) for *rodZ* were similar in both the 168 and PY79 backgrounds (Fig. Sup. 5A.). The only notable difference was a strong growth lag correlated to the richness of the medium, for the *rodZ* KO in PY79 (Fig. Sup. 6B).

Taken together, we concluded that *rodZ* is not essential for growth, that it displays shape and division defects that worsen based on the composition of the medium (which critical factor(s) remain to be identified) and that the genetic background influences this sensitivity to the medium.

Analysis of the mutants' growth and shape suggest distinct causes are responsible for altered cell width

During the phenotypic characterization of the selected width-deficient mutants, we noticed that the *guaA* mutant was unambiguously shorter than the others, while at the opposite the *minJ* mutant formed distinctive long cells (Fig. 3D). This observation suggests that these mutants might be affected in the control of the division process. We then systematically measured the length of the selected mutants, revealing to our surprise that all mutants but *cwlO* displayed an average length significantly greater or smaller than that of the wild-type cells (Fig. 3C, Table 1). While the wild type strain's average length variability ranged from 0.1% to 5.6 % across replicates (Sup. Table 7), 11 mutants displayed an average length >9 % larger or thinner than that of the wild-type cells (Fig. 3C; Table 1). It should be noted that the minicells formed by Δ*minJ* and Δ*rodZ*, as previously reported (*20*, *66*), were not taken into account in our length quantification.

As shown on Figure 3, the ordering of the strains by width (3B) did not predicted their ordering by length (3C), indicating the absence of a simple correlation between the two parameters (Fig. Sup. 4A). However, all metabolism-related mutants but Δ*rpe* were shorter (>12 %) and thinner (>8 %) than the

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wild type (Fig. 3B-D and Table 1). In contrast, shorter and wider mutants were all related to CW metabolism, again to the exception of Δ*rpe*.

In the course of our experiments, we also noticed that the mutants selected were obviously growing at different pace. Because the length –but not the width- of *B. subtilis* usually correlates with its growth rate (the "growth law"), we wondered i- if the differences of length observed between the mutants would reflect their growth and ii- if and how their width would varies regarding their growth. We determined the generation time of the 12 mutant strains with a significantly affected width during mid exponential growth (see Material & Method; Fig. Sup. 4B). All the metabolism related mutants, and only these, presented an altered generation time (GT) with a >75 % increase compared to that of the wild type. For these, the GT strongly correlates with their length (R^2=0.837) indicating that in such mutants the "growth law" is conserved (Fig. Sup. 4C), at the contrary to CW homeostasis mutants for which the growth rate appeared unaffected despite a change in their length (Fig. Sup. 4B-C). However, the GT was not or poorly correlated with the width for both above-mentioned subcategories suggesting that both parameters are not connected (Fig. Sup. 4C).

Finally, we calculated the surface area (S) to volume (V) ratio of the mutants, a parameters that was proposed to be a key values maintained constant in a defined condition, that may be a key determinant of the cell shape (*67*). Calculation of S/V showed that this ratio was significantly altered in every mutants (to the exception of *minJ*-) and that the width variation, not the length, was the main contributor to the S/V variation between mutants (Fig. Sup. 4B). As a consequence, all CW homeostasis mutants presented a small S/V ratio while the metabolic mutants but not *rpe* displayed a larger S/V. The S/V is remarkably constant over time for a given conditions, which has been hypothesized to originate from a scaling between the growth rates of S and V (*68*). Harris & Theriot proposed that this scaling originates from the rates of surface and volume growth being both functions of V (and not functions of S and V, respectively) (*67*). A consequence of their model is that a diminishing rate of S growth, for example when reducing the CW synthesis, both increases cell width and reduces S/V. In the frame of this model, one could hypothesizes that the increase of width observed in the mutants we have selected may be a direct consequence of a decreased CW incorporation affecting the S/V homeostasis.

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Overall, these results discriminate between two main group of mutants with similar trends: those of genes involved into cw homeostasis displaying an increased width and reduced S/V but an unaffected growth rate, and mutants of metabolic genes, strongly affected for growth and presenting a reduced width and increased S/V. In this dichotomy, *rpe* is stepping out, sharing characteristics of both groups and suggesting that its phenotypes might reflect a defect in both pathways, which could be a cause for its instability. Also, based on these observations, it is thus tempting to predict that *ybzH* deletion is affecting the 'metabolic pathway' while *yaaA* is somehow affecting the 'cw homeostasis' pathway.

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Discussion

The cell width is probably one of the most tightly regulated physiological parameter in *B. subtilis* (*33*). But the mechanism allowing its fine control remains unclear. Our approach aimed at revealing in a systematic way the (non-essential) genes involved in this process. Reassuringly, we confirmed most of the non-essential (or non-synthetic) factors previously reported (Sup. Table 6) and identified 9 new genes presenting a strong effect on *B. subtilis* diameter. Since we arbitrarily setup a cutoff to select the most drastically affected mutants, it is likely that extra genes could potentially participate in the process, along with some essential genes or genes acting synthetically. A quick survey of the top 10 % most affected mutants (Sup. Table 3) shows a few dozen of genes involved in CW (e.g. *walH*, *pbpG*, *lytG*, *yocH*, *murQ*, *murE*…), lipid metabolism (*fabI*, *lipL*, *araM*, *fadE*…) or central carbon metabolism (*tkt*, *ywjH*, *coaA*…), albeit to a lesser degree. This complete list should be taken with cautious since the two-step verification performed on our top 1% selection revealed a significant number of false positive.

Until now, all the genes described to affect the cell width were involved into CW synthesis or affecting it (Sup. Table 6), and many mutants selected in the present study belongs to this group as well. In addition to the known *cwlO*, *rodZ*, *ftsX* and *ftsE* we identified *dacA*, encoding the major vegetative DD-carboxypeptidase PBP5, responsible for the maturation of the PG by trimming the terminal D-Ala of the pentapeptide (*69*).

However, since the cell shape results from the proper synthesis of the PG meshwork, such mutants are necessarily overrepresented in our study and were expected. Therefore the underlying question of this project was: is there proteins not belonging to the CW machinery that could control or contribute to the tight maintenance of the cell diameter? The answer is yes since most genes reported here have a known function unrelated to it or have not been characterized yet.

In particular, we identified several known metabolic genes, *guaA*, *ptsH*, *pyk*, *rpe* and *panD*. For two of them, *guaA* and *ptsH*, a few strings could connect them to the CW synthetic pathway. *guaA*, which displays the smallest cell diameter of our entire study, encodes a GMP synthetase and therefore belongs to the purine nucleotide synthetic pathway (*57*). Interestingly, it was shown decades ago that GuaA inhibition leads to a decreased synthesis and recycling of the PG (*70*). Together, these results suggest a

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tight link between purine metabolism and cell shape. The second gene, *ptsH*, encodes Hpr, a component of the sugar phosphotransferase system (PTS). The complex is responsible for glucose uptake, and as such is feeding the glycolysis and the PG precursor synthesis pathways (*59*). In addition, mutants of *ptsI*, that encodes another piece of the PTS, were previously selected as suppressors of an *mreB* mutant (*71*). Finally, preliminary results from our lab indicate a connection between the PTS and MreC and MreD (Keary *et al.*, to be published), strengthening this connection. Thus, one could imagine that Hpr could be a moon-lightening protein monitoring sugar availability to coordinate its uptake with the elongation machinery.

Remarkably, previous studies have linked the cell metabolic status with the cell size, although in these cases the mutants were affected for their length (reviewed in (*26*)). Out of the 17 *B. subtilis* mutants previously reported, only *pyk*, encoding the pyruvate kinase PykA (that produces pyruvate in the final step of glycolysis), was identified in our screen (*26*). These studies, aiming at deciphering how the growth law (which describes the correlation between cell size and growth rate) is encoded, have revealed how some metabolic genes are encoding enzyme acting as nutrient sensors controlling and coordinating cell division. It should be pointed out that to a couple of exceptions the mechanisms remain unknown. Since *B. subtilis* diameter, at the contrary to its length, is usually constant, a similar sensing mechanism would make little sense. However, Here, one could imagine that the identified metabolic enzymes may influence one of the two competing elongation machineries (the Rod complex and PBP1). Such effect could be direct via a moon-lightening activity (as observed for the control of length with UgtP (*32*)) or indirect if a metabolite influences the activity of a third-party regulatory protein (as observed with PykA (*72*)).

It is nonetheless striking that all the metabolic genes revealed in the present screen were affected both for width and length control. In addition, all these mutants were both thinner and shorter as if both dimensions were somehow linked (to the exception of *rpe* that presents an uncontrolled width, with both wider and thinner cells). Independently of these metabolic genes, another link between length and width was found in the course of our study with the selection of the *minJ* and *rodZ* mutants. RodZ is a known "thinning" factor (Sup. Table 6), member of the Rod complex, and it is suspected to interfere with cell

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division because of the presence of anucleated minicells in a depletion mutant, a phenotype we confirmed here in the KO strains (*20*, *65*). This role was proposed to be mediated via its interaction with MinJ, although the mechanism remains unknown (*65*). MinJ is part of the Min system, composed in *B. subtilis* of MinC, MinD, MinJ and DivIVA, that controls the proper positioning of the septum (*61*, *62*, *73*). The phenotype of the *minJ* knockout in elongation is therefore well known but not its implication on width. Considering the width, the phenotypes of the two mutants differ slightly, *rodZ*- forming uniform wider cells, while *minJ*- displays this unique uncontrolled width in a fraction of the population. Interestingly, two other mutants, encoding parts of the Min system, *divIVA* and *minC*, presented a somewhat thinner diameter as well in our primary screen (-6.1 % and -4.9 % respectively) (Sup. Table 3). Since MinJ interacts with both DivIVA and RodZ which have opposite effect on width control, the mix phenotype of *minJ*- may reflect the composite result of their opposing influences. Nonetheless, it remains to determine why the perturbation of Min affect the cell diameter. A tempting hypothesis would be that their primary effector, the divisome, may play a role in cell elongation in such perturbed genetic background.

Overall, our study have highlighted several new genes involved into a limited number of cellular pathways that play a role in *B. subtilis* width control. Even though PBP1 and the Rod complex are certainly important players in this process, these results demonstrate that other factors are required as well. It will thus be critical to understand the function of the identified genes in hope, in the future, to decipher the mechanism underlying the setting and the monitoring of the cellular diameter during bacterial growth.

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Materials and methods

General methods and bacterial growth conditions. Methods for growth of *B. subtilis*, transformation, selection of transformants and so on have been described extensively elsewhere (*74*). DNA manipulations were carried out by standard methods. *B. subtilis* strains used in this study are listed in Sup. Table 5. *B. subtilis* strains were grown at 30 or 37 °C in rich lysogeny broth medium (LB), except for assaying growth in poor media were strains were grown in Modified Salt Medium (MSM) supplemented with 10 mM MgSO4 (*52*) and S medium (*31*) with the corrected 1.2 µg/ml of MnSO4. For precultures, media supplements were added at the following final concentrations: $MgSO_4$ 20 mM, and genotype-depending, neomycin 15 $\mu g.ml^{-1}$, spectinomycin 100 $\mu g.ml^{-1}$ or chloramphenicol 5 $\mu g.ml^{-1}$ (Sup. Table 5). Transformants were selected on LB agar plates supplemented with $MgSO_4$ and neomycin. For the determination of generation time (GT), cells from overnight cultures were diluted to a fixed starting OD_{600nm} of 0.01 in fresh LB medium supplemented with $MgSO_4$ in 96-well cell culture plates (CellStar) and grown in microplate reader at 250 rpm at 37°C. GT was calculated using a Matlab script available at the following link:.

General screening procedure

Screening was performed on the BKK library using HCSm setups (see 'High content screening microscopy'), leading to the selection of 3974 out of the 3983 mutants from this collection (9 clones were absent from the published library or failed to regrow) (*22*). Images were processed and cell diameter was measured (see 'Image processing and cell size quantification'). The 1% most affected strains (40 mutants) were selected and their phenotype confirmed on an epifluorescence widefield microscope (see 'Low throughput epifluorescence microscopy' and 'Image processing and cell size quantification'). Deletions in the selected clones was verified by PCR revealing that 2 out of 40 mutants (*yoqC*, *yorP*) were wild type for the expected locus and discarded for further analysis. The remaining 38 mutants were backcrossed into the wild type 168 strain to be analyzed over triplicates experiments,

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using low throughput microscopy. An arbitrary cutoff of 8% Δwidth, obtained by comparison to the wild type strain width, was chosen and 12 genes were selected.

High content screening microscopy. Cells from overnight cultures, grown in the presence of neomycin and $MgSO_4$, were diluted 600 × in fresh LB medium supplemented with $MgSO_4$ in 96-well cell culture plates (CellStar) and grown on an orbital shaker at 250 rpm at 37°C until mid-exponential phase (OD_{600} ~ 0.2). To fix the cells, 150 µL of culture were mixed with 50 µL of fixation solution (0.5 M KPO_4 pH 7, 8 % paraformaldehyde, 0.08 % glutaraldehyde) in 96-well PCR plates and incubated 15 min at room temperature followed by 15 min on ice. The cells were pelleted by a 5 min centrifugation at 450 g and the supernatant carefully removed by pipetting. The pellets were washed with 200 µL of washing buffer (KPO_4 0.1 M pH 7) and centrifuged again. The pellets were resuspended in 20 µL of water containing 3.3 µg/mL FM1-43FX (ThermoFisher, F35355) and incubated 5 min at room temperature. 180 µL of washing buffer were added and the cells were centrifuged a last time to be concentrated 3.75 × in 40 µL washing buffer. 96-well (Fisher) or 384-well (Greiner) microscopy plates were treated with 60 µL of poly-L-lysine 0,01 % and washed with 60 µL of deionized water. 40 µL of cells were put in each well and discarded after a 1 min incubation. Finally, 40 or 120 µL of deionized water were added into each well of 96-well or 384-well plates. Imaging was performed either on an ImageXpress micro Confocal (Molecular Devices) or an INCell 6000 analyzer (GE Healthcare) used in non-confocal mode. The ImageXpress HCS microscope was equipped with a 60 × Nikon air objective (NA 0.95), a FITC filter (Ex.488/Em.536) and a Zyla 4.2 Andor sCMOS camera with a final pixel size of 115 nm and controlled by MetaXpress software package. The INCell 6000 analyzer was equipped with a 60 × water objective (NA 0.95), a FITC filter (Ex.488/Em.525) and a sCMOS 5.5 Mpixels camera with a final pixel size of 108 nm and controlled by the INCell 6000 Analyzer - Acquisition v.7.1 Software. Images from 4 fields of view were acquired for each strain.

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Low throughput epifluorescence microscopy. Cultures were performed as for HCS microscopy but in shaking tubes instead of microplates. For live cell imaging, 300 µL of cultures were directly mixed with FM™ 1-43FX (ThermoFisher) to reach the concentration of 3.3 µg/mL and concentrated 3.75 × before 1 µL of the preparation was spotted onto a thin 2 % agarose-LB pad, topped by a coverslip and immersion oil, and mounted immediately in the temperature-controlled microscope stage. For the imaging of fixed cells, cells were fixed as described for HCS microscopy except that 300 µL of culture were mixed with 100 µL of fixation solution and subsequently washed with 300 µL of buffer. Cells were either loaded on a 2 % agarose-LB pad or loaded on poly-L-lysine treated 96 well microscopy plate. For the latter, the wells were washed then filled with deionized water. Epifluorescence images of the stained membranes were acquired on a previously described setup equipped with a 100 × objective (*75*).

Image processing and cell size quantification. The post-acquisition treatment of the images was done with the Fiji shareware and the measures (mean cell diameter and length) with the MicrobeJ plugin (*48-50*). In MicrobeJ, the width was calculated as the mean value along the medial axis of the cell. The parameters used for the MicrobeJ module are listed in Sup. Table 1. Cells aggregates were excluded and segmentation was manually corrected when necessary.

During high throughput screening, the cell width of each strain was calculated as the mean of 225 cells (in average). When the four-image set contained less than 30 measurable cells, a new acquisition was performed. Because the library is devoid of a wild type reference, and to prevent putative plate to plate variability, the mean cell width of each mutant was compared to the average width of all measured cells of its 96-well plate, or ADP (average cell diameter per plate) index (17-19.10^3 cells/plate) (Fig. Sup. 2A). Each strain's diameter deviation relatively to this index was calculated, as:

$$\Delta\text{width (\%)} = (\text{mean width of the mutant} - \text{ADP}) \times 100 / \text{ADP}$$

From these differences, the 0.5st and 99.5th percentile were calculated and the 99 % of the mutants between these two values eliminated.

During low-throughput microscopy (for the verification of the BKK candidates and for clones resulting from the backcross into the 168 strain) the cell width and length of each strain was calculated as the

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mean of 245 cells (in average). The calculated Δwidth was expressed by comparison with the wild type cell size.

Alternative methods for cell width measurement. Cell widths were measured either with the ChainTracer plugin of the Fiji shareware, or by "manually" determining the width at maximum height on intensity profiles (*76*) (Fig. S1)**.** For ChainTracer, we used a stack of phase contrast and epifluorescence images of stained membranes, and only analyzed isolated chains of cells to prevent segmentation issues. For the measurement using intensity profiles, a line was manually drawn perpendicularly to the cell's long axis, on epifluorescence images of stained membranes, and a profile plot of the fluorescence intensity was generated. The cell diameter was determined by measuring the distance between the two maxima.

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Figure legends

Figure 1. Discrimination of diameter-control deficient *B. subtilis* mutants: a proof of concept.

A. Comparison of cell width distribution of six independent cultures of fixed wild-type *B. subtilis* cells grown in rich (LB) medium. One-way ANOVA statistical analysis showed no significant differences between the replicates (Sup. Table 2). **B.** Comparative cell width distributions of fixed wild-type *B. subtilis* cells grown in rich (LB) and minimal (S) media. **C.** Qualitative (images) and quantitative (distribution of measured cell width) comparisons of data acquired on a wide-field epifluorescence microscope and a confocal HCSm, using the wild-type, Δ*mreB* and Δ*ponA* mutant strains of *B. subtilis*. Fluorescent images were acquired on cells grown to mid exponential phase ($0.2<OD_{600\ nm}<0.3$), fixed and stained with the FM1-43fx membrane dye. Discrete fluorescent foci result from cell fixation. Scale bar, 5 µm. Width distributions are displayed as violin plots with the broken line indicating the mean. Statistical analyses were performed using (A) a one-way ANOVA or (B, C) nested t-tests. For each statistical test, **** = $P<0.0001$, *** = $0.0001<P<0.001$, ** = $0.001<P<0.01$, * = $0.01<P<0.05$, and ns = $P>0.05$. When significant, the difference between the means, expressed as a percent, is indicated on the plots. B and C are compilations of at least two independent experiments.

Figure 2. Protocol summary of the screening process.

Screening of the *B. subtilis* BKK collection arrayed in 96-well plates was based on automated image acquisition using an HCSm. The MicrobeJ plugin of FIJI was used for cell segmentation and width measurements. Average cell diameter of each mutant was compared to the average diameter of all cells on the plate (ADP). Candidates where confirmed by measuring their diameter on images acquired with an epifluorescence microscope, relative to the wild-type strain. The selected mutants were then backcrossed into a wild type background before final width determination over triplicate experiments.

Figure 3. The screen reveals 13 mutants with a cell width variation > 8 % relative to the wild-type.

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A. Width difference (Δ width) of each mutant relative to the ADP of its plate. Dotted lines indicate the cut-offs for the 0.5 % largest (top) and thinnest (bottom) mutants. Red dots mark the 13 mutants with confirmed diameter defects after deletion were backcrossed into the wild-type strain. **B-C**. Cell width (B) and cell length (C) distributions of the 13 selected (backcrossed) mutants. Red and green plots correspond to thinner and wider mutants respectively, compared to their parental wild-type strain (blue). Broken line: mean. Data are compilations of three independent experiments. The difference between the means of each mutants and the wild-type is indicated, in %. Statistical significance between the mutant and the wild-type strain width (B) and length (C) were calculated using nested t-tests (see Table 1 for *P*-values). All differences were significant except for the mean width of the Δ*minJ* mutant (B) and the mean length of the Δ*cwlO* mutant (C). **D.** Phenotypes of the backcrossed mutants segregate into four classes based on their width and length defects. Δ*minJ* and Δ*rpe* mutants form both thinner (arrowhead, 1) and larger (arrowhead, 2) cells. Displayed are images of FM1-43fx membrane-labelled fixed cells. Scale bar, 5µm.

Figure 4. Δ*minJ* and Δ*rpe* mutants exhibit unique uncontrolled diameter phenotypes.

A. Images of membrane-labelled strains and corresponding distribution of cell widths for the wild type strain, Δ*rpe* from the BKK collection and Δ*rpe* backcrossed into 168 wild type background. Broken line: mean. Data are compilations of two independent experiments and statistical significance between mutants and the wild type strains was calculated using the Mann-Whitney non parametric test (**** = P<0.0001; *** = 0.0001<P<0.001; ** = 0.001<P<0.01; * = 0.01<P<0.05; ns = P>0.05). **B.** Images of membrane-labelled Δ*minJ* mutant, presenting varying width along single cells or chain of cells. This phenotype is observed in approximately 15% of the population. Percentages indicate the difference of width compared to that of the wild type strain, at the position of the red marks.

Figure 5. *rodZ* is not essential for *B. subtilis* growth but contributes to cell width control.

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A. Typical growth curves of wt and *rodZ* mutants of *B. subtilis* grown in rich LB (blue) and poor MSM (green) media. Strains are wt (168; solid line), *rodZ*- in 168 background (CcBs351; dashed line), *rodZ*- from BKK library (BKK16910; open circles) or *rodZ*- from BKK backcrossed into 168 wt (RCL828: dotted line). **B**. Epifluorescence images of *B. subtilis* strains (same as in A), FM1-43Fx membrane-labelled, grown to mid exponential phase in LB or MSM media. **C-D**. Distribution of cell width of strains (same as A) grown to mid exponential phase in rich LB (C) or poor MSM (D) media, in at least two independent experiments. Cell widths were determined using the manual method. Statistical analyses were performed using nested t-tests, and **** indicates a *P*-values <0.0001.

Fig. Sup. 1. Comparative cell width distributions of wild type *B. subtilis* cells measured with 3 different methods.

A. Cell width of live and fixed cells were measured using the FIJI plugins MicrobeJ and Chain tracer, or by manual measurements (see Material and methods). The differences between the means of live and fixed cells (in %) is specified for each method. **B.** Comparative cell width distribution of fixed wild-type *B. subtilis* cells grown in LB with and without 20 mM magnesium supplementation. Broken line: mean. Statistical analysis were performed using nested t-tests, were **** = P<0.0001, *** = 0.0001<P<0.001, ** = 0.001<P<0.01, * = 0.01<P<0.05, and ns = P>0.05. Differences between the means, expressed as a percent, is indicated on the plots. Data are compilations of at least two independent experiments.

Fig. Sup. 2. ADPs are constant across plates and equal to the width of the wild-type strain.

A. ADP of the 48 96-well plates containing the BKK library. Each ADP is the mean of all width (~18 700) on a plate, and error bars are the standard deviations to the mean (SDM). The 48th plate has a smaller value because the acquisition was performed on the epifluorescence microscope (with 100x magnification) and not on the HCSm. **B.** Comparison of the average of the ADPs of all 48 plates and the average width of a wild-type cell population measured with the HCSm. There is no significant

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difference between the two values according to the Mann-Whitney non parametric test, indicating ADPs are similar to the wild type diameter (1.160 µm vs 1.153 µm, respectively). Similarly, the ADP calculated for the 48th plate is close to the wild-type strain measured in the corresponding microscope (0.975 µm vs 0.964 µm, respectively). Error bars are SDM.

Fig. Sup. 3. Carbon metabolic pathways involving selected mutants deficient for cell width control. The four genes selected in our the current screen and involved into carbo metabolism, *panD*, *ptsH*, *pyk* and *rpe* and encoding enzymes required for the pentothenate, glycolysis and penthose pathway respectively. PanD converts L-asp into β-alanine, the first step of the pathway leading to Coenzyme A (Co-A) synthesis. Co-A is used in glycolysis as a substrate for Pyk to form acetyl-CoA. HPr (encoded by *ptsH*) is a bi-functional protein acting also in glycolysis as a part of the PTS (phosphotransfer system) required for the import/phosphorylation of sugars, and in the regulation of the carbon catabolite control, as an allosteric regulator with CcpA. Rpe produces xylulose-5P in the penthose pathway.

Fig. Sup. 4. Relationship between generation time, length, width and surface to volume ratio in the selected mutants. A. Average cell lengths as a function of average cell widths for each mutant. Functional categories are color-encoded: orange for metabolism, blue for CW homeostasis and white for others. Wild type (wt) strains is labelled in green. **B**. Average generation time (GT), length (L), surface to volume ratio (S/V) and width (W) of cell width deficient mutants compared to the wt. The dotted line marks the level of the average wt value. Generation time are calculated on populations (see M&M) and are the average of 4 independent experiments. Length, S/V ratio and width data are calculated per cell and compiled data from three independent experiments. Statistical significance of the difference between each mutant and the wild type was calculated using either a Mann-Whitney non parametric test (generation time) or a nested t-tests (length, S/V ratio and width) and indicated using *P*-values, as follows: **** = P<0.0001; *** = 0.0001<P<0.001; ** = 0.001<P<0.01; * = 0.01<P<0.05; ns = P>0.05. **C**. Average length and width as a function of the generation time (GT). Upper panel:

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metabolism-related mutant; lower panel: CW homeostasis-related mutant. R^2 of the linear regressions (lines) are indicated on the panels. Data are compilations of at least three independent experiments.

Fig. Sup. 5. Cell shape morphologies of several *B. subtilis rodZ* mutants and their cognate parental wild type strains, grown in LB, MSM or S media.

A. Epifluorescence images of *B. subtilis* cells grown to mid exponential growth phase, colored with FM1-43Fx membrane dye. Strains are wild type 168 ('wt'; 168), deleted for *rodZ* in 168 background ('351', CcBs351), *rodZ*- from BKK library ('BKK', BKK16910), *rodZ*- from BKK backcrossed into 168 wt ('BC', RCL828), wild type PY79 ('PY', PY79), and deleted for *rodZ* in PY79 background ('628', RCL628). **B**. *rodZ* mutants form minicells during growth in LB medium. Display are images of CcBs351 grown to mid exponential growth phase in LB medium, colored with FM1-43Fx and imaged by phase contrast (right panels) or epifluorescence (left panels) microscopy. Arrowheads point to minicells. Scale bars (A-B): 1 µm.

Fig. Sup. 6. Growth defect of *rodZ* mutants varies depending on growth media and genetic background.

A-B. Typical growth curves of wt and *rodZ* mutants of *B. subtilis* in rich LB (blue), poor MSM (green) and S (orange) media. Strains are derivative of the wt 168 strain (A) or PY79 (B), and either wt (plain; 168 or PY79), or deleted for *rodZ*- (dashed; CcBs351 or RCL628). Panel A has two extra curves for *rodZ*- from BKK library (circles; BKK16910) and *rodZ*- from BKK backcrossed into 168 wt (dotted; RCL828).

C. Cell width distributions of the *rodZ* mutant (black) and its parental wild type PY79 strain (red), grown to mid exponential phase in LB and MSM media. Difference of width between the two strains was estimated with a nested t-test (**** = *P*-value <0.0001).

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Fig. Sup. 7. Backcross of the *rpe* deletion reveals a strong growth defect.

Chromosomal DNA of strain BKK15790, K-O for *rpe*, was transformed into wild type *B. subtilis* 168. Transformants display a 'small-colony' phenotype indicative of a growth defect. Here are shown isolates colonies of a typical transformant (RCL856), and its parental wild type (WT; 168) and *rpe* mutant from the BKK collection (BKK15790), streaked on LB plate and grown for 24h at 37°C.

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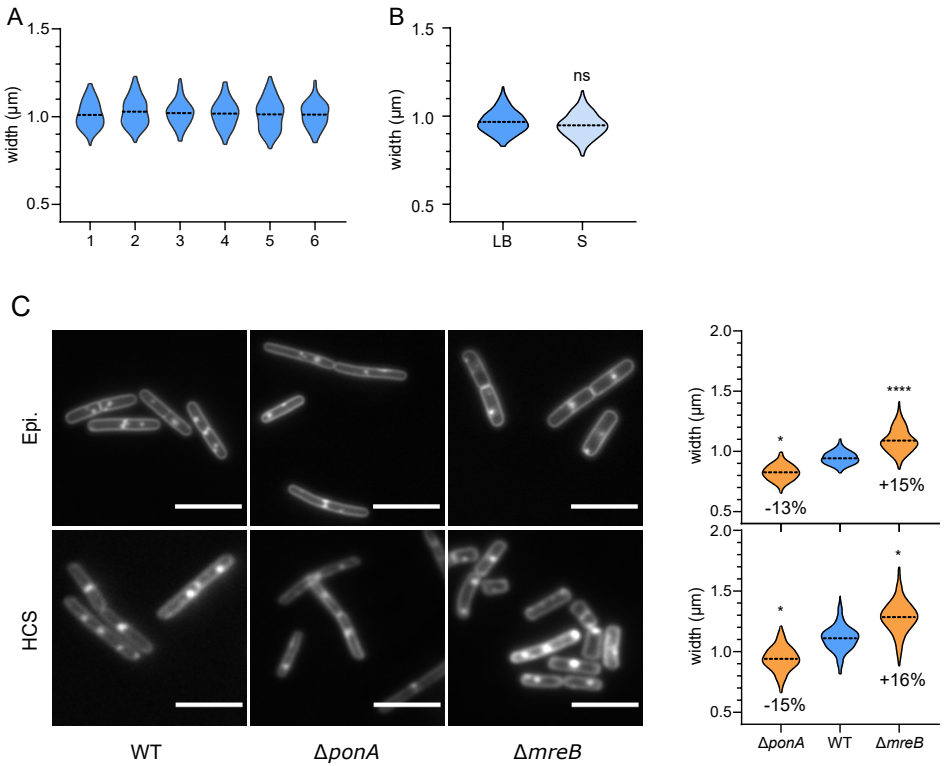
Juillot et al., Figure 1



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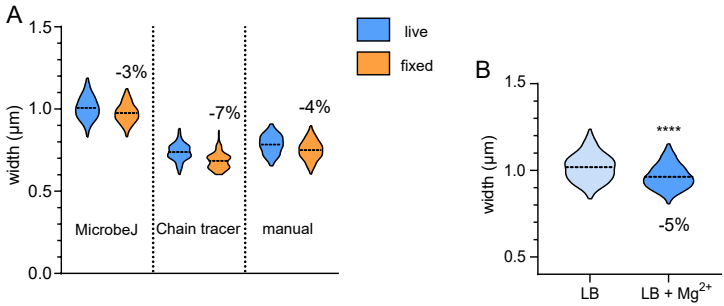
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width (µm)
-3%
-7%
-4%
MicrobeJ
Chain tracer
manual
live
fixed
B
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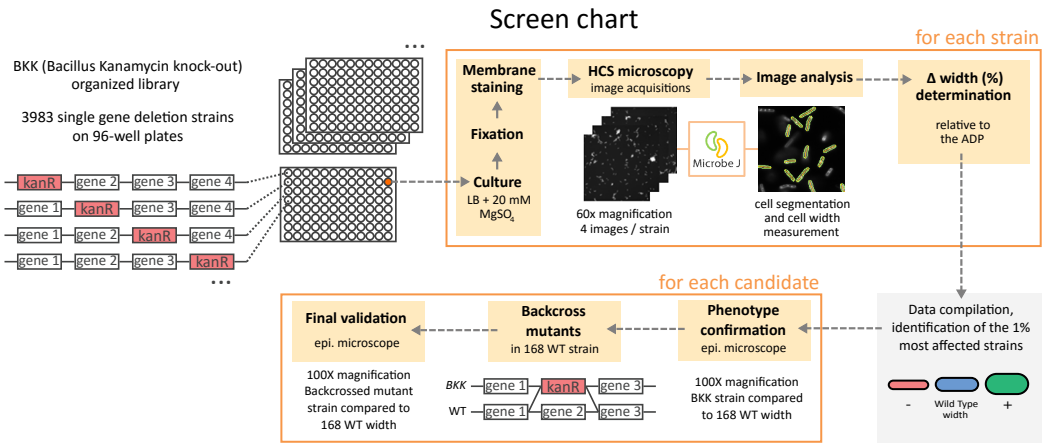
1.0
0.5
width (µm)
****
-5%
LB
LB + Mg2+

Juillot et al., Figure 2



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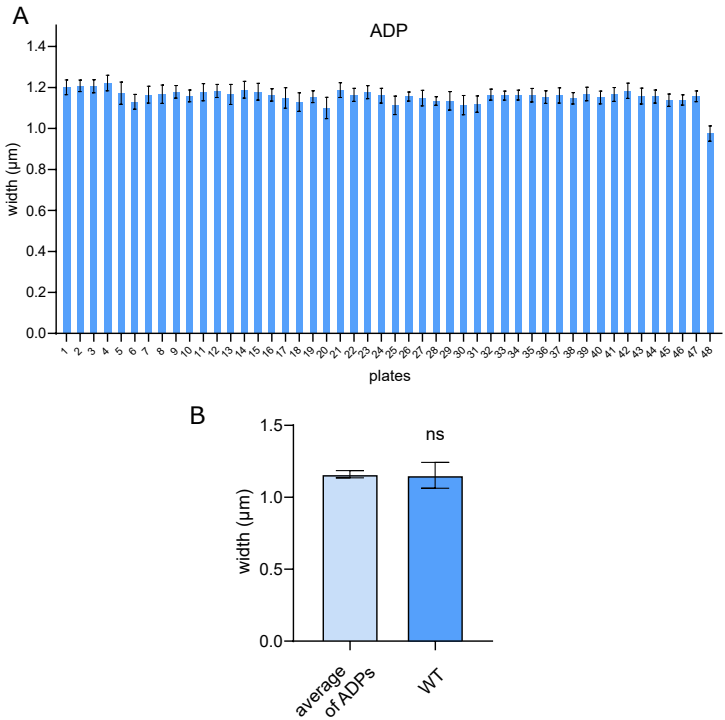
A
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width (µm)
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1.2
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0.8
0.6
0.4
0.2
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plates
B
ns
1.5
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0.5
0.0
average of ADPs
WT

Juillot et al., Figure 3

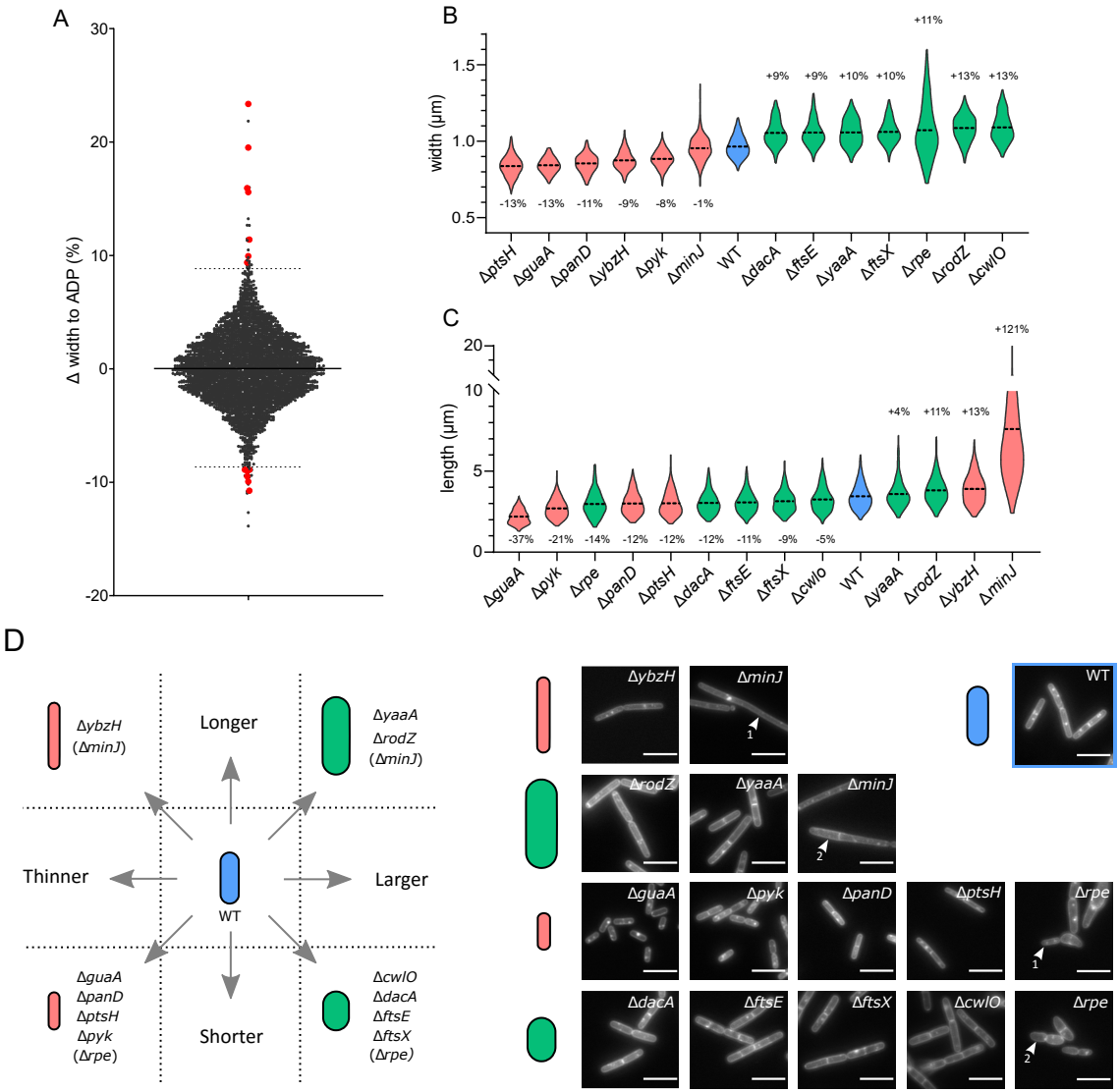

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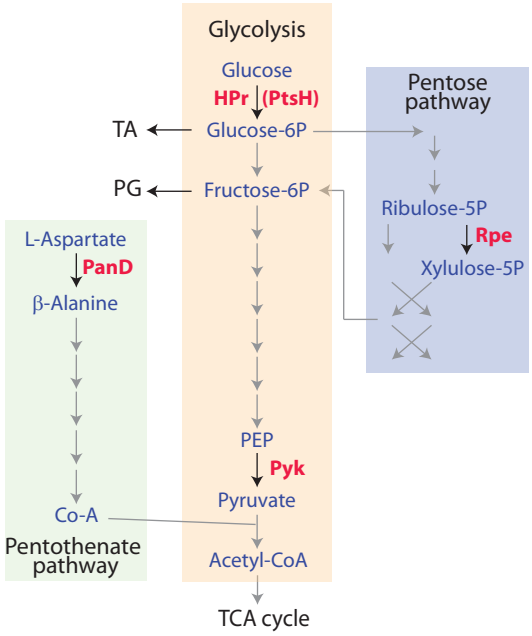
Fig. Sup. 3



Juillot et al., Figure 4

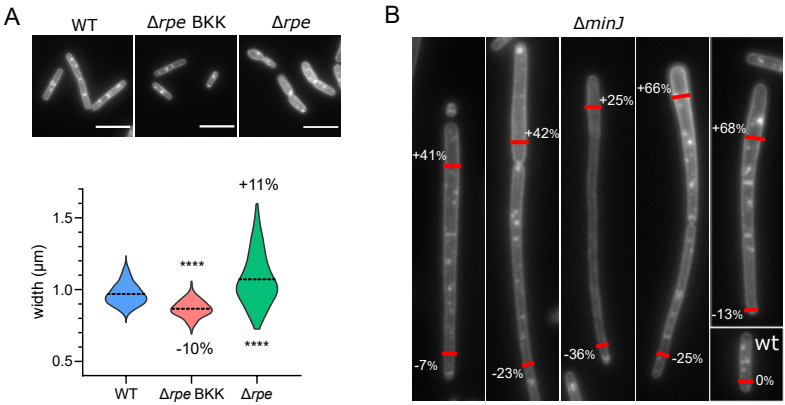


Fig. Sup. 7

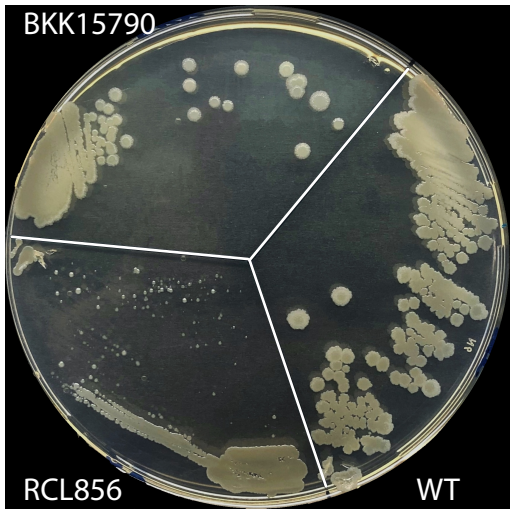
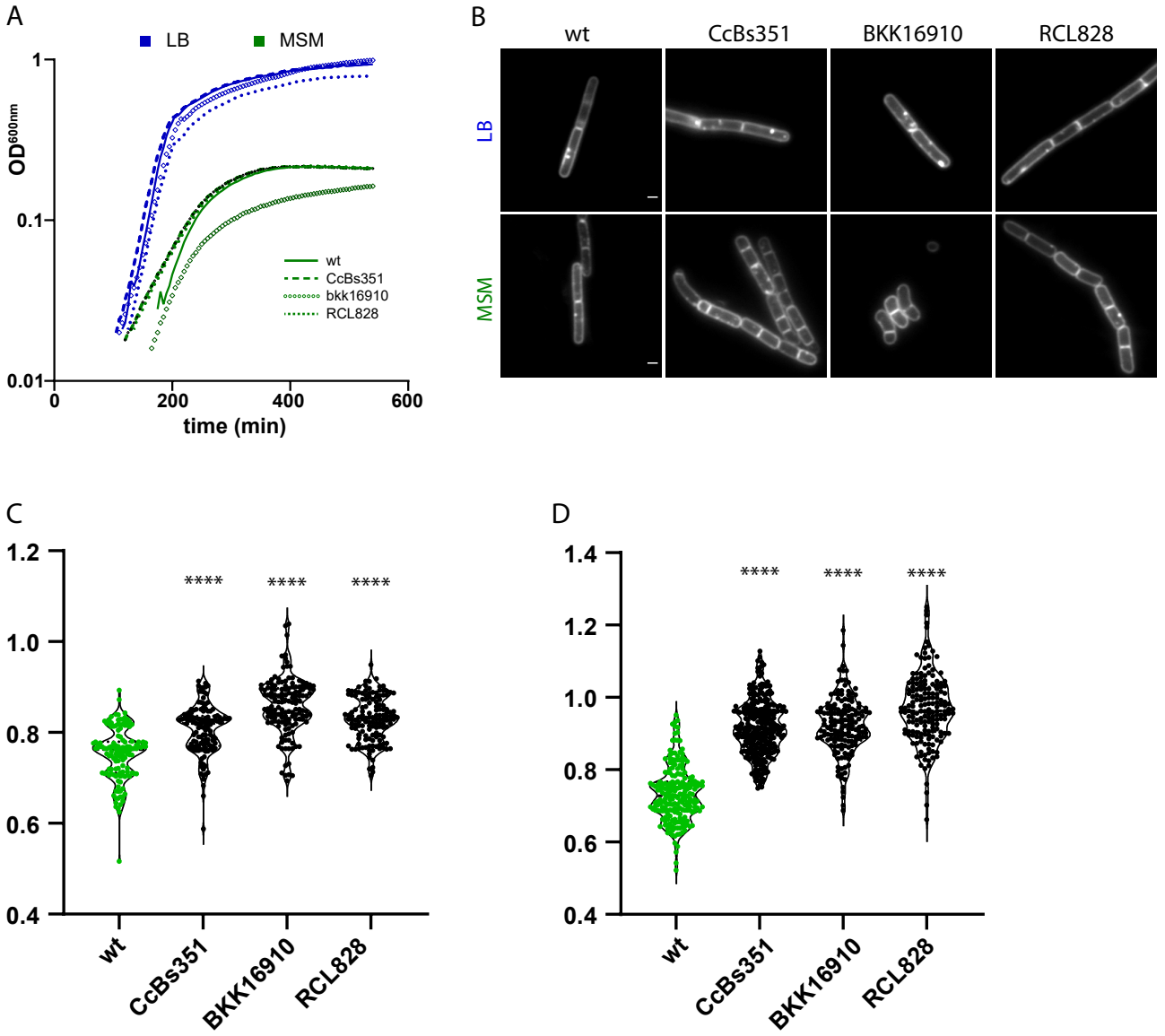


Fig. Sup. 7. Backcrossing the *rpe* deletion reveals a strong growth defect.
Chromosomal DNA of strain BKK15790, K-O for *rpe*, was transformed into wild type *B. subtilis* 168.
Transformants display a 'small-colony' phenotype indicative of a growth defect. Here are shown isolates colonies of typical transformant (RCL856), and its parental wild type (WT; 168) and *rpe* mutant from the BKK collection (BKK15790), streaked on LB plate and grown for 24h at 37°C.

Fig. 5.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RCL828
B
wt
CcBs351
BKK16910
RCL828
LB
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wt
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RCL828
D
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wt
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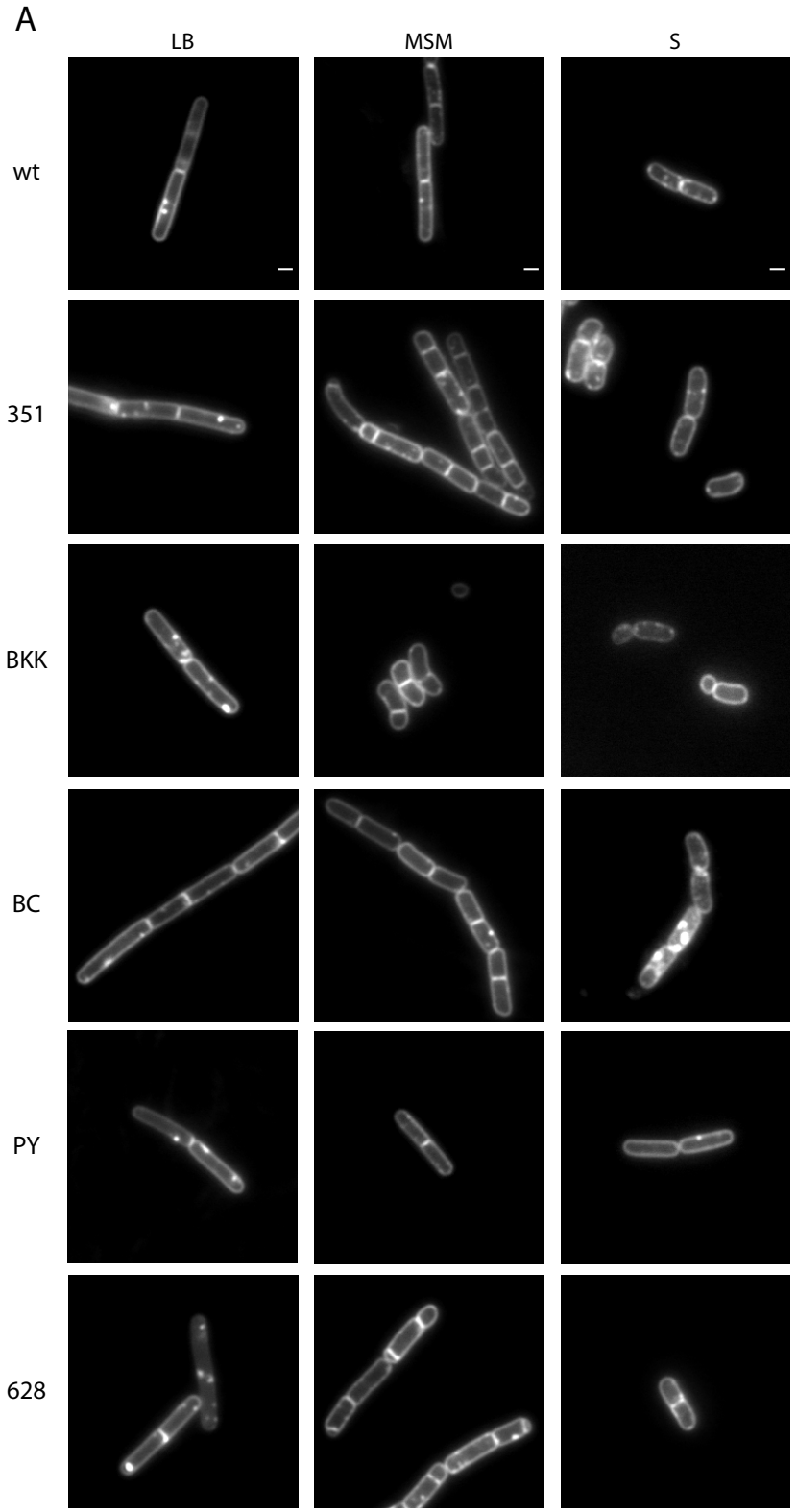
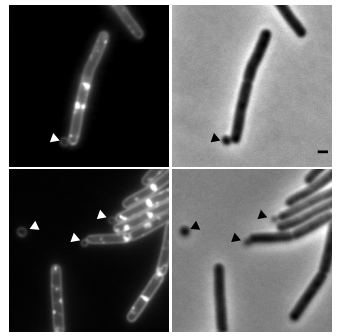
BKK16910
RCL828

Fig. Sup. 5.





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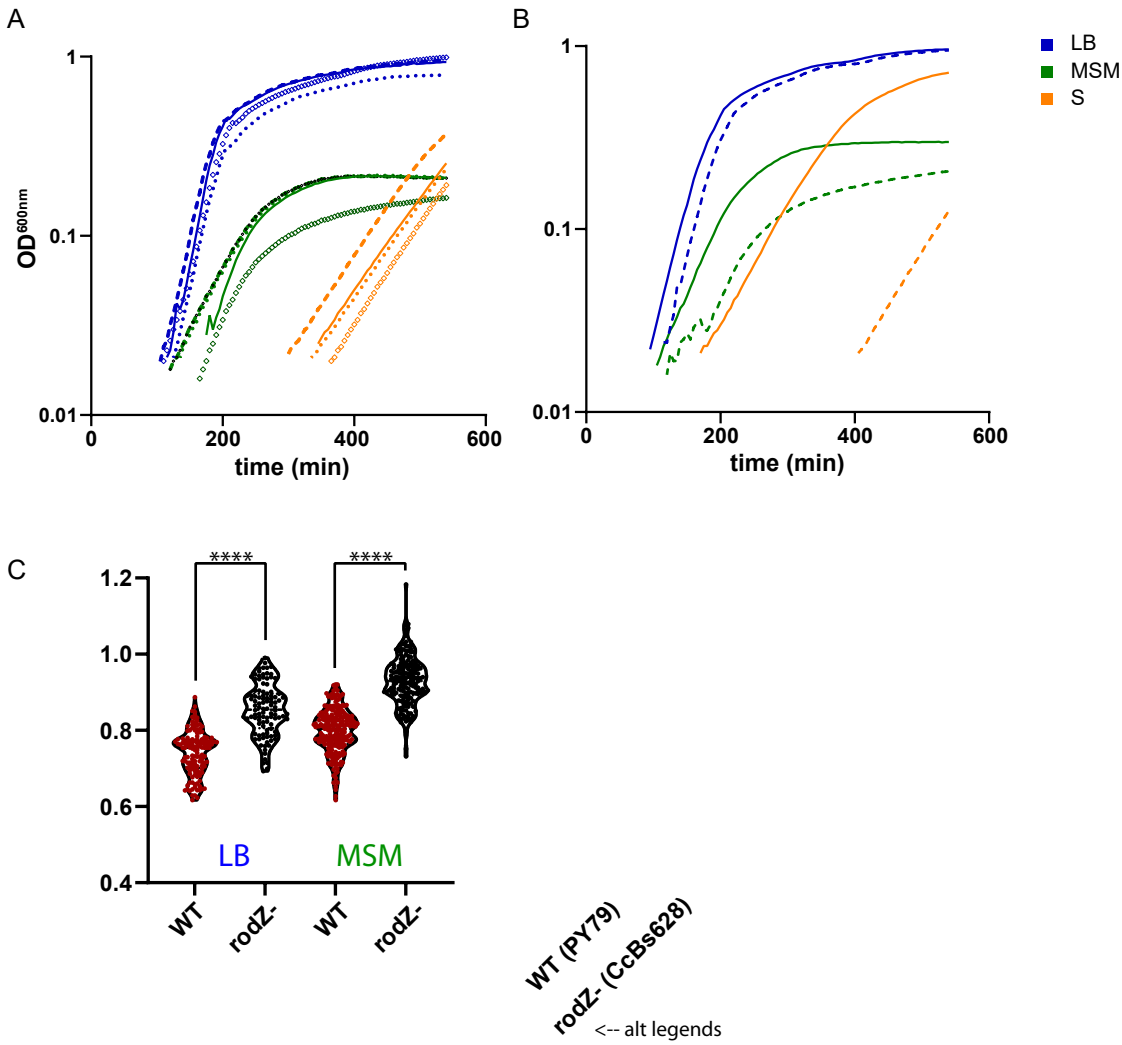
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MSM
WT
rodZ-
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rodZ-
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rodZ- (CcBs628)
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Fig. Sup. 4.

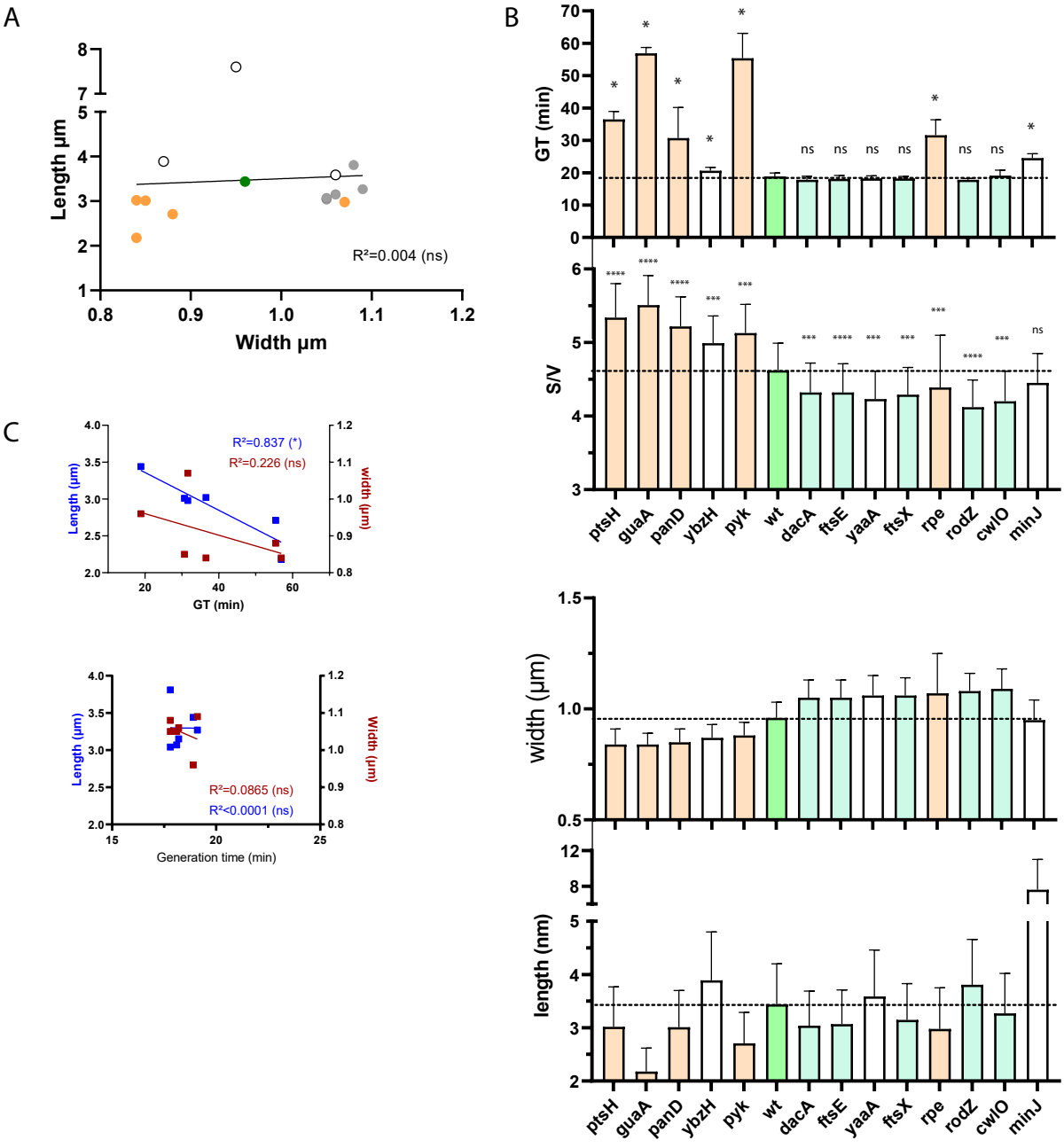
A
Length µm
Width µm
R²=0.004 (ns)
B
GT (min)
S/V
width (µm)
length (nm)
ptsH
guaA
panD
ybzH
pyk
wt
dacA
ftsE
yaaA
ftsX
rpe
rodZ
cwlO
minJ
C
Length (µm)
width (µm)
GT (min)
R²=0.837 (*)
R²=0.226 (ns)
Generation time (min)
R²=0.0865 (ns)
R²<0.0001 (ns)

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Table 1. Cellular parameters of the confirmed width-control defficient strains

Gene	Functional category[4]	δ length [1] (%)	*P*- value[2]	δ width [1] (%)	*P* -value[2]	δ GT [3] (min)	*P* -value[2]
minJ	cell division	**120.6**	****	-1.0	ns	5,6	*
ybzH	unknown (putative TR)	**12.9**	****	**-9.3**	****	1,7	*
rodZ	CW homeostasis	**10.7**	**	**12.5**	****	**-1,1**	ns
yaaA	translation	**4.4**	**	**9.7**	***	**-0,7**	ns
wt	-	0,0	-	0,0	-	0,0	
cwlO	CW homeostasis	**-5.2**	ns	**13.1**	***	0,3	*
ftsX	CW homeostasis	**-8.6**	**	**10.0**	****	**-0,7**	ns
ftsE	CW homeostasis	**-10.9**	****	**9.4**	****	**-0,7**	ns
dacA	CW homeostasis	**-11.7**	****	**9.3**	****	**-1,1**	ns
ptsH	central C metabolism	**-12.2**	****	**-13.3**	****	17,6	*
panD	central C metabolism	**-12.5**	****	**-11.4**	****	11,9	*
rpe	central C metabolism	**-13.6**	***	**11.0**	****	12,8	*
pyk	central C metabolism	**-21.4**	****	**-8.3**	***	36,5	*
guaA	purine metabolism	**-36.7**	****	**-12.7**	****	38,1	*

Colors of numbers indicate positively (purple) or negatively (orange) affected value in width or length, or inreased or decreased generation time, compared to the wild type strain

1: difference (in %) relative to wild type, average of 3 independant pooled replicates

2 : statistical significance estimated by nested t-test (δlength, δwidth) or Mann-Whitney test (GT)

P- values are displayed as follow: **** = P<0.0001; *** = 0.0001<P<0.001; ** = 0.001<P<0.01; * = 0.01<P<0.05; ns = P>0.05.

3: difference of generation time (GT) relative to the wild type, averages of 4 independent experiments

4: according to Subtiwiki (Zhu, 2018)

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Sup. Table 1. Settings used for MicrobeJ pluggin

Particle selection parameters	
Area [µm²]:	3.7-20
Length [µm]:	0-max
Width [µm]:	0.5-2
- Range [µm]:	0-max
- Variation:	0-0.15
Circularity:	0.3-0.7
Curvature:	0-max
Sinuosity:	0-max
Angularity [rad]:	0-0.25
Solidity:	0.85-max
Intensity:	0-max
Segmentation method	
Dark, Otsu, median axis	
Treatment	
Thresholding:	Use ROI (enabled)
Resampling:	Resolution: 0.5, Method: Bilinear
Other:	Include Holes (enabled)
Pre-Processing (enabled):	Subtract Background, rolling=12
Threshold Calculator (enabled):	Binary, Dark, Otsu, offset: 0, area: 1000-max

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Sup. Table 2. Average width differences (%) across replicates[1]

	WT 1	WT 2	WT 3	WT 4	WT 5	WT 6
WT 1	-	+1.7 %	+0.8 %	+0.5 %	+0.2 %	+0.1 %
WT 2	-	-	-0.9 %	-1.2 %	-1.5 %	-1.6 %
WT 3	-	-	-	-0.3 %	-0.6 %	-0.7 %
WT 4	-	-	-	-	-0.4 %	-0.4 %
WT 5	-	-	-	-	-	-0.1 %
width (µm)	1.01	1.028	1.012	1.016	1.013	1.012
+/-	0.076	0.080	0.071	0.076	0.089	0.071

1: ordinary one-way ANOVA test between replicates conclude to no significant differences

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Sup. Table 3: Cell width of mutants of the BKK collection

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK34800	*cwlO*	23,357	1,418	0,136	301	1,149
BKK12760	*xkdW*	21,842	1,421	0,125	150	1,166
BKK35260	*ftsE*	19,51	1,383	0,153	109	1,158
BKK22849	*ypzH*	15,994	1,276	0,133	401	1,100
BKK00100	*dacA*	15,94	1,342	0,149	107	1,158
BKK35250	*ftsX*	15,586	1,329	0,183	286	1,149
BKK20680	*yoqC*	13,238	1,323	0,180	411	1,168
BKK16825	*ymfD*	12,668	1,309	0,172	82	1,162
BKK27320	*greA*	12,654	1,098	0,100	40	0,975
BKK35450	*comFC*	11,474	1,242	0,102	90	1,114
BKK16910	*rodZ*	11,399	1,294	0,108	287	1,162
BKK31070	*yuaC*	11,327	1,293	0,130	238	1,161
BKK12770	*xkdX*	10,489	1,289	0,121	135	1,166
BKK00030	*yaaA*	9,941	1,283	0,122	189	1,167
BKK17000	*kbl*	9,825	1,276	0,164	152	1,162
BKK35440	*yvyF*	9,578	1,221	0,111	161	1,114
BKK23990	*yqiW*	9,495	1,263	0,141	142	1,153
BKK35220	*minJ*	9,381	1,242	0,131	104	1,135
BKK13030	*ykhA*	9,169	1,273	0,183	109	1,166
BKK02750	*natA*	9,096	1,311	0,124	127	1,201
BKK19550	*yoaC*	9,083	1,232	0,110	425	1,129
BKK18230	*yngG*	8,914	1,276	0,084	255	1,172
BKK36280	*ywqA*	8,891	1,213	0,146	347	1,114
BKK15450	*lspA*	8,741	1,210	0,108	210	1,113
BKK28800	*araA*	8,593	1,209	0,100	31	1,113
BKK15730	*fmt*	8,544	1,058	0,086	72	0,975
BKK08690	*ygaD*	8,54	1,312	0,134	34	1,208
BKK05344	*ydzS*	8,47	1,266	0,099	161	1,167
BKK35520	*yvhJ*	8,434	1,246	0,130	196	1,149
BKK16660	*truB*	8,397	1,261	0,121	75	1,164
BKK34110	*rsbP*	8,384	1,230	0,109	124	1,135
BKK36130	*ywrA*	8,371	1,057	0,089	33	0,975
BKK19440	*norM*	8,352	1,224	0,130	613	1,129
BKK23520	*fur*	8,293	1,249	0,140	93	1,153
BKK36269	*ywzD*	8,241	1,252	0,112	101	1,157
BKK29280	*ytnM*	8,103	1,203	0,118	155	1,113
BKK12619	*ykzL*	7,983	1,282	0,140	81	1,187
BKK14750	*ylaE*	7,862	1,272	0,183	72	1,179
BKK09840	*hemZ*	7,816	1,269	0,127	140	1,177
BKK27290	*yrzA*	7,775	1,268	0,128	45	1,177
BKK34760	*yvcK*	7,743	1,223	0,105	271	1,135
BKK12850	*ykaA*	7,694	1,252	0,130	271	1,163
BKK19370	*odhA*	7,657	1,216	0,124	315	1,129
BKK31580	*maeN*	7,642	1,236	0,099	103	1,148
BKK13280	*ykoJ*	7,628	1,255	0,166	168	1,166
BKK31570	*yufQ*	7,616	1,315	0,129	119	1,222
BKK38229	*slrA*	7,495	1,203	0,112	144	1,119
BKK23250	*ribH*	7,444	1,275	0,102	339	1,187
BKK18320	*ppsC*	7,406	1,258	0,113	91	1,172
BKK04410	*ydbB*	7,404	1,251	0,109	372	1,165
BKK01950	*skfE*	7,358	1,222	0,097	31	1,138
BKK00330	*yabA*	7,321	1,265	0,127	430	1,179
BKK18150	*xynC*	7,264	1,257	0,112	231	1,172
BKK18130	*eglS*	7,223	1,256	0,116	231	1,172
BKK33710	*opuBC*	7,139	1,232	0,108	486	1,149
BKK39020	*yxjA*	7,131	1,293	0,161	103	1,206
BKK14570	*ykyA*	7,126	1,263	0,180	32	1,179
BKK29730	*ytxD*	7,116	1,192	0,093	30	1,113
BKK30050	*ytgP*	7,092	1,309	0,213	112	1,222
BKK22770	*mtrB*	7,077	1,235	0,143	232	1,153
BKK24930	*yqzD*	7,065	1,246	0,104	415	1,164
BKK01700	*murQ*	7,045	1,218	0,146	34	1,138
BKK12672	*xkzB*	7,034	1,273	0,176	40	1,189
BKK26720	*azlB*	6,983	1,259	0,109	392	1,177
BKK22620	*hisC*	6,963	1,177	0,121	304	1,100
BKK05330	*aseR*	6,954	1,248	0,068	122	1,167
BKK19510	*yojB*	6,876	1,242	0,141	243	1,162
BKK03040	*amyE*	6,864	1,208	0,137	60	1,130
BKK03651	*bsdD*	6,852	1,245	0,102	150	1,165
BKK34130	*ganA*	6,791	1,212	0,115	30	1,135
BKK02610	*ycbR*	6,782	1,207	0,128	56	1,130
BKK04770	*ydcH*	6,741	1,243	0,138	298	1,165
BKK22530	*ypjA*	6,735	1,216	0,103	76	1,139
BKK28450	*sdhC*	6,734	1,238	0,097	32	1,160
BKK31370	*yugJ*	6,723	1,225	0,095	618	1,148
BKK34560	*malL*	6,715	1,211	0,142	116	1,135
BKK39360	*hutU*	6,694	1,244	0,152	105	1,166
BKK04060	*ycsG*	6,653	1,242	0,082	146	1,165
BKK35150	*yvzB*	6,63	1,210	0,141	62	1,135

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK19390	*yojN*	6,61	1,204	0,116	324	1,129
BKK36380	*rapD*	6,61	1,188	0,116	769	1,114
BKK10100	*yhgC*	6,591	1,255	0,115	206	1,177
BKK37680	*ywfH*	6,58	1,192	0,099	116	1,119
BKK25250	*ccpN*	6,574	1,240	0,106	98	1,164
BKK19530	*yoaA*	6,542	1,203	0,155	502	1,129
BKK36390	*fihP*	6,537	1,187	0,123	160	1,114
BKK36860	*atpE*	6,487	1,222	0,128	253	1,147
BKK25840	*phrE*	6,454	1,038	0,095	43	0,975
BKK23160	*rluB*	6,451	1,264	0,105	212	1,187
BKK13840	*stoA*	6,443	1,242	0,123	39	1,166
BKK31150	*uppP*	6,429	1,236	0,110	286	1,161
BKK11590	*yjbL*	6,402	1,265	0,169	516	1,189
BKK26590	*blt*	6,37	1,300	0,088	72	1,222
BKK14090	*ykuI*	6,306	1,240	0,133	387	1,166
BKK29400	*ytlI*	6,306	1,235	0,108	257	1,161
BKK10210	*yhfF*	6,304	1,251	0,109	116	1,177
BKK05450	*ydfK*	6,302	1,241	0,116	146	1,167
BKK21750	*scuA*	6,3	1,226	0,142	215	1,153
BKK15570	*cysH*	6,219	1,219	0,099	35	1,148
BKK15270	*sbp*	6,206	1,252	0,143	140	1,179
BKK32080	*yuiB*	6,197	1,219	0,079	152	1,148
BKK00610	*yabQ*	6,179	1,244	0,108	94	1,172
BKK13140	*ohrA*	6,162	1,234	0,146	212	1,163
BKK37350	*sboA*	6,153	1,188	0,110	116	1,119
BKK40290	*yycN*	6,108	1,221	0,122	299	1,151
BKK24220	*spo0A*	6,107	1,257	0,101	161	1,184
BKK15590	*sat*	6,105	1,239	0,130	241	1,168
BKK09490	*yhdJ*	6,083	1,249	0,121	86	1,177
BKK23030	*ypbB*	6,074	1,221	0,124	294	1,151
BKK09620	*yhdW*	6,056	1,248	0,117	148	1,177
BKK22990	*ypbF*	6,034	1,167	0,099	570	1,100
BKK05650	*ydgH*	6,024	1,238	0,126	149	1,167
BKK18400	*yoeD*	6,008	1,242	0,087	327	1,172
BKK18250	*yngI*	5,923	1,241	0,117	178	1,172
BKK38480	*ywaC*	5,912	1,185	0,127	30	1,119
BKK05390	*ydfF*	5,893	1,236	0,090	391	1,167
BKK04460	*dctR*	5,887	1,233	0,128	392	1,165
BKK24720	*comGB*	5,883	1,232	0,124	251	1,164
BKK23280	*ribD*	5,871	1,257	0,113	218	1,187
BKK15780	*cpgA*	5,86	1,032	0,156	41	0,975
BKK32100	*yumB*	5,847	1,215	0,095	63	1,148
BKK17890	*tkt*	5,816	1,229	0,120	550	1,162
BKK34730	*yvcN*	5,799	1,201	0,124	592	1,135
BKK25700	*yqeF*	5,798	1,220	0,125	367	1,153
BKK40980	*yyaB*	5,775	1,253	0,116	97	1,184
BKK22660	*trpC*	5,766	1,217	0,127	348	1,151
BKK20650	*yoqF*	5,748	1,221	0,130	194	1,155
BKK03820	*yclP*	5,726	1,203	0,122	89	1,138
BKK15620	*sirB*	5,71	1,213	0,092	100	1,148
BKK06220	*ydjJ*	5,698	1,246	0,111	285	1,179
BKK23460	*spoIIAB*	5,696	1,275	0,161	93	1,206
BKK13810	*ykvS*	5,695	1,229	0,136	221	1,163
BKK23120	*resD*	5,674	1,163	0,099	350	1,100
BKK23510	*ripX*	5,671	1,254	0,095	148	1,187
BKK05490	*ydfO*	5,658	1,233	0,115	151	1,167
BKK29870	*ytzB*	5,644	1,030	0,079	100	0,975
BKK35820	*gerBC*	5,632	1,214	0,107	408	1,149
BKK31500	*yuxK*	5,625	1,212	0,147	56	1,148
BKK40810	*yyaM*	5,597	1,233	0,148	144	1,167
BKK00050	*yaaB*	5,574	1,245	0,126	178	1,179
BKK25650	*yqeI*	5,559	1,228	0,099	346	1,164
BKK08820	*katA*	5,529	1,242	0,124	162	1,177
BKK11300	*med*	5,512	1,249	0,132	67	1,183
BKK30740	*mntD*	5,498	1,214	0,123	218	1,151
BKK35670	*gtaB*	5,489	1,175	0,131	218	1,114
BKK26060	*yqbM*	5,483	1,241	0,104	292	1,177
BKK34910	*hisD*	5,475	1,197	0,092	377	1,135
BKK35570	*tuaE*	5,475	1,212	0,132	504	1,149
BKK37460	*rapF*	5,469	1,180	0,131	258	1,119
BKK10300	*aprE*	5,445	1,248	0,141	117	1,183
BKK03490	*srfAB*	5,444	1,028	0,085	80	0,975
BKK03290	*nasE*	5,431	1,191	0,145	37	1,130
BKK22700	*aroB*	5,422	1,249	0,114	132	1,184
BKK02670	*lmrB*	5,417	1,200	0,124	52	1,138
BKK21030	*yonP*	5,411	1,216	0,117	398	1,153
BKK27480	*yrrC*	5,403	1,222	0,105	146	1,160
BKK04130	*yczJ*	5,388	1,228	0,130	143	1,165
BKK22630	*trpA*	5,379	1,159	0,107	118	1,100

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK39260	*bglH*	5,364	1,227	0,120	79	1,165
BKK34870	*hisF*	5,362	1,196	0,100	246	1,135
BKK40579	*yyzL*	5,346	1,229	0,128	85	1,166
BKK29410	*ytkL*	5,34	1,223	0,128	410	1,161
BKK40260	*yycQ*	5,338	1,213	0,115	203	1,151
BKK09340	*yhdA*	5,327	1,240	0,101	102	1,177
BKK33630	*secG*	5,322	1,211	0,090	354	1,149
BKK04070	*ycsI*	5,301	1,227	0,100	92	1,165
BKK02960	*yceJ*	5,29	1,265	0,148	47	1,201
BKK11580	*yjbK*	5,282	1,252	0,132	921	1,189
BKK10950	*yitD*	5,271	1,246	0,123	70	1,183
BKK09990	*scoC*	5,267	1,239	0,105	67	1,177
BKK19540	*yodB*	5,241	1,188	0,117	565	1,129
BKK04450	*dctS*	5,231	1,264	0,094	65	1,201
BKK25380	*yqfA*	5,211	1,224	0,105	148	1,164
BKK32820	*fadE*	5,205	1,227	0,114	96	1,166
BKK14810	*ylaK*	5,201	1,240	0,071	86	1,179
BKK12671	*xkdN*	5,181	1,251	0,174	77	1,189
BKK33130	*liaI*	5,172	1,193	0,118	62	1,134
BKK03410	*bglC*	5,146	1,188	0,133	38	1,130
BKK37110	*ywjH*	5,144	1,176	0,141	115	1,119
BKK19669	*yoyF*	5,14	1,187	0,133	315	1,129
BKK02880	*yceB*	5,132	1,188	0,130	67	1,130
BKK04930	*yddD*	5,113	1,217	0,092	96	1,158
BKK27490	*yrrB*	5,109	1,219	0,110	148	1,160
BKK39810	*csbC*	5,096	1,208	0,114	422	1,149
BKK01830	*ndhF*	5,086	1,219	0,107	274	1,160
BKK05720	*ydhE*	5,085	1,227	0,081	366	1,167
BKK14510	*ktrC*	5,078	1,239	0,097	359	1,179
BKK19520	*yojA*	5,07	1,187	0,116	686	1,129
BKK00170	*yaaI*	5,06	1,218	0,124	606	1,160
BKK18160	*xynD*	5,052	1,231	0,115	249	1,172
BKK05350	*ydfB*	5,036	1,226	0,075	179	1,167
BKK16990	*tdh*	5,036	1,222	0,105	110	1,164
BKK38440	*ywaF*	5,015	1,175	0,125	32	1,119
BKK29890	*ytnP*	5,002	1,169	0,121	39	1,113
BKK11630	*prpE*	4,999	1,248	0,140	803	1,189
BKK23402	*spoVAEB*	4,99	1,267	0,187	36	1,206
BKK14500	*ykqA*	4,976	1,238	0,116	301	1,179
BKK16860	*ymfH*	4,967	1,221	0,127	82	1,164
BKK22740	*hepT*	4,961	1,155	0,101	110	1,100
BKK37170	*acdA*	4,938	1,224	0,116	89	1,166
BKK01800	*alkA*	4,929	1,217	0,104	324	1,160
BKK09370	*lytF*	4,921	1,268	0,136	47	1,208
BKK17440	*ynbB*	4,909	1,221	0,114	160	1,164
BKK06630	*yerH*	4,908	1,260	0,073	89	1,201
BKK05130	*ydeB*	4,893	1,224	0,112	366	1,167
BKK28320	*ysnD*	4,891	1,216	0,103	447	1,160
BKK30170	*ytcP*	4,889	1,282	0,140	33	1,222
BKK26700	*azlD*	4,888	1,282	0,078	201	1,222
BKK34880	*hisA*	4,887	1,191	0,086	270	1,135
BKK24450	*efp*	4,884	1,245	0,108	402	1,187
BKK29510	*ytfJ*	4,882	1,167	0,110	102	1,113
BKK31740	*yuxH*	4,882	1,204	0,092	121	1,148
BKK35020	*nagBA*	4,879	1,190	0,123	126	1,135
BKK35679	*yvzH*	4,867	1,205	0,122	239	1,149
BKK11700	*thiF*	4,86	1,247	0,143	929	1,189
BKK11990	*yjdB*	4,847	1,247	0,180	70	1,189
BKK28750	*araN*	4,846	1,281	0,078	69	1,222
BKK03810	*yclO*	4,844	1,260	0,073	113	1,201
BKK22040	*ypbQ*	4,843	1,154	0,147	35	1,100
BKK21040	*yonO*	4,833	1,209	0,108	308	1,153
BKK18430	*yogA*	4,827	1,228	0,086	84	1,172
BKK09900	*natB*	4,82	1,234	0,091	98	1,177
BKK08920	*yhbB*	4,802	1,218	0,120	207	1,163
BKK09965	*yhaJ*	4,797	1,233	0,131	93	1,177
BKK35390	*yviE*	4,79	1,189	0,123	430	1,135
BKK24510	*yghO*	4,783	1,206	0,112	311	1,151
BKK40000	*yxnA*	4,779	1,202	0,121	256	1,147
BKK00320	*yaaT*	4,777	1,235	0,114	214	1,179
BKK29500	*ytfJ*	4,769	1,166	0,100	181	1,113
BKK16120	*topA*	4,768	1,241	0,126	110	1,184
BKK34400	*padC*	4,765	1,189	0,096	68	1,135
BKK24680	*comGF*	4,754	1,208	0,140	178	1,153
BKK12090	*cotT*	4,749	1,245	0,203	112	1,189
BKK24500	*yqhP*	4,746	1,206	0,106	404	1,151
BKK33670	*rghRB*	4,743	1,188	0,139	33	1,134
BKK03050	*ldh*	4,742	1,184	0,127	46	1,130
BKK21720	*ypmT*	4,739	1,206	0,132	237	1,151

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK10690	*gerPD*	4,734	1,239	0,107	93	1,183
BKK27580	*yrxJ*	4,725	1,280	0,064	102	1,222
BKK27710	*tgt*	4,718	1,214	0,101	352	1,160
BKK29920	*ytmP*	4,71	1,166	0,128	41	1,113
BKK20690	*yoqB*	4,7	1,209	0,112	317	1,155
BKK26580	*bltR*	4,698	1,279	0,110	56	1,222
BKK06076	*ydzW*	4,693	1,222	0,146	449	1,167
BKK05408	*ydzP*	4,67	1,193	0,138	32	1,139
BKK12380	*uxaB*	4,666	1,244	0,170	666	1,189
BKK06200	*ydjH*	4,662	1,234	0,129	191	1,179
BKK05640	*ydgG*	4,653	1,222	0,092	289	1,167
BKK27930	*spo0B*	4,648	1,207	0,145	126	1,153
BKK12600	*xkdF*	4,635	1,244	0,125	181	1,189
BKK27400	*yrzL*	4,631	1,213	0,118	464	1,160
BKK14830	*glsB*	4,626	1,234	0,082	201	1,179
BKK34180	*yvfI*	4,619	1,188	0,101	230	1,135
BKK09020	*yhcB*	4,618	1,231	0,109	97	1,177
BKK33180	*yvrC*	4,613	1,278	0,109	77	1,222
BKK27600	*relA*	4,606	1,213	0,098	421	1,160
BKK38530	*dltD*	4,605	1,202	0,166	142	1,149
BKK01845	*ybcC*	4,599	1,213	0,104	268	1,160
BKK37320	*narK*	4,597	1,200	0,108	349	1,147
BKK28650	*ysgA*	4,59	1,164	0,117	121	1,113
BKK18019	*ynzL*	4,588	1,217	0,119	105	1,164
BKK07480	*yfmG*	4,582	1,212	0,114	333	1,159
BKK24950	*pstBB*	4,578	1,262	0,148	150	1,206
BKK34380	*slrR*	4,578	1,187	0,087	234	1,135
BKK04480	*ydbI*	4,563	1,256	0,091	43	1,201
BKK28620	*rnhC*	4,561	1,164	0,099	170	1,113
BKK30390	*bceS*	4,561	1,278	0,090	74	1,222
BKK13450	*sigI*	4,549	1,219	0,136	43	1,166
BKK02760	*natB*	4,547	1,256	0,177	90	1,201
BKK37960	*ywdH*	4,547	1,200	0,114	436	1,147
BKK20310	*yorO*	4,516	1,214	0,109	191	1,162
BKK23260	*ribAB*	4,514	1,241	0,121	254	1,187
BKK17430	*ynbA*	4,513	1,216	0,109	71	1,164
BKK35410	*flgK*	4,507	1,165	0,107	1066	1,114
BKK02980	*opuAA*	4,495	1,255	0,132	69	1,201
BKK06180	*pspA*	4,493	1,232	0,117	192	1,179
BKK40560	*yybP*	4,489	1,219	0,123	132	1,166
BKK03840	*ycnB*	4,477	1,217	0,105	221	1,165
BKK33660	*rghRA*	4,473	1,019	0,076	55	0,975
BKK09230	*yhcV*	4,472	1,230	0,096	153	1,177
BKK16000	*ylqC*	4,461	1,169	0,120	241	1,119
BKK22380	*ypmB*	4,45	1,149	0,105	218	1,100
BKK14270	*moeB*	4,448	1,232	0,109	344	1,179
BKK31900	*yukD*	4,448	1,199	0,111	148	1,148
BKK23680	*yqjZ*	4,446	1,202	0,112	340	1,151
BKK20700	*yoqA*	4,444	1,206	0,116	398	1,155
BKK31700	*comX*	4,443	1,218	0,102	223	1,166
BKK04830	*sacV*	4,439	1,217	0,091	355	1,165
BKK02230	*purT*	4,437	1,180	0,123	85	1,130
BKK11670	*thiO*	4,437	1,242	0,153	883	1,189
BKK04810	*immA*	4,435	1,217	0,123	156	1,165
BKK40210	*yydC*	4,434	1,218	0,193	47	1,166
BKK12080	*ctaO*	4,427	1,242	0,183	156	1,189
BKK17010	*ymcB*	4,416	1,215	0,120	146	1,164
BKK06340	*yeaD*	4,414	1,198	0,134	301	1,147
BKK23270	*ribE*	4,409	1,239	0,103	363	1,187
BKK27370	*yrrL*	4,406	1,211	0,105	221	1,160
BKK05290	*ydeP*	4,398	1,219	0,084	214	1,167
BKK03380	*yckB*	4,396	1,254	0,130	282	1,201
BKK25460	*dnaJ*	4,382	1,215	0,126	211	1,164
BKK01900	*ybcM*	4,373	1,162	0,112	35	1,113
BKK06380	*yebC*	4,371	1,230	0,144	366	1,179
BKK26259	*yqzO*	4,358	1,228	0,100	128	1,177
BKK35210	*yvkA*	4,356	1,200	0,117	376	1,149
BKK37000	*prmC*	4,352	1,163	0,130	78	1,114
BKK38018	*ywzG*	4,346	1,217	0,127	71	1,166
BKK28700	*ysfE*	4,331	1,161	0,078	32	1,113
BKK38850	*yxkC*	4,329	1,215	0,125	58	1,165
BKK10390	*yhfW*	4,319	1,234	0,091	176	1,183
BKK03788	*yczM*	4,309	1,207	0,138	43	1,158
BKK14590	*pdhB*	4,304	1,230	0,148	301	1,179
BKK02780	*ycdA*	4,3	1,253	0,212	33	1,201
BKK08860	*ssuD*	4,292	1,227	0,109	234	1,177
BKK16740	*spoVFB*	4,285	1,213	0,122	89	1,164
BKK20670	*yoqD*	4,284	1,204	0,124	286	1,155
BKK34150	*ganP*	4,283	1,184	0,115	62	1,135

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK00340	*yabB*	4,272	1,230	0,152	79	1,179
BKK26150	*yqbD*	4,272	1,017	0,091	96	0,975
BKK29040	*ytbD*	4,268	1,274	0,076	114	1,222
BKK39070	*bglS*	4,253	1,214	0,137	96	1,165
BKK01990	*ybdG*	4,252	1,178	0,132	69	1,130
BKK35940	*rbsA*	4,231	1,198	0,130	336	1,149
BKK29050	*ytbE*	4,217	1,160	0,111	70	1,113
BKK14370	*yknZ*	4,216	1,229	0,120	77	1,179
BKK27785	*yrzF*	4,209	1,208	0,099	405	1,160
BKK25900	*cwlA*	4,196	1,273	0,073	192	1,222
BKK20250	*mtbP*	4,195	1,211	0,127	199	1,162
BKK13680	*motB*	4,193	1,217	0,122	296	1,168
BKK31230	*tlpB*	4,193	1,204	0,131	144	1,156
BKK17330	*miaA*	4,187	1,212	0,128	109	1,164
BKK34729	*yxzJ*	4,186	1,198	0,122	289	1,149
BKK22000	*sspL*	4,185	1,203	0,115	238	1,155
BKK09130	*tcyP*	4,177	1,226	0,117	77	1,177
BKK10060	*ecsC*	4,17	1,217	0,120	300	1,168
BKK38400	*epr*	4,17	1,195	0,112	399	1,147
BKK15370	*ylmD*	4,169	1,187	0,122	53	1,139
BKK25760	*spoIVCB*	4,165	1,273	0,102	232	1,222
BKK00810	*dusB*	4,162	1,208	0,126	361	1,160
BKK31350	*pgi*	4,162	1,196	0,120	103	1,148
BKK12000	*manR*	4,158	1,238	0,171	444	1,189
BKK11180	*yitZ*	4,147	1,232	0,136	118	1,183
BKK24620	*tasA*	4,144	1,015	0,117	64	0,975
BKK05340	*ydfA*	4,14	1,015	0,085	47	0,975
BKK19400	*sodC*	4,136	1,176	0,131	489	1,129
BKK05140	*ydzE*	4,135	1,208	0,127	633	1,160
BKK20210	*yorY*	4,135	1,176	0,134	88	1,129
BKK36010	*alsS*	4,13	1,160	0,114	47	1,114
BKK37430	*albG*	4,125	1,197	0,114	403	1,149
BKK12400	*yjnA*	4,11	1,238	0,150	551	1,189
BKK19570	*yodE*	4,104	1,176	0,098	440	1,129
BKK39600	*yxeC*	4,103	1,195	0,107	270	1,147
BKK40529	*yyzH*	4,103	1,214	0,118	105	1,166
BKK30000	*ythQ*	4,095	1,272	0,174	141	1,222
BKK25110	*yqfU*	4,094	1,211	0,103	647	1,164
BKK07770	*yfkS*	4,086	1,216	0,129	357	1,168
BKK12190	*yjhB*	4,08	1,238	0,095	267	1,189
BKK07860	*yfkL*	4,073	1,258	0,161	100	1,208
BKK31100	*ktrB*	4,058	1,208	0,137	223	1,161
BKK02350	*nagP*	4,056	1,176	0,128	139	1,130
BKK08880	*rpsNB*	4,054	1,225	0,099	151	1,177
BKK33210	*yvrG*	4,052	1,214	0,105	121	1,166
BKK29070	*ytaF*	4,045	1,203	0,099	79	1,156
BKK13819	*ykzS*	4,043	1,214	0,108	259	1,166
BKK24970	*pstA*	4,033	1,255	0,156	51	1,206
BKK23210	*scpB*	4,03	1,232	0,111	79	1,184
BKK02010	*ybdK*	4,027	1,184	0,128	137	1,138
BKK28310	*ilvB*	4,024	1,206	0,119	295	1,160
BKK34210	*yvfG*	4,022	1,181	0,108	85	1,135
BKK27910	*yszB*	4,011	1,206	0,121	200	1,160
BKK12980	*ykfB*	4,008	1,257	0,101	35	1,208
BKK23320	*ypzC*	4,001	1,235	0,111	107	1,187
BKK26890	*csn*	3,998	1,224	0,108	318	1,177
BKK24890	*yqgN*	3,985	1,210	0,099	280	1,164
BKK40970	*parA*	3,973	1,232	0,104	130	1,184
BKK32120	*yuzG*	3,965	1,193	0,110	30	1,148
BKK10009	*yhzF*	3,952	1,223	0,105	148	1,177
BKK07680	*yfiH*	3,95	1,205	0,119	206	1,159
BKK33830	*opuCA*	3,95	1,195	0,110	332	1,149
BKK24560	*gcvPA*	3,945	1,234	0,099	271	1,187
BKK30430	*ytrD*	3,931	1,207	0,113	280	1,161
BKK30340	*ytvA*	3,929	1,207	0,113	277	1,161
BKK07750	*yflA*	3,917	1,214	0,129	253	1,168
BKK09889	*yhzD*	3,905	1,223	0,126	134	1,177
BKK37560	*thrZ*	3,9	1,162	0,101	154	1,119
BKK08800	*ygaK*	3,887	1,204	0,127	394	1,159
BKK14260	*mobA*	3,883	1,225	0,121	282	1,179
BKK11540	*pepF*	3,879	1,229	0,113	89	1,183
BKK25289	*yqzL*	3,878	1,209	0,094	332	1,164
BKK07280	*yfnG*	3,874	1,225	0,149	108	1,179
BKK10620	*addB*	3,874	1,229	0,102	114	1,183
BKK30490	*ytqB*	3,873	1,201	0,104	140	1,156
BKK08210	*malQ*	3,87	1,255	0,111	31	1,208
BKK20460	*yoqZ*	3,87	1,173	0,157	67	1,129
BKK18610	*yoaH*	3,867	1,217	0,113	138	1,172
BKK33430	*cysI*	3,864	1,013	0,078	41	0,975

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK06160	*gutP*	3,856	1,224	0,143	116	1,179
BKK03220	*ycgO*	3,843	1,173	0,104	114	1,130
BKK35460	*comFB*	3,826	1,157	0,090	103	1,114
BKK18239	*yngHB*	3,824	1,216	0,086	342	1,172
BKK15390	*sepF*	3,82	1,213	0,119	153	1,168
BKK08050	*yfjL*	3,818	1,254	0,139	74	1,208
BKK26260	*ygaM*	3,811	1,222	0,111	255	1,177
BKK07250	*yetO*	3,808	1,202	0,092	78	1,158
BKK08740	*ygzB*	3,808	1,203	0,110	507	1,159
BKK19670	*yodN*	3,804	1,172	0,145	185	1,129
BKK04359	*ydzK*	3,799	1,209	0,091	552	1,165
BKK05630	*dinB*	3,797	1,212	0,075	188	1,167
BKK04720	*rsbW*	3,788	1,209	0,106	403	1,165
BKK10310	*yhfO*	3,786	1,228	0,112	141	1,183
BKK18220	*yngF*	3,784	1,216	0,099	132	1,172
BKK34840	*yvcB*	3,784	1,178	0,113	132	1,135
BKK37180	*fadF*	3,778	1,161	0,130	401	1,119
BKK14550	*ykrA*	3,775	1,224	0,154	69	1,179
BKK38310	*ywbI*	3,775	1,161	0,102	43	1,119
BKK06130	*ydjC*	3,769	1,223	0,141	198	1,179
BKK12230	*yjjA*	3,761	1,234	0,090	127	1,189
BKK29590	*iscS*	3,761	1,155	0,127	70	1,113
BKK02990	*opuAB*	3,756	1,247	0,101	134	1,201
BKK06370	*pbuG*	3,753	1,223	0,136	384	1,179
BKK28950	*thrS*	3,749	1,155	0,097	32	1,113
BKK03640	*ubiD*	3,748	1,209	0,112	170	1,165
BKK13610	*mtnB*	3,744	1,210	0,145	74	1,166
BKK32660	*yurT*	3,744	1,177	0,088	90	1,134
BKK24150	*mmgC*	3,741	1,231	0,103	395	1,187
BKK09760	*yheE*	3,733	1,221	0,118	133	1,177
BKK12260	*yjlA*	3,732	1,233	0,065	115	1,189
BKK15970	*ylxM*	3,729	1,160	0,132	73	1,119
BKK11560	*yjbI*	3,718	1,211	0,114	200	1,168
BKK13750	*queF*	3,704	1,210	0,133	258	1,166
BKK07760	*yfkT*	3,698	1,202	0,123	371	1,159
BKK18620	*yoaI*	3,698	1,215	0,081	250	1,172
BKK26920	*yraJ*	3,693	1,220	0,110	292	1,177
BKK15260	*ylxX*	3,681	1,223	0,110	622	1,179
BKK29650	*ytrP*	3,678	1,154	0,082	59	1,113
BKK40350	*rocR*	3,667	1,193	0,121	257	1,151
BKK38090	*vpr*	3,665	1,160	0,125	302	1,119
BKK23010	*ypbD*	3,663	1,141	0,114	591	1,100
BKK23560	*mleN*	3,653	1,230	0,104	191	1,187
BKK29820	*ytpR*	3,65	1,154	0,108	88	1,113
BKK11650	*tenA*	3,647	1,211	0,129	253	1,168
BKK09720	*yheH*	3,638	1,252	0,163	44	1,208
BKK33000	*htrB*	3,629	1,203	0,107	475	1,161
BKK06410	*yebG*	3,618	1,189	0,111	296	1,147
BKK13509	*ykzP*	3,604	1,208	0,138	159	1,166
BKK21520	*yolC*	3,601	1,196	0,115	408	1,155
BKK40790	*yyaO*	3,598	1,189	0,121	369	1,147
BKK09480	*yhdI*	3,596	1,219	0,123	129	1,177
BKK09010	*yhcA*	3,591	1,204	0,112	245	1,163
BKK16210	*fliF*	3,591	1,204	0,111	224	1,163
BKK05160	*ydeD*	3,58	1,209	0,116	65	1,167
BKK39520	*yxeK*	3,577	1,206	0,115	67	1,165
BKK07900	*yfkH*	3,576	1,200	0,124	95	1,159
BKK18270	*ynzE*	3,559	1,213	0,099	191	1,172
BKK26980	*yraE*	3,559	1,219	0,106	284	1,177
BKK12060	*yjdI*	3,557	1,231	0,133	340	1,189
BKK10640	*sbcD*	3,556	1,225	0,100	164	1,183
BKK20910	*yopF*	3,553	1,196	0,106	336	1,155
BKK11640	*yjbQ*	3,547	1,231	0,137	824	1,189
BKK07720	*yflD*	3,544	1,200	0,116	327	1,159
BKK36270	*ywqB*	3,538	1,208	0,103	95	1,166
BKK38770	*cimH*	3,533	1,178	0,118	53	1,138
BKK09520	*sigM*	3,531	1,219	0,150	65	1,177
BKK27390	*yrrK*	3,521	1,200	0,099	448	1,160
BKK40650	*ypbG*	3,521	1,226	0,116	154	1,184
BKK40990	*noc*	3,518	1,226	0,100	70	1,184
BKK07630	*nosA*	3,514	1,200	0,111	433	1,159
BKK06320	*yeaB*	3,513	1,200	0,114	382	1,160
BKK29780	*ytxG*	3,513	1,179	0,086	114	1,139
BKK15380	*ylmE*	3,511	1,221	0,117	47	1,179
BKK31321	*mstX*	3,508	1,197	0,108	92	1,156
BKK01740	*rsiW*	3,506	1,244	0,073	33	1,201
BKK08660	*sspE*	3,503	1,199	0,113	358	1,159
BKK38410	*sacX*	3,502	1,197	0,106	134	1,157
BKK34420	*yveF*	3,499	1,175	0,106	150	1,135

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK09740	*yheF*	3,49	1,218	0,113	105	1,177
BKK16640	*ylxP*	3,487	1,204	0,112	110	1,164
BKK37990	*ywdE*	3,475	1,187	0,110	391	1,147
BKK39480	*yxeO*	3,474	1,264	0,091	72	1,222
BKK01650	*ybbC*	3,467	1,243	0,105	34	1,201
BKK12450	*yjpA*	3,466	1,179	0,128	64	1,139
BKK39320	*yxiB*	3,458	1,205	0,113	144	1,165
BKK21530	*yolB*	3,455	1,195	0,128	462	1,155
BKK03280	*nasF*	3,452	1,169	0,134	64	1,130
BKK08425	*mprF*	3,446	1,208	0,116	230	1,168
BKK21598	*yoyK*	3,446	1,191	0,117	243	1,151
BKK23190	*dacB*	3,446	1,248	0,168	48	1,206
BKK38600	*licR*	3,442	1,205	0,112	189	1,165
BKK18340	*ppsA*	3,441	1,212	0,085	43	1,172
BKK24830	*yqgT*	3,441	1,248	0,165	154	1,206
BKK21160	*yonA*	3,435	1,195	0,114	404	1,155
BKK07350	*yfmT*	3,429	1,208	0,124	257	1,168
BKK38380	*ywbB*	3,425	1,196	0,120	64	1,157
BKK15410	*ylmH*	3,412	1,219	0,153	72	1,179
BKK00490	*spoVG*	3,402	1,177	0,124	51	1,138
BKK15820	*rpmB*	3,397	1,174	0,102	30	1,135
BKK04990	*ydzI*	3,396	1,199	0,104	98	1,160
BKK06269	*ydzJ*	3,393	1,219	0,125	242	1,179
BKK31180	*yulE*	3,387	1,195	0,129	89	1,156
BKK04220	*ydaG*	3,382	1,204	0,115	274	1,165
BKK06270	*ydjO*	3,377	1,219	0,115	143	1,179
BKK06730	*yefA*	3,372	1,219	0,132	263	1,179
BKK22760	*hepS*	3,371	1,192	0,109	161	1,153
BKK25300	*cdd*	3,365	1,203	0,102	299	1,164
BKK25470	*dnaK*	3,365	1,203	0,103	324	1,164
BKK14009	*ykzT*	3,364	1,229	0,158	168	1,189
BKK20800	*yopQ*	3,364	1,201	0,110	349	1,162
BKK40140	*yyzJ*	3,363	1,206	0,140	78	1,166
BKK26040	*yqbN*	3,362	1,216	0,094	148	1,177
BKK00700	*coaX*	3,358	1,178	0,097	106	1,139
BKK01620	*feuB*	3,358	1,216	0,107	517	1,177
BKK22830	*gpsA*	3,352	1,137	0,115	44	1,100
BKK20440	*yorB*	3,336	1,167	0,145	88	1,129
BKK24330	*yqhY*	3,333	1,189	0,123	307	1,151
BKK30750	*mntC*	3,328	1,263	0,088	47	1,222
BKK13060	*ykjA*	3,323	1,205	0,098	44	1,166
BKK09730	*yheG*	3,32	1,216	0,123	146	1,177
BKK26050	*yqdB*	3,32	1,192	0,124	242	1,153
BKK11450	*oppC*	3,318	1,207	0,122	237	1,168
BKK40280	*yycO*	3,318	1,189	0,114	311	1,151
BKK26180	*yqbA*	3,317	1,216	0,117	139	1,177
BKK09200	*yhcS*	3,316	1,176	0,111	59	1,138
BKK08970	*prkA*	3,298	1,216	0,121	163	1,177
BKK28460	*ysIB*	3,296	1,196	0,097	87	1,158
BKK16200	*fliE*	3,292	1,201	0,109	347	1,163
BKK05730	*ydhF*	3,291	1,198	0,105	346	1,160
BKK29480	*ytxK*	3,29	1,150	0,132	82	1,113
BKK37830	*spsJ*	3,286	1,156	0,146	53	1,119
BKK05740	*phoB*	3,278	1,205	0,083	202	1,167
BKK14450	*ampS*	3,274	1,218	0,103	66	1,179
BKK39030	*yxiT*	3,271	1,203	0,133	117	1,165
BKK13799	*ykzR*	3,256	1,204	0,120	177	1,166
BKK21610	*yokF*	3,25	1,188	0,114	341	1,151
BKK08270	*yfiH*	3,247	1,196	0,117	410	1,159
BKK21970	*ypeP*	3,241	1,192	0,108	486	1,155
BKK17080	*pksA*	3,24	1,201	0,119	62	1,164
BKK34430	*racX*	3,238	1,187	0,114	381	1,149
BKK34320	*epsF*	3,232	1,187	0,109	371	1,149
BKK29270	*ytoI*	3,23	1,149	0,099	186	1,113
BKK34570	*malK*	3,223	1,172	0,123	31	1,135
BKK22680	*trpE*	3,222	1,188	0,114	242	1,151
BKK22700	*aroB*	3,222	1,136	0,094	42	1,100
BKK35470	*comFA*	3,222	1,199	0,118	398	1,161
BKK07880	*yfkJ*	3,209	1,206	0,116	272	1,168
BKK10630	*addA*	3,208	1,221	0,105	125	1,183
BKK14140	*ccpC*	3,208	1,204	0,117	884	1,166
BKK30700	*rpmEB*	3,206	1,195	0,104	119	1,158
BKK13970	*ykwD*	3,198	1,200	0,128	215	1,163
BKK32490	*pucC*	3,195	1,185	0,122	40	1,148
BKK30950	*glgA*	3,188	1,193	0,098	122	1,156
BKK37290	*arfM*	3,17	1,154	0,106	59	1,119
BKK04290	*ydaL*	3,166	1,202	0,099	156	1,165
BKK26760	*yrdC*	3,156	1,214	0,110	172	1,177
BKK11410	*yjbA*	3,155	1,221	0,134	94	1,183

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK12680	*xkdO*	3,154	1,227	0,162	83	1,189
BKK35320	*fliT*	3,153	1,171	0,124	449	1,135
BKK36160	*ywqM*	3,153	1,149	0,126	92	1,114
BKK15350	*thiQ*	3,152	1,216	0,152	168	1,179
BKK09330	*yhcZ*	3,15	1,205	0,118	286	1,168
BKK11010	*yitJ*	3,134	1,220	0,094	130	1,183
BKK39129	*yxzI*	3,13	1,201	0,116	114	1,165
BKK14072	*ykzU*	3,128	1,203	0,153	401	1,166
BKK21070	*yonJ*	3,124	1,191	0,126	185	1,155
BKK40460	*yyzB*	3,116	1,203	0,105	128	1,166
BKK06210	*ydjI*	3,115	1,196	0,108	899	1,160
BKK32669	*yuzN*	3,114	1,170	0,103	160	1,134
BKK24790	*yqgX*	3,11	1,200	0,100	262	1,164
BKK09560	*cueR*	3,108	1,246	0,119	96	1,208
BKK07830	*yfkO*	3,104	1,195	0,120	398	1,159
BKK27620	*recJ*	3,104	1,196	0,104	151	1,160
BKK35130	*yvlA*	3,101	1,170	0,104	377	1,135
BKK39830	*yxcA*	3,097	1,193	0,102	115	1,158
BKK26630	*yrdQ*	3,093	1,189	0,119	303	1,153
BKK03570	*sfp*	3,091	1,193	0,107	80	1,158
BKK07840	*yfkN*	3,09	1,195	0,112	454	1,159
BKK25660	*aroD*	3,09	1,200	0,101	462	1,164
BKK38360	*ywbD*	3,085	1,153	0,135	37	1,119
BKK05610	*vmlR*	3,078	1,195	0,125	425	1,160
BKK40960	*parB*	3,071	1,221	0,101	118	1,184
BKK28560	*lcfA*	3,07	1,192	0,110	102	1,156
BKK29000	*nrdR*	3,063	1,193	0,094	114	1,158
BKK08870	*ygaN*	3,062	1,213	0,108	128	1,177
BKK10150	*yhgD*	3,062	1,213	0,103	138	1,177
BKK01550	*gerD*	3,061	1,173	0,112	35	1,138
BKK06600	*pcrB*	3,061	1,215	0,113	261	1,179
BKK27420	*yrrI*	3,06	1,189	0,112	290	1,153
BKK14890	*ctaC*	3,059	1,215	0,109	327	1,179
BKK14770	*bipA*	3,055	1,215	0,097	259	1,179
BKK09980	*yhaI*	3,054	1,245	0,158	82	1,208
BKK08250	*yfiF*	3,052	1,194	0,129	108	1,159
BKK28540	*fadB*	3,049	1,005	0,094	159	0,975
BKK11110	*yitS*	3,048	1,219	0,099	76	1,183
BKK27809	*yrzT*	3,048	1,195	0,103	164	1,160
BKK39010	*yxjB*	3,048	1,200	0,116	101	1,165
BKK27130	*rsiV*	3,047	1,259	0,067	80	1,222
BKK16180	*flgB*	3,045	1,204	0,101	348	1,168
BKK37620	*rsfA*	3,044	1,153	0,107	78	1,119
BKK31020	*yuaF*	3,043	1,197	0,120	371	1,161
BKK00750	*pabA*	3,041	1,134	0,116	53	1,100
BKK02920	*yceF*	3,039	1,238	0,152	67	1,201
BKK38590	*licB*	3,037	1,200	0,114	83	1,165
BKK08290	*yfiJ*	3,034	1,245	0,172	39	1,208
BKK13550	*mtnA*	3,034	1,202	0,126	162	1,166
BKK19450	*rsbRC*	3,027	1,163	0,118	459	1,129
BKK31710	*comQ*	3,02	1,183	0,123	52	1,148
BKK22870	*fni*	3,018	1,133	0,100	251	1,100
BKK07590	*citT*	3,013	1,203	0,103	261	1,168
BKK17320	*ymaF*	3,007	1,199	0,096	117	1,164
BKK33680	*yvoP*	2,985	1,168	0,109	71	1,134
BKK23640	*yqkD*	2,984	1,222	0,109	241	1,187
BKK00950	*mrnC*	2,982	1,222	0,099	150	1,187
BKK27670	*spoVB*	2,966	1,258	0,069	80	1,222
BKK24070	*buk*	2,959	1,222	0,113	356	1,187
BKK09210	*yhcT*	2,958	1,212	0,098	147	1,177
BKK20010	*yosT*	2,957	1,163	0,123	351	1,129
BKK26170	*yqbB*	2,955	1,211	0,100	159	1,177
BKK05360	*ydfC*	2,947	1,202	0,089	163	1,167
BKK23930	*yqjC*	2,942	1,222	0,097	343	1,187
BKK03630	*ubiX*	2,94	1,199	0,109	77	1,165
BKK10510	*yhjH*	2,939	1,218	0,093	161	1,183
BKK25520	*yqxA*	2,937	1,185	0,103	262	1,151
BKK09630	*yhdX*	2,931	1,211	0,120	85	1,177
BKK35350	*yvyC*	2,928	1,168	0,106	233	1,135
BKK06520	*purH*	2,922	1,213	0,122	487	1,179
BKK31959	*ybdZ*	2,92	1,181	0,107	230	1,148
BKK14200	*ykuS*	2,919	1,214	0,147	767	1,179
BKK38550	*ilvK*	2,917	1,191	0,135	85	1,157
BKK20930	*yopD*	2,914	1,189	0,122	528	1,155
BKK37920	*ywdL*	2,914	1,191	0,112	67	1,157
BKK06590	*yerD*	2,912	1,213	0,137	180	1,179
BKK23080	*aroC*	2,909	1,132	0,097	247	1,100
BKK05500	*ydfP*	2,908	1,201	0,092	309	1,167
BKK23440	*spoVAA*	2,906	1,242	0,157	38	1,206

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK09360	*yhdC*	2,9	1,211	0,092	94	1,177
BKK29080	*mutM*	2,9	1,195	0,120	488	1,161
BKK08730	*perR*	2,899	1,191	0,103	116	1,158
BKK35080	*yvmB*	2,895	1,168	0,125	76	1,135
BKK03950	*ycnJ*	2,894	1,199	0,085	135	1,165
BKK39550	*yxeH*	2,888	1,198	0,101	161	1,165
BKK09460	*ctrA*	2,887	1,196	0,111	268	1,163
BKK18390	*yoeC*	2,885	1,195	0,110	289	1,162
BKK18680	*yooO*	2,883	1,205	0,101	61	1,172
BKK00080	*yaoC*	2,872	1,193	0,126	254	1,160
BKK06560	*yerA*	2,872	1,213	0,104	402	1,179
BKK38640	*yxlH*	2,869	1,191	0,108	155	1,158
BKK24660	*yqzE*	2,868	1,197	0,106	173	1,164
BKK06033	*ydzT*	2,867	1,201	0,088	410	1,167
BKK06880	*yesF*	2,866	1,213	0,142	279	1,179
BKK32190	*yuzB*	2,864	1,181	0,138	110	1,148
BKK13950	*mcpC*	2,857	1,200	0,144	76	1,166
BKK23620	*yqkF*	2,844	1,186	0,125	296	1,153
BKK32600	*frlO*	2,843	1,257	0,129	176	1,222
BKK27210	*yrhF*	2,841	1,210	0,105	358	1,177
BKK06720	*dagK*	2,84	1,218	0,125	80	1,184
BKK05790	*ydhK*	2,839	1,200	0,092	148	1,167
BKK13920	*splA*	2,839	1,199	0,124	135	1,166
BKK28330	*ysnE*	2,838	1,186	0,124	521	1,153
BKK40820	*yyaL*	2,836	1,218	0,102	168	1,184
BKK27720	*queA*	2,831	1,192	0,120	201	1,160
BKK14160	*ykuO*	2,83	1,213	0,135	1011	1,179
BKK14670	*suhB*	2,829	1,213	0,125	249	1,179
BKK33040	*fumC*	2,827	1,166	0,087	48	1,134
BKK10530	*ntdC*	2,821	1,201	0,107	252	1,168
BKK07000	*yesR*	2,82	1,212	0,125	227	1,179
BKK01460	*ybaE*	2,819	1,170	0,116	62	1,138
BKK18830	*pps*	2,819	1,170	0,090	121	1,138
BKK39500	*yxeM*	2,818	1,256	0,074	65	1,222
BKK21790	*yplQ*	2,809	1,186	0,110	344	1,153
BKK06490	*purF*	2,803	1,212	0,121	358	1,179
BKK18260	*yngJ*	2,798	1,204	0,116	59	1,172
BKK33950	*cggR*	2,798	1,166	0,099	107	1,134
BKK19240	*yocK*	2,796	1,194	0,121	410	1,162
BKK20760	*yopU*	2,796	1,187	0,105	503	1,155
BKK12300	*uxaC*	2,795	1,222	0,142	347	1,189
BKK20720	*yopY*	2,791	1,201	0,124	192	1,168
BKK26730	*yrdF*	2,79	1,210	0,094	77	1,177
BKK38930	*yxjI*	2,787	1,197	0,130	46	1,165
BKK18290	*yngL*	2,786	1,194	0,118	340	1,162
BKK26010	*yqbQ*	2,786	1,196	0,115	72	1,164
BKK38300	*thiM*	2,781	1,199	0,110	115	1,166
BKK18420	*ftsR*	2,779	1,204	0,083	219	1,172
BKK25569	*yqzM*	2,779	1,196	0,102	333	1,164
BKK38720	*yxkO*	2,777	1,179	0,110	397	1,147
BKK34990	*lgt*	2,773	1,181	0,108	535	1,149
BKK01730	*sigW*	2,77	1,192	0,087	103	1,160
BKK23370	*ypuA*	2,77	1,185	0,124	247	1,153
BKK08770	*ygzA*	2,769	1,191	0,122	552	1,159
BKK25950	*yqcC*	2,766	1,002	0,100	88	0,975
BKK29150	*ytwI*	2,765	1,193	0,116	466	1,161
BKK22400	*dinG*	2,757	1,131	0,117	87	1,100
BKK40720	*yyaT*	2,754	1,217	0,096	113	1,184
BKK09165	*yhcO*	2,751	1,200	0,117	336	1,168
BKK40710	*yybA*	2,751	1,217	0,096	171	1,184
BKK04590	*ydbS*	2,75	1,197	0,091	424	1,165
BKK18669	*yozS*	2,75	1,194	0,120	196	1,162
BKK20530	*yoqS*	2,749	1,200	0,105	292	1,168
BKK15830	*yloU*	2,745	1,145	0,096	102	1,114
BKK16730	*spoVFA*	2,74	1,240	0,125	96	1,206
BKK24940	*yqzC*	2,732	1,195	0,114	222	1,164
BKK28200	*lonA*	2,732	1,183	0,120	278	1,151
BKK07930	*yfkD*	2,729	1,190	0,109	450	1,159
BKK12040	*yjdG*	2,727	1,221	0,157	285	1,189
BKK12130	*yjfC*	2,727	1,221	0,157	285	1,189
BKK03020	*ycgA*	2,726	1,234	0,075	101	1,201
BKK34100	*rsbQ*	2,726	1,166	0,153	96	1,135
BKK22540	*qcrC*	2,721	1,130	0,119	419	1,100
BKK15530	*pyrK*	2,72	1,187	0,103	87	1,156
BKK34010	*yvbW*	2,719	1,189	0,097	77	1,158
BKK16440	*cheW*	2,714	1,193	0,106	399	1,161
BKK19930	*yotC*	2,704	1,193	0,131	428	1,162
BKK13180	*metE*	2,696	1,170	0,130	39	1,139
BKK07800	*treP*	2,69	1,190	0,115	388	1,159

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK30560	*pckA*	2,685	1,187	0,120	102	1,156
BKK30460	*ytrA*	2,676	1,187	0,130	108	1,156
BKK03170	*ycgK*	2,668	1,191	0,111	325	1,160
BKK03700	*gerKA*	2,667	1,196	0,090	126	1,165
BKK26039	*yqbN*	2,667	1,208	0,103	545	1,177
BKK13640	*spo0E*	2,664	1,241	0,155	58	1,208
BKK13860	*ykvY*	2,664	1,197	0,151	329	1,166
BKK01140	*ybaC*	2,661	1,195	0,112	228	1,164
BKK32290	*yutF*	2,652	1,192	0,116	377	1,161
BKK08440	*yfiY*	2,651	1,240	0,172	67	1,208
BKK09880	*yhaR*	2,641	1,208	0,103	153	1,177
BKK21300	*yomM*	2,633	1,181	0,105	141	1,151
BKK09100	*cspB*	2,629	1,208	0,098	129	1,177
BKK27650	*secDF*	2,629	1,254	0,084	135	1,222
BKK00180	*tadA*	2,627	1,208	0,098	98	1,177
BKK31310	*yugP*	2,625	1,186	0,112	75	1,156
BKK21460	*bdbA*	2,622	1,181	0,120	280	1,151
BKK30010	*ythP*	2,621	1,186	0,096	92	1,156
BKK08120	*yfjF*	2,617	1,189	0,110	158	1,159
BKK04540	*ydbO*	2,616	1,233	0,097	318	1,201
BKK15120	*yllA*	2,614	1,210	0,126	188	1,179
BKK03880	*yczG*	2,606	1,195	0,104	478	1,165
BKK28070	*comC*	2,606	1,190	0,116	242	1,160
BKK31040	*yuaD*	2,603	1,186	0,117	118	1,156
BKK07120	*lplC*	2,602	1,240	0,154	538	1,208
BKK18380	*iseA*	2,601	1,238	0,146	84	1,206
BKK40570	*yybO*	2,599	1,197	0,115	141	1,166
BKK22060	*pbuX*	2,598	1,169	0,122	97	1,139
BKK27200	*yrhG*	2,596	1,207	0,097	296	1,177
BKK18140	*ynfE*	2,595	1,202	0,124	213	1,172
BKK40250	*yycR*	2,594	1,177	0,110	255	1,147
BKK21060	*yonK*	2,593	1,185	0,113	539	1,155
BKK25180	*trmK*	2,58	1,181	0,113	344	1,151
BKK10110	*pbpF*	2,579	1,207	0,110	107	1,177
BKK04320	*ydaO*	2,576	1,232	0,070	42	1,201
BKK29420	*ytkK*	2,576	1,000	0,061	39	0,975
BKK39380	*hutG*	2,576	1,195	0,136	88	1,165
BKK28240	*ysoA*	2,573	1,189	0,103	185	1,160
BKK29190	*pfkA*	2,573	1,142	0,099	199	1,113
BKK15850	*sdaAB*	2,564	1,143	0,077	79	1,114
BKK01870	*ybcH*	2,559	1,000	0,090	59	0,975
BKK26450	*yrkN*	2,559	1,183	0,119	334	1,153
BKK04610	*ydcA*	2,55	1,195	0,101	135	1,165
BKK02380	*ybgB*	2,546	1,159	0,086	63	1,130
BKK11549	*yizD*	2,543	1,213	0,106	84	1,183
BKK04100	*kipR*	2,536	1,194	0,080	126	1,165
BKK17100	*pksC*	2,535	1,193	0,106	145	1,164
BKK28810	*abnA*	2,533	1,168	0,104	123	1,139
BKK09240	*yhcW*	2,532	1,207	0,107	99	1,177
BKK03190	*ycgL*	2,53	1,159	0,128	72	1,130
BKK24410	*spoIIIAC*	2,53	1,237	0,122	84	1,206
BKK19710	*yodQ*	2,527	1,158	0,134	190	1,129
BKK26190	*yqaT*	2,527	1,180	0,135	334	1,151
BKK03800	*yclN*	2,52	1,232	0,152	603	1,201
BKK33700	*opuBD*	2,515	1,163	0,094	94	1,134
BKK13490	*htpX*	2,507	1,196	0,129	69	1,166
BKK08400	*yfiU*	2,499	1,197	0,121	249	1,168
BKK23401	*spoVAEA*	2,495	1,237	0,158	95	1,206
BKK01540	*solA*	2,494	1,206	0,108	231	1,177
BKK24060	*lpdV*	2,494	1,217	0,116	246	1,187
BKK19680	*yozE*	2,486	1,157	0,124	673	1,129
BKK07370	*yfmR*	2,485	1,238	0,174	111	1,208
BKK28050	*maf*	2,476	1,188	0,095	158	1,160
BKK25320	*yqfG*	2,474	1,194	0,111	400	1,165
BKK29310	*ytnI*	2,466	1,141	0,093	67	1,113
BKK21210	*yomV*	2,463	1,183	0,121	218	1,155
BKK09140	*yhcM*	2,46	1,206	0,108	110	1,177
BKK14380	*fruR*	2,458	1,208	0,156	69	1,179
BKK34230	*epsN*	2,455	1,163	0,114	198	1,135
BKK39140	*yxiK*	2,453	1,193	0,123	112	1,165
BKK00390	*yabD*	2,448	1,167	0,137	58	1,139
BKK31990	*dhbC*	2,448	1,186	0,093	116	1,158
BKK27729	*yrzS*	2,446	1,188	0,101	429	1,160
BKK15840	*yloV*	2,437	1,141	0,096	124	1,114
BKK30960	*glgD*	2,436	1,184	0,098	87	1,156
BKK23890	*oxaAB*	2,434	1,236	0,193	31	1,206
BKK04440	*dctB*	2,43	1,193	0,117	267	1,165
BKK35190	*yvkC*	2,43	1,163	0,094	354	1,135
BKK09750	*sspB*	2,429	1,206	0,094	76	1,177

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK11100	*nprB*	2,429	1,212	0,120	122	1,183
BKK20330	*yorM*	2,428	1,190	0,102	219	1,162
BKK01520	*yboK*	2,427	0,999	0,056	30	0,975
BKK36170	*ywqL*	2,427	1,141	0,139	31	1,114
BKK36630	*ywnA*	2,427	1,175	0,113	275	1,147
BKK34370	*epsA*	2,426	1,163	0,083	192	1,135
BKK34480	*yvdT*	2,426	1,163	0,083	192	1,135
BKK21229	*youA*	2,423	1,183	0,105	382	1,155
BKK35580	*tuaD*	2,416	1,177	0,124	516	1,149
BKK14350	*yknX*	2,415	1,165	0,092	154	1,138
BKK16190	*flgC*	2,412	1,191	0,106	426	1,163
BKK26770	*yrdB*	2,411	1,205	0,103	262	1,177
BKK31810	*yuzE*	2,411	1,176	0,120	271	1,148
BKK20929	*yoyI*	2,41	1,183	0,112	505	1,155
BKK31460	*kapB*	2,409	1,176	0,127	31	1,148
BKK21220	*yomU*	2,407	1,179	0,119	403	1,151
BKK03350	*yciB*	2,389	1,230	0,104	61	1,201
BKK13940	*ykwB*	2,385	1,190	0,112	280	1,163
BKK38940	*yxjI*	2,385	1,192	0,124	88	1,165
BKK00450	*sspF*	2,384	1,191	0,101	123	1,164
BKK31920	*yukF*	2,384	1,175	0,126	89	1,148
BKK10790	*asnO*	2,382	1,211	0,116	85	1,183
BKK13290	*ykzD*	2,377	1,190	0,118	220	1,163
BKK31430	*yugE*	2,375	1,175	0,128	61	1,148
BKK26990	*yraD*	2,374	1,205	0,105	205	1,177
BKK37160	*rpoE*	2,37	1,145	0,118	331	1,119
BKK07320	*yfnC*	2,354	1,237	0,153	522	1,208
BKK06980	*yesP*	2,349	1,165	0,101	30	1,138
BKK08930	*cspR*	2,349	1,190	0,114	213	1,163
BKK18810	*yobA*	2,347	1,235	0,138	54	1,206
BKK03440	*tlpC*	2,344	1,187	0,127	413	1,160
BKK09220	*yhcU*	2,344	1,205	0,111	165	1,177
BKK37670	*ywfI*	2,339	1,212	0,113	98	1,184
BKK02660	*ycbU*	2,334	0,998	0,098	50	0,975
BKK02410	*ybgG*	2,326	1,156	0,088	126	1,130
BKK38990	*scoA*	2,326	1,192	0,107	74	1,165
BKK36980	*ywlA*	2,315	1,184	0,114	126	1,158
BKK07100	*lplA*	2,314	1,236	0,119	105	1,208
BKK05520	*ydzH*	2,313	1,194	0,083	333	1,167
BKK38970	*yxjF*	2,312	1,193	0,107	82	1,166
BKK05470	*ydfM*	2,31	1,229	0,099	95	1,201
BKK33800	*opuCD*	2,309	1,176	0,115	336	1,149
BKK20830	*yopN*	2,307	1,182	0,122	343	1,155
BKK31279	*yuzH*	2,303	1,183	0,112	152	1,156
BKK00410	*rnmV*	2,3	1,190	0,117	75	1,164
BKK33490	*capB*	2,298	1,188	0,112	291	1,161
BKK37420	*albF*	2,296	1,193	0,109	119	1,166
BKK17280	*ymaD*	2,295	1,190	0,117	96	1,164
BKK12650	*xkdK*	2,292	1,216	0,152	131	1,189
BKK03300	*nasD*	2,29	1,156	0,132	58	1,130
BKK25360	*yqfC*	2,29	1,190	0,103	151	1,164
BKK08110	*sspH*	2,289	1,185	0,122	149	1,159
BKK24980	*pstC*	2,289	1,177	0,124	413	1,151
BKK40580	*yybN*	2,288	1,193	0,136	109	1,166
BKK36510	*amtB*	2,286	1,176	0,108	331	1,149
BKK12290	*ndh*	2,285	1,216	0,127	932	1,189
BKK28230	*tig*	2,284	1,186	0,101	191	1,160
BKK02240	*mpr*	2,283	1,156	0,113	144	1,130
BKK35230	*swrAA*	2,282	1,161	0,116	321	1,135
BKK09080	*yhcH*	2,281	1,195	0,121	420	1,168
BKK00590	*yabO*	2,271	1,198	0,128	138	1,172
BKK36440	*ywoH*	2,271	1,184	0,092	98	1,158
BKK37520	*ywhD*	2,271	1,193	0,109	91	1,166
BKK28400	*ysmB*	2,268	1,186	0,091	267	1,160
BKK40850	*maa*	2,264	1,211	0,105	118	1,184
BKK10230	*yhfH*	2,262	1,204	0,116	112	1,177
BKK38890	*yxjN*	2,261	1,191	0,111	166	1,165
BKK20610	*yoqJ*	2,255	1,181	0,135	124	1,155
BKK26650	*czcD*	2,254	1,203	0,105	277	1,177
BKK29805	*ytpS*	2,254	1,250	0,055	36	1,222
BKK36050	*cotB*	2,252	1,184	0,094	106	1,158
BKK31970	*dhbB*	2,25	1,174	0,110	112	1,148
BKK06540	*yezC*	2,248	1,205	0,130	198	1,179
BKK17830	*yndM*	2,243	1,190	0,110	80	1,164
BKK25780	*arsC*	2,241	1,177	0,122	361	1,151
BKK07780	*yfkR*	2,238	1,185	0,122	258	1,159
BKK12140	*yjgA*	2,234	1,216	0,159	160	1,189
BKK23530	*spoIIM*	2,231	1,179	0,115	310	1,153
BKK35780	*lytD*	2,227	1,175	0,123	251	1,149

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK40700	*yybB*	2,224	1,211	0,092	101	1,184
BKK34470	*yveA*	2,223	1,187	0,108	461	1,161
BKK04020	*yczH*	2,219	1,191	0,079	160	1,165
BKK24600	*sinI*	2,218	0,997	0,082	103	0,975
BKK07660	*yflJ*	2,217	1,184	0,131	307	1,159
BKK34930	*hisZ*	2,217	1,192	0,109	191	1,166
BKK04190	*ydaD*	2,216	1,191	0,106	383	1,165
BKK10990	*yitH*	2,214	1,209	0,122	132	1,183
BKK01510	*ybaJ*	2,211	0,997	0,066	53	0,975
BKK12590	*xkdE*	2,21	1,215	0,188	155	1,189
BKK15320	*sigE*	2,207	1,205	0,122	164	1,179
BKK05430	*ydfJ*	2,205	1,228	0,096	75	1,201
BKK04400	*gsiB*	2,204	1,191	0,094	188	1,165
BKK32620	*yurQ*	2,203	1,159	0,109	110	1,134
BKK19380	*yojO*	2,202	1,154	0,125	293	1,129
BKK22100	*kdgA*	2,202	1,125	0,123	117	1,100
BKK34330	*epsE*	2,202	1,192	0,111	214	1,166
BKK17110	*pksD*	2,2	1,189	0,106	174	1,164
BKK04030	*ycsD*	2,19	1,185	0,117	345	1,160
BKK31980	*dhbE*	2,188	1,187	0,105	422	1,161
BKK25770	*spoIVCA*	2,185	1,249	0,090	124	1,222
BKK37980	*ywdF*	2,183	1,143	0,114	141	1,119
BKK31510	*yufK*	2,182	1,164	0,093	67	1,139
BKK12890	*ykcC*	2,176	1,235	0,151	56	1,208
BKK06580	*yerC*	2,169	1,204	0,111	334	1,179
BKK13000	*ykfD*	2,169	1,188	0,117	283	1,163
BKK40574	*yyzI*	2,168	1,181	0,098	139	1,156
BKK13880	*glcT*	2,165	1,192	0,127	241	1,166
BKK38610	*yxzF*	2,163	1,190	0,099	56	1,165
BKK13480	*ykrK*	2,162	1,192	0,148	66	1,166
BKK39200	*yxzC*	2,157	1,190	0,131	96	1,165
BKK37450	*ywhK*	2,156	1,172	0,113	303	1,147
BKK01450	*ybxA*	2,154	1,189	0,096	175	1,164
BKK08540	*yfhI*	2,153	1,234	0,155	165	1,208
BKK08899	*ygzD*	2,146	1,202	0,086	107	1,177
BKK34940	*yvpB*	2,146	1,159	0,105	429	1,135
BKK39150	*yxiJ*	2,144	1,190	0,132	66	1,165
BKK11799	*yjzK*	2,142	1,214	0,086	338	1,189
BKK37550	*ywhA*	2,139	1,143	0,103	168	1,119
BKK08160	*yfjB*	2,138	1,184	0,112	284	1,159
BKK37210	*ywjC*	2,138	1,143	0,110	111	1,119
BKK23950	*yqjA*	2,137	1,178	0,120	335	1,153
BKK28490	*uvrC*	2,136	0,996	0,066	43	0,975
BKK24570	*gcvT*	2,135	1,212	0,095	102	1,187
BKK31410	*yugG*	2,135	1,172	0,097	63	1,148
BKK10720	*gerPA*	2,132	1,209	0,099	170	1,183
BKK05180	*ydeF*	2,123	1,192	0,100	251	1,167
BKK07980	*pdaA*	2,122	1,183	0,103	419	1,159
BKK20990	*yonU*	2,12	1,179	0,111	447	1,155
BKK07550	*yjfT*	2,115	1,183	0,114	217	1,159
BKK20390	*yorG*	2,115	1,186	0,102	481	1,162
BKK18010	*yneN*	2,113	1,188	0,137	83	1,164
BKK20030	*yosR*	2,113	1,153	0,160	73	1,129
BKK18970	*yobI*	2,109	1,186	0,103	478	1,162
BKK04390	*ydbA*	2,105	1,184	0,114	397	1,160
BKK15520	*pyrAB*	2,104	1,180	0,106	63	1,156
BKK26160	*yqbC*	2,1	1,201	0,123	146	1,177
BKK07220	*yetL*	2,097	0,995	0,086	60	0,975
BKK24730	*comGA*	2,096	1,178	0,121	248	1,153
BKK06860	*yezE*	2,092	1,204	0,127	476	1,179
BKK38020	*pdaK*	2,092	1,181	0,112	101	1,157
BKK23150	*resA*	2,088	1,232	0,182	124	1,206
BKK37480	*ywhH*	2,088	1,142	0,096	370	1,119
BKK16220	*fliG*	2,081	1,187	0,100	283	1,163
BKK38560	*licH*	2,081	1,189	0,137	35	1,165
BKK40160	*yydH*	2,079	1,191	0,145	85	1,166
BKK06839	*phrH*	2,077	1,203	0,113	285	1,179
BKK35480	*yviA*	2,077	1,137	0,139	71	1,114
BKK23610	*nudF*	2,075	1,212	0,090	174	1,187
BKK15960	*ylqB*	2,074	1,142	0,113	31	1,119
BKK31550	*yufO*	2,072	1,247	0,071	88	1,222
BKK08230	*catD*	2,071	1,233	0,130	100	1,208
BKK13340	*ykoM*	2,065	1,190	0,094	172	1,166
BKK02500	*ycbG*	2,062	1,184	0,113	369	1,160
BKK02160	*ybfA*	2,059	1,153	0,108	167	1,130
BKK09570	*yhdR*	2,057	1,201	0,114	78	1,177
BKK00440	*veg*	2,054	1,187	0,102	171	1,164
BKK40730	*yyaS*	2,054	1,209	0,101	132	1,184
BKK02470	*ycbD*	2,053	1,153	0,135	95	1,130

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK39160	*yxiI*	2,052	1,189	0,110	101	1,165
BKK17120	*pksE*	2,051	1,231	0,150	206	1,206
BKK16390	*flhA*	2,049	1,177	0,132	387	1,153
BKK06970	*yesO*	2,048	1,226	0,081	234	1,201
BKK25820	*yqcI*	2,046	1,177	0,119	230	1,153
BKK04940	*yddE*	2,045	1,191	0,118	503	1,167
BKK29530	*sppA*	2,041	1,163	0,097	191	1,139
BKK12229	*yjzI*	2,039	1,213	0,089	1324	1,189
BKK13040	*hmp*	2,038	1,190	0,117	451	1,166
BKK17230	*pksS*	2,036	1,187	0,115	151	1,164
BKK27070	*levD*	2,036	1,201	0,093	261	1,177
BKK11680	*thiS*	2,032	1,213	0,150	755	1,189
BKK35650	*lytR*	2,031	1,173	0,106	529	1,149
BKK03000	*opuAC*	2,03	1,226	0,065	146	1,201
BKK05590	*ydgD*	2,027	1,191	0,077	159	1,167
BKK16080	*ylqH*	2,026	1,183	0,126	259	1,160
BKK27310	*pbpI*	2,024	0,995	0,106	123	0,975
BKK30450	*ytrB*	2,023	1,174	0,117	246	1,151
BKK26910	*yraK*	2,022	1,200	0,106	204	1,177
BKK04660	*ndoA*	2,02	1,188	0,092	72	1,165
BKK36110	*ywrC*	2,013	1,190	0,131	93	1,166
BKK39470	*yxeP*	2,013	1,188	0,107	95	1,165
BKK29910	*ytzH*	2,011	1,135	0,135	46	1,113
BKK26250	*yqaN*	2,007	1,200	0,103	195	1,177
BKK40540	*yybR*	2,006	1,179	0,105	120	1,156
BKK12710	*xkdR*	2,005	1,213	0,154	142	1,189
BKK23470	*spoIIAA*	2,001	1,231	0,157	184	1,206
BKK26790	*aadK*	1,996	1,200	0,101	286	1,177
BKK39440	*yxxB*	1,993	1,231	0,109	192	1,206
BKK40660	*yybF*	1,993	1,190	0,100	407	1,167
BKK20928	*yoyH*	1,992	1,178	0,110	326	1,155
BKK14440	*panE*	1,99	1,203	0,116	210	1,179
BKK22030	*ypbR*	1,99	1,176	0,114	377	1,153
BKK22720	*cheR*	1,99	1,176	0,120	252	1,153
BKK27810	*yrbD*	1,98	1,183	0,092	212	1,160
BKK33221	*yvrH*	1,976	0,994	0,081	41	0,975
BKK33990	*yvbU*	1,976	1,157	0,126	72	1,134
BKK03590	*tcyC*	1,974	1,225	0,085	153	1,201
BKK07130	*lplD*	1,974	1,202	0,118	423	1,179
BKK17580	*xynB*	1,972	1,186	0,112	205	1,164
BKK21780	*yplP*	1,97	1,178	0,130	274	1,155
BKK11190	*argC*	1,966	1,207	0,106	73	1,183
BKK37750	*ywfA*	1,965	1,172	0,112	349	1,149
BKK31520	*yufL*	1,964	1,170	0,114	329	1,148
BKK22880	*ypfD*	1,962	1,176	0,114	318	1,153
BKK15800	*thiN*	1,96	1,157	0,113	318	1,135
BKK34780	*yvcI*	1,96	1,157	0,145	339	1,135
BKK30630	*ytkD*	1,959	1,179	0,090	123	1,156
BKK24000	*bmrU*	1,958	1,210	0,104	414	1,187
BKK29220	*ytsJ*	1,958	1,162	0,099	103	1,139
BKK34070	*yvfT*	1,955	1,172	0,120	289	1,149
BKK34580	*yvdJ*	1,954	1,172	0,102	502	1,149
BKK08850	*ssuC*	1,95	1,232	0,132	128	1,208
BKK03180	*cah*	1,948	1,182	0,124	632	1,160
BKK03930	*gdh*	1,944	1,188	0,086	175	1,165
BKK40830	*yyaK*	1,942	1,207	0,103	172	1,184
BKK33470	*bdbC*	1,941	1,189	0,104	160	1,166
BKK17490	*ynzG*	1,939	1,184	0,107	433	1,162
BKK19110	*yobW*	1,939	1,194	0,116	89	1,172
BKK10130	*hemH*	1,938	1,178	0,105	92	1,156
BKK36490	*ywoC*	1,938	1,189	0,095	81	1,166
BKK14130	*ykuL*	1,937	1,189	0,142	774	1,166
BKK28360	*ysnA*	1,937	1,173	0,118	288	1,151
BKK40500	*rplI*	1,935	1,207	0,099	105	1,184
BKK10020	*serC*	1,934	1,200	0,119	157	1,177
BKK19030	*yobO*	1,934	1,194	0,139	98	1,172
BKK30680	*ytjA*	1,932	1,178	0,113	78	1,156
BKK11120	*yitT*	1,926	1,185	0,112	223	1,163
BKK21170	*yomZ*	1,923	1,177	0,104	316	1,155
BKK33580	*yvaF*	1,922	1,156	0,125	114	1,134
BKK22640	*trpB*	1,921	1,121	0,096	196	1,100
BKK13770	*ykvO*	1,919	1,189	0,130	68	1,166
BKK21420	*bhlA*	1,919	1,173	0,111	216	1,151
BKK21800	*ypkP*	1,918	1,177	0,117	566	1,155
BKK10010	*trpP*	1,917	1,232	0,127	46	1,208
BKK23810	*yqjN*	1,912	1,210	0,102	350	1,187
BKK20590	*yoqL*	1,91	1,177	0,122	249	1,155
BKK00600	*yabP*	1,909	1,169	0,107	550	1,147
BKK13690	*motA*	1,898	1,189	0,102	117	1,166

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK23540	*yqkK*	1,898	1,210	0,110	283	1,187
BKK03200	*ycgM*	1,892	1,151	0,119	36	1,130
BKK10360	*yhfT*	1,891	1,206	0,101	217	1,183
BKK32630	*yurR*	1,889	1,156	0,092	150	1,134
BKK18490	*rtp*	1,888	1,184	0,126	266	1,162
BKK11900	*yjcL*	1,885	1,184	0,120	287	1,163
BKK19340	*yocR*	1,884	1,179	0,095	155	1,158
BKK27730	*ruvB*	1,884	1,181	0,107	314	1,160
BKK14990	*ylbF*	1,883	1,201	0,131	615	1,179
BKK28250	*leuD*	1,88	1,181	0,099	224	1,160
BKK35170	*uvrB*	1,876	1,156	0,117	87	1,135
BKK32990	*mrgA*	1,873	1,156	0,091	90	1,134
BKK10780	*yisN*	1,871	1,205	0,130	152	1,183
BKK13780	*ykvP*	1,871	1,188	0,121	416	1,166
BKK35950	*rbsC*	1,867	1,188	0,105	116	1,166
BKK24140	*prpC*	1,865	1,209	0,102	659	1,187
BKK26660	*yrdN*	1,857	1,199	0,117	403	1,177
BKK38630	*katX*	1,855	1,186	0,131	34	1,165
BKK04860	*ydcQ*	1,852	1,186	0,121	95	1,165
BKK29540	*ppnKB*	1,851	1,161	0,089	140	1,139
BKK06440	*purB*	1,849	1,201	0,124	179	1,179
BKK19470	*yojF*	1,847	1,190	0,118	412	1,168
BKK27220	*yrhE*	1,843	1,198	0,100	228	1,177
BKK14300	*moaE*	1,838	1,201	0,107	880	1,179
BKK17760	*yndE*	1,836	1,185	0,113	206	1,164
BKK39270	*bglP*	1,835	1,186	0,113	79	1,165
BKK01090	*rplGB*	1,832	1,185	0,109	249	1,164
BKK05420	*ydfI*	1,824	1,223	0,116	68	1,201
BKK07330	*yfnB*	1,818	1,200	0,112	548	1,179
BKK13830	*ykvU*	1,816	1,184	0,115	326	1,163
BKK31390	*yugI*	1,816	1,169	0,105	232	1,148
BKK00970	*yacP*	1,815	1,181	0,123	307	1,160
BKK10740	*yisJ*	1,814	1,205	0,113	75	1,183
BKK02480	*gudP*	1,81	1,223	0,069	197	1,201
BKK32790	*yusG*	1,81	1,155	0,095	171	1,134
BKK13800	*ykvR*	1,804	1,187	0,132	58	1,166
BKK05770	*ydhI*	1,798	1,188	0,110	439	1,167
BKK02490	*gudD*	1,797	1,150	0,123	43	1,130
BKK25930	*yqcE*	1,796	1,172	0,104	256	1,151
BKK31050	*gbsB*	1,796	1,177	0,126	106	1,156
BKK33480	*bdbD*	1,796	1,155	0,095	157	1,134
BKK17590	*xylR*	1,79	1,184	0,113	81	1,164
BKK04520	*ydbM*	1,788	1,180	0,115	696	1,160
BKK21599	*yoyK*	1,788	1,176	0,107	459	1,155
BKK40370	*yycJ*	1,785	1,150	0,098	131	1,130
BKK40610	*yybK*	1,784	1,187	0,121	101	1,166
BKK15560	*pyrE*	1,783	1,160	0,092	111	1,139
BKK38830	*aldY*	1,781	1,185	0,118	77	1,165
BKK38950	*yxjH*	1,78	1,178	0,094	70	1,158
BKK03610	*tcyA*	1,775	1,168	0,116	422	1,147
BKK16140	*codV*	1,77	1,205	0,125	65	1,184
BKK19140	*yozB*	1,768	1,182	0,116	362	1,162
BKK08070	*acoB*	1,767	1,179	0,118	417	1,159
BKK09310	*pgcA*	1,767	1,230	0,127	38	1,208
BKK02710	*ycxC*	1,765	1,223	0,067	82	1,201
BKK36150	*ywqN*	1,764	1,134	0,087	54	1,114
BKK40840	*yyaJ*	1,764	1,188	0,117	192	1,167
BKK04420	*ydbC*	1,763	1,185	0,100	263	1,165
BKK02170	*ybfB*	1,758	1,168	0,120	442	1,147
BKK39280	*yxxE*	1,757	1,185	0,122	80	1,165
BKK14010	*cheV*	1,754	1,183	0,123	333	1,163
BKK02310	*ybfO*	1,752	1,150	0,097	86	1,130
BKK08830	*ssuB*	1,745	1,229	0,167	96	1,208
BKK13530	*kinE*	1,743	1,188	0,103	359	1,168
BKK18690	*yoaP*	1,743	1,182	0,114	392	1,162
BKK10610	*yhjR*	1,74	1,204	0,108	150	1,183
BKK21240	*yomS*	1,739	1,175	0,123	411	1,155
BKK29430	*ytzD*	1,739	1,159	0,092	208	1,139
BKK29610	*ezrA*	1,739	1,132	0,116	65	1,113
BKK03100	*ycgG*	1,737	1,150	0,107	110	1,130
BKK02000	*ybdJ*	1,735	1,150	0,097	72	1,130
BKK04490	*ydbJ*	1,734	1,222	0,098	109	1,201
BKK07490	*yfmF*	1,733	1,179	0,094	296	1,159
BKK10890	*yisX*	1,732	1,204	0,120	111	1,183
BKK05320	*ydeS*	1,726	1,187	0,122	143	1,167
BKK06700	*yerO*	1,725	1,199	0,126	373	1,179
BKK06073	*ydzW*	1,722	1,167	0,098	121	1,147
BKK29700	*acuB*	1,721	1,178	0,105	142	1,158
BKK24210	*yqiG*	1,719	1,207	0,145	583	1,187

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK13120	*proB*	1,714	1,186	0,123	109	1,166
BKK28740	*oroP*	1,713	1,159	0,102	107	1,139
BKK04700	*rsbU*	1,71	1,185	0,115	93	1,165
BKK10500	*yhjG*	1,71	1,204	0,102	100	1,183
BKK27350	*yrrN*	1,698	1,171	0,123	232	1,151
BKK29490	*tpx*	1,695	1,132	0,120	128	1,113
BKK40578	*yyzK*	1,692	1,186	0,114	161	1,166
BKK04170	*ydaB*	1,687	1,185	0,097	343	1,165
BKK22160	*yptA*	1,68	1,119	0,097	30	1,100
BKK03060	*lctP*	1,674	1,149	0,121	51	1,130
BKK19689	*yokU*	1,674	1,188	0,106	330	1,168
BKK24290	*xseB*	1,672	1,207	0,112	260	1,187
BKK10600	*yhjQ*	1,665	1,203	0,120	85	1,183
BKK30940	*glgP*	1,665	1,175	0,103	132	1,156
BKK09400	*spoVR*	1,663	1,228	0,112	201	1,208
BKK16950	*pbpX*	1,661	1,227	0,160	62	1,206
BKK21380	*yomF*	1,661	1,174	0,125	384	1,155
BKK18410	*ggt*	1,66	1,157	0,097	89	1,138
BKK20090	*yosK*	1,656	1,148	0,113	70	1,129
BKK28300	*ilvH*	1,656	1,179	0,096	313	1,160
BKK04180	*ydaC*	1,655	1,184	0,087	146	1,165
BKK16170	*codY*	1,649	1,182	0,138	230	1,163
BKK39350	*hutH*	1,647	1,184	0,115	102	1,165
BKK09260	*yhxA*	1,643	1,182	0,104	262	1,163
BKK09120	*yhcK*	1,636	1,182	0,108	295	1,163
BKK30840	*yteA*	1,632	1,175	0,116	117	1,156
BKK06890	*cotJA*	1,631	1,198	0,113	433	1,179
BKK25190	*cccA*	1,63	1,172	0,111	473	1,153
BKK39680	*ioII*	1,621	1,166	0,106	353	1,147
BKK06500	*purM*	1,62	1,198	0,121	369	1,179
BKK36060	*cotH*	1,619	1,168	0,118	334	1,149
BKK36550	*spoIIQ*	1,619	1,168	0,118	334	1,149
BKK35690	*ggaA*	1,617	1,176	0,105	68	1,158
BKK04370	*ydaS*	1,61	1,184	0,094	466	1,165
BKK08550	*sspK*	1,601	1,177	0,114	318	1,159
BKK10340	*phoE*	1,601	1,202	0,115	140	1,183
BKK17460	*glnA*	1,601	1,182	0,115	59	1,164
BKK24540	*yqhL*	1,6	1,206	0,110	223	1,187
BKK06330	*yeaC*	1,596	1,198	0,120	155	1,179
BKK27140	*oatA*	1,596	1,242	0,068	82	1,222
BKK32860	*yusN*	1,596	1,152	0,102	110	1,134
BKK10970	*yitF*	1,591	1,202	0,119	107	1,183
BKK20180	*yosB*	1,589	1,180	0,114	343	1,162
BKK35840	*ywtF*	1,589	1,132	0,100	277	1,114
BKK00220	*yaaL*	1,586	1,202	0,124	98	1,183
BKK17040	*mutS*	1,584	1,182	0,112	258	1,164
BKK39060	*citH*	1,584	1,183	0,114	87	1,165
BKK39290	*yxxD*	1,584	1,185	0,121	66	1,166
BKK17980	*sspP*	1,582	1,182	0,111	159	1,164
BKK05870	*gmuF*	1,581	1,186	0,116	431	1,167
BKK22180	*gpsB*	1,577	1,118	0,115	76	1,100
BKK06048	*ydzU*	1,574	1,186	0,113	280	1,167
BKK30580	*ytmA*	1,574	1,174	0,085	99	1,156
BKK31540	*yufN*	1,571	1,241	0,082	57	1,222
BKK32980	*yusZ*	1,569	1,180	0,115	395	1,161
BKK09350	*yhdB*	1,568	1,195	0,105	280	1,177
BKK05700	*ydhC*	1,558	1,185	0,075	162	1,167
BKK03920	*glcU*	1,555	1,220	0,082	32	1,201
BKK34680	*yvcT*	1,554	1,153	0,107	60	1,135
BKK19050	*yobQ*	1,551	1,190	0,106	142	1,172
BKK29330	*ytmO*	1,551	1,130	0,108	791	1,113
BKK12340	*uxuA*	1,549	1,207	0,092	1324	1,189
BKK11170	*yitY*	1,547	1,202	0,098	110	1,183
BKK30330	*ytvB*	1,547	1,174	0,089	111	1,156
BKK23900	*yqjF*	1,546	1,225	0,164	94	1,206
BKK09650	*yhdZ*	1,545	1,195	0,110	122	1,177
BKK17990	*sspO*	1,543	1,180	0,124	356	1,162
BKK39740	*ioIC*	1,542	0,990	0,076	90	0,975
BKK28670	*ysfB*	1,541	1,157	0,096	170	1,139
BKK34250	*epsL*	1,538	1,153	0,093	142	1,135
BKK07870	*yfkK*	1,537	1,180	0,120	342	1,163
BKK09420	*lytE*	1,537	1,227	0,115	39	1,208
BKK16590	*ylxS*	1,535	1,179	0,127	326	1,161
BKK22869	*ypzI*	1,535	1,117	0,088	110	1,100
BKK08650	*fabL*	1,533	1,177	0,155	135	1,159
BKK40130	*yydK*	1,531	1,165	0,095	388	1,147
BKK12960	*dppE*	1,529	1,155	0,093	140	1,138
BKK09380	*nsrR*	1,528	1,195	0,104	120	1,177
BKK08029	*yfzA*	1,524	1,176	0,110	516	1,159

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK05230	*ydeK*	1,523	1,157	0,085	95	1,139
BKK27610	*apt*	1,518	1,177	0,098	142	1,160
BKK02090	*ybxI*	1,516	1,147	0,129	111	1,130
BKK08760	*spo0M*	1,514	1,227	0,147	248	1,208
BKK37590	*ywgA*	1,514	1,136	0,131	72	1,119
BKK25010	*yqgE*	1,512	1,225	0,116	49	1,206
BKK29840	*ytpP*	1,511	1,157	0,103	98	1,139
BKK23050	*fmnP*	1,509	1,117	0,103	148	1,100
BKK00210	*recR*	1,502	1,165	0,163	503	1,147
BKK21990	*ypdQ*	1,502	1,172	0,103	484	1,155
BKK06910	*cotJC*	1,5	1,197	0,115	261	1,179
BKK35420	*yvyG*	1,5	1,131	0,108	862	1,114
BKK40950	*yyaC*	1,498	1,202	0,096	139	1,184
BKK04840	*ydcO*	1,495	1,177	0,131	359	1,160
BKK24610	*sinR*	1,492	1,202	0,088	162	1,184
BKK11660	*tenI*	1,49	1,207	0,118	264	1,189
BKK30660	*ytkA*	1,486	1,240	0,055	32	1,222
BKK12970	*ykfA*	1,484	1,226	0,139	121	1,208
BKK33450	*helD*	1,476	1,151	0,085	97	1,134
BKK05620	*ydgF*	1,475	1,177	0,113	690	1,160
BKK19630	*deoD*	1,472	1,146	0,119	548	1,129
BKK19430	*yojI*	1,469	1,146	0,132	269	1,129
BKK20820	*yopO*	1,465	1,172	0,106	450	1,155
BKK13010	*ykgB*	1,462	1,183	0,126	555	1,166
BKK10710	*gerPB*	1,461	1,201	0,117	127	1,183
BKK16800	*spoIIIE*	1,461	1,224	0,175	62	1,206
BKK26810	*yrpC*	1,454	1,240	0,084	165	1,222
BKK01660	*ybbD*	1,451	1,219	0,083	66	1,201
BKK11390	*appB*	1,451	1,226	0,162	190	1,208
BKK06150	*gutB*	1,447	1,196	0,126	82	1,179
BKK32160	*yutM*	1,446	1,178	0,110	434	1,161
BKK33720	*opuBB*	1,445	1,183	0,114	181	1,166
BKK32500	*pucB*	1,444	1,183	0,114	156	1,166
BKK32300	*yutE*	1,441	1,178	0,113	384	1,161
BKK35810	*gerBB*	1,435	1,130	0,116	31	1,114
BKK25860	*yqcG*	1,431	1,168	0,107	300	1,151
BKK27280	*yrrT*	1,431	0,989	0,085	47	0,975
BKK33590	*yvaG*	1,43	1,151	0,107	178	1,134
BKK26020	*yqbP*	1,427	1,193	0,122	119	1,177
BKK19120	*czrA*	1,426	1,188	0,109	157	1,172
BKK40630	*yybI*	1,426	1,201	0,109	194	1,184
BKK07570	*yflS*	1,422	1,226	0,140	73	1,208
BKK34240	*epsM*	1,421	1,151	0,108	130	1,135
BKK08530	*yfhH*	1,417	1,175	0,106	257	1,159
BKK17220	*pksR*	1,415	1,180	0,108	157	1,164
BKK28910	*lrgA*	1,404	1,178	0,108	203	1,161
BKK34080	*yvfS*	1,404	1,166	0,097	241	1,149
BKK40120	*yyzE*	1,398	0,989	0,063	46	0,975
BKK06740	*yefB*	1,394	1,195	0,113	251	1,179
BKK28040	*radC*	1,394	1,169	0,118	183	1,153
BKK35860	*pgdS*	1,393	1,165	0,103	527	1,149
BKK34120	*ganB*	1,391	1,177	0,106	416	1,161
BKK14310	*moaD*	1,386	1,195	0,107	574	1,179
BKK24430	*spoIIIAA*	1,386	1,167	0,113	452	1,151
BKK40590	*yybM*	1,383	1,182	0,107	186	1,166
BKK08950	*yhbE*	1,382	1,225	0,165	85	1,208
BKK14009	*ykzT*	1,382	1,182	0,130	124	1,166
BKK09000	*yhbJ*	1,381	1,193	0,123	131	1,177
BKK27820	*yrbC*	1,38	1,169	0,114	470	1,153
BKK25370	*yqfB*	1,378	0,988	0,083	49	0,975
BKK07440	*yfmK*	1,372	1,175	0,106	308	1,159
BKK32810	*yusI*	1,366	1,150	0,103	65	1,134
BKK37030	*racA*	1,362	1,173	0,121	116	1,157
BKK24820	*yqgU*	1,361	1,179	0,106	322	1,164
BKK03830	*yclQ*	1,36	1,218	0,091	69	1,201
BKK25050	*yqgA*	1,36	1,169	0,115	206	1,153
BKK36560	*ywnH*	1,36	1,182	0,103	162	1,166
BKK05370	*ydfD*	1,355	1,175	0,128	409	1,160
BKK01590	*ybaS*	1,353	1,153	0,107	123	1,138
BKK22070	*xpt*	1,352	1,155	0,112	112	1,139
BKK02520	*ycbJ*	1,348	1,145	0,089	215	1,130
BKK08980	*yhbH*	1,347	1,193	0,106	183	1,177
BKK29290	*ytnL*	1,346	1,155	0,092	133	1,139
BKK05100	*yddT*	1,34	1,183	0,112	351	1,167
BKK32440	*pucK*	1,339	1,163	0,110	68	1,148
BKK17600	*xylA*	1,333	1,179	0,138	65	1,164
BKK26089	*yqzN*	1,329	1,192	0,118	191	1,177
BKK31830	*yueE*	1,328	1,163	0,111	251	1,148
BKK19650	*yodM*	1,325	1,144	0,118	1093	1,129

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta² (%)	erage width (µı	+/-	nb	ADP
BKK02630	*tatAD*	1,323	1,217	0,079	43	1,201
BKK21920	*ugtP*	1,322	1,222	0,162	73	1,206
BKK13230	*thiV*	1,317	1,224	0,144	59	1,208
BKK11710	*thiD*	1,316	1,205	0,097	800	1,189
BKK33980	*yvbT*	1,311	1,177	0,117	449	1,161
BKK35400	*flgL*	1,309	1,150	0,127	456	1,135
BKK35990	*ywrO*	1,308	1,129	0,093	92	1,114
BKK26370	*yqaC*	1,306	1,192	0,098	415	1,177
BKK07190	*yezD*	1,304	1,194	0,120	279	1,179
BKK14290	*mobB*	1,304	1,195	0,098	513	1,179
BKK41020	*trmE*	1,303	1,175	0,113	189	1,160
BKK29860	*ytoP*	1,301	1,128	0,120	71	1,113
BKK10320	*yhfP*	1,298	1,178	0,106	390	1,163
BKK22020	*ypbS*	1,298	1,115	0,131	151	1,100
BKK15440	*ylyA*	1,297	1,154	0,088	127	1,139
BKK24960	*pstBA*	1,293	1,222	0,123	132	1,206
BKK05150	*ydeC*	1,292	1,173	0,117	96	1,158
BKK24530	*yqhM*	1,29	1,202	0,120	251	1,187
BKK19360	*odhB*	1,287	1,144	0,121	549	1,129
BKK37090	*ywjI*	1,282	1,162	0,108	254	1,147
BKK38260	*efeN*	1,277	1,181	0,110	63	1,166
BKK02250	*ybfJ*	1,275	1,217	0,068	77	1,201
BKK35310	*yvyD*	1,272	1,150	0,124	178	1,135
BKK22090	*kdgT*	1,27	1,222	0,126	196	1,206
BKK30620	*ytlD*	1,269	1,238	0,081	34	1,222
BKK03530	*ycxA*	1,267	1,217	0,115	381	1,201
BKK18180	*yngB*	1,266	1,222	0,167	172	1,206
BKK04040	*ycsE*	1,264	1,174	0,120	687	1,160
BKK35970	*ywsB*	1,263	1,128	0,143	32	1,114
BKK24520	*mntR*	1,262	1,168	0,118	145	1,153
BKK05529	*ydzR*	1,26	0,987	0,076	37	0,975
BKK15110	*ylbQ*	1,26	1,194	0,129	310	1,179
BKK15100	*ylbP*	1,259	1,171	0,107	130	1,156
BKK19060	*yobR*	1,258	1,199	0,139	119	1,184
BKK05570	*ydgB*	1,25	1,182	0,127	169	1,167
BKK14960	*ylbC*	1,249	1,194	0,116	99	1,179
BKK11090	*yitR*	1,244	1,177	0,102	427	1,163
BKK29620	*hisJ*	1,242	1,127	0,106	116	1,113
BKK30160	*ytcQ*	1,242	1,237	0,132	33	1,222
BKK20200	*yorZ*	1,238	1,176	0,118	242	1,162
BKK21360	*yomH*	1,238	1,169	0,108	660	1,155
BKK30190	*bioI*	1,237	1,170	0,111	146	1,156
BKK36940	*ywlD*	1,237	0,987	0,067	60	0,975
BKK18470	*proJ*	1,233	1,186	0,107	362	1,172
BKK21560	*yokK*	1,232	1,168	0,113	374	1,153
BKK06319	*ydzX*	1,231	1,193	0,111	263	1,179
BKK11740	*cotZ*	1,229	1,177	0,114	369	1,163
BKK32540	*bsn*	1,223	1,153	0,085	138	1,139
BKK06120	*ydjB*	1,222	1,153	0,103	162	1,139
BKK29690	*acuA*	1,222	1,153	0,091	97	1,139
BKK03070	*mdr*	1,221	1,216	0,071	60	1,201
BKK32570	*frlD*	1,218	0,987	0,085	108	0,975
BKK18330	*ppsB*	1,217	1,186	0,104	265	1,172
BKK03660	*ycIE*	1,216	1,152	0,084	77	1,138
BKK10580	*yhjO*	1,213	1,223	0,167	120	1,208
BKK35960	*rbsB*	1,21	1,175	0,108	324	1,161
BKK07390	*yfmP*	1,206	1,173	0,122	115	1,159
BKK03210	*ycgN*	1,205	1,144	0,117	102	1,130
BKK12830	*spoIISA*	1,205	1,182	0,112	386	1,168
BKK23670	*yqkA*	1,203	1,165	0,111	373	1,151
BKK40780	*tetL*	1,202	1,161	0,100	434	1,147
BKK37400	*albD*	1,199	1,180	0,104	91	1,166
BKK02770	*yccK*	1,193	1,173	0,111	306	1,160
BKK27090	*aapA*	1,193	1,191	0,095	644	1,177
BKK08450	*yfiZ*	1,191	0,987	0,077	110	0,975
BKK32390	*yunF*	1,19	1,162	0,104	91	1,148
BKK33880	*ywbJ*	1,19	0,987	0,073	46	0,975
BKK23330	*ypuC*	1,187	1,201	0,097	299	1,187
BKK11550	*yjbH*	1,185	1,197	0,107	164	1,183
BKK18890	*yabF*	1,181	1,151	0,087	139	1,138
BKK24110	*yqzF*	1,181	1,167	0,120	340	1,153
BKK30480	*ytqA*	1,179	1,170	0,119	97	1,156
BKK31800	*yueF*	1,174	1,161	0,113	30	1,148
BKK07580	*citS*	1,172	1,223	0,135	97	1,208
BKK23340	*ypuB*	1,172	1,201	0,096	492	1,187
BKK19200	*desR*	1,17	1,185	0,081	187	1,172
BKK13700	*clpE*	1,166	1,180	0,171	37	1,166
BKK02210	*ybfH*	1,165	1,143	0,101	173	1,130
BKK39670	*ioIJ*	1,165	1,178	0,100	128	1,165

BKK name [1]	gene	screening delta² (%)	erage width (µı	+/-	nb	ADP
BKK19690	*kamA*	1,164	1,142	0,121	516	1,129
BKK30690	*ytiB*	1,163	1,169	0,101	118	1,156
BKK34450	*sacB*	1,163	1,148	0,118	344	1,135
BKK18310	*ppsD*	1,159	1,151	0,074	48	1,138
BKK24420	*spoIIIAB*	1,155	1,220	0,143	44	1,206
BKK20999	*yoyJ*	1,154	1,168	0,101	696	1,155
BKK37790	*rocG*	1,141	1,132	0,104	77	1,119
BKK22580	*ypiB*	1,14	1,113	0,101	432	1,100
BKK20840	*yopM*	1,138	1,167	0,109	463	1,153
BKK35120	*yvlB*	1,138	1,148	0,095	221	1,135
BKK11600	*yjbM*	1,13	1,202	0,123	874	1,189
BKK08500	*yfhE*	1,128	1,172	0,107	303	1,159
BKK25610	*yqeM*	1,125	1,177	0,086	116	1,164
BKK09860	*khtT*	1,124	1,222	0,149	81	1,208
BKK21230	*yomT*	1,118	1,168	0,121	384	1,155
BKK02400	*ybgF*	1,117	1,143	0,092	116	1,130
BKK06077	*ydzW*	1,114	1,171	0,098	123	1,158
BKK34530	*cotR*	1,114	1,148	0,101	139	1,135
BKK06300	*cotA*	1,113	1,192	0,137	231	1,179
BKK39100	*yxiO*	1,113	1,220	0,122	240	1,206
BKK19040	*csaA*	1,103	1,185	0,105	258	1,172
BKK29300	*rbfK*	1,1	1,152	0,102	129	1,139
BKK13090	*ykkC*	1,099	1,222	0,147	54	1,208
BKK15870	*recG*	1,094	1,170	0,106	87	1,157
BKK33070	*gerAC*	1,092	1,147	0,090	128	1,134
BKK19900	*yotF*	1,09	1,170	0,105	101	1,158
BKK12270	*yjlB*	1,086	1,202	0,139	1310	1,189
BKK03320	*nasB*	1,083	1,172	0,122	628	1,160
BKK14080	*ykuH*	1,083	1,179	0,121	496	1,166
BKK31530	*yufM*	1,082	1,164	0,123	167	1,151
BKK20160	*yosD*	1,078	1,141	0,145	94	1,129
BKK18770	*cyeA*	1,073	1,150	0,093	165	1,138
BKK23230	*ypuF*	1,071	1,200	0,109	87	1,187
BKK12620	*xkdH*	1,07	1,202	0,146	325	1,189
BKK32420	*pucR*	1,068	1,174	0,104	189	1,161
BKK08130	*yfjE*	1,06	0,985	0,086	35	0,975
BKK27340	*yrrO*	1,056	1,163	0,119	280	1,151
BKK34090	*yvfR*	1,056	1,162	0,114	355	1,149
BKK26800	*yrpB*	1,054	1,189	0,104	219	1,177
BKK30640	*ytkC*	1,053	1,150	0,100	144	1,138
BKK39930	*yxaM*	1,051	1,162	0,102	406	1,149
BKK32200	*yutJ*	1,05	1,151	0,091	155	1,139
BKK03160	*ycgJ*	1,049	1,172	0,103	409	1,160
BKK21290	*yomN*	1,047	1,167	0,102	284	1,155
BKK30230	*bioK*	1,047	1,163	0,122	231	1,151
BKK23730	*yqjV*	1,044	1,199	0,107	514	1,187
BKK09250	*yhcX*	1,04	1,189	0,106	161	1,177
BKK18820	*yobB*	1,038	1,174	0,114	363	1,162
BKK39340	*hutP*	1,031	1,177	0,110	128	1,165
BKK26210	*yqoR*	1,027	1,165	0,113	220	1,153
BKK06037	*ydzT*	1,026	1,179	0,126	384	1,167
BKK39330	*abnB*	1,022	1,159	0,097	385	1,147
BKK37780	*rocA*	1,02	1,159	0,119	283	1,147
BKK14520	*adeC*	1,018	1,191	0,134	117	1,179
BKK21250	*yomR*	1,016	1,167	0,109	564	1,155
BKK21050	*yonN*	1,015	1,167	0,111	523	1,155
BKK02120	*ybeC*	1,014	1,141	0,091	47	1,130
BKK08330	*yfiN*	1,011	1,171	0,101	487	1,159
BKK17410	*cwlC*	1,01	1,219	0,172	262	1,206
BKK27080	*levR*	1,009	1,189	0,102	272	1,177
BKK26380	*yqaB*	1,008	1,189	0,105	524	1,177
BKK05710	*ydhD*	1,005	1,214	0,085	97	1,201
BKK39690	*iolH*	1,004	1,176	0,107	125	1,165
BKK32720	*yurZ*	1,003	1,146	0,109	150	1,134
BKK02830	*ycdF*	1,001	1,171	0,097	372	1,160
BKK18670	*yoaN*	1,001	1,149	0,087	138	1,138
BKK28340	*ysnF*	1,001	1,171	0,102	308	1,160
BKK31260	*mcpB*	1	1,173	0,113	392	1,161
BKK27440	*glnH*	0,995	1,171	0,111	306	1,160
BKK16330	*cheY*	0,994	1,173	0,112	242	1,162
BKK29390	*ytmI*	0,992	1,173	0,112	387	1,161
BKK04800	*ydcL*	0,989	1,159	0,119	400	1,147
BKK27840	*safA*	0,988	1,165	0,122	303	1,153
BKK11210	*argB*	0,985	1,195	0,107	73	1,183
BKK34190	*yvfH*	0,985	1,146	0,112	621	1,135
BKK39220	*yxxG*	0,984	1,176	0,119	107	1,165
BKK27880	*nifS*	0,982	1,162	0,113	333	1,151
BKK14880	*ctaB*	0,981	1,191	0,144	304	1,179
BKK18980	*yobJ*	0,981	1,173	0,107	322	1,162

BKK name [1]	gene	screening delta² (%)	erage width (µı	+/-	nb	ADP
BKK39210	*yxiF*	0,98	1,176	0,087	93	1,165
BKK04120	*yczI*	0,979	1,176	0,071	157	1,165
BKK17530	*ynaE*	0,978	1,173	0,109	333	1,162
BKK34410	*yveG*	0,977	1,146	0,127	133	1,135
BKK40060	*gntK*	0,976	1,179	0,123	198	1,168
BKK05170	*ydeE*	0,975	0,985	0,090	172	0,975
BKK15470	*pyrR*	0,975	1,151	0,074	139	1,139
BKK27060	*levE*	0,973	1,162	0,119	322	1,151
BKK11880	*metC*	0,972	1,201	0,109	76	1,189
BKK33170	*yvrB*	0,971	1,145	0,072	109	1,134
BKK05300	*ydeQ*	0,969	1,171	0,111	442	1,160
BKK24750	*yqhB*	0,966	1,175	0,101	199	1,164
BKK22150	*ypvA*	0,965	1,111	0,129	31	1,100
BKK30890	*ytxO*	0,965	1,167	0,102	119	1,156
BKK37410	*albE*	0,963	1,161	0,113	302	1,149
BKK09280	*glpF*	0,962	1,179	0,100	204	1,168
BKK11860	*yjcH*	0,962	1,200	0,130	1045	1,189
BKK13390	*ykoT*	0,962	1,178	0,160	133	1,166
BKK07050	*yesW*	0,956	1,171	0,118	723	1,160
BKK25910	*yqxH*	0,951	1,169	0,093	161	1,158
BKK30510	*ytpA*	0,951	1,167	0,088	123	1,156
BKK14100	*ykuJ*	0,949	1,150	0,096	157	1,139
BKK33050	*gerAA*	0,948	1,145	0,108	98	1,134
BKK27460	*glnP*	0,944	1,234	0,069	98	1,222
BKK04140	*pbpC*	0,941	1,213	0,074	38	1,201
BKK35930	*rbsD*	0,94	1,160	0,109	441	1,149
BKK27540	*yrvM*	0,937	1,164	0,118	194	1,153
BKK18510	*yoxC*	0,936	1,183	0,106	142	1,172
BKK34340	*epsD*	0,935	1,177	0,099	149	1,166
BKK32840	*fadN*	0,933	1,145	0,109	126	1,134
BKK29990	*pbuO*	0,932	1,233	0,098	43	1,222
BKK40080	*gntZ*	0,93	1,179	0,112	275	1,168
BKK40470	*yycC*	0,929	1,177	0,122	74	1,166
BKK36540	*ywnJ*	0,925	1,125	0,114	142	1,114
BKK20410	*yorE*	0,921	1,173	0,108	274	1,162
BKK30500	*ytpB*	0,921	1,167	0,117	135	1,156
BKK28060	*spoIIB*	0,918	1,233	0,069	47	1,222
BKK02580	*ycbO*	0,912	1,140	0,092	111	1,130
BKK08260	*yfiG*	0,912	1,219	0,123	61	1,208
BKK08460	*yfhA*	0,912	1,179	0,110	271	1,168
BKK11929	*yjzG*	0,91	1,173	0,124	238	1,163
BKK15690	*rpoZ*	0,907	1,145	0,113	146	1,134
BKK35500	*degS*	0,907	1,195	0,096	368	1,184
BKK21080	*yonI*	0,894	1,165	0,111	263	1,155
BKK38170	*qoxA*	0,892	1,167	0,111	118	1,157
BKK06230	*ioIT*	0,891	1,212	0,099	51	1,201
BKK30350	*yttB*	0,891	1,233	0,104	53	1,222
BKK29600	*braB*	0,888	1,150	0,097	141	1,139
BKK32220	*yutI*	0,888	1,158	0,116	96	1,148
BKK07910	*yfkF*	0,887	1,173	0,111	307	1,163
BKK18720	*yoaR*	0,887	1,172	0,117	408	1,162
BKK27430	*glnQ*	0,885	1,233	0,073	63	1,222
BKK33270	*yvrO*	0,885	1,177	0,092	100	1,166
BKK02850	*adcA*	0,882	1,212	0,185	62	1,201
BKK28530	*etfB*	0,88	1,170	0,104	54	1,160
BKK15810	*spoVM*	0,875	1,217	0,143	136	1,206
BKK18849	*yozV*	0,872	1,148	0,096	136	1,138
BKK12500	*xkdA*	0,87	1,199	0,131	581	1,189
BKK21180	*yomY*	0,87	1,165	0,105	121	1,155
BKK30710	*ythA*	0,869	1,171	0,110	517	1,161
BKK32380	*yunE*	0,869	1,233	0,088	187	1,222
BKK30659	*ytzI*	0,864	1,166	0,099	112	1,156
BKK29630	*yttP*	0,863	1,161	0,103	266	1,151
BKK40022	*yxaC*	0,862	1,159	0,118	436	1,149
BKK29940	*ytlR*	0,859	1,166	0,091	104	1,156
BKK13620	*mtnD*	0,858	1,173	0,106	247	1,163
BKK05670	*ydgJ*	0,856	1,177	0,083	202	1,167
BKK03680	*ycIG*	0,855	1,148	0,083	150	1,138
BKK39540	*yxeI*	0,853	1,176	0,161	61	1,166
BKK17680	*thyA*	0,843	1,172	0,102	391	1,162
BKK07735	*yfiB*	0,842	1,169	0,116	352	1,159
BKK06170	*ydjE*	0,841	1,169	0,109	242	1,160
BKK11490	*yjbC*	0,84	1,193	0,108	104	1,183
BKK30990	*thiT*	0,839	1,232	0,144	449	1,222
BKK18110	*ynfC*	0,838	1,181	0,097	86	1,172
BKK26490	*yrkJ*	0,836	1,163	0,118	313	1,153
BKK37280	*narG*	0,836	1,128	0,095	66	1,119
BKK06480	*purL*	0,835	1,157	0,105	230	1,147
BKK30135	*yteP*	0,834	1,167	0,105	100	1,158

BKK name [1]	gene	screening delta² (%)	erage width (µı	+/-	nb	ADP
BKK32770	*yusE*	0,831	1,144	0,103	127	1,134
BKK15250	*ylxW*	0,829	1,178	0,106	230	1,168
BKK29160	*ytvI*	0,829	0,983	0,092	59	0,975
BKK35050	*yvnA*	0,828	1,171	0,104	484	1,161
BKK38330	*lrgB*	0,825	1,176	0,115	146	1,166
BKK17020	*ymcA*	0,823	1,173	0,121	89	1,164
BKK06240	*bdhA*	0,822	1,189	0,118	208	1,179
BKK14560	*defB*	0,822	1,189	0,111	157	1,179
BKK23180	*spmA*	0,821	1,161	0,110	214	1,151
BKK33310	*fhuB*	0,821	1,176	0,089	132	1,166
BKK16260	*ylxF*	0,819	1,172	0,105	385	1,163
BKK19000	*yobL*	0,818	1,171	0,109	228	1,162
BKK05540	*ydfS*	0,817	1,157	0,108	443	1,147
BKK16870	*ymfI*	0,815	1,173	0,127	152	1,164
BKK23960	*artR*	0,815	1,147	0,126	64	1,138
BKK34440	*pbpE*	0,815	1,159	0,104	531	1,149
BKK17180	*pksJ*	0,813	1,173	0,138	53	1,164
BKK03940	*ycnI*	0,808	1,167	0,103	145	1,158
BKK16940	*recA*	0,808	1,171	0,136	314	1,162
BKK02440	*glnJ*	0,805	1,139	0,095	145	1,130
BKK36820	*atpG*	0,805	1,157	0,108	161	1,147
BKK15490	*pyrB*	0,801	1,165	0,095	92	1,156
BKK16890	*ymfK*	0,801	1,173	0,116	110	1,164
BKK38160	*qoxB*	0,8	1,157	0,106	300	1,147
BKK20940	*yopC*	0,797	1,164	0,106	347	1,155
BKK23740	*yqjU*	0,796	1,197	0,101	476	1,187
BKK04260	*topB*	0,794	1,169	0,124	161	1,160
BKK13070	*ykkA*	0,794	1,176	0,091	75	1,166
BKK36140	*ywqO*	0,792	1,123	0,129	34	1,114
BKK38670	*yxlE*	0,791	1,174	0,100	71	1,165
BKK04970	*yddH*	0,788	1,167	0,103	187	1,158
BKK15040	*ylbK*	0,786	1,188	0,099	57	1,179
BKK35980	*ywsA*	0,785	1,166	0,104	214	1,157
BKK12170	*yjgD*	0,782	1,198	0,171	663	1,189
BKK05810	*gmuB*	0,781	1,176	0,070	262	1,167
BKK04550	*ydbP*	0,78	1,174	0,115	38	1,165
BKK16980	*spoVS*	0,78	1,171	0,114	489	1,162
BKK39110	*deaD*	0,78	1,174	0,108	71	1,165
BKK14930	*ctaG*	0,778	1,188	0,084	340	1,179
BKK38250	*ywbO*	0,775	1,166	0,128	73	1,157
BKK20570	*yoqN*	0,773	1,138	0,129	216	1,129
BKK22430	*panB*	0,77	1,148	0,093	106	1,139
BKK05030	*yddM*	0,763	1,168	0,114	341	1,160
BKK07210	*yetK*	0,763	1,177	0,114	305	1,168
BKK21270	*yomP*	0,759	1,164	0,106	512	1,155
BKK34350	*epsC*	0,759	1,158	0,105	493	1,149
BKK18000	*citB*	0,758	1,171	0,116	333	1,162
BKK23200	*ypuI*	0,758	1,196	0,113	175	1,187
BKK14690	*yktD*	0,757	1,188	0,123	159	1,179
BKK38220	*ywcC*	0,755	1,127	0,129	194	1,119
BKK39910	*yxnB*	0,754	1,173	0,116	114	1,165
BKK02650	*pcp*	0,751	1,156	0,099	407	1,147
BKK04110	*lipC*	0,749	1,168	0,123	363	1,160
BKK33150	*yvqK*	0,749	1,143	0,105	183	1,134
BKK04690	*rsbT*	0,747	1,174	0,125	153	1,165
BKK17480	*ynzF*	0,747	1,171	0,107	549	1,162
BKK38760	*cydA*	0,746	1,173	0,112	80	1,165
BKK28150	*hemC*	0,744	1,168	0,122	118	1,160
BKK12810	*xlyA*	0,738	1,171	0,124	192	1,163
BKK37730	*bacB*	0,738	1,158	0,110	383	1,149
BKK16880	*ymfJ*	0,737	1,172	0,115	163	1,164
BKK25800	*yqcK*	0,735	1,162	0,119	297	1,153
BKK20920	*yopE*	0,734	1,163	0,093	358	1,155
BKK32340	*lytH*	0,734	1,231	0,068	103	1,222
BKK22670	*trpD*	0,727	1,108	0,100	210	1,100
BKK34860	*hisI*	0,727	1,143	0,118	365	1,135
BKK08750	*ygxA*	0,722	1,171	0,117	280	1,163
BKK07300	*yfnE*	0,721	0,982	0,107	90	0,975
BKK17310	*ymaG*	0,72	1,172	0,103	209	1,164
BKK08220	*yfiC*	0,719	1,217	0,149	146	1,208
BKK20790	*yopR*	0,719	1,163	0,110	540	1,155
BKK10330	*yhfQ*	0,717	1,171	0,101	412	1,163
BKK04839	*ydzL*	0,716	1,173	0,101	120	1,165
BKK21370	*yomG*	0,713	1,163	0,115	493	1,155
BKK24190	*yqiI*	0,713	1,215	0,141	36	1,206
BKK39139	*yxzJ*	0,713	1,173	0,106	60	1,165
BKK10810	*yisP*	0,711	1,192	0,109	100	1,183
BKK38980	*scoB*	0,71	1,175	0,111	95	1,166
BKK07310	*yfnD*	0,706	1,187	0,117	483	1,179

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK22950	*ypdA*	0,704	1,108	0,122	68	1,100
BKK16280	*flgD*	0,7	1,176	0,110	238	1,168
BKK19980	*yosW*	0,699	1,170	0,113	242	1,162
BKK12010	*manP*	0,698	1,197	0,110	207	1,189
BKK24400	*spoIIIAD*	0,697	1,215	0,156	73	1,206
BKK00760	*pabC*	0,694	1,166	0,108	91	1,158
BKK13760	*ykvN*	0,694	1,171	0,104	317	1,163
BKK19940	*yotB*	0,694	1,170	0,112	401	1,162
BKK39310	*yxiC*	0,693	1,173	0,095	154	1,165
BKK20620	*yoqI*	0,69	1,170	0,123	243	1,162
BKK30060	*ytfP*	0,688	1,164	0,097	179	1,156
BKK07410	*yfmN*	0,686	1,167	0,117	156	1,159
BKK12539	*ykzK*	0,685	1,157	0,127	328	1,149
BKK12600	*xkdF*	0,684	1,174	0,139	219	1,166
BKK38620	*aag*	0,684	1,173	0,118	86	1,165
BKK12030	*yjdF*	0,683	1,217	0,121	62	1,208
BKK27110	*yrhO*	0,681	1,185	0,110	374	1,177
BKK27230	*yrhD*	0,681	1,185	0,110	374	1,177
BKK33460	*yvgT*	0,681	1,142	0,102	219	1,134
BKK31670	*yuxO*	0,677	1,156	0,143	105	1,148
BKK38910	*yxjL*	0,677	1,215	0,133	72	1,206
BKK02260	*ybfK*	0,676	1,167	0,107	479	1,160
BKK02940	*yceH*	0,672	1,138	0,090	112	1,130
BKK05000	*yddK*	0,668	1,167	0,120	413	1,160
BKK18050	*yneQ*	0,668	1,170	0,120	382	1,162
BKK34000	*cyeB*	0,665	1,157	0,102	296	1,149
BKK21120	*yonE*	0,662	1,163	0,103	431	1,155
BKK17750	*yndD*	0,657	1,171	0,099	143	1,164
BKK24020	*bmrR*	0,655	1,161	0,113	349	1,153
BKK24230	*spoIVB*	0,651	1,214	0,151	171	1,206
BKK28140	*hemD*	0,649	1,167	0,115	32	1,160
BKK30670	*luxS*	0,648	1,164	0,092	146	1,156
BKK12630	*xkdI*	0,643	1,197	0,115	243	1,189
BKK37850	*spsG*	0,643	1,126	0,106	156	1,119
BKK01480	*truA*	0,642	1,167	0,109	987	1,160
BKK03970	*ycnL*	0,64	1,172	0,075	138	1,165
BKK02700	*estA*	0,637	1,209	0,069	46	1,201
BKK40690	*yybC*	0,637	1,192	0,082	150	1,184
BKK25530	*spoIIP*	0,634	1,230	0,122	228	1,222
BKK39640	*yxdL*	0,634	1,230	0,123	41	1,222
BKK18460	*gltC*	0,633	1,145	0,104	86	1,138
BKK09070	*yhcG*	0,632	1,184	0,119	349	1,177
BKK39570	*yxeF*	0,632	1,230	0,084	41	1,222
BKK37970	*ung*	0,628	1,126	0,117	234	1,119
BKK05400	*ydfG*	0,627	1,175	0,090	283	1,167
BKK10800	*yizA*	0,627	1,191	0,116	78	1,183
BKK24250	*ahrC*	0,626	1,194	0,115	224	1,187
BKK06074	*ydzW*	0,624	1,175	0,131	184	1,167
BKK15650	*yloB*	0,624	1,141	0,087	176	1,134
BKK22570	*ypiF*	0,623	1,107	0,115	586	1,100
BKK08190	*moIR*	0,622	1,166	0,120	268	1,159
BKK29570	*sspA*	0,62	1,120	0,105	74	1,113
BKK14650	*yktB*	0,618	1,186	0,131	229	1,179
BKK38200	*galK*	0,615	1,155	0,101	480	1,147
BKK17699	*ynzK*	0,614	1,171	0,101	59	1,164
BKK21450	*yolJ*	0,614	1,158	0,108	327	1,151
BKK40860	*yyaH*	0,611	1,192	0,115	101	1,184
BKK07450	*yfmJ*	0,604	1,166	0,110	189	1,159
BKK23390	*spoVAF*	0,602	1,214	0,144	33	1,206
BKK39490	*yxeN*	0,597	1,145	0,103	70	1,138
BKK02450	*glnL*	0,596	1,167	0,118	302	1,160
BKK12050	*yjdH*	0,596	1,196	0,132	53	1,189
BKK02360	*nagBB*	0,593	1,137	0,109	196	1,130
BKK08140	*yfjD*	0,591	1,166	0,104	594	1,159
BKK00420	*ksgA*	0,585	1,154	0,103	542	1,147
BKK12610	*xkdG*	0,585	1,196	0,089	288	1,189
BKK16020	*rimM*	0,584	1,163	0,115	58	1,156
BKK11470	*oppF*	0,58	1,169	0,115	270	1,163
BKK16299	*ylzI*	0,576	1,169	0,124	264	1,163
BKK36870	*atpB*	0,568	1,173	0,101	96	1,166
BKK38000	*ywdD*	0,568	1,125	0,083	111	1,119
BKK40380	*yycI*	0,565	1,136	0,096	121	1,130
BKK00890	*yacL*	0,563	1,154	0,107	520	1,147
BKK30310	*ytwF*	0,563	1,163	0,099	107	1,156
BKK15880	*fapR*	0,562	1,125	0,126	861	1,119
BKK38030	*ywdA*	0,562	1,125	0,095	98	1,119
BKK21400	*yomD*	0,558	1,161	0,101	255	1,155
BKK30530	*ytnA*	0,558	1,162	0,103	83	1,156
BKK31340	*yugM*	0,553	1,144	0,094	147	1,138

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK14790	*ylaI*	0,552	1,186	0,101	798	1,179
BKK36930	*ywlE*	0,551	1,163	0,095	139	1,157
BKK19060	*yobR*	0,546	1,144	0,096	95	1,138
BKK32550	*yurJ*	0,544	1,146	0,091	112	1,139
BKK00880	*disA*	0,541	1,144	0,128	65	1,138
BKK19090	*yobU*	0,541	1,168	0,116	346	1,162
BKK29950	*ytlQ*	0,541	1,162	0,090	85	1,156
BKK16780	*rnjB*	0,54	1,170	0,103	100	1,164
BKK05910	*ydiB*	0,539	1,174	0,094	138	1,167
BKK17200	*pksM*	0,538	1,170	0,123	99	1,164
BKK33440	*cysJ*	0,538	1,140	0,123	146	1,134
BKK22310	*recU*	0,533	1,106	0,126	173	1,100
BKK06640	*yerI*	0,531	1,185	0,138	221	1,179
BKK14030	*ykuC*	0,53	1,213	0,164	91	1,206
BKK35590	*tuaC*	0,53	1,172	0,112	139	1,166
BKK13250	*ykoG*	0,529	1,173	0,098	350	1,166
BKK12100	*yjeA*	0,526	1,169	0,111	403	1,163
BKK24550	*gcvPB*	0,522	1,193	0,116	252	1,187
BKK04880	*ydcS*	0,517	1,171	0,133	55	1,165
BKK03750	*yclJ*	0,515	1,171	0,090	172	1,165
BKK31380	*yuzA*	0,512	1,154	0,097	152	1,148
BKK36620	*ywmB*	0,508	1,153	0,102	370	1,147
BKK15069	*ylzH*	0,506	1,145	0,123	68	1,139
BKK30470	*ytzC*	0,505	1,162	0,102	111	1,156
BKK39960	*yxaI*	0,505	1,171	0,101	113	1,165
BKK38050	*sacP*	0,503	1,124	0,113	151	1,119
BKK11350	*yjaZ*	0,502	1,168	0,108	254	1,163
BKK13820	*ykvT*	0,501	1,172	0,104	198	1,166
BKK32760	*yusD*	0,498	1,167	0,114	491	1,161
BKK36990	*ywkF*	0,497	1,163	0,124	81	1,157
BKK18908	*yozY*	0,495	1,144	0,094	152	1,138
BKK26510	*yrkH*	0,495	1,183	0,103	265	1,177
BKK22560	*qcrA*	0,492	1,106	0,116	509	1,100
BKK39780	*iolS*	0,491	1,170	0,099	67	1,165
BKK09640	*yhdY*	0,488	1,183	0,113	140	1,177
BKK37720	*bacC*	0,487	1,124	0,097	60	1,119
BKK16370	*fliR*	0,486	1,167	0,104	307	1,162
BKK37900	*spsB*	0,485	1,155	0,109	325	1,149
BKK19620	*yodJ*	0,484	1,212	0,137	277	1,206
BKK16090	*sucC*	0,482	1,165	0,106	324	1,160
BKK40870	*ccpB*	0,48	1,153	0,106	296	1,147
BKK18920	*phrK*	0,479	1,174	0,123	361	1,168
BKK22940	*prsW*	0,479	1,212	0,113	177	1,206
BKK08700	*ygaE*	0,475	1,164	0,116	366	1,159
BKK03720	*gerKB*	0,474	1,170	0,119	187	1,165
BKK31330	*yugN*	0,474	1,161	0,101	90	1,156
BKK26140	*yqbE*	0,472	1,157	0,107	509	1,151
BKK23519	*yqzK*	0,469	1,193	0,103	228	1,187
BKK20050	*yosQ*	0,467	1,135	0,128	244	1,129
BKK24240	*recN*	0,462	1,193	0,098	405	1,187
BKK17290	*ebrB*	0,459	1,212	0,123	103	1,206
BKK12490	*yjqC*	0,456	1,194	0,132	479	1,189
BKK23710	*polYB*	0,455	1,192	0,105	309	1,187
BKK04680	*rsbS*	0,454	1,170	0,106	190	1,165
BKK13720	*queC*	0,453	1,172	0,115	305	1,166
BKK04920	*ydaC*	0,451	1,153	0,104	382	1,147
BKK18500	*yoxD*	0,441	1,167	0,116	316	1,162
BKK28680	*glcD*	0,441	1,144	0,102	258	1,139
BKK14210	*ykuT*	0,44	1,168	0,122	316	1,163
BKK32350	*yunB*	0,439	1,144	0,103	309	1,139
BKK39760	*mmsA*	0,439	1,163	0,085	196	1,158
BKK40030	*yxaB*	0,439	1,161	0,102	150	1,156
BKK16690	*pnpA*	0,437	1,167	0,103	296	1,162
BKK13160	*ohrB*	0,436	1,171	0,144	251	1,166
BKK13200	*rsbRB*	0,432	1,168	0,113	293	1,163
BKK40110	*bglA*	0,432	1,173	0,112	233	1,168
BKK02220	*ybfI*	0,43	1,135	0,092	170	1,130
BKK28510	*xsa*	0,428	1,165	0,117	121	1,160
BKK32960	*yusY*	0,423	1,171	0,100	174	1,166
BKK05270	*ydzF*	0,422	1,165	0,117	427	1,160
BKK23360	*ppiB*	0,418	1,158	0,109	475	1,153
BKK38320	*cidA*	0,418	1,154	0,114	449	1,149
BKK23380	*lysA*	0,417	1,192	0,107	296	1,187
BKK32910	*yusS*	0,417	1,139	0,099	102	1,134
BKK23850	*zwf*	0,414	1,158	0,119	278	1,153
BKK39450	*yxeR*	0,414	1,211	0,143	161	1,206
BKK17170	*pksI*	0,412	1,168	0,122	55	1,164
BKK19490	*gerT*	0,408	1,134	0,110	855	1,129
BKK16290	*flgE*	0,406	1,167	0,105	264	1,163

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK39410	*nupC*	0,406	1,211	0,121	169	1,206
BKK39940	*yxaL*	0,406	1,169	0,120	149	1,165
BKK12320	*yjmC*	0,402	1,194	0,112	487	1,189
BKK26870	*yraN*	0,401	1,227	0,077	226	1,222
BKK00540	*yabK*	0,399	1,168	0,116	119	1,164
BKK23720	*yqzH*	0,399	1,192	0,111	149	1,187
BKK17640	*alrB*	0,398	1,211	0,140	126	1,206
BKK20900	*yopG*	0,397	1,159	0,111	293	1,155
BKK04900	*yddA*	0,394	1,170	0,097	174	1,165
BKK12069	*yjzH*	0,394	1,167	0,121	380	1,163
BKK05580	*ydgC*	0,389	1,172	0,078	186	1,167
BKK27120	*sigV*	0,389	1,181	0,111	106	1,177
BKK15500	*pyrC*	0,388	1,162	0,099	114	1,158
BKK33049	*yvzF*	0,388	1,139	0,107	137	1,134
BKK24100	*bkdR*	0,386	1,162	0,101	76	1,158
BKK36800	*atpC*	0,386	1,119	0,100	114	1,114
BKK20870	*yopJ*	0,385	1,156	0,121	241	1,151
BKK29250	*nrnA*	0,383	1,117	0,091	182	1,113
BKK06010	*ydiL*	0,381	1,172	0,093	276	1,167
BKK14970	*ylbD*	0,376	1,172	0,101	330	1,168
BKK28720	*abfA*	0,375	1,144	0,093	167	1,139
BKK34020	*yvbX*	0,375	1,139	0,089	166	1,134
BKK31360	*yugK*	0,372	1,152	0,115	238	1,148
BKK17630	*yncC*	0,371	1,211	0,179	185	1,206
BKK35340	*fliD*	0,37	1,139	0,112	342	1,135
BKK01600	*ybbA*	0,369	1,181	0,096	187	1,177
BKK27980	*spoIVFA*	0,369	1,227	0,103	37	1,222
BKK08470	*yfhB*	0,363	1,163	0,106	647	1,159
BKK04280	*ydaK*	0,359	1,169	0,102	90	1,165
BKK17140	*pksF*	0,358	1,168	0,102	125	1,164
BKK22170	*ypsC*	0,356	1,143	0,091	185	1,139
BKK22140	*kduD*	0,355	1,104	0,136	162	1,100
BKK34950	*pelC*	0,355	1,170	0,118	121	1,166
BKK03520	*srfAD*	0,349	1,206	0,110	358	1,201
BKK33190	*yvrD*	0,349	1,138	0,096	120	1,134
BKK39770	*iolR*	0,349	1,151	0,099	347	1,147
BKK21620	*yokE*	0,345	1,157	0,112	268	1,153
BKK06400	*yebE*	0,338	1,162	0,108	155	1,158
BKK14730	*ylaC*	0,337	1,183	0,164	47	1,179
BKK08350	*estB*	0,336	1,166	0,107	343	1,163
BKK31060	*gbsA*	0,336	1,162	0,101	87	1,158
BKK14120	*ykzF*	0,333	1,170	0,118	709	1,166
BKK03740	*yclI*	0,327	1,163	0,114	365	1,160
BKK33840	*yvbF*	0,322	1,138	0,093	94	1,134
BKK02290	*psd*	0,318	1,151	0,109	486	1,147
BKK04960	*yddG*	0,314	1,205	0,144	424	1,201
BKK15140	*mraW*	0,311	1,210	0,144	38	1,206
BKK20000	*yosU*	0,309	1,133	0,144	350	1,129
BKK23140	*resB*	0,309	1,191	0,104	848	1,187
BKK36840	*atpH*	0,309	1,118	0,117	116	1,114
BKK10490	*sipV*	0,308	1,166	0,109	259	1,163
BKK08610	*yfhO*	0,306	1,172	0,112	328	1,168
BKK18640	*yoaK*	0,304	1,141	0,090	121	1,138
BKK20020	*yosS*	0,303	1,133	0,130	174	1,129
BKK36720	*ywmE*	0,302	1,151	0,112	230	1,147
BKK08010	*yfjP*	0,296	1,162	0,113	362	1,159
BKK28550	*fadR*	0,294	1,141	0,088	128	1,138
BKK16270	*fliK*	0,293	1,171	0,120	278	1,168
BKK27330	*udk*	0,291	0,978	0,120	35	0,975
BKK04850	*ydcP*	0,29	1,163	0,107	520	1,160
BKK37260	*narJ*	0,29	1,122	0,102	110	1,119
BKK00840	*mcsA*	0,287	1,161	0,106	73	1,158
BKK23790	*yqiP*	0,277	1,190	0,109	238	1,187
BKK08840	*ssuA*	0,273	1,171	0,111	284	1,168
BKK17420	*spoVK*	0,273	1,210	0,144	106	1,206
BKK03340	*folEB*	0,272	1,133	0,087	153	1,130
BKK40359	*yyzO*	0,271	1,153	0,114	356	1,149
BKK32450	*pucL*	0,269	1,143	0,082	149	1,139
BKK23550	*mleA*	0,268	1,190	0,103	198	1,187
BKK08000	*yfjQ*	0,266	1,162	0,101	373	1,159
BKK33820	*opuCB*	0,266	1,137	0,091	98	1,134
BKK39610	*yxeB*	0,266	1,151	0,104	590	1,147
BKK00570	*yabM*	0,265	1,141	0,131	38	1,138
BKK27830	*coxA*	0,264	1,163	0,101	115	1,160
BKK28220	*clpX*	0,263	1,163	0,112	147	1,160
BKK15400	*ylmG*	0,258	1,182	0,156	135	1,179
BKK32780	*yusF*	0,257	1,137	0,100	178	1,134
BKK25940	*yqcD*	0,252	1,154	0,104	313	1,151
BKK24310	*folD*	0,25	1,154	0,120	106	1,151

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK23750	*yqjT*	0,249	0,977	0,082	55	0,975
BKK33390	*yvgM*	0,249	1,141	0,099	123	1,138
BKK07600	*yfjP*	0,247	1,162	0,103	326	1,159
BKK19010	*yobM*	0,246	1,174	0,088	124	1,172
BKK10730	*yisI*	0,243	1,186	0,121	118	1,183
BKK30020	*ytzE*	0,243	1,159	0,101	138	1,156
BKK22610	*tyrA*	0,242	1,103	0,142	69	1,100
BKK33400	*yvgN*	0,236	1,137	0,097	121	1,134
BKK02370	*ybgA*	0,235	1,133	0,097	68	1,130
BKK18240	*yngHA*	0,235	1,174	0,104	136	1,172
BKK05070	*yddQ*	0,232	1,162	0,107	412	1,160
BKK25340	*phoH*	0,231	1,166	0,098	211	1,164
BKK09500	*yhdK*	0,23	1,211	0,198	77	1,208
BKK10030	*hinT*	0,23	1,180	0,108	124	1,177
BKK31010	*yuaG*	0,228	1,159	0,103	99	1,156
BKK13410	*ykoV*	0,227	1,169	0,121	65	1,166
BKK14780	*ylaH*	0,226	1,182	0,104	302	1,179
BKK17570	*xynP*	0,226	1,166	0,124	87	1,164
BKK05480	*ydfN*	0,225	1,170	0,100	142	1,167
BKK26120	*yqbG*	0,225	1,179	0,090	222	1,177
BKK03790	*yclM*	0,224	1,168	0,101	695	1,165
BKK13169	*ykzN*	0,223	1,211	0,118	207	1,208
BKK20350	*yorK*	0,222	1,142	0,109	41	1,139
BKK09810	*yhaZ*	0,22	1,165	0,110	260	1,163
BKK04730	*sigB*	0,219	1,167	0,175	164	1,165
BKK31960	*dhbF*	0,219	1,169	0,112	184	1,166
BKK37070	*rpmEA*	0,217	1,160	0,098	107	1,158
BKK02550	*ycbL*	0,215	1,132	0,088	130	1,130
BKK26560	*yrkC*	0,215	1,156	0,102	583	1,153
BKK31910	*yukE*	0,215	1,142	0,101	140	1,139
BKK23650	*yqkC*	0,214	1,190	0,111	197	1,187
BKK14860	*pycA*	0,213	1,165	0,110	228	1,163
BKK30910	*cotSA*	0,213	1,158	0,095	140	1,156
BKK18860	*yozH*	0,212	1,164	0,110	370	1,162
BKK09550	*yhdP*	0,211	1,211	0,169	39	1,208
BKK10430	*yhxD*	0,211	1,186	0,119	104	1,183
BKK05750	*ydhG*	0,203	1,170	0,075	265	1,167
BKK36920	*ywlF*	0,203	1,159	0,145	30	1,157
BKK39880	*yxbC*	0,202	1,150	0,112	397	1,147
BKK40300	*rapG*	0,202	1,169	0,110	107	1,166
BKK30650	*dps*	0,201	1,158	0,115	113	1,156
BKK23170	*spmB*	0,197	1,189	0,090	186	1,187
BKK07700	*nagP*	0,196	1,161	0,113	434	1,159
BKK13260	*ykoH*	0,196	1,140	0,115	113	1,138
BKK08560	*yfhJ*	0,195	1,161	0,112	591	1,159
BKK32090	*yuiA*	0,195	1,150	0,121	401	1,148
BKK32510	*pucA*	0,192	1,150	0,098	85	1,148
BKK25030	*yqgC*	0,189	1,156	0,121	260	1,153
BKK39170	*yxzG*	0,184	1,167	0,111	78	1,165
BKK11870	*metI*	0,179	1,191	0,133	619	1,189
BKK28570	*yshE*	0,178	1,162	0,097	70	1,160
BKK34390	*pnbA*	0,177	1,137	0,108	195	1,135
BKK32320	*yutC*	0,175	1,168	0,103	241	1,166
BKK37040	*ywkB*	0,174	1,151	0,115	428	1,149
BKK33620	*ywoK*	0,167	1,136	0,096	148	1,134
BKK15080	*rpmF*	0,166	1,181	0,154	33	1,179
BKK00290	*yaaQ*	0,16	1,181	0,143	721	1,179
BKK11950	*yjcQ*	0,159	1,164	0,116	221	1,163
BKK10370	*bioY*	0,156	1,210	0,136	251	1,208
BKK33730	*opuBA*	0,155	1,163	0,114	603	1,161
BKK01389	*ybzG*	0,148	1,165	0,103	312	1,164
BKK03310	*nasC*	0,147	1,132	0,102	91	1,130
BKK01880	*ybcI*	0,145	1,140	0,108	157	1,138
BKK38800	*yxkH*	0,145	1,210	0,131	126	1,208
BKK37390	*albC*	0,144	1,151	0,103	476	1,149
BKK02050	*ybdO*	0,142	1,132	0,095	130	1,130
BKK17710	*tatAC*	0,142	1,165	0,110	135	1,164
BKK04890	*ydcT*	0,14	1,167	0,107	124	1,165
BKK24180	*yqiK*	0,138	1,155	0,117	264	1,153
BKK22169	*ypzG*	0,134	1,141	0,090	131	1,139
BKK16420	*cheB*	0,132	1,163	0,107	233	1,161
BKK33010	*cssR*	0,128	1,136	0,093	170	1,134
BKK30520	*ytoA*	0,126	1,157	0,103	133	1,156
BKK25450	*prmA*	0,125	1,165	0,086	229	1,164
BKK01970	*skfG*	0,123	1,141	0,092	231	1,139
BKK13220	*thiW*	0,123	1,210	0,185	60	1,208
BKK32970	*yusY*	0,121	1,168	0,104	140	1,166
BKK14740	*ylaD*	0,12	1,169	0,109	459	1,168
BKK11940	*yjcP*	0,117	1,190	0,102	573	1,189

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK22750	*menH*	0,117	1,102	0,111	167	1,100
BKK01960	*skfF*	0,116	1,159	0,110	97	1,158
BKK06260	*ydjN*	0,115	1,180	0,126	106	1,179
BKK02019	*ybzI*	0,113	1,131	0,081	88	1,130
BKK38350	*ywbE*	0,113	1,120	0,108	196	1,119
BKK36320	*ywpG*	0,112	1,158	0,106	104	1,157
BKK27100	*yrhP*	0,111	1,223	0,067	74	1,222
BKK35330	*fliS*	0,109	1,136	0,116	72	1,135
BKK14600	*pdhC*	0,108	0,976	0,067	62	0,975
BKK08940	*yhbD*	0,101	1,169	0,111	312	1,168
BKK33370	*yvgK*	0,1	1,162	0,112	358	1,161
BKK32900	*yusR*	0,099	1,135	0,098	156	1,134
BKK31890	*yukC*	0,098	1,149	0,122	33	1,148
BKK18660	*yoaM*	0,094	1,163	0,113	539	1,162
BKK10450	*yhjB*	0,092	1,169	0,100	396	1,168
BKK21510	*yolD*	0,092	1,156	0,106	445	1,155
BKK14720	*ylaB*	0,088	1,169	0,114	205	1,168
BKK30250	*ytaP*	0,088	1,157	0,101	182	1,156
BKK35890	*pgsC*	0,088	1,150	0,114	508	1,149
BKK06470	*purQ*	0,087	1,180	0,117	328	1,179
BKK17090	*pksB*	0,087	1,208	0,142	95	1,206
BKK08780	*ygaJ*	0,084	1,160	0,108	183	1,159
BKK05040	*yddN*	0,08	1,161	0,110	508	1,160
BKK11840	*yjcF*	0,08	1,190	0,102	239	1,189
BKK21630	*yokD*	0,078	1,156	0,112	537	1,155
BKK31875	*yukB*	0,077	1,223	0,085	142	1,222
BKK16230	*fliH*	0,074	1,163	0,109	309	1,163
BKK09390	*ygxB*	0,073	1,178	0,105	122	1,177
BKK10870	*yisU*	0,071	1,184	0,122	89	1,183
BKK08779	*ygzC*	0,069	0,976	0,068	78	0,975
BKK31220	*yuxG*	0,068	1,157	0,090	121	1,156
BKK07360	*yfmS*	0,067	1,209	0,162	277	1,208
BKK20500	*ligB*	0,065	1,140	0,102	119	1,139
BKK20540	*yoqR*	0,065	1,140	0,096	140	1,139
BKK35040	*yvnB*	0,064	1,136	0,099	258	1,135
BKK21940	*degR*	0,062	1,156	0,106	328	1,155
BKK15090	*ylbO*	0,061	1,180	0,128	295	1,179
BKK22120	*kdgR*	0,061	1,154	0,105	309	1,153
BKK24800	*yqgW*	0,061	1,164	0,100	306	1,164
BKK11260	*yjzC*	0,059	1,184	0,108	83	1,183
BKK14240	*rok*	0,057	1,163	0,108	254	1,163
BKK03870	*ycnE*	0,054	1,166	0,109	252	1,165
BKK34060	*yvfU*	0,053	1,135	0,093	115	1,134
BKK18850	*yobD*	0,045	1,139	0,083	33	1,138
BKK38040	*sacA*	0,045	1,167	0,119	82	1,166
BKK14910	*ctaE*	0,044	1,180	0,124	362	1,179
BKK30570	*ytmB*	0,036	1,156	0,095	100	1,156
BKK11270	*yjzD*	0,034	1,184	0,137	84	1,183
BKK31170	*yulF*	0,033	1,156	0,105	133	1,156
BKK17920	*ynzD*	0,032	1,164	0,122	83	1,164
BKK19270	*yozN*	0,031	1,172	0,105	99	1,172
BKK13110	*purU*	0,025	1,163	0,122	377	1,163
BKK31190	*yulD*	0,025	1,151	0,116	329	1,151
BKK39090	*yxiP*	0,023	1,165	0,111	167	1,165
BKK24170	*mmgA*	0,022	0,975	0,086	46	0,975
BKK16410	*ykxH*	0,021	1,156	0,093	246	1,156
BKK28710	*cstA*	0,021	1,156	0,093	246	1,156
BKK29960	*ytlP*	0,021	1,156	0,106	75	1,156
BKK12780	*xepA*	0,015	1,209	0,116	125	1,208
BKK05600	*ydgE*	0,014	1,167	0,078	333	1,167
BKK11370	*appF*	0,012	1,168	0,112	350	1,168
BKK10900	*yisY*	0,01	1,183	0,109	90	1,183
BKK11240	*carB*	0,01	1,183	0,099	77	1,183
BKK03260	*ycgS*	0,008	1,130	0,082	74	1,130
BKK16240	*fliI*	0,008	1,163	0,102	402	1,163
BKK20170	*yosC*	0,006	1,162	0,103	302	1,162
BKK02200	*ybfG*	0,005	1,160	0,111	334	1,160
BKK31280	*yugU*	0,005	1,158	0,098	182	1,158
BKK35510	*yvyE*	0,004	1,114	0,115	94	1,114
BKK33570	*yvaE*	0,003	1,222	0,096	64	1,222
BKK05380	*ydfE*	0	1,167	0,119	117	1,167
BKK38060	*ywcJ*	-0,001	1,158	0,104	159	1,158
BKK07380	*yfmQ*	-0,002	1,159	0,114	290	1,159
BKK04870	*ydcR*	-0,003	1,147	0,113	421	1,147
BKK13310	*tnrA*	-0,003	1,163	0,107	316	1,163
BKK11079	*yizB*	-0,005	1,183	0,106	129	1,183
BKK23940	*yqjB*	-0,007	1,187	0,107	578	1,187
BKK29460	*moaB*	-0,008	1,113	0,112	56	1,113
BKK35070	*yvmC*	-0,008	1,158	0,118	102	1,158

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK33750	*sdpA*	-0,01	1,166	0,114	98	1,166
BKK03270	*ycgT*	-0,013	1,130	0,087	70	1,130
BKK19810	*ypqP*	-0,013	1,162	0,108	490	1,162
BKK03900	*gabT*	-0,016	1,159	0,116	439	1,160
BKK08280	*yfiI*	-0,016	1,159	0,109	485	1,159
BKK13020	*ykgA*	-0,017	1,166	0,113	222	1,166
BKK21980	*ypdP*	-0,017	1,155	0,104	410	1,155
BKK19080	*yobT*	-0,019	1,138	0,096	153	1,138
BKK11400	*appC*	-0,021	1,162	0,113	319	1,163
BKK09060	*yhcF*	-0,022	1,177	0,109	213	1,177
BKK40940	*yyaD*	-0,028	1,167	0,086	1044	1,167
BKK02680	*lmrA*	-0,031	1,130	0,091	136	1,130
BKK17470	*ynxB*	-0,038	1,161	0,104	322	1,162
BKK06140	*gutR*	-0,039	1,178	0,110	197	1,179
BKK10700	*gerPC*	-0,039	1,183	0,099	144	1,183
BKK13580	*mtnE*	-0,039	1,166	0,100	307	1,166
BKK29930	*amyX*	-0,044	1,156	0,096	114	1,156
BKK22010	*exoA*	-0,046	1,157	0,118	101	1,158
BKK17840	*fosB*	-0,048	1,163	0,101	79	1,164
BKK25420	*yqeW*	-0,049	1,137	0,093	161	1,138
BKK07610	*citM*	-0,052	1,208	0,162	70	1,208
BKK23970	*artQ*	-0,052	1,186	0,092	375	1,187
BKK29679	*ytzK*	-0,053	1,150	0,096	183	1,151
BKK06038	*ydzT*	-0,055	1,157	0,097	121	1,158
BKK10480	*yhjE*	-0,059	1,208	0,125	156	1,208
BKK39240	*yxxF*	-0,059	1,206	0,133	120	1,206
BKK02280	*ybfM*	-0,061	1,129	0,088	66	1,130
BKK08020	*yfjO*	-0,061	1,158	0,110	459	1,159
BKK21150	*yonB*	-0,067	1,154	0,116	258	1,155
BKK11020	*yitK*	-0,069	1,162	0,105	400	1,163
BKK36040	*ywrJ*	-0,072	1,160	0,105	395	1,161
BKK33160	*yvrA*	-0,076	1,133	0,087	67	1,134
BKK28280	*leuA*	-0,077	1,159	0,100	263	1,160
BKK22270	*yppE*	-0,081	1,099	0,127	308	1,100
BKK40420	*purA*	-0,082	1,147	0,103	301	1,147
BKK40530	*cotF*	-0,084	1,164	0,100	110	1,165
BKK23570	*ansB*	-0,086	1,186	0,099	322	1,187
BKK26110	*yqbH*	-0,088	1,176	0,101	82	1,177
BKK19230	*yocJ*	-0,09	1,161	0,098	389	1,162
BKK05190	*ydeG*	-0,094	1,200	0,122	600	1,201
BKK12790	*xhlA*	-0,096	1,165	0,126	299	1,166
BKK18300	*ppsE*	-0,096	1,137	0,098	126	1,138
BKK21280	*yomO*	-0,096	1,154	0,102	187	1,155
BKK18930	*yobH*	-0,097	1,161	0,108	456	1,162
BKK23240	*ypzK*	-0,097	1,152	0,111	266	1,153
BKK12900	*htrA*	-0,103	1,161	0,108	201	1,163
BKK33530	*yvaA*	-0,104	1,133	0,107	126	1,134
BKK00270	*yaaO*	-0,105	1,188	0,154	255	1,189
BKK30760	*mntB*	-0,107	1,155	0,104	87	1,156
BKK17510	*ynaC*	-0,112	1,162	0,108	108	1,164
BKK02040	*ybdN*	-0,113	1,158	0,112	519	1,160
BKK12990	*ykfC*	-0,113	1,207	0,136	89	1,208
BKK25060	*yqfZ*	-0,113	1,152	0,115	437	1,153
BKK00930	*cysE*	-0,114	1,099	0,119	344	1,100
BKK30830	*menF*	-0,114	1,155	0,097	132	1,156
BKK24690	*comGE*	-0,115	1,150	0,117	411	1,151
BKK28430	*sdhB*	-0,117	0,974	0,088	37	0,975
BKK11930	*yjcO*	-0,119	1,188	0,115	502	1,189
BKK33030	*yuxN*	-0,119	1,133	0,092	114	1,134
BKK16460	*cheD*	-0,12	1,160	0,105	594	1,161
BKK25100	*zur*	-0,121	1,162	0,099	222	1,164
BKK03670	*dtpT*	-0,122	1,137	0,098	191	1,138
BKK11200	*argJ*	-0,122	1,167	0,101	274	1,168
BKK06770	*yeeB*	-0,123	1,177	0,128	196	1,179
BKK24870	*glpG*	-0,124	1,162	0,106	221	1,164
BKK04150	*ycsN*	-0,126	1,156	0,110	186	1,158
BKK20360	*yorJ*	-0,126	1,138	0,109	54	1,139
BKK24090	*ptb*	-0,127	1,186	0,113	204	1,187
BKK03910	*gabD*	-0,129	1,137	0,094	125	1,138
BKK10550	*ntdA*	-0,13	1,167	0,107	302	1,168
BKK02900	*yceD*	-0,131	1,128	0,092	151	1,130
BKK04340	*ydaP*	-0,131	1,163	0,102	180	1,165
BKK19250	*yocL*	-0,131	1,170	0,087	154	1,172
BKK35699	*yvzE*	-0,132	1,160	0,104	471	1,161
BKK22650	*trpF*	-0,133	1,099	0,099	205	1,100
BKK23350	*ypzD*	-0,133	1,185	0,095	555	1,187
BKK02740	*natR*	-0,134	1,128	0,081	33	1,130
BKK13400	*ykoU*	-0,134	1,165	0,100	214	1,166
BKK21190	*yomX*	-0,135	1,150	0,103	417	1,151

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK35680	*ggaB*	-0,137	1,160	0,101	475	1,161
BKK17500	*ynaB*	-0,138	1,160	0,102	456	1,162
BKK03500	*comS*	-0,14	1,156	0,117	101	1,158
BKK18200	*yngD*	-0,144	1,170	0,116	40	1,172
BKK08410	*yfiV*	-0,147	1,157	0,110	450	1,159
BKK25590	*comEA*	-0,147	1,162	0,108	120	1,164
BKK19600	*yodH*	-0,149	0,974	0,082	95	0,975
BKK22290	*sspM*	-0,157	1,099	0,129	223	1,100
BKK11530	*coiA*	-0,158	1,181	0,118	141	1,183
BKK11160	*yitW*	-0,163	1,181	0,102	106	1,183
BKK23800	*proI*	-0,163	1,152	0,110	315	1,153
BKK40800	*yyaN*	-0,163	1,183	0,110	194	1,184
BKK17660	*yncF*	-0,165	1,160	0,106	345	1,162
BKK39660	*yxdI*	-0,165	1,163	0,121	126	1,165
BKK29750	*aroA*	-0,167	1,138	0,091	202	1,139
BKK16380	*flhB*	-0,168	1,151	0,108	434	1,153
BKK38900	*yxjM*	-0,169	1,206	0,165	87	1,208
BKK10240	*yhfI*	-0,177	1,175	0,097	124	1,177
BKK28290	*ilvC*	-0,179	1,158	0,093	161	1,160
BKK36790	*ywmA*	-0,179	1,155	0,107	122	1,157
BKK12560	*xpf*	-0,185	1,187	0,140	193	1,189
BKK33520	*csoR*	-0,19	1,132	0,095	118	1,134
BKK14820	*ylaL*	-0,191	1,204	0,122	65	1,206
BKK15000	*ylbG*	-0,192	1,177	0,122	43	1,179
BKK28160	*hemX*	-0,197	1,157	0,121	145	1,160
BKK39980	*qodI*	-0,198	1,145	0,110	477	1,147
BKK36340	*ywpE*	-0,202	1,155	0,133	66	1,157
BKK18570	*yoaE*	-0,206	1,136	0,092	106	1,138
BKK19610	*yodI*	-0,208	1,127	0,127	787	1,129
BKK02860	*adcC*	-0,209	1,145	0,105	129	1,147
BKK33640	*yvaM*	-0,209	1,132	0,083	92	1,134
BKK20480	*yoqX*	-0,21	1,159	0,112	334	1,162
BKK32859	*yuzM*	-0,211	1,132	0,098	229	1,134
BKK40070	*gntP*	-0,211	1,145	0,101	447	1,147
BKK05950	*ydiF*	-0,212	1,199	0,097	201	1,201
BKK10880	*yisV*	-0,212	1,181	0,120	113	1,183
BKK17810	*yndK*	-0,212	1,161	0,104	81	1,164
BKK12700	*xkdQ*	-0,214	1,137	0,122	51	1,139
BKK33550	*yvaC*	-0,219	1,155	0,093	106	1,158
BKK19880	*yotH*	-0,224	1,165	0,111	370	1,168
BKK22080	*ypwA*	-0,224	1,137	0,089	115	1,139
BKK10350	*yhfS*	-0,229	1,165	0,112	381	1,168
BKK17670	*cotU*	-0,229	1,161	0,102	60	1,164
BKK40360	*htrC*	-0,229	1,148	0,114	206	1,151
BKK08150	*yfjC*	-0,233	1,165	0,104	219	1,168
BKK27300	*yrrS*	-0,238	1,174	0,113	99	1,177
BKK11080	*yitQ*	-0,239	1,180	0,098	89	1,183
BKK22970	*mecB*	-0,239	1,098	0,119	380	1,100
BKK02140	*glpT*	-0,24	1,157	0,106	419	1,160
BKK07080	*yesZ*	-0,24	1,176	0,125	170	1,179
BKK11750	*cotY*	-0,24	1,160	0,105	250	1,163
BKK12070	*yjdI*	-0,244	1,137	0,115	128	1,139
BKK33650	*yvzC*	-0,248	1,132	0,097	106	1,134
BKK06850	*yeeK*	-0,252	1,176	0,118	284	1,179
BKK33690	*yvaQ*	-0,252	1,131	0,089	144	1,134
BKK13730	*queD*	-0,253	1,165	0,113	294	1,168
BKK29580	*thiI*	-0,258	1,110	0,095	79	1,113
BKK10460	*yhjC*	-0,259	1,180	0,110	94	1,183
BKK17650	*yncE*	-0,259	1,161	0,121	77	1,164
BKK12950	*dppD*	-0,262	1,205	0,221	52	1,208
BKK25570	*comEC*	-0,262	1,148	0,113	195	1,151
BKK16960	*ymdA*	-0,267	1,160	0,118	66	1,164
BKK03430	*nucA*	-0,268	1,157	0,111	483	1,160
BKK14700	*nprE*	-0,272	1,176	0,130	125	1,179
BKK33080	*liaR*	-0,273	1,131	0,113	94	1,134
BKK33890	*yvbK*	-0,278	1,146	0,109	488	1,149
BKK15060	*ylbM*	-0,279	1,176	0,133	31	1,179
BKK08310	*yfiL*	-0,28	1,205	0,173	344	1,208
BKK29340	*tcyN*	-0,281	1,136	0,102	79	1,139
BKK03580	*yczE*	-0,282	1,135	0,083	161	1,138
BKK21090	*yonH*	-0,283	1,150	0,106	441	1,153
BKK01720	*ybbK*	-0,285	1,156	0,099	107	1,160
BKK09470	*yhdH*	-0,285	1,205	0,154	154	1,208
BKK08180	*malA*	-0,287	1,159	0,106	297	1,163
BKK11500	*spxA*	-0,288	1,154	0,108	160	1,158
BKK26400	*yrkS*	-0,289	1,150	0,104	160	1,153
BKK07290	*yfnF*	-0,294	0,972	0,101	55	0,975
BKK18950	*yozL*	-0,295	1,168	0,100	174	1,172
BKK41040	*oxaAA*	-0,295	1,163	0,156	108	1,166

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK05110	*ydeA*	-0,297	1,156	0,100	417	1,160
BKK09320	*yhcY*	-0,299	1,135	0,095	61	1,138
BKK02690	*ansZ*	-0,3	1,198	0,073	70	1,201
BKK12930	*dppB*	-0,301	1,163	0,110	480	1,166
BKK11382	*appA*	-0,302	1,165	0,106	303	1,168
BKK30970	*glgC*	-0,303	1,153	0,122	89	1,156
BKK14410	*sipT*	-0,306	1,176	0,095	649	1,179
BKK30980	*glgB*	-0,307	1,152	0,086	152	1,156
BKK38130	*ywcE*	-0,307	1,153	0,109	126	1,157
BKK18360	*yoxA*	-0,308	1,168	0,118	122	1,172
BKK25500	*hemN*	-0,313	1,160	0,095	276	1,164
BKK26430	*yrkP*	-0,313	1,147	0,110	263	1,151
BKK08910	*yhbA*	-0,315	1,173	0,096	108	1,177
BKK20400	*yorF*	-0,318	1,158	0,109	391	1,162
BKK38110	*nfrA*	-0,321	1,144	0,114	420	1,147
BKK18280	*yngK*	-0,322	1,134	0,096	99	1,138
BKK08990	*yhbI*	-0,324	1,173	0,107	115	1,177
BKK01630	*feuA*	-0,329	1,198	0,064	38	1,201
BKK05690	*ydhB*	-0,329	1,163	0,080	303	1,167
BKK10520	*glcP*	-0,332	1,179	0,101	80	1,183
BKK31030	*yuaE*	-0,334	1,152	0,097	92	1,156
BKK02800	*ycdC*	-0,336	1,152	0,099	127	1,156
BKK39650	*yxdK*	-0,338	1,161	0,105	67	1,165
BKK12220	*yjiC*	-0,34	1,159	0,105	418	1,163
BKK39850	*yxbF*	-0,34	1,144	0,108	397	1,147
BKK32800	*yusH*	-0,341	1,154	0,096	112	1,158
BKK25000	*pbpA*	-0,343	0,972	0,075	76	0,975
BKK02540	*ycbK*	-0,344	1,197	0,064	120	1,201
BKK37340	*ywiB*	-0,344	1,162	0,113	66	1,166
BKK16470	*sigD*	-0,345	1,157	0,099	212	1,161
BKK39620	*yxeA*	-0,35	1,161	0,106	109	1,165
BKK08590	*yfhM*	-0,354	1,155	0,117	288	1,159
BKK17270	*ymaC*	-0,356	1,159	0,119	88	1,164
BKK19160	*yocC*	-0,356	1,153	0,102	125	1,158
BKK34050	*yvfV*	-0,359	1,130	0,093	74	1,134
BKK17850	*lexA*	-0,361	1,159	0,144	93	1,164
BKK28600	*yshB*	-0,362	1,155	0,094	108	1,160
BKK19220	*yocI*	-0,364	1,158	0,107	360	1,162
BKK10440	*yhjA*	-0,366	1,179	0,097	76	1,183
BKK28099	*yszA*	-0,366	1,155	0,096	293	1,160
BKK31420	*yugF*	-0,369	1,135	0,094	104	1,139
BKK26620	*yrdR*	-0,371	1,217	0,126	196	1,222
BKK39530	*yxeJ*	-0,374	1,160	0,101	76	1,165
BKK16799	*ylzJ*	-0,375	1,159	0,110	125	1,164
BKK40330	*rocE*	-0,38	1,147	0,095	426	1,151
BKK25490	*hrcA*	-0,381	1,159	0,103	336	1,164
BKK33870	*yvbI*	-0,386	1,157	0,112	359	1,161
BKK31160	*yubA*	-0,388	1,152	0,105	64	1,156
BKK31110	*yubF*	-0,389	1,152	0,092	86	1,156
BKK36670	*csbD*	-0,389	1,110	0,104	79	1,114
BKK29850	*ytoQ*	-0,39	1,157	0,109	367	1,161
BKK30810	*ytxM*	-0,393	1,151	0,113	71	1,156
BKK39190	*yxiG*	-0,394	1,143	0,104	454	1,147
BKK20730	*yopX*	-0,395	1,150	0,113	409	1,155
BKK05880	*gmuG*	-0,398	1,155	0,108	553	1,160
BKK08640	*yfhS*	-0,398	1,154	0,117	132	1,159
BKK22250	*ypgG*	-0,4	1,096	0,138	56	1,100
BKK10260	*yhjK*	-0,405	1,172	0,093	116	1,177
BKK14330	*yknV*	-0,405	1,202	0,148	113	1,206
BKK29360	*tcyL*	-0,405	1,109	0,092	96	1,113
BKK29260	*ytpI*	-0,406	1,109	0,140	221	1,113
BKK26540	*yrkE*	-0,407	1,172	0,104	315	1,177
BKK07170	*yetI*	-0,408	1,174	0,123	200	1,179
BKK36240	*ywqE*	-0,41	1,157	0,119	478	1,161
BKK07260	*ltaSA*	-0,414	1,155	0,124	873	1,160
BKK00730	*cysK*	-0,415	1,150	0,157	186	1,155
BKK05060	*lrpB*	-0,415	1,155	0,117	452	1,160
BKK10380	*hemAT*	-0,416	1,203	0,179	117	1,208
BKK12440	*phrA*	-0,417	1,163	0,108	296	1,168
BKK38650	*yxlG*	-0,417	1,161	0,146	88	1,166
BKK05250	*ydeM*	-0,418	1,153	0,094	211	1,158
BKK02180	*ybfE*	-0,422	1,155	0,111	629	1,160
BKK22920	*ypeB*	-0,423	1,149	0,110	254	1,153
BKK06830	*rapH*	-0,426	1,174	0,112	301	1,179
BKK00230	*bofA*	-0,428	1,178	0,122	117	1,183
BKK02190	*ybfF*	-0,429	1,155	0,102	935	1,160
BKK06820	*yeeG*	-0,429	1,174	0,111	408	1,179
BKK34280	*epsJ*	-0,431	1,130	0,120	451	1,135
BKK40600	*yybL*	-0,431	1,161	0,112	83	1,166

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK31090	*ktrA*	-0,432	1,151	0,092	124	1,156
BKK23020	*recQ*	-0,434	1,096	0,111	512	1,100
BKK18840	*xynA*	-0,435	1,152	0,108	127	1,157
BKK36850	*atpF*	-0,436	1,161	0,107	114	1,166
BKK22730	*ndk*	-0,437	1,153	0,094	91	1,158
BKK02510	*garD*	-0,438	1,125	0,076	32	1,130
BKK27900	*pheA*	-0,445	1,154	0,110	78	1,160
BKK04010	*sipU*	-0,449	1,160	0,119	114	1,165
BKK29100	*phoR*	-0,449	1,108	0,104	53	1,113
BKK06460	*purS*	-0,45	1,174	0,111	333	1,179
BKK36810	*atpD*	-0,453	1,109	0,119	259	1,114
BKK06430	*purK*	-0,455	1,173	0,148	134	1,179
BKK07060	*yesX*	-0,456	1,152	0,108	93	1,158
BKK25810	*arsR*	-0,459	0,971	0,081	89	0,975
BKK02950	*yceI*	-0,46	1,196	0,139	96	1,201
BKK21870	*ilvD*	-0,46	1,150	0,108	532	1,155
BKK24050	*bkdAA*	-0,46	1,182	0,112	134	1,187
BKK38340	*ywbF*	-0,461	1,114	0,120	229	1,119
BKK29560	*ytcI*	-0,462	1,108	0,120	58	1,113
BKK04380	*ydaT*	-0,463	1,154	0,106	433	1,160
BKK14900	*ctaD*	-0,465	1,174	0,101	488	1,179
BKK06710	*swrC*	-0,466	1,154	0,107	502	1,160
BKK07140	*yetF*	-0,469	1,173	0,112	281	1,179
BKK21490	*sunI*	-0,469	1,148	0,110	595	1,153
BKK39590	*yxeD*	-0,47	1,159	0,108	161	1,165
BKK03359	*yczL*	-0,471	1,125	0,081	91	1,130
BKK19830	*yotM*	-0,474	1,124	0,141	604	1,129
BKK19640	*yodL*	-0,475	1,124	0,101	1106	1,129
BKK27150	*yrhK*	-0,479	1,148	0,110	477	1,153
BKK21690	*msrA*	-0,48	1,148	0,107	495	1,153
BKK24920	*yqgL*	-0,48	1,158	0,089	136	1,164
BKK28690	*glcF*	-0,484	1,146	0,109	285	1,151
BKK24840	*yqgS*	-0,485	1,201	0,157	48	1,206
BKK25090	*yqfW*	-0,489	1,158	0,099	203	1,164
BKK28960	*ytxC*	-0,491	1,108	0,096	33	1,113
BKK12910	*proG*	-0,492	1,161	0,094	429	1,166
BKK07160	*yetH*	-0,495	1,152	0,086	159	1,158
BKK31210	*yulB*	-0,497	1,150	0,089	111	1,156
BKK31240	*mcpA*	-0,497	1,150	0,091	103	1,156
BKK38730	*cydD*	-0,497	1,159	0,099	176	1,165
BKK21740	*ypmR*	-0,498	1,200	0,116	101	1,206
BKK33110	*liaG*	-0,498	1,129	0,109	107	1,134
BKK32849	*yuzL*	-0,499	1,129	0,089	135	1,134
BKK18630	*exIX*	-0,501	1,166	0,095	178	1,172
BKK13600	*mtnX*	-0,502	1,161	0,101	269	1,166
BKK33740	*yvoV*	-0,502	1,155	0,104	423	1,161
BKK39700	*iolG*	-0,502	1,159	0,125	128	1,165
BKK01680	*ybbF*	-0,509	1,154	0,108	425	1,160
BKK04039	*yczO*	-0,51	1,154	0,112	617	1,160
BKK13510	*ykzE*	-0,511	1,157	0,110	245	1,163
BKK19100	*yobV*	-0,512	1,166	0,081	90	1,172
BKK25150	*yqfQ*	-0,513	1,158	0,103	256	1,164
BKK40139	*yyzN*	-0,515	1,142	0,101	412	1,147
BKK23310	*sipS*	-0,516	1,181	0,112	172	1,187
BKK32930	*yusU*	-0,516	1,128	0,085	121	1,134
BKK33029	*yuzO*	-0,517	1,128	0,100	133	1,134
BKK12250	*yjkB*	-0,52	1,202	0,179	419	1,208
BKK20110	*yosI*	-0,52	1,123	0,159	139	1,129
BKK27000	*yraB*	-0,524	1,171	0,097	137	1,177
BKK04230	*ydaH*	-0,525	1,152	0,118	155	1,158
BKK07030	*yesU*	-0,527	1,173	0,126	429	1,179
BKK04160	*mtlR*	-0,532	1,159	0,110	91	1,165
BKK10180	*yhfC*	-0,533	1,156	0,105	283	1,163
BKK04650	*endB*	-0,537	1,159	0,096	107	1,165
BKK28610	*yshA*	-0,539	1,151	0,108	129	1,158
BKK28470	*lysC*	-0,54	0,970	0,073	32	0,975
BKK40640	*yybH*	-0,546	1,178	0,108	186	1,184
BKK07340	*yfnA*	-0,547	1,151	0,107	68	1,158
BKK02430	*glsA*	-0,548	1,153	0,096	386	1,160
BKK10830	*yisR*	-0,548	1,177	0,106	71	1,183
BKK08080	*acoC*	-0,555	1,152	0,100	334	1,159
BKK40100	*ahpF*	-0,556	1,162	0,106	417	1,168
BKK03360	*yciC*	-0,559	1,124	0,099	94	1,130
BKK36400	*flhO*	-0,559	1,155	0,090	293	1,161
BKK27700	*yrbF*	-0,56	1,215	0,088	197	1,222
BKK03240	*ycgQ*	-0,561	1,141	0,110	538	1,147
BKK17520	*ynaD*	-0,564	1,155	0,105	431	1,162
BKK19070	*yobS*	-0,564	1,165	0,082	212	1,172
BKK07270	*yfnH*	-0,565	1,151	0,104	109	1,158

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK02300	*ybfN*	-0,569	1,153	0,110	417	1,160
BKK28660	*sspI*	-0,573	1,133	0,103	135	1,139
BKK25690	*sda*	-0,574	1,147	0,122	141	1,153
BKK11760	*cotX*	-0,575	1,182	0,129	720	1,189
BKK21900	*bsaA*	-0,575	1,148	0,114	230	1,155
BKK01890	*ybcL*	-0,578	1,131	0,119	141	1,138
BKK12930	*dppB*	-0,581	1,182	0,131	1017	1,189
BKK30920	*cotI*	-0,585	1,149	0,092	124	1,156
BKK33200	*yvrE*	-0,585	1,128	0,099	106	1,134
BKK06960	*yesN*	-0,586	1,172	0,105	370	1,179
BKK31250	*tlpA*	-0,588	1,149	0,104	117	1,156
BKK32590	*frlN*	-0,6	1,133	0,085	266	1,139
BKK40240	*yycS*	-0,602	1,144	0,110	363	1,151
BKK33510	*copZ*	-0,609	1,127	0,106	100	1,134
BKK27990	*minD*	-0,61	1,131	0,093	76	1,138
BKK23070	*serA*	-0,611	1,151	0,112	147	1,158
BKK03120	*ycgI*	-0,613	1,153	0,108	731	1,160
BKK29980	*ytjP*	-0,614	1,149	0,107	92	1,156
BKK01580	*ybaR*	-0,616	1,194	0,074	45	1,201
BKK04980	*yddI*	-0,618	1,152	0,105	375	1,160
BKK18030	*tlp*	-0,621	1,156	0,103	91	1,164
BKK33239	*yvrJ*	-0,622	1,127	0,105	103	1,134
BKK37240	*ywiE*	-0,625	1,112	0,110	74	1,119
BKK05200	*ydeH*	-0,628	1,160	0,112	169	1,167
BKK06034	*ydzT*	-0,628	1,160	0,122	635	1,167
BKK00990	*rpmGB*	-0,635	0,969	0,092	74	0,975
BKK31270	*tgl*	-0,635	1,149	0,096	54	1,156
BKK39920	*asnH*	-0,638	1,157	0,112	88	1,165
BKK39029	*yxiT*	-0,642	1,157	0,124	56	1,165
BKK17950	*yneJ*	-0,648	1,154	0,113	407	1,162
BKK30035	*ytzG*	-0,65	1,149	0,104	177	1,156
BKK22500	*ypjD*	-0,651	1,093	0,110	315	1,100
BKK07400	*yfmO*	-0,654	1,200	0,185	537	1,208
BKK00520	*ctc*	-0,655	1,156	0,119	116	1,164
BKK00720	*yacD*	-0,655	1,131	0,104	111	1,138
BKK22910	*ypfA*	-0,656	1,199	0,165	62	1,206
BKK03770	*rapC*	-0,658	1,131	0,084	139	1,138
BKK11070	*yitP*	-0,658	1,176	0,130	112	1,183
BKK22190	*ypsA*	-0,658	1,093	0,115	234	1,100
BKK25480	*grpE*	-0,658	1,156	0,094	228	1,164
BKK19590	*ctpA*	-0,659	1,122	0,140	308	1,129
BKK13430	*ykoX*	-0,661	1,200	0,116	84	1,208
BKK30180	*ytbQ*	-0,663	1,148	0,087	125	1,156
BKK07560	*pel*	-0,667	1,151	0,108	301	1,159
BKK09850	*yhaU*	-0,671	1,200	0,142	65	1,208
BKK32830	*fadA*	-0,673	1,127	0,096	160	1,134
BKK09440	*citA*	-0,68	1,155	0,099	349	1,163
BKK07810	*treA*	-0,683	1,151	0,119	341	1,159
BKK29240	*ytrI*	-0,684	1,105	0,107	208	1,113
BKK12640	*xkdJ*	-0,686	1,160	0,117	308	1,168
BKK38520	*dltC*	-0,686	1,142	0,117	106	1,149
BKK21410	*blyA*	-0,688	1,145	0,108	318	1,153
BKK15860	*sdaAA*	-0,69	1,107	0,119	86	1,114
BKK30110	*yteS*	-0,691	1,130	0,098	172	1,138
BKK35560	*tuaF*	-0,692	0,968	0,082	46	0,975
BKK24760	*rsbRD*	-0,694	1,155	0,095	103	1,164
BKK30420	*ytrE*	-0,694	1,214	0,099	160	1,222
BKK26640	*yrdP*	-0,697	1,145	0,098	461	1,153
BKK31820	*yuzF*	-0,697	1,132	0,096	98	1,139
BKK23580	*ansA*	-0,698	1,179	0,099	267	1,187
BKK38100	*ywcH*	-0,7	1,149	0,098	103	1,157
BKK12870	*mhqA*	-0,703	1,158	0,122	71	1,166
BKK36220	*ywqG*	-0,704	1,149	0,105	146	1,157
BKK36650	*ureB*	-0,704	1,149	0,105	146	1,157
BKK24460	*yqhT*	-0,705	1,143	0,104	402	1,151
BKK32920	*yusT*	-0,705	0,968	0,072	110	0,975
BKK40930	*yyaE*	-0,705	1,148	0,106	143	1,156
BKK36740	*ywmC*	-0,708	1,106	0,103	101	1,114
BKK13460	*rsgI*	-0,71	1,160	0,110	284	1,168
BKK15300	*bpr*	-0,712	1,154	0,110	315	1,163
BKK24440	*yqhV*	-0,713	1,179	0,103	289	1,187
BKK17266	*ymzE*	-0,714	1,155	0,085	76	1,164
BKK40880	*exoAA*	-0,716	1,176	0,089	156	1,184
BKK16700	*ylxY*	-0,721	1,155	0,112	89	1,164
BKK37220	*ywjB*	-0,724	1,158	0,116	106	1,166
BKK26840	*sigZ*	-0,727	1,168	0,101	270	1,177
BKK15480	*pyrP*	-0,732	1,148	0,110	96	1,156
BKK06040	*ydiM*	-0,733	1,131	0,120	118	1,139
BKK23630	*yqkE*	-0,733	1,178	0,094	656	1,187

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK25830	*rapE*	-0,734	1,155	0,093	64	1,164
BKK17700	*cotC*	-0,739	1,155	0,094	106	1,164
BKK17740	*ynzB*	-0,739	1,153	0,107	311	1,162
BKK21820	*thyB*	-0,743	1,143	0,106	188	1,151
BKK09958	*yhzE*	-0,744	1,168	0,092	134	1,177
BKK35160	*uvrA*	-0,745	1,127	0,119	693	1,135
BKK24810	*yqgV*	-0,747	1,155	0,092	280	1,164
BKK17160	*pksH*	-0,756	1,155	0,097	112	1,164
BKK29740	*ccpA*	-0,758	1,153	0,142	154	1,161
BKK17240	*ymzB*	-0,759	1,153	0,108	396	1,162
BKK32890	*yusQ*	-0,766	1,126	0,098	134	1,134
BKK01810	*adaA*	-0,767	1,151	0,096	148	1,160
BKK19750	*cgeE*	-0,771	1,121	0,138	159	1,129
BKK04500	*ydbK*	-0,773	1,151	0,117	466	1,160
BKK19479	*yoyC*	-0,781	1,120	0,107	532	1,129
BKK21200	*yomW*	-0,781	1,146	0,100	543	1,155
BKK14340	*yknW*	-0,782	1,170	0,122	261	1,179
BKK12150	*yjgB*	-0,783	1,180	0,151	191	1,189
BKK31140	*cdoA*	-0,788	1,147	0,111	87	1,156
BKK11620	*yjbO*	-0,789	1,130	0,105	59	1,139
BKK22960	*gudB*	-0,791	1,148	0,108	82	1,158
BKK24300	*xseA*	-0,791	1,178	0,104	258	1,187
BKK27740	*ruvA*	-0,791	1,150	0,119	126	1,160
BKK05899	*ydhU*	-0,792	1,130	0,098	190	1,139
BKK36450	*ywoG*	-0,792	1,140	0,085	265	1,149
BKK22019	*ypzF*	-0,794	1,092	0,147	61	1,100
BKK31860	*yueB*	-0,795	1,139	0,110	505	1,148
BKK18990	*yobK*	-0,797	1,129	0,089	101	1,138
BKK17930	*ccdA*	-0,799	1,154	0,133	71	1,164
BKK25440	*rsmE*	-0,801	1,154	0,099	258	1,164
BKK33230	*sigO*	-0,801	0,967	0,074	94	0,975
BKK02130	*glpQ*	-0,805	1,150	0,111	551	1,160
BKK19580	*yodF*	-0,807	1,120	0,106	819	1,129
BKK29370	*tcyK*	-0,807	1,129	0,094	64	1,138
BKK12720	*xkdS*	-0,811	1,130	0,101	226	1,139
BKK30070	*opuD*	-0,812	1,152	0,107	355	1,161
BKK31080	*yuaB*	-0,818	1,147	0,102	80	1,156
BKK28100	*ysxE*	-0,825	1,150	0,101	367	1,160
BKK01020	*rplK*	-0,826	1,154	0,099	453	1,164
BKK25890	*yqxI*	-0,828	1,144	0,104	437	1,153
BKK14760	*ylaF*	-0,829	1,169	0,131	403	1,179
BKK18440	*gltB*	-0,829	1,158	0,108	258	1,168
BKK37760	*rocC*	-0,83	1,109	0,140	54	1,119
BKK38070	*sacT*	-0,834	1,109	0,169	30	1,119
BKK05410	*ydfH*	-0,835	1,138	0,102	406	1,147
BKK38870	*ykkA*	-0,836	1,138	0,105	378	1,147
BKK11980	*yjdA*	-0,837	1,153	0,111	259	1,163
BKK02110	*ybyB*	-0,843	1,120	0,107	72	1,130
BKK08890	*ygaO*	-0,847	1,158	0,106	277	1,168
BKK34290	*epsI*	-0,849	1,156	0,109	145	1,166
BKK38080	*ywcI*	-0,858	1,109	0,093	102	1,119
BKK26930	*yraI*	-0,859	1,167	0,112	295	1,177
BKK07820	*treR*	-0,861	1,149	0,112	507	1,159
BKK23100	*sigX*	-0,863	1,091	0,118	364	1,100
BKK24780	*yqgY*	-0,863	1,154	0,104	231	1,164
BKK00260	*yaaN*	-0,864	1,156	0,136	719	1,166
BKK16360	*fliQ*	-0,865	1,152	0,118	488	1,162
BKK03652	*yclD*	-0,867	1,128	0,098	144	1,138
BKK19420	*yojK*	-0,867	1,152	0,106	434	1,162
BKK23910	*yqjE*	-0,867	1,141	0,127	264	1,151
BKK32410	*pucH*	-0,867	1,130	0,085	208	1,139
BKK32950	*yusW*	-0,869	1,128	0,090	114	1,138
BKK10160	*yhgE*	-0,875	1,167	0,076	97	1,177
BKK10250	*yhfJ*	-0,875	1,167	0,089	101	1,177
BKK03789	*yczN*	-0,88	1,155	0,104	309	1,165
BKK20470	*yoqY*	-0,88	1,152	0,113	368	1,162
BKK18870	*yozI*	-0,883	1,152	0,114	418	1,162
BKK31200	*yuIC*	-0,889	1,147	0,102	142	1,158
BKK33260	*yvrN*	-0,889	1,147	0,119	95	1,158
BKK01640	*ybbB*	-0,89	1,149	0,118	376	1,160
BKK05460	*ydfL*	-0,892	1,149	0,105	224	1,160
BKK03400	*yckD*	-0,893	0,966	0,075	74	0,975
BKK14060	*fadH*	-0,893	1,156	0,119	643	1,166
BKK04090	*kipA*	-0,897	1,154	0,086	123	1,165
BKK31470	*kapD*	-0,899	1,138	0,118	264	1,148
BKK06812	*yeeF*	-0,909	1,149	0,105	430	1,160
BKK27450	*glnM*	-0,91	1,149	0,094	177	1,160
BKK21260	*yomQ*	-0,911	1,141	0,115	260	1,151
BKK34650	*yvdC*	-0,911	1,125	0,094	30	1,135

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK40340	*rocD*	-0,911	1,141	0,112	191	1,151
BKK35698	*yvzI*	-0,914	1,104	0,094	225	1,114
BKK35790	*yvyI*	-0,914	1,104	0,120	98	1,114
BKK39860	*aldX*	-0,918	1,154	0,091	94	1,165
BKK03030	*ycgB*	-0,919	1,120	0,100	159	1,130
BKK16300	*fliL*	-0,921	1,157	0,104	169	1,168
BKK19740	*yodT*	-0,924	1,119	0,109	569	1,129
BKK24010	*bmr*	-0,924	1,147	0,097		1,158
BKK10750	*yisK*	-0,926	1,152	0,113	418	1,163
BKK34720	*yvcP*	-0,928	1,139	0,095	317	1,149
BKK27570	*yrzK*	-0,931	1,149	0,089	55	1,160
BKK35200	*yvkB*	-0,934	1,124	0,109	345	1,135
BKK12470	*yjqA*	-0,935	1,178	0,098	823	1,189
BKK15070	*ylbN*	-0,935	1,152	0,105	238	1,163
BKK18040	*yneP*	-0,935	1,157	0,116	222	1,168
BKK07020	*rhgT*	-0,943	1,168	0,114	406	1,179
BKK03390	*yckC*	-0,946	1,147	0,111	106	1,158
BKK03960	*ycnK*	-0,946	1,149	0,105	386	1,160
BKK29380	*tcyJ*	-0,946	1,127	0,085	113	1,138
BKK04200	*ydaE*	-0,947	1,154	0,109	57	1,165
BKK25350	*yqfD*	-0,948	1,153	0,103	226	1,164
BKK23328	*ypzJ*	-0,949	1,140	0,105	342	1,151
BKK40270	*yycP*	-0,951	1,140	0,100	356	1,151
BKK25990	*yqbS*	-0,953	1,140	0,115	245	1,151
BKK06750	*yefC*	-0,956	1,168	0,108	131	1,179
BKK12210	*yjiB*	-0,956	1,178	0,101	1308	1,189
BKK11850	*yjcG*	-0,958	1,178	0,110	408	1,189
BKK19700	*yodP*	-0,961	1,195	0,135	101	1,206
BKK20750	*ypoV*	-0,962	1,144	0,097	498	1,155
BKK40190	*fbp*	-0,966	1,157	0,108	254	1,168
BKK20970	*yonX*	-0,97	1,142	0,100	490	1,153
BKK01690	*ybbH*	-0,973	1,165	0,106	289	1,177
BKK32180	*yutK*	-0,978	1,210	0,067	54	1,222
BKK02420	*glnT*	-0,98	1,148	0,097	479	1,160
BKK24630	*sipW*	-0,981	0,965	0,084	50	0,975
BKK25080	*yqfX*	-0,982	1,152	0,114	249	1,164
BKK17790	*yndH*	-0,991	1,156	0,108	352	1,168
BKK19780	*cgeA*	-0,992	1,146	0,110	134	1,158
BKK09660	*yheN*	-0,993	1,165	0,104	115	1,177
BKK17620	*yncB*	-0,994	1,150	0,110	420	1,162
BKK13470	*sspD*	-0,995	1,155	0,112	115	1,166
BKK09710	*yheI*	-1	1,196	0,114	55	1,208
BKK26670	*gltR*	-1,003	1,142	0,099	508	1,153
BKK37650	*cysL*	-1,004	1,108	0,109	257	1,119
BKK13650	*eag*	-1,005	1,151	0,108	313	1,163
BKK24670	*comGG*	-1,009	1,152	0,098	163	1,164
BKK24860	*yqgQ*	-1,012	1,152	0,100	316	1,164
BKK17870	*yneB*	-1,014	1,150	0,113	307	1,162
BKK25120	*yqfT*	-1,014	1,142	0,104	482	1,153
BKK14150	*ykuN*	-1,018	1,167	0,123	907	1,179
BKK36950	*ywlC*	-1,02	0,965	0,112	41	0,975
BKK23110	*resE*	-1,029	1,194	0,094	126	1,206
BKK26830	*yrpE*	-1,029	1,209	0,067	94	1,222
BKK26900	*yraL*	-1,032	1,165	0,102	431	1,177
BKK34220	*epsO*	-1,033	1,123	0,111	96	1,135
BKK40010	*yxaD*	-1,036	1,136	0,107	433	1,147
BKK35880	*pgsA*	-1,037	1,138	0,095	548	1,149
BKK36669	*ywzF*	-1,038	1,136	0,100	159	1,147
BKK27190	*yrzI*	-1,039	1,146	0,112	86	1,158
BKK02530	*rtpA*	-1,04	1,136	0,101	428	1,147
BKK34690	*yvcS*	-1,041	1,137	0,105	563	1,149
BKK33780	*sdpI*	-1,043	1,122	0,096	107	1,134
BKK06780	*yeeC*	-1,045	1,167	0,102	601	1,179
BKK37610	*ywzC*	-1,045	1,107	0,104	320	1,119
BKK38540	*dltE*	-1,046	0,965	0,084	50	0,975
BKK33060	*gerAB*	-1,047	1,122	0,095	77	1,134
BKK33300	*fhuG*	-1,047	1,122	0,103	99	1,134
BKK34710	*yvcQ*	-1,047	1,137	0,106	440	1,149
BKK03230	*ycgP*	-1,048	1,118	0,091	41	1,130
BKK26880	*yroM*	-1,051	1,141	0,102	504	1,153
BKK26420	*yrkQ*	-1,054	1,209	0,092	161	1,222
BKK35800	*gerBA*	-1,054	1,103	0,087	38	1,114
BKK23000	*ypbE*	-1,057	1,089	0,113	607	1,100
BKK18750	*yoaT*	-1,064	1,159	0,106	218	1,172
BKK18900	*yazI*	-1,064	1,126	0,093	69	1,138
BKK31590	*yufS*	-1,064	1,127	0,110	61	1,139
BKK05120	*cspC*	-1,067	1,147	0,120	380	1,160
BKK10910	*yisZ*	-1,069	1,171	0,097	92	1,183
BKK12820	*spoIISB*	-1,069	1,195	0,160	87	1,208

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK33120	*liaH*	-1,071	1,122	0,084	63	1,134
BKK05260	*ydeN*	-1,075	1,155	0,097	89	1,167
BKK24160	*mmgB*	-1,075	1,141	0,105	257	1,153
BKK33320	*fhuD*	-1,075	1,209	0,105	252	1,222
BKK01710	*ybbJ*	-1,077	1,164	0,102	133	1,177
BKK27470	*yrrD*	-1,077	1,147	0,099	194	1,160
BKK18350	*dacC*	-1,078	1,193	0,135	91	1,206
BKK21550	*yokL*	-1,079	1,142	0,104	393	1,155
BKK39230	*wapA*	-1,084	1,193	0,143	195	1,206
BKK19870	*yotI*	-1,086	1,117	0,135	332	1,129
BKK09770	*yheD*	-1,091	1,155	0,097	330	1,168
BKK21020	*yonR*	-1,092	1,141	0,099	548	1,153
BKK36420	*spoIIIJD*	-1,094	1,137	0,107	357	1,149
BKK00250	*xpoC*	-1,095	1,154	0,113	166	1,166
BKK17300	*ebrA*	-1,095	1,127	0,080	151	1,139
BKK28970	*ytxB*	-1,096	1,149	0,102	394	1,161
BKK18960	*yozM*	-1,103	1,149	0,111	410	1,162
BKK40150	*yydI*	-1,104	1,135	0,095	299	1,147
BKK21320	*yomL*	-1,106	1,141	0,119	521	1,153
BKK23860	*gndA*	-1,107	1,174	0,123	247	1,187
BKK15760	*prpC*	-1,108	1,122	0,105	108	1,134
BKK02330	*ybfQ*	-1,111	1,117	0,101	90	1,130
BKK19300	*yozC*	-1,114	1,149	0,115	374	1,162
BKK38960	*yxjG*	-1,116	1,152	0,112	148	1,165
BKK07180	*yetI*	-1,117	1,166	0,110	343	1,179
BKK03090	*ycgF*	-1,125	1,147	0,117	276	1,160
BKK08600	*csbB*	-1,128	1,149	0,111	343	1,163
BKK22260	*yppF*	-1,128	1,127	0,099	97	1,139
BKK05440	*nap*	-1,129	1,145	0,093	126	1,158
BKK31680	*comA*	-1,13	1,127	0,091	114	1,139
BKK34200	*sigL*	-1,131	1,122	0,150	50	1,135
BKK07890	*yfkI*	-1,132	1,146	0,112	300	1,159
BKK10680	*gerPE*	-1,132	1,155	0,094	302	1,168
BKK34850	*yvcA*	-1,135	1,136	0,117	519	1,149
BKK06280	*ydjP*	-1,136	1,134	0,107	302	1,147
BKK10420	*comK*	-1,136	1,170	0,094	96	1,183
BKK11230	*carA*	-1,136	1,170	0,126	87	1,183
BKK32530	*pucF*	-1,138	1,135	0,141	51	1,148
BKK27680	*yrbG*	-1,143	1,146	0,099	381	1,160
BKK13170	*guaD*	-1,145	1,153	0,132	208	1,166
BKK06390	*yebD*	-1,146	1,146	0,108	324	1,160
BKK30200	*bioB*	-1,148	1,143	0,097	92	1,156
BKK30300	*melA*	-1,149	1,143	0,096	118	1,156
BKK35060	*cypX*	-1,149	1,122	0,122	509	1,135
BKK17820	*yndL*	-1,152	1,150	0,117	119	1,164
BKK04050	*ycsF*	-1,156	1,134	0,098	508	1,147
BKK13870	*ykvZ*	-1,157	1,149	0,104	324	1,163
BKK39460	*yxeQ*	-1,157	1,151	0,090	123	1,165
BKK38820	*yxkF*	-1,158	1,151	0,100	179	1,165
BKK31450	*kinB*	-1,16	1,208	0,062	59	1,222
BKK27010	*adhA*	-1,166	1,163	0,099	387	1,177
BKK20980	*yonV*	-1,167	1,140	0,101	590	1,153
BKK21660	*yokA*	-1,168	1,141	0,094	236	1,155
BKK18190	*yngC*	-1,169	1,192	0,143	65	1,206
BKK05080	*ydzR*	-1,171	1,154	0,114	251	1,167
BKK25730	*yqeC*	-1,173	1,150	0,116	153	1,164
BKK00120	*pdxT*	-1,176	1,144	0,111	91	1,158
BKK22850	*seoA*	-1,178	1,087	0,116	159	1,100
BKK00430	*yabG*	-1,179	1,150	0,094	141	1,164
BKK13299	*ykzO*	-1,179	1,087	0,112	133	1,100
BKK32400	*yunG*	-1,179	1,134	0,128	144	1,148
BKK09530	*yhdN*	-1,18	1,149	0,118	291	1,163
BKK29970	*ytkP*	-1,181	1,142	0,114	107	1,156
BKK17350	*ymzC*	-1,186	1,148	0,109	446	1,162
BKK10170	*fabHB*	-1,187	1,163	0,097	106	1,177
BKK32030	*bioYB*	-1,187	1,208	0,068	97	1,222
BKK37310	*fnr*	-1,187	1,134	0,101	308	1,147
BKK37580	*ywgB*	-1,188	1,105	0,120	802	1,119
BKK12649	*ykzM*	-1,189	1,154	0,111	241	1,168
BKK02910	*yceE*	-1,191	1,117	0,099	166	1,130
BKK13670	*mhqR*	-1,191	1,152	0,116	231	1,166
BKK15660	*yloC*	-1,191	1,121	0,102	102	1,134
BKK08520	*recX*	-1,193	1,145	0,103	280	1,159
BKK33090	*liaS*	-1,193	1,207	0,126	67	1,222
BKK12180	*yjhA*	-1,199	1,194	0,161	146	1,208
BKK16160	*clpY*	-1,2	1,149	0,105	311	1,163
BKK04820	*immR*	-1,201	1,144	0,095	123	1,158
BKK30090	*yteU*	-1,218	1,124	0,099	116	1,138
BKK38500	*dltA*	-1,218	1,135	0,124	115	1,149

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK08380	*yfiS*	-1,219	1,145	0,110	285	1,159
BKK35920	*rbsK*	-1,219	1,101	0,093	72	1,114
BKK08320	*yfiM*	-1,221	1,145	0,107	270	1,159
BKK30380	*bceA*	-1,222	1,207	0,080	97	1,222
BKK24650	*yqzG*	-1,223	1,173	0,107	165	1,187
BKK20850	*yopL*	-1,224	1,137	0,101	257	1,151
BKK36570	*ywnG*	-1,224	1,101	0,107	208	1,114
BKK20130	*yosG*	-1,225	1,148	0,109	236	1,162
BKK26780	*yrdA*	-1,225	1,139	0,111	450	1,153
BKK04630	*ydcC*	-1,228	1,187	0,115	558	1,201
BKK20740	*yopW*	-1,228	1,141	0,097	412	1,155
BKK38840	*yxkD*	-1,233	1,193	0,123	83	1,208
BKK38580	*licC*	-1,234	1,152	0,127	75	1,166
BKK14170	*ykuP*	-1,241	1,148	0,098	319	1,163
BKK07230	*yetM*	-1,242	1,164	0,111	529	1,179
BKK09090	*yhcI*	-1,244	1,154	0,112	287	1,168
BKK38880	*yxjO*	-1,244	1,150	0,102	79	1,165
BKK36700	*moaA*	-1,245	1,100	0,111	86	1,114
BKK06940	*yesL*	-1,246	1,153	0,099	342	1,168
BKK07500	*yfmE*	-1,247	1,144	0,102	257	1,159
BKK38710	*yxlA*	-1,25	1,150	0,114	148	1,165
BKK03330	*nasA*	-1,255	1,186	0,074	69	1,201
BKK02870	*adcB*	-1,26	1,124	0,109	108	1,138
BKK39420	*deoC*	-1,262	1,150	0,108	126	1,165
BKK35910	*rbsR*	-1,264	1,152	0,108	135	1,166
BKK20890	*yopH*	-1,265	1,139	0,091	514	1,153
BKK26680	*yrdK*	-1,269	1,136	0,100	279	1,151
BKK17450	*glnR*	-1,272	1,147	0,101	632	1,162
BKK11440	*oppB*	-1,273	1,193	0,162	80	1,208
BKK20070	*nrdIB*	-1,276	1,115	0,120	112	1,129
BKK00400	*yabE*	-1,28	1,125	0,106	65	1,139
BKK37130	*spo0F*	-1,28	1,135	0,095	525	1,149
BKK17130	*acpK*	-1,293	1,148	0,120	90	1,164
BKK34610	*mdxE*	-1,296	1,146	0,117	352	1,161
BKK25390	*yqeZ*	-1,297	1,148	0,095	182	1,164
BKK35280	*yvjA*	-1,298	1,120	0,111	324	1,135
BKK34040	*yvfW*	-1,299	1,120	0,090	138	1,134
BKK11000	*yitI*	-1,302	1,147	0,117	303	1,163
BKK21880	*ypgR*	-1,302	1,140	0,097	477	1,155
BKK00370	*abrB*	-1,303	1,164	0,146	91	1,179
BKK06450	*purC*	-1,303	1,163	0,119	259	1,179
BKK20280	*yorR*	-1,303	1,153	0,106	244	1,168
BKK38230	*ywcB*	-1,303	1,104	0,117	69	1,119
BKK17720	*yndA*	-1,304	1,147	0,106	409	1,162
BKK12730	*xkdT*	-1,307	1,173	0,126	110	1,189
BKK26390	*spoIIIC*	-1,313	1,161	0,109	187	1,177
BKK31400	*yugH*	-1,315	1,133	0,116	120	1,148
BKK12550	*xtrA*	-1,317	1,153	0,120	208	1,168
BKK34660	*yvdB*	-1,318	1,134	0,106	357	1,149
BKK06760	*yeeA*	-1,321	1,163	0,105	420	1,179
BKK07510	*yfmD*	-1,321	1,192	0,147	53	1,208
BKK20860	*yopK*	-1,323	1,138	0,112	512	1,153
BKK03860	*ycnD*	-1,324	1,132	0,103	386	1,147
BKK05660	*ydgI*	-1,325	1,142	0,106	80	1,158
BKK23430	*spoVAB*	-1,33	1,190	0,130	100	1,206
BKK07990	*yfjR*	-1,331	1,143	0,109	324	1,159
BKK04210	*ydaF*	-1,333	1,149	0,096	136	1,165
BKK37810	*spsL*	-1,339	1,134	0,110	405	1,149
BKK06920	*yesJ*	-1,342	1,163	0,127	285	1,179
BKK30410	*ytrF*	-1,343	1,140	0,101	163	1,156
BKK39510	*yxeL*	-1,347	1,149	0,106	82	1,165
BKK04780	*ydcI*	-1,352	1,149	0,133	181	1,165
BKK01980	*skfH*	-1,353	1,144	0,101	436	1,160
BKK08360	*yfiQ*	-1,354	1,143	0,120	230	1,159
BKK02620	*phoD*	-1,357	1,132	0,109	508	1,147
BKK37380	*albB*	-1,359	1,104	0,094	61	1,119
BKK24200	*yqiH*	-1,361	1,190	0,163	31	1,206
BKK38790	*yxzE*	-1,361	1,149	0,108	112	1,165
BKK18800	*penP*	-1,364	0,962	0,101	39	0,975
BKK27690	*yrzE*	-1,364	1,144	0,103	394	1,160
BKK31930	*ald*	-1,364	1,132	0,120	51	1,148
BKK10960	*yitE*	-1,373	1,167	0,103	143	1,183
BKK13100	*ykkD*	-1,373	1,192	0,138	130	1,208
BKK25430	*rimO*	-1,374	1,148	0,103	365	1,164
BKK34920	*hisG*	-1,377	1,119	0,113	100	1,135
BKK35430	*flgM*	-1,377	1,141	0,106	89	1,157
BKK16480	*ylxL*	-1,38	1,145	0,117	375	1,161
BKK11381	*appA*	-1,386	1,167	0,107	111	1,183
BKK10760	*yisL*	-1,387	1,167	0,115	123	1,183

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK29760	*ytxJ*	-1,39	1,124	0,095	87	1,139
BKK18520	*yoxB*	-1,391	1,141	0,105	122	1,157
BKK34520	*yvdP*	-1,391	1,119	0,104	77	1,135
BKK25740	*yqeB*	-1,396	1,147	0,112	122	1,164
BKK28940	*ysaA*	-1,398	1,098	0,120	292	1,113
BKK40480	*yycB*	-1,399	1,131	0,099	412	1,147
BKK21390	*yomE*	-1,401	1,137	0,109	434	1,153
BKK39120	*yxiM*	-1,404	1,148	0,116	30	1,165
BKK12460	*xlyB*	-1,41	1,172	0,109	914	1,189
BKK33380	*yvgL*	-1,41	1,205	0,089	94	1,222
BKK06310	*gabP*	-1,411	1,143	0,104	835	1,160
BKK19920	*yotD*	-1,414	1,113	0,142	144	1,129
BKK03982	*mtlF*	-1,419	1,148	0,084	173	1,165
BKK17730	*yndB*	-1,42	1,145	0,105	310	1,162
BKK21540	*yolA*	-1,423	1,138	0,114	236	1,155
BKK36640	*ureC*	-1,424	1,140	0,111	147	1,157
BKK37190	*clsB*	-1,424	1,103	0,104	64	1,119
BKK06250	*ydjM*	-1,425	1,162	0,107	316	1,179
BKK30770	*mntA*	-1,426	1,145	0,105	389	1,161
BKK18540	*yoaB*	-1,428	1,122	0,093	174	1,138
BKK33240	*oxdC*	-1,428	1,118	0,106	149	1,134
BKK07940	*yfkC*	-1,432	1,142	0,106	337	1,159
BKK37060	*tdk*	-1,432	1,098	0,123	30	1,114
BKK30080	*yteV*	-1,434	1,139	0,106	98	1,156
BKK11130	*ipi*	-1,437	1,166	0,095	131	1,183
BKK23820	*yqjM*	-1,437	1,137	0,105	489	1,153
BKK15770	*prkC*	-1,438	1,151	0,101	374	1,168
BKK39339	*yxzL*	-1,441	1,131	0,105	357	1,147
BKK29680	*acsA*	-1,445	1,097	0,115	54	1,113
BKK16430	*cheA*	-1,446	1,122	0,117	107	1,138
BKK27469	*yrzR*	-1,447	1,134	0,101	274	1,151
BKK06990	*yesQ*	-1,452	1,191	0,193	175	1,208
BKK35140	*yvkN*	-1,453	1,119	0,112	363	1,135
BKK36880	*atpI*	-1,454	1,098	0,135	177	1,114
BKK02570	*ycbN*	-1,461	1,184	0,071	153	1,201
BKK08390	*yfiT*	-1,468	1,142	0,113	277	1,159
BKK07090	*yetA*	-1,471	1,162	0,122	231	1,179
BKK22590	*ypiA*	-1,472	1,084	0,101	235	1,100
BKK05090	*ydzS*	-1,475	1,143	0,116	439	1,160
BKK25230	*yqxD*	-1,475	1,146	0,092	192	1,164
BKK38920	*pepT*	-1,475	1,148	0,125	149	1,165
BKK18580	*yoaF*	-1,478	1,121	0,092	73	1,138
BKK11510	*yjbE*	-1,479	1,166	0,107	141	1,183
BKK00240	*csfB*	-1,48	1,166	0,114	178	1,183
BKK02840	*ycdG*	-1,48	1,113	0,095	53	1,130
BKK17610	*xylB*	-1,481	1,145	0,110	292	1,162
BKK10270	*lcfB*	-1,482	1,166	0,086	74	1,183
BKK16110	*dprA*	-1,482	1,142	0,122	183	1,160
BKK08790	*thiC*	-1,487	1,142	0,103	187	1,159
BKK14430	*ykpA*	-1,487	1,145	0,098	374	1,163
BKK03710	*gerKC*	-1,488	1,121	0,090	59	1,138
BKK08480	*yfhC*	-1,488	1,142	0,120	318	1,159
BKK36100	*ywrD*	-1,488	1,140	0,095	90	1,157
BKK13630	*ykvA*	-1,49	0,960	0,069	99	0,975
BKK14680	*ykzC*	-1,493	1,162	0,162	93	1,179
BKK28790	*araB*	-1,493	1,122	0,098	118	1,139
BKK32070	*yuiC*	-1,495	1,131	0,082	182	1,148
BKK16310	*fliM*	-1,501	1,145	0,113	212	1,163
BKK08510	*yfhF*	-1,503	1,141	0,104	306	1,159
BKK16060	*rnhB*	-1,503	1,147	0,096	66	1,165
BKK19800	*phy*	-1,503	1,144	0,115	426	1,162
BKK35770	*tagC*	-1,504	1,144	0,114	343	1,161
BKK18020	*sspN*	-1,506	1,146	0,113	69	1,164
BKK32520	*pucG*	-1,513	1,204	0,064	126	1,222
BKK17190	*pksL*	-1,514	1,150	0,101	460	1,168
BKK23060	*ypzE*	-1,514	1,140	0,088	95	1,158
BKK11139	*yizC*	-1,517	1,145	0,105	410	1,163
BKK26950	*yraG*	-1,518	1,159	0,109	169	1,177
BKK18120	*alsT*	-1,521	1,154	0,123	126	1,172
BKK24380	*spoIIIAF*	-1,521	1,188	0,140	54	1,206
BKK23980	*artP*	-1,522	1,136	0,113	432	1,153
BKK02390	*ilvE*	-1,528	1,142	0,099	480	1,160
BKK16930	*cinA*	-1,529	1,146	0,103	109	1,164
BKK08300	*yfiK*	-1,533	1,141	0,116	123	1,159
BKK21860	*yphP*	-1,535	1,137	0,102	356	1,155
BKK06078	*ydzW*	-1,536	1,130	0,102	158	1,147
BKK26440	*yrkO*	-1,536	1,159	0,108	235	1,177
BKK39630	*yxdM*	-1,539	1,203	0,082	74	1,222
BKK21760	*ypmP*	-1,542	1,137	0,112	541	1,155

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK03620	*yclA*	-1,543	1,147	0,102	218	1,165
BKK29900	*trmB*	-1,543	1,143	0,115	339	1,161
BKK30100	*yteT*	-1,544	1,138	0,084	264	1,156
BKK38450	*ywaE*	-1,544	1,140	0,095	86	1,158
BKK21930	*cspD*	-1,545	1,136	0,115	292	1,153
BKK37840	*spsI*	-1,546	1,148	0,109	96	1,166
BKK41060	*rpmH*	-1,546	1,138	0,141	37	1,156
BKK22550	*qcrB*	-1,549	1,083	0,122	393	1,100
BKK23600	*yqxK*	-1,551	1,169	0,102	227	1,187
BKK02460	*ycbC*	-1,554	1,112	0,103	106	1,130
BKK16100	*sucD*	-1,556	1,144	0,103	270	1,163
BKK25330	*yqfF*	-1,559	1,145	0,095	287	1,164
BKK02790	*ycdB*	-1,56	1,112	0,101	71	1,130
BKK38510	*dltB*	-1,561	1,148	0,109	108	1,166
BKK02340	*gltP*	-1,571	1,112	0,086	113	1,130
BKK13380	*ykoS*	-1,571	1,150	0,104	463	1,168
BKK31730	*yuzC*	-1,571	1,122	0,085	67	1,139
BKK11809	*yjcZ*	-1,572	1,170	0,088	328	1,189
BKK30720	*ythB*	-1,572	1,138	0,101	112	1,156
BKK40040	*glxK*	-1,572	1,129	0,101	458	1,147
BKK10120	*hemE*	-1,574	1,158	0,118	98	1,177
BKK29710	*acuC*	-1,577	1,133	0,106	278	1,151
BKK11910	*yjcM*	-1,578	1,170	0,112	321	1,189
BKK33222	*rsoA*	-1,578	1,116	0,082	107	1,134
BKK35360	*hag*	-1,58	1,117	0,112	490	1,135
BKK33610	*rnr*	-1,581	1,116	0,098	95	1,134
BKK17770	*yndF*	-1,588	1,145	0,107	100	1,164
BKK23090	*rsiX*	-1,588	1,138	0,103	140	1,156
BKK40680	*yybD*	-1,588	1,166	0,095	235	1,184
BKK08170	*yfjA*	-1,59	1,140	0,107	392	1,159
BKK16130	*trmFO*	-1,592	1,141	0,096	555	1,160
BKK28110	*spoVID*	-1,593	1,141	0,104	89	1,160
BKK29010	*speD*	-1,593	1,095	0,102	167	1,113
BKK20450	*yorA*	-1,596	1,149	0,108	282	1,168
BKK13050	*ykzH*	-1,597	1,144	0,101	351	1,163
BKK07670	*yfjI*	-1,6	1,141	0,099	508	1,160
BKK19410	*cwlS*	-1,603	1,143	0,119	379	1,162
BKK03540	*ycxB*	-1,605	1,112	0,097	128	1,130
BKK20040	*yosP*	-1,606	1,111	0,146	181	1,129
BKK07850	*yfkM*	-1,608	1,141	0,100	442	1,160
BKK32640	*sspG*	-1,609	1,116	0,080	162	1,134
BKK36600	*mta*	-1,609	1,096	0,102	68	1,114
BKK10560	*yhjM*	-1,611	1,164	0,102	93	1,183
BKK17940	*ynel*	-1,612	1,143	0,103	382	1,162
BKK03510	*srfAC*	-1,613	1,112	0,105	104	1,130
BKK24850	*glcK*	-1,614	1,145	0,097	126	1,164
BKK11570	*yjbJ*	-1,617	1,189	0,136	144	1,208
BKK09600	*crcBA*	-1,619	1,158	0,098	143	1,177
BKK05890	*ydhU*	-1,62	1,139	0,095	125	1,158
BKK08900	*yhzB*	-1,623	1,158	0,096	73	1,177
BKK06840	*yeeI*	-1,629	1,160	0,112	307	1,179
BKK25880	*yqxJ*	-1,632	0,959	0,070	80	0,975
BKK01530	*cwlD*	-1,634	0,959	0,076	49	0,975
BKK25580	*comEB*	-1,639	1,144	0,109	305	1,164
BKK38270	*efeM*	-1,641	1,131	0,107	296	1,149
BKK08490	*yfhD*	-1,643	1,140	0,101	197	1,159
BKK20580	*yoqM*	-1,644	1,136	0,098	448	1,155
BKK34590	*mdxG*	-1,644	1,131	0,110	557	1,149
BKK30150	*ytdP*	-1,647	1,137	0,087	99	1,156
BKK37910	*spsA*	-1,648	1,138	0,131	166	1,157
BKK33860	*yvbH*	-1,653	1,142	0,107	283	1,161
BKK39890	*yxbB*	-1,653	1,138	0,121	98	1,158
BKK32050	*pepA*	-1,655	1,129	0,097	189	1,148
BKK07620	*yfjN*	-1,658	1,140	0,111	437	1,159
BKK07955	*yfkA*	-1,658	1,143	0,102	358	1,163
BKK08340	*padR*	-1,659	1,143	0,103	324	1,163
BKK26550	*yrkD*	-1,661	1,157	0,102	241	1,177
BKK28590	*polX*	-1,661	1,140	0,094	41	1,160
BKK14280	*moeA*	-1,667	1,159	0,105	186	1,179
BKK12420	*yjoB*	-1,668	1,169	0,115	635	1,189
BKK02270	*pssA*	-1,669	1,111	0,092	91	1,130
BKK33340	*sspJ*	-1,67	1,142	0,113	342	1,161
BKK21890	*ypgQ*	-1,672	1,136	0,106	342	1,155
BKK07710	*yfjE*	-1,674	1,119	0,100	128	1,138
BKK32010	*besA*	-1,675	1,129	0,126	164	1,148
BKK38680	*yxlD*	-1,675	1,147	0,106	219	1,166
BKK13520	*ykrP*	-1,676	1,147	0,103	230	1,166
BKK14470	*mreBH*	-1,677	1,143	0,105	317	1,163
BKK26480	*yrkK*	-1,677	1,134	0,097	437	1,153

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK17030	*cotE*	-1,679	1,186	0,120	146	1,206
BKK29320	*ytnI*	-1,68	1,094	0,124	219	1,113
BKK32240	*thrB*	-1,681	1,129	0,128	97	1,148
BKK10040	*ecsA*	-1,685	1,119	0,106	117	1,138
BKK00140	*dck*	-1,686	1,159	0,111	494	1,179
BKK21960	*ypeQ*	-1,686	1,132	0,102	312	1,151
BKK27270	*mtnN*	-1,686	1,138	0,105	125	1,158
BKK08060	*acoA*	-1,69	1,148	0,100	355	1,168
BKK29720	*ytxE*	-1,693	1,120	0,098	134	1,139
BKK00480	*yabJ*	-1,696	1,144	0,104	133	1,164
BKK16720	*ymxH*	-1,696	1,144	0,110	151	1,164
BKK09780	*yheC*	-1,699	1,157	0,100	171	1,177
BKK39990	*yxaF*	-1,699	1,145	0,116	71	1,165
BKK12280	*rex*	-1,7	1,143	0,111	267	1,163
BKK33960	*araE*	-1,7	1,142	0,099	359	1,161
BKK34970	*ppaX*	-1,7	1,116	0,123	252	1,135
BKK34600	*mdxF*	-1,704	1,116	0,102	143	1,135
BKK18710	*yozF*	-1,707	1,152	0,106	89	1,172
BKK02619	*yczK*	-1,713	1,111	0,105	61	1,130
BKK31560	*yufP*	-1,713	1,146	0,104	163	1,166
BKK05530	*ydfR*	-1,715	1,140	0,104	319	1,160
BKK39840	*yxbG*	-1,716	0,958	0,091	42	0,975
BKK03690	*yczF*	-1,718	1,145	0,106	134	1,165
BKK32560	*frlR*	-1,72	1,120	0,092	204	1,139
BKK30120	*yteR*	-1,721	1,136	0,089	121	1,156
BKK19890	*yotG*	-1,724	1,110	0,125	487	1,129
BKK11330	*fabHA*	-1,725	1,163	0,114	77	1,183
BKK24640	*yqxM*	-1,725	1,131	0,100	200	1,151
BKK36830	*atpA*	-1,727	1,095	0,114	135	1,114
BKK32460	*pucM*	-1,728	1,128	0,139	50	1,148
BKK12940	*dppC*	-1,729	1,187	0,151	94	1,208
BKK26860	*yroO*	-1,73	1,156	0,093	212	1,177
BKK38240	*ywcA*	-1,732	1,099	0,144	41	1,119
BKK25620	*yqeL*	-1,74	1,143	0,093	205	1,164
BKK17690	*yncM*	-1,741	1,142	0,097	467	1,162
BKK04740	*rsbX*	-1,745	1,145	0,137	276	1,165
BKK31440	*patB*	-1,745	1,128	0,096	187	1,148
BKK32870	*yusO*	-1,745	1,115	0,106	105	1,134
BKK07420	*yfmM*	-1,75	1,187	0,136	44	1,208
BKK34140	*ganQ*	-1,75	1,137	0,087	145	1,158
BKK05990	*tatCY*	-1,759	1,139	0,110	489	1,160
BKK17880	*ynzC*	-1,766	1,141	0,100	341	1,162
BKK21640	*yokC*	-1,773	1,133	0,100	472	1,153
BKK39710	*iolF*	-1,773	1,146	0,099	194	1,166
BKK23830	*yqjL*	-1,776	1,166	0,112	135	1,187
BKK22300	*yppC*	-1,778	1,081	0,120	153	1,100
BKK33500	*copA*	-1,778	1,118	0,101	103	1,138
BKK04270	*ydaJ*	-1,78	1,180	0,070	54	1,201
BKK19999	*yojW*	-1,781	1,109	0,134	310	1,129
BKK24080	*bcd*	-1,787	1,166	0,112	291	1,187
BKK11970	*yjcS*	-1,79	1,142	0,111	337	1,163
BKK30595	*ytlA*	-1,791	1,200	0,059	243	1,222
BKK21110	*yonF*	-1,793	1,134	0,116	243	1,155
BKK32480	*pucD*	-1,793	1,145	0,108	84	1,166
BKK13990	*kinA*	-1,798	1,163	0,113	98	1,184
BKK05780	*ydhJ*	-1,799	1,139	0,099	444	1,160
BKK32360	*yunC*	-1,799	1,127	0,115	101	1,148
BKK03981	*mtlA*	-1,801	1,144	0,089	125	1,165
BKK10940	*yitC*	-1,801	1,162	0,112	128	1,183
BKK15720	*defa*	-1,801	1,114	0,115	85	1,134
BKK26740	*cypA*	-1,802	1,155	0,101	376	1,177
BKK35090	*yvmA*	-1,802	1,129	0,097	453	1,149
BKK08100	*acoR*	-1,805	1,138	0,098	462	1,159
BKK12390	*uxaA*	-1,805	1,147	0,105	422	1,168
BKK39390	*hutM*	-1,809	1,144	0,107	106	1,165
BKK22930	*sleB*	-1,81	1,080	0,128	100	1,100
BKK07430	*yfmL*	-1,811	1,139	0,109	434	1,160
BKK22810	*yphF*	-1,812	1,185	0,126	147	1,206
BKK07530	*yfmB*	-1,815	1,138	0,106	496	1,159
BKK36660	*ureA*	-1,815	1,094	0,121	218	1,114
BKK33850	*yvbG*	-1,819	0,957	0,071	65	0,975
BKK14110	*ykuK*	-1,821	1,141	0,111	232	1,163
BKK34160	*cycB*	-1,821	1,129	0,113	428	1,149
BKK34820	*bmrA*	-1,823	1,128	0,094	590	1,149
BKK25600	*comER*	-1,825	1,142	0,094	229	1,164
BKK01060	*ybxB*	-1,83	1,142	0,097	388	1,164
BKK06079	*ydzW*	-1,832	1,136	0,101	98	1,158
BKK15460	*rluD*	-1,835	1,093	0,110	129	1,113
BKK31850	*yueC*	-1,837	1,127	0,115	237	1,148

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK38180	*ywzA*	-1,84	1,136	0,100	88	1,157
BKK03140	*tmrB*	-1,844	1,109	0,093	113	1,130
BKK10080	*yhfA*	-1,844	1,186	0,151	72	1,208
BKK24580	*yghH*	-1,844	1,136	0,093	114	1,158
BKK11820	*yjcD*	-1,85	1,141	0,099	347	1,163
BKK19350	*yocS*	-1,853	1,184	0,144	83	1,206
BKK40170	*yydG*	-1,854	1,146	0,126	284	1,168
BKK39750	*iolB*	-1,855	1,143	0,113	74	1,165
BKK36350	*ywpD*	-1,858	1,140	0,101	406	1,161
BKK39180	*yxiH*	-1,859	1,143	0,095	72	1,165
BKK39970	*yxaH*	-1,859	1,128	0,097	551	1,149
BKK11790	*yjcA*	-1,861	1,167	0,132	759	1,189
BKK01935	*skfC*	-1,866	1,092	0,095	102	1,113
BKK16650	*rbfA*	-1,867	1,142	0,135	97	1,164
BKK21329	*youB*	-1,867	1,132	0,099	450	1,153
BKK34460	*levB*	-1,867	1,114	0,116	246	1,135
BKK37710	*bacD*	-1,868	1,128	0,095	609	1,149
BKK03890	*gabR*	-1,873	1,143	0,129	557	1,165
BKK06570	*yerB*	-1,876	1,179	0,088	145	1,201
BKK04910	*yddB*	-1,881	1,126	0,096	417	1,147
BKK32000	*dhbA*	-1,881	1,118	0,089	39	1,139
BKK39080	*licT*	-1,883	1,143	0,098	69	1,165
BKK26559	*yrzN*	-1,884	1,155	0,108	337	1,177
BKK20420	*yorD*	-1,887	1,140	0,105	457	1,162
BKK38140	*qoxD*	-1,887	1,135	0,089	126	1,157
BKK01240	*rpmC*	-1,888	1,126	0,106	154	1,147
BKK07070	*yesY*	-1,888	1,157	0,135	181	1,179
BKK32370	*yunD*	-1,889	1,126	0,118	44	1,148
BKK37230	*ywjA*	-1,892	1,126	0,106	474	1,147
BKK20780	*yopS*	-1,893	1,140	0,105	463	1,162
BKK18740	*yozG*	-1,894	1,149	0,125	113	1,172
BKK09259	*yhzG*	-1,897	1,141	0,101	340	1,163
BKK17860	*yneA*	-1,9	1,141	0,121	79	1,164
BKK25960	*yqcB*	-1,901	1,141	0,112	132	1,164
BKK22330	*ypoC*	-1,905	1,129	0,101	491	1,151
BKK37700	*bacE*	-1,91	1,127	0,113	257	1,149
BKK02970	*yceK*	-1,913	1,108	0,089	99	1,130
BKK01750	*ybbP*	-1,915	1,137	0,087	209	1,160
BKK25130	*nfo*	-1,917	1,141	0,097	250	1,164
BKK29450	*argG*	-1,919	1,129	0,102	330	1,151
BKK08960	*yhbF*	-1,923	1,154	0,096	209	1,177
BKK26570	*yrkB*	-1,923	1,131	0,102	355	1,153
BKK16250	*fliJ*	-1,927	1,146	0,102	344	1,168
BKK21590	*yokH*	-1,929	1,133	0,109	426	1,155
BKK26075	*yqbK*	-1,933	1,129	0,105	474	1,151
BKK06420	*purE*	-1,938	1,156	0,124	258	1,179
BKK40310	*phrG*	-1,938	1,129	0,097	459	1,151
BKK13790	*ykvQ*	-1,939	1,144	0,107	90	1,166
BKK33100	*liaF*	-1,941	1,112	0,095	174	1,134
BKK27380	*yrzB*	-1,946	1,129	0,102	372	1,151
BKK02150	*ybeF*	-1,948	1,108	0,113	74	1,130
BKK13240	*thiU*	-1,95	1,144	0,117	52	1,166
BKK17540	*ynaF*	-1,95	1,139	0,107	360	1,162
BKK02070	*csgA*	-1,952	1,108	0,093	59	1,130
BKK28410	*gerE*	-1,952	1,137	0,093	132	1,160
BKK02060	*ybxG*	-1,953	1,108	0,078	45	1,130
BKK30240	*bioW*	-1,956	1,133	0,098	264	1,156
BKK14580	*pdhA*	-1,958	1,156	0,161	118	1,179
BKK35540	*tuaH*	-1,961	1,127	0,100	691	1,149
BKK35630	*lytB*	-1,961	1,127	0,100	691	1,149
BKK19330	*sodF*	-1,968	1,149	0,112	116	1,172
BKK37140	*ywjG*	-1,968	1,097	0,112	690	1,119
BKK31300	*yugS*	-1,97	1,138	0,102	296	1,161
BKK38499	*ywzH*	-1,972	1,097	0,122	85	1,119
BKK24280	*ispA*	-1,974	1,164	0,099	281	1,187
BKK25040	*yggB*	-1,974	1,141	0,114	149	1,164
BKK36530	*bcrC*	-1,975	1,092	0,073	51	1,114
BKK03730	*yclH*	-1,976	1,178	0,116	979	1,201
BKK27760	*csbX*	-1,977	1,137	0,113	408	1,160
BKK15330	*sigG*	-1,978	1,117	0,114	66	1,139
BKK00350	*yazA*	-1,982	1,156	0,155	152	1,179
BKK14420	*ykoA*	-1,984	1,156	0,117	450	1,179
BKK24710	*comGC*	-1,985	1,140	0,091	464	1,164
BKK32940	*yusV*	-1,985	1,198	0,098	38	1,222
BKK35240	*ctpB*	-1,988	1,113	0,131	420	1,135
BKK13130	*proA*	-1,989	1,143	0,113	173	1,166
BKK16790	*tepA*	-1,99	1,140	0,117	96	1,164
BKK27590	*dtd*	-1,991	1,137	0,095	316	1,160
BKK08570	*yfhK*	-1,996	1,136	0,118	187	1,159

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK32020	*yuiH*	-2,006	1,125	0,107	138	1,148
BKK35100	*yvlD*	-2,007	1,112	0,106	409	1,135
BKK37500	*speE*	-2,01	1,096	0,135	44	1,119
BKK12740	*xkdU*	-2,012	1,143	0,120	135	1,166
BKK33140	*yvqJ*	-2,017	1,197	0,083	140	1,222
BKK27040	*levG*	-2,019	1,153	0,110	255	1,177
BKK06036	*ydzT*	-2,026	1,136	0,101	346	1,160
BKK17210	*pksN*	-2,03	1,140	0,106	81	1,164
BKK20600	*yoqK*	-2,031	1,131	0,114	250	1,155
BKK05550	*cotP*	-2,033	1,124	0,104	346	1,147
BKK20230	*yorW*	-2,033	1,144	0,114	250	1,168
BKK02640	*tatCD*	-2,034	1,177	0,071	79	1,201
BKK32140	*paiB*	-2,035	1,125	0,098	42	1,148
BKK20120	*yosH*	-2,036	1,106	0,120	100	1,129
BKK09190	*yhcR*	-2,037	1,153	0,104	120	1,177
BKK12570	*xtmA*	-2,037	1,165	0,129	436	1,189
BKK39900	*aslA*	-2,041	1,142	0,108	112	1,166
BKK24900	*rpmGA*	-2,043	1,140	0,095	211	1,164
BKK34550	*pgcM*	-2,046	1,112	0,109	267	1,135
BKK00560	*spoVT*	-2,048	0,955	0,075	44	0,975
BKK21000	*yonT*	-2,049	1,130	0,105	585	1,153
BKK31319	*yuzI*	-2,049	1,132	0,113	69	1,156
BKK24490	*yqhQ*	-2,05	1,163	0,094	377	1,187
BKK28780	*araD*	-2,051	1,090	0,092	351	1,113
BKK25920	*yqxG*	-2,054	1,140	0,130	58	1,164
BKK18590	*yoaG*	-2,055	1,115	0,094	104	1,138
BKK05840	*gmuD*	-2,056	1,143	0,077	244	1,167
BKK09110	*yhcJ*	-2,056	1,183	0,142	691	1,208
BKK27660	*comN*	-2,058	1,136	0,107	232	1,160
BKK20710	*yopZ*	-2,06	1,131	0,104	381	1,155
BKK21010	*yonS*	-2,06	1,182	0,106	94	1,206
BKK33250	*yvrL*	-2,06	1,137	0,104	253	1,161
BKK02730	*natK*	-2,062	1,177	0,059	52	1,201
BKK30360	*yttA*	-2,065	1,132	0,101	148	1,156
BKK05820	*gmuA*	-2,068	1,124	0,095	395	1,147
BKK26530	*yrkF*	-2,07	1,130	0,109	398	1,153
BKK35239	*swrAA*	-2,071	1,112	0,123	410	1,135
BKK37740	*bacA*	-2,072	1,096	0,098	90	1,119
BKK15630	*sirC*	-2,074	1,124	0,112	433	1,148
BKK13560	*mtnK*	-2,076	1,138	0,107	430	1,163
BKK21130	*yonD*	-2,079	1,131	0,097	406	1,155
BKK30870	*ytcB*	-2,08	1,197	0,063	445	1,222
BKK12240	*yjkA*	-2,087	1,183	0,158	459	1,208
BKK05800	*pbuE*	-2,088	1,176	0,051	59	1,201
BKK06000	*ydiK*	-2,091	1,143	0,098	204	1,167
BKK11890	*yjcK*	-2,094	1,164	0,121	356	1,189
BKK06190	*ydjG*	-2,096	1,154	0,103	168	1,179
BKK05760	*ydhH*	-2,098	1,143	0,131	139	1,167
BKK24700	*comGD*	-2,099	1,127	0,104	387	1,151
BKK33970	*araR*	-2,101	1,133	0,091	124	1,158
BKK12840	*pit*	-2,103	1,183	0,132	80	1,208
BKK34740	*crh*	-2,105	1,111	0,094	379	1,135
BKK26690	*brnQ*	-2,114	1,196	0,086	222	1,222
BKK02320	*ybfP*	-2,117	1,106	0,103	125	1,130
BKK37490	*speB*	-2,117	1,095	0,099	57	1,119
BKK07520	*yfmC*	-2,119	1,183	0,125	181	1,208
BKK12480	*yjqB*	-2,126	1,164	0,147	729	1,189
BKK36090	*ywrE*	-2,126	1,091	0,098	458	1,114
BKK07460	*yfmI*	-2,131	1,135	0,110	546	1,160
BKK25670	*yqeH*	-2,131	1,127	0,133	130	1,151
BKK37800	*yweA*	-2,137	1,125	0,105	439	1,149
BKK08240	*cotE*	-2,141	1,134	0,109	292	1,159
BKK04600	*ydbT*	-2,146	1,123	0,098	421	1,147
BKK30220	*bioF*	-2,15	1,131	0,103	114	1,156
BKK31780	*yueH*	-2,152	1,123	0,107	205	1,148
BKK06790	*yeeD*	-2,157	1,135	0,096	487	1,160
BKK21430	*bhlB*	-2,158	1,130	0,103	474	1,155
BKK18450	*gltA*	-2,159	1,113	0,087	57	1,138
BKK10920	*yitA*	-2,163	1,158	0,114	121	1,183
BKK38420	*sacY*	-2,163	1,095	0,113	183	1,119
BKK01610	*feuC*	-2,166	1,151	0,095	232	1,177
BKK38390	*ywbA*	-2,167	1,132	0,124	61	1,157
BKK16010	*ylqD*	-2,168	1,132	0,107	126	1,157
BKK24030	*bkdB*	-2,168	1,161	0,108	173	1,187
BKK22130	*kduI*	-2,171	1,076	0,137	144	1,100
BKK29520	*yteJ*	-2,178	1,089	0,105	72	1,113
BKK09670	*dat*	-2,179	1,182	0,127	45	1,208
BKK32060	*yuiD*	-2,18	1,115	0,109	82	1,139
BKK25850	*yqzI*	-2,181	1,138	0,112	104	1,164

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK06350	*yebA*	-2,185	1,153	0,110	460	1,179
BKK13190	*ispA*	-2,185	1,141	0,085	56	1,166
BKK03550	*ycxC*	-2,186	1,105	0,097	113	1,130
BKK36070	*cotG*	-2,187	1,131	0,117	91	1,156
BKK17250	*ymaE*	-2,189	1,136	0,107	575	1,162
BKK26749	*yrdD*	-2,189	1,151	0,097	166	1,177
BKK32210	*yuzD*	-2,189	1,123	0,093	38	1,148
BKK05240	*ydeL*	-2,19	1,114	0,105	58	1,139
BKK01400	*rpmJ*	-2,192	1,134	0,129	188	1,160
BKK11480	*yjbB*	-2,195	1,182	0,120	87	1,208
BKK28580	*mutSB*	-2,198	1,134	0,107	46	1,160
BKK31840	*yueD*	-2,199	1,123	0,093	145	1,148
BKK15030	*ylbJ*	-2,2	1,153	0,138	261	1,179
BKK26220	*yqaQ*	-2,2	1,151	0,094	408	1,177
BKK40090	*ahpC*	-2,201	1,142	0,109	340	1,168
BKK26000	*yqbR*	-2,206	1,126	0,092	459	1,151
BKK37270	*narH*	-2,206	1,094	0,108	90	1,119
BKK25630	*yqeK*	-2,213	1,138	0,099	142	1,164
BKK34830	*yvzA*	-2,215	1,110	0,127	164	1,135
BKK11360	*appD*	-2,22	1,182	0,143	116	1,208
BKK25540	*gpr*	-2,22	1,138	0,093	189	1,164
BKK04470	*dctP*	-2,221	1,132	0,095	228	1,158
BKK05329	*ydzO*	-2,222	1,141	0,107	146	1,167
BKK33770	*spbC*	-2,223	1,135	0,097	572	1,161
BKK13150	*ohrR*	-2,225	1,140	0,125	195	1,166
BKK01760	*ybbR*	-2,226	1,134	0,104	558	1,160
BKK11220	*argD*	-2,235	1,142	0,109	390	1,168
BKK19150	*yocB*	-2,239	1,136	0,103	468	1,162
BKK34510	*yvdQ*	-2,239	1,135	0,101	418	1,161
BKK40200	*yydD*	-2,239	1,125	0,102	270	1,151
BKK30440	*ytrC*	-2,249	1,195	0,088	239	1,222
BKK18530	*yoaA*	-2,25	1,132	0,108	113	1,158
BKK18780	*yoaW*	-2,251	1,145	0,095	267	1,172
BKK00680	*hprT*	-2,252	1,122	0,103	265	1,147
BKK11810	*spoVIF*	-2,255	1,162	0,121	413	1,189
BKK37770	*rocB*	-2,255	1,094	0,123	46	1,119
BKK02890	*yceC*	-2,256	1,131	0,095	132	1,158
BKK29140	*citZ*	-2,261	1,088	0,138	132	1,113
BKK39560	*yxeG*	-2,262	1,138	0,092	115	1,165
BKK34170	*ganR*	-2,265	1,109	0,121	92	1,135
BKK09870	*khtS*	-2,266	1,181	0,180	175	1,208
BKK25750	*nucB*	-2,267	0,953	0,064	47	0,975
BKK26619	*yrzO*	-2,271	1,150	0,109	114	1,177
BKK05510	*ydfQ*	-2,272	1,141	0,106	647	1,167
BKK07640	*yfjL*	-2,272	1,132	0,106	495	1,159
BKK13500	*ktrD*	-2,274	1,140	0,101	289	1,166
BKK15050	*ylbL*	-2,275	1,114	0,107	81	1,139
BKK00550	*mfd*	-2,278	1,137	0,113	86	1,164
BKK20810	*yopP*	-2,28	1,125	0,108	268	1,151
BKK27050	*levF*	-2,282	1,150	0,094	349	1,177
BKK07970	*yfjT*	-2,289	1,132	0,114	252	1,159
BKK02720	*yccF*	-2,29	1,174	0,082	45	1,201
BKK36580	*ywnF*	-2,291	1,089	0,141	214	1,114
BKK13980	*pbpH*	-2,294	1,136	0,107	403	1,163
BKK38810	*msmX*	-2,294	1,181	0,162	257	1,208
BKK30930	*ytaB*	-2,296	1,135	0,100	429	1,161
BKK13930	*splB*	-2,299	1,140	0,131	47	1,166
BKK33410	*yvgO*	-2,3	1,108	0,079	85	1,134
BKK21650	*yokB*	-2,301	1,127	0,106	388	1,153
BKK26558	*yrzM*	-2,302	1,127	0,104	248	1,153
BKK39250	*yxiE*	-2,304	1,138	0,117	85	1,165
BKK10470	*yhjD*	-2,305	1,136	0,106	422	1,163
BKK28930	*lytS*	-2,308	1,125	0,115	236	1,151
BKK10090	*yhgB*	-2,313	1,150	0,096	126	1,177
BKK00040	*recF*	-2,314	1,140	0,135	688	1,167
BKK04580	*cshA*	-2,315	1,133	0,121	225	1,160
BKK17960	*yneK*	-2,316	1,135	0,112	478	1,162
BKK33350	*yvsG*	-2,316	1,108	0,100	127	1,134
BKK01820	*adaB*	-2,321	1,133	0,101	151	1,160
BKK26230	*yqaP*	-2,327	1,149	0,086	152	1,177
BKK39000	*yxjC*	-2,327	1,138	0,102	117	1,165
BKK26130	*yqbF*	-2,33	0,952	0,105	50	0,975
BKK10860	*yisT*	-2,332	1,156	0,106	103	1,183
BKK20770	*yopT*	-2,332	1,135	0,103	225	1,162
BKK17150	*pksG*	-2,333	1,136	0,105	116	1,164
BKK38570	*licA*	-2,335	1,138	0,092	79	1,165
BKK22860	*yphA*	-2,337	1,178	0,119	103	1,206
BKK28920	*lytT*	-2,346	1,193	0,093	69	1,222
BKK39870	*yxbD*	-2,348	1,137	0,097	99	1,165

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK33420	*nhaK*	-2,351	1,134	0,101	490	1,161
BKK14710	*ylaA*	-2,355	1,151	0,113	150	1,179
BKK19990	*yasV*	-2,356	1,141	0,108	317	1,168
BKK32470	*pucE*	-2,357	1,113	0,096	129	1,139
BKK01470	*ybaF*	-2,358	1,136	0,092	172	1,164
BKK05560	*ydgA*	-2,36	1,130	0,103	167	1,158
BKK12110	*yjfA*	-2,36	1,161	0,135	210	1,189
BKK40180	*yydF*	-2,363	1,140	0,113	245	1,168
BKK10280	*yhfM*	-2,366	1,155	0,091	112	1,183
BKK39820	*htpG*	-2,366	1,137	0,086	112	1,165
BKK01350	*rplO*	-2,372	1,136	0,099	135	1,164
BKK38860	*galE*	-2,375	1,137	0,119	81	1,165
BKK29110	*phoP*	-2,376	1,087	0,104	34	1,113
BKK29239	*ytrH*	-2,378	1,087	0,080	70	1,113
BKK16450	*cheC*	-2,379	1,134	0,102	380	1,161
BKK15540	*pyrD*	-2,384	1,128	0,122	73	1,156
BKK19259	*yoyB*	-2,384	1,144	0,108	70	1,172
BKK20220	*yorX*	-2,386	1,112	0,112	59	1,139
BKK14390	*fruK*	-2,387	1,151	0,141	131	1,179
BKK20380	*yorH*	-2,39	1,102	0,124	48	1,129
BKK25980	*yqbT*	-2,392	0,952	0,072	120	0,975
BKK39580	*yxeE*	-2,394	1,137	0,089	128	1,165
BKK17050	*mutL*	-2,398	1,136	0,104	144	1,164
BKK16620	*rplGA*	-2,399	1,130	0,100	81	1,158
BKK06049	*ydzV*	-2,404	1,139	0,111	125	1,167
BKK14640	*yktA*	-2,404	1,135	0,110	295	1,163
BKK30270	*msmE*	-2,414	1,111	0,096	110	1,138
BKK37300	*ywiC*	-2,416	1,092	0,110	94	1,119
BKK12920	*dppA*	-2,417	1,138	0,135	52	1,166
BKK27800	*yrzH*	-2,42	1,123	0,114	398	1,151
BKK31322	*yugO*	-2,421	1,128	0,104	48	1,156
BKK27160	*cypB*	-2,422	1,148	0,110	280	1,177
BKK26610	*yrkA*	-2,425	1,148	0,121	121	1,177
BKK24740	*yqxL*	-2,426	1,177	0,128	71	1,206
BKK20960	*yopA*	-2,427	1,127	0,105	270	1,155
BKK30280	*amyD*	-2,427	1,110	0,101	68	1,138
BKK07040	*yesV*	-2,431	1,150	0,111	337	1,179
BKK22800	*spoIVA*	-2,434	1,112	0,092	55	1,139
BKK25510	*lepA*	-2,435	1,135	0,103	312	1,164
BKK26750	*yrdD*	-2,437	1,148	0,105	326	1,177
BKK35110	*ylxC*	-2,438	1,107	0,103	428	1,135
BKK10590	*yhjP*	-2,439	1,134	0,100	274	1,163
BKK27870	*nadB*	-2,441	1,131	0,099	246	1,160
BKK08040	*yfjM*	-2,442	1,131	0,097	529	1,159
BKK19480	*yajE*	-2,442	1,102	0,101	828	1,129
BKK12310	*exuM*	-2,445	1,179	0,120	75	1,208
BKK18880	*yobE*	-2,448	1,133	0,117	361	1,162
BKK27240	*yrhC*	-2,448	1,148	0,109	166	1,177
BKK03450	*hxlB*	-2,454	1,102	0,094	30	1,130
BKK17900	*yneE*	-2,456	1,135	0,085	105	1,164
BKK12800	*xhlB*	-2,463	1,138	0,129	184	1,166
BKK10840	*degA*	-2,473	1,154	0,100	142	1,183
BKK32650	*yurS*	-2,474	1,137	0,105	138	1,166
BKK34030	*yvbY*	-2,474	1,106	0,091	88	1,134
BKK13660	*kinD*	-2,476	1,177	0,160	152	1,206
BKK30210	*bioD*	-2,479	1,127	0,118	81	1,156
BKK11928	*yjzF*	-2,488	1,139	0,105	531	1,168
BKK17360	*ymzA*	-2,491	1,135	0,107	132	1,164
BKK38740	*cydC*	-2,491	1,172	0,129	459	1,201
BKK14490	*kinC*	-2,494	1,176	0,151	48	1,206
BKK39300	*yxiD*	-2,497	1,137	0,094	81	1,166
BKK12350	*uxuB*	-2,498	1,159	0,141	177	1,189
BKK16350	*fliP*	-2,498	1,133	0,108	581	1,162
BKK15610	*sumT*	-2,501	1,119	0,100	165	1,148
BKK30880	*ytcC*	-2,505	1,132	0,107	301	1,161
BKK40050	*gntR*	-2,516	1,119	0,119	149	1,147
BKK12360	*exuT*	-2,521	1,178	0,149	104	1,208
BKK18940	*yazK*	-2,523	1,142	0,105	362	1,172
BKK19460	*yajG*	-2,523	1,101	0,120	194	1,129
BKK03850	*ycnC*	-2,524	1,136	0,098	318	1,165
BKK40750	*yyaQ*	-2,524	1,119	0,106	545	1,147
BKK26820	*yrpD*	-2,527	1,147	0,111	280	1,177
BKK39730	*ioID*	-2,527	1,135	0,108	107	1,165
BKK20150	*yosE*	-2,528	1,101	0,157	129	1,129
BKK32250	*thrC*	-2,529	1,119	0,096	75	1,148
BKK28520	*etfA*	-2,532	1,128	0,107	72	1,158
BKK21340	*yomJ*	-2,533	1,126	0,096	315	1,155
BKK37020	*ywkD*	-2,533	1,086	0,081	34	1,114
BKK22900	*ypfB*	-2,534	1,072	0,109	247	1,100

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK27009	*yrzP*	-2,535	1,124	0,106	366	1,153
BKK10670	*gerPF*	-2,539	1,153	0,097	128	1,183
BKK07790	*yfkQ*	-2,54	1,129	0,114	366	1,159
BKK19560	*yodD*	-2,541	1,101	0,129	112	1,129
BKK24260	*yqxC*	-2,542	1,128	0,090	113	1,158
BKK24470	*yqhS*	-2,542	1,128	0,090	113	1,158
BKK05409	*ydzQ*	-2,543	1,118	0,098	434	1,147
BKK26940	*yraH*	-2,544	1,147	0,098	433	1,177
BKK30739	*ytzL*	-2,548	1,127	0,091	60	1,156
BKK10000	*yhaH*	-2,551	1,133	0,101	400	1,163
BKK05310	*ydeR*	-2,553	1,130	0,114	429	1,160
BKK18898	*yozW*	-2,555	1,109	0,093	41	1,138
BKK21770	*ilvA*	-2,556	0,950	0,072	150	0,975
BKK18550	*yooC*	-2,562	1,109	0,109	53	1,138
BKK12200	*yjiA*	-2,563	1,159	0,083	1736	1,189
BKK08030	*dusC*	-2,566	1,129	0,106	451	1,159
BKK18560	*yoaD*	-2,568	1,132	0,110	415	1,162
BKK18060	*yneR*	-2,577	1,134	0,105	133	1,164
BKK27860	*nadC*	-2,578	1,121	0,115	422	1,151
BKK26600	*bltD*	-2,579	1,146	0,099	140	1,177
BKK28260	*leuC*	-2,582	1,130	0,085	298	1,160
BKK36310	*ssbB*	-2,59	1,085	0,114	158	1,114
BKK40259	*yyzG*	-2,594	1,120	0,120	232	1,149
BKK16810	*ymfC*	-2,598	1,133	0,087	86	1,164
BKK00580	*yabN*	-2,603	1,133	0,093	136	1,164
BKK18170	*yngA*	-2,612	1,141	0,125	150	1,172
BKK36120	*ywrB*	-2,614	1,136	0,096	96	1,166
BKK28900	*lrgB*	-2,618	1,084	0,121	239	1,113
BKK39050	*katE*	-2,621	1,134	0,094	87	1,165
BKK10770	*wprA*	-2,626	1,152	0,118	131	1,183
BKK29170	*ytzA*	-2,626	1,131	0,102	350	1,161
BKK08200	*malP*	-2,633	1,128	0,098	405	1,159
BKK09910	*yhaO*	-2,633	1,153	0,102	172	1,184
BKK17550	*ynaG*	-2,633	1,133	0,151	89	1,164
BKK20630	*yoqH*	-2,633	1,131	0,103	434	1,162
BKK35900	*pgsB*	-2,633	1,119	0,103	461	1,149
BKK06530	*purD*	-2,634	1,148	0,118	479	1,179
BKK40021	*yxzK*	-2,636	1,119	0,089	601	1,149
BKK21440	*bdbB*	-2,643	1,124	0,103	548	1,155
BKK06290	*yeaA*	-2,644	1,148	0,116	159	1,179
BKK35030	*yvoA*	-2,648	1,135	0,113	78	1,166
BKK01380	*mapA*	-2,649	1,133	0,104	327	1,164
BKK22050	*bcsA*	-2,651	1,071	0,103	79	1,100
BKK25140	*cshB*	-2,654	1,133	0,107	190	1,164
BKK33810	*opuCC*	-2,656	1,119	0,101	243	1,149
BKK21680	*msrB*	-2,662	1,124	0,093	567	1,155
BKK03460	*hxlA*	-2,666	1,100	0,096	72	1,130
BKK06800	*yezA*	-2,671	1,147	0,112	331	1,179
BKK14840	*ylaN*	-2,671	1,148	0,089	337	1,179
BKK10570	*yhjN*	-2,674	1,152	0,096	86	1,183
BKK15130	*mraZ*	-2,674	1,108	0,100	130	1,138
BKK04000	*ycsA*	-2,676	1,134	0,109	110	1,165
BKK26748	*yrdD*	-2,68	1,145	0,098	379	1,177
BKK28210	*lonB*	-2,683	1,129	0,093	223	1,160
BKK22460	*ypjH*	-2,687	1,120	0,100	398	1,151
BKK36890	*upp*	-2,692	1,084	0,127	283	1,114
BKK26360	*yqaD*	-2,695	0,949	0,088	33	0,975
BKK33290	*fhuC*	-2,696	1,135	0,092	100	1,166
BKK13370	*ykoQ*	-2,697	1,135	0,109	154	1,166
BKK02080	*ybxH*	-2,698	1,099	0,097	41	1,130
BKK13960	*ykwC*	-2,7	1,135	0,118	328	1,166
BKK31000	*yuaI*	-2,7	1,125	0,095	139	1,156
BKK11280	*yjaU*	-2,71	1,151	0,144	93	1,183
BKK21950	*ypzA*	-2,71	1,124	0,107	354	1,155
BKK40740	*yyaR*	-2,711	1,152	0,101	266	1,184
BKK36610	*ywnC*	-2,717	1,125	0,105	107	1,157
BKK14980	*ylbE*	-2,718	1,147	0,130	424	1,179
BKK23420	*spoVAC*	-2,718	1,120	0,110	328	1,151
BKK37200	*ywjD*	-2,721	0,948	0,072	47	0,975
BKK24880	*yggO*	-2,728	1,132	0,098	228	1,164
BKK27970	*spoIVFB*	-2,733	1,128	0,102	269	1,160
BKK03470	*hxlR*	-2,74	1,099	0,087	84	1,130
BKK19639	*yoyE*	-2,741	1,098	0,141	180	1,129
BKK12750	*xkdV*	-2,743	1,134	0,127	291	1,166
BKK30860	*ytcA*	-2,746	1,188	0,074	183	1,222
BKK13570	*mtnU*	-2,747	1,134	0,099	260	1,166
BKK19790	*cgeB*	-2,751	1,098	0,091	379	1,129
BKK30260	*msmR*	-2,757	1,124	0,102	89	1,156
BKK34630	*mdxR*	-2,757	1,129	0,091	497	1,161

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK17800	*yndJ*	-2,759	1,131	0,125	81	1,164
BKK03569	*sfp*	-2,765	1,099	0,093	46	1,130
BKK15210	*spoIVE*	-2,766	1,173	0,125	72	1,206
BKK22280	*yppD*	-2,774	1,070	0,114	281	1,100
BKK29770	*ytxH*	-2,777	1,082	0,121	83	1,113
BKK34770	*yvcJ*	-2,778	1,104	0,114	215	1,135
BKK35730	*tagE*	-2,778	1,134	0,104	114	1,166
BKK15750	*yloN*	-2,779	1,103	0,097	89	1,134
BKK23660	*yqkB*	-2,783	1,154	0,103	246	1,187
BKK25240	*yqfL*	-2,784	1,131	0,102	140	1,164
BKK28380	*gerM*	-2,788	1,127	0,117	165	1,160
BKK00980	*sigH*	-2,792	1,154	0,109	586	1,187
BKK00960	*rlmB*	-2,8	1,154	0,093	297	1,187
BKK24910	*yqgM*	-2,8	1,119	0,105	522	1,151
BKK29830	*ytpQ*	-2,8	1,125	0,105	157	1,158
BKK05109	*ydzN*	-2,801	1,127	0,101	522	1,160
BKK13330	*ykoL*	-2,802	1,108	0,114	39	1,139
BKK23870	*polYA*	-2,803	1,154	0,100	293	1,187
BKK27640	*yrvC*	-2,807	1,127	0,093	225	1,160
BKK00830	*ctsR*	-2,808	1,069	0,121	202	1,100
BKK09890	*natA*	-2,808	1,174	0,151	90	1,208
BKK12020	*manA*	-2,808	1,156	0,138	122	1,189
BKK39370	*hutI*	-2,808	0,948	0,072	30	0,975
BKK36180	*ywqK*	-2,81	1,134	0,098	114	1,166
BKK02600	*cwlJ*	-2,812	1,168	0,061	37	1,201
BKK38370	*ywbC*	-2,813	1,087	0,222	31	1,119
BKK32280	*yutG*	-2,816	1,116	0,105	62	1,148
BKK15640	*yloA*	-2,818	1,116	0,165	31	1,148
BKK27850	*nadA*	-2,823	1,127	0,098	241	1,160
BKK35609	*tuaA*	-2,823	1,117	0,109	518	1,149
BKK14360	*yknY*	-2,829	1,106	0,096	114	1,138
BKK27530	*yrvN*	-2,83	1,127	0,093	414	1,160
BKK32719	*yuzK*	-2,83	1,102	0,097	169	1,134
BKK20490	*yoqW*	-2,843	1,097	0,126	55	1,129
BKK09430	*citR*	-2,849	1,143	0,109	184	1,177
BKK27030	*sacC*	-2,849	1,143	0,095	115	1,177
BKK28180	*ysxD*	-2,85	1,127	0,099	313	1,160
BKK02560	*ycbM*	-2,851	1,098	0,099	170	1,130
BKK07920	*yfkE*	-2,852	1,126	0,101	420	1,159
BKK08630	*yfhQ*	-2,855	1,126	0,105	319	1,159
BKK11290	*yjqV*	-2,86	1,149	0,123	133	1,183
BKK08580	*yfhL*	-2,862	1,126	0,095	507	1,159
BKK40320	*argI*	-2,862	1,118	0,105	351	1,151
BKK20640	*yoqG*	-2,866	1,129	0,102	411	1,162
BKK06510	*purN*	-2,871	1,145	0,103	417	1,179
BKK08090	*acoL*	-2,873	1,129	0,106	386	1,163
BKK25400	*yqeY*	-2,873	1,130	0,103	178	1,164
BKK16845	*ymfF*	-2,877	1,130	0,114	127	1,164
BKK36000	*alsD*	-2,881	1,124	0,100	167	1,157
BKK20340	*yorL*	-2,89	1,097	0,144	56	1,129
BKK31760	*pncA*	-2,894	1,106	0,096	129	1,139
BKK20100	*yosI*	-2,898	1,097	0,133	51	1,129
BKK00160	*yaaH*	-2,903	1,125	0,122	113	1,159
BKK13590	*mtnW*	-2,908	1,132	0,083	62	1,166
BKK28860	*rpmI*	-2,908	1,118	0,090	208	1,151
BKK36200	*ywqI*	-2,909	1,082	0,114	70	1,114
BKK00660	*yabT*	-2,912	1,096	0,161	81	1,129
BKK37940	*ywdJ*	-2,916	1,086	0,115	64	1,119
BKK40430	*yycE*	-2,918	1,132	0,099	185	1,166
BKK01860	*ybcF*	-2,921	1,126	0,100	422	1,160
BKK07690	*mapB*	-2,928	1,125	0,111	181	1,159
BKK17060	*ymzD*	-2,929	1,129	0,099	74	1,164
BKK21670	*ypqP*	-2,929	1,121	0,104	256	1,155
BKK15170	*spoVD*	-2,931	1,129	0,117	221	1,163
BKK31130	*yubD*	-2,931	1,186	0,079	95	1,222
BKK21100	*yonG*	-2,932	1,117	0,114	347	1,151
BKK27468	*yrzQ*	-2,932	1,126	0,093	407	1,160
BKK21570	*yokI*	-2,94	1,121	0,112	417	1,155
BKK36020	*alsR*	-2,95	1,081	0,116	336	1,114
BKK26410	*psiE*	-2,953	1,142	0,103	251	1,177
BKK10070	*yhaA*	-2,954	1,142	0,100	150	1,177
BKK30370	*bceB*	-2,959	1,117	0,122	241	1,151
BKK39040	*yxiS*	-2,961	1,130	0,109	60	1,165
BKK21330	*yomK*	-2,963	1,119	0,098	639	1,153
BKK21310	*yozP*	-2,965	1,121	0,112	299	1,155
BKK21910	*metA*	-2,965	1,123	0,107	137	1,158
BKK12610	*xkdG*	-2,968	1,132	0,119	584	1,166
BKK18080	*yneT*	-2,968	1,129	0,103	100	1,164
BKK32469	*yuzJ*	-2,968	1,114	0,108	58	1,148

BKK name [1]	gene	screening delta[2] (%)	erage width (µı	+/-	nb	ADP
BKK06083	*ydzW*	-2,972	1,133	0,102	143	1,167
BKK32330	*lipA*	-2,976	1,127	0,102	309	1,161
BKK20270	*yorS*	-2,98	1,149	0,106	101	1,184
BKK37360	*sboX*	-2,982	1,085	0,096	95	1,119
BKK28270	*leuB*	-2,983	1,125	0,107	318	1,160
BKK40770	*tetB*	-2,985	1,149	0,108	84	1,184
BKK08620	*yfhP*	-2,99	1,124	0,103	526	1,159
BKK40220	*yydB*	-2,99	1,131	0,098	113	1,166
BKK31480	*yuxJ*	-2,992	1,114	0,129	184	1,148
BKK31490	*pbpD*	-2,993	1,185	0,074	103	1,222
BKK37530	*ywhC*	-2,999	1,085	0,097	81	1,119
BKK08670	*ygaB*	-3	1,124	0,115	301	1,159
BKK13420	*ykoW*	-3,003	1,172	0,147	169	1,208
BKK34750	*whiA*	-3,003	1,101	0,144	238	1,135
BKK23329	*ypuC*	-3,016	1,116	0,097	316	1,151
BKK33600	*smpB*	-3,02	1,100	0,093	70	1,134
BKK20060	*nrdEB*	-3,021	1,133	0,108	417	1,168
BKK02820	*rapJ*	-3,026	1,096	0,099	54	1,130
BKK01570	*ybaN*	-3,027	1,141	0,098	283	1,177
BKK20950	*yopB*	-3,03	1,120	0,111	297	1,155
BKK15510	*pyrAA*	-3,032	1,121	0,094	126	1,156
BKK29130	*icd*	-3,037	1,079	0,108	216	1,113
BKK03560	*ycxD*	-3,039	1,096	0,099	61	1,130
BKK40920	*engD*	-3,041	1,148	0,097	110	1,184
BKK09680	*nhaC*	-3,044	1,141	0,116	113	1,177
BKK29020	*gapB*	-3,044	1,079	0,093	142	1,113
BKK12880	*ykcB*	-3,053	1,131	0,111	385	1,166
BKK07200	*yetJ*	-3,058	1,143	0,100	309	1,179
BKK06550	*yecA*	-3,059	1,143	0,108	290	1,179
BKK17070	*ymcC*	-3,059	1,128	0,120	77	1,164
BKK14630	*speA*	-3,064	1,143	0,111	578	1,179
BKK11780	*cotV*	-3,066	1,153	0,125	942	1,189
BKK24590	*yqhG*	-3,067	0,945	0,091	78	0,975
BKK19190	*desK*	-3,071	1,169	0,108	71	1,206
BKK23700	*yqjX*	-3,071	1,151	0,099	168	1,187
BKK27890	*nadR*	-3,074	1,124	0,100	193	1,160
BKK25720	*yqeD*	-3,075	1,116	0,107	389	1,151
BKK09690	*nhaX*	-3,08	1,141	0,099	150	1,177
BKK26090	*yqbJ*	-3,086	1,116	0,102	571	1,151
BKK06900	*cotJB*	-3,088	1,142	0,116	414	1,179
BKK28820	*ysdC*	-3,09	1,104	0,103	125	1,139
BKK17400	*ymaB*	-3,092	1,126	0,106	441	1,162
BKK15670	*ylzA*	-3,11	1,099	0,073	125	1,134
BKK27250	*mccB*	-3,11	1,140	0,114	181	1,177
BKK20880	*yopI*	-3,118	0,945	0,070	69	0,975
BKK31690	*comP*	-3,118	1,130	0,098	91	1,166
BKK39790	*yxcE*	-3,119	1,128	0,075	63	1,165
BKK27520	*cymR*	-3,12	1,123	0,099	388	1,160
BKK24370	*spoIIIAG*	-3,121	1,115	0,095	412	1,151
BKK40520	*yybS*	-3,126	1,130	0,104	157	1,166
BKK11690	*thiG*	-3,13	1,131	0,106	235	1,168
BKK09040	*yhcD*	-3,132	1,140	0,100	215	1,177
BKK22110	*kdgK*	-3,133	1,066	0,117	155	1,100
BKK08710	*gsaB*	-3,15	1,122	0,108	543	1,159
BKK35640	*lytA*	-3,153	1,125	0,107	340	1,161
BKK05343	*ydzS*	-3,154	1,104	0,100	137	1,139
BKK36730	*ywmD*	-3,154	1,079	0,104	233	1,114
BKK10540	*ntdB*	-3,157	1,170	0,147	103	1,208
BKK19170	*yocD*	-3,157	1,135	0,086	143	1,172
BKK34360	*epsB*	-3,157	1,113	0,096	410	1,149
BKK01010	*nusG*	-3,16	1,150	0,133	98	1,187
BKK08720	*ygaF*	-3,163	1,122	0,108	460	1,159
BKK24480	*yqhR*	-3,164	1,150	0,100	225	1,187
BKK30850	*ytdA*	-3,165	1,183	0,059	48	1,222
BKK27750	*bofC*	-3,168	1,123	0,096	254	1,160
BKK23500	*drm*	-3,182	1,117	0,098	469	1,153
BKK21140	*yonC*	-3,183	1,118	0,103	283	1,155
BKK40573	*yyzI*	-3,185	1,129	0,123	86	1,166
BKK32310	*yutD*	-3,19	1,124	0,097	399	1,161
BKK25020	*sodA*	-3,192	1,126	0,100	159	1,164
BKK19970	*yosX*	-3,196	1,093	0,142	297	1,129
BKK40910	*rpsF*	-3,199	1,147	0,108	212	1,184
BKK14540	*ykzG*	-3,2	0,944	0,093	45	0,975
BKK22420	*panC*	-3,206	1,121	0,112	139	1,158
BKK25280	*recO*	-3,206	1,126	0,110	82	1,164
BKK06930	*yesK*	-3,208	1,163	0,082	103	1,201
BKK09610	*yhdV*	-3,211	1,139	0,098	139	1,177
BKK12580	*xtmB*	-3,213	1,151	0,158	645	1,189
BKK21350	*yomI*	-3,215	1,118	0,106	363	1,155

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Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK09790	*yheB*	-3,22	1,139	0,102	160	1,177
BKK26100	*yqbI*	-3,22	1,139	0,092	273	1,177
BKK31790	*yueG*	-3,222	1,124	0,102	275	1,161
BKK29880	*malS*	-3,223	1,077	0,100	138	1,113
BKK27770	*yrbE*	-3,227	1,122	0,092	155	1,160
BKK14040	*ykuD*	-3,239	1,129	0,144	63	1,166
BKK37660	*pta*	-3,241	1,082	0,103	43	1,119
BKK00300	*yaoR*	-3,253	1,110	0,098	509	1,147
BKK06559	*yezF*	-3,254	1,140	0,111	323	1,179
BKK07010	*yesS*	-3,259	1,140	0,121	322	1,179
BKK14569	*ykzV*	-3,26	1,141	0,108	517	1,179
BKK17340	*ymaH*	-3,269	1,125	0,100	83	1,164
BKK17780	*yndG*	-3,27	1,125	0,105	111	1,164
BKK30610	*ytlC*	-3,287	1,182	0,097	538	1,222
BKK14870	*ctaA*	-3,294	1,140	0,100	700	1,179
BKK05970	*rex*	-3,303	1,119	0,082	66	1,158
BKK10660	*yisB*	-3,316	1,144	0,111	81	1,183
BKK32040	*yuiF*	-3,321	1,110	0,106	107	1,148
BKK11320	*yjzB*	-3,327	1,144	0,115	105	1,183
BKK06650	*sapB*	-3,332	1,140	0,101	446	1,179
BKK26970	*adhB*	-3,333	1,113	0,113	266	1,151
BKK33560	*yvaD*	-3,335	1,127	0,112	111	1,166
BKK32580	*frlM*	-3,337	1,110	0,135	34	1,148
BKK09590	*yhdT*	-3,344	1,138	0,080	117	1,177
BKK05020	*phrI*	-3,351	1,109	0,099	471	1,147
BKK34300	*epsH*	-3,353	1,111	0,099	194	1,149
BKK06870	*yesE*	-3,354	1,139	0,095	217	1,179
BKK21470	*sunT*	-3,362	1,116	0,106	467	1,155
BKK10200	*yhfE*	-3,37	1,119	0,098	274	1,158
BKK20190	*yosA*	-3,372	1,091	0,129	93	1,129
BKK33280	*yvrP*	-3,372	1,127	0,100	87	1,166
BKK13710	*ykvI*	-3,373	1,127	0,095	412	1,166
BKK18979	*yoyA*	-3,38	1,123	0,105	426	1,162
BKK22980	*ypbG*	-3,381	1,114	0,101	575	1,153
BKK39400	*pdp*	-3,384	1,125	0,092	89	1,165
BKK09150	*yhcN*	-3,386	1,137	0,103	110	1,177
BKK10930	*yitB*	-3,389	1,143	0,117	93	1,183
BKK25790	*arsB*	-3,389	0,942	0,067	55	0,975
BKK33330	*lysP*	-3,395	1,096	0,103	76	1,134
BKK17267	*ymzE*	-3,396	1,124	0,105	209	1,164
BKK26500	*yrkI*	-3,397	1,114	0,105	511	1,153
BKK03250	*ycgR*	-3,398	1,092	0,106	46	1,130
BKK21700	*ypoP*	-3,398	1,114	0,113	383	1,153
BKK30900	*cotS*	-3,401	1,117	0,109	124	1,156
BKK28890	*yscB*	-3,405	1,180	0,075	73	1,222
BKK03600	*tcyB*	-3,418	1,160	0,074	478	1,201
BKK11730	*cotO*	-3,419	1,144	0,087	86	1,184
BKK11460	*oppD*	-3,422	1,167	0,138	139	1,208
BKK09450	*yhdF*	-3,424	1,137	0,090	185	1,177
BKK04250	*lrpC*	-3,436	1,125	0,106	439	1,165
BKK11140	*yitU*	-3,455	1,142	0,113	73	1,183
BKK23780	*yqjQ*	-3,467	1,146	0,097	190	1,187
BKK05050	*lrpA*	-3,473	1,127	0,144	150	1,167
BKK36960	*ywlB*	-3,477	1,076	0,112	120	1,114
BKK02590	*ycbP*	-3,478	1,091	0,094	50	1,130
BKK07650	*yflK*	-3,479	0,941	0,063	173	0,975
BKK11960	*yjcR*	-3,489	1,148	0,130	929	1,189
BKK38470	*ywaD*	-3,499	1,080	0,109	176	1,119
BKK32610	*frlB*	-3,5	1,108	0,106	42	1,148
BKK41010	*trmF*	-3,505	1,143	0,084	169	1,184
BKK28350	*ysnB*	-3,509	1,119	0,091	379	1,160
BKK19760	*cgeD*	-3,515	1,090	0,119	447	1,129
BKK25550	*rpsT*	-3,519	1,123	0,107	179	1,164
BKK26030	*yqbO*	-3,521	1,135	0,098	271	1,177
BKK20320	*yorN*	-3,526	1,089	0,138	92	1,129
BKK04670	*rsbRA*	-3,527	1,124	0,113	335	1,165
BKK39800	*yxcD*	-3,532	1,124	0,094	35	1,165
BKK06660	*opuE*	-3,537	1,159	0,081	125	1,201
BKK03110	*ycgH*	-3,54	1,159	0,079	59	1,201
BKK21710	*dinF*	-3,54	1,113	0,091	278	1,153
BKK39430	*deoR*	-3,547	1,123	0,097	111	1,165
BKK17678	*ynzJ*	-3,551	1,122	0,114	97	1,164
BKK35010	*nagA*	-3,553	1,095	0,121	463	1,135
BKK03780	*phrC*	-3,557	1,107	0,095	545	1,147
BKK17970	*cotM*	-3,572	1,163	0,126	121	1,206
BKK26240	*yqaO*	-3,575	1,135	0,121	168	1,177
BKK30400	*bceR*	-3,578	1,115	0,092	136	1,156
BKK00800	*yazB*	-3,586	1,061	0,121	391	1,100
BKK08370	*yfiR*	-3,589	0,940	0,072	60	0,975

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK36080	*ywrF*	-3,595	1,074	0,089	41	1,114
BKK10410	*yhzC*	-3,599	1,141	0,102	84	1,183
BKK09830	*yhaX*	-3,6	1,135	0,110	118	1,177
BKK07150	*yetG*	-3,602	1,136	0,119	289	1,179
BKK27180	*yrhH*	-3,605	1,112	0,102	274	1,153
BKK00710	*hslO*	-3,607	1,113	0,099	356	1,155
BKK27020	*yraA*	-3,608	1,134	0,098	379	1,177
BKK14480	*abh*	-3,61	1,121	0,102	535	1,163
BKK17260	*aprX*	-3,611	1,122	0,098	158	1,164
BKK07540	*yfmA*	-3,613	1,118	0,096	627	1,160
BKK28840	*ysdA*	-3,614	1,073	0,116	106	1,113
BKK39950	*yxaJ*	-3,614	1,123	0,101	114	1,165
BKK20080	*yosL*	-3,619	0,940	0,080	38	0,975
BKK29249	*ytzJ*	-3,62	1,073	0,117	108	1,113
BKK05280	*ydeO*	-3,645	1,125	0,088	99	1,167
BKK23880	*yqzI*	-3,651	1,144	0,098	324	1,187
BKK02930	*yceG*	-3,654	1,106	0,100	616	1,147
BKK19749	*yoyG*	-3,667	1,088	0,152	196	1,129
BKK36250	*ptkA*	-3,668	1,107	0,105	358	1,149
BKK19720	*yodR*	-3,67	1,088	0,093	404	1,129
BKK32150	*paiA*	-3,672	1,106	0,100	272	1,148
BKK13850	*zosA*	-3,676	1,162	0,141	155	1,206
BKK37370	*albA*	-3,678	1,078	0,095	136	1,119
BKK33760	*sdpB*	-3,694	1,123	0,098	97	1,166
BKK37930	*ywdK*	-3,709	1,107	0,090	210	1,149
BKK14460	*ykpC*	-3,721	1,135	0,136	765	1,179
BKK23410	*spoVAD*	-3,724	1,143	0,096	457	1,187
BKK34310	*epsG*	-3,724	1,093	0,119	56	1,135
BKK21580	*yokI*	-3,73	1,112	0,091	566	1,155
BKK24320	*nusB*	-3,732	0,939	0,070	33	0,975
BKK37870	*spsE*	-3,735	1,107	0,098	536	1,149
BKK36590	*clsA*	-3,737	1,073	0,122	124	1,114
BKK32270	*yutH*	-3,738	1,105	0,106	90	1,148
BKK23590	*ansR*	-3,751	1,143	0,095	227	1,187
BKK12660	*xkdM*	-3,759	1,144	0,132	612	1,189
BKK38280	*efeU*	-3,772	1,077	0,104	58	1,119
BKK04750	*ydcF*	-3,778	1,121	0,136	564	1,165
BKK09700	*yheJ*	-3,779	1,133	0,104	105	1,177
BKK32880	*yusP*	-3,779	1,176	0,100	100	1,222
BKK09940	*yhaL*	-3,79	1,132	0,097	159	1,177
BKK00860	*clpC*	-3,799	1,058	0,117	107	1,100
BKK18700	*yoaQ*	-3,803	1,124	0,106	271	1,168
BKK26960	*yraF*	-3,807	1,132	0,108	202	1,177
BKK11250	*argF*	-3,819	1,138	0,104	86	1,183
BKK40450	*yycD*	-3,82	1,122	0,096	163	1,166
BKK02810	*cwlK*	-3,825	0,938	0,082	36	0,975
BKK36520	*glnK*	-3,83	1,072	0,132	124	1,114
BKK10650	*sbcC*	-3,832	1,138	0,096	97	1,183
BKK15310	*spoIIGA*	-3,832	1,160	0,124	93	1,206
BKK21480	*sunA*	-3,836	1,111	0,108	268	1,155
BKK18899	*yozX*	-3,839	1,123	0,110	308	1,168
BKK27170	*bscR*	-3,839	1,132	0,102	83	1,177
BKK15550	*pyrF*	-3,84	1,096	0,098	60	1,139
BKK14660	*ykzI*	-3,854	1,134	0,129	292	1,179
BKK00090	*guaB*	-3,863	1,133	0,135	122	1,179
BKK35180	*csbA*	-3,866	1,091	0,106	540	1,135
BKK37540	*ywhB*	-3,866	1,075	0,114	68	1,119
BKK21600	*yokG*	-3,871	1,110	0,108	369	1,155
BKK28830	*ysdB*	-3,876	1,070	0,094	74	1,113
BKK19840	*yotL*	-3,883	1,085	0,134	281	1,129
BKK02030	*ybdM*	-3,888	1,086	0,090	31	1,130
BKK03420	*nin*	-3,897	1,086	0,104	116	1,130
BKK23300	*ypuD*	-3,899	1,141	0,100	84	1,187
BKK15740	*rsmB*	-3,92	1,090	0,099	114	1,134
BKK14250	*yknT*	-3,924	1,133	0,114	285	1,179
BKK11055	*yitO*	-3,936	1,137	0,110	90	1,183
BKK35550	*tuaG*	-3,947	1,104	0,093	553	1,149
BKK13440	*ykoY*	-3,951	1,117	0,107	228	1,163
BKK37630	*ywfM*	-3,953	1,104	0,104	290	1,149
BKK21830	*ypjQ*	-3,954	1,112	0,097	125	1,158
BKK26200	*yqaS*	-3,957	1,130	0,107	234	1,177
BKK13320	*ykzB*	-3,975	1,120	0,092	92	1,166
BKK13789	*ykzQ*	-3,975	1,159	0,133	121	1,206
BKK24990	*pstS*	-3,978	1,158	0,156	108	1,206
BKK24360	*spoIIIAH*	-3,997	1,158	0,136	37	1,206
BKK16340	*fliZ*	-4,004	1,115	0,095	163	1,162
BKK14071	*fadG*	-4,011	1,116	0,099	391	1,163
BKK40760	*yyaP*	-4,018	1,137	0,098	178	1,184
BKK04790	*ydcK*	-4,026	1,118	0,146	53	1,165

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK03010	*amhX*	-4,043	1,084	0,074	32	1,130
BKK17559	*ynzI*	-4,045	1,115	0,093	526	1,162
BKK35620	*lytC*	-4,049	1,114	0,103	339	1,161
BKK13540	*ogt*	-4,073	1,119	0,105	204	1,166
BKK04760	*ydcG*	-4,077	1,117	0,152	168	1,165
BKK04950	*ydzF*	-4,078	1,120	0,120	192	1,167
BKK25170	*yqfO*	-4,091	1,116	0,097	313	1,164
BKK16610	*ylxR*	-4,097	1,120	0,116	327	1,168
BKK34490	*yvdS*	-4,098	1,089	0,113	297	1,135
BKK37120	*fbaA*	-4,113	1,073	0,088	41	1,119
BKK10400	*yhxC*	-4,116	1,135	0,095	95	1,183
BKK26850	*yrpG*	-4,125	1,128	0,100	173	1,177
BKK15360	*ylmC*	-4,127	1,130	0,156	58	1,179
BKK36360	*mscL*	-4,129	1,113	0,099	373	1,161
BKK04430	*ydbD*	-4,132	1,112	0,098	537	1,160
BKK09030	*yhcC*	-4,143	1,128	0,101	105	1,177
BKK20560	*yoqO*	-4,143	1,083	0,119	63	1,129
BKK00360	*yabC*	-4,151	1,130	0,121	206	1,179
BKK27360	*yrrM*	-4,152	1,111	0,095	162	1,160
BKK11310	*comZ*	-4,157	1,134	0,126	120	1,183
BKK20240	*yorV*	-4,158	1,082	0,152	32	1,129
BKK14020	*ykyB*	-4,169	1,118	0,115	263	1,166
BKK36970	*spoIIR*	-4,174	1,101	0,097	368	1,149
BKK28420	*ysmA*	-4,186	0,934	0,072	45	0,975
BKK10220	*gltT*	-4,205	1,127	0,108	206	1,177
BKK19260	*yocM*	-4,211	1,122	0,115	39	1,172
BKK10290	*yhfN*	-4,215	1,133	0,099	135	1,183
BKK24390	*spoIIIAE*	-4,219	1,156	0,152	36	1,206
BKK04330	*mutT*	-4,22	1,116	0,137	405	1,165
BKK14400	*fruA*	-4,227	1,129	0,124	701	1,179
BKK19910	*yotE*	-4,23	1,082	0,126	111	1,129
BKK15010	*ylbH*	-4,237	1,129	0,093	295	1,179
BKK37050	*maeA*	-4,238	1,067	0,145	60	1,114
BKK25410	*rpsU*	-4,24	1,114	0,102	277	1,164
BKK37600	*ywfO*	-4,243	1,071	0,116	355	1,119
BKK34810	*yvcD*	-4,246	1,087	0,120	38	1,135
BKK05830	*gmuC*	-4,253	1,118	0,098	150	1,167
BKK35319	*yvzG*	-4,258	1,117	0,104	141	1,166
BKK16710	*mlpA*	-4,265	1,114	0,105	137	1,164
BKK09300	*glpD*	-4,267	1,127	0,096	306	1,177
BKK25710	*cwlH*	-4,267	1,114	0,108	127	1,164
BKK18210	*yngE*	-4,273	1,122	0,083	93	1,172
BKK01560	*kbaA*	-4,282	1,126	0,100	278	1,177
BKK09290	*glpK*	-4,282	1,127	0,095	239	1,177
BKK20430	*yorC*	-4,284	1,081	0,134	168	1,129
BKK16560	*rseP*	-4,286	1,112	0,095	344	1,161
BKK20550	*yoqP*	-4,289	1,081	0,113	131	1,129
BKK23920	*yqjD*	-4,299	1,136	0,094	539	1,187
BKK18819	*yozU*	-4,31	1,121	0,121	242	1,172
BKK31720	*degQ*	-4,329	1,111	0,098	262	1,161
BKK16320	*fliY*	-4,343	1,117	0,102	233	1,168
BKK05960	*mooC*	-4,346	1,116	0,143	429	1,167
BKK22370	*aspB*	-4,347	1,052	0,113	246	1,100
BKK09410	*phoA*	-4,354	1,126	0,096	124	1,177
BKK38750	*cydB*	-4,356	1,115	0,093	133	1,166
BKK17560	*ynaI*	-4,358	1,113	0,098	106	1,164
BKK20660	*yoqE*	-4,36	1,111	0,108	325	1,162
BKK34960	*yvoF*	-4,365	1,086	0,132	229	1,135
BKK05099	*ydzM*	-4,366	1,116	0,108	265	1,167
BKK38700	*sigY*	-4,369	1,114	0,126	108	1,165
BKK12430	*rapA*	-4,37	1,137	0,122	337	1,189
BKK37880	*spsD*	-4,37	1,070	0,088	48	1,119
BKK16400	*flhF*	-4,375	1,117	0,097	396	1,168
BKK24130	*prpD*	-4,381	1,135	0,104	362	1,187
BKK23690	*yqjY*	-4,394	1,135	0,091	466	1,187
BKK14050	*ykuE*	-4,402	1,115	0,087	38	1,166
BKK11920	*yjcN*	-4,404	1,137	0,112	461	1,189
BKK11990	*yjdB*	-4,405	0,932	0,069	59	0,975
BKK22240	*ypqA*	-4,438	1,100	0,108	384	1,151
BKK14800	*ylaJ*	-4,439	1,153	0,128	77	1,206
BKK30290	*amyC*	-4,441	1,168	0,100	39	1,222
BKK29030	*ytcD*	-4,444	1,089	0,087	120	1,139
BKK32430	*pucI*	-4,444	1,097	0,125	117	1,148
BKK04300	*ydaM*	-4,447	1,113	0,116	664	1,165
BKK18370	*yoeA*	-4,451	1,153	0,128	99	1,206
BKK22470	*ypjG*	-4,455	1,051	0,124	189	1,100
BKK36710	*fdhD*	-4,455	1,065	0,100	67	1,114
BKK36260	*ywqC*	-4,467	1,098	0,099	537	1,149
BKK05010	*rapI*	-4,478	1,096	0,098	520	1,147

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK25310	*dgkA*	-4,491	1,111	0,099	473	1,164
BKK11430	*oppA*	-4,499	1,131	0,091	184	1,184
BKK36030	*ywrK*	-4,499	1,109	0,094	476	1,161
BKK11030	*yitL*	-4,506	1,130	0,105	101	1,183
BKK01910	*skfA*	-4,507	1,063	0,112	125	1,113
BKK21500	*uvrX*	-4,507	1,099	0,087	250	1,151
BKK36190	*ywqJ*	-4,507	1,064	0,100	195	1,114
BKK34540	*clpP*	-4,517	0,931	0,054	36	0,975
BKK26470	*yrkL*	-4,523	1,123	0,100	311	1,177
BKK38210	*ywcD*	-4,527	1,113	0,104	138	1,166
BKK36470	*pucI*	-4,534	1,064	0,108	62	1,114
BKK33790	*sdpR*	-4,55	1,113	0,091	226	1,166
BKK05860	*gmuE*	-4,552	1,114	0,088	305	1,167
BKK10850	*yisS*	-4,558	1,129	0,109	73	1,183
BKK25970	*yqcA*	-4,558	0,931	0,068	64	0,975
BKK34700	*yvcR*	-4,564	1,097	0,098	406	1,149
BKK09270	*glpP*	-4,568	1,123	0,107	161	1,177
BKK01030	*rplA*	-4,57	1,110	0,095	223	1,164
BKK23450	*sigF*	-4,571	1,133	0,090	301	1,187
BKK27630	*yrvD*	-4,583	1,106	0,096	377	1,160
BKK06950	*yesM*	-4,585	1,146	0,096	151	1,201
BKK29470	*ackA*	-4,595	1,062	0,133	35	1,113
BKK02100	*cypC*	-4,597	1,078	0,117	37	1,130
BKK03370	*yckA*	-4,601	1,078	0,094	106	1,130
BKK35380	*fliW*	-4,612	1,083	0,113	531	1,135
BKK23770	*dsdA*	-4,62	1,132	0,095	216	1,187
BKK19310	*dhaS*	-4,642	1,117	0,092	136	1,172
BKK40670	*yybE*	-4,648	1,129	0,094	248	1,184
BKK16150	*clpQ*	-4,649	1,106	0,101	470	1,160
BKK05220	*ydeJ*	-4,679	1,113	0,145	91	1,167
BKK38190	*galT*	-4,685	1,066	0,107	79	1,119
BKK36330	*ywpF*	-4,692	1,107	0,101	437	1,161
BKK19130	*yocA*	-4,707	1,116	0,105	99	1,172
BKK23480	*docF*	-4,71	1,150	0,165	58	1,206
BKK29120	*mdh*	-4,727	1,060	0,088	105	1,113
BKK12410	*yjoA*	-4,729	1,133	0,143	638	1,189
BKK32260	*hom*	-4,73	1,086	0,079	69	1,139
BKK11150	*yitV*	-4,739	1,127	0,105	113	1,183
BKK34670	*yvdA*	-4,739	1,081	0,111	207	1,135
BKK04530	*ydbN*	-4,74	1,110	0,132	519	1,165
BKK34640	*yvdD*	-4,745	1,081	0,141	94	1,135
BKK24120	*prpB*	-4,757	1,131	0,098	252	1,187
BKK34890	*hisH*	-4,766	1,081	0,123	256	1,135
BKK00650	*yabS*	-4,774	1,075	0,096	189	1,129
BKK09180	*yhcQ*	-4,784	1,121	0,096	245	1,177
BKK41000	*rsmG*	-4,785	1,128	0,101	132	1,184
BKK37820	*spsK*	-4,787	1,094	0,095	637	1,149
BKK37950	*ywdI*	-4,791	1,065	0,104	135	1,119
BKK12690	*xkdP*	-4,799	1,112	0,109	284	1,168
BKK14620	*slp*	-4,824	1,148	0,099	30	1,206
BKK23490	*pupG*	-4,83	1,130	0,095	606	1,187
BKK00200	*yaaK*	-4,842	1,120	0,098	112	1,177
BKK37890	*spsC*	-4,844	1,094	0,109	420	1,149
BKK07240	*yetN*	-4,848	1,122	0,106	358	1,179
BKK12749	*xkzA*	-4,85	1,110	0,111	304	1,166
BKK10050	*ecsB*	-4,852	1,120	0,097	133	1,177
BKK35610	*tuaA*	-4,853	1,094	0,109	551	1,149
BKK08810	*senS*	-4,855	1,103	0,093	320	1,159
BKK09920	*yhaN*	-4,864	1,120	0,104	87	1,177
BKK13910	*ptsI*	-4,878	1,109	0,141	37	1,166
BKK37100	*murAB*	-4,883	1,093	0,107	138	1,149
BKK10820	*yisQ*	-4,889	1,082	0,099	56	1,138
BKK28000	*minC*	-4,891	1,103	0,092	148	1,160
BKK32850	*fadM*	-4,908	1,079	0,092	71	1,134
BKK03990	*mtlD*	-4,91	1,108	0,108	181	1,165
BKK36668	*ywzE*	-4,915	1,060	0,103	164	1,114
BKK12160	*yjgC*	-4,947	1,130	0,138	416	1,189
BKK33540	*ywaB*	-4,95	0,927	0,077	67	0,975
BKK20140	*yosF*	-4,958	1,073	0,118	34	1,129
BKK19660	*yozD*	-4,959	1,073	0,138	455	1,129
BKK32730	*metN*	-4,964	1,161	0,114	157	1,222
BKK11839	*yjzE*	-4,985	1,130	0,103	859	1,189
BKK04240	*ydzA*	-4,989	1,107	0,105	284	1,165
BKK09800	*yheA*	-4,993	1,118	0,103	137	1,177
BKK18910	*rapK*	-5,013	1,113	0,103	123	1,172
BKK19210	*yocH*	-5,019	1,146	0,139	59	1,206
BKK22200	*cotD*	-5,019	1,045	0,142	141	1,100
BKK12860	*ykbA*	-5,021	1,108	0,126	173	1,166
BKK33020	*cssS*	-5,025	1,108	0,098	126	1,166

Sup. Table 3: Cell width of mutants of the BKK collection (continued)

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK35490	*degU*	-5,028	1,103	0,094	353	1,161
BKK14220	*ykuU*	-5,047	1,120	0,137	196	1,179
BKK19770	*cgeC*	-5,049	1,072	0,116	409	1,129
BKK00640	*spoIIE*	-5,063	1,072	0,165	177	1,129
BKK32230	*yuxL*	-5,063	1,082	0,082	98	1,139
BKK05210	*ydeI*	-5,069	1,108	0,096	109	1,167
BKK28370	*rph*	-5,069	1,099	0,101	155	1,158
BKK39720	*iolE*	-5,075	1,106	0,118	77	1,165
BKK21850	*ypiP*	-5,086	1,096	0,100	509	1,155
BKK13270	*ykoI*	-5,104	1,107	0,112	287	1,166
BKK04080	*kipI*	-5,122	1,089	0,094	445	1,147
BKK07110	*lplB*	-5,123	1,118	0,096	317	1,179
BKK04360	*mntH*	-5,141	1,100	0,112	447	1,160
BKK29090	*polA*	-5,16	1,056	0,129	60	1,113
BKK37250	*narI*	-5,167	1,061	0,096	52	1,119
BKK34265	*epsK*	-5,179	1,076	0,097	424	1,135
BKK23760	*coaA*	-5,185	1,126	0,092	230	1,187
BKK05900	*thiL*	-5,19	1,107	0,121	370	1,167
BKK05980	*tatAY*	-5,201	1,088	0,096	277	1,147
BKK36210	*ywqH*	-5,201	1,056	0,105	299	1,114
BKK36290	*ywpJ*	-5,219	1,056	0,121	169	1,114
BKK38290	*thiE*	-5,222	1,060	0,102	69	1,119
BKK13350	*ykoN*	-5,223	1,105	0,103	305	1,166
BKK06100	*ydiS*	-5,237	1,106	0,112	395	1,167
BKK00740	*pabB*	-5,238	1,043	0,145	55	1,100
BKK14320	*yknU*	-5,243	1,143	0,143	136	1,206
BKK28130	*hemB*	-5,281	1,098	0,126	56	1,160
BKK37080	*rho*	-5,283	1,060	0,114	150	1,119
BKK24040	*bkdAB*	-5,286	1,124	0,096	57	1,187
BKK16970	*ymdB*	-5,293	1,102	0,099	95	1,164
BKK36780	*ywzB*	-5,303	1,055	0,123	105	1,114
BKK38690	*yxlC*	-5,32	1,138	0,098	184	1,201
BKK32130	*guaC*	-5,331	1,087	0,117	176	1,148
BKK18600	*yozQ*	-5,334	1,077	0,106	38	1,138
BKK31945	*yukJ*	-5,337	1,079	0,103	69	1,139
BKK37470	*phrF*	-5,346	1,088	0,098	284	1,149
BKK28730	*araQ*	-5,352	1,078	0,106	33	1,139
BKK00850	*mcsB*	-5,355	1,041	0,117	384	1,100
BKK03080	*ycgE*	-5,36	1,069	0,115	43	1,130
BKK13890	*ptsG*	-5,372	1,125	0,113	244	1,189
BKK36500	*ywoB*	-5,372	1,054	0,112	54	1,114
BKK22690	*aroH*	-5,383	1,041	0,110	175	1,100
BKK36750	*spoIID*	-5,389	1,054	0,112	82	1,114
BKK12120	*yjfB*	-5,402	1,125	0,150	170	1,189
BKK35850	*ywtE*	-5,418	1,054	0,109	232	1,114
BKK32750	*metQ*	-5,42	1,156	0,076	124	1,222
BKK34500	*yvdR*	-5,445	1,103	0,089	116	1,166
BKK31770	*yueI*	-5,453	1,085	0,111	190	1,148
BKK24810	*yqgV*	-5,456	1,120	0,085	254	1,184
BKK38460	*tyrZ*	-5,457	1,058	0,120	209	1,119
BKK13360	*ykoP*	-5,467	1,103	0,103	133	1,166
BKK06090	*ydiR*	-5,478	1,103	0,116	63	1,167
BKK16900	*ymfK*	-5,503	1,104	0,095	484	1,168
BKK31120	*lytG*	-5,51	1,155	0,114	35	1,222
BKK24770	*mgsR*	-5,511	1,099	0,120	148	1,164
BKK14940	*ylbA*	-5,527	1,114	0,085	267	1,179
BKK20370	*yorI*	-5,528	1,067	0,130	64	1,129
BKK11520	*mecA*	-5,533	1,118	0,103	81	1,183
BKK19950	*sspC*	-5,539	1,067	0,150	182	1,129
BKK03760	*yclK*	-5,543	1,135	0,108	308	1,201
BKK21730	*ypmS*	-5,56	1,091	0,100	321	1,155
BKK18790	*yoaZ*	-5,564	1,106	0,126	34	1,172
BKK23040	*fer*	-5,575	1,039	0,127	159	1,100
BKK12540	*xkdD*	-5,596	1,122	0,146	699	1,189
BKK36480	*ywoD*	-5,598	1,052	0,104	113	1,114
BKK35000	*hprK*	-5,65	1,071	0,123	123	1,135
BKK35870	*pgsE*	-5,661	1,051	0,132	83	1,114
BKK40510	*yybT*	-5,677	1,100	0,103	128	1,166
BKK11040	*yitM*	-5,698	1,116	0,103	82	1,183
BKK19579	*yoyD*	-5,717	1,065	0,104	462	1,129
BKK13080	*ykkB*	-5,729	1,100	0,122	341	1,166
BKK19730	*yodS*	-5,735	1,065	0,085	361	1,129
BKK13740	*queE*	-5,743	1,099	0,117	417	1,166
BKK09930	*yhaM*	-5,753	1,109	0,088	144	1,177
BKK05930	*rimI*	-5,775	1,100	0,114	469	1,167
BKK15340	*ylmA*	-5,795	1,137	0,138	72	1,206
BKK00150	*dgk*	-5,807	1,110	0,110	188	1,179
BKK18650	*pelB*	-5,827	1,103	0,123	37	1,172
BKK37860	*spsF*	-5,842	1,053	0,133	51	1,119

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK37570	*mmr*	-5,904	1,082	0,096	313	1,149
BKK12370	*exuR*	-5,917	1,119	0,124	591	1,189
BKK36770	*ywmB*	-5,935	1,048	0,115	118	1,114
BKK36680	*ywmF*	-6,051	1,047	0,104	38	1,114
BKK09050	*yhcE*	-6,061	1,106	0,098	147	1,177
BKK15420	*divIVA*	-6,061	0,916	0,082	59	0,975
BKK14610	*pdhD*	-6,065	1,108	0,135	50	1,179
BKK37690	*bacF*	-6,105	1,050	0,091	51	1,119
BKK15580	*cysP*	-6,125	1,078	0,113	180	1,148
BKK21840	*ypjP*	-6,132	1,084	0,092	301	1,155
BKK22230	*ypqE*	-6,15	1,033	0,094	68	1,100
BKK28440	*sdhA*	-6,151	0,915	0,055	47	0,975
BKK35830	*ywtG*	-6,225	1,078	0,098	291	1,149
BKK40620	*yybJ*	-6,234	1,094	0,142	88	1,167
BKK28770	*araL*	-6,238	1,044	0,104	85	1,113
BKK22320	*ponA*	-6,259	1,081	0,128	394	1,153
BKK14629	*ykzW*	-6,274	1,105	0,123	561	1,179
BKK18709	*yozT*	-6,295	1,095	0,097	377	1,168
BKK20510	*yoqU*	-6,361	1,057	0,110	64	1,129
BKK18909	*yozZ*	-6,405	1,097	0,128	169	1,172
BKK19820	*yotN*	-6,465	1,056	0,100	822	1,129
BKK14950	*ylbB*	-6,466	1,103	0,092	122	1,179
BKK34980	*yvoD*	-6,499	1,061	0,109	241	1,135
BKK00470	*purR*	-6,679	1,086	0,103	97	1,164
BKK34900	*hisB*	-6,697	1,059	0,132	224	1,135
BKK12330	*yjmD*	-6,79	1,108	0,132	661	1,189
BKK18480	*proH*	-6,817	1,092	0,113	162	1,172
BKK38780	*yxkI*	-6,825	1,085	0,104	133	1,165
BKK19280	*yocN*	-6,839	1,091	0,131	344	1,172
BKK36300	*glcR*	-6,844	1,038	0,122	159	1,114
BKK29550	*ytcJ*	-6,86	1,037	0,127	55	1,113
BKK22510	*ypjC*	-6,867	1,025	0,117	53	1,100
BKK36900	*glyA*	-6,868	0,908	0,093	50	0,975
BKK20520	*yoqT*	-6,872	1,052	0,130	198	1,129
BKK22520	*ypjB*	-6,873	1,025	0,127	101	1,100
BKK13900	*ptsH*	-6,914	1,107	0,116	41	1,189
BKK04710	*rsbV*	-6,939	1,084	0,114	273	1,165
BKK23130	*resC*	-6,943	1,024	0,116	207	1,100
BKK16070	*ylqG*	-6,983	1,023	0,148	134	1,100
BKK13210	*thiX*	-7,014	1,085	0,142	40	1,166
BKK22820	*yphE*	-7,032	1,023	0,103	46	1,100
BKK04510	*ydbL*	-7,047	1,083	0,126	663	1,165
BKK20290	*yorQ*	-7,086	1,049	0,132	74	1,129
BKK35370	*csrA*	-7,091	1,055	0,099	132	1,135
BKK06110	*ydjA*	-7,15	1,084	0,102	369	1,167
BKK33360	*yvgJ*	-7,2	1,134	0,104	215	1,222
BKK29640	*ytsP*	-7,208	1,033	0,094	123	1,113
BKK28760	*araM*	-7,221	1,033	0,100	80	1,113
BKK36460	*ywoF*	-7,232	1,034	0,090	30	1,114
BKK20270	*yorS*	-7,257	1,047	0,136	40	1,129
BKK28120	*hemL*	-7,261	1,075	0,093	185	1,160
BKK22390	*ypmA*	-7,278	1,020	0,133	164	1,100
BKK37440	*ywhL*	-7,291	1,037	0,104	101	1,119
BKK01920	*skfB*	-7,317	1,032	0,098	110	1,113
BKK29350	*tcyM*	-7,331	1,055	0,089	48	1,138
BKK10980	*yitG*	-7,353	1,119	0,116	43	1,208
BKK05680	*ydgK*	-7,423	1,112	0,082	220	1,201
BKK20260	*yorT*	-7,443	1,045	0,130	38	1,129
BKK29440	*argH*	-7,459	1,030	0,111	30	1,113
BKK36430	*usd*	-7,477	1,031	0,092	84	1,114
BKK11770	*cotW*	-7,497	1,100	0,099	279	1,189
BKK37510	*pbpG*	-7,549	1,063	0,096	228	1,149
BKK18730	*yoaS*	-7,576	1,083	0,120	71	1,172
BKK14230	*ykuV*	-7,642	1,089	0,123	156	1,179
BKK00870	*radA*	-7,706	1,015	0,122	45	1,100
BKK14920	*ctaF*	-7,782	1,087	0,085	361	1,179
BKK37640	*ywfL*	-7,8	0,899	0,073	40	0,975
BKK40490	*yycA*	-7,876	1,073	0,118	255	1,165
BKK15600	*cysC*	-7,935	1,057	0,118	187	1,148
BKK32740	*metP*	-7,952	1,074	0,096	103	1,166
BKK35270	*cccB*	-8,013	1,044	0,129	273	1,135
BKK19290	*yozO*	-8,249	1,075	0,139	549	1,172
BKK18760	*yoaU*	-8,275	1,075	0,115	81	1,172
BKK11720	*fabI*	-8,301	1,090	0,127	90	1,189
BKK26710	*azlC*	-8,397	1,054	0,122	257	1,151
BKK05850	*gmuR*	-8,408	1,069	0,090	154	1,167
BKK22480	*mgsA*	-8,445	1,007	0,132	95	1,100
BKK36690	*rapB*	-8,446	1,020	0,110	88	1,114
BKK10140	*hemY*	-8,489	1,077	0,097	162	1,177

BKK name [1]	gene	screening delta[2] (%)	erage width (µ	+/-	nb	ADP
BKK38430	*gspA*	-8,529	1,023	0,108	128	1,119
BKK36910	*ywlG*	-8,643	1,018	0,105	199	1,114
BKK00630	*yabR*	-8,798	1,056	0,101	68	1,158
BKK28170	*hemA*	-8,839	1,057	0,124	323	1,160
BKK29180	*pyk*	-8,872	1,062	0,119	123	1,156
BKK15790	*rpe*	-8,905	1,034	0,115	35	1,135
BKK22210	*yprB*	-8,945	1,002	0,134	110	1,100
BKK13900	*ptsH*	-8,969	1,062	0,126	58	1,166
BKK19320	*sqhC*	-9,157	1,064	0,134	55	1,172
BKK34620	*mdxD*	-9,39	1,028	0,120	61	1,135
BKK03480	*srfAA*	-9,413	1,024	0,103	38	1,130
BKK20300	*yorP*	-9,42	1,023	0,145	52	1,129
BKK01889	*ybzH*	-9,47	0,883	0,054	42	0,975
BKK22340	*nth*	-9,547	0,995	0,104	85	1,100
BKK19020	*yobN*	-9,585	1,059	0,107	36	1,172
BKK38660	*yxlF*	-9,702	1,028	0,068	45	1,138
BKK06360	*guaA*	-9,94	0,878	0,055	50	0,975
BKK22220	*yprA*	-10,181	0,988	0,116	38	1,100
BKK22410	*panD*	-10,738	0,982	0,183	31	1,100
BKK19180	*des*	-10,806	1,045	0,088	87	1,172
BKK04310	*ydaN*	-10,896	1,038	0,123	218	1,165
BKK08680	*ygaC*	-10,965	1,032	0,117	185	1,159
BKK22360	*asnS*	-12,67	0,961	0,148	37	1,100
BKK40390	*walH*	-13,873	0,973	0,069	43	1,130
BKK00110	*pdxS*	n/a	n/a	n/a	n/a	n/a
BKK00690	*ftsH*	n/a	n/a	n/a	n/a	n/a
BKK01670	*ybbE*	n/a	n/a	n/a	n/a	n/a
BKK27260	*mccA*	n/a	n/a	n/a	n/a	n/a
BKK31290	*yugT*	n/a	n/a	n/a	n/a	n/a
BKK33920	*tpiA*	n/a	n/a	n/a	n/a	n/a
BKK33930	*pgk*	n/a	n/a	n/a	n/a	n/a
BKK38150	*qoxC*	n/a	n/a	n/a	n/a	n/a
BKK41030	*jag*	n/a	n/a	n/a	n/a	n/a

1: underscored and bold names indicate the top 10 % and 1% delta, respectively

2: n/a : 9 mutants have no values because they did not grow after several attempts

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Sup. Table 4: Width of the 0.5% largest and thinnest selected strains

gene		screening step					checking step				post-backcross step					backcross strains without Mg^{2+} [5]					
name	reference	width (µm)	+/-	delta[1] (%)	nb	ADP (µm)	width (µm)	+/-	delta[2] (%)	nb	width (µm)	+/-	delta[3] (%)	nb	*P*-value[4]	width (µm)	+/-	delta (%)	nb	P value[4]	
cwlO	BKK34800	1,42	0,14	23,36	301	1,15	1,25	0,13	28,30	265	1,09	0,09	13,07	438	***	1,10	0,08	7,68	411	****	comfirmed positively affected
rodZ	BKK16910	1,29	0,11	11,40	287	1,16	1,12	0,10	14,77	199	1,08	0,08	12,55	331	****	1,07	0,09	5,52	370	**	
rpe	BKK15790	1,03	0,12	-8,91	35	1,14	0,86	0,07	-11,39	136	1,07	0,18	11,02	207	****	1,09	0,11	6,96	357	****	
ftsX	BKK35250	1,33	0,18	15,59	286	1,15	1,18	0,12	20,97	167	1,06	0,08	9,95	342	****	1,10	0,08	7,66	341	****	
yaaA	BKK00030	1,28	0,12	9,94	189	1,17	1,02	0,07	4,87	188	1,06	0,09	9,72	349	***	1,13	0,09	11,38	294	****	
ftsE	BKK35260	1,38	0,15	19,51	109	1,16	1,21	0,11	24,20	90	1,05	0,08	9,43	431	****	1,07	0,08	5,03	335	**	
dacA	BKK00100	1,34	0,15	15,94	107	1,16	1,03	0,10	5,94	260	1,05	0,08	9,33	409	****	1,08	0,09	6,06	370	****	
yuaC	BKK31070	1,29	0,13	11,33	238	1,16	0,99	0,08	2,04	150	1,02	0,08	5,48	405		1,01	0,07	-0,88	281		
natA	BKK02750	1,31	0,12	9,10	127	1,20	0,96	0,06	-0,86	129	1,00	0,07	4,03	331		1,03	0,09	1,63	90		
ymfD	BKK16825	1,31	0,17	12,67	82	1,16	0,93	0,07	-4,42	53	1,00	0,07	3,92	383		1,04	0,07	1,79	102		
comFC	BKK35450	1,24	0,10	11,47	90	1,11	1,03	0,06	6,07	238	1,00	0,07	3,64	351		1,06	0,07	3,60	97		
yvyF	BKK35440	1,22	0,11	9,58	161	1,11	0,99	0,07	2,07	131	1,00	0,07	3,30	367		1,02	0,08	-0,10	324		
greA	BKK27320	1,10	0,10	12,65	40	0,98	n/a	n/a	n/a	n/a	0,99	0,06	3,20	154		0,99	0,06	-2,32	154		
mdxD	BKK34620	1,03	0,12	-9,39	61	1,14	0,95	0,07	-2,70	174	0,99	0,07	3,08	405		0,99	0,07	-2,56	295		
yprB	BKK22210	1,00	0,13	-8,95	110	1,10	0,97	0,09	-0,22	127	0,99	0,08	3,06	180		0,99	0,07	-3,06	246		
srfAA	BKK03480	1,02	0,10	-9,41	38	1,13	0,92	0,08	-4,89	123	0,99	0,07	3,06	441		1,00	0,08	-1,46	287		
yobN	BKK19020	1,06	0,11	-9,59	36	1,17	0,98	0,09	1,31	124	0,99	0,08	3,03	324		0,97	0,07	-4,43	305		
yxlF	BKK38660	1,03	0,07	-9,70	45	1,14	0,97	0,06	-0,12	127	0,99	0,07	2,83	394		1,00	0,08	-1,91	324		
ypzH	BKK22849	1,28	0,13	15,99	401	1,10	1,02	0,08	4,54	78	0,99	0,08	2,73	356		0,99	0,07	-2,57	116		
ykhA	BKK13030	1,27	0,18	9,17	109	1,17	0,99	0,06	1,31	155	0,99	0,09	2,71	355		1,04	0,10	1,93	138		
yoqC [6]	BKK20680	1,32	0,18	13,23	411	1,17	0,94	0,07	-3,46	101	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a		
yorP [6]	BKK20300	1,02	0,15	-9,42	52	1,13	1,01	0,07	3,90	189	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a		
des	BKK19180	1,04	0,09	-10,81	87	1,17	0,98	0,07	0,72	165	0,99	0,09	2,47	424		1,02	0,07	0,29	204		
yprA	BKK22220	0,99	0,12	-10,18	38	1,10	0,99	0,08	2,14	107	0,99	0,07	2,46	276		0,99	0,07	-3,10	183		
xkdX	BKK12770	1,29	0,12	10,49	135	1,17	0,96	0,07	-0,86	224	0,98	0,07	2,04	283		1,02	0,08	-0,30	155		
yqiW	BKK23990	1,26	0,14	9,50	142	1,15	0,97	0,07	-0,31	237	0,98	0,07	1,61	324		0,97	0,08	-4,31	131		
nth	BKK22340	1,00	0,10	-9,55	85	1,10	1,00	0,08	2,44	160	0,98	0,07	1,33	267		0,99	0,08	-2,52	277		
ygaC	BKK08680	1,03	0,12	-10,97	185	1,16	0,94	0,07	-3,16	121	0,98	0,07	1,24	366		1,01	0,08	-0,55	236		
xkdW	BKK12760	1,42	0,12	21,84	150	1,17	0,99	0,08	2,14	79	0,97	0,07	1,14	316		0,98	0,06	-4,25	64		
sqhC	BKK19320	1,06	0,13	-9,16	55	1,17	0,97	0,07	-0,06	163	0,97	0,08	1,07	322		0,98	0,07	-3,88	270		
ydaN	BKK04310	1,04	0,12	-10,90	218	1,16	0,97	0,07	-0,04	119	0,97	0,06	0,74	376		1,01	0,08	-0,87	173		
kbl	BKK17000	1,28	0,16	9,83	152	1,16	0,96	0,07	-1,70	161	0,97	0,07	0,62	333		0,99	0,06	-2,71	75		
asnS	BKK22360	0,96	0,15	-12,67	37	1,10	0,97	0,07	-0,24	103	0,97	0,07	0,17	322		0,98	0,08	-3,34	100		
minJ	BKK35220	1,24	0,13	9,38	104	1,14	0,98	0,08	0,49	211	0,95	0,09	-1,02	677		0,97	0,11	-4,60	225		
walH	BKK40390	0,97	0,07	-13,87	43	1,13	0,89	0,06	-8,04	126	0,92	0,07	-4,54	366		0,92	0,07	-9,55	361		
pyk	BKK29180	1,06	0,12	-8,87	123	1,16	0,82	0,04	-15,67	105	0,88	0,06	-8,32	314	***	0,94	0,08	-7,47	289	****	comfirmed negatively
ybzH	BKK01889	0,88	0,05	-9,47	42	0,98	n/a	n/a	n/a	n/a	0,87	0,06	-9,30	369	****	0,86	0,06	-15,19	115	****	
panD	BKK22410	0,98	0,18	-10,74	31	1,10	0,82	0,05	-15,65	135	0,85	0,06	-11,39	301	****	0,87	0,06	-15,04	256	****	
guaA	BKK06360	0,88	0,05	-9,94	50	0,98	n/a	n/a	n/a	n/a	0,84	0,05	-12,73	351	****	0,81	0,05	-20,58	182	****	
ptsH	BKK13900	1,06	0,13	-8,97	58	1,17	0,83	0,06	-14,44	163	0,84	0,07	-13,30	392	****	0,91	0,06	-10,27	390	****	

1: δ relative to ADP
2: δ relative to wild type width
3: δ relative to wild type strain, average of 3 independant replicates
4: *P*-value (summary) of nested t-tests, comparing the widths of mutants with that of the wild type cells (**** = P<0.0001; *** = 0.0001<P<0.001; ** = 0.001<P<0.01; * = 0.01<P<0.05; ns = P>0.05)
5: width values for confirmed affected mutants are the average of 3 independant replicates
6: PCR checking revealed that the BKK strains are wt for the tested loci. Deletions were therefore not backcrossed into the 168 strain

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Sup. Table 5. *B. subtilis* strains used in this study

Strain (*B. subtilis*)	Relevant genotype	Source or reference[1]
168	(wt)	Laboratory stock
PY79	(wt)	Laboratory stock
RCL413	Ω*neo3427* - Δ*mreB*	Billaudeau, 2019
PS2062	Δ*ponA* ::*spc*	Popham, 1995
CcBs351	Δ*rodZ* ::*cat*	Gibson assembly → 168
CcBs628	Δ*rodZ* ::*cat*	CcBs351→ PY79
BKK00030	Δ*yaaA* ::*km*	Koo, 2017
BKK00100	Δ*dacA* ::*km*	Koo, 2017
BKK01889	Δ*ybzH* ::*km*	Koo, 2017
BKK02750	Δ*natA* ::*km*	Koo, 2017
BKK03480	Δ*srfAA* ::*km*	Koo, 2017
BKK04310	Δ*ydaN* ::*km*	Koo, 2017
BKK06360	Δ*guaA* ::*km*	Koo, 2017
BKK08680	Δ*ygaC* ::*km*	Koo, 2017
BKK12760	Δ*xkdW* ::*km*	Koo, 2017
BKK12770	Δ*xkdX* ::*km*	Koo, 2017
BKK13030	Δ*ykhA* ::*km*	Koo, 2017
BKK13900	Δ*ptsH* ::*km*	Koo, 2017
BKK15790	Δ*rpe* ::*km*	Koo, 2017
BKK16825	Δ*ymfD* ::*km*	Koo, 2017
BKK16910	Δ*rodZ* ::*km*	Koo, 2017
BKK17000	Δ*kbl* ::*km*	Koo, 2017
BKK19020	Δ*yobN* ::*km*	Koo, 2017
BKK19180	Δ*des* ::*km*	Koo, 2017
BKK19320	Δ*sqhC* ::*km*	Koo, 2017
BKK20300	Δ*yorP* ::*km*	Koo, 2017
BKK20680	Δ*yoqC* ::*km*	Koo, 2017
BKK22210	Δ*yprB* ::*km*	Koo, 2017
BKK22220	Δ*yprA* ::*km*	Koo, 2017
BKK22340	Δ*nth* ::*km*	Koo, 2017
BKK22360	Δ*asnS* ::*km*	Koo, 2017
BKK22410	Δ*panD* ::*km*	Koo, 2017
BKK22849	Δ*ypzH* ::*km*	Koo, 2017
BKK23990	Δ*yqiw* ::*km*	Koo, 2017
BKK27320	Δ*greA* ::*km*	Koo, 2017
BKK29180	Δ*pyk* ::*km*	Koo, 2017
BKK31070	Δ*yuaC* ::*km*	Koo, 2017
BKK34620	Δ*mdxD* ::*km*	Koo, 2017
BKK34800	Δ*cwlo* ::*km*	Koo, 2017
BKK35220	Δ*minJ* ::*km*	Koo, 2017
BKK35250	Δ*ftsX* ::*km*	Koo, 2017
BKK35260	Δ*ftsE* ::*km*	Koo, 2017
BKK35440	Δ*yvyF* ::*km*	Koo, 2017
BKK35450	Δ*comFC* ::*km*	Koo, 2017
BKK38660	Δ*yxlF* ::*km*	Koo, 2017
BKK40390	Δ*walH* ::*km*	Koo, 2017
RCL0820	Δ*cwlo* ::*km*	BKK34800 DNA → 168
RCL0821	Δ*xkdW* ::*km*	BKK12760 DNA → 168
RCL0822	Δ*ftsE* ::*km*	BKK35260 DNA → 168
RCL0823	Δ*ypzH* ::*km*	BKK22849 DNA → 168
RCL0824	Δ*dacA* ::*km*	BKK00100 DNA → 168
RCL0825	Δ*ftsX* ::*km*	BKK35250 DNA → 168
RCL0826	Δ*ymfD* ::*km*	BKK16825 DNA → 168
RCL0827	Δ*comFC* ::*km*	BKK35450 DNA → 168
RCL0828	Δ*rodZ* ::*km*	BKK16910 DNA → 168
RCL0829	Δ*yuaC* ::*km*	BKK31070 DNA → 168
RCL0830	Δ*xkdX* ::*km*	BKK12770 DNA → 168
RCL0831	Δ*yaaA* ::*km*	BKK00030 DNA → 168
RCL0832	Δ*kbl* ::*km*	BKK17000 DNA → 168
RCL0833	Δ*yvyF* ::*km*	BKK35440 DNA → 168

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RCL0834	Δ*minJ* ::*km*	BKK35220 DNA → 168
RCL0835	Δ*yqiw* ::*km*	BKK23990 DNA → 168
RCL0837	Δ*ykhA* ::*km*	BKK13030 DNA → 168
RCL0838	Δ*natA* ::*km*	BKK02750 DNA → 168
RCL0839	Δ*ywqA* ::*km*	BKK36280 DNA → 168
RCL0840	Δ*walH* ::*km*	BKK40390 DNA → 168
RCL0841	Δ*asnS* ::*km*	BKK22360 DNA → 168
RCL0842	Δ*ygaC* ::*km*	BKK08680 DNA → 168
RCL0843	Δ*ydaN* ::*km*	BKK04310 DNA → 168
RCL0844	Δ*des* ::*km*	BKK19180 DNA → 168
RCL0845	Δ*panD* ::*km*	BKK22410 DNA → 168
RCL0846	Δ*yprA* ::*km*	BKK22220 DNA → 168
RCL0848	Δ*yobN* ::*km*	BKK19020 DNA → 168
RCL0849	Δ*nth* ::*km*	BKK22340 DNA → 168
RCL0850	Δ*srfAA* ::*km*	BKK03480 DNA → 168
RCL0851	Δ*mdxD* ::*km*	BKK34620 DNA → 168
RCL0852	Δ*sqhC* ::*km*	BKK19320 DNA → 168
RCL0853	Δ*pyk* ::*km*	BKK29180 DNA → 168
RCL0854	Δ*ptsH* ::*km*	BKK13900 DNA → 168
RCL0855	Δ*yprB* ::*km*	BKK22210 DNA → 168
RCL0856	Δ*rpe* ::*km*	BKK15790 DNA → 168
RCL0858	Δ*greA* ::*km*	BKK27320 DNA → 168
RCL0859	Δ*ybzH* ::*km*	BKK01889 DNA → 168
RCL0860	Δ*guaA* ::*km*	BKK06360 DNA → 168

1: Arrows indicate construction by transformation with chromosomal DNA

Sup. Table 6. Genes reported to affect cell width in *B. subtilis*

gene	fonction	essentiality	effect[1]	references [2]	this study[3]
CW homeostasis					
mreB	rod complex regulation	no	+	Jones *et al.,* 01	na
mbl	rod complex regulation	no	+	Abhayawardhane *et al.,* 95, Jones *et al.,* 01	na
mreBH	rod complex regulation	no	-	Carballido-López *et al.* , 06; Sassine *et al.* , 20	no
mreB+mbl+mreBH	rod complex regulation	yes[4]	R	Schirmer *et al.* , 09	na
mreC	rod complex transpeptidase regulator	no	R	Lee *et al.,* 03; Leaver *et al.,* 05	na
mreD	rod complex, unknown function	yes	R	Leaver *et al.,* 05	na
pbpA+pbpH	rod complex transpeptidases (bPBPs)	yes[4]	R	Wei *et al.,* 03	na
rodA	rod complex transglycosylase	yes	R	Henriques *et al.,* 98	na
rodZ	rod complex, unknown function	?[5]	+	Muchova *et al.,* 13; Van Beilen *et al.* , 16	yes
murB	PG precursor synthetic pathway	yes	+	Peters *et al.,* 16	na
ponA	transglycosylase/transpeptidase (aPBP)	no	-	Popham *et al.,* 96; Claessen *et al.,* 08	yes
lytE	autolysin	no	?[6]	Dominguez-Cuevas *et al.,* 13; Carballido-López *et al.* , 06; Sassine *et al.* 20	no
cwlO	autolysin	no	+	Dominguez-Cuevas *et al.,* 13; Meisner *et al.,* 13	yes
ftsE	ABC transporter, activator of CwlO	no	+	Dominguez-Cuevas *et al.,* 13; Meisner *et al.,* 13	yes
ftsX	ABC transporter, activator of CwlO	no	+	Dominguez-Cuevas *et al.,* 13; Meisner *et al.,* 13	yes
glmR (yvcK)	stimulates PG precursor synthetic pathway	yes[7]	+[7]	Foulquier *et al.,* 11	na
tagT+TagV	Teichoic acid synthesis	no	+	Kawai *et al* ., 11	na
tagO	TA synthesis (first step)	no[8]	R	D'Elia *et al.,* 06	na
tagA	TA synthesis (first commited step)	no[8]	R	D'Elia *et al.,* 09	na
Other cell envelop					
ltaS (yflE)	lipoteichoic acid synthase	no	-	Sassine, 20	no
yqgS	lipoteichoic acid synthase	no	-	Sassine, 20	no
yfnI (ltaSA)	lipoteichoic acid synthase	no	-	Sassine, 20	no
Division:					
ezrA+gpsB	FtsZ inhibitor and late divisome protein; *ponA* localization	no	-	Claessen *et al.,* 08	na

1: + or - impact on cell width upon gene deletion or depletion; R stands for round cell, a consequence of the absence of elongation
2: references for measurement of width
3: genes selected for width defect in the present screen; na (not available) indicates that the gene could not be be find here du to its absence in BKK library, its essentiality or because the phenotype is synthetic
4: synthetically lethal
5: essential in Muchova *et al.,* 13 but inactivated in Van Beilen *et al.,* 16, Koo *et al.* , 17, Kobayashi *et al.,* 03
6: thinner in Dominguez *et al., 20* 13, Carballido *et al., 20* 06, and Sassine, 2020 but wild type width in Meisner *et al.* , 13
7: only during neoglucogenic condition
8: non lethal but absent from the BKK library (wrongly annotated into the subtiwiky database)

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Sup. Table 7. Average length differences (%) across replicates [1]

	WT 1	WT 2	WT 3	WT 4	WT 5	WT 6
WT 1	-	+2.9 %	+1.2 %	+4.8 %	+3.0 %	-0.5 %
WT 2	-	-	-1.7 %	+2.0 %	+0.1 %	-3.5 %
WT 3	-	-	-	+3.7 %	+1.8 %	-1,7 %
WT 4	-	-	-	-	-2.0 %	-5.6 %
WT 5	-	-	-	-	-	-3.6 %
length (µm)	3,384	3,484	3,424	3,556	3,487	3,367
+/-	0,708	0,760	0,805	0,822	0,705	0,777

1: ordinary one-way ANOVA test between replicates conclude to no significant differences