A full cycle anti-viral drug screen identifies a clinical compound against adenovirus infection

Fanny Georgi[1], Fabien Kuttler[2], Luca Murer[1], Vardan Andriasyan[1], Robert Witte[1], Artur Yakimovich[3,4], Gerardo Turcatti[2], Urs F Greber[1]

[1] Department of Molecular Life Sciences, University of Zurich (UZH), Winterthurerstrasse 190, 8057 Zurich, Switzerland
[2] Biomolecular Screening Facility, School of Life Sciences, Ecole Polytechnique Fédérale (EPFL) de Lausanne, Station 15, Lausanne 1015, Switzerland
[3] MRC Laboratory for Molecular Cell Biology, University College London, Gower St, London, WC1E 6BT, United Kingdom
[4] Artificial Intelligence for Life Sciences CIC, 40 Gowers walk, London, E1 8BH, United Kingdom
Corresponding author: Urs F Greber, urs.greber@imls.uzh.ch

Human adenoviruses (HAdVs) are fatal to immune-suppressed people, but no effective anti-HAdV therapy is available. Here, we present a novel image-based high-throughput screening (HTS) platform, which scores the full viral replication cycle from virus entry to dissemination of progeny. We analysed 1,280 small molecular compounds of the Prestwick Chemical Library (PCL) for interference with HAdV-C2 infection in a quadruplicate blinded format, followed by robust image analyses, and hit identification. We present the entire set of image-based screening data including all the images, and the image analysis and data processing pipelines, as deposited at the Image Data repository (IDR) [1] (project number #pending). We identified Nelfinavir mesylate as an inhibitor of HAdV plaque formation, in agreement with the previous notion that Nelfinavir is ineffective in single round HAdV infection assays. Nelfinavir has been FDA-approved for anti-retroviral therapy in humans. Our results underscore the power of image-based multi-round infection assays in identifying viral inhibitors with clinical potential.

Background & Summary:

Human adenoviruses (HAdV) predominantly cause diseases of the respiratory and gastrointestinal tracts. They are a significant cause of acute human disease with morbidity and mortality, especially for immuno-compromised patients [2,3] as indicated by a recent outbreak in the USA killing 12 children. Surprisingly, a recent case of HAdV-C2 caused meningoencephalitis was also reported in a middle-aged woman in the US [4]. HAdV have a high prevalence [5–8] and are broadly used as gene therapy vectors [9] and oncolytic viruses [10,11]. The high seroprevalence of HAdV-C2/5 [12] underlines that HAdV infections are asymptomatic in healthy individuals, but HAdV persist in mucosal lymphocytes, and thereby pose a severe risk for immunosuppressed patients undergoing stem cell transplantation [13].

More than 100 HAdV genotypes have been formally approved [14] and are grouped into seven species based on hemagglutination assay and genome sequences [15]. They exhibit a broad range of tissue tropism, including the respiratory and gastrointestinal tracts, the eye, the kidney, the urogenital tracts and blood cells. While species A, F and G target the gastrointestinal tract, HAdV-B, C and E cause infections of the respiratory tract, and conjunctivitis is mostly associated with species B and D, but also C types. HAdV-B show the broadest spectrum of tropisms, also infecting the kidney and hematopoietic system [7,13].

HAdV is a non-enveloped virus with a double-stranded DNA genome of ~36 kbp tightly packaged
into an icosahedral capsid of about 90 nm in diameter [16,17]. The best-studied HAdV are HAdV-
C2/5 (species C, type 2 and 5), which are very closely related to each other. HAdV enter cells by
receptor mediated endocytosis, penetrate the endosomal membrane by the activation of a viral
lytic machinery, and shed virion proteins in a stepwise manner, until they arrive at the nuclear
membrane, where they uncoat and release their genome to the nucleus [18,19]. In the nucleus the
viral genome gives rise to the immediate early viral mRNA encoding the E1A protein which then
transactivates all the subviral promoters and is key to give rise to lytic infection and maintains viral
persistence in presence of the innate immune regulator interferon [20]. Mature HAdV progeny is
known to be released by cell lysis upon rupture of the nuclear envelope and the plasma
membrane, giving rise to cell-free virions [21–23].

To this day, no effective anti-viral therapy is available against HAdV infection For example, the
nucleoside analogue Cidofovir is the current standard of care for the treatment of HAdV infections,
albeit with poor clinical efficacy [7]. Cidofovir is a general inhibitor of viral DNA polymerases and
impairs the replication of viral DNA [24]. The pre-clinical development of novel anti-HAdV agents
has been limited by the shortage of a suitable small animal model, although Syrian Hamsters
support HAdV-C progeny production, albeit in limited amounts [25].

Here, we developed a data-based approach to identify novel inhibitors of HAdV infection by
testing the Prestwick Chemical Library (PCL) to inhibit HAdV-C2 infection in cell cultures. The
PCL is commercially available, and comprises a library of 1,280 off-patent FDA-approved small
molecules (listed in Supplementary Table 1) covering significant pharmaceutical range. PCL has
been successfully used to identify many compounds for repurposing applications ranging from
antimicrobial agents[26] to anticancer candidates [27]. For a full list of publications, see [28]. We
performed a phenotypic screen for HAdV-C2 infection, as outlined in (Figure 1A, 1B). We took
advantage of automated fluorescence microscopy and image-based scoring of the progression
of multi-round infections using Plaque2.0 software [29]. This high-throughput screening (HTS)
modality was carried out at a 384-well plate format. For representative images, see Figure 1C.

We demonstrate robust imaging methodology, image analysis and data processing routines as
concluded from parallel procedures in two teams at independent institutions, the Biomolecular
Screening Facility at Ecole Polytechnique Fédérale de Lausanne (EPFL) and the Department of
Molecular Life Sciences at University of Zurich (UZH). To score the infection phenotypes, we used
five infection assay features obtained from microscopy: the number of nuclei, the number of
infected nuclei, the infection index as calculated from the total nuclei and the infected cells, the
number of plaques (areas of multi-round infection foci originating from a single infected host cell)
and the integrated viral infection marker, in this case the green fluorescence protein (GFP)
intensity. All data is available at the Image Data repository (IDR) [1] (project number #pending).
The structure of the repository is outlined in Figure 2. Raw and scored infection phenotype
features are shown for UZH and EPFL analyses (Supplementary Tables 2 and 3, and Supple-
mentary Tables 4 and 5, respectively). Rigorous assay development ensured a high assay quality
as indicated in Figure 3 and by mean Z'-scores of 0.52 for the number of plaques (Table 1). The

screening was performed in four biological replicates at high reproducibility, see Figure 4 and
Table 2. We further excluded those PCL compounds that showed significant toxicity in the
absence of infection (Table 3 and Figure 5). Imaging, image analysis and scoring by the two
independent teams yielded well correlated scores, as depicted in Figure 6.
96
97 Our data indicate a high significance of the identified top hit, Nelfinavir mesylate (Figure 1D and
98 6). We confirmed the efficacy of Nelfinavir as an inhibitor of HAdV infection by biological follow-
99 up studies (submission in preparation).
100

101 **Methods:**
102

Virus
HAdV-C2-dE3B virus was produced as described [21]. In brief, the virus was generated by
exchange of the viral E3B genome region with a reporter cassette harbouring the enhanced green
fluorescent protein (GFP) under the immediate early Cytomegalovirus (CMV) promoter. The virus
was grown in A549 cells and purified by double caesium chloride gradient centrifugation [30].
Aliquots supplemented with 10% glycerol (v/v) were stored at -80°C. HAdV-C2-dE3B was found
to be homogeneous by SDS-PAGE and negative-stain analyses by transmission electron
microscopy.
111

Cell line
A549 (human adenocarcinomic alveolar basal epithelium) cells were obtained from the American
Type Culture Collection (ATCC), Manassas, USA. The cells were maintained in full medium: high
glucose Dulbecco Modified Eagle Medium (DMEM; Thermo Fisher Scientific, Waltham, USA)
containing 7.5% fetal bovine serum (FBS, Invitrogen, Carlsbad, USA), 1% L-glutamine (Sigma-
Aldrich, St. Louis, USA) and 1% penicillin streptomycin (Sigma-Aldrich, St. Louis, USA) and
subcultured following PBS washing and trypsinisation (Trypsin-EDTA, Sigma-Aldrich, St. Louis,
USA) weekly. Cell cultures were grown at standard conditions (37°C, 5% CO_2, 95% humidity) and
passage number limited to 20.
121

122 **Preparation of pre plates**
123 10 µl 0.0125% DMSO in PBS was spotted on all 384 wells each of imaging-compatible 384-well
124 plates (Matrix plates #4332, Thermo Fisher Scientific, Waltham, USA) using a Matrix WellMate
125 dispenser and normal bore Matrix WellMate tubing cartridges (Thermo Fisher Scientific, Waltham,
126 USA). Plates were sealed and stored at -20°C.
127

Blinding
The PCL compound arrangement as spotted by EPFL across the 4 plates A - D comprising each
screening set replicate 1 - 4 was blinded and replaced by UZH with internal identifier
(Supplementary Tables 2 and 3, *compoundIdentifier* 1 to 1280). The identity of the compounds
was only disclosed (Table 3 and Supplementary Tables 1 and 2, *PCL_ID* Prestw-1 to Prestw-
1804 and *compoundName*) after the screening process including hit filtering was finished.
134

Compounds

The PCL was obtained from Prestwick Chemical (Illkirch, France). 3′-Deoxy-3′-fluorothymidine (DFT, CAS number 25526-93-6) was obtained from Toronto Research Chemical, North York, Canada. All compounds were dissolved in Dimethyl sulfoxide (DMSO, Sigma-Aldrich, St. Louis, USA) at a final stock concentration of 10 mM and stored at -20°C.

Presto-blue toxicity assay

Toxicity of the PCL chemical compounds on A549 in absence of infection was tested using compound concentrations, treatment timing and seeding cell numbers corresponding to the screening protocol, and using the Presto Blue Cell Viability reagent (Thermo Fisher Scientific, Waltham, USA). Briefly, following 3.5-day continuous treatment of A549 cells, 10% final PrestoBlue was added to each well and incubated for 1 h at standard cell incubation conditions. Fluorescence intensity (bottom-read) was then measured using a multi-well plate reader (Tecan Infinite F500, Tecan, Männedorf, Switzerland) with excitation at 560/10 nm, emission at 590/10 nm at a fixed gain. Doxorubicin hydrochloride (Prestw-438, Prestwick Chemical, Illkirch, France) was used as a positive control for cytotoxicity, at a final concentration of 10 µM, and the corresponding volume of DMSO was used as a negative control. The full PCL library was tested on duplicated plates. The EPFL-BSF in-house Laboratory Information Management System (LIMS) was used for data processing and statistical validation. First, raw PrestoBlue readings were normalized per plate to negative control values at 0 and positive controls at 1. Then, the normalized values of the duplicates were averaged. Assay quality was assessed for each plate through the Z' factor calculation. Compounds were considered toxic hits when the normalized value for all replicates was higher than the average + 3σ (standard deviation, SD) of the DMSO negative control for the corresponding plate. Scores and score SD were then calculated for hit compounds by averaging normalized value for all replicates.

Preparation of Z' and screening plates

10 nl of 10 mM PCL compounds, the nucleoside analogue DFT positive control (all dissolved in DMSO) and DMSO only as negative control were pre-spotted on imaging-compatible 384-well plates (Falcon plates, Corning Inc., New York, USA) using an Echo acoustic liquid handling system (Labcyte, San Jose, USA) by the EPFL-BSF, sealed and stored at -20°C. Z' plates consisted of 192 technical replicates of positive and negative control, each, per 384-well plate. Each screening plate set consisted of 4 plates A to D. Each screening plate consisted of 32 technical replicates of positive and negative control, each, and 320 single technical replicate PCL compounds.

Wet-lab screening pipeline

The screening was performed in four independent biological replicates. Wet-lab liquid handling was performed using a Matrix WellMate dispenser and Matrix WellMate tubing cartridges (Thermo Fisher Scientific, Waltham, USA). Prior to usage, tubings were rinsed with 125 ml autoclaved ddH$_2$O followed by 125 ml autoclaved PBS. Pre-spotted compound plates were thawed at room temperature (RT) for 30 min, briefly centrifuged before compounds were dissolved in 10 µl/ well PBS. 4,000 A549 cells/ well in 60 µl full medium were seeded onto the compounds using standard bore tubing cartridges. Following cell adhesion over night, the cells are inoculated with 1.77*10^5

genome equivalents per well of HAdV-C2-dE3B in 10 µl full media using bovine serum albumin
(BSA, cell-culture grade, Sigma-Aldrich, St. Louis, USA)-blocked small bore tubing cartridges.
Final compound concentration was 1.25 µM at 0.0125% DMSO. Infection was allowed to progress
over multiple infection rounds for 72 h giving rise to foci of infected cells originating from a single
first round infected cell termed plaque. Cells were fixed for 1 h at RT by addition of 26.6 µL 16%
PFA and 4 µg/ml Hoechst 33342 (Sigma-Aldrich, St. Louis, USA) in PBS using standard bore
tubing cartridges. Cells were washed 3 times with PBS before PBS supplemented with 0.02% N_3
was added and plates were sealed for long-term storage at 4°C. Following usage, tubings were
rinse with 125 ml autoclaved ddH$_2$O followed by 125 ml autoclaved PBS and autoclaved for re-
usage.
189
Imaging
Nuclei (DAPI channel) and viral GFP (FITC channel) were imaged on two devices. At UZH, plates
were imaged on an IXM-C automated high-throughput fluorescence microscope (Molecular
Devices, San Jose, USA) using MetaXpress (version 6.2, Molecular Devices, San Jose, USA)
and a 4x air objective (Nikon S Fluor, 0.20 NA, 15.5 mm WD, Nikon Instruments, Minato, Japan)
at widefield mode. Image size 2,048^2 px at 1.72 µm/px resolution acquired on an Andor sCMOS
camera (Oxford Instruments, Abingdon, UK). Exposure times: DAPI 150 ms, FITC 20 ms. At
EPFL, images were acquired on a IN Cell 2200 automated high-throughput florescence
microscope (GE Healthcare, Chicago, USA) using IN Cell Analyzer (version 6.2, GE Healthcare,
Chicago, USA) and a 4x air objective (Nikon Plan Apo, 0.20 NA, 15.7 mm WD, Nikon Instruments,
Minato, Japan) at widefield mode. Image size 2,048^2 px at 1.625 µm/px resolution acquired on an
Andor sCMOS camera. Exposure times: DAPI 300 ms, FITC 40 ms.
202
Image analysis
The infection phenotype for each well was quantified by Plaque2.0 [29]
(https://github.com/plaque2/matlab/tree/antivir) via five read-outs: number of nuclei, number of
infected nuclei, the ratio between infected and total nuclei referred to as infection index, number
of multi-round infection foci termed plaques (plaque forming units, pfu) and the integrated viral
transgenic GFP intensity. Plaque2.0 parameters were optimized independently at UZH and EPFL
for the data acquired at the respective institution.
210
211 **Z'-score calculation**
212 The Z'-score was computed using R version 3.3.2 [31] according to Equation (1)
213
$$Z' = 1 - \frac{(3\sigma_+ + 3\sigma_-)}{|\mu_+ - \mu_-|} \quad (1)$$

214 where σ_+ is the SD of the positive control, σ_- is the SD of the negative control, μ_+ the mean of the
215 positive control and μ_- the mean of the negative control.
216
Screening data processing
Plaque2.0 results were further independently processed and filtered. At UZH, results were
processed in R version 3.3.2 [31], EPFL used KNIME version 3.4.0 [32] as well as the EPFL-BSF in-
house LIMS. Mean infection scores over the Plaque2.0 read-outs of the four biological replicates
of each PCL compound and the 16 biological replicates containing each 16 technical replicates

of positive and negative control, each, were calculated. Each compound's scores were normalized
by the mean score of the DMSO negative control of the respective plate. Only non-toxic, effective
PCL compounds were considered as HAdV inhibitor candidates. Non-toxic compounds were
filtered by applying an inclusive μ_+ (mean of the negative control) $\pm\, 2\sigma$ (SD of the negative control)
threshold for number of nuclei. Efficacy was filtered by applying an excluding $\mu_+ \pm 3\sigma$ threshold
for the infection scores (number of infected nuclei, infection index, number of plaques or
integrated GFP intensity).
229
230 **Data Records:**
231
Data structure and repository
The HAdV screening data comprise the information collected during assay development,
including stability, quality and the PCL screening itself. The latter two have been imaged on two
different microscopes. We provide the parameters used for Plaque2.0 image analysis, and the
code for the subsequent hit filtering in R. The data structure as available at the IDR [1], project
number #pending) is structures as outlined in Figure 2.
238
Data sets and file types
The provided data consists of four data sets 1 to 4.
- *1-prePlates* contains layouts (.csv), images (.tif), Plaque2.0 image analysis parameters (.mat)
and results (.csv) for the assay stability test plates performed at UZH prior to Z' plates (*preZ*) and
the AntiVir screen (*preScreen*).
- *2-ZPlates* contains layouts (.csv), images (.tif), Plaque2.0 image analysis parameters (.mat) and
results (.csv) for the two Z' plates a and b as imaged and analysed at (*Data_UZH*) and EPFL
(*Data_EPFL*).
- *3-Screen* contains layouts (.csv), images (.tif), Plaque2.0 image analysis parameters (.mat) and
results (.csv) for the 16 screening plates (4 biological replicas 1 - 4 each consisting of a set of 4
plates A - D) as imaged and analysed at UZH (*Data_UZH*) and EPFL (*Data_EPFL*). Moreover,
Analysis contains the Plaque2.0 batch processing (*AntiVir_batchprocessing.m*) and hit filtering
pipeline (*AntiVir_hitfiltering.R*) used by UZH.
- *4-Toxicity* contains the Presto-blue raw results (.csv) for toxicity in absence of infection.
253
254 **Technical Validation:**
255
Assay stability
The wet-lab screening pipeline was optimized regarding liquid handling, cell seeding, virus
inoculum, positive and negative control, time line, imaging and image analysis to ensure high
assay stability and reproducibility. Furthermore, all compounds, especially media and
supplements, the BSA for tubing saturation, PFA- and Hoechst-supplemented fixative were
prepared as large batch from a single LOT and stored as single-use aliquots. Assay stability with
respect to cell and infection phenotype was tested following the established wet-lab, imaging and
image analysis pipeline prior to every experiment on pre plates. Since the solvent control had
already been spotted in 10 μl PBS, no further PBS was added prior to cell seeding. If infection

scores were found to be low due to limited stability of viral stocks, the virus stock dilution in the
subsequent experiment was decreased.
267
Independent analysis
Imaging, image analysis and screening data processing was performed by two independent
research teams from two independent institutions at UZH and EPFL. Both dry-lab pipelines
confirmed the high assay quality (Table 1). As summarized in Figure 6 left panel, both scores are
strongly correlated with R^2 between 0.6870 - 0.9870. Both approaches yielded identical top scored
compounds (Figure 6 right panel), of which Prestw-1764, Nelfinavir mesylate, was the top hit.
274
Assay quality determination: Z'-score
The assay's effect size was assessed following the established wet-lab, imaging and image
analysis pipeline for two independently performed Z' plates (Table 1 and Figure 2). 3σ Z'-scores
of *numberOfInfectedNuclei*, *infectionIndex* and *numberOfPlaques* were in the range of 0.30 to
0.57 and thus good to excellent. *totalVirusIntensity* (Z' scores between -0.07 to 0.08) are not
suitable to identify HAdV infection inhibitors, while *numberOfNuclei* (Z' scores between -1.11 to
-8.10) is not relevant either. Additionally, the Z'-scores were determined for each of the 16
screening plates (Table 2 and Figure 3). 3σ Z'-scores of *numberOfInfectedNuclei*, *infectionIndex*
and *numberOfPlaques* were again good to excellent (0.27 to 0.57).
284
285 <u>**Usage Notes:**</u>
286
287 **Infection scoring using the Plaque2.0 GUI**
288 A detailed manual for Plaque2.0-based infection phenotype scoring is available at
289 http://plaque2.github.io/. No MATLAB license is necessary.
290
291 Five parameters were quantified for each well: the number of nuclei (*numberOfNuclei*), number
292 of infected nuclei (*numberOfInfectedNuclei*), the ratio between number of infected and total nuclei
293 (*infectionIndex*), the number of multi-round infection foci termed plaques (*numberOfPlaques*) and
294 the extend of viral GFP reporter expression as integrated GFP intensity *totalVirusIntensity*).
295
To analyse the HAdV screening data by Plaque2.0, the following setting should be used:
<u>Input/Output:</u>
Processing Folder: Path to folder containing the images (e.g. *ScreenA /3-*
Screen/Data_EPFL/Screen/ BSF018292_1A).
filename pattern Data_UZH: *.* (?<wellName>[A-Z][0-9]*)_(?<channelName>w[0-9]*).TIF*
filename pattern Data_EPFL: *.* (?<wellName>[A-Z] - [0-9]+)[(]fld 1 wv (?<channel>[A-Z]{4}) .*.tif*
Plate name: Name of the plate to be analysed (e.g. *BSF018292_1A*)
Result Output Folder: Path to the results folder in the respective Data folder (e.g. *ScreenA/3-*
Screen/Data_EPFL/Results).
<u>Stitch:</u> Stitching of the images is not necessary, since every 384-well is imaged in a single site.
Do not activate the tab.
<u>Mask:</u>

Custom Mask File: Path to the manually defined mask file (e.g. *ScreenA/3-*
Screen/Data_UZH/Parameters).
<u>Monolayer:</u>
Channel: Nuclei were imaged in channel 1.
<u>Plaque:</u>
Channel: Viral GFP reporter signal was imaged in channel 2.
314
315   **<u>Code Availability:</u>**
316
Plaque2.0 batch image analysis for infection scoring
The MATLAB (version R2016b, The MathWorks, Natick, USA) script *AntiVir_batchprocessing.m*
used by UZH for image analysis is provided at IDR #pending under *ScreenA/3-Screen/Analysis*.
It is based on the Plaque2.0 software available on GitHub: https://github.com/plaque2/matlab
under GPLv3 open source license.
To batch analyse the HAdV screening data by Plaque2.0, fork or download the Plaque2.0 AntiVir
code   from   GitHub: https://github.com/plaque2/matlab/tree/antivir.   Place   the
AntiVir_batchprocessing.m file from *ScreenA/3-Screen/Analysis* into the *Plaque2/matlab* folder
and follow the instructions in *AntiVir_batchprocessing.m*. A MATLAB license is required.
326
327   **Hit filtering using R**
328   The R[31] (version 3.6.1 (2019-07-05)) script *AntiVir_hitfiltering* used by UZH for data processing
329   and hit filtering is provided at IDR #pending under *ScreenA/3-Screen/Analysis*.

Acknowledgements, Author Contributions & Competing Interests

Author Contributions:
UFG, VA, AY conceived the screening idea. FG designed the experiments, and with UFG coordinated the project. FK prepared the PCL-spotted plates. FG and RW performed the experiments. FG and FK acquired the data. FG and VA analysed the imaging data. LM and FG processed the data. GT organized and supervised the screening project at the EPFL-BSF. FG, FK and UFG wrote manuscript, with input from all the co-authors.

 Acknowledgements:
We thank the entire Greber lab for fruitful discussions and critical assessment of the data.

Competing Interests:
The authors declare no conflict of interest.

Funding:
The work was supported by the Swiss National Science Foundation to UFG (Grant numbers 316030_170799 / 1 and 31003A_179256 / 1), and to GT (National Research Program "NCCR chemical biology").

Abbreviations:
BSA, bovine serum albumin;
BSF, Biomolecular Screening Facility;
CMV, Cytomegalovirus;
DFT, 3′-Deoxy-3′-fluorothymidine;
DMEM, Dulbecco Modified Eagle medium;
DMSO, Dimethyl sulfoxide;
dpi, days post infection;
EPFL, Ecole Polytechnique Fédérale de Lausanne;
FBS, fetal bovine serum;
GFP, green fluorescent protein;
HAdV, Human adenovirus;
hpi, hours post infection;
HTS, high-throughput screening;
IDR, The Image Data Resource;
LIMS, Laboratory Information Management System;
LUT, Look up table;
PCL, Prestwick Chemical Library;
PFA, para-formaldehyde;
pfu, plaque forming units;
RT, room temperature;
SE, standard error;
SD, standard deviation;
UZH, University of Zurich

Figures & Tables

A

Assay Development
Optimization of   - liquid handling
- cell seeding   - virus inoculation
- positive and negative controls
- timing   - imaging
- Plaque2.0 analysis

Assay Stability and Quality Testing
- preZ' plate
- Z' plates and Z'-scores

Definition of Post Processing Pipeline

AntiVir HAdV PCL Screening
- pre plate
- screening plates

UZH   **EPFL**   **EPFL**

Imaging   **PCL Toxicity Testing**   **Imaging**
                 in absence of infection
                 using Presto-blue Assay

Infection Phenotype Scoring   **Infection Phenotype Scoring**
using Plaque2.0   using Plaque2.0

Data Processing   **Data Processing**
for hit filtering   for hit filtering

Hit Comparison

Identification of PCL Best Hit

B

Pre-spotting of Prestwick
Chemical Library

A549 seeding on
pre-spotted plates

Inoculation with
HAdV-C2

Fixation and
staining

Automated
epifluorescence
imaging

Automated
image analysis

day   -n   0   1   4   +n   +n

C **- Prestwick Chemical Library +**

Nuclei GFP

D 0.0125% DMSO   1.25 µM Nelfinavir   1.25 µM DFT

Nuclei GFP

Fig. 1: The HAdV screening procedure. A Following assay development, stability and quality testing, the HAdV screening of the PCL was performed. Imaging, image analysis and data processing was performed independently at UZH and EPFL, before ranked hits were compared. **B** Schematic overview of the wet-lab pipeline. PCL compounds and DFT positive control in DMSO as well as DMSO alone as negative control were pre-spotted onto 384-well imaging plates by Echo acoustic liquid handling at 10 nl corresponding to a final concentration of 1.25 µM in 80 µl assay volume/ well and stored at -20°C. Compound-blinded plates were thawed and 4,000 A549 cells/ wells seeded. The following day, the cells were inoculated with HAdV-C2-dE3B at $1.77*10^5$ genome equivalents / well. Allowing for multiple viral replication rounds, the cells were PFA-fixed at 72 hpi and the nuclei stained using Hoechst. The infection phenotype was imaged using an epifluorescence HT microscope and score using Plaque2.0. The data of the four technical replicates was further processed in R or through EPFL-BSF LIMS. **C** Exemplary epifluorescence microscopy 384-well images stitched to a screening plate overview of consistent of 16 replicates of negative (two most left columns) and positive control (two most right columns) and 320 blinded PCL compounds (centre 20 columns). Hoechst-stained nuclei are shown in blue, viral GFP in green. **D** Representative 384-well epifluorescence microscopy images of the DMSO negative control (most left), the DFT positive control (most right) and the top hit Nelfinavir mesylate (centre). Hoechst-stained nuclei are shown in blue, viral GFP in green. Scale bar is 5 mm.

393
394   **Fig. 2. HAdV data structure** provided as project #pending at IDR.

395
396 **Fig. 3: Infection score density of positive and negative controls across Z' plates.** Distribution of **A**
397 *numberOfNuclei,* **B** *numberOfInfectedNuclei*, **C** *infectionIndex*, **D** *numberOfPlaques* and **E**
398 *totalVirusIntensity* in negative control (0.0125% DMSO) compared to positive control-treated (1.25 µM DFT)
399 samples of the two Z' plates. Dark green and dark grey indicates Z' plate a, light green and grey show Z'
400 plate b. Dashed vertical lines mark mean of 192 technical replicas.

401
Fig. 4: Infection score density of positive and negative controls across screening replicates.
Distribution of **A** *numberOfNuclei,* **B** *numberOfInfectedNuclei*, **C** *infectionIndex*, **D** *numberOfPlaques* and
E *totalVirusIntensity* in negative control (0.0125% DMSO in grey) compared to positive control-treated (1.25

405 µM DFT in green) samples of the screening sets. Each set 1 to 4 indicated by colour shading is comprised
406 of four plates containing 32 technical replicas per control.
407

408
409 **Fig. 5: PCL Toxicity in absence of infection.** Of the 1,278 PCL compounds tested, 126 PCL compounds
410 (shown in red, listed in Table 3) were found to be toxic.

Fig. 6: Correlation between PCL scores from independent dry-lab pipelines. Imaging, image analysis and data processing was performed independently at UZH and EPFL. PCL-treated infection phenotypes from 4 biological replicates were averaged and normalized against the DMSO solvent control. Obtained scores for **A** *numberOfNuclei*, **B** *numberOfInfectedNuclei*, **C** *infectionIndex*, **D** *numberOfPlaques* and **E** *totalVirusIntensity* of the 1,278 tested PCL compounds from UZH and EPFL are correlated via linear regression (green line), R^2 was calculated using GraphPad Prism 8.2.1. Highest scoring compounds are shown on the right and *PCL_ID* of non-toxic compounds indicated. Red dots indicate toxicity in the absence of infection, non-toxic compounds are shown in green.

420 **Tab. 1: Z'-scores of Z plates.**
421 The quality of the screening platform was assessed prior to screening the PCL by two independent Z' plates
422 containing 192 technical replicas of both positive control- (1.25 µM DFT) and negative solvent only control-
423 treated (0.0125% DMSO). Z'-scores for the five Plaque2.0 read-outs [29] obtained by independent analysis
424 at UZH and EPFL were calculated according to Equation 1 for 3 and 2σ.

| | | UZH | | | | | EPFL | | | | |
| | | 3 sigma | | | | | 3 sigma | | | | |
Barcode	Plate	numberOf Nuclei	numberOf Infected Nuclei	infection Index	numberOf Plaques	totalVirus Intensity	numberOf Nuclei	numberOf Infected Nuclei	infection Index	numberOf Plaques	totalVirus Intensity
BSF018104	Za	-1.11	0.50	0.57	0.50	0.07	-1.20	0.36	0.47	0.52	0.08
BSF018105	Zb	-8.10	0.30	0.45	0.39	-0.07	-1.23	0.27	0.32	0.44	-0.04
Mean		-4.61	0.40	0.51	0.44	0.00	-1.22	0.32	0.40	0.48	0.02
		UZH					EPFL				
		2 sigma					2 sigma				
Barcode	Plate	numberOf Nuclei	numberOf Infected Nuclei	infection Index	numberOf Plaques	totalVirus Intensity	numberOf Nuclei	numberOf Infected Nuclei	infection Index	numberOf Plaques	totalVirus Intensity
BSF018104	Za	-0.41	0.67	0.71	0.67	0.07	-0.47	0.58	0.64	0.68	0.38
BSF018105	Zb	-5.07	0.53	0.63	0.59	-0.07	-0.49	0.52	0.55	0.63	0.31
Mean		-2.74	0.60	0.67	0.63	0.00	-0.48	0.55	0.60	0.66	0.35

426 **Tab. 2: Z'-scores of screening plates.**
427 The quality of the screening data was quantified for each screening plate based on the 32 technical replicas
428 of both positive control- (1.25 µM DFT) and negative solvent only control-treated (0.0125% DMSO) included
429 in each plate. Z'-scores for the five Plaque2.0 read-outs [29] obtained by independent analysis at UZH and
430 EPFL were calculated according to Equation (1) for 3σ.

Barcode	Plate	UZH 3 sigma					EPFL 3 sigma				
		numberOf Nuclei	numberOf Infected Nuclei	infection Index	numberOf Plaques	totalVirus Intensity	numberOf Nuclei	numberOf Infected Nuclei	infection Index	numberOf Plaques	totalVirus Intensity
BSF018292	1A	-0.13	0.58	0.58	0.59	0.35	-0.14	0.51	0.49	0.58	0.31
BSF018293	1B	-0.88	0.58	0.65	0.55	0.34	-0.35	0.51	0.52	0.51	0.35
BSF018294	1C	-1.01	0.62	0.62	0.63	0.33	-0.74	0.52	0.50	0.66	0.32
BSF018295	1D	-0.34	0.56	0.54	0.45	0.16	-0.21	0.43	0.38	0.46	0.19
BSF018296	2A	-1.35	0.64	0.67	0.55	0.30	-0.20	0.57	0.55	0.55	0.28
BSF018297	2B	-3.63	0.56	0.52	0.45	0.14	-1.20	0.45	0.39	0.40	0.12
BSF018298	2C	-1.81	0.60	0.58	0.49	0.24	-0.38	0.52	0.42	0.52	0.19
BSF018299	2D	-1.94	0.57	0.57	0.57	0.24	-0.22	0.50	0.43	0.63	0.20
BSF018300	3A	-1.74	0.64	0.66	0.56	0.36	-0.54	0.55	0.51	0.59	0.34
BSF018301	3B	-1.13	0.60	0.68	0.58	0.40	-0.09	0.52	0.57	0.59	0.40
BSF018302	3C	-4.02	0.66	0.68	0.48	0.42	-1.07	0.63	0.60	0.50	0.41
BSF018303	3D	-2.36	0.55	0.63	0.51	0.36	-0.10	0.58	0.54	0.52	0.35
BSF018304	4A	-0.68	0.70	0.74	0.42	0.37	-0.29	0.56	0.58	0.48	0.36
BSF018305	4B	-0.17	0.71	0.74	0.51	0.50	-0.50	0.63	0.67	0.50	0.50
BSF018306	4C	-0.44	0.61	0.62	0.50	0.28	-0.28	0.50	0.48	0.47	0.26
BSF018307	4D	-0.77	0.63	0.70	0.42	0.41	-0.22	0.54	0.56	0.36	0.39
Mean		-1.40	0.61	0.64	0.52	0.32	-0.41	0.53	0.51	0.52	0.31

Tab. 3: PCL compounds excluded due to toxicity in absence of infection. Presto-blue raw data is available at *ScreenA/4-Toxicity*.

PCL_ID	Compound	Score	ScoreSD	Toxic	PCL_ID	Compound	Score	ScoreSD	Toxic
Prestw-100	Nocodazole	0.75	0.02	yes	Prestw-347	Thioguanosine	0.18	0.03	yes
Prestw-1020	Rimexolone	0.39	0.08	yes	Prestw-353	Moclobemide	0.14	0.02	yes
Prestw-1040	Pyrvinium pamoate	0.74	0.03	yes	Prestw-362	Betamethasone	0.60	0.03	yes
Prestw-1044	Prednicarbate	0.54	0.00	yes	Prestw-363	Colchicine	0.91	0.00	yes
Prestw-1104	Clonixin Lysinate	0.22	0.05	yes	Prestw-373	Amethopterin (R,S)	0.20	0.01	yes
Prestw-1110	Parbendazole	0.40	0.02	yes	Prestw-377	Nafronyl oxalate	0.17	0.03	yes
Prestw-1119	Clocortolone pivalate	0.34	0.04	yes	Prestw-385	Mitoxantrone dihydrochloride	0.99	0.00	yes
Prestw-1134	Cytarabine	0.91	0.00	yes	Prestw-388	Dequalinium dichloride	0.46	0.00	yes
Prestw-1159	Sibutramine HCl	0.74	0.06	yes	Prestw-396	Etoposide	0.55	0.02	yes
Prestw-118	Nalbuphine hydrochloride	0.87	0.00	yes	Prestw-4	Metformin hydrochloride	0.12	0.00	yes
Prestw-1180	Docetaxel	0.86	0.03	yes	Prestw-409	Amiodarone hydrochloride	0.14	0.02	yes
Prestw-1196	Topotecan	0.62	0.04	yes	Prestw-419	Bisacodyl	0.15	0.01	yes
Prestw-1198	Tranilast	0.50	0.02	yes	Prestw-430	Cisapride	0.12	0.02	yes
Prestw-12	Benzonatate	0.85	0.06	yes	Prestw-432	Corticosterone	0.37	0.01	yes
Prestw-120	Triamcinolone	0.60	0.03	yes	Prestw-436	Digitoxigenin	0.99	0.00	yes
Prestw-1266	Gemcitabine	0.85	0.01	yes	Prestw-437	Digoxin	0.98	0.00	yes
Prestw-130	Dexamethasone acetate	0.53	0.02	yes	Prestw-438	Doxorubicin hydrochloride	0.96	0.00	yes
Prestw-1362	Vorinostat	0.19	0.01	yes	Prestw-439	Carbimazole	0.13	0.00	yes
Prestw-1408	Etoricoxib	0.20	0.03	yes	Prestw-447	Hydrocortisone base	0.55	0.02	yes
Prestw-1415	Floxuridine	0.15	0.04	yes	Prestw-448	Hydroxytacrine maleate (R,S)	0.11	0.00	yes
Prestw-1417	Fluconazole	0.42	0.01	yes	Prestw-456	Meclocycline sulfosalicylate	0.11	0.01	yes
Prestw-1419	Fluocinolone acetonide	0.60	0.03	yes	Prestw-457	Meclozine dihydrochloride	0.11	0.02	yes
Prestw-143	Chlorhexidine	0.19	0.02	yes	Prestw-458	Melatonin	0.13	0.01	yes
Prestw-1435	Melengestrol acetate	0.34	0.05	yes	Prestw-476	Primaquine diphosphate	0.16	0.01	yes
Prestw-1443	Misoprostol	0.54	0.05	yes	Prestw-478	Felodipine	0.16	0.01	yes
Prestw-1476	Amcinonide	0.62	0.02	yes	Prestw-48	Dicyclomine hydrochloride	0.13	0.03	yes
Prestw-1484	Cladribine	0.72	0.03	yes	Prestw-481	Serotonin hydrochloride	0.13	0.01	yes
Prestw-1486	Cortisol acetate	0.38	0.08	yes	Prestw-487	Daunorubicin hydrochloride	1.00	0.00	yes
Prestw-1509	Deflazacort	0.56	0.01	yes	Prestw-497	Vancomycin hydrochloride	0.12	0.02	yes
Prestw-155	Paclitaxel	0.88	0.02	yes	Prestw-498	Artemisinin	0.12	0.00	yes
Prestw-1704	Desonide	0.48	0.06	yes	Prestw-513	Norcyclobenzaprine	0.13	0.00	yes
Prestw-1712	Flumethasone pivalate	0.60	0.02	yes	Prestw-514	Pyrazinamide	0.11	0.01	yes
Prestw-1715	Algestone acetophenide	0.11	0.00	yes	Prestw-518	Budesonide	0.61	0.00	yes
Prestw-1722	Azatadine maleate	0.28	0.13	yes	Prestw-522	Thiostrepton	0.15	0.01	yes
Prestw-1740	Besifloxacin hydrochloride	0.36	0.09	yes	Prestw-529	Mesoridazine besylate	0.13	0.00	yes
Prestw-1741	Loteprednol etabonate	0.46	0.05	yes	Prestw-530	Trolox	0.16	0.00	yes
Prestw-1752	Epirubicin hydrochloride	0.90	0.02	yes	Prestw-553	Pentamidine isethionate	0.64	0.01	yes
Prestw-176	Iproniazide phosphate	0.21	0.11	yes	Prestw-572	Mometasone furoate	0.61	0.00	yes
Prestw-1761	Rizatriptan benzoate	0.43	0.00	yes	Prestw-6	Isoflupredone acetate	0.63	0.01	yes
Prestw-1801	Ciclesonide	0.55	0.03	yes	Prestw-619	Diflorasone Diacetate	0.61	0.00	yes
Prestw-1802	Darunavir	0.43	0.06	yes	Prestw-641	Sulmazole	0.44	0.01	yes
Prestw-192	Thalidomide	0.34	0.09	yes	Prestw-643	Flunisolide	0.64	0.01	yes
Prestw-20	Minoxidil	0.60	0.01	yes	Prestw-645	Flurandrenolide	0.64	0.01	yes
Prestw-200	Camptothecine (S,+)	0.69	0.02	yes	Prestw-652	Picrotoxinin	0.16	0.07	yes
Prestw-216	Tiapride hydrochloride	0.39	0.02	yes	Prestw-655	Halcinonide	0.60	0.01	yes
Prestw-217	Mebendazole	0.36	0.02	yes	Prestw-656	Lanatoside C	0.98	0.00	yes
Prestw-222	Antimycin A	0.53	0.08	yes	Prestw-718	Fluorometholone	0.55	0.03	yes
Prestw-223	Xylometazoline hydrochloride	0.22	0.09	yes	Prestw-72	Imipramine hydrochloride	0.55	0.00	yes
Prestw-226	Griseofulvin	0.37	0.07	yes	Prestw-734	Flumethasone	0.58	0.04	yes
Prestw-244	Glutethimide, para-amino	0.59	0.00	yes	Prestw-743	Medrysone	0.34	0.01	yes
Prestw-260	Praziquantel	0.57	0.05	yes	Prestw-771	Alclometasone dipropionate	0.55	0.02	yes
Prestw-268	Vinpocetine	0.41	0.01	yes	Prestw-774	Fluocinonide	0.55	0.03	yes
Prestw-271	Vincamine	0.25	0.00	yes	Prestw-777	Alexidine dihydrochloride	0.90	0.00	yes
Prestw-272	Indomethacin	0.41	0.00	yes	Prestw-781	Clobetasol propionate	0.63	0.00	yes
Prestw-273	Cortisone	0.57	0.01	yes	Prestw-782	Podophyllotoxin	0.89	0.00	yes
Prestw-274	Prednisolone	0.61	0.00	yes	Prestw-790	Cycloheximide	0.76	0.01	yes
Prestw-275	Fenofibrate	0.15	0.01	yes	Prestw-855	Beclomethasone dipropionate	0.52	0.02	yes
Prestw-279	Methylprednisolone, 6-alpha	0.61	0.00	yes	Prestw-883	Digoxigenin	0.94	0.00	yes
Prestw-299	Mifepristone	0.12	0.01	yes	Prestw-97	Disulfiram	0.81	0.04	yes
Prestw-318	Quinacrine dihydrochloride dihydrate	0.11	0.03	yes	Prestw-975	Naftopidil dihydrochloride	0.59	0.01	yes
Prestw-337	Procainamide hydrochloride	0.14	0.01	yes	Prestw-986	Proscillaridin A	0.98	0.00	yes
Prestw-339	Guanfacine hydrochloride	0.19	0.01	yes	Prestw-997	Fluticasone propionate	0.63	0.02	yes
Prestw-34	Triamterene	0.14	0.00	yes	Prestw-998	Zuclopenthixol hydrochloride	0.13	0.01	yes

432
433
434

Tab. 4: Summary of screening controls and top hits. Compounds were scored toxic, if they showed significant toxicity in either of the assays. Mean correspond to means over four biological replicates of PCL compound and 16 biological replicates each carrying 16 technical replicates for each control. Neg. ctr. refers to negative control (DMSO), pos. ctr. to positive control (DFT). Normalized indicates each compound's mean read-outs relative to the mean of the positive control. Toxicity was accessed by presto-blue assay of 72 h treatment of non-infected A549 cells as well as by the nuclei Z'-score in the screen. Hits were selected for low toxicity and high inhibitory effect compared to solvent control.

PCL_ID	compound Identifier	Compound	Group	Toxic	Analysis	Mean read-outs					Normalized mean read-outs					Hit				
						Nuclei	Infected nuclei	Infection index	Plaques	Virus intensity [AU]	Nuclei	Infected nuclei	Infection index	Plaques	Virus intensity [AU]	Nuclei	Infected nuclei	Infection index	Plaques	Virus intensity [AU]
DMSO	DMSO	DMSO	neg. ctr.	no	UZH	36'399	27'911	0.77	27.32	9.79E+09	1.00	1.00	1.00	1.00	1.00	-	-	-	-	-
					EPFL	29'749	15'156	0.51	21.11	5.02E+09	1.00	1.00	1.00	1.00	1.00	-	-	-	-	-
DFT	DFT	DFT	pos. ctr.	no	UZH	30'204	3'595	0.12	0.12	2.90E+09	0.83	0.13	0.15	0.00	0.30	-	-	-	-	-
					EPFL	20'745	1'776	0.09	0.03	1.62E+09	0.70	0.12	0.17	0.00	0.32	-	-	-	-	-
Prestw-1764	497	Nelfinavir mesylate	PCL	no	UZH	30'908	5'479	0.18	0.75	2.98E+09	0.85	0.20	0.23	0.03	0.30	no	yes	yes	yes	yes
					EPFL	21'895	2'988	0.14	0.00	1.68E+09	0.74	0.20	0.27	0.00	0.33	no	yes	yes	yes	yes
Prestw-388	763	Dequalinium dichloride	PCL	yes	UZH	28'763	13'751	0.48	14.00	3.62E+09	0.79	0.49	0.62	0.51	0.37	no	yes	yes	yes	yes
					EPFL	21'247	4'988	0.23	9.25	1.92E+09	0.71	0.33	0.46	0.44	0.38	yes	yes	yes	yes	yes
Prestw-1717	452	Aminacrine	PCL	no	UZH	31'723	14'689	0.47	20.50	4.88E+09	0.87	0.53	0.62	0.75	0.50	no	no	yes	no	yes
					EPFL	42'191	9'057	0.22	14.25	2.54E+09	1.42	0.60	0.42	0.67	0.51	no	no	yes	no	yes
Prestw-925	1214	Thonzonium bromide	PCL	no	UZH	30'644	15'057	0.49	14.75	4.77E+09	0.84	0.54	0.63	0.54	0.49	no	yes	yes	no	yes
					EPFL	24'093	6'849	0.28	11.75	2.51E+09	0.81	0.45	0.56	0.56	0.50	no	yes	no	no	no

443 **Suppl. Tab. 1: PCL compounds tested in the screening procedure.** PCL catalogue IDs (*PCL_ID*),
444 compound names (*CompoundName*) and spottability flag (*SpottabilityFlag*) for the 1,280 compounds of the
445 PCL. Two compounds, namely Prestw-354 (Clopamide) and Prestw-410 (Amphotericine B) could not be
446 successfully transferred via acoustic dispensing e.g. due to precipitation and were therefore not included in
447 the screening.
448
449 **Suppl. Tab. 2: UZH HAdV screening infection scores.**
450
451 **Suppl. Tab. 3: Scored UZH PCL-treated HAdV infection phenotype.**
452
453 **Suppl. Tab. 4: EPFL HAdV screening infection scores.**
454
455 **Suppl. Tab. 5: Scored EPFL PCL-treated HAdV infection phenotype.**

References:

1. The Image Data Resource (IDR). *The Image Data Resource (IDR)* at <https://idr.openmicroscopy.org/>

2. Krilov, L. R. Adenovirus infections in the immunocompromised host. *Pediatr. Infect. Dis. J.* **24,** 555–556 (2005).

3. Greber, U. F., Arnberg, N., Wadell, G., Benkő, M. & Kremer, E. J. Adenoviruses - from pathogens to therapeutics: a report on the 10th International Adenovirus Meeting. *Cell Microbiol.* **15,** 16–23 (2013).

4. Tunkel, A. R., Baron, E. L., Buch, K. A., Marty, F. M. & Martinez-Lage, M. Case 31-2019: A 45-Year-Old Woman with Headache and Somnolence. *N. Engl. J. Med.* **381,** 1459–1470 (2019).

5. Gray, G. C. *et al.* Genotype prevalence and risk factors for severe clinical adenovirus infection, United States 2004-2006. *Clin. Infect. Dis.* **45,** 1120–1131 (2007).

6. Metzgar, D. *et al.* Abrupt emergence of diverse species B adenoviruses at US military recruit training centers. *J. Infect. Dis.* **196,** 1465–1473 (2007).

7. Lynch, J. P. & Kajon, A. E. Adenovirus: epidemiology, global spread of novel serotypes, and advances in treatment and prevention. *Semin Respir Crit Care Med* **37,** 586–602 (2016).

8. Haque, E., Banik, U., Monowar, T., Anthony, L. & Adhikary, A. K. Worldwide increased prevalence of human adenovirus type 3 (HAdV-3) respiratory infections is well correlated with heterogeneous hypervariable regions (HVRs) of hexon. *PLoS One* **13,** e0194516 (2018).

9. Ginn, S. L., Amaya, A. K., Alexander, I. E., Edelstein, M. & Abedi, M. R. Gene therapy clinical trials worldwide to 2017: An update. *J Gene Med* **20,** e3015 (2018).

10. Jiang, H. *et al.* Oncolytic adenovirus research evolution: from cell-cycle checkpoints to immune checkpoints. *Curr Opin Virol* **13,** 33–39 (2015).

11. Lawler, S. E., Speranza, M.-C., Cho, C.-F. & Chiocca, E. A. Oncolytic viruses in cancer treatment: A review. *JAMA Oncol.* **3,** 841–849 (2017).

12. Mennechet, F. J. D. *et al.* A review of 65 years of human adenovirus seroprevalence. *Expert Rev. Vaccines* **18,** 597–613 (2019).

13. Lion, T. Adenovirus persistence, reactivation, and clinical management. *FEBS Lett.* (2019). doi:10.1002/1873-3468.13576

14. Ismail, A. M. *et al.* Genomic foundations of evolution and ocular pathogenesis in human adenovirus species D. *FEBS Lett.* **593,** 3583–3608 (2019).

15. Harrach, B., Tarján, Z. L. & Benkő, M. Adenoviruses across the animal kingdom: a walk in the zoo. *FEBS Lett.* (2019). doi:10.1002/1873-3468.13687

16. Reddy, V. S., Natchiar, S. K., Stewart, P. L. & Nemerow, G. R. Crystal structure of human adenovirus at 3.5 A resolution. *Science* **329,** 1071–1075 (2010).

17. Benevento, M. *et al.* Adenovirus composition, proteolysis, and disassembly studied by in-depth qualitative and quantitative proteomics. *J. Biol. Chem.* **289,** 11421–11430 (2014).

18. Greber, U. F. & Flatt, J. W. Adenovirus entry: from infection to immunity. *Annu. Rev. Virol.* **6,** 177–197 (2019).

19. Bauer, M. *et al.* The e3 ubiquitin ligase mind bomb 1 controls adenovirus genome release at the nuclear pore complex. *Cell Rep.* **29,** 3785–3795.e8 (2019).

20. Prasad, V. *et al.* The UPR sensor IRE1α and the adenovirus E3-19Kglycoprotein sustain persistent and lytic infections. *Nat. Commun.* (2020).

21. Yakimovich, A. *et al.* Cell-free transmission of human adenovirus by passive mass transfer in cell culture simulated in a computer model. *J. Virol.* **86,** 10123–10137 (2012).

22. Tollefson, A. E. *et al.* The adenovirus death protein (E3-11.6K) is required at very late stages of infection for efficient cell lysis and release of adenovirus from infected cells. *J. Virol.* **70,** 2296–2306 (1996).

23. Doronin, K. *et al.* Overexpression of the ADP (E3-11.6K) protein increases cell lysis and spread of adenovirus. *Virology* **305,** 378–387 (2003).

24. Lenaerts, L. & Naesens, L. Antiviral therapy for adenovirus infections. *Antiviral Res.* **71,** 172–180
(2006).

25. Wold, W. S. M., Tollefson, A. E., Ying, B., Spencer, J. F. & Toth, K. Drug development against
human adenoviruses and its advancement by Syrian hamster models. *FEMS Microbiol. Rev.* **43,**
380–388 (2019).

26. Wall, G. *et al.* Screening a Repurposing Library for Inhibitors of Multidrug-Resistant Candida auris
Identifies Ebselen as a Repositionable Candidate for Antifungal Drug Development. *Antimicrob.*
Agents Chemother. **62,** (2018).

27. Chauvin, C. *et al.* High-Throughput Drug Screening Identifies Pazopanib and Clofilium Tosylate as
Promising Treatments for Malignant Rhabdoid Tumors. *Cell Rep.* **21,** 1737–1745 (2017).

28. Prestwick Chemical publications. *Prestwick Chemical publications* at
<http://www.prestwickchemical.com/libraries-publications.html>

29. Yakimovich, A. *et al.* Plaque2.0-A High-Throughput Analysis Framework to Score Virus-Cell
Transmission and Clonal Cell Expansion. *PLoS One* **10,** e0138760 (2015).

30. Greber, U. F., Willetts, M., Webster, P. & Helenius, A. Stepwise dismantling of adenovirus 2 during
entry into cells. *Cell* **75,** 477–486 (1993).

31. R Core Team. *R:A Language and Environment for Statistical Computing.* (R Foundation for
Statistical Computing, 2018).

32. Berthold, M. R. *et al.* KNIME - the Konstanz information miner. *SIGKDD Explor. Newsl.* **11,** 26
(2009).

UZH   EPFL
3 sigma   3 sigma

Barcode	Plate	numberOf Nuclei	numberOf Infected Nuclei	infection Index	numberOf Plaques	totalVirus Intensity	numberOf Nuclei	numberOf Infected Nuclei	infection Index	numberOf Plaques	totalVirus Intensity
BSF018104	Za	-1.11	0.50	0.57	0.50	0.07	-1.20	0.36	0.47	0.52	0.08
BSF018105	Zb	-8.10	0.30	0.45	0.39	-0.07	-1.23	0.27	0.32	0.44	-0.04
Mean		-4.61	0.40	0.51	0.44	0.00	-1.22	0.32	0.40	0.48	0.02

UZH   EPFL
2 sigma   2 sigma

Barcode	Plate	numberOf Nuclei	numberOf Infected Nuclei	infection Index	numberOf Plaques	totalVirus Intensity	numberOf Nuclei	numberOf Infected Nuclei	infection Index	numberOf Plaques	totalVirus Intensity
BSF018104	Za	-0.41	0.67	0.71	0.67	0.07	-0.47	0.58	0.64	0.68	0.38
BSF018105	Zb	-5.07	0.53	0.63	0.59	-0.07	-0.49	0.52	0.55	0.63	0.31
Mean		-2.74	0.60	0.67	0.63	0.00	-0.48	0.55	0.60	0.66	0.35

Barcode	Plate Index	numberOf Infected Nuclei	numberOf Plaques	Nuclei totalVirus infection Index	numberOf Intensity	Infected numberOf Nuclei	Infected Nuclei numberOf Plaques	infection numberOf totalVirus	Nuclei Intensity	infection
BSF018292	1A	-0.13	0.58	0.58	0.59	0.35	-0.14	0.51	0.49	0.58	0.31
BSF018293	1B	-0.88	0.58	0.65	0.55	0.34	-0.35	0.51	0.52	0.51	0.35
BSF018294	1C	-1.01	0.62	0.62	0.63	0.33	-0.74	0.52	0.50	0.66	0.32
BSF018295	1D	-0.34	0.56	0.54	0.45	0.16	-0.21	0.43	0.38	0.46	0.19
BSF018296	2A	-1.35	0.64	0.67	0.55	0.30	-0.20	0.57	0.55	0.55	0.28
BSF018297	2B	-3.63	0.56	0.52	0.45	0.14	-1.20	0.45	0.39	0.40	0.12
BSF018298	2C	-1.81	0.60	0.58	0.49	0.24	-0.38	0.52	0.42	0.52	0.19
BSF018299	2D	-1.94	0.57	0.57	0.57	0.24	-0.22	0.50	0.43	0.63	0.20
BSF018300	3A	-1.74	0.64	0.66	0.56	0.36	-0.54	0.55	0.51	0.59	0.34
BSF018301	3B	-1.13	0.60	0.68	0.58	0.40	-0.09	0.52	0.57	0.59	0.40
BSF018302	3C	-4.02	0.66	0.68	0.48	0.42	-1.07	0.63	0.60	0.50	0.41
BSF018303	3D	-2.36	0.55	0.63	0.51	0.36	-0.10	0.58	0.54	0.52	0.35
BSF018304	4A	-0.68	0.70	0.74	0.42	0.37	-0.29	0.56	0.58	0.48	0.36
BSF018305	4B	-0.17	0.71	0.74	0.51	0.50	-0.50	0.63	0.67	0.50	0.50
BSF018306	4C	-0.44	0.61	0.62	0.50	0.28	-0.28	0.50	0.48	0.47	0.26
BSF018307	4D	-0.77	0.63	0.70	0.42	0.41	-0.22	0.54	0.56	0.36	0.39
Mean		-1.40	0.61	0.64	0.52	0.32	-0.41	0.53	0.51	0.52	0.31

PCL_ID	Compound	Score	ScoreSD	Toxic
Prestw-1	Azaguanine-8			no
Prestw-10	Sulfaguanidine			no
Prestw-100	Nocodazole	0.749439938	0.015000825	yes
Prestw-1000	Lymecycline			no
Prestw-1001	Alfadolone acetate			no
Prestw-1002	Alfaxalone			no
Prestw-1003	Azapropazone			no
Prestw-1004	Meptazinol hydrochloride			no
Prestw-1005	Apramycin			no
Prestw-1007	Fursultiamine Hydrochloride			no
Prestw-1008	Gabexate mesilate			no
Prestw-1009	Pivampicillin			no
Prestw-101	R(-) Apomorphine hydrochloride hemihydrate			no
Prestw-1011	Flucloxacillin sodium			no
Prestw-1012	Trapidil			no
Prestw-1013	Deptropine citrate			no
Prestw-1014	Sertraline			no
Prestw-1015	Ethamsylate			no
Prestw-1016	Moxonidine			no
Prestw-1017	Etilefrine hydrochloride			no
Prestw-1018	Alprostadil			no
Prestw-1019	Tribenoside			no
Prestw-102	Amoxapine			no
Prestw-1020	Rimexolone	0.392103742	0.075804134	yes
Prestw-1021	Isradipine			no
Prestw-1023	Isometheptene mucate			no
Prestw-1024	Nifurtimox			no
Prestw-1025	Letrozole			no
Prestw-1026	Arbutin			no
Prestw-1027	Tocainide hydrochloride			no
Prestw-1028	Benzathine benzylpenicillin			no
Prestw-1029	Risperidone			no
Prestw-103	Cyproheptadine hydrochloride			no
Prestw-1030	Torsemide			no

Prestw-1031	Halofantrine hydrochloride			no
Prestw-1032	Articaine hydrochloride			no
Prestw-1033	Nomegestrol acetate		no	
Prestw-1034	Pancuronium bromide		no	
Prestw-1035	Molindone hydrochloride			no
Prestw-1036	Alcuronium chloride		no	
Prestw-1037	Zalcitabine	no		
Prestw-1038	Methyldopate hydrochloride			no
Prestw-1039	Levocabastine hydrochloride			no
Prestw-104	Famotidine	no		
Prestw-1040	Pyrvinium pamoate	0.743404425	0.032474443	yes
Prestw-1041	Etomidate	no		
Prestw-1042	Tridihexethyl chloride		no	
Prestw-1043	Penbutolol sulfate		no	
Prestw-1044	Prednicarbate	0.537113537	0.00162552	yes
Prestw-1045	Sertaconazole nitrate		no	
Prestw-1046	Repaglinide	no		
Prestw-1047	Piretanide	no		
Prestw-1048	Piperacetazine		no	
Prestw-1049	Oxyphenbutazone		no	
Prestw-105	Danazol	no		
Prestw-1050	Quinethazone		no	
Prestw-1051	Moricizine hydrochloride			no
Prestw-1052	Iopanoic acid		no	
Prestw-1053	Pivmecillinam hydrochloride			no
Prestw-1054	Levopropoxyphene napsylate			no
Prestw-1055	Piperidolate hydrochloride			no
Prestw-1056	Trifluridine		no	
Prestw-1057	Oxprenolol hydrochloride			no
Prestw-1058	Ondansetron Hydrochloride			no

Prestw-1059	Propoxycaine hydrochloride		no
Prestw-106	Nicorandil	no	
Prestw-1060	Oxaprozin	no	
Prestw-1061	Phensuximide	no	
Prestw-1062	Ioxaglic acid	no	
Prestw-1063	Naftifine hydrochloride		no
Prestw-1064	Meprylcaine hydrochloride		no
Prestw-1065	Milrinone	no	
Prestw-1066	Methantheline bromide	no	
Prestw-1067	Ticarcillin sodium	no	
Prestw-1068	Thiethylperazine dimalate		no
Prestw-1069	Mesalamine	no	
Prestw-1071	Imidurea	no	
Prestw-1072	Lansoprazole	no	
Prestw-1073	Bethanechol chloride	no	
Prestw-1074	Cyproterone acetate	no	
Prestw-1075	(R)-Propranolol hydrochloride		no
Prestw-1076	Ciprofibrate	no	
Prestw-1078	Benzylpenicillin sodium		no
Prestw-108	Nomifensine maleate	no	
Prestw-1080	Methiazole	no	
Prestw-1081	(S)-propranolol hydrochloride		no
Prestw-1082	(-)-Eseroline fumarate salt		no
Prestw-1086	D-cycloserine	no	
Prestw-1088	(+,-)-Synephrine	no	
Prestw-1089	(S)-(-)-Cycloserine	no	
Prestw-109	Dizocilpine maleate	no	
Prestw-1090	Homosalate	no	
Prestw-1091	Spaglumic acid	no	
Prestw-1092	Ranolazine	no	
Prestw-1094	Sulfadoxine	no	

```
Prestw-1095 Cyclopentolate hydrochloride            no

Prestw-1096 Estriol                  no
Prestw-1097 (-)-Isoproterenol hydrochloride              no

Prestw-1099 Nialamide                no
Prestw-11   Meticrane                no
Prestw-110  Acenocoumarol                 no

Prestw-1101 Perindopril              no
Prestw-1102 Fexofenadine HCl             no

Prestw-1104 Clonixin Lysinate 0.219176883 0.047610971 yes

Prestw-1105 Verteporfin              no
Prestw-1106 Meropenem                no
Prestw-1107 Ramipril                 no
Prestw-1108 Mephenytoin              no
Prestw-1109 Rifabutin                no
Prestw-111  Naloxone hydrochloride              no

Prestw-1110 Parbendazole      0.398402496 0.018663349 yes

Prestw-1111 Mecamylamine hydrochloride              no

Prestw-1112 Procarbazine hydrochloride              no

Prestw-1113 Viomycin sulfate             no

Prestw-1114 Saquinavir mesylate              no

Prestw-1115 Ronidazole               no
Prestw-1116 Dorzolamide hydrochloride              no

Prestw-1117 Azaperone                no
Prestw-1118 Cefepime hydrochloride             no

Prestw-1119 Clocortolone pivalate   0.338538784 0.042248856 yes

Prestw-112  Metolazone               no
Prestw-1120 Nadifloxacin                 no

Prestw-1121 Carbadox                 no
Prestw-1125 Oxiconazole Nitrate              no

Prestw-1127 Acipimox                 no
Prestw-1129 Benazepril HCl              no

Prestw-113  Ciprofloxacin hydrochloride hydrate                no

Prestw-1130 Azelastine HCl              no

Prestw-1132 Celiprolol HCl              no
```

Prestw-1134	Cytarabine	0.905540871	0.00431943	yes
Prestw-1136	Doxofylline		no	
Prestw-1137	Esmolol hydrochloride		no	
Prestw-1139	Itraconazole		no	
Prestw-114	Ampicillin trihydrate		no	
Prestw-1140	Liranaftate		no	
Prestw-1144	Mirtazapine		no	
Prestw-1147	Modafinil		no	
Prestw-115	Haloperidol		no	
Prestw-1152	Nefazodone HCl		no	
Prestw-1154	Nilvadipine		no	
Prestw-1156	Oxcarbazepine		no	
Prestw-1157	Rifapentine		no	
Prestw-1158	Ropinirole HCl		no	
Prestw-1159	Sibutramine HCl	0.738620234	0.064731141	yes
Prestw-116	Naltrexone hydrochloride dihydrate		no	
Prestw-1161	Stanozolol		no	
Prestw-1162	Zonisamide		no	
Prestw-1165	Acitretin		no	
Prestw-1166	Rebamipide		no	
Prestw-1167	Diacerein		no	
Prestw-1169	Miglitol		no	
Prestw-117	Chlorpheniramine maleate		no	
Prestw-1170	Venlafaxine		no	
Prestw-1173	Irsogladine maleate		no	
Prestw-1174	Acarbose		no	
Prestw-1177	Carbidopa		no	
Prestw-1178	Aniracetam		no	
Prestw-1179	Busulfan		no	
Prestw-118	Nalbuphine hydrochloride	0.870454735	0.004500787	yes
Prestw-1180	Docetaxel	0.856343595	0.032520001	yes
Prestw-1181	Tibolone		no	
Prestw-1182	Tizanidine HCl		no	
Prestw-1183	Temozolomide		no	
Prestw-1184	Tioconazole		no	
Prestw-1187	Granisetron		no	
Prestw-1188	Ziprasidone Hydrochloride		no	
Prestw-1189	Montelukast		no	

Prestw-119	Picotamide monohydrate			no
Prestw-1190	Olmesartan		no	
Prestw-1192	Oxandrolone		no	
Prestw-1195	Toltrazuril		no	
Prestw-1196	Topotecan	0.61923066	0.043792234	yes
Prestw-1197	Toremifene		no	
Prestw-1198	Tranilast	0.502083509	0.024539976	yes
Prestw-1199	Tripelennamine hydrochloride			no
Prestw-12	Benzonatate	0.853668407	0.055294598	yes
Prestw-120	Triamcinolone	0.600492086	0.025733241	yes
Prestw-1202	4-aminosalicylic acid			no
Prestw-1203	5-fluorouracil		no	
Prestw-1206	Acetylcysteine		no	
Prestw-1207	Acetylsalicylic acid			no
Prestw-121	Bromocryptine mesylate			no
Prestw-1210	Alendronate sodium			no
Prestw-1211	Alfacalcidol		no	
Prestw-1213	Allopurinol		no	
Prestw-1217	Amisulpride		no	
Prestw-1219	Amlodipine		no	
Prestw-1222	Anastrozole		no	
Prestw-1223	Anethole-trithione			no
Prestw-1224	Anthralin		no	
Prestw-1228	Argatroban		no	
Prestw-1229	Aripiprazole		no	
Prestw-123	Dehydrocholic acid			no
Prestw-1231	Asenapine maleate		no	
Prestw-1232	Atorvastatin		no	
Prestw-1233	Auranofin		no	
Prestw-1234	Azithromycin		no	
Prestw-1236	Benztropine mesylate			no
Prestw-1239	Bicalutamide		no	
Prestw-1241	Bifonazole		no	

```
Prestw-1242 Erlotinib                    no
Prestw-1244 Bosentan                     no
Prestw-1246 Bromhexine hydrochloride              no

Prestw-1249 Famciclovir                 no
Prestw-125  Perphenazine                    no

Prestw-1251 Butalbital                 no
Prestw-1252 Butenafine Hydrochloride             no

Prestw-1253 Butylscopolammonium (n-) bromide            no

Prestw-1254 Fentiazac                  no
Prestw-1256 Caffeine                   no
Prestw-1257 Calcipotriene                 no

Prestw-1258 Candesartan                no
Prestw-1259 Canrenone                  no
Prestw-126  Mefloquine hydrochloride             no

Prestw-1261 Carprofen                  no
Prestw-1262 Carvedilol                 no
Prestw-1263 Cefdinir                   no
Prestw-1265 Gatifloxacin                  no

Prestw-1266 Gemcitabine 0.8506899   0.006780787 yes

Prestw-1267 Gestrinone                 no
Prestw-1268 Guaiacol                   no
Prestw-1269 Haloprogin                 no
Prestw-127  Isoconazole                no
Prestw-1270 Gefitinib                  no
Prestw-1271 Escitalopram                  no

Prestw-1274 Emedastine                 no
Prestw-1279 Stavudine                  no
Prestw-128  Spironolactone                no

Prestw-1280 Mepivacaine hydrochloride              no

Prestw-1282 Methenamine                no
Prestw-1283 Buspirone hydrochloride              no

Prestw-1284 Hydroxychloroquine sulfate             no

Prestw-1285 Ibandronate sodium                no

Prestw-1286 Ibudilast                  no
Prestw-1288 Idebenone                  no
Prestw-129  Pirenzepine dihydrochloride            no

Prestw-1290 Imatinib                   no
Prestw-1291 Imiquimod                  no
Prestw-1292 Ipsapirone                 no
```

```
Prestw-1294 Isosorbide mononitrate            no

Prestw-1295 Itopride              no
Prestw-1297 Lacidipine            no
Prestw-1298 Lamivudine           no
Prestw-13   Hydroflumethiazide               no

Prestw-130  Dexamethasone acetate   0.534246176 0.016683283 yes

Prestw-1303 Pefloxacine          no
Prestw-1307 Olopatadine hydrochloride            no

Prestw-1308 Phentermine hydrochloride            no

Prestw-131  Glipizide            no
Prestw-1310 Phenylbutazone              no

Prestw-1314 Pioglitazone               no

Prestw-1315 Potassium clavulanate           no

Prestw-1316 Pramipexole          no
Prestw-1317 Pranlukast           no
Prestw-1318 Pranoprofen          no
Prestw-1319 Pravastatin          no
Prestw-132  Loxapine succinate             no

Prestw-1321 Prothionamide             no

Prestw-1322 Pyridostigmine iodid            no

Prestw-1323 Quetiapine           no
Prestw-1325 Raclopride           no
Prestw-1328 Reboxetine mesylate            no

Prestw-133  Hydroxyzine dihydrochloride           no

Prestw-1331 Rimantadine Hydrochloride            no

Prestw-1334 Rivastigmine              no

Prestw-1336 Rofecoxib            no
Prestw-1337 Rosiglitazone Hydrochloride           no

Prestw-1338 Rufloxacin           no
Prestw-1339 Sarafloxacin              no

Prestw-134  Diltiazem hydrochloride            no

Prestw-1340 Secnidazole          no
Prestw-1341 Sertindole           no
Prestw-1342 Sildenafil           no
Prestw-1343 Sparfloxacin              no
```

```
Prestw-1345 Sulbactam                 no
Prestw-1346 Sumatriptan succinate            no

Prestw-1349 Tazobactam                no
Prestw-135  Methotrexate              no

Prestw-1350 Telmisartan               no
Prestw-1351 Tenatoprazole             no

Prestw-1352 Tulobuterol          no
Prestw-1353 Tylosin              no
Prestw-1356 Vardenafil           no
Prestw-1358 Vatalanib            no
Prestw-1359 Vecuronium bromide            no

Prestw-136  Astemizole               no
Prestw-1361 Viloxazine hydrochloride              no

Prestw-1362 Vorinostat  0.194967444 0.014823239 yes

Prestw-1363 Warfarin                 no
Prestw-1364 Zafirlukast              no
Prestw-1365 Zileuton                 no
Prestw-1367 Zopiclone                no
Prestw-1368 Zotepine                 no
Prestw-1369 Zaleplon                 no
Prestw-137  Clindamycin hydrochloride            no

Prestw-1371 Celecoxib                no
Prestw-1374 Chlormadinone acetate            no

Prestw-1376 Cilnidipine              no
Prestw-1378 Clarithromycin           no

Prestw-1379 Clinafloxacin            no

Prestw-138  Terfenadine              no
Prestw-1380 Clobutinol hydrochloride             no

Prestw-1383 Clofibrate               no
Prestw-1385 Closantel                no
Prestw-1387 Tetraethylenepentamine pentahydrochloride              no

Prestw-139  Cefotaxime sodium salt           no

Prestw-1390 Desloratadine            no

Prestw-1392 Dexfenfluramine hydrochloride             no

Prestw-1393 Dibenzepine hydrochloride            no

Prestw-1394 Diclazuril               no
Prestw-1398 Dopamine hydrochloride           no
```

```
Prestw-1399 Doxycycline hydrochloride                    no

Prestw-14   Sulfacetamide sodic hydrate                  no

Prestw-140  Tetracycline hydrochloride                   no

Prestw-1400 Efavirenz                no
Prestw-1401 Enoxacin                 no
Prestw-1403 Entacapone               no
Prestw-1405 Ethinylestradiol              no

Prestw-1407 Etofenamate              no
Prestw-1408 Etoricoxib  0.196053034 0.033370342 yes

Prestw-1409 Etretinate              no
Prestw-141  Verapamil hydrochloride                      no

Prestw-1410 Exemestane              no
Prestw-1414 Fleroxacin              no
Prestw-1415 Floxuridine 0.145511021 0.04436541  yes

Prestw-1416 Flubendazol             no
Prestw-1417 Fluconazole 0.42186662  0.00949002  yes

Prestw-1419 Fluocinolone acetonide 0.598570483 0.027322461 yes

Prestw-142  Dipyridamole                 no

Prestw-1420 Formestane              no
Prestw-1421 Formoterol fumarate                 no

Prestw-1423 Fosinopril             no
Prestw-1424 Fulvestrant            no
Prestw-1427 Levetiracetam               no

Prestw-1429 Linezolid              no
Prestw-143  Chlorhexidine     0.189885893 0.018482317 yes

Prestw-1430 Lofexidine             no
Prestw-1431 Loracarbef             no
Prestw-1432 Loratadine             no
Prestw-1433 Losartan               no
Prestw-1435 Melengestrol acetate    0.340764251 0.046314669 yes

Prestw-144  Loperamide hydrochloride                     no

Prestw-1441 Mevastatin             no
Prestw-1443 Misoprostol 0.541210393 0.046498969 yes

Prestw-1444 Mitotane               no
Prestw-1446 Moxifloxacin                no

Prestw-1447 Nalidixic acid sodium salt                   no
```

```
Prestw-1449 Nicotinamide                      no

Prestw-145  Chlortetracycline hydrochloride              no

Prestw-1452 Norgestimate                      no

Prestw-1454 Nylidrin                no
Prestw-1455 Olanzapine              no
Prestw-1456 Opipramol dihydrochloride                 no

Prestw-1459 Oxfendazol              no
Prestw-146  Tamoxifen citrate          no

Prestw-1460 Oxibendazol             no
Prestw-1463 Tomoxetine hydrochloride               no

Prestw-1464 Tosufloxacin hydrochloride             no

Prestw-1465 Tramadol hydrochloride             no

Prestw-1467 Troglitazone                  no

Prestw-1469 Mercaptopurine                 no

Prestw-147  Nicergoline             no
Prestw-1471 Amfepramone hydrochloride              no

Prestw-1472 Hexachlorophene               no

Prestw-1473 Estradiol Valerate               no

Prestw-1474 Chloroxine             no
Prestw-1475 Oxacillin sodium           no

Prestw-1476 Amcinonide  0.622636517 0.015692533 yes

Prestw-1477 Penicillamine                 no

Prestw-1478 Rifaximin              no
Prestw-1479 Triclosan              no
Prestw-148  Canrenoic acid potassium salt              no

Prestw-1480 Racepinephrine HCl              no

Prestw-1481 Cyclophosphamide              no

Prestw-1482 Valproic acid              no

Prestw-1483 Fludarabine            no
Prestw-1484 Cladribine  0.720890411 0.028504044 yes

Prestw-1486 Cortisol acetate 0.376061648 0.082147287 yes

Prestw-1487 Mesna             no
```

Prestw-1488	Penciclovir		no	
Prestw-1489	Amifostine		no	
Prestw-149	Thioproperazine dimesylate			no
Prestw-1490	Nalmefene hydrochloride			no
Prestw-1491	Pentobarbital		no	
Prestw-1492	Lamotrigine		no	
Prestw-1493	Topiramate		no	
Prestw-1494	Irinotecan Hydrochloride			no
Prestw-1495	Rabeprazole Sodium salt			no
Prestw-1497	Ambrisentan		no	
Prestw-1498	Camylofine chlorhydrate			no
Prestw-1499	Fomepizole		no	
Prestw-15	Heptaminol hydrochloride			no
Prestw-150	Dihydroergotamine tartrate			no
Prestw-1500	Voriconazole		no	
Prestw-1501	Fenipentol		no	
Prestw-1502	Acamprosate calcium		no	
Prestw-1503	Diosmin		no	
Prestw-1505	Valacyclovir hydrochloride			no
Prestw-1506	Mizolastine		no	
Prestw-1507	Acefylline		no	
Prestw-1508	Ibutilide fumarate		no	
Prestw-1509	Deflazacort	0.56116229	0.005447151	yes
Prestw-151	Erythromycin		no	
Prestw-1510	Dolasetron mesilate		no	
Prestw-1511	Aceclidine Hydrochloride			no
Prestw-1512	Abacavir Sulfate		no	
Prestw-1514	Darifenacin hydrobromide			no
Prestw-1516	Levalbuterol hydrochloride			no
Prestw-153	Didanosine		no	
Prestw-154	Josamycin		no	
Prestw-155	Paclitaxel	0.883419652	0.019851781	yes
Prestw-156	Ivermectin		no	

```
Prestw-157  Gallamine triethiodide            no

Prestw-158  Neomycin sulfate            no

Prestw-159  Dihydrostreptomycin sulfate            no

Prestw-16   Sulfathiazole            no

Prestw-160  Gentamicine sulfate            no

Prestw-1600 Aprepitant            no
Prestw-1601 Pinaverium bromide            no

Prestw-1602 Indatraline hydrochloride            no

Prestw-1603 Pemirolast potassium            no

Prestw-1604 (-)-Emtricitabine            no

Prestw-161  Isoniazid            no
Prestw-162  Pentylenetetrazole            no

Prestw-163  Chlorzoxazone            no

Prestw-164  Ornidazole            no
Prestw-165  Ethosuximide            no

Prestw-166  Mafenide hydrochloride            no

Prestw-167  Riluzole hydrochloride            no

Prestw-168  Nitrofurantoin            no

Prestw-169  Hydralazine hydrochloride            no

Prestw-17   Levodopa            no
Prestw-170  Phenelzine sulfate            no

Prestw-1700 Histamine dihydrochloride            no

Prestw-1701 Clopidogrel            no
Prestw-1702 Trimetozine            no
Prestw-1703 1,8-Dihydroxyanthraquinone            no

Prestw-1704 Desonide    0.480247318 0.055471432 yes

Prestw-1705 Diatrizoic acid dihydrate            no

Prestw-1706 Donepezil hydrochloride            no

Prestw-1707 Doxapram hydrochloride            no

Prestw-1708 (R)-Duloxetine hydrochloride            no
```

```
Prestw-1709 Estramustine                      no

Prestw-171  Tranexamic acid                   no

Prestw-1710 Ethoxzolamide                     no

Prestw-1711 Felbamate              no
Prestw-1712 Flumethasone pivalate  0.602259043 0.020548598 yes

Prestw-1713 Fenoldopam            no
Prestw-1714 Adapalene             no
Prestw-1715 Algestone acetophenide 0.10931683  0.003425235 yes

Prestw-1716 Altrenogest           no
Prestw-1717 Aminacrine            no
Prestw-1718 Amlexanox             no
Prestw-1719 Amorolfine hydrochloride            no

Prestw-172  Etofylline            no
Prestw-1720 Anagrelide            no
Prestw-1721 Avobenzone            no
Prestw-1722 Azatadine maleate 0.28020354  0.129728397 yes

Prestw-1723 Benzoxiquine                       no

Prestw-1726 Cefpiramide           no
Prestw-1727 Cefpodoxime proxetil              no

Prestw-1728 Cefprozil             no
Prestw-1729 Ceftibuten            no
Prestw-173  Tranylcypromine hydrochloride                no

Prestw-1730 Cefuroxime axetil          no

Prestw-1731 Zoledronic acid hydrate             no

Prestw-1732 Tolcapone             no
Prestw-1733 Nitazoxanide               no

Prestw-1734 Rasagiline            no
Prestw-1735 Valsartan             no
Prestw-1736 Irbesartan            no
Prestw-1737 Indinavir sulfate         no

Prestw-1738 Risedronic acid monohydrate             no

Prestw-1739 Nevirapine            no
Prestw-174  Alverine citrate salt           no

Prestw-1740 Besifloxacin hydrochloride   0.356621139 0.093303577 yes

Prestw-1741 Loteprednol etabonate  0.455770914 0.050619797 yes

Prestw-1743 Dofetilide            no
```

Prestw-1744 Tolterodine tartrate		no	
Prestw-1745 Cisatracurium besylate		no	
Prestw-1746 Lodoxamide	no		
Prestw-1748 Nateglinide	no		
Prestw-1749 Silodosin	no		
Prestw-175 Aceclofenac	no		
Prestw-1750 Terbinafine	no		
Prestw-1751 Brimonidine L-Tartrate		no	
Prestw-1752 Epirubicin hydrochloride	0.902839264	0.016524502	yes
Prestw-1753 Tegafur	no		
Prestw-1756 Lofepramine	no		
Prestw-1758 Pantoprazole sodium		no	
Prestw-1759 Valdecoxib	no		
Prestw-176 Iproniazide phosphate	0.205675223	0.111130671	yes
Prestw-1760 Tegaserod maleate		no	
Prestw-1761 Rizatriptan benzoate	0.433665551	0.001547144	yes
Prestw-1762 Ezetimibe	no		
Prestw-1763 Actarit	no		
Prestw-1764 Nelfinavir mesylate		no	
Prestw-1765 Latanoprost	no		
Prestw-1766 Benidipine hydrochloride		no	
Prestw-1768 Triclabendazole		no	
Prestw-1769 Enalaprilat dihydrate		no	
Prestw-177 Sulfamethoxazole		no	
Prestw-1770 Perospirone	no		
Prestw-1771 Carmofur	no		
Prestw-1772 Ampiroxicam	no		
Prestw-1773 Ipriflavone	no		
Prestw-1774 Nifekalant	no		
Prestw-1775 Lomerizine hydrochloride		no	
Prestw-1776 Phenprobamate		no	
Prestw-1777 Trimebutine	no		
Prestw-1778 Troxipide	no		
Prestw-178 Mephenesin	no		
Prestw-1780 Oxymetholone		no	
Prestw-1781 Alosetron hydrochloride		no	
Prestw-1782 Ritonavir	no		

Prestw-1783 Palonosetron hydrochloride   no

Prestw-1784 Ubenimex   no
Prestw-1785 Phenothiazine   no

Prestw-1786 Enrofloxacin   no

Prestw-1787 Homoveratrylamine   no

Prestw-1788 Milnacipran hydrochloride   no

Prestw-179 Phenformin hydrochloride   no

Prestw-1791 Pregabalin   no
Prestw-1792 Pidotimod   no
Prestw-1793 Raltitrexed   no
Prestw-1794 Pemetrexed disodium   no

Prestw-1795 Mupirocin   no
Prestw-1796 Delavirdine   no
Prestw-1797 Grepafloxacin   no

Prestw-1798 Mirabegron   no
Prestw-1799 Tigecycline   no
Prestw-18   Idoxuridine   no
Prestw-180 Flutamide   no
Prestw-1800 Zolmitriptan   no

Prestw-1801 Ciclesonide 0.550239421 0.033851547 yes

Prestw-1802 Darunavir   0.42653591 0.063667248 yes

Prestw-1803 Methicillin sodium   no

Prestw-1804 Nelarabine   no
Prestw-181 Ampyrone   no
Prestw-182 Levamisole hydrochloride   no

Prestw-183 Pargyline hydrochloride   no

Prestw-184 Methocarbamol   no

Prestw-185 Aztreonam   no
Prestw-186 Cloxacillin sodium salt   no

Prestw-187 Catharanthine   no

Prestw-188 Pentolinium bitartrate   no

Prestw-189 Aminopurine, 6-benzyl   no

Prestw-19   Captopril   no
Prestw-190 Tolbutamide   no

```
Prestw-191 Midodrine hydrochloride                    no

Prestw-192 Thalidomide 0.344191967 0.089259533 yes

Prestw-193 Oxolinic acid                    no

Prestw-194 Nimesulide              no
Prestw-196 Pentoxifylline              no

Prestw-197 Metaraminol bitartrate            no

Prestw-198 Salbutamol            no
Prestw-199 Prilocaine hydrochloride              no

Prestw-2   Allantoin            no
Prestw-20  Minoxidil   0.595790897 0.008462418 yes

Prestw-200 Camptothecine (S,+)    0.693495492 0.017802016 yes

Prestw-201 Ranitidine hydrochloride              no

Prestw-202 Tiratricol, 3,3',5-triiodothyroacetic acid            no

Prestw-203 Flufenamic acid            no

Prestw-204 Flumequine          no
Prestw-205 Tolfenamic acid            no

Prestw-206 Meclofenamic acid sodium salt monohydrate            no

Prestw-208 Trimethoprim            no

Prestw-209 Metoclopramide monohydrochloride          no

Prestw-21  Sulfaphenazole            no

Prestw-210 Fenbendazole            no

Prestw-211 Piroxicam            no
Prestw-212 Pyrantel tartrate          no

Prestw-213 Fenspiride hydrochloride            no

Prestw-214 Gemfibrozil          no
Prestw-215 Mefexamide hydrochloride            no

Prestw-216 Tiapride hydrochloride 0.391945138 0.023910398 yes

Prestw-217 Mebendazole 0.360975753 0.020675576 yes

Prestw-218 Fenbufen            no
Prestw-219 Ketoprofen          no
Prestw-22  Panthenol (D)            no
```

```
Prestw-220  Indapamide                no
Prestw-221  Norfloxacin               no
Prestw-222  Antimycin A 0.526173916 0.078294325 yes

Prestw-223  Xylometazoline hydrochloride 0.215555951 0.08506239  yes

Prestw-224  Oxymetazoline hydrochloride            no

Prestw-225  Nifenazone                no
Prestw-226  Griseofulvin      0.370865398 0.066871042 yes

Prestw-227  Clemizole hydrochloride                no

Prestw-228  Tropicamide               no
Prestw-229  Nefopam hydrochloride            no

Prestw-23   Sulfadiazine               no

Prestw-230  Phentolamine hydrochloride             no

Prestw-231  Etodolac                  no
Prestw-232  Scopolamin-N-oxide hydrobromide           no

Prestw-233  Hyoscyamine (L)            no

Prestw-234  Chlorphensin carbamate            no

Prestw-236  Dilazep dihydrochloride                no

Prestw-237  Ofloxacin                 no
Prestw-238  Lomefloxacin hydrochloride             no

Prestw-239  Orphenadrine hydrochloride             no

Prestw-24   Norethynodrel              no

Prestw-240  Proglumide                no
Prestw-241  Mexiletine hydrochloride               no

Prestw-242  Flavoxate hydrochloride                no

Prestw-243  Bufexamac                 no
Prestw-244  Glutethimide, para-amino      0.590640799 0.004495793 yes

Prestw-245  Dropropizine (R,S)               no

Prestw-246  Pinacidil                 no
Prestw-247  Albendazole               no
Prestw-248  Clonidine hydrochloride                no

Prestw-249  Bupropion hydrochloride                no

Prestw-25   Thiamphenicol               no
```

```
Prestw-250  Alprenolol hydrochloride                no

Prestw-251  Chlorothiazide            no

Prestw-252  Diphenidol hydrochloride                no

Prestw-253  Norethindrone            no

Prestw-254  Nortriptyline hydrochloride             no

Prestw-255  Niflumic acid            no

Prestw-256  Isotretinoin            no

Prestw-257  Retinoic acid            no

Prestw-258  Antazoline hydrochloride                no

Prestw-259  Ethacrynic acid            no

Prestw-26   Cimetidine            no
Prestw-260  Praziquantel      0.572807813 0.04518284  yes

Prestw-261  Ethisterone            no
Prestw-262  Triprolidine hydrochloride              no

Prestw-263  Doxepin hydrochloride              no

Prestw-264  Dyclonine hydrochloride                no

Prestw-265  Dimenhydrinate            no

Prestw-266  Disopyramide            no

Prestw-267  Clotrimazole            no

Prestw-268  Vinpocetine 0.408765577 0.014497286 yes

Prestw-269  Clomipramine hydrochloride              no

Prestw-27   Doxylamine succinate               no

Prestw-270  Fendiline hydrochloride                no

Prestw-271  Vincamine   0.253500604 0.000173832 yes

Prestw-272  Indomethacin      0.40760967  0.001655721 yes

Prestw-273  Cortisone   0.573403865 0.009975833 yes

Prestw-274  Prednisolone      0.612821653 0.004544576 yes

Prestw-275  Fenofibrate 0.149090539 0.007268135 yes
```

```
Prestw-276 Bumetanide                        no
Prestw-277 Labetalol hydrochloride                        no

Prestw-278 Cinnarizine                   no
Prestw-279 Methylprednisolone, 6-alpha  0.613370634 0.004055706 yes

Prestw-28  Ethambutol dihydrochloride                      no

Prestw-280 Quinidine hydrochloride monohydrate                    no

Prestw-281 Fludrocortisone acetate                    no

Prestw-282 Fenoterol hydrobromide              no

Prestw-283 Homochlorcyclizine dihydrochloride           no

Prestw-284 Diethylcarbamazine citrate              no

Prestw-285 Chenodiol                no
Prestw-286 Perhexiline maleate               no

Prestw-287 Oxybutynin chloride                no

Prestw-288 Spiperone               no
Prestw-289 Pyrilamine maleate               no

Prestw-29  Antipyrine                no
Prestw-290 Sulfinpyrazone              no

Prestw-291 Dantrolene sodium salt             no

Prestw-292 Trazodone hydrochloride                   no

Prestw-293 Glafenine hydrochloride                   no

Prestw-294 Pimethixene maleate               no

Prestw-295 Pergolide mesylate               no

Prestw-296 Acemetacin              no
Prestw-297 Benzydamine hydrochloride              no

Prestw-298 Fipexide hydrochloride              no

Prestw-299 Mifepristone       0.122510375 0.005380019 yes

Prestw-3   Acetazolamide                   no

Prestw-30  Antipyrine, 4-hydroxy              no

Prestw-300 Diperodon hydrochloride                   no

Prestw-301 Lisinopril              no
```

```
Prestw-302  Lincomycin hydrochloride                no

Prestw-303  Telenzepine dihydrochloride             no

Prestw-304  Econazole nitrate            no

Prestw-305  Bupivacaine hydrochloride               no

Prestw-306  Clemastine fumarate             no

Prestw-307  Oxytetracycline dihydrate               no

Prestw-308  Pimozide              no
Prestw-309  Amodiaquin dihydrochloride dihydrate                no

Prestw-31   Chloramphenicol             no

Prestw-310  Mebeverine hydrochloride                no

Prestw-311  Ifenprodil tartrate             no

Prestw-312  Flunarizine dihydrochloride             no

Prestw-313  Trifluoperazine dihydrochloride               no

Prestw-314  Enalapril maleate            no

Prestw-315  Minocycline hydrochloride               no

Prestw-316  Glibenclamide               no

Prestw-317  Guanethidine sulfate            no

Prestw-318  Quinacrine dihydrochloride dihydrate    0.112868076
       0.026711166 yes
Prestw-319  Clofilium tosylate              no

Prestw-32   Epirizole              no
Prestw-320  Fluphenazine dihydrochloride            no

Prestw-321  Streptomycin sulfate            no

Prestw-322  Alfuzosin hydrochloride             no

Prestw-323  Chlorpropamide              no

Prestw-324  Phenylpropanolamine hydrochloride               no

Prestw-325  Ascorbic acid               no

Prestw-326  Methyldopa (L,-)            no

Prestw-327  Cefoperazone dihydrate              no
```

Prestw-328	Zoxazolamine			no
Prestw-329	Tacrine hydrochloride			no
Prestw-33	Diprophylline			no
Prestw-330	Bisoprolol fumarate			no
Prestw-331	Tremorine dihydrochloride			no
Prestw-332	Practolol			no
Prestw-333	Zidovudine, AZT			no
Prestw-334	Sulfisoxazole			no
Prestw-335	Zaprinast			no
Prestw-336	Chlormezanone			no
Prestw-337	Procainamide hydrochloride	0.137586477	0.007951479	yes
Prestw-338	N6-methyladenosine			no
Prestw-339	Guanfacine hydrochloride	0.187986194	0.011159652	yes
Prestw-34	Triamterene	0.141584474	0.002094588	yes
Prestw-340	Domperidone			no
Prestw-341	Furosemide			no
Prestw-342	Methapyrilene hydrochloride			no
Prestw-343	Desipramine hydrochloride			no
Prestw-344	Clorgyline hydrochloride			no
Prestw-345	Clenbuterol hydrochloride			no
Prestw-346	Maprotiline hydrochloride			no
Prestw-347	Thioguanosine	0.179913987	0.031786184	yes
Prestw-348	Chlorprothixene hydrochloride			no
Prestw-349	Ritodrine hydrochloride			no
Prestw-35	Dapsone			no
Prestw-350	Clozapine			no
Prestw-351	Chlorthalidone			no
Prestw-352	Dobutamine hydrochloride			no
Prestw-353	Moclobemide	0.142220859	0.021919493	yes
Prestw-355	Hycanthone			no

```
Prestw-356 Adenosine 5'-monophosphate monohydrate            no

Prestw-357 Amoxicillin          no
Prestw-359 Dextromethorphan hydrobromide monohydrate              no

Prestw-36  Troleandomycin             no

Prestw-360 Droperidol          no
Prestw-361 Bambuterol hydrochloride          no

Prestw-362 Betamethasone     0.602803979 0.032068404 yes

Prestw-363 Colchicine  0.905055715 0.002997195 yes

Prestw-364 Metergoline          no
Prestw-365 Brinzolamide             no

Prestw-366 Ambroxol hydrochloride           no

Prestw-367 Benfluorex hydrochloride            no

Prestw-368 Bepridil hydrochloride          no

Prestw-369 Meloxicam          no
Prestw-37  Pyrimethamine          no

Prestw-370 Benzbromarone            no

Prestw-371 Ketotifen fumarate           no

Prestw-372 Debrisoquin sulfate           no

Prestw-373 Amethopterin (R,S)     0.204253877 0.009370681 yes

Prestw-374 Methylergometrine maleate           no

Prestw-375 Methiothepin maleate          no

Prestw-376 Clofazimine          no
Prestw-377 Nafronyl oxalate 0.169009561 0.029886225 yes

Prestw-378 Bezafibrate          no
Prestw-38  Hexamethonium dibromide dihydrate           no

Prestw-380 Clebopride maleate          no

Prestw-381 Lidoflazine          no
Prestw-382 Betaxolol hydrochloride            no

Prestw-383 Nicardipine hydrochloride           no

Prestw-384 Probucol          no
Prestw-385 Mitoxantrone dihydrochloride 0.991694132 0.000573566 yes
```

```
Prestw-386  GBR 12909 dihydrochloride              no

Prestw-387  Carbetapentane citrate           no

Prestw-388  Dequalinium dichloride 0.459536573 0.004539056 yes

Prestw-389  Ketoconazole                 no

Prestw-39   Diflunisal            no
Prestw-390  Fusidic acid sodium salt             no

Prestw-391  Terbutaline hemisulfate              no

Prestw-392  Ketanserin tartrate hydrate          no

Prestw-393  Hemicholinium bromide            no

Prestw-394  Kanamycin A sulfate              no

Prestw-395  Amikacin hydrate          no

Prestw-396  Etoposide   0.545076873 0.015578586 yes

Prestw-397  Clomiphene citrate (Z,E)             no

Prestw-398  Oxantel pamoate          no

Prestw-399  Prochlorperazine dimaleate           no

Prestw-4    Metformin hydrochloride       0.117062894 0.000250737 yes

Prestw-40   Niclosamide           no
Prestw-400  Hesperidin            no
Prestw-401  Testosterone propionate              no

Prestw-403  Thyroxine (L)             no

Prestw-405  Pepstatin A           no
Prestw-407  Adamantamine fumarate            no

Prestw-408  Butoconazole nitrate             no

Prestw-409  Amiodarone hydrochloride      0.135560563 0.016230909 yes

Prestw-41   Procaine hydrochloride           no

Prestw-411  Androsterone                 no

Prestw-413  Carbarsone            no
Prestw-416  Bacampicillin hydrochloride          no

Prestw-418  Biotin                no
Prestw-419  Bisacodyl   0.153803101 0.011345262 yes
```

Prestw-42	Moxisylyte hydrochoride			no
Prestw-421	Suloctidil			no
Prestw-423	Carisoprodol			no
Prestw-424	Cephalosporanic acid, 7-amino			no
Prestw-425	Chicago sky blue 6B			no
Prestw-426	Buflomedil hydrochloride			no
Prestw-428	Roxatidine Acetate HCl			no
Prestw-43	Betazole hydrochloride			no
Prestw-430	Cisapride	0.115164789	0.018744489	yes
Prestw-432	Corticosterone	0.366129081	0.013359203	yes
Prestw-433	Cyanocobalamin			no
Prestw-434	Cefadroxil			no
Prestw-435	Cyclosporin A			no
Prestw-436	Digitoxigenin	0.992747505	0.000204895	yes
Prestw-437	Digoxin	0.984748688	0.000178533	yes
Prestw-438	Doxorubicin hydrochloride	0.964578971	0.002854986	yes
Prestw-439	Carbimazole	0.125199625	0.002194123	yes
Prestw-44	Isoxicam			no
Prestw-440	Epiandrosterone			no
Prestw-441	Estradiol-17 beta			no
Prestw-443	Gabazine bromide			no
Prestw-445	Cyclobenzaprine hydrochloride			no
Prestw-446	Carteolol hydrochloride			no
Prestw-447	Hydrocortisone base	0.553541859	0.021775587	yes
Prestw-448	Hydroxytacrine maleate (R,S)	0.107538381	0.003603812	yes
Prestw-449	Pilocarpine nitrate			no
Prestw-45	Naproxen			no
Prestw-450	Dicloxacillin sodium salt hydrate			no
Prestw-451	Alizapride HCl			no

Prestw-455	Mebhydroline 1,5-naphtalenedisulfonate			no
Prestw-456	Meclocycline sulfosalicylate	0.107156782	0.011836131	yes
Prestw-457	Meclozine dihydrochloride	0.113507415	0.017087115	yes
Prestw-458	Melatonin	0.13160938	0.006597583	yes
Prestw-46	Naphazoline hydrochloride			no
Prestw-460	Dinoprost trometamol			no
Prestw-461	Tropisetron HCl			no
Prestw-462	Cefixime			no
Prestw-463	Metrizamide			no
Prestw-468	Neostigmine bromide			no
Prestw-469	Niridazole			no
Prestw-47	Ticlopidine hydrochloride			no
Prestw-470	Ceforanide			no
Prestw-473	Cefotetan			no
Prestw-475	Brompheniramine maleate			no
Prestw-476	Primaquine diphosphate	0.161620847	0.011225059	yes
Prestw-477	Progesterone			no
Prestw-478	Felodipine	0.156799322	0.007799217	yes
Prestw-48	Dicyclomine hydrochloride	0.132347475	0.02511396	yes
Prestw-481	Serotonin hydrochloride	0.132305018	0.005810307	yes
Prestw-482	Cefotiam hydrochloride			no
Prestw-484	Benperidol			no
Prestw-485	Cefaclor hydrate			no
Prestw-486	Colistin sulfate			no
Prestw-487	Daunorubicin hydrochloride	1.002834608	0.00290379	yes
Prestw-488	Dosulepin hydrochloride			no
Prestw-489	Ceftazidime pentahydrate			no
Prestw-49	Amyleine hydrochloride			no
Prestw-490	Iobenguane sulfate			no
Prestw-491	Metixene hydrochloride			no

```
Prestw-492  Nitrofural              no
Prestw-493  Omeprazole              no
Prestw-494  Propylthiouracil            no

Prestw-495  Terconazole             no
Prestw-496  Tiaprofenic acid           no

Prestw-497  Vancomycin hydrochloride      0.117319101 0.02199845  yes

Prestw-498  Artemisinin 0.122977377 0.004564096 yes

Prestw-499  Propafenone hydrochloride            no

Prestw-5    Atracurium besylate                no

Prestw-50   Lidoca? hydrochloride              no

Prestw-500  Ethamivan               no
Prestw-501  Vigabatrin              no
Prestw-502  Biperiden hydrochloride             no

Prestw-503  Cetirizine dihydrochloride          no

Prestw-504  Etifenin                no
Prestw-505  Metaproterenol sulfate, orciprenaline sulfate           no

Prestw-506  Sisomicin sulfate           no

Prestw-509  Bromperidol             no
Prestw-510  Cyclizine hydrochloride             no

Prestw-511  Fluoxetine hydrochloride            no

Prestw-512  Iohexol                 no
Prestw-513  Norcyclobenzaprine      0.133914745 0.003222051 yes

Prestw-514  Pyrazinamide       0.107208754 0.013354302 yes

Prestw-515  Trimethadione               no

Prestw-516  Lovastatin              no
Prestw-517  Nystatine               no
Prestw-518  Budesonide  0.609531215 0.003357572 yes

Prestw-519  Imipenem                no
Prestw-52   Carbamazepine               no

Prestw-520  Sulfasalazine               no

Prestw-522  Thiostrepton       0.150332354 0.010142501 yes

Prestw-524  Tiabendazole                no

Prestw-525  Rifampicin              no
```

```
Prestw-526  Ethionamide              no
Prestw-527  Tenoxicam                no
Prestw-528  Triflusal                no
Prestw-529  Mesoridazine besylate   0.131310604 0.001900833 yes

Prestw-53   Triflupromazine hydrochloride              no

Prestw-530  Trolox       0.155439272 0.00338611  yes

Prestw-531  Pirenperone              no
Prestw-533  Phenacetin               no
Prestw-534  Atovaquone               no
Prestw-535  Methoxamine hydrochloride          no

Prestw-536  (R)-(+)-Atenolol             no

Prestw-537  Piracetam                no
Prestw-538  Phenindione              no
Prestw-539  Thiocolchicoside           no

Prestw-54   Mefenamic acid             no

Prestw-540  Clorsulon                no
Prestw-541  Ciclopirox ethanolamine              no

Prestw-542  Probenecid               no
Prestw-543  Betahistine mesylate             no

Prestw-544  Tobramycin               no
Prestw-545  Tetramisole hydrochloride            no

Prestw-546  Pregnenolone             no

Prestw-547  Molsidomine              no
Prestw-548  Chloroquine diphosphate              no

Prestw-549  Trimetazidine dihydrochloride              no

Prestw-55   Acetohexamide              no

Prestw-550  Parthenolide             no

Prestw-551  Hexetidine               no
Prestw-552  Selegiline hydrochloride             no

Prestw-553  Pentamidine isethionate      0.635144006 0.005485571 yes

Prestw-554  Tolazamide               no
Prestw-555  Nifuroxazide               no

Prestw-557  Dirithromycin              no

Prestw-558  Gliclazide               no
Prestw-559  DO 897/99                no
```

```
Prestw-56    Sulpiride                    no
Prestw-560   Prenylamine lactate                    no

Prestw-565   Atropine sulfate monohydrate                    no

Prestw-566   Eserine sulfate, physostigmine sulfate                    no

Prestw-57    Benoxinate hydrochloride                    no

Prestw-571   Tetraca? hydrochloride            no

Prestw-572   Mometasone furoate      0.60798789  0.00123881  yes

Prestw-574   Dacarbazine              no
Prestw-576   Acetopromazine maleate salt                    no

Prestw-58    Oxethazaine              no
Prestw-583   Papaverine hydrochloride                    no

Prestw-584   Yohimbine hydrochloride                    no

Prestw-587   Cilostazol               no
Prestw-588   Galanthamine hydrobromide                    no

Prestw-59    Pheniramine maleate                no

Prestw-594   Diclofenac sodium              no

Prestw-598   Xylazine                 no
Prestw-6     Isoflupredone acetate   0.632408562 0.005865799 yes

Prestw-60    Tolazoline hydrochloride                    no

Prestw-607   Eburnamonine (-)               no

Prestw-61    Morantel tartrate              no

Prestw-616   Demecarium bromide                 no

Prestw-617   Quipazine dimaleate salt                    no

Prestw-619   Diflorasone Diacetate   0.610204817 0.001675959 yes

Prestw-62    Homatropine hydrobromide (R,S)                    no

Prestw-623   Pyridoxine hydrochloride                    no

Prestw-626   Racecadotril                    no

Prestw-627   Folic acid              no
Prestw-63    Nifedipine             no
Prestw-630   Dimethisoquin hydrochloride                    no
```

```
Prestw-631  Thiamine hydrochloride              no

Prestw-632  Dipivefrin hydrochloride                 no

Prestw-633  Thiorphan              no
Prestw-64   Chlorpromazine hydrochloride          no

Prestw-641  Sulmazole   0.436896596 0.005633171 yes

Prestw-643  Flunisolide 0.635876191 0.008417054 yes

Prestw-644  N-Acetyl-DL-homocysteine Thiolactone              no

Prestw-645  Flurandrenolide   0.636960415 0.007943442 yes

Prestw-649  Etanidazole              no
Prestw-65   Diphenhydramine hydrochloride              no

Prestw-651  Glimepiride              no
Prestw-652  Picrotoxinin      0.160261438 0.069339383 yes

Prestw-653  Mepenzolate bromide              no

Prestw-654  Benfotiamine              no

Prestw-655  Halcinonide 0.60231122  0.014767943 yes

Prestw-656  Lanatoside C      0.984812221 0.000400162 yes

Prestw-657  Benzamil hydrochloride              no

Prestw-658  Suxibuzone              no
Prestw-659  6-Furfurylaminopurine              no

Prestw-66   Minaprine dihydrochloride              no

Prestw-660  Avermectin B1a              no

Prestw-666  Nisoldipine              no
Prestw-67   Miconazole              no
Prestw-671  Dydrogesterone              no

Prestw-676  Beta-Escin              no
Prestw-68   Isoxsuprine hydrochloride              no

Prestw-683  Pempidine tartrate              no

Prestw-688  Estropipate              no
Prestw-69   Acebutolol hydrochloride              no

Prestw-692  Citalopram Hydrobromide              no

Prestw-693  Promazine hydrochloride              no
```

```
Prestw-694  Sulfamerazine                          no

Prestw-696  Ethotoin                      no
Prestw-697  3-alpha-Hydroxy-5-beta-androstan-17-one              no

Prestw-698  Tetrahydrozoline hydrochloride                  no

Prestw-699  Hexestrol                     no
Prestw-7    Amiloride hydrochloride dihydrate            no

Prestw-70   Tolnaftate                    no
Prestw-700  Cefmetazole sodium salt                   no

Prestw-701  Trihexyphenidyl-D,L Hydrochloride               no

Prestw-702  Succinylsulfathiazole                  no

Prestw-703  Famprofazone                      no

Prestw-704  Bromopride                    no
Prestw-705  Methyl benzethonium chloride              no

Prestw-706  Chlorcyclizine hydrochloride              no

Prestw-707  Diphenylpyraline hydrochloride                  no

Prestw-708  Benzethonium chloride                  no

Prestw-709  Trioxsalen                    no
Prestw-71   Todralazine hydrochloride                 no

Prestw-711  Sulfabenzamide                    no

Prestw-712  Benzocaine                    no
Prestw-713  Dipyrone                  no
Prestw-714  Isosorbide dinitrate                   no

Prestw-715  Sulfachloropyridazine                  no

Prestw-716  Pramoxine hydrochloride                   no

Prestw-717  Finasteride                   no
Prestw-718  Fluorometholone   0.546621819 0.026697765 yes

Prestw-719  Cephalothin sodium salt                   no

Prestw-72   Imipramine hydrochloride     0.552337921 0.001220565 yes

Prestw-720  Cefuroxime sodium salt                no

Prestw-721  Althiazide                    no
Prestw-722  Isopyrin hydrochloride                 no
```

```
Prestw-723  Phenethicillin potassium salt                    no

Prestw-724  Sulfamethoxypyridazine            no

Prestw-725  Deferoxamine mesylate            no

Prestw-726  Mephentermine hemisulfate              no

Prestw-728  Sulfadimethoxine          no

Prestw-729  Sulfanilamide             no

Prestw-73   Sulindac              no
Prestw-730  Balsalazide Sodium              no

Prestw-731  Sulfaquinoxaline sodium salt          no

Prestw-732  Streptozotocin            no

Prestw-733  Metoprolol-(+,-) (+)-tartrate salt         no

Prestw-734  Flumethasone      0.578328937 0.035894338 yes

Prestw-735  Flecainide acetate            no

Prestw-736  Cefazolin sodium salt         no

Prestw-738  Folinic acid calcium salt            no

Prestw-739  Levonordefrin            no

Prestw-74   Amitryptiline hydrochloride            no

Prestw-740  Ebselen              no
Prestw-741  Nadide               no
Prestw-742  Sulfamethizole           no

Prestw-743  Medrysone   0.339177425 0.010461615 yes

Prestw-744  Flunixin meglumine            no

Prestw-745  Spiramycin            no
Prestw-746  Glycopyrrolate           no

Prestw-748  Monensin sodium salt          no

Prestw-749  Isoetharine mesylate salt            no

Prestw-75   Adiphenine hydrochloride            no

Prestw-750  Mevalonic-D, L acid lactone          no

Prestw-751  Terazosin hydrochloride            no
```

Prestw-752	Phenazopyridine hydrochloride			no
Prestw-753	Demeclocycline hydrochloride		no	
Prestw-754	Fenoprofen calcium salt dihydrate			no
Prestw-755	Piperacillin sodium salt		no	
Prestw-756	Diethylstilbestrol	no		
Prestw-757	Chlorotrianisene	no		
Prestw-758	Ribostamycin sulfate salt		no	
Prestw-759	Methacholine chloride	no		
Prestw-76	Dibucaine	no		
Prestw-760	Pipenzolate bromide	no		
Prestw-761	Butamben	no		
Prestw-762	Sulfapyridine	no		
Prestw-763	Meclofenoxate hydrochloride		no	
Prestw-764	Furaltadone hydrochloride		no	
Prestw-765	Ethoxyquin	no		
Prestw-766	Tinidazole	no		
Prestw-767	Guanadrel sulfate	no		
Prestw-768	Vidarabine	no		
Prestw-769	Sulfameter	no		
Prestw-77	Prednisone	no		
Prestw-770	Isopropamide iodide	no		
Prestw-771	Alclometasone dipropionate	0.548857471	0.019210964	yes
Prestw-772	Leflunomide	no		
Prestw-773	Norgestrel-(-)-D	no		
Prestw-774	Fluocinonide	0.548669847	0.033125277	yes
Prestw-775	Sulfamethazine sodium salt		no	
Prestw-776	Guaifenesin	no		
Prestw-777	Alexidine dihydrochloride	0.899746757	0.004763748	yes
Prestw-778	Proadifen hydrochloride		no	
Prestw-779	Zomepirac sodium salt	no		
Prestw-78	Thioridazine hydrochloride		no	
Prestw-780	Cinoxacin	no		

Prestw-781	Clobetasol propionate	0.632383559	0.001669832	yes
Prestw-782	Podophyllotoxin	0.891825686	0.004025029	yes
Prestw-783	Clofibric acid		no	
Prestw-784	Bendroflumethiazide		no	
Prestw-785	Dicumarol		no	
Prestw-786	Methimazole		no	
Prestw-787	Merbromin		no	
Prestw-788	Hexylcaine hydrochloride		no	
Prestw-789	Drofenine hydrochloride		no	
Prestw-79	Diphemanil methylsulfate		no	
Prestw-790	Cycloheximide	0.760396853	0.010900281	yes
Prestw-791	(R) -Naproxen sodium salt		no	
Prestw-792	Propidium iodide		no	
Prestw-793	Cloperastine hydrochloride		no	
Prestw-794	Eucatropine hydrochloride		no	
Prestw-795	Isocarboxazid		no	
Prestw-796	Lithocholic acid		no	
Prestw-797	Methotrimeprazine maleat salt		no	
Prestw-798	Dienestrol		no	
Prestw-799	Pridinol methanesulfonate salt		no	
Prestw-8	Amprolium hydrochloride		no	
Prestw-80	Trimethobenzamide hydrochloride		no	
Prestw-800	Amrinone		no	
Prestw-801	Carbinoxamine maleate salt		no	
Prestw-802	Methazolamide		no	
Prestw-803	Pyrithyldione		no	
Prestw-804	Spectinomycin dihydrochloride		no	
Prestw-805	Piromidic acid		no	
Prestw-806	Trimipramine maleate salt		no	

Prestw-807	Chloropyramine hydrochloride		no
Prestw-808	Furazolidone	no	
Prestw-809	Dichlorphenamide	no	
Prestw-81	Metronidazole	no	
Prestw-810	Sulconazole nitrate		no
Prestw-812	Cromolyn disodium salt		no
Prestw-813	Bucladesine sodium salt		no
Prestw-814	Cefsulodin sodium salt		no
Prestw-815	Fosfosal	no	
Prestw-816	Suprofen	no	
Prestw-818	Nadolol	no	
Prestw-819	Moxalactam disodium salt		no
Prestw-820	Aminophylline	no	
Prestw-821	Azlocillin sodium salt		no
Prestw-822	Clidinium bromide	no	
Prestw-823	Sulfamonomethoxine		no
Prestw-824	Benzthiazide	no	
Prestw-825	Trichlormethiazide		no
Prestw-826	Oxalamine citrate salt		no
Prestw-827	Propantheline bromide		no
Prestw-829	Dimethadione	no	
Prestw-83	Edrophonium chloride		no
Prestw-830	Ethaverine hydrochloride		no
Prestw-831	Butacaine	no	
Prestw-832	Cefoxitin sodium salt		no
Prestw-833	Ifosfamide	no	
Prestw-834	Novobiocin sodium salt		no
Prestw-836	Indoprofen	no	
Prestw-837	Carbenoxolone disodium salt		no
Prestw-838	Iocetamic acid	no	

Prestw-839	Ganciclovir	no	
Prestw-84	Moroxidine hydrochloride		no
Prestw-840	Ethopropazine hydrochloride		no
Prestw-842	Trimeprazine tartrate	no	
Prestw-843	Nafcillin sodium salt monohydrate		no
Prestw-844	Procyclidine hydrochloride		no
Prestw-845	Amiprilose hydrochloride		no
Prestw-846	Ethynylestradiol 3-methyl ether		no
Prestw-847	(-) -Levobunolol hydrochloride		no
Prestw-848	Iodixanol	no	
Prestw-85	Baclofen (R,S)	no	
Prestw-850	Equilin	no	
Prestw-851	Paroxetine Hydrochloride		no
Prestw-853	Liothyronine	no	
Prestw-854	Roxithromycin	no	
Prestw-855	Beclomethasone dipropionate	0.516796469	0.01912019 yes
Prestw-856	Tolmetin sodium salt dihydrate		no
Prestw-857	(+) -Levobunolol hydrochloride		no
Prestw-858	Doxazosin mesylate	no	
Prestw-859	Fluvastatin sodium salt		no
Prestw-86	Acyclovir	no	
Prestw-860	Methylhydantoin-5-(L)	no	
Prestw-861	Gabapentin	no	
Prestw-862	Raloxifene hydrochloride		no
Prestw-864	Methylhydantoin-5-(D)	no	
Prestw-865	Simvastatin	no	
Prestw-866	Azacytidine-5	no	
Prestw-867	Paromomycin sulfate	no	
Prestw-868	Acetaminophen	no	
Prestw-869	Phthalylsulfathiazole	no	

ID	Name			
Prestw-87	Diazoxide	no		
Prestw-870	Luteolin	no		
Prestw-871	Iopamidol	no		
Prestw-872	Iopromide	no		
Prestw-873	Theophylline monohydrate		no	
Prestw-874	Theobromine	no		
Prestw-875	Reserpine	no		
Prestw-877	Scopolamine hydrochloride		no	
Prestw-878	Ioversol	no		
Prestw-88	Amidopyrine	no		
Prestw-880	Carbachol	no		
Prestw-881	Niacin	no		
Prestw-882	Bemegride	no		
Prestw-883	Digoxigenin	0.942413923	0.003460901	yes
Prestw-884	Meglumine	no		
Prestw-886	Clioquinol	no		
Prestw-887	Oxybenzone	no		
Prestw-888	Promethazine hydrochloride		no	
Prestw-893	Felbinac	no		
Prestw-894	Butylparaben	no		
Prestw-895	Aminohippuric acid	no		
Prestw-896	N-Acetyl-L-leucine	no		
Prestw-897	Pipemidic acid	no		
Prestw-898	Dioxybenzone	no		
Prestw-899	Adrenosterone	no		
Prestw-9	Hydrochlorothiazide	no		
Prestw-90	Pindolol	no		
Prestw-900	Methylatropine nitrate	no		
Prestw-901	Hymecromone	no		
Prestw-903	Diloxanide furoate	no		
Prestw-904	Metyrapone	no		
Prestw-905	Urapidil hydrochloride	no		
Prestw-906	Fluspirilen	no		
Prestw-907	S-(+)-ibuprofen	no		
Prestw-908	Ethynodiol diacetate	no		
Prestw-909	Nabumetone	no		
Prestw-91	Khellin	no		

```
Prestw-910  Nisoxetine hydrochloride                    no

Prestw-911  (+)-Isoproterenol (+)-bitartrate salt              no

Prestw-912  Monobenzone            no
Prestw-913  2-Aminobenzenesulfonamide            no

Prestw-914  Estrone            no
Prestw-915  Lorglumide sodium salt            no

Prestw-916  Nitrendipine            no

Prestw-917  Flurbiprofen            no

Prestw-918  Nimodipine            no
Prestw-919  Bacitracin            no
Prestw-92   Zimelidine dihydrochloride monohydrate            no

Prestw-920  L(-)-vesamicol hydrochloride            no

Prestw-921  Nizatidine            no
Prestw-922  Thioperamide maleate            no

Prestw-923  Xamoterol hemifumarate            no

Prestw-924  Rolipram            no
Prestw-925  Thonzonium bromide            no

Prestw-926  Idazoxan hydrochloride            no

Prestw-927  Quinapril HCl            no

Prestw-928  Nilutamide            no
Prestw-929  Ketorolac tromethamine            no

Prestw-93   Azacyclonol            no
Prestw-930  Protriptyline hydrochloride            no

Prestw-931  Propofol            no
Prestw-932  S(-)Eticlopride hydrochloride            no

Prestw-933  Primidone            no
Prestw-934  Flucytosine            no
Prestw-935  (-)-MK 801 hydrogen maleate            no

Prestw-936  Bephenium hydroxynaphthoate            no

Prestw-937  Dehydroisoandosterone 3-acetate            no

Prestw-938  Benserazide hydrochloride            no

Prestw-939  Iodipamide            no
Prestw-94   Azathioprine            no
```

```
Prestw-941  Pentetic acid                    no

Prestw-942  Bretylium tosylate                    no

Prestw-943  Pralidoxime chloride                  no

Prestw-944  Phenoxybenzamine hydrochloride                  no

Prestw-945  Salmeterol            no
Prestw-946  Altretamine          no
Prestw-947  Prazosin hydrochloride           no

Prestw-948  Timolol maleate salt             no

Prestw-949  (+,-)-Octopamine hydrochloride                no

Prestw-95   Lynestrenol          no
Prestw-951  Crotamiton           no
Prestw-953  (S)-(-)-Atenolol           no

Prestw-954  Tyloxapol            no
Prestw-955  Florfenicol          no
Prestw-956  Megestrol acetate          no

Prestw-957  Deoxycorticosterone              no

Prestw-958  Urosiol                    no
Prestw-959  Proparacaine hydrochloride            no

Prestw-96   Guanabenz acetate          no

Prestw-960  Aminocaproic acid          no

Prestw-961  Denatonium benzoate              no

Prestw-963  Enilconazole               no

Prestw-964  Methacycline hydrochloride             no

Prestw-966  Sotalol hydrochloride            no

Prestw-968  Decamethonium bromide            no

Prestw-97   Disulfiram  0.810974666 0.041945599 yes

Prestw-971  Remoxipride Hydrochloride              no

Prestw-972  THIP Hydrochloride               no

Prestw-973  Pirlindole mesylate              no

Prestw-974  Pronethalol hydrochloride              no
```

```
Prestw-975  Naftopidil dihydrochloride   0.590302611 0.008627842 yes

Prestw-976  Tracazolate hydrochloride              no

Prestw-977  Zardaverine           no
Prestw-978  Memantine Hydrochloride                no

Prestw-979  Ozagrel hydrochloride             no

Prestw-98   Acetylsalicylsalicylic acid            no

Prestw-980  Piribedil hydrochloride                no

Prestw-981  Nitrocaramiphen hydrochloride              no

Prestw-982  Nandrolone            no
Prestw-983  Dimaprit dihydrochloride               no

Prestw-986  Proscillaridin A  0.984088825 0.000202303 yes

Prestw-99   Mianserine hydrochloride               no

Prestw-991  Gliquidone            no
Prestw-992  Pizotifen malate            no

Prestw-993  Ribavirin            no
Prestw-994  Cyclopenthiazide          no

Prestw-995  Fluvoxamine maleate            no

Prestw-997  Fluticasone propionate 0.633845979 0.017135343 yes

Prestw-998  Zuclopenthixol hydrochloride 0.131241358 0.009244257 yes

Prestw-999  Proguanil hydrochloride                no
```

Compound Group Toxic   Mean read-outs
Normalized mean read-outs   Hit

PCL_ID   compoundIdentifier   Analysis   Nuclei
    Infected nuclei Infection index Plaques   Virus intensity [AU]
    Nuclei   Infected nuclei Infection index Plaques   Virus
intensity [AU]   Nuclei   Infected nuclei Infection index Plaques
    Virus intensity [AU]
DMSO DMSO DMSO neg. ctr. no   UZH   36'399   27'911   0.77
    27.32 9.79E+09   1.00 1.00 1.00 1.00 1.00 -   -   -   -
    -
                           EPFL   29'749   15'156   0.51 21.11
    5.02E+09   1.00 1.00 1.00 1.00 1.00
DFT   DFT   DFT   pos. ctr. no   UZH   30'204   3'595   0.12 0.12
    2.90E+09   0.83 0.13 0.15 0.00 0.30 -   -   -   -   -
                           EPFL   20'745   1'776   0.09 0.03
    1.62E+09   0.70 0.12 0.17 0.00 0.32
Prestw-1764 497   Nelfinavir mesylate   PCL   no   UZH   30'908
5'479   0.18 0.75 2.98E+09   0.85 0.20 0.23 0.03 0.30 no   yes
    yes   yes   yes
                           EPFL   21'895   2'988   0.14 0.00
    1.68E+09   0.74 0.20 0.27 0.00 0.33 no   yes   yes   yes   yes
Prestw-388 763   Dequalinium dichloride PCL   yes   UZH   28'763
13'751   0.48 14.00 3.62E+09   0.79 0.49 0.62 0.51 0.37 no   yes
    yes   yes   yes
                           EPFL   21'247   4'988   0.23 9.25
    1.92E+09   0.71 0.33 0.46 0.44 0.38 yes   yes   yes   yes   yes
Prestw-1717 452   Aminacrine PCL   no   UZH   31'723   14'689   0.47
    20.50 4.88E+09   0.87 0.53 0.62 0.75 0.50 no   yes   yes   no
    yes
                           EPFL   42'191   9'057   0.22 14.25
    2.54E+09   1.42 0.60 0.42 0.67 0.51 no   no   yes   no   yes
Prestw-925 1214   Thonzonium bromide   PCL   no   UZH   30'644
15'057   0.49 14.75 4.77E+09   0.84 0.54 0.63 0.54 0.49 no   yes
    yes   no   yes
                           EPFL   24'093   6'849   0.28 11.75
    2.51E+09   0.81 0.45 0.56 0.56 0.50 no   yes   no   no   no