



REST API of PercellomeWeb Service ver.1 (1/Nov/2012)

CONTENTS

- I) Overview
- II) Host Information
- III) Main Tools
- IV) Typical Work flow
- V) Notice, Copyright and Disclaimers

I) Overview

This document is a manual for REST API of Percellome Web Service. This service handles the Percellome Database, which is one of the biggest toxicogenomics database in the world. Toxicogenomics data is obtained from Affymetrix GeneChip which monitors the mRNA expression of a biological sample. The One Percellome data consists of absolutized mRNA expression values generated by the Percellome method (see <http://www.biomedcentral.com/1471-2164/7/64>) of liver and other organs of rodents (mainly male C57BL/6 mice, 12weeks-old, 4 time points, 4 levels of dose, triplicate, total of 48 animals per one dataset) exposed to a chemical. The database contains datasets of more than 100 chemicals. All chemicals were tested over liver and some chemicals were tested over several organs (lung, kidney, heart, brain, testis etc.) simultaneously. It is notable that you can make direct comparison among data on different chemicals and tissues on the bounty of data absolutization.

Using this REST Web API, you can browse all the absolutized measurements on gene-expression either by tables or by 3-dimension "Surface" graphs which show time- and dose-dependent alteration in gene-expression induced by a test chemical.

II) Host Information

- root URL: <http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/>
- user authentication: access free (temporary)
- request: send HTTP requests (GET method) to the host.
- result data format: JSON, binary (JPEG) and simple string

III) Main Tools

***Test

-To check the connection and host activity.

-parameters:

No parameter

-sample:

<http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/test>

***Announcement

-To get information from the host; official announcement for users

-parameters:

No parameter

-sample:

<http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/announcement>

***PercellomeLogo

- To get a small Percellome Logo (JPEG, 56 x 56 pixel) →



-parameters:

No parameter

-sample:

<http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/PercellomeLogo>

***Project

-To search and get the Project Id and its information

-parameters:

1) Species

2) Keyword (chemical name, add wild card automatically)

-sample:

-To select project containing “TCD” in their chemical name.

<http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/project/mouse/TCD>

-To select project of liver tissue.

<http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/project/mouse/liver>

-To get whole list of accessible projects.

<http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/project/mouse>

***Probe Set ID

-To search and get Affymetrix GeneChip Probe Set Id

-parameters

- 1) Species
- 2) Keyword (gene common name, add wild card automatically)

-sample:

<http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/psid/mouse/cyp1>

***Gene Information

-To get a probe set information

-parameters:

- 1) Species
- 2) Probe Set Id

-sample:

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/geneinfo/mouse/1422217_a_at

***Group Average Data (formatted)

-To get a Percellome Surface Data (group average)

-parameters:

- 1) Project Id
- 2) Probe Set Id

-sample:

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/AvData/4/1422217_a_at

***Group Sd Data (formatted)

- To get a Percellome Surface Data (group Sd)

-parameters:

- 1) Project Id
- 2) Probe Set Id

-sample:

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/SdData/4/1422217_a_at

***Group Median Data (formatted)

-To get a Percellome Surface Data (group median)

-parameters:

- 1) Project Id
- 2) Probe Set Id

-sample

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/MedData/4/1422217_a_at

*****Group Maximum Data (formatted)**

-To get a Percellome Surface Data (group maximum)

-parameters:

- 1) Project Id
- 2) Probe Set Id

-sample:

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/MaxData/4/1422217_a_at

*****Group Minimum Data (formatted)**

-To get a Percellome Surface Data (group minimum)

-parameters:

- 1) Project Id
- 2) Probe Set Id

-sample:

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/MinData/4/1422217_a_at

*****Individual Data (formatted)**

-To get a Percellome Surface Data (Individual)

-parameters:

- 1) Project Id
- 2) Probe Set Id

-sample:

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/IdvData/4/1422217_a_at

*****Surface Graph**

-To get a Percellome Surface Graph (JPEG Image)

-parameters:

- 1) Project Id
- 2) Probe Set Id
- 3) Visible surface
 - A: average surface
 - S: Sd surface
 - M: median surface
 - X: maximum surface

N: minimum surface

I: individual data point (red cross)

T: significant sign by t-test

(yellow star: $p < 0.01$ // red star: $p < 0.05$ // green star: $p < 0.10$)

4) Graph options

N: no interpolated

I: interpolated

S: vehicle subtraction

5) 3D options

5-1) rotate (default=330)

5-2) elevate (default=340)

5-3) surface transparency (default=50)

5-4) perspective (default=1 // no perspective = 0)

6) axis options

6-1) maximum of vertical axis (copies per cell) (default=A (auto) // absolute value)

6-2) minimum of vertical axis (copies per cell) (default=0 // auto=A)

6-3) view modes (N=normal view, I=inverted view, R=rear view)

7) size

7-1) graph width (default=400)

7-2) graph height (default=400)

7-3) title font (default=8 // invisible=0)

-sample:

average surface +-Sd surface

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/6/1422217_a_at/AS/N/330-340-50-1/A-0-N/300-300-8

average surface +-Sd surface, Individual point and significant point

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/6/1422217_a_at/ASIT/N/330-340-50-1/A-0-N/300-300-8

median surface, maximum and minimum surface

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/6/1422217_a_at/MXN/N/330-340-50-1/A-0-N/300-300-8

average surface +-Sd surface, interpolated

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/6/1422217_a_at/AS/I/330-340-50-1/A-0-N/300-300-8

average surface +-Sd surface, vehicle subtracted

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/6/1422217_a_at/AS/NS/330-340-50-1/A-0-N/300-300-8

average surface +-Sd surface, expression axis is inverted.

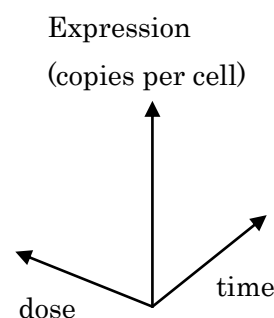
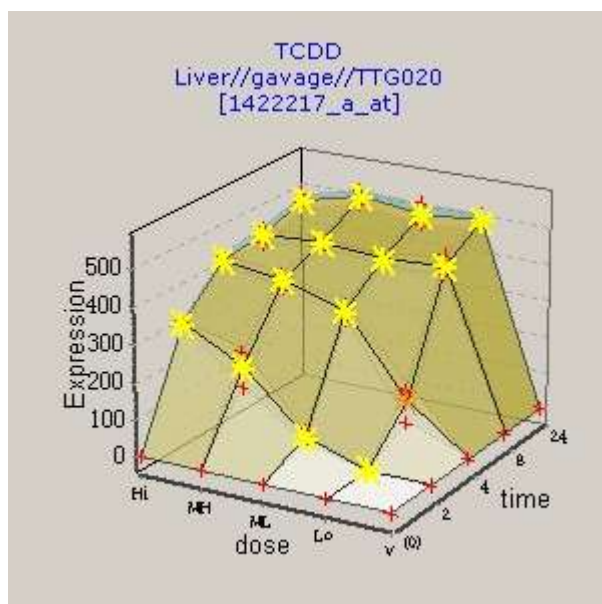
http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/6/1422217_a_at/AS/N/330-340-50-1/A-0-I/300-300-8

average surface +- Sd surface, rear view

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/6/1422217_a_at/AS/N/330-340-50-1/A-0-R/300-300-8

average surface +- Sd surface, no title

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/6/1422217_a_at/AS/N/330-340-50-1/A-0-N/300-300-0



An example of Surface graph

Average Surface, +-Sd Surface, individual points (+) and significant points ($p < 0.01$) (*)

IV) Typical Work flow

- 1) Search Project by chemical name and get the Project Id (Project tool)
- 2) Search candidate gene by its common name and get the Probe Set Id. (PSId tool)
- 3) View the Surface graph (Surface tool)

example:

To view the Ahr gene expression pattern affected by 3-methylcholanthrene in mice.

1) Get Project Id

<http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/project/mouse/3-methyl>

>>> Project Id = 121(wild type, liver), 267(Ahr KO mouse, liver)

2) Get Probe Set Id

<http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/tools/psid/mouse/ahr>

>>> Probe Set Id=1422631_at, 1450695_at

3) View the Surface Graph

3-1) Response of wild type mouse

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/121/1422631_at/A_SIT/N/330-340-50-1/A-0-N/300-300-8

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/121/1450695_at/A_SIT/N/330-340-50-1/A-0-N/300-300-8

3-2) Response of Ahr KO mouse

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/267/1422631_at/A_SIT/N/330-340-50-1/A-0-N/300-300-8

http://percellome.nihs.go.jp/PDBR/v1.dll/ds/rest/Tools/Surface/267/1450695_at/A_SIT/N/330-340-50-1/A-0-N/300-300-8

V) Notice, Copyright and Disclaimers

Notice

To assure the integrity of information on this service, we reserve the right to monitor system access if malicious actions are taken to disable our online services or intentionally gain unauthorized access to our systems.

Copyright

Percellome Database was produced by the Percellome Project.

Percellome Project is a toxicomics research program and has been implemented by the Division of Cellular and Molecular Toxicology, Biological Safety Research Center, National Institute of Health Sciences, JAPAN (Div. Tox, NIHS).

The Project is supported in part by Research Grants from the Japanese Ministry of Health, Labour and Welfare, the Ministry of Education, Culture, Sports, Science and Technology, and the Ministry of Environment.

REST API of PercellomeWeb Service is maintained by Div. Tox, NIHS and all rights reserved. It is free to use for academic research and governmental administration.

Please contact us (toxomicsdb@nihs.go.jp) beforehand to use the APIs and/or the information from the database for following cases:

- Commercial use (drug discovery etc.)
- Publication and/or presentation at public conferences.

It is requested that in any subsequent use of the database, Div. Tox, NIHS be given appropriate acknowledgment.

Disclaimer

For data and software available from this service, we do not warrant or assume any legal liability or responsibility for the accuracy, completeness or usefulness of any information, apparatus, product, or process disclosed.

(Revised 12 Nov 2012)