

Microarray Data Upload Tutorial

Login

First, login to the BIRN Microarray site. You must create a new account if this is your first time.

Upload Data

Hi Mouse MPTP Model!

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start -- upload CSV file-- select global annotations-- select column annotations-- enter global annotations-- enter column annotations-- done

Upload Data

To upload data, make sure that it is saved in a file in the CSV (comma separated values) format. The first row should be headers and the first column should contain probe information. The data should look like:

```
Probe set,my_run_1,my_run_2,my_run_3,my_run_4,my_run_5
probe_1,9.688260527,9.567979015,9.683857755,9.646699099,9.793452673
probe_2,10.93782943,10.90813957,10.93351137,10.92649346,10.60981388
probe_3,9.982321432,9.811004259,9.865944367,9.886423353,10.01274453
probe_4,8.138811973,7.93442332,8.226493913,8.099909735,8.261787736
```

There is no inherent limit on the number of columns or rows, but the file size must be less than 100MB.

Once the file has been uploaded, you will be prompted for the type of annotations that you would like to enter for the rows and the columns. You will then be asked to enter that information for the probe column and for each experimental header in the first row. If the header annotations that you enter include information about anatomical location, you will be ready to view the data in the context of an atlas in MBAT.

Start!

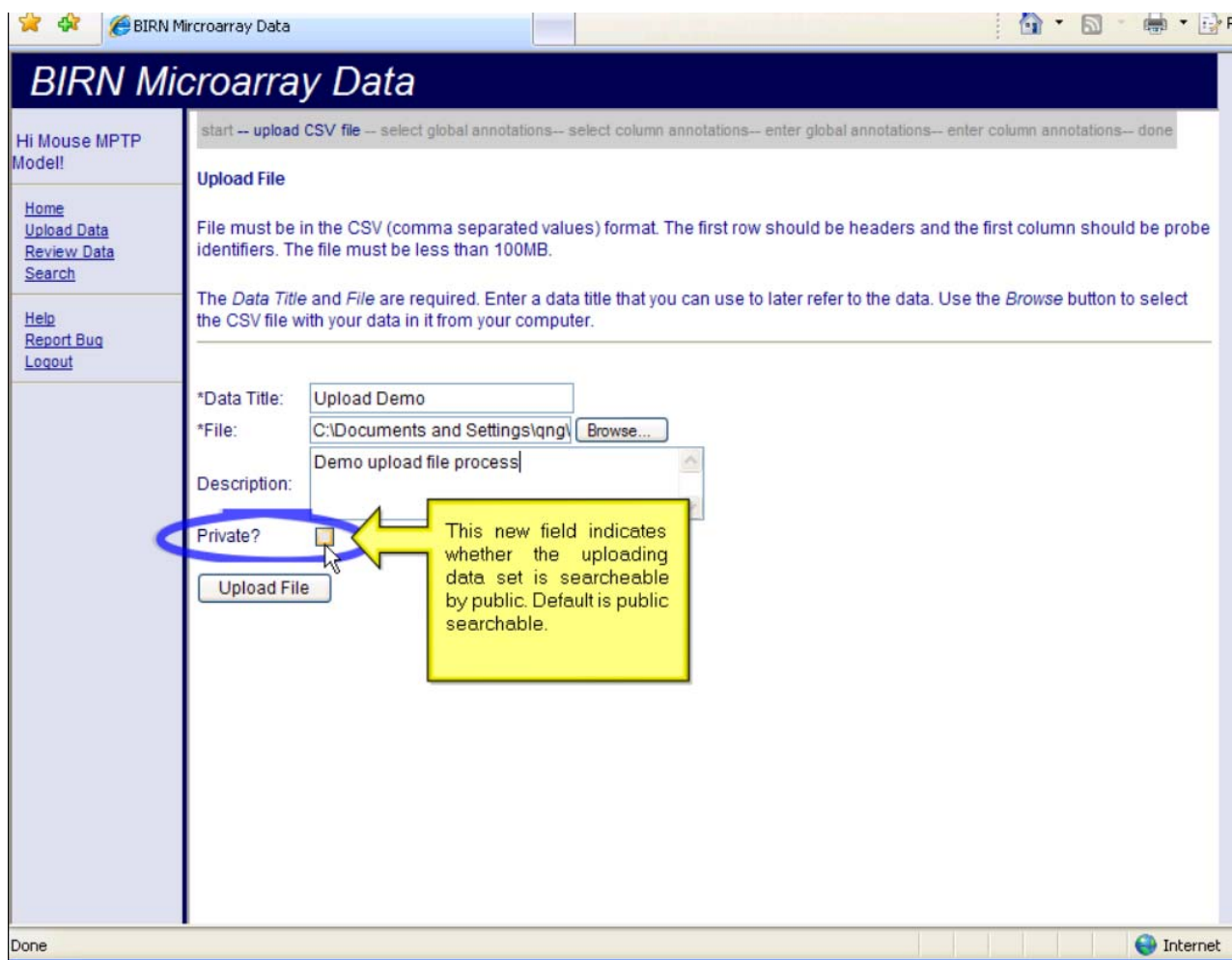
Internet

1. Make sure the uploaded files are in the correct format, i.e. it must be in CSV format, and the *first row should be headers and the first column should contain probe information*. After the first column, each column should contain all the data for a single experiment. You will be asked for information about each experiment (column) that you upload.

Example:

```
ProbeSet,amygdala,cerebellum,cerebral_cortex,dorsal_striatum,hippocampus,...
AFFX-18SRNAMur/X00686_3_at,9.688260527,9.567979015,9.683857755,9.646699099,9.793452673,...
AFFX-18SRNAMur/X00686_5_at,10.93782943,10.90813957,10.93351137,10.92649346,10.60981388,...
AFFX-18SRNAMur/X00686_M_at, 9.982321432,9.811004259,9.865944367,9.886423353,10.01274453,...
AFFX-BioB-3_at, 8.138811973,7.93442332,8.226493913,8.099909735,8.261787736,...
```

2. Click on **Start!** button when ready to upload files.



3. Enter the Data Title, Description of the uploading data file.
Note: The data file must be less than 100 MB.
4. Click the Private? check box you do not want others to view this data without your username and password. Publicly accessible data will be available to all users. Leaving the check box blank will make the data available for public to search.
5. When done, click the “Upload File” button to continue uploading the file.

Selecting the Categories you will use to annotate your data

a) Select Global Annotation

BIRN Microarray Data

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File successfully uploaded; beginning data parse.
File Upload Demo (103) successfully parsed: 27 columns and 49 rows

start-- upload CSV file -- **select global annotations** -- select column annotations-- enter global annotations-- enter column annotations-- done

Select global annotations
These are annotations that will cover the entire data set. You will enter them only once. Items selected as globals cannot be selected for column annotations.

- normalization/summarization
- probe_manufacturer
- age_in_days (adult)
- age_in_days (embryo)
- gender
- species
- stage
- strain

Select Annotations

Click here to continue the upload.

uad_user.php Internet

Global Annotations allows the user to annotate the information that applies to all uploaded experiments in this data file.

1. Click the check box to select annotations that apply to all the data in the current data set.
2. By default, normalization/summarization and probe_manufacturer are selected.
3. Description
 - a. **Normalization/summation** – A list of normalization and summarization algorithm used for comparing different gene.
 - b. **Probe_manufacturer** – The manufacturer that created the probes like Affymetrix, Illumina...
 - c. **Age_in_days (adult)** – The age of the post-natal subject.
 - d. **Age_in_days(embryo)** – The age of pre-natal subject
 - e. **Gender** – male or female.
 - f. **Species** – The species of the subject, currently, the selection are limited to mouse, quail, and human.
 - g. **Stage** – the developmental stage of the subject.
 - h. **Strain** – The strain of the subject
4. Click “Select Annotations” when done selecting.

b) Select Column Annotation

The screenshot shows the BIRN Microarray Data interface. The top navigation bar includes links: start—upload CSV file—select global annotations—select column annotations—enter global annotations—enter column annotations—done. The main content area is titled "Select annotations for each column" and contains the following text: "These are annotations that you will be asked to enter for each column. For enumerated types (multiple choice), you can limit the items that will appear in the pull-down menus by deselecting them here." Below this text is a list of checkboxes for selecting annotations:

- age_in_days (adult)
- age_in_days (embryo)
- brain_region
 - CNS
 - Brain
 - Forebrain
 - Cerebral Cortex
 - Hippocampus
 - CA1
 - CA3
 - Dentate Gyrus
 - Olfactory System
 - Frontal Cortex
 - Perirhinal Cortex
 - Entorhinal Cortex
 - Basal Ganglia
 - Caudoputamen
 - Globus Pallidus
 - Septum
 - Lateral Septal Nucleus

- Retina
- Midbrain
- Superior Colliculus
- Inferior Colliculus
- Interpeduncular Nucleus
- Substantia Nigra
- Hindbrain
- Pons
- Medulla
- Cerebellum
- Cerebellar Cortex
- Deep Cerebellar Nuclei
- Pituitary
- Spinal Cord
- other_region
- subject_or_group_ID
- treatment_description
- treatment_group
- treated
- control
- other

At the bottom of the list is a button labeled "Selected Annotations" with a yellow callout box pointing to it containing the text "Click here to continue the upload."

Column Annotation allows the user to select which categories will be available when annotating the uploaded experiments (columns) by selecting the applicable fields. For instance, if all the uploaded data is all from the same brain area, you may wish to select only that brain area to make the annotation process easier and faster.

1. Click the check box to select annotations that you would like to apply to the experiments (columns) in this current data set.
2. By default, the brain_region and other_region are selected. Also, those annotation fields not selected in the global columns are available for selection here as well.
3. Description
 - a. **Brain_region** – A list of brain region structures and tissues is displayed in hierarchical order.
 - b. **Other_region** – Allows the user to enter any tissue or structures name that are not in the brain_region list.

- c. ***Subject_or_group_id*** – The id used to identify the subject
- d. ***Treatment_group*** – The treatment group identifies the subject(s) of each experiment (column) as treated, control or other. Checking this option will make them available for selection.
- e. ***Treatment_description*** – allows the user to enter a description of the treatment.

4. Click “Select Annotations” when done selecting.

Annotating your Data

a) Global Annotation

The screenshot shows the 'Global Annotation' section of the BIRN Microarray Data application. At the top, a dark blue header contains the text 'BIRN Microarray Data'. Below the header, a navigation bar includes a progress indicator: 'start-- upload CSV file-- select global annotations-- select column annotations -- enter global annotations -- enter column annotations-- done'. On the left side, there is a vertical menu with the following items: 'Hi Mouse MPTP Model!', 'Home', 'Upload Data', 'Review Data', 'Search', 'Help', 'Report Bug', and 'Logout'. The main content area is titled 'Global Annotation' and contains several dropdown menus for selecting annotation fields: 'species' (Mus musculus), 'strain' (C57BL/6J), 'gender' (male), 'probe_manufacturer' (Affymetrix), 'stage' (Theiler), and 'data_analysis-normalization_summarization' (GC-RMA). At the bottom of this section are two buttons: 'Add Annotation' and 'Clear Annotation'.

Here, the fields selected earlier in Global Annotations are displayed here for the purpose of annotating the full uploaded data file.

1. Select the annotation field, and make a single selection in the dropdown list
2. When done, click “Add Annotation” button.
3. Click “Clear Annotation” to deselect all the selections.

b) Column Annotation

The screenshot shows the 'BIRN Microarray Data' web application interface. At the top, a progress bar indicates the current step: 'start-- upload CSV file-- select global annotations-- select column annotations-- enter global annotations -- enter column annotations -- done'. The main heading is 'Column Annotation for amygdala (1 of 26)', where 'amygdala' is circled in blue and labeled 'column header name' with a blue arrow. The interface includes a sidebar with navigation links: 'Hi Mouse MPTP Model!', 'Home', 'Upload Data', 'Review Data', 'Search', 'Help', 'Report Bug', and 'Logout'. The main content area contains several input fields: 'treatment_group' (a dropdown menu set to 'treated'), 'brain_region' (a list box with 15 brain regions: Hippocampus, CA1, CA3, Dentate Gyrus, Olfactory System, Frontal Cortex, Perirhinal Cortex, Entorhinal Cortex, Basal Ganglia, Caudoputamen, Globus Pallidus, Septum, Lateral Septal Nucleus, Amygdala, and Interbrain), 'other_region' (a text input field), and 'age_in_days (embryo)' (a text input field). At the bottom, there are two buttons: 'Add Annotation' and 'Clear Annotation'.

The user will be prompted to annotate each column (experiment) in sequential order according to the order in the input file. The column number and column header are displayed on the top of the screen for reference.

1. Select the annotation field that describes this experiment, and make a single selection in the dropdown list, or make multiple selections in the list box by holding down the Ctrl key.
2. For the structures not listed in the brain_region list box, you can enter in the other_region text box.
3. When done, click “Add Annotation” button.
4. Click “Clear Annotation” to deselect all the selections.

Done Uploading

The screenshot shows a web browser window displaying the BIRN Microarray Data application. The page title is "BIRN Microarray Data". A progress bar at the top indicates the current step: "start-- upload CSV file-- select global annotations-- select column annotations-- enter global annotations-- enter column annotations -- done". The main content area displays a "Done!" message and a congratulatory message: "Congratulations your file is loaded and annotated." The left sidebar contains navigation links: "Hi Mouse MPTP Model!", "Home", "Upload Data", "Review Data", "Search", "Help", "Report Bug", and "Logout". The browser's status bar at the bottom shows "Done" on the left and "Internet" on the right.

The above message will be displayed when you are done annotating the data file.

You can click the Review Data on the navigation column on left to review the annotation just entered, or re-annotate them if necessary.