Hub Updates and Q&A

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The FaceBase Hub has spent the last year:
• Publishing new data
• Improving existing data
• Launching and improving the new FaceBase website based on user feedback
• Identifying new ways to make our data as useful as possible
DATA UPDATES
Data Uploads

In Year 2, published data from most FaceBase 2 spoke projects:

- Regularly communicated with the spokes on their data submissions
- Feedback for the data submission spreadsheet produced by the informatics team
- Made updates to the vocabularies across all attributes
- Worked closely with the OCDM (Jim Brinkley) spoke to facilitate the ongoing development of ontologies

Our process for publishing new data:

- First posted the data for internal review by each spoke
- Allow to submit corrections where they had missing or incorrect fields.
- Effectively addressed quality control issues
## Data Uploads by FB2 Spokes

<table>
<thead>
<tr>
<th>Study</th>
<th>Dataset Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing 3D Craniofacial Morphometry Data and Tools to Transform Dysmorphology</td>
<td>1 dataset - Human - Morphometric analysis</td>
</tr>
<tr>
<td>Genomic and Transgenic Resources for Craniofacial Enhancer Studies</td>
<td>2 datasets - Mouse and Human - Chromatin modifier-associated region identification assay and RNA expression (RNA-seq) data</td>
</tr>
<tr>
<td>Integrated Research of Functional Genomics and Craniofacial Morphogenesis</td>
<td>2 datasets - Mouse - Hard and soft tissue microCT images and RNA expression (microarray)</td>
</tr>
<tr>
<td>RNA Dynamics in the Developing Mouse Face</td>
<td>1 dataset - Mouse - RNA expression (microarray) data</td>
</tr>
<tr>
<td>Transcriptome Atlases of the Craniofacial Sutures</td>
<td>2 datasets - Mouse - RNA expression (RNA-seq) data</td>
</tr>
<tr>
<td>Project Description</td>
<td>Data or Resources</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Anatomical Atlas and Transgenic Toolkit for Late Skull Formation in Zebrafish</td>
<td>Zebrafish Imaging data (In Review)</td>
</tr>
<tr>
<td>Genomic and Transgenic Resources for Craniofacial Enhancer Studies</td>
<td>Mouse or human transgenic bioinformatics</td>
</tr>
<tr>
<td>Epigenetic landscapes and regulatory divergence of human craniofacial traits</td>
<td>Mouse transgenic imaging and bioinformatics</td>
</tr>
<tr>
<td>Transcriptome Atlases of the Craniofacial Sutures</td>
<td>Mouse bioinformatics</td>
</tr>
</tbody>
</table>
Fixing and Curating

• Improved classification of data
  – New Experiment Type attribute
  – Added phenotypes
  – Support for transgenic enhancer data

• Clean up of existing metadata
  – E.g., consistent anatomical terms from OCDM
  – Genotype, fixing entries, etc
Fixing and Curating

• Added cross linkages to navigate between related data
  – Between Gene Summary pages and dataset records
  – Looking for more opportunities between different data

• Handling human data
  – Working with the Spritz/Klein spoke
  – Refined the submission standards for human subjects data to support the latest research
  – Creating an automated ingest pipeline for sensitive data
SITE ENHANCEMENTS
The new Mouse Matrix provides a rich visualization of all mouse control data.

- Grid of data by age stage and anatomy
- Color coding indicates the experiment type(s) available
- Clicking on the cells, rows, and columns allows users to navigate directly to the database entries for those data sets
- Users can scroll up and down the entries for each cell
Mouse Matrix

Mouse Age Stage & Anatomy Matrix

Click a cell or label to see a list of links to the related datasets.
Mouse Matrix

• Show live on

https://www.facebase.org/mousematrix/
Permalinks: One-click Data Shortcuts

• The Data Browser allows you to save your searches that are most interesting to you.

• Through analysis with domain users in the community, we identified key types of data of interest to FaceBase users.

• Via permalinks, we are able to add shortcuts to this data on the homepage and other parts of the site to take users directly to interesting collections.
Permalinks: Example on Home page

Browse the Data Repository by Attributes Get started with one of these or start from scratch.

Try the new Mouse Matrix to visualize our mouse data.

By Organism
- Mouse
- Zebrafish
- Human

By Genomics Data
- Human Genotype and Phenotype Assay
- Expression Profiling
- Enhancer Identification
- Gene Expression Pattern

By Imaging Modality
- microCT
- microMRI
- OPT Images
Home page redesign

Last winter, we re-configured the home page to:

• Add permalinks
• Better reflect the data available
• Find other resources
Home page redesign

• We are continuing to evolve and develop the homepage
  – Reflect new data capabilities and features (ie, Mouse Matrix)
  – Make it easier to share the data with the community.
  – Perform usability testing with people from the craniofacial community to better understand what they’re looking for.
Home page – new iteration

Comprehensive data and resources for craniofacial researchers

Search through craniofacial datasets of mouse, human, and zebrafish with the FaceBase Data Browser.

Mouse
- Data Browser Shortcuts:
  - All Mouse Datasets
  - Expression Profiling
  - Enhancer Identification
  - Mouse microCT
- Mouse Matrix
  View a matrix of all available FaceBase mouse experiment types by anatomy and age stage.
- Gene Expression Patterns
  View gene expression pattern drawings and related gene information.
- Mouse Anatomy
  View color-coded images of mouse anatomical features by age stage.

Human
- Data Browser Shortcuts:
  - All Human Datasets
  - Expression Profiling
  - Enhancer Identification
  - Human Genotype & Phenotype Assay
- Gene Expression Patterns
  Certain genes in the Gene Expression Pattern Summary show where human mutations are expressed in the gene.
- 3D Facial Norms Database
  High-quality craniofacial anthropometric normative data.
- Human Genomics Analysis
  High-quality craniofacial anthropometric normative data.

Zebrafish
- Data Browser Shortcuts:
  - All Zebrafish Datasets
  - Expression Profiling
- FishFace
  Developmental atlas of zebrafish.

More Resources
- OCCIM - Ontology for craniofacial anatomy and development.
- Genome Browser
  View our custom track on the UCSC Genome Browser.
- Gene Expression Omnibus
  View a curated set of FaceBase mouse gene expression data.

Featured Publications
- View all FaceBase publications here

News
- All news
- Sign up for our mailing list

03/02/2016 - 2016 FaceBase Annual Meeting in Denver
  May 2-3
02/09/2016 - Upgrade to FaceBase authentication - Phase 1 on Feb 13th
12/14/2015 - Site updates - First new FBZ2 datasets now available
10/13/2015 - Site updates - Homepage Links and Data Browser UI
User and Group Management

With the launch of the new FB site, we integrated a flexible and secure user and group management services, Globus Nexus

- Same identity and groups across services using best practices for security.
- Extended and branded with FaceBase 2 styling,
- New workflows support an administrator approval process and required user attributes (e.g., the user’s project and organization)
- Uses the Open Authorization (OAuth) protocol to enable secure authentication across services and the Globus Groups API to ensure that users are authorized to access FaceBase services and data.
Upgrading Account Management

We are in the process of upgrading our system to use the Internet standard Open Authorization (OAuth) 2 protocol, used almost ubiquitously across the Web:

- Soon, people will be able to log into the FaceBase site using their existing institutional logins or major commercial services such as Google.
- Reduces the barrier to access to a FaceBase account.
Support for fine-grained authorization

Adding support for fine-grained authorization of data in the database server that powers the FaceBase data browser.

• best possible security and performance available in a web services stack

• Significant step towards providing our spoke projects with the ability to curate their own data in the coming year.
Usability Enhancements

Been gathering feedback from the user committee.

- Implemented usability testing for the website and prototypes of features for the data browser.
- We convened a usability testing team and tested mockups of alternative user interfaces.
- Used results to improve the data browser search capability to make the search more intuitive.
  - Example, “Filter” button
  - Easier to understand how to add filters to the search in order to quickly narrow results to the desired set of data.
  - New “Site Tour” link in Data Browser
- Surveys indicate higher user satisfaction
METRICS AND ANALYTICS
Web traffic statistics

Using Google analytics, here is the interaction with the new site since July 1, 2015

Number of:

- New registered users: 201
- Downloads of dataset zips: 319*
- Unique page views: 34,973
  - Average pages per session: 3
  - Average session duration: 3:54
- New vs Returning visitors: 64.7% / 35.3%

Bounce rate: 45% (pretty average for websites)

Data Browser itself has been accessed over 4,000 times.

* This metric doesn’t include views of 2D images and 3D previews.
New video showcasing how you can answer craniofacial research questions using www.facebase.org

Debuted at the Gordon conference
Show demo:
https://youtu.be/5NUQyV3FSfM
Coming up…

• High resolution data model
• Heatmaps
• More cross-cutting integrations and visualizations between datasets
• More data matrices – you’ll be able to define the criteria
• Integrate the Monarch PhenoGrid functionality into FaceBase.
  – Browse across related phenotypes within the FaceBase datasets as well as to identify related data that might exist outside of FaceBase.