FaceBase

A Resource for Dental
and Craniofacial Researchers

Welcome to FaceBase Bootcamp

FaceBase 2025 Bootcamp for
Users and Contributors

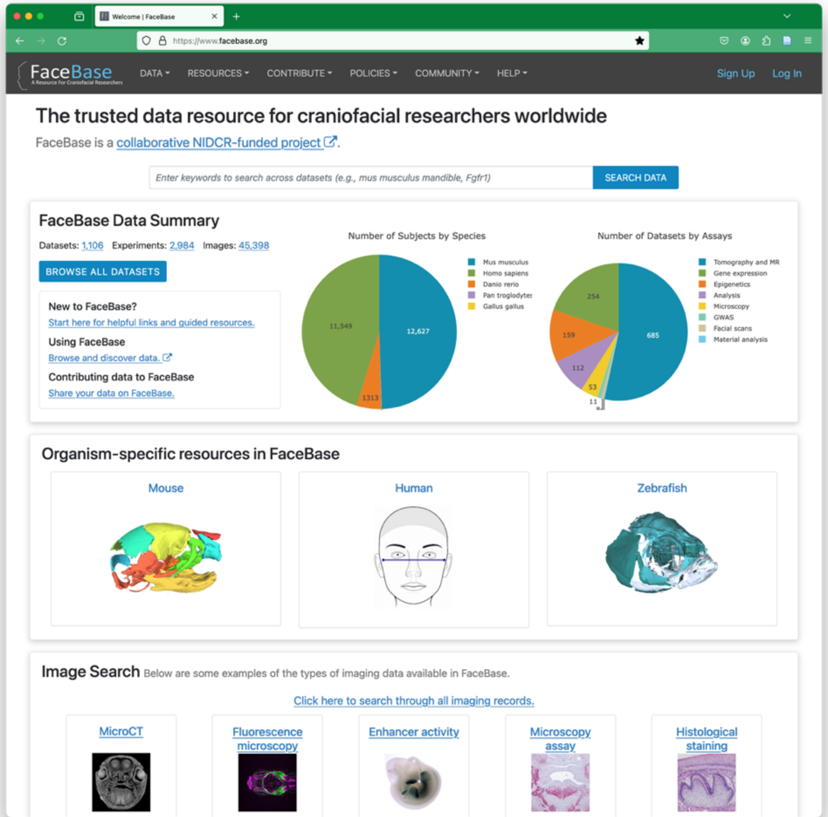
FaceBase
A Resource For Craniofacial Researchers

Our Mission

*To serve as the trusted **online data resource** for dental, oral, craniofacial (DOC) and biologically related research worldwide*

1. Provide a ***comprehensive data resource*** in support of advancing research in craniofacial development and malformations
2. Promote ***multidisciplinary collaboration*** and research in the dental and craniofacial fields
3. Integrate ***genomic and phenotype data*** from *multiple species*
4. Utilize multiple, complementary resources and strategies to **enhance data reproducibility**

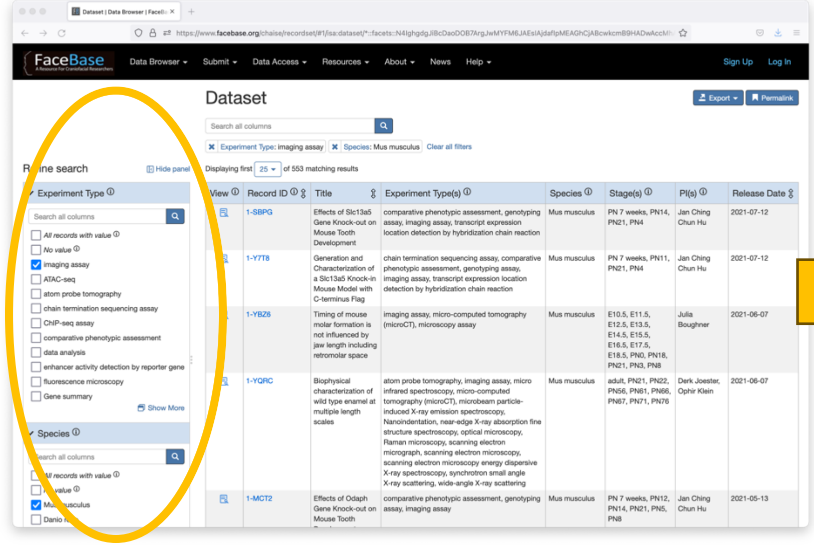
Established in 2009

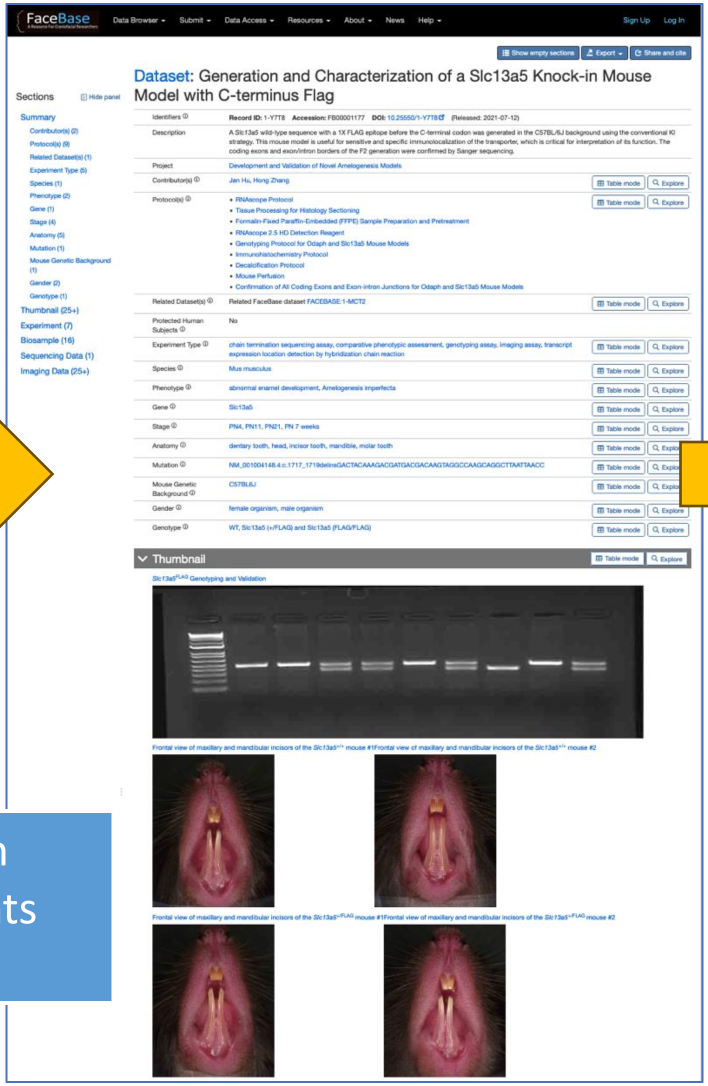


www.facebase.org

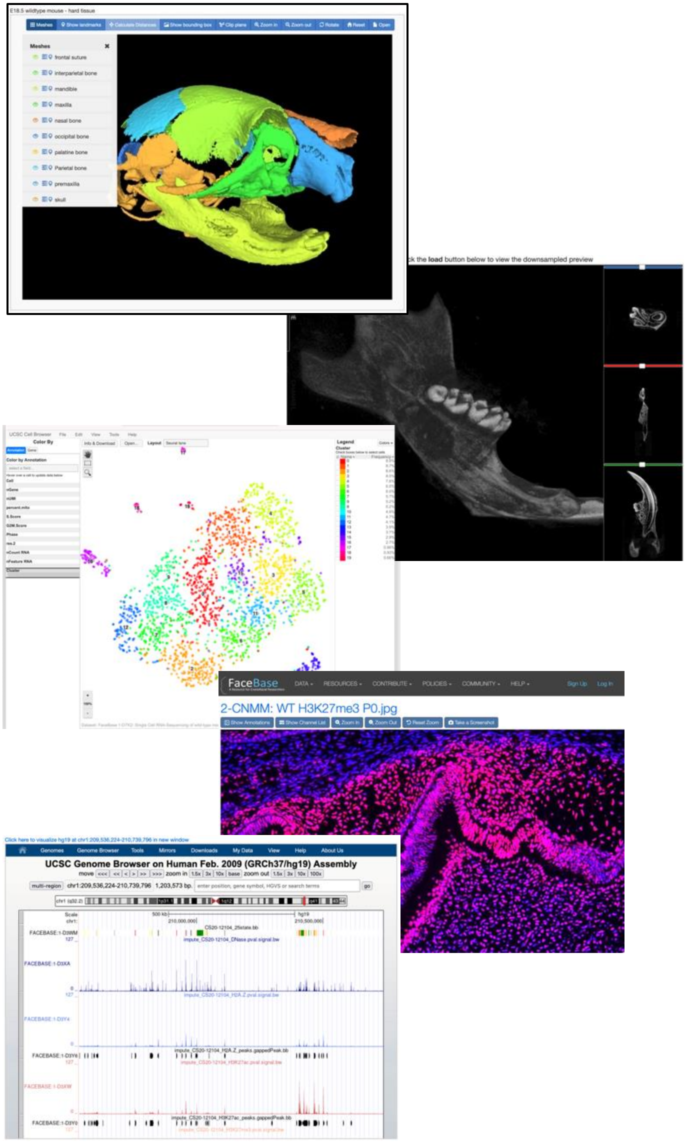
FAIR and AI/ML-Ready Data Usage

1. Find: consistent labeling leads to accurate filtering to find data of interest



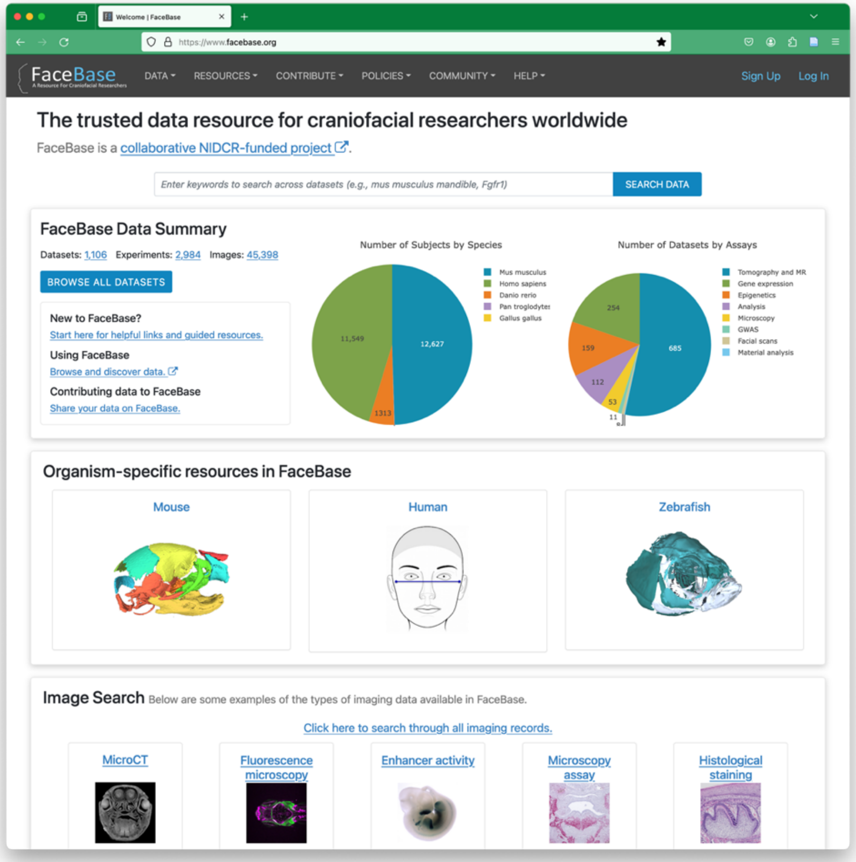


2. Access: detailed descriptions with well organized details on experiments and biological characteristics



3. Interop and Reuse: many paths for online visualization or download for offline analysis

Demo: Website and Documentation



Website

- https://www.facebase.org

Documentation

- https://docs.facebase.org

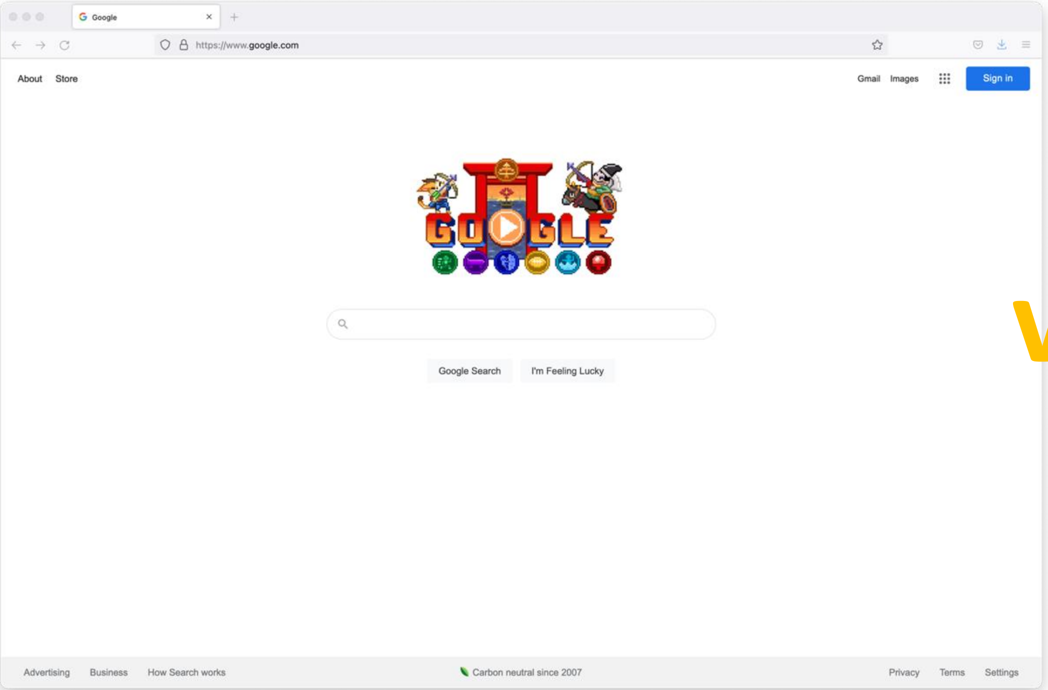
Finding, Accessing & Citing Data

FaceBase 2025 Bootcamp for Users and Contributors

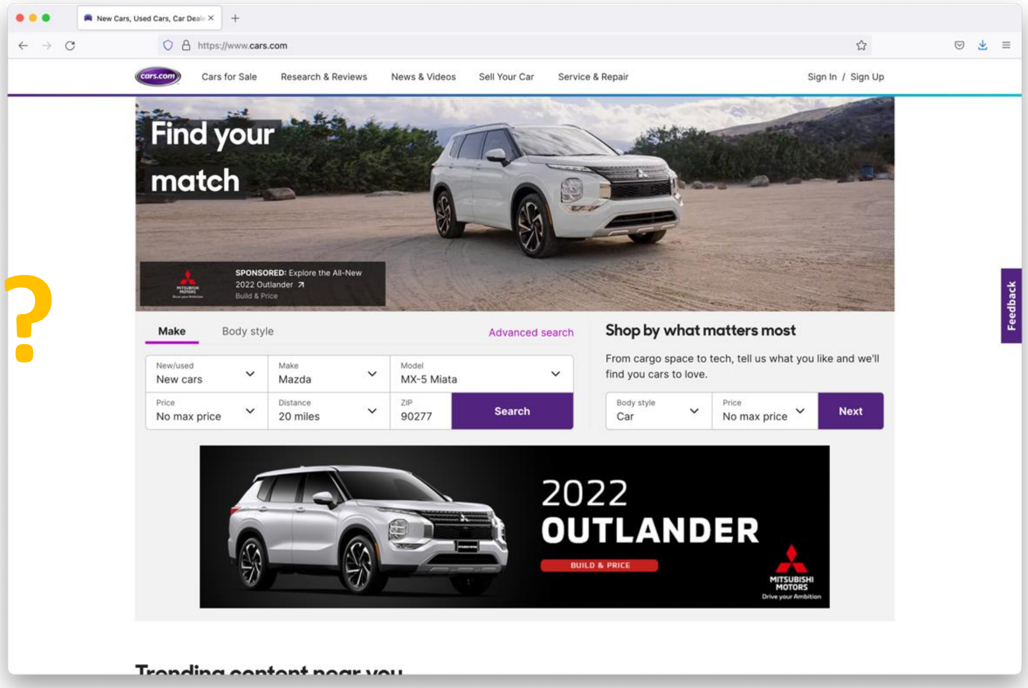
An Analogy… Shopping for a Car Online

Google vs. Cars.com?

“2018 or newer Mazda MX-5 Miata with less than 20,000 miles near 90292”



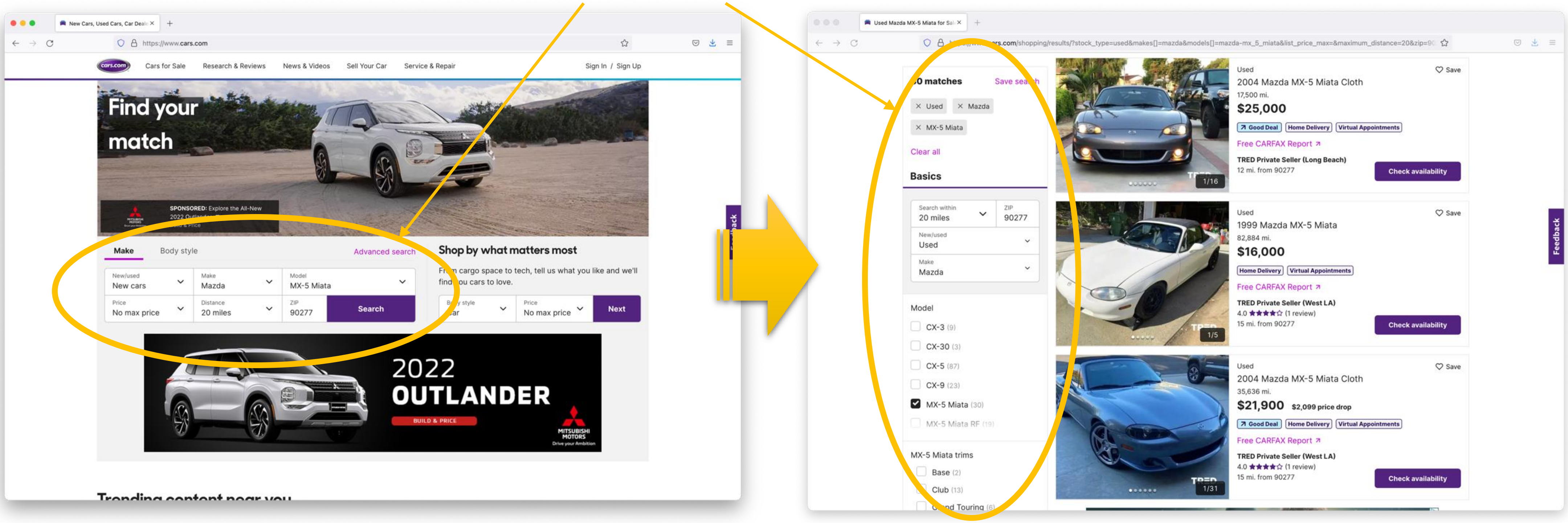
vs?



Text search works well over a collection of documents, not as well for non-text objects

"Faceted Navigation" through Structured Data

Filters by category

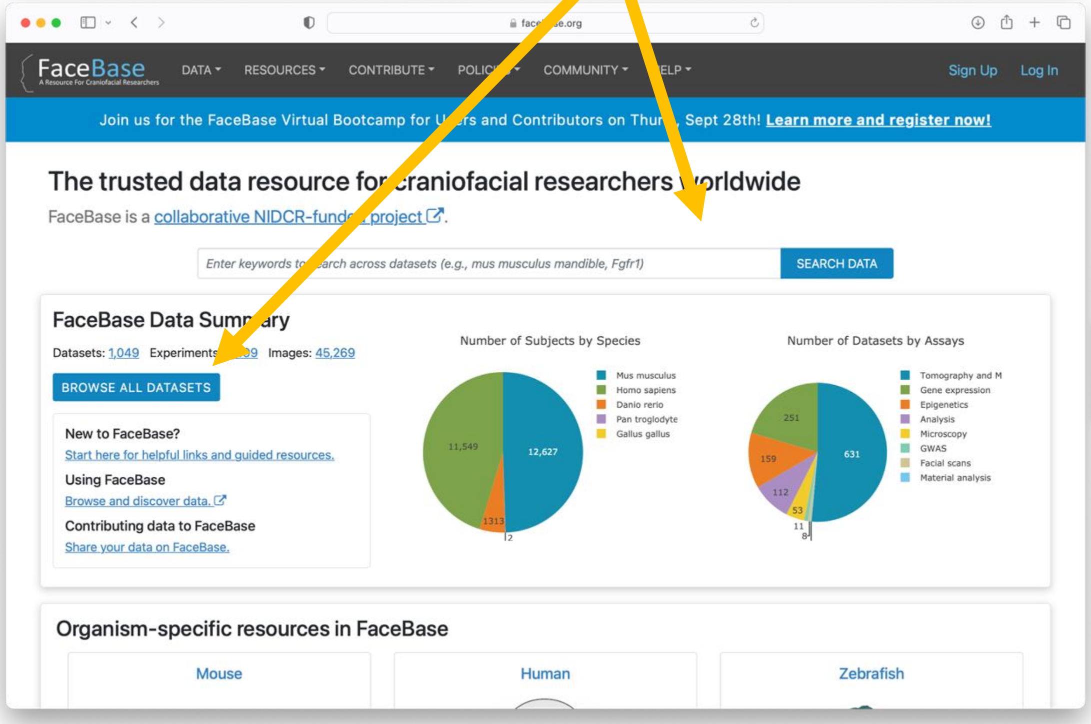


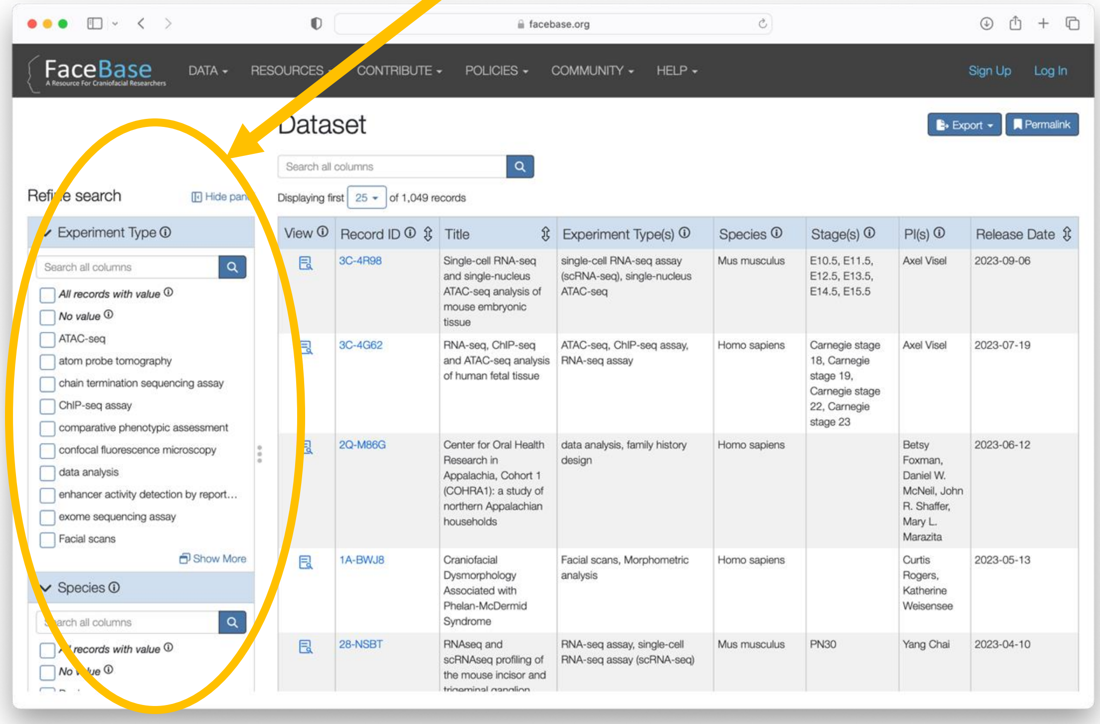
Guides the “search” through structured data by their classification or characteristics

Finding Data in FaceBase

Search & Browse

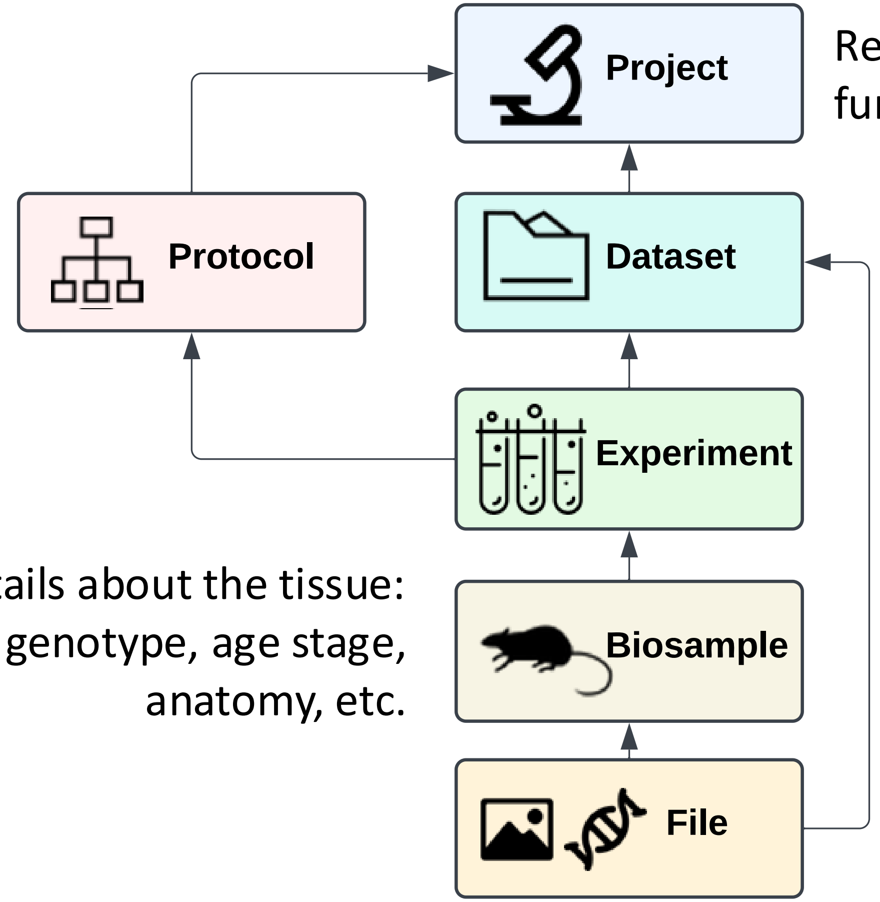
Filters by category





Guided search through the project-dataset-experiment-biosample data model

Ready for Reuse, Reproducibility, (Re)analysis



Represents the group contributing data, funding, and team members

Describe or reference protocol(s)

Collection of data and metadata

Specifies assay type, protocol used, instruments, etc. for each experiment.

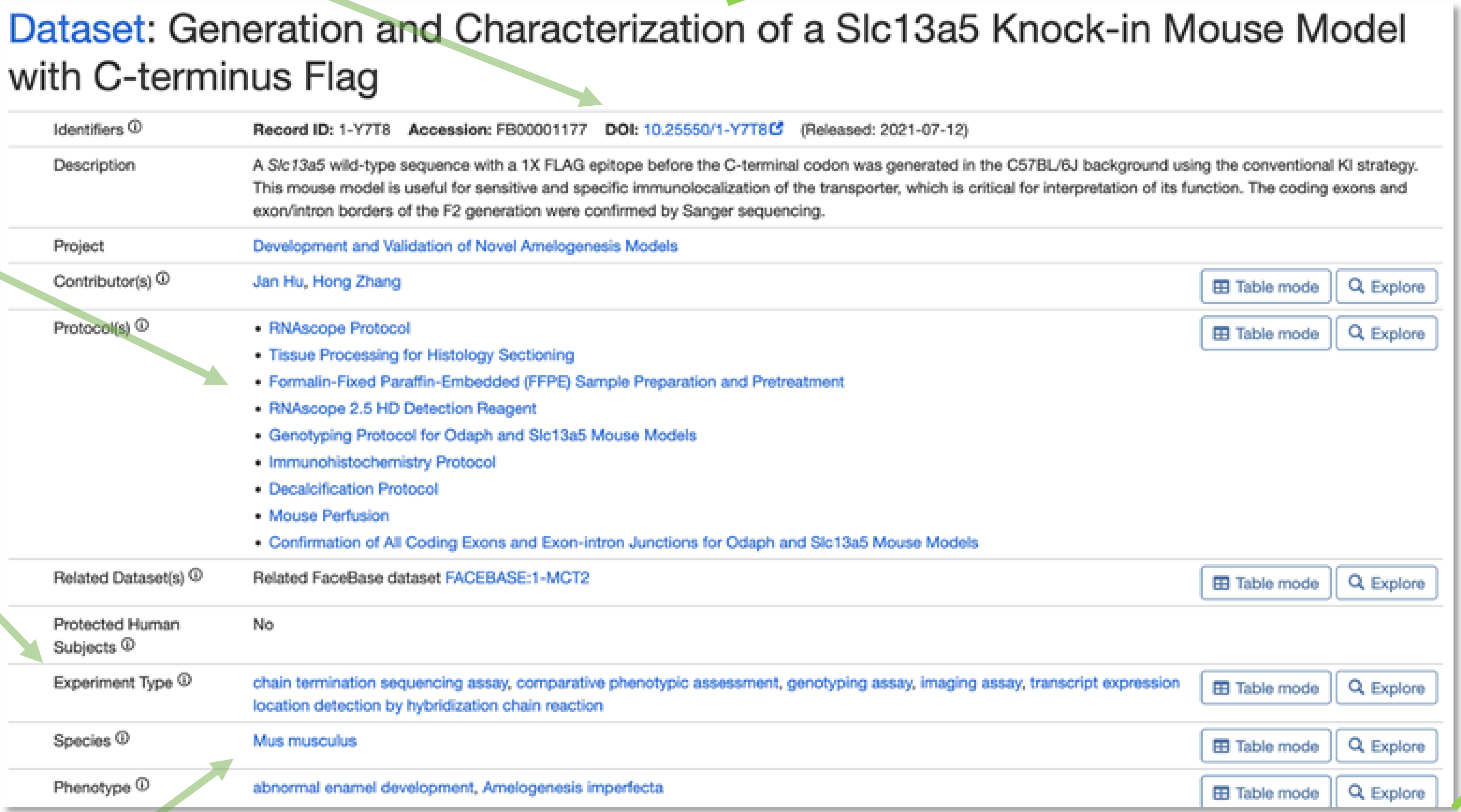
Provides details about the tissue: species, genotype, age stage, anatomy, etc.

Collects data output: imaging, microscopy, sequencing and others…

Based on "FAIR data" principles, for increased scientific utility

Tour of Dataset Details

Persistent Identifiers
(e.g., Digital Object Identifiers)



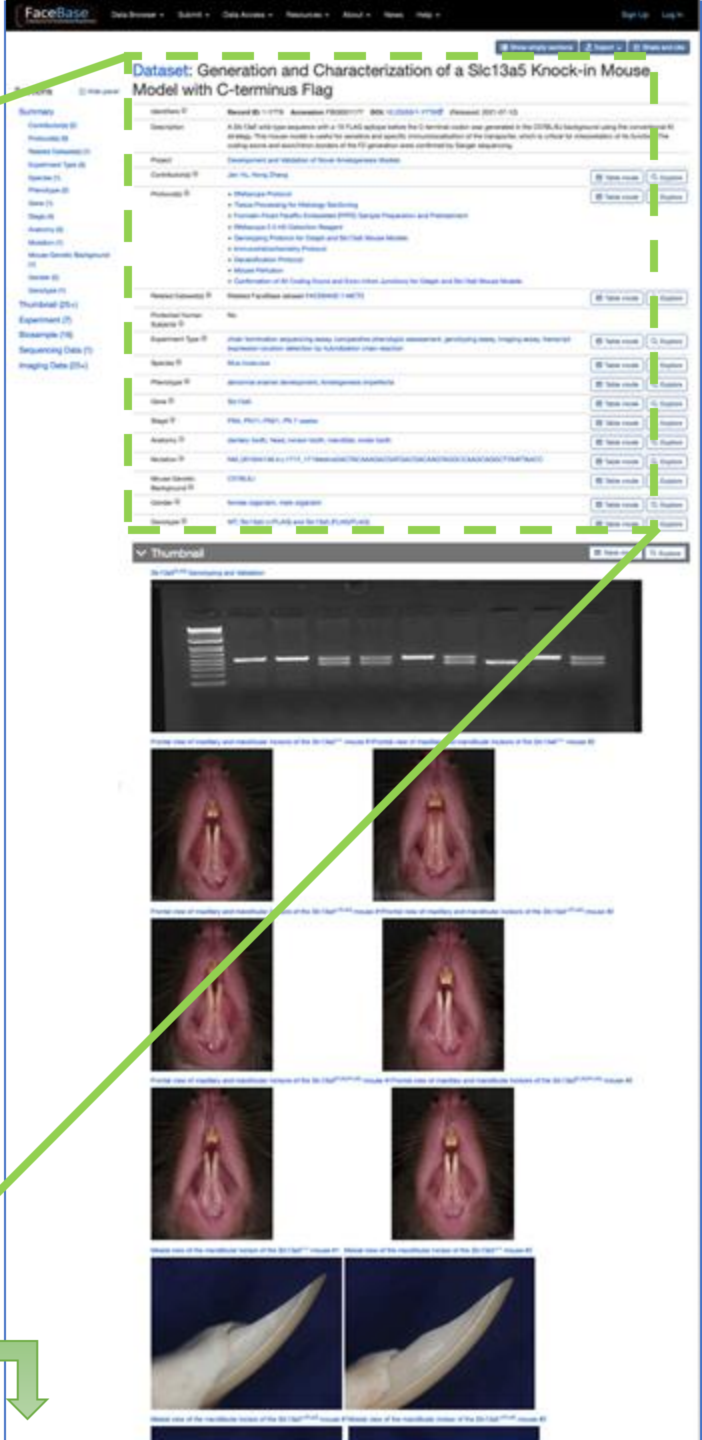
Dataset: Generation and Characterization of a Slc13a5 Knock-in Mouse Model with C-terminus Flag

Identifiers	**Record ID:** 1-Y7T8 **Accession:** FB00001177 **DOI:** 10.25550/1-Y7T8 (Released: 2021-07-12)	
Description	A *Slc13a5* wild-type sequence with a 1X FLAG epitope before the C-terminal codon was generated in the C57BL/6J background using the conventional KI strategy. This mouse model is useful for sensitive and specific immunolocalization of the transporter, which is critical for interpretation of its function. The coding exons and exon/intron borders of the F2 generation were confirmed by Sanger sequencing.	
Project	Development and Validation of Novel Amelogenesis Models	
Contributor(s)	Jan Hu, Hong Zhang	Table mode / Explore
Protocol(s)	• RNAscope Protocol • Tissue Processing for Histology Sectioning • Formalin-Fixed Paraffin-Embedded (FFPE) Sample Preparation and Pretreatment • RNAscope 2.5 HD Detection Reagent • Genotyping Protocol for Odaph and Slc13a5 Mouse Models • Immunohistochemistry Protocol • Decalcification Protocol • Mouse Perfusion • Confirmation of All Coding Exons and Exon-intron Junctions for Odaph and Slc13a5 Mouse Models	Table mode / Explore
Related Dataset(s)	Related FaceBase dataset FACEBASE:1-MCT2	Table mode / Explore
Protected Human Subjects	No	
Experiment Type	chain termination sequencing assay, comparative phenotypic assessment, genotyping assay, imaging assay, transcript expression location detection by hybridization chain reaction	Table mode / Explore
Species	Mus musculus	Table mode / Explore
Phenotype	abnormal enamel development, Amelogenesis imperfecta	Table mode / Explore

Protocols

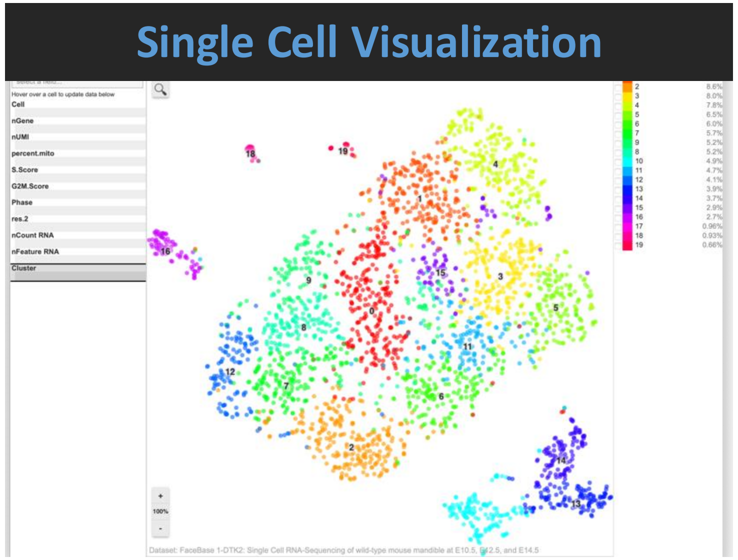
Keywords

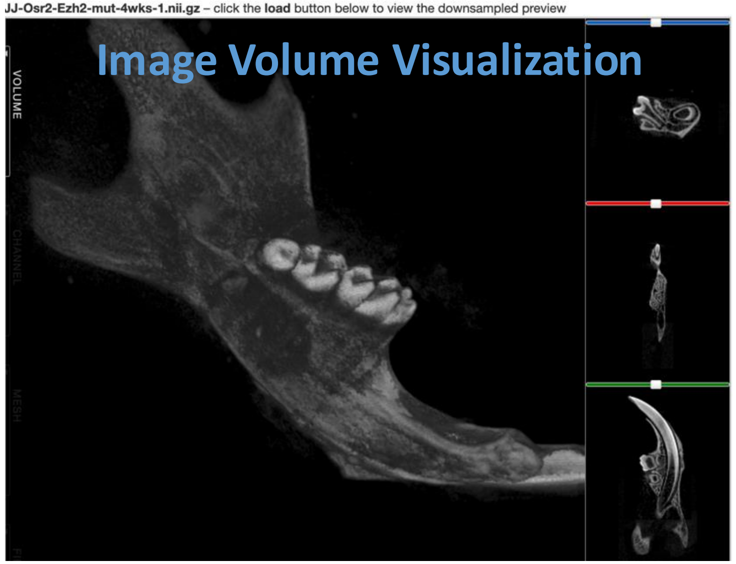
Standardized Terminology

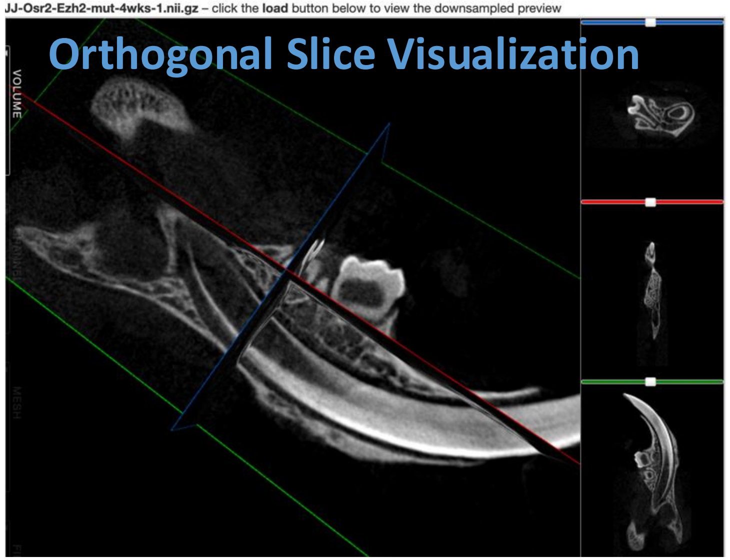


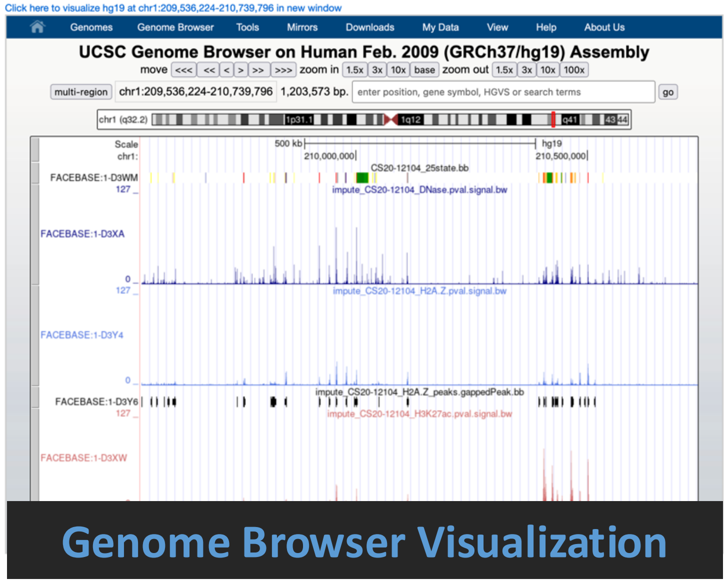
Additional Details

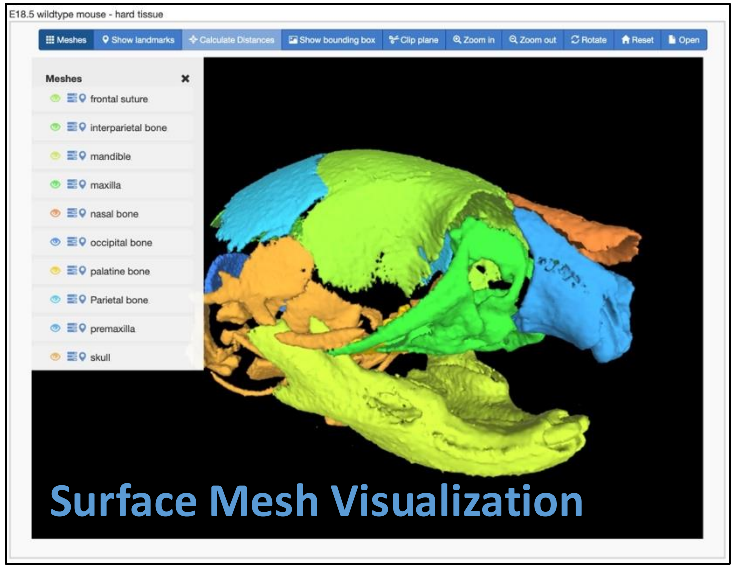
Data Visualization to Maximize Accessibility



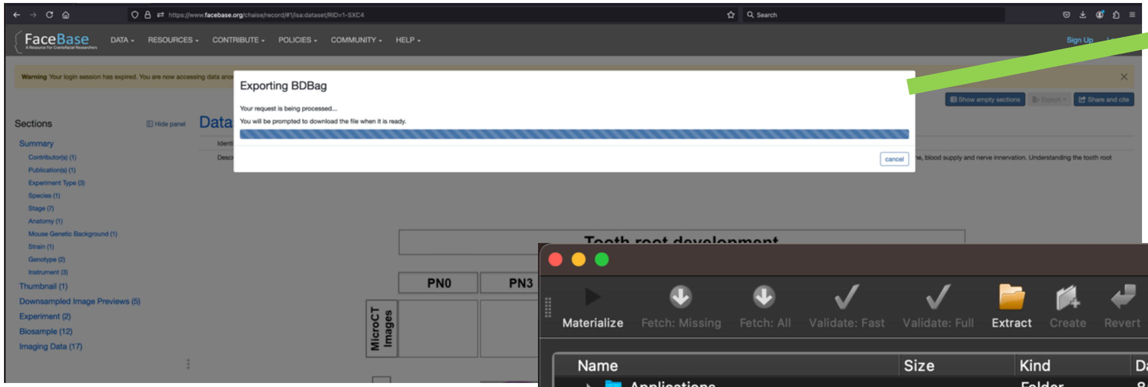


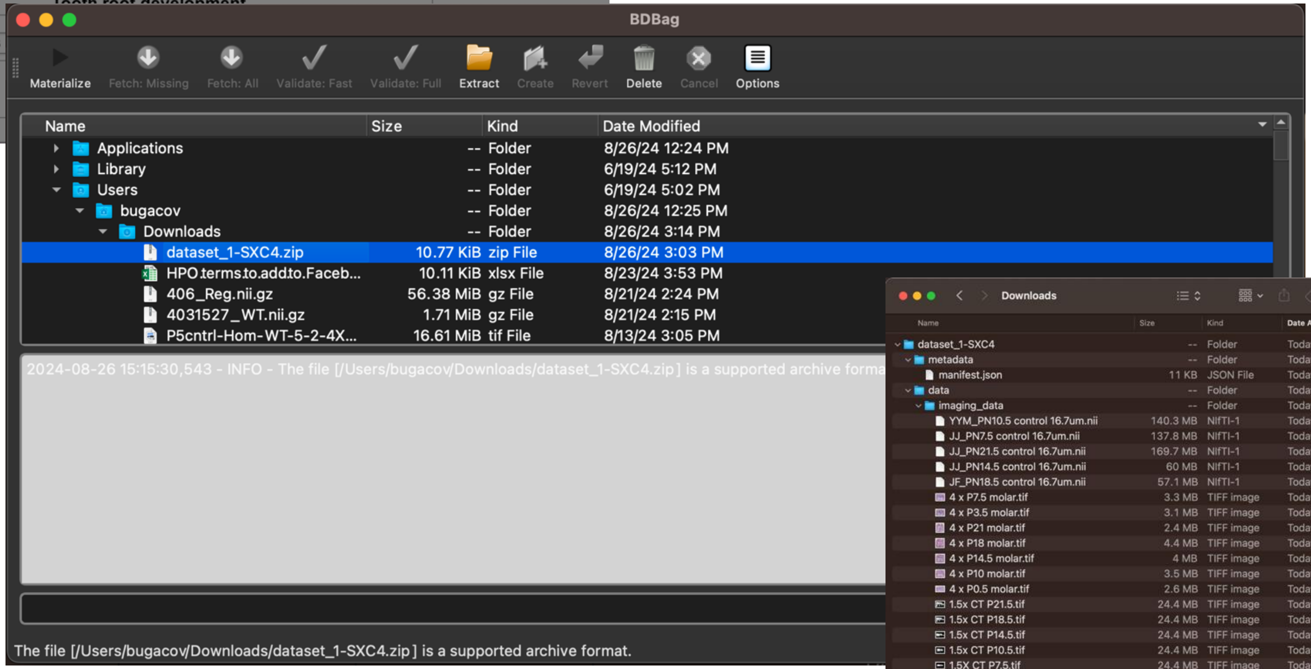




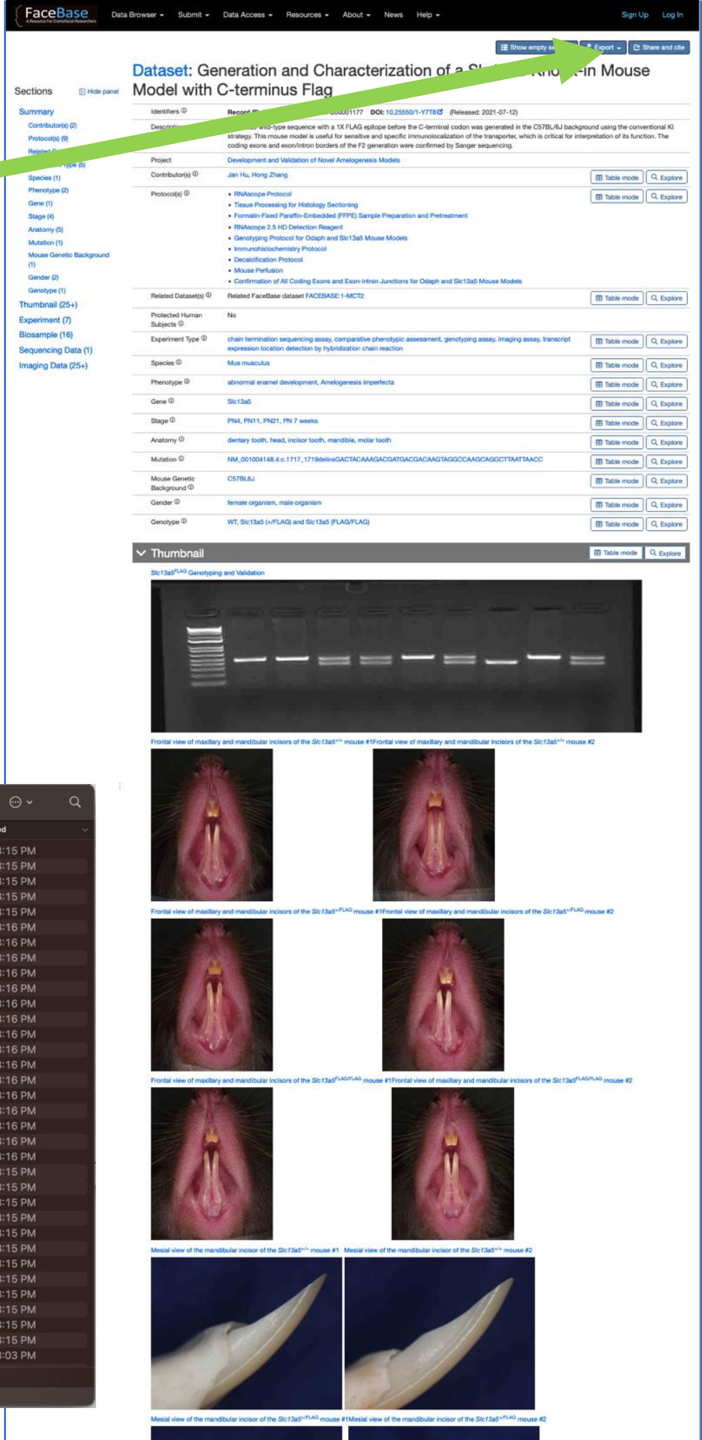


Batch Data Export



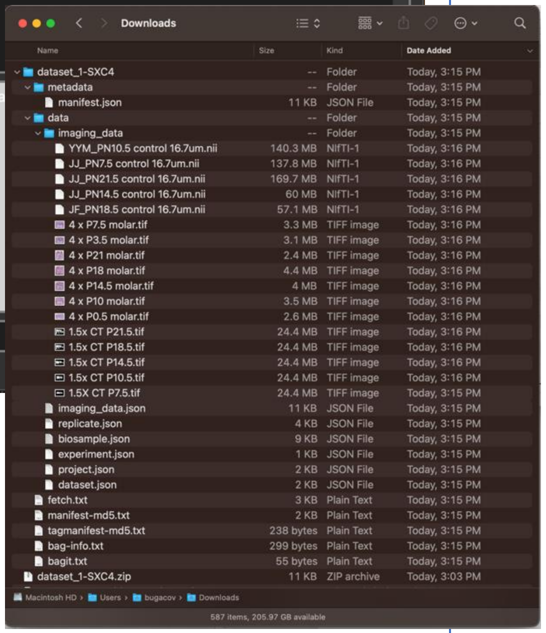


1 Download a dataset manifest file (BDBag) using the browser



Materialize – fetch and integrity check data files

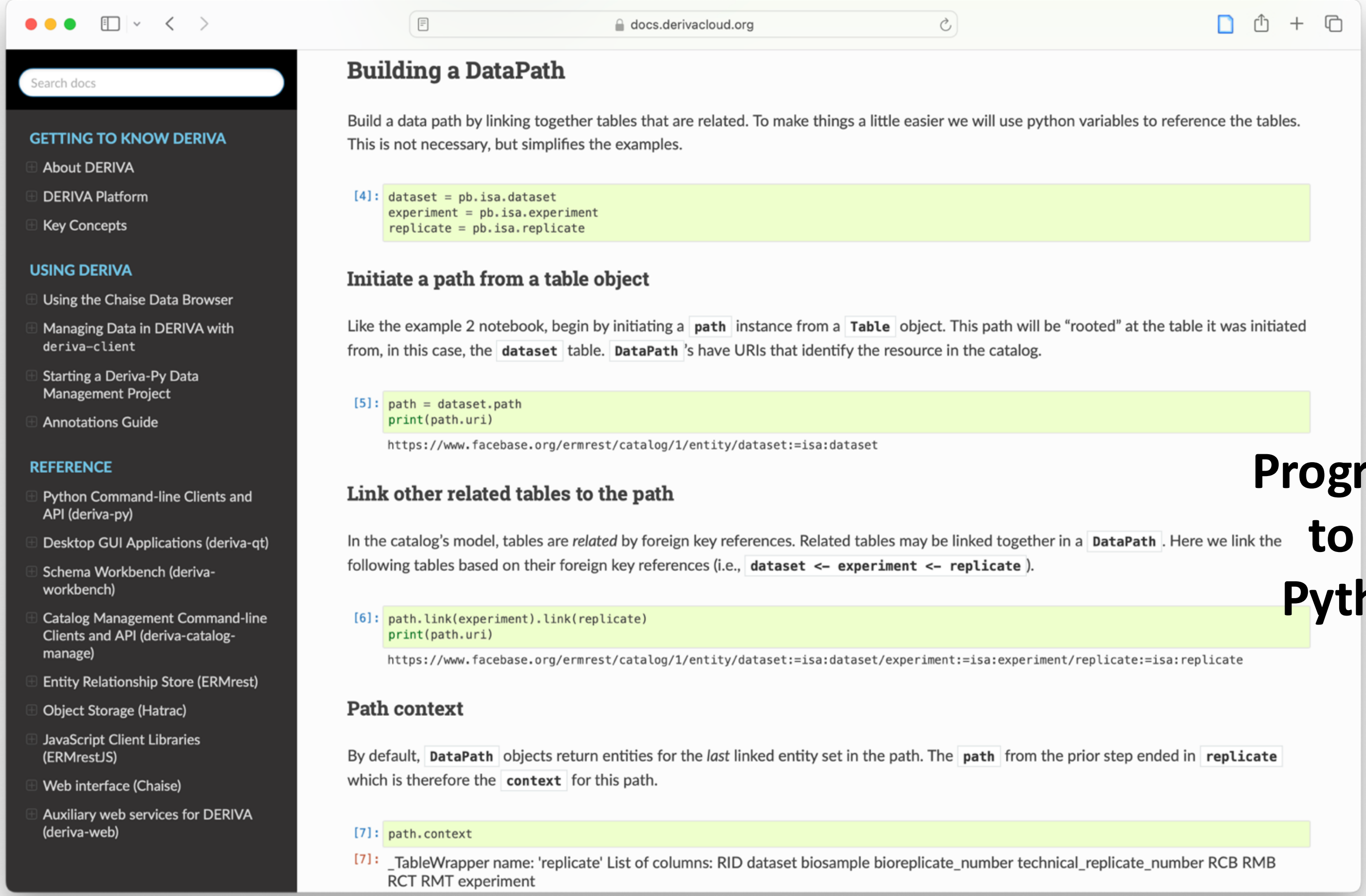
2



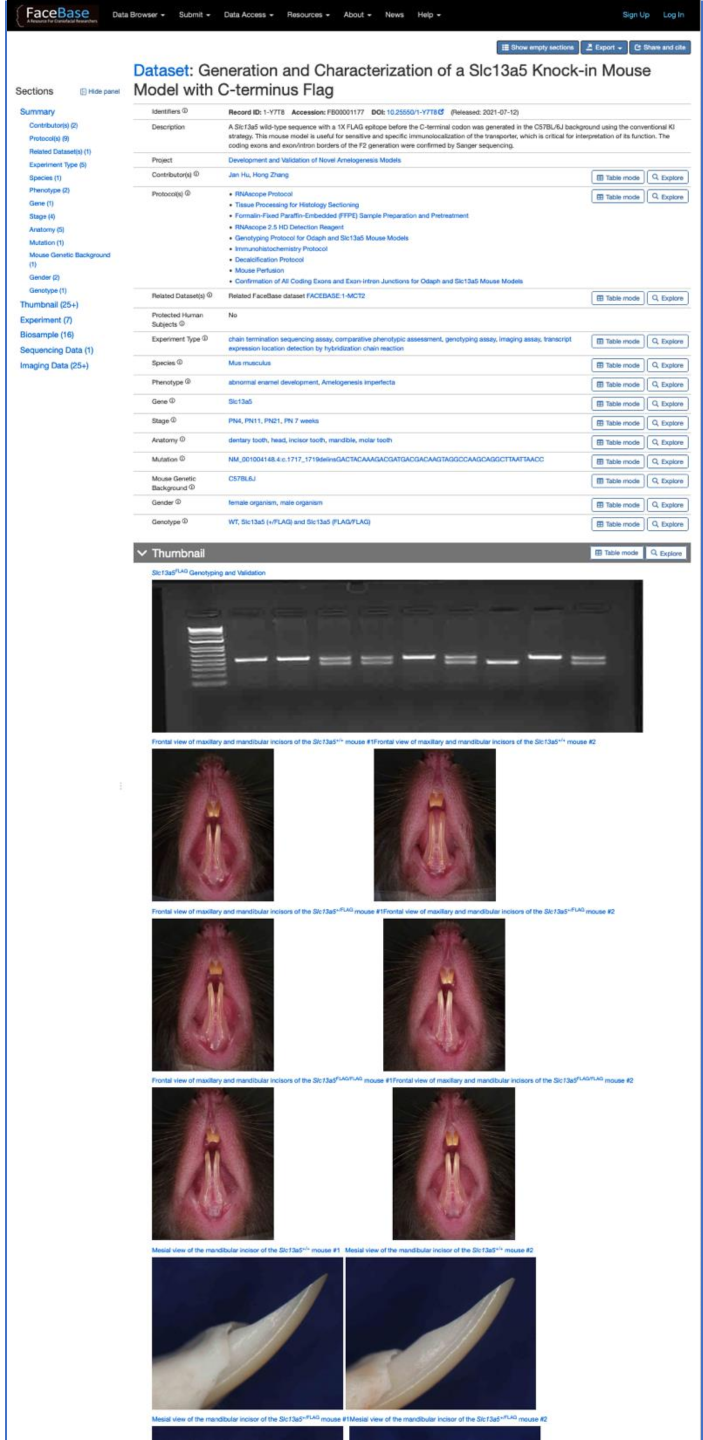
All files downloaded to your computer

3

Programmatic Data Access



Programmatic access to all data using Python and R APIs



Citing Datasets In Publications

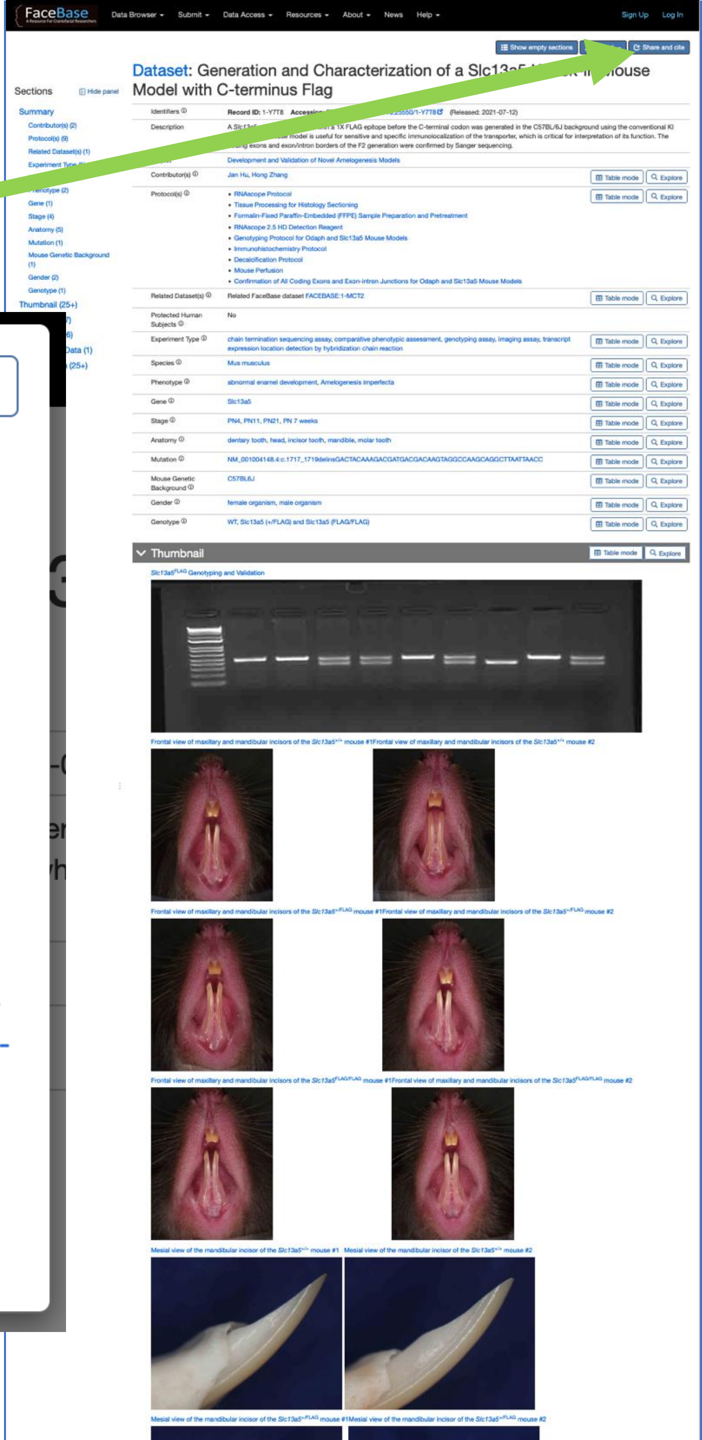
Citable Data IDs:

- Globally-unique
- Persistent
- Actionable
- Versioned
- Publishable

✓Cite data as you would any other work that you use

✓Always include the DOI! ☺

Recommended Citation Format for Data



Demo: Search & Browse & Visualization

- General Search
  - www.facebase.org → Search Data OR Browse All Datasets
- Image Search
  - www.facebase.org → Data → Images
- Visualization Examples
  - Image Volume
    - https://www.facebase.org/id/TKT (skull)
    - https://www.facebase.org/id/1-SXC4 (dental)
  - Histology
    - https://www.facebase.org/id/1-W96W
  - Surface Model/Mesh
    - https://www.facebase.org/id/1-YQK8
  - Genome Browser
    - https://www.facebase.org/id/TMJ
    - https://www.facebase.org/id/1-7780
  - Single Cell
    - https://www.facebase.org/id/R-PPWJ
    - https://www.facebase.org/id/V-J7QP (direct)