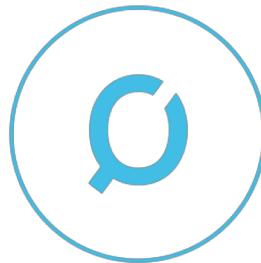


JAX FAIR Apps Team



DISQOVER



**The Jackson
Laboratory**

Leading the search
for tomorrow's cures



FAIR Beyond Data – Applications as FAIR Team Members

How do we become better data stewards?

We use data standards
National Bureau of Standards
(now NIST)
Department of Commerce

We work in a community and share
best practices
and use
pragmatic solutions to FAIR

W3C Standards

- Unique and persistent identifiers – ORCIDs, DOIs, etc.
- OWLs -
- DCATs – data catalogs so datasets can be findable
- RDFs – for describing graph networks of your data
- Turtle format (ttl) – terse RDF triple language
- SHACLs – for validation
- ... more

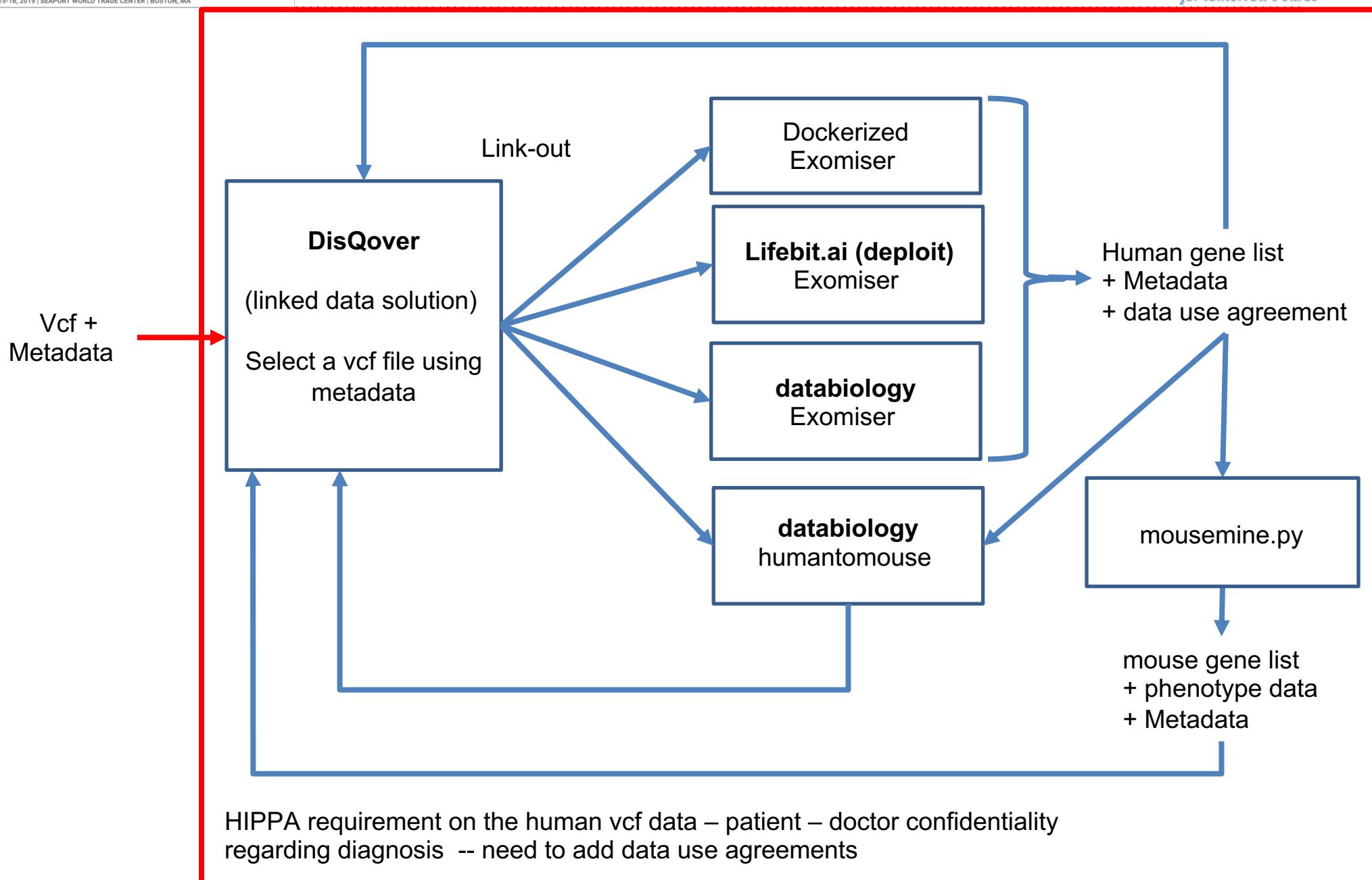
Tools work with standards (scratching surface)

- SMART APIs – for making services known
- STARDOG – validate RDF graphs with SHACL
- openprovenance.org – used to illustrate the provenance of our data in – application used (who ran it) – data out
- Google dataset search
- ... more

What's missing?

- Data use agreements
- Instruments generating data to these standards

JAX FAIR Apps Use Case

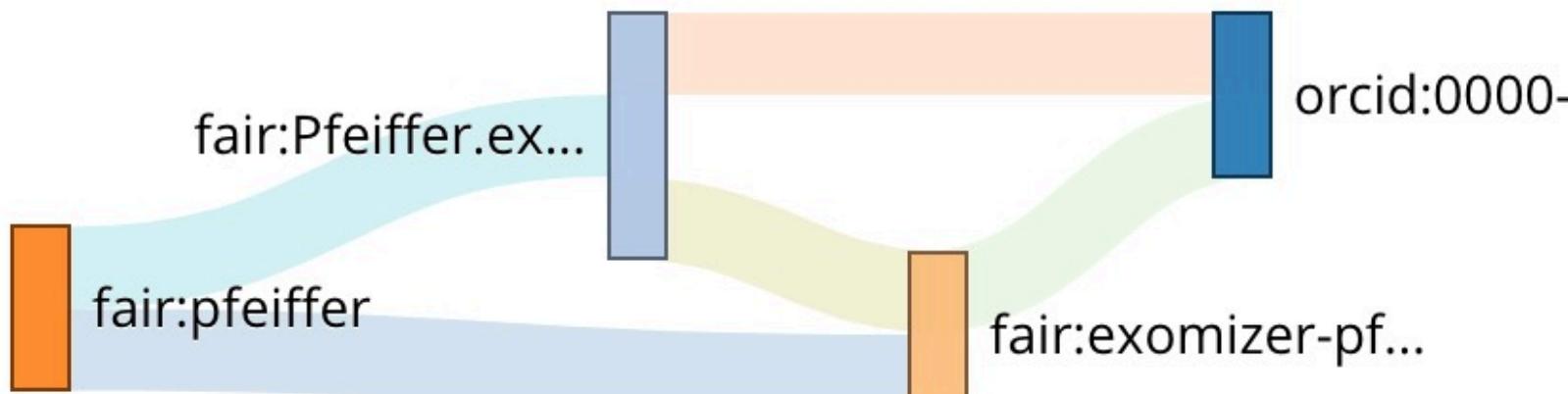


Example Provenance Document

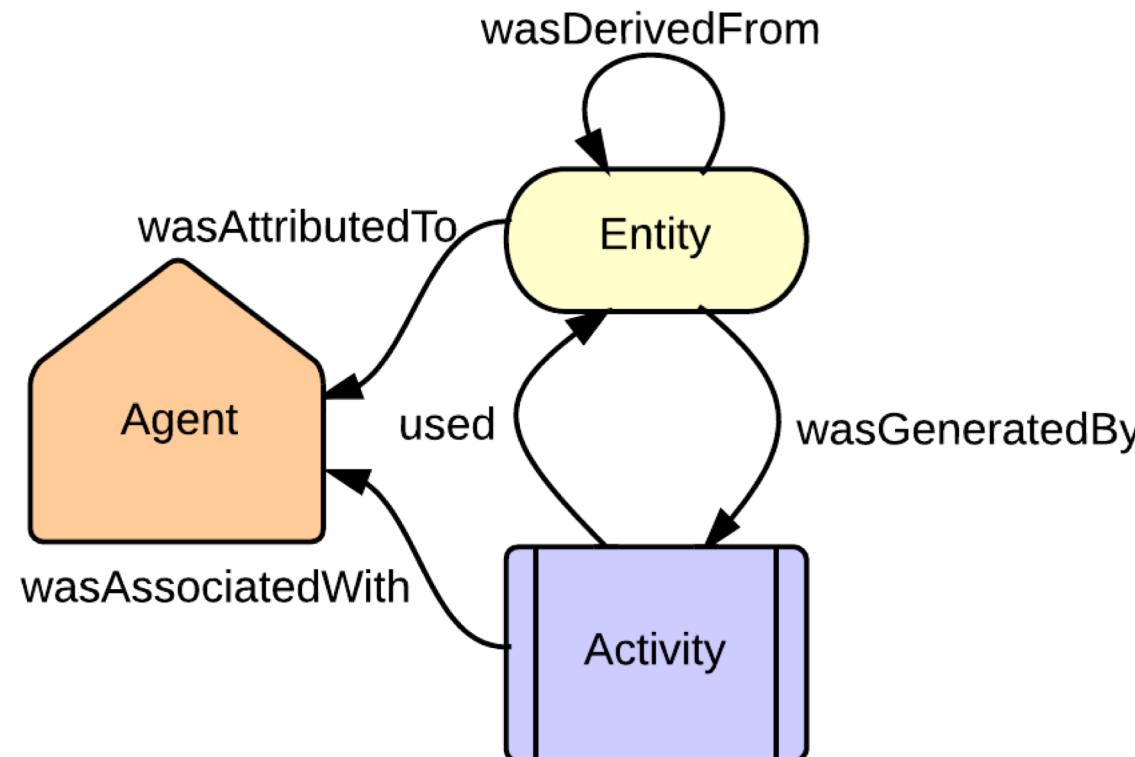
example provenance document

<https://openprovenance.org/store/documents/749>

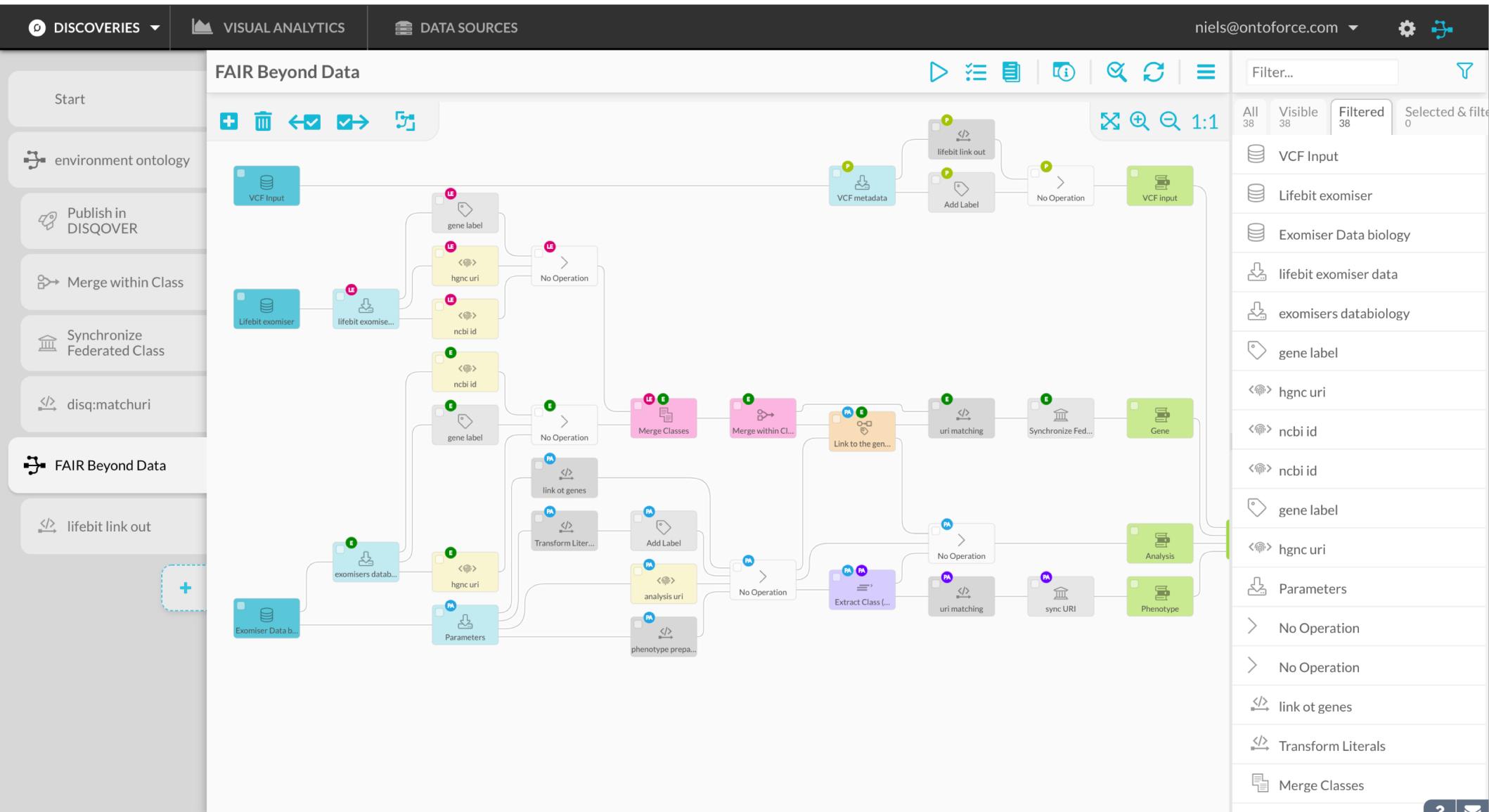
input on left, result in middle, process is exomiser, and person who ran it is orcid



Provenance Schema from W3C PROV



DisQover



FAIR Analysis Solution



Search &
Find data



5

Ingest back data to
Ontoforce

3 API Call to Deploit
to run analysis



5

Link to any
system/UI
through API



Nextflow

BDS

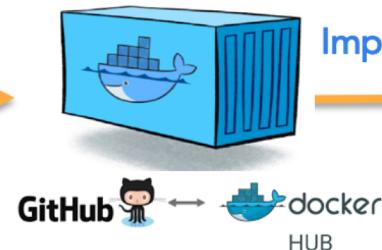
bcbio

R

scripts written
in other
languages

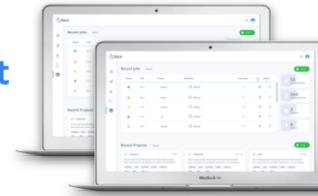
1

Containerise



2

Import to Deploit



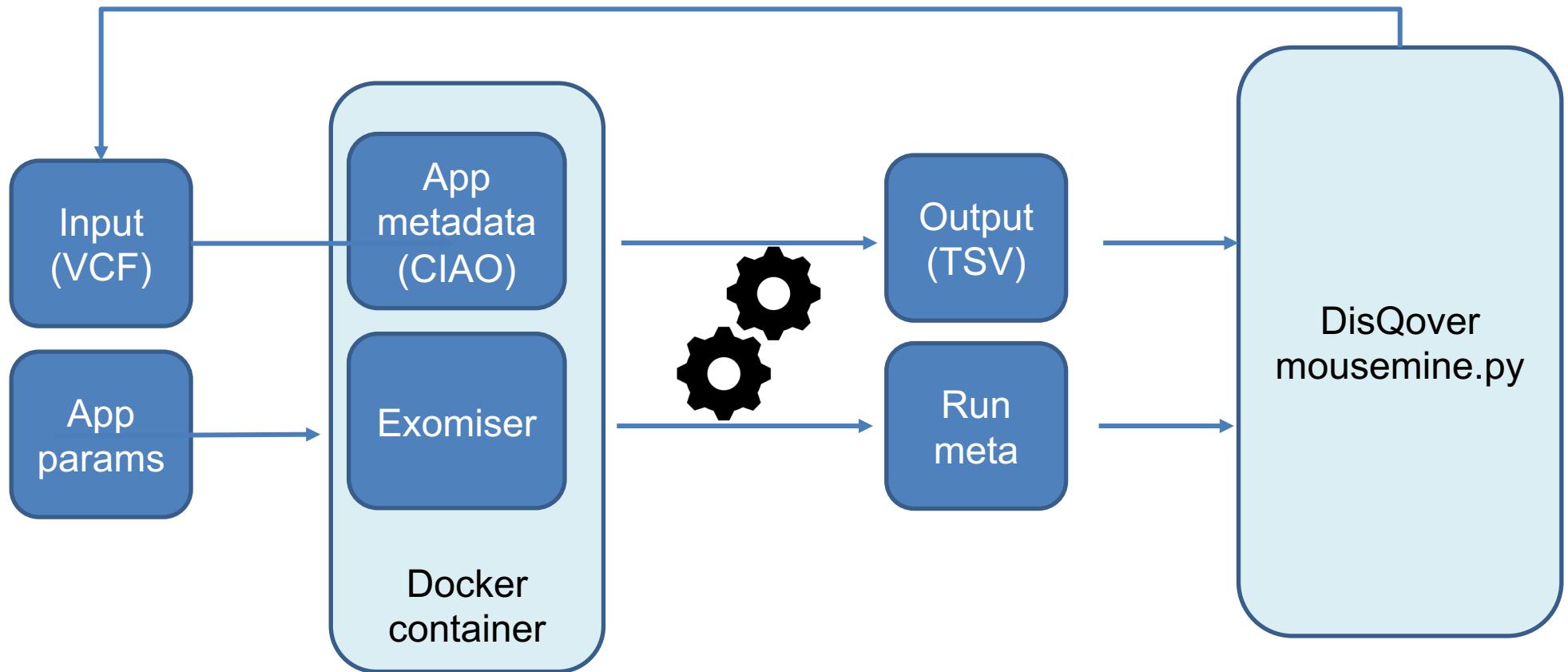
4

Monitor & Share
analysis progress



Databiology app

<https://bitbucket.org/databiology/app-dbio-exomiser/>



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From any project / data set page in MPD, you can see associated publication citation(s). Or, you can cite the MPD web page itself by clicking on the project's "About | Contact" button then find the "Formatted Citation" for copy-paste.

Citing this resource

Please use RRID:SCR_003212 when citing MPD.

Publications about MPD

Bogue MA, Grubb SC, Walton DO, Philip VM, Kolishovski G, Stearns T, Dunn MH, Skelly DA, Kadakkuzha B, TeHennepe G, Kunde-Ramamoorthy G, Chesler EJ. Mouse Phenome Database: an integrative database and analysis suite for curated empirical phenotype data from laboratory mice. Nucleic Acids Res. 2018 Jan 4;46(D1):D843-D850. doi: 10.1093/nar/gkx1082. [PubMed 29136208](#)

Bogue MA, Churchill GA, Chesler EJ. Collaborative Cross and Diversity Outbred data resources in the Mouse Phenome Database. Mamm Genome. 2015 Oct;26(9-10):511-20. doi: 10.1007/s00335-015-9595-6. Epub 2015 Aug 19. [PubMed 26286858](#) [FullText](#)

Bogue MA, Peters LL, Paigen B, Korstanje R, Yuan R, Ackert-Bicknell C, Grubb SC, Churchill GA, Chesler EJ. Accessing Data Resources in the Mouse Phenome Database for Genetic Analysis of Murine Life Span and Health Span. J Gerontol A Biol Sci Med Sci. 2016 Feb;71(2):170-7. doi: 10.1093/gerona/glu223. Epub 2014 Dec 22. [PubMed 25533306](#) [FullText](#)

Exomiser



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Improved exome prioritization of disease genes through cross-species phenotype comparison. Robinson PN, Köhler S, Oelrich A, Sanger Mouse Genetics Project, Wang K, Mungall CJ, Lewis SE, Washington N, Bauer S, Seelow D, Krawitz P, Gilissen C, Haendel M and Smedley Genome research 2014;24;2;340-8

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Not Secure | www.informatics.jax.org/mgihome/projects/aboutMouseMine.shtml

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ALLIANCE OF GENOME RESOURCES FOUNDING MEMBER

About the MouseMine data warehouse resource

MouseMine is a data warehouse for accessing integrated mouse data from Mouse Genome Informatics (MGI) and other web resources. MouseMine is a member of an extensive community of online data resources based on the [InterMine](#) software framework. It provides multiple, diverse, query templates and supports custom and iterative querying. MouseMine gives you the ability to upload and manipulate lists of features, save and combine results from different queries, and its web services API offers robust and comprehensive programmatic access to MGI data. For more information on MouseMine data see its [Data Categories](#).

For help using MouseMine, see MouseMine [help](#) and/or [Contact](#) MGI User Support.

See also: Motenko H, Neuhauser SB, O'Keefe M, Richardson JE. 2015. MouseMine: a new data warehouse for MGI. [Mamm Genome](#). 2015 Aug;26(7):325-30. [PubMed](#)

Contributing Projects: Mouse Genome Database (MGD), Gene Expression Database (GXD), Mouse Tumor Biology (MTB), Gene Ontology (GO), MouseCyc

[Citing These Resources](#) last database update 04/09/2019
[Funding Information](#) MGCI 6.13
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Citing MGI Resources

Publications to cite in your manuscripts

Please use the following citation formats when referring to resources available from the Mouse Genome Informatics Web Site in your publications.

MGD:

Smith CL, Blake JA, Kadin JA, Richardson JE, Bult CJ, the Mouse Genome Database Group. 2018. Mouse Genome Database (MGD)-2018: knowledgebase for the laboratory mouse. Nucleic Acids Res. 2018 Jan. 4;46 (D1): D836-D842.

GXD:

Finger JH, Smith CM, Hayamizu TF, McCright IJ, Xu J, Law M, Shaw DR, Baldarelli RM, Beal JS, Blodgett O, Campbell JW, Corbani LE, Lewis JR, Forthofer KL, Frost PJ, Giannatto SC, Hutchins LN, Miers DB, Motenko H, Stone KR, Eppig JT, Kadin JA, Richardson JE, Ringwald M. 2017. The mouse Gene Expression Database (GXD): 2017 update. Nucleic Acids Res. 2017 Jan. 4;45 (D1): D730-D736.

MTB:

Bult CJ, Krupke DM, Begley DA, Richardson JE, Neuhauser SB, Sundberg JP, Eppig JT. Mouse Tumor Biology (MTB): a database of mouse models for human cancer. Nucleic Acids Res. 2015 Jan 28;43(Database issue):D818-24.

See [Mouse Genome Informatics Publications](#) for an expanded list of resources available at the Mouse Genome Informatics website.

To cite specific database projects, use a format similar to that shown in the following examples:

Mouse Genome Database (MGD) at the [Mouse Genome Informatics](#) website, The Jackson Laboratory, Bar Harbor, Maine. World Wide Web (URL: <http://www.informatics.jax.org>). [Type in date (month, yr) when you retrieve data cited].

[Gene Expression Database \(GXD\)](#), Mouse Genome Informatics Web Site. World Wide Web (URL: <http://www.informatics.jax.org>). [Type in date (month, yr) when you retrieve data cited.]

[Mouse Tumor Biology Database \(MTB\)](#), Mouse Genome Informatics Web Site, The Jackson Laboratory, Bar Harbor, Maine. World Wide Web (URL: <http://tumor.informatics.jax.org/mtbwi/index.do>). [Type in date (month, yr) when you retrieved data cited].

[MouseMine](#), Mouse Genome Informatics Web Site, The Jackson Laboratory, Bar Harbor, Maine. World Wide Web (URL: <http://www.mousemine.org/>). [Type in date (month, yr) when you retrieved data cited].

To cite a specific data area or display, use a format similar to that shown in the following examples:

Some phenotype data for this paper were retrieved from the Mouse Genome Database (MGD), Mouse Genome Informatics, The Jackson Laboratory, Bar Harbor, Maine. World Wide Web (URL: <http://www.informatics.jax.org>). (June, 2013 [i.e., the date you retrieved the data cited]).

Davission MT, Cook SA, Eicher EM. The first spontaneous mutation in the mouse Herc2 gene, MGI Direct Data Submission to Mouse Genome Database (MGD), MGI:1349786, (URL: <http://www.informatics.jax.org>). (1999).

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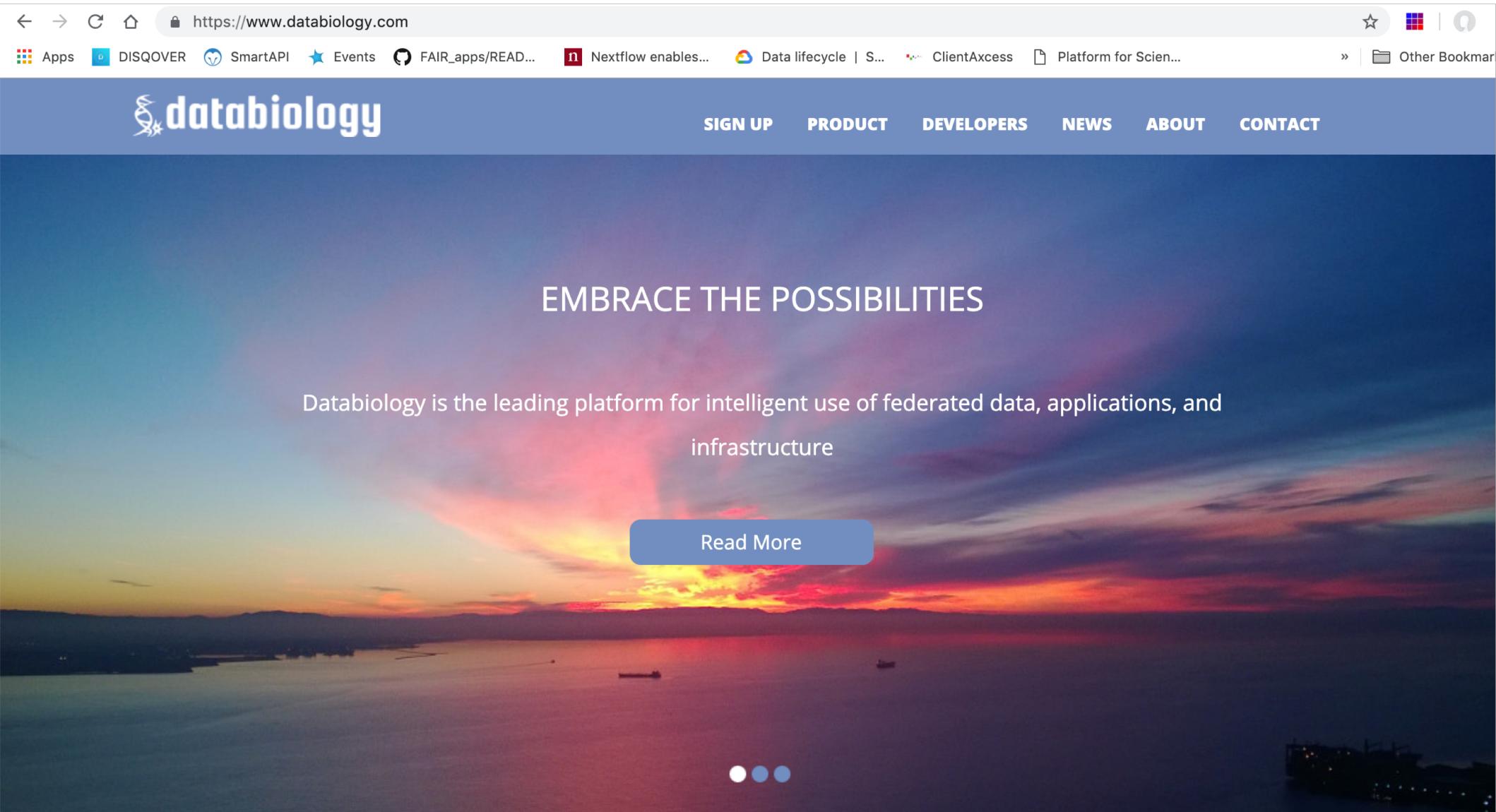
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Our semantic linked data and visualization platform DISQOVER powers citizen data science.

4/17/19

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