NIAID OCAT: Analytical Platform for Research Outcomes

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Health Research Alliance, September 17, 2017

Problem

- Pressure to demonstrate NIAID-enabled outcomes
- 4 years to assemble narratives for 90 approved products (e.g., Flumist, Maraviroc)
  - Labor intensive
  - Numerous government, academic, and private sector databases
  - Structured and Unstructured data
- Connections difficult to identify
  - Across data sources
  - Through time

Combine data sources into one analytical platform

- Simple search (13 sources, 123 million records)
- Visualize the results and connections on a timeline
- Provide “Big Data” analytical tools to assist the analyst to speed up the process (e.g., statistical, machine learning, predictive algorithms)

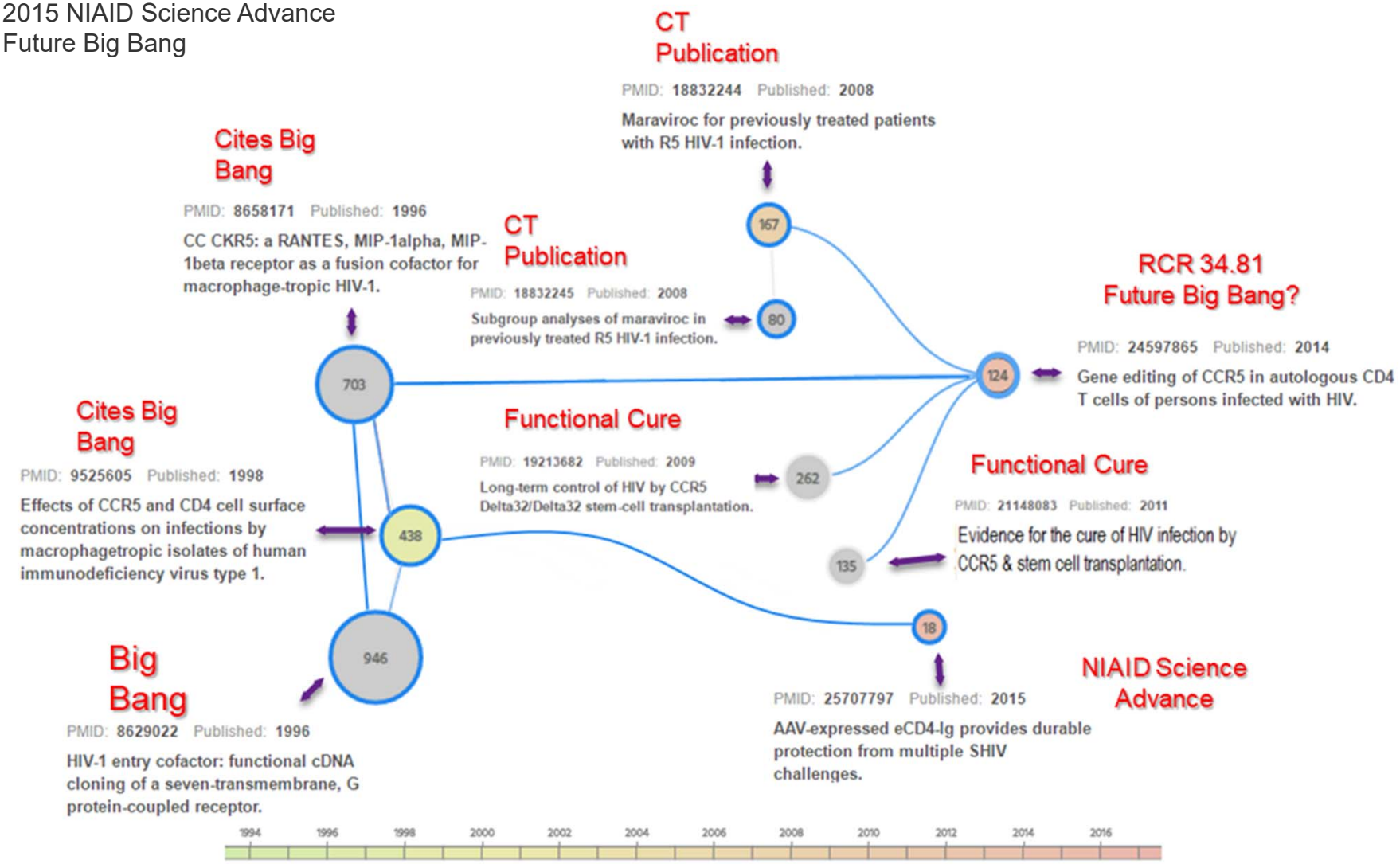
Sources/#Records

pc	55,516
pubmed	28,634,537
wos	65,333,814
derwent	23,038,091
dimensions	4,710
clinical guidelines	2,233
fda purple	416
irdb	2,866,894
fda patents	13,400
fda products	33,725
grants	713,656
clinical trials	230,201
USPTO	3,023,781
Total:	**123,950,974**

Sample result: Maraviroc HIV anti-viral

Demonstrates connections from discovery of CCR5 “Big Bang” to:

- Maraviroc
- Functional cure
- 2015 NIAID Science Advance
- Future Big Bang



Demonstration

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Search and Visualize Relationships on Timeline

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Expand and Explore Relationships in Time

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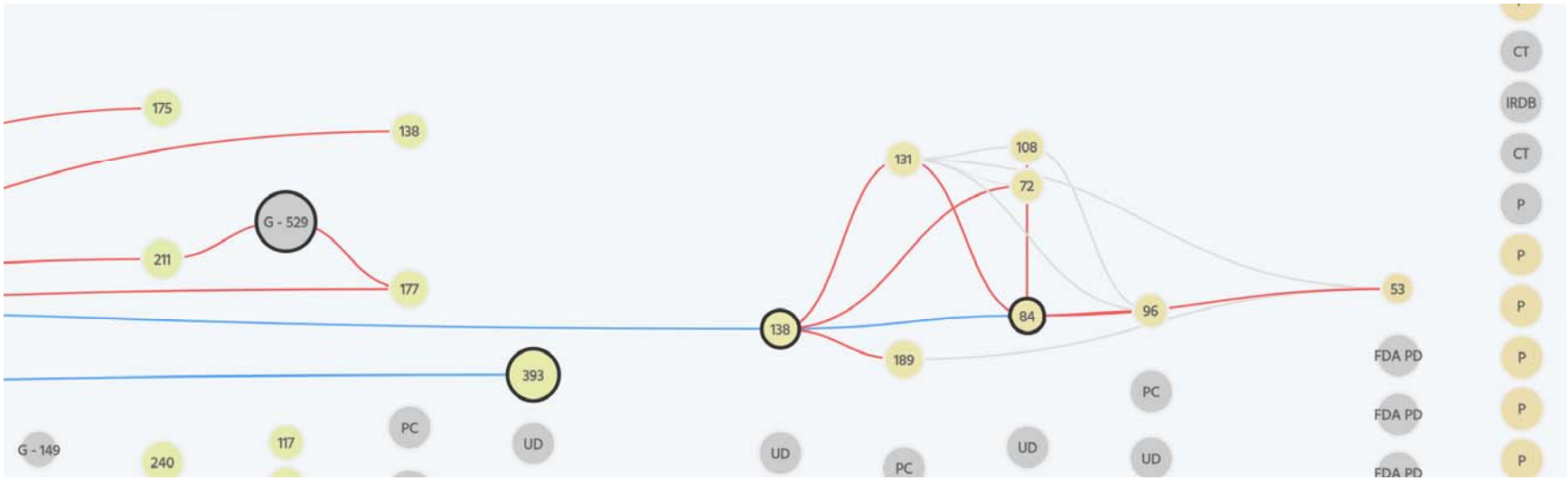
Cites

Cited By

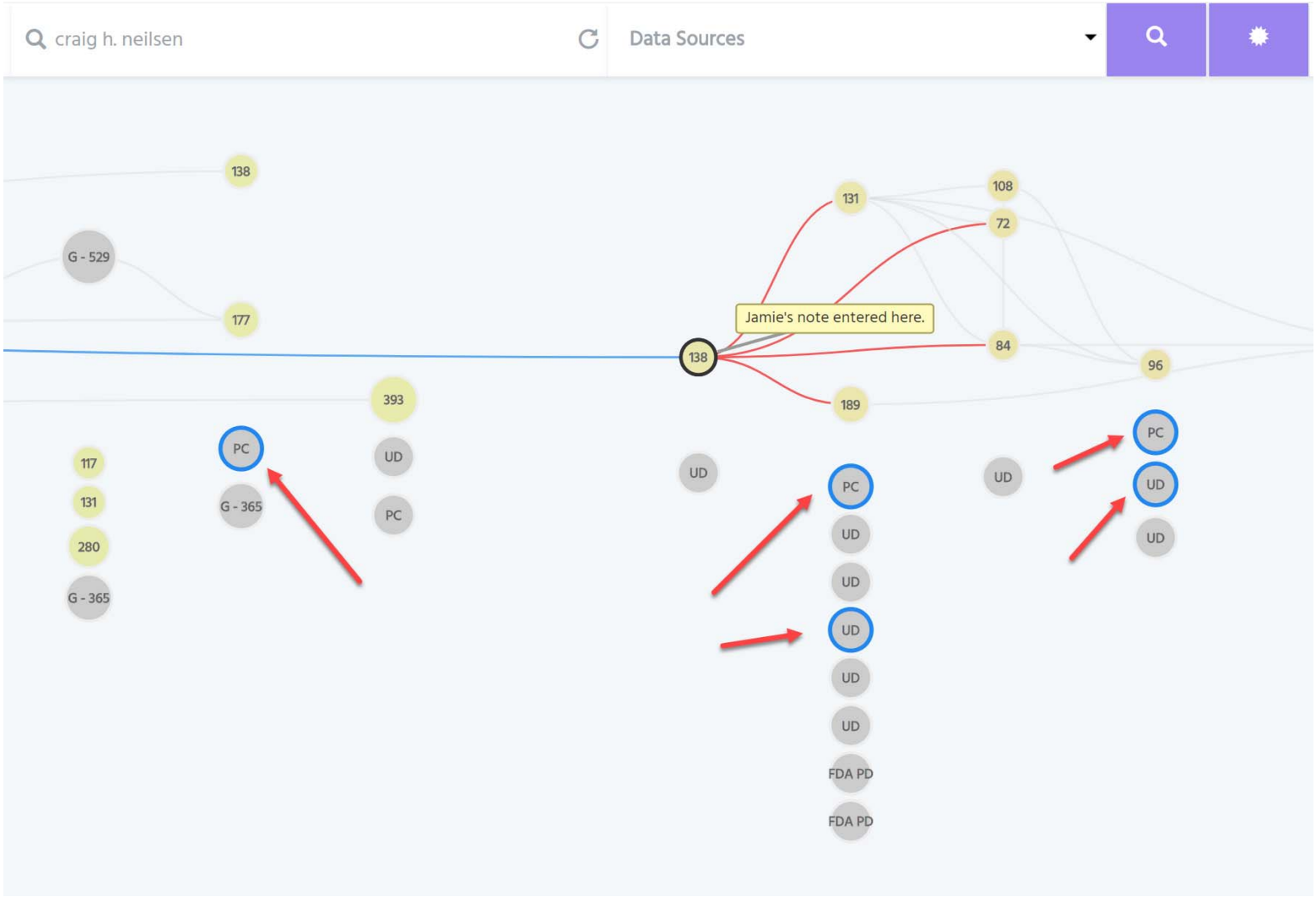
Timeline shows the evolution of knowledge



Relationships depend on availability in the data sources

Highlight Funder Contributions

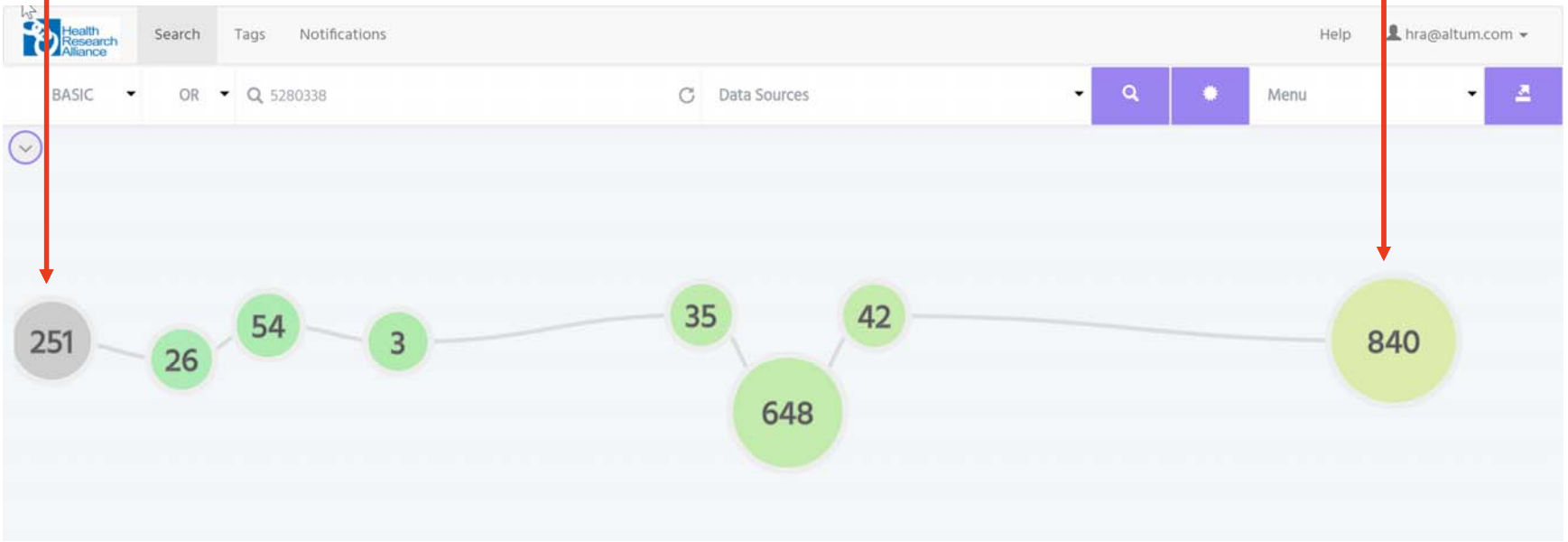
Craig H. Neilsen Foundation; NINDS



Find the Path Connecting Two Articles

1971 5280338 *Granulopoiesis in* ***acute myeloid leukemia*** *and preleukemia.*

2002 12434020 *Frequent deletions and down-regulation of micro- RNA genes miR15 and miR16 at 13q14 in* ***chronic lymphocytic leukemia****.*



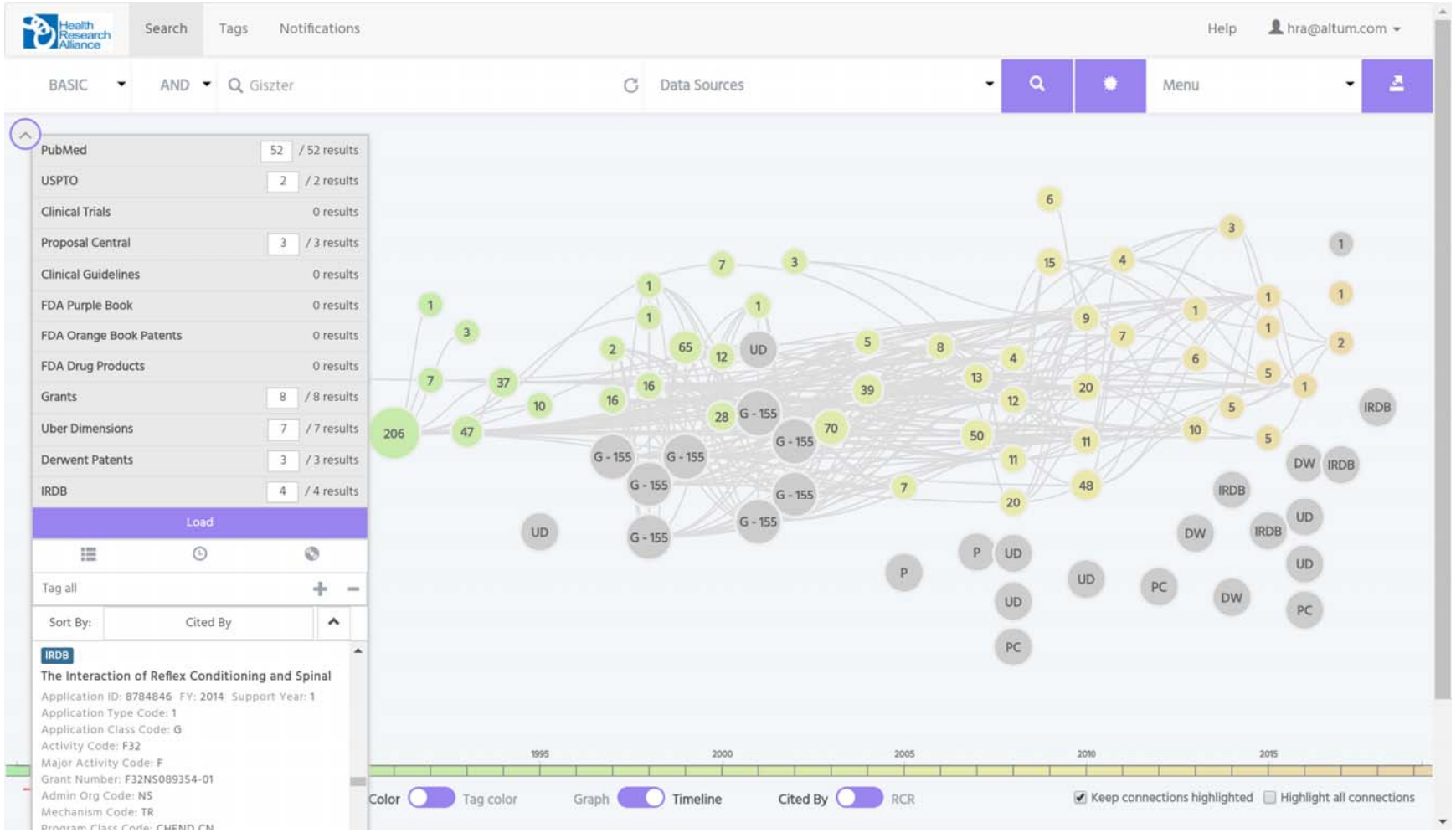
Explore related items with similarity search.

Example: Search for similar articles (e.g. PubMed ID 19657110)

Use Machine Learning can automatically classify results

Use learning set (pre coded) and machine learning algorithm to automatically code the results to 4 types of leukemia

Visualize the Contributions of a Grantee(s)



Simple name search requires inspection to validate the results. ORCID will enable precise "Person" visualizations across data sources.

Questions?

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