

GraphSpace: Stimulating interdisciplinary collaborations in network biology

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Tyson and T. M. Murali

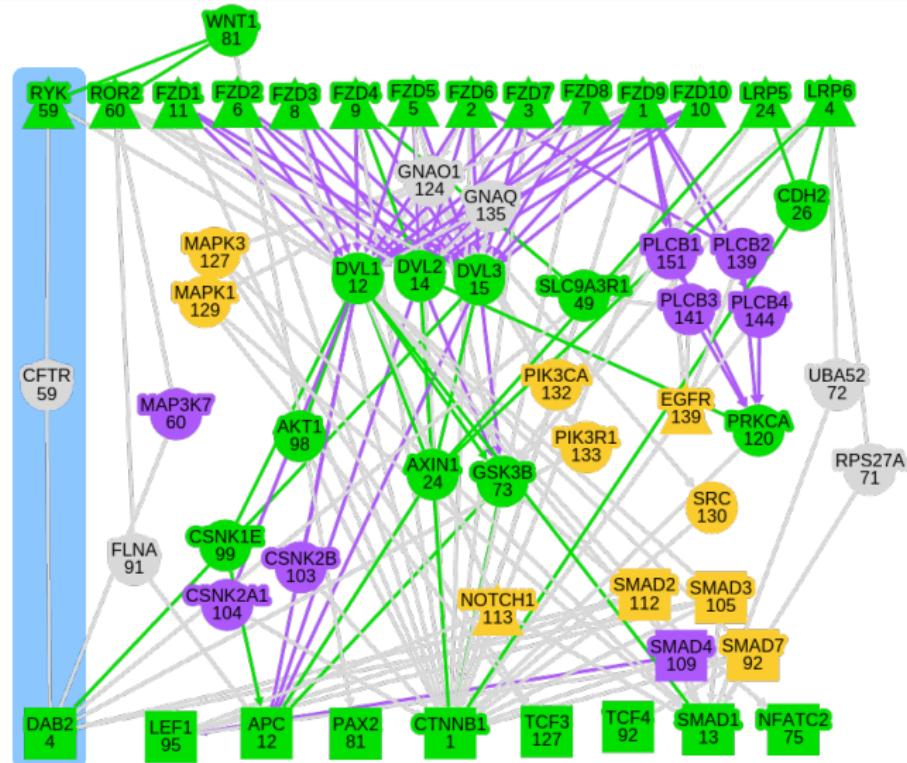
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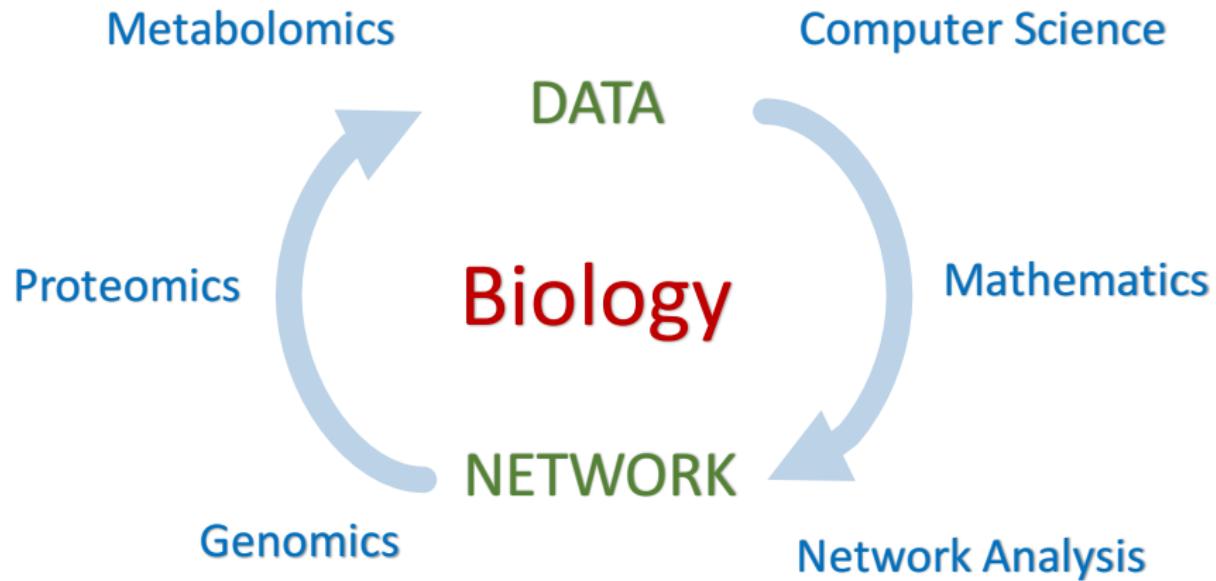
Networks are Ubiquitous in Systems Biology



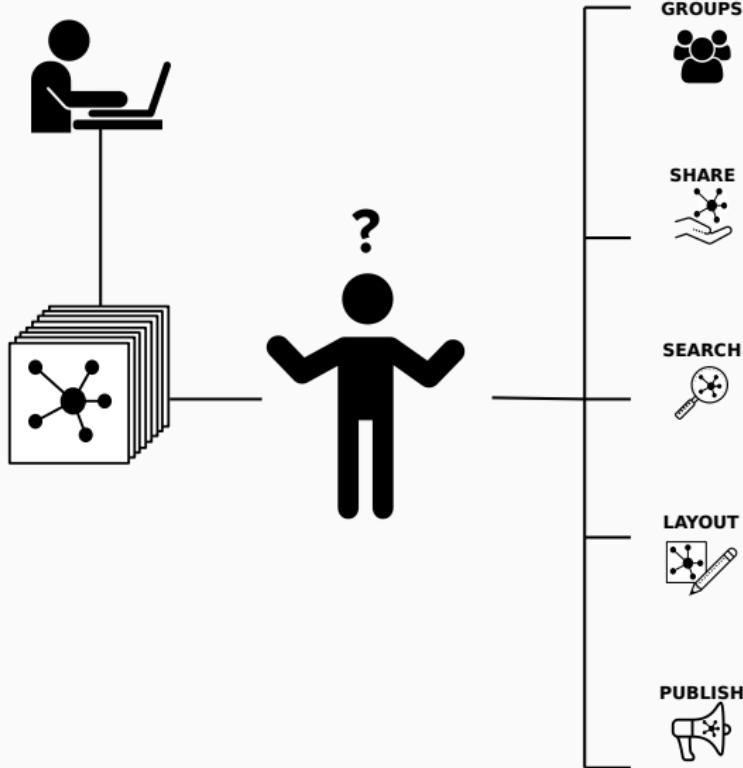
Research is increasingly collaborative



Research is increasingly interdisciplinary

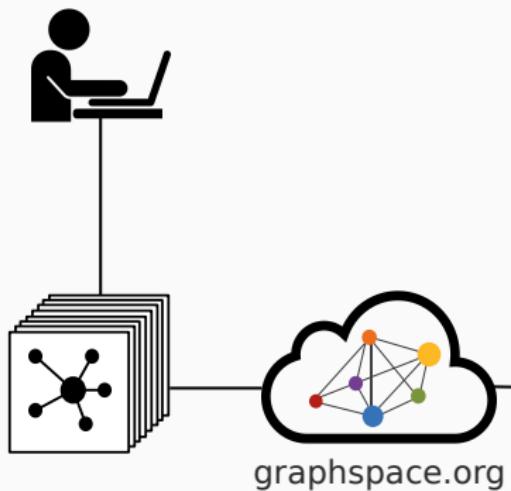


But collaboration is still painful!



Challenges
faced by
interdisciplinary
research teams in
network biology

GraphSpace Features



- GROUPS** Create groups and add/invite your collaborators.
- SHARE** Share your networks and layouts with one or more groups.
- SEARCH** Search for networks with a given property or that contain a specific node or collection of nodes.
- LAYOUT** Use a powerful layout editor to move nodes, edit network style and save new layouts.
- PUBLISH** Share your networks with the scientific community.

Welcome to GraphSpace!

The interactive graph sharing website.

[!\[\]\(3cb60d42b10e53f9522bb0b392c1c4cd_img.jpg\) Public Graphs](#)[!\[\]\(d0262bbe9d2356661a2e89321dfcc781_img.jpg\) Upload Graph](#)

If you don't have an account right now, you can check out [public graphs](#) or [upload](#) a new graph.

Features

Upload Graphs

- [Import](#) graphs created in [Cytoscape](#) directly into GraphSpace
- [Create graphs and upload](#) it via the [Web Interface](#) or through the [REST API](#)

Interact with graphs

- View a graph, customize layouts for a graph, and save [layouts](#) for graphs
- Sequentially [step through subgraphs](#) of the entire graph

Share graphs

- Create [groups](#) and add collaborators
- Share [graphs](#) among all members of a [group](#)
- Share [layouts](#) between collaborators
- Share graphs with the [world](#)

Search graphs

- [Search](#) for elements within a graph

Organize graphs

- [Tags](#) allow for organizing multiple graphs

RESTful APIs

- Use the comprehensive [REST API](#)

Easy to upload graphs

Upload Graph

Graph Name:

Required

Upload the network file:

Required

 Browse

Upload the style file (Optional):

Optional

 Browse

Submit

Access networks via unique URLs

GraphSpace

Graphs

Help

About Us

Log In

Create Account

Wnt Pathway Reconstruction

Anonymous User / Wnt Pathway Reconstruction # graphspace-paper # pathlinker-paper # 2015-npj-sysbio-appl-pathlinker

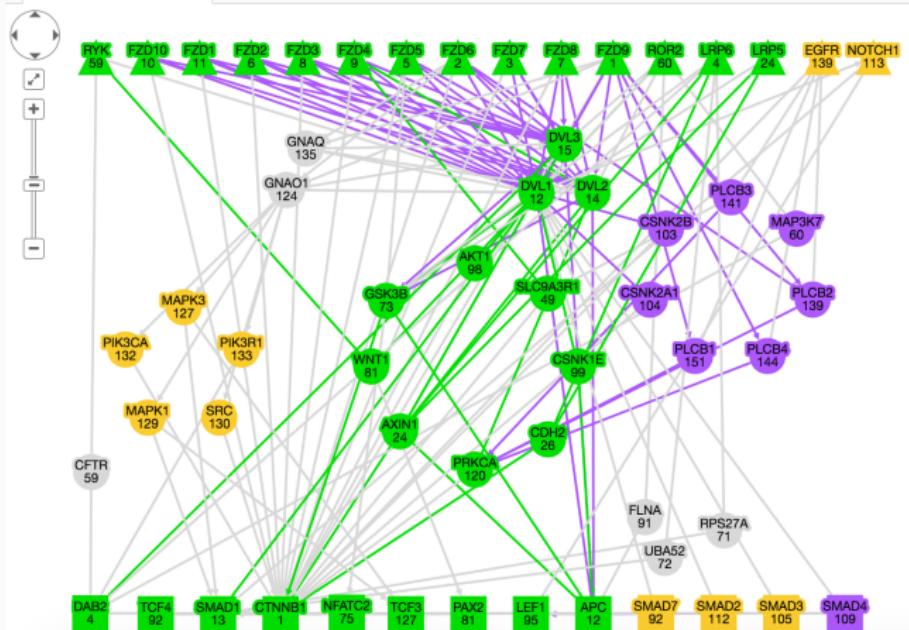


Graph Visualization

Graph Information

Nodes 58

Edges 153

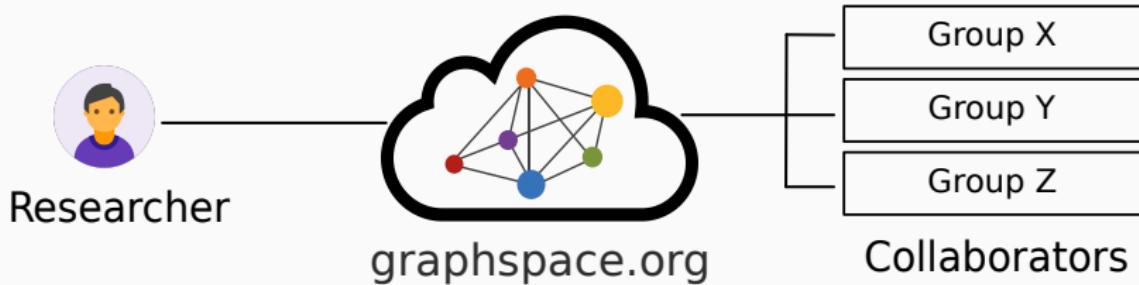


Search for nodes and edges

Filter nodes
and edges

Change Layout

Create groups



Group Name:

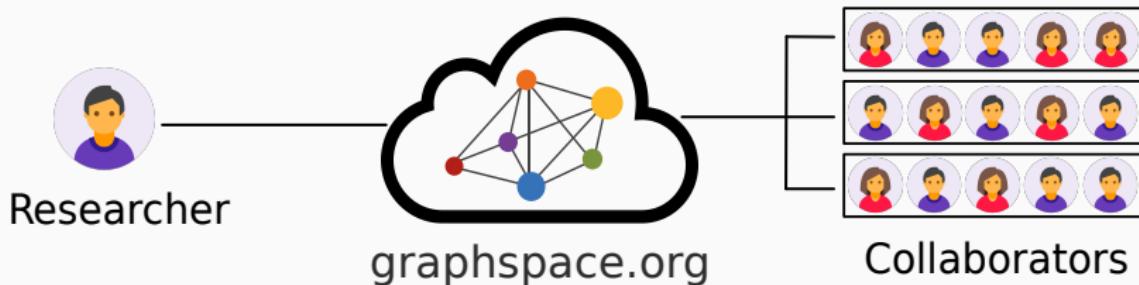
2015 PathLinker Reconstructions

Group Description:

PathLinker reconstructions for the Nature Methods :

Create Group

Add/Invite collaborators



Add group member by email id

Enter email id.....

Submit

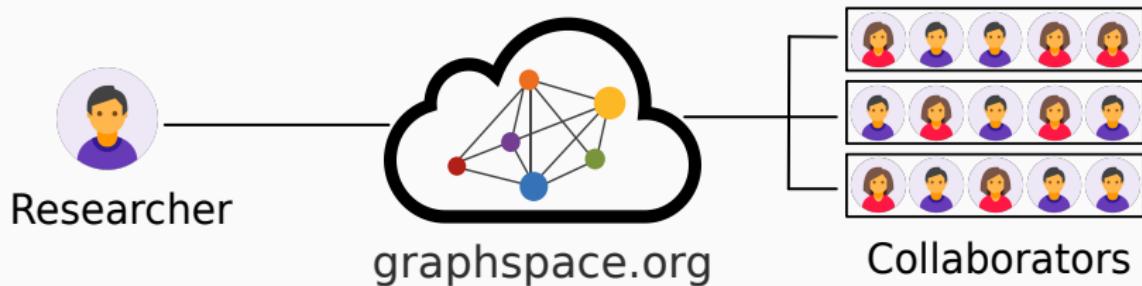
OR

Send this signup link to your group members

Using the following link, new members can join this group on GraphSpace.

<http://graphspace.org/groups/46/join/?code=FHCY?U7PF7>

Share networks

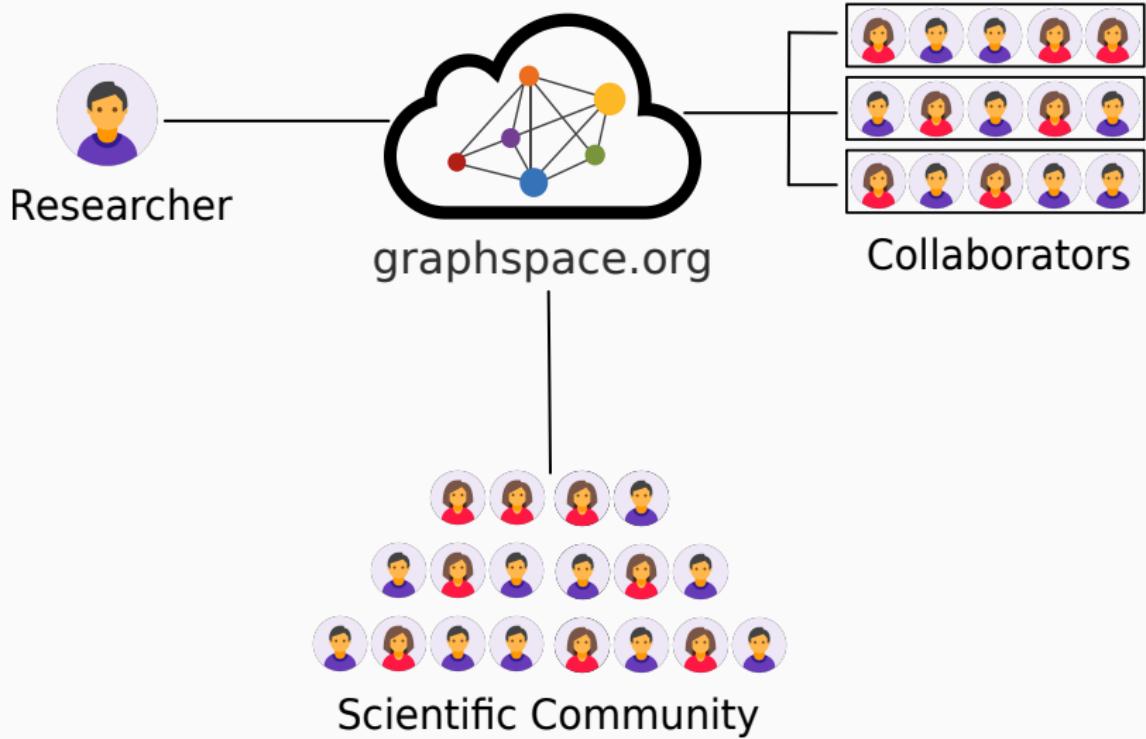


Share Graph ×

Share with public   Share

Test Group owned by: user1@example.com  Unshare

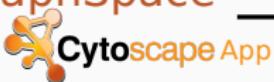
An online collaborative platform



Use GraphSpace as a service

Google Summer of Code

CyGraphSpace



GraphCrowd

Google Summer of Code

graphspace-python

RESTful API



GraphSpace



Poster A-151

GraphSpace is growing

- 21000+ Graphs
- 300+ Users
- 90+ Groups

Contact Information

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Stimulating interdisciplinary collaborations in network biology

BACKGROUND

Despite the existence of several software systems and interfaces to analyze and view networks, interdisciplinary research teams in network biology find it challenging to share, explore, and interpret computed networks in their collaborations.

GraphSpace is a web-based platform that fosters team science by allowing collaborators to easily store, share, interact with, and lay out networks.

The screenshot displays the GraphSpace web application interface. It includes sections for 'GRAPHSPACE FEATURES' such as STORE, SEARCH, GROUPS, SHARE, PUBLISH, LAYOUT, VISUALIZE, and INTERACT. Each feature is illustrated with a shield icon and a brief description. The 'LAYOUT' section shows a powerful layout editor with various parameters. The 'VISUALIZE' section shows a network graph with nodes and edges. The 'INTERACT' section shows a subgraph with a filter interface.

FUTURE DIRECTIONS

- **Plug and play algorithms** providing a single platform for algorithm development.
- **Automated personalized layouts** generated by learned user preferences from previous layouts.
- **Crowdsourced layouts** generated by citizen scientist via integration with platforms like Zooniverse and MTurk.

FUNDING



GET INVOLVED

- Web: <http://bioinformatics.cs.vt.edu/~murali/>
- Email: murali@cs.vt.edu
- Github: <https://github.com/Murali-group/GraphSpace/>

ACKNOWLEDGEMENTS

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