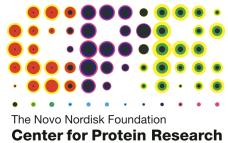


Where do networks come from?



Lars Juhl Jensen
jensenlab.org



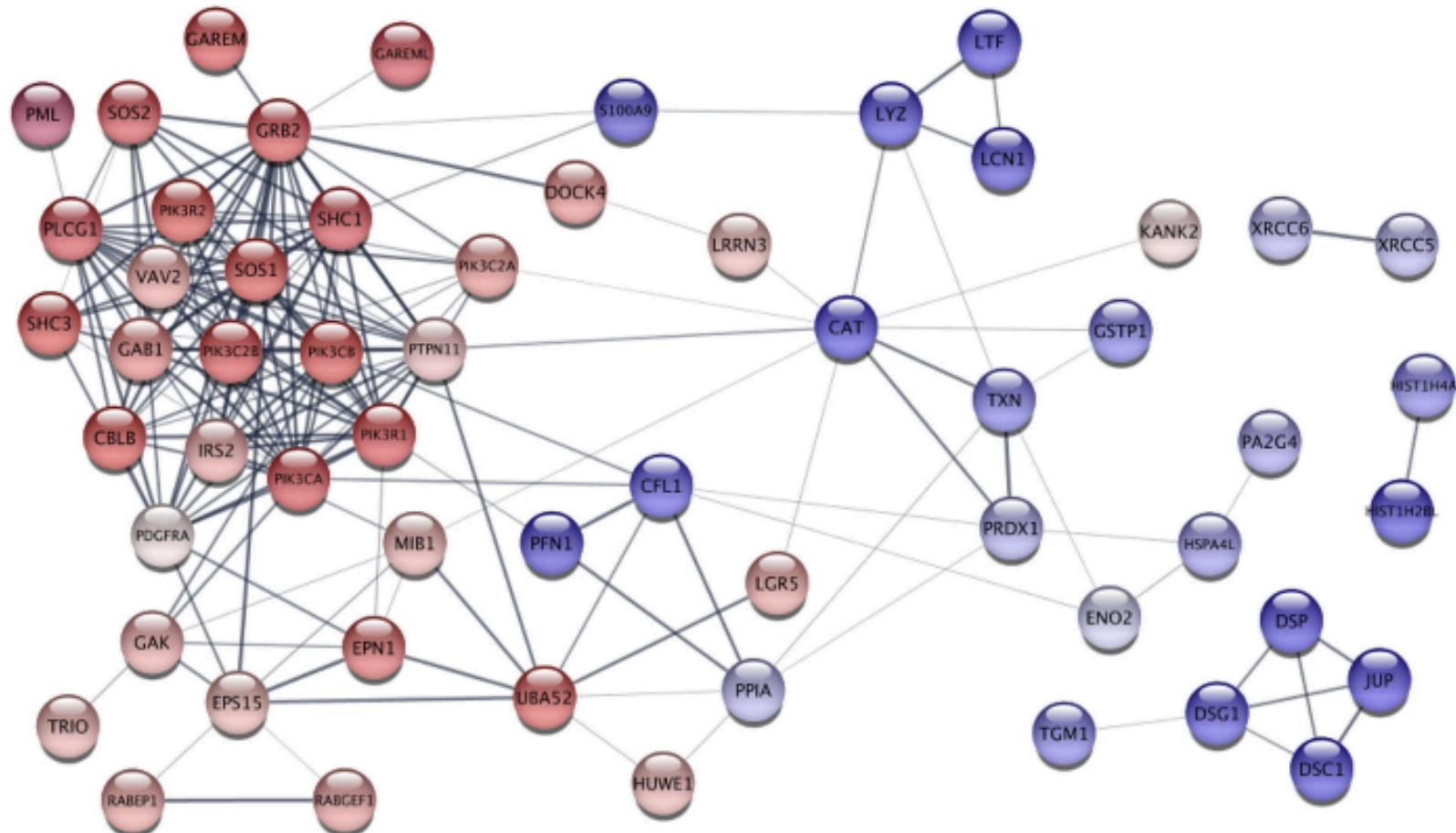
the problem

omics study

list of genes/proteins

network visualization

Cytoscape



nodes

no edges

DUDE, WHERE'S MY NETWORK?



functional associations

stringApp

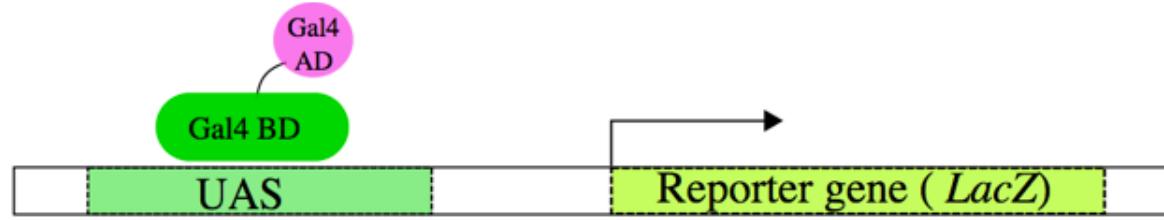
physical interactions

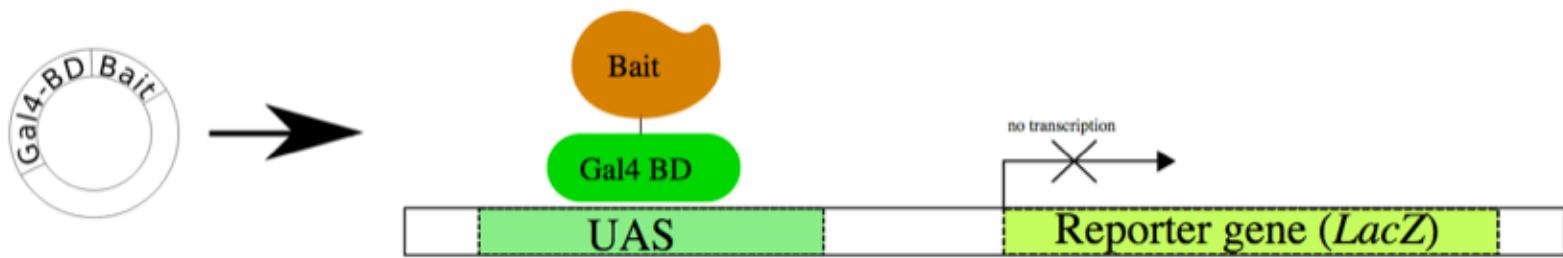
PSICQUIC

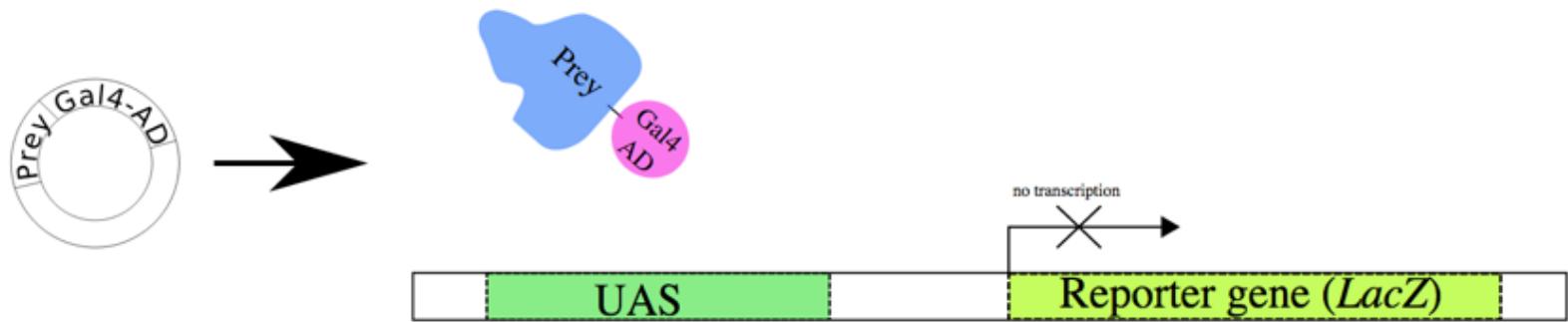
similarity networks

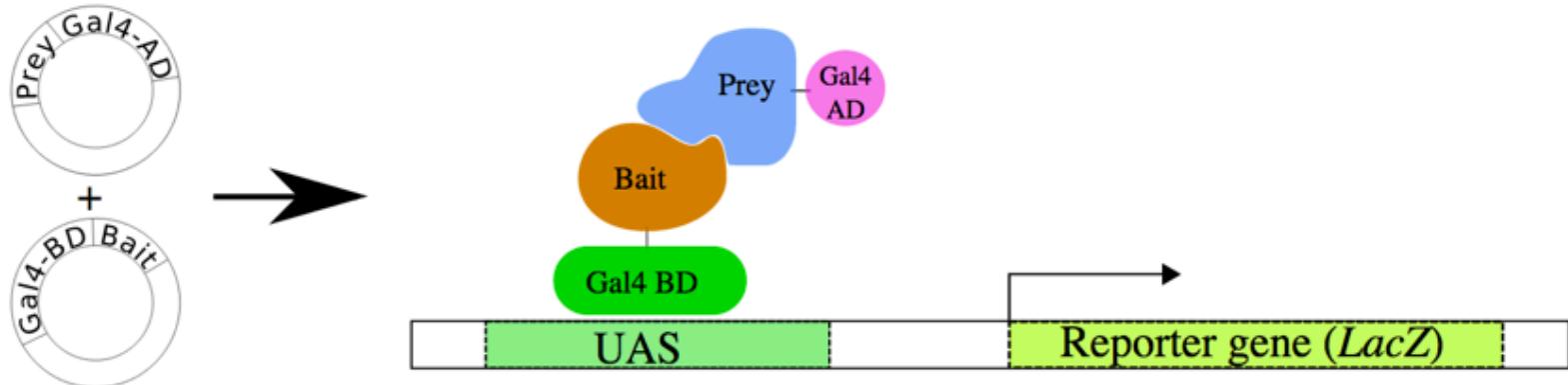
physical interactions

yeast two-hybrid









direct protein interactions

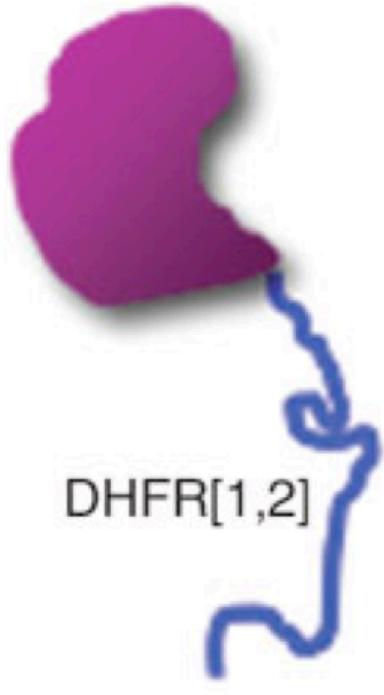
high-throughput

high error rate

no membrane proteins

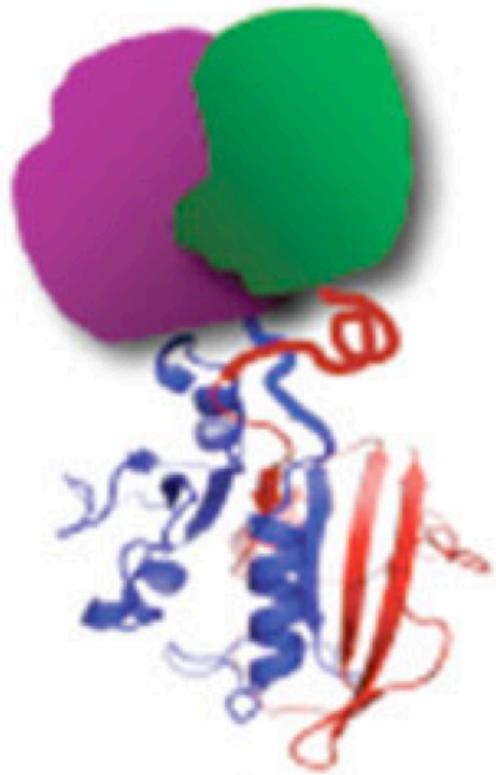
fragment complementation

Protein X



Protein Y



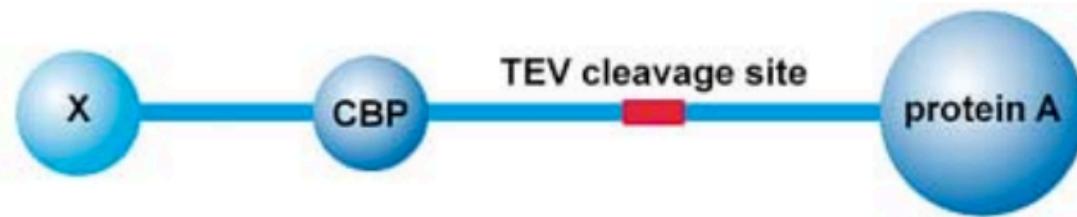


membrane proteins

not as high throughput

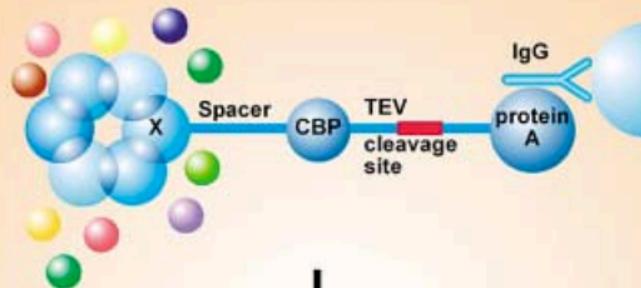
AP-MS

bait construct



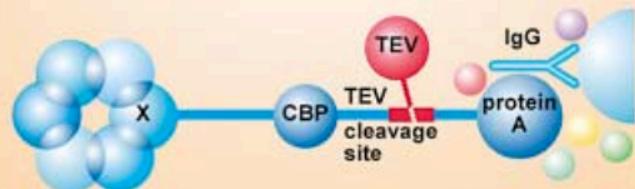
tandem affinity purification

Protein A-IgG Interaction

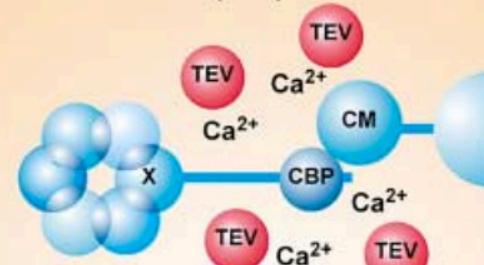


Wash

TEV cleavage

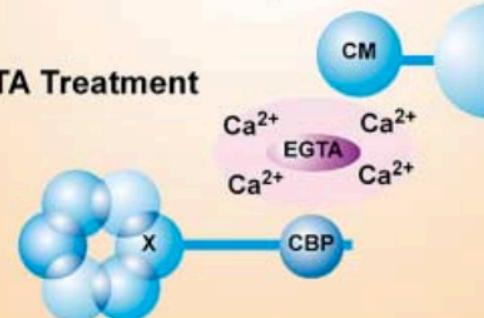


CBP-Calmodulin (CM) Interaction



Wash

EGTA Treatment



mass spectrometry

co-complex interactions

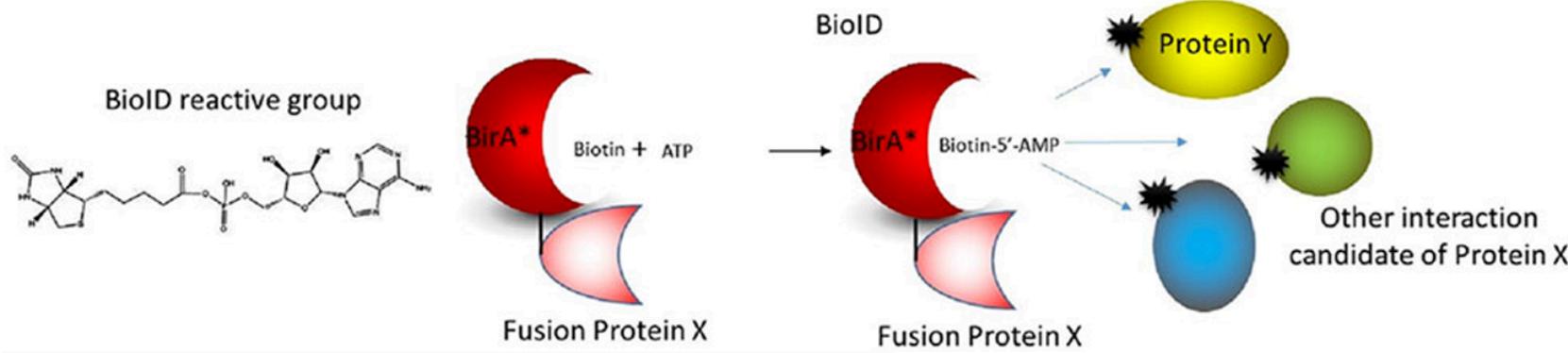
high-throughput

no transient interactions

no membrane proteins

proximity labeling

BioID

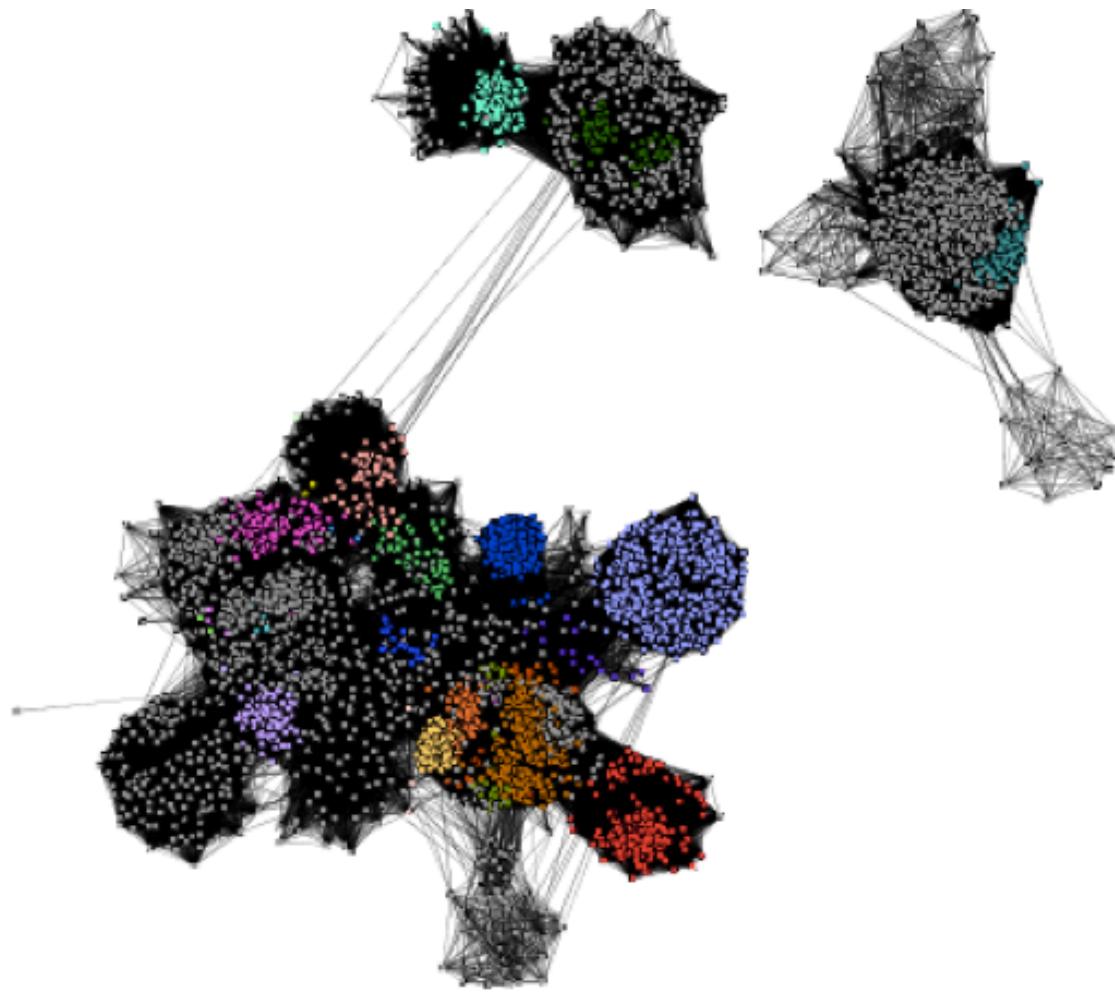


transient interactions

random collisions

similarity networks

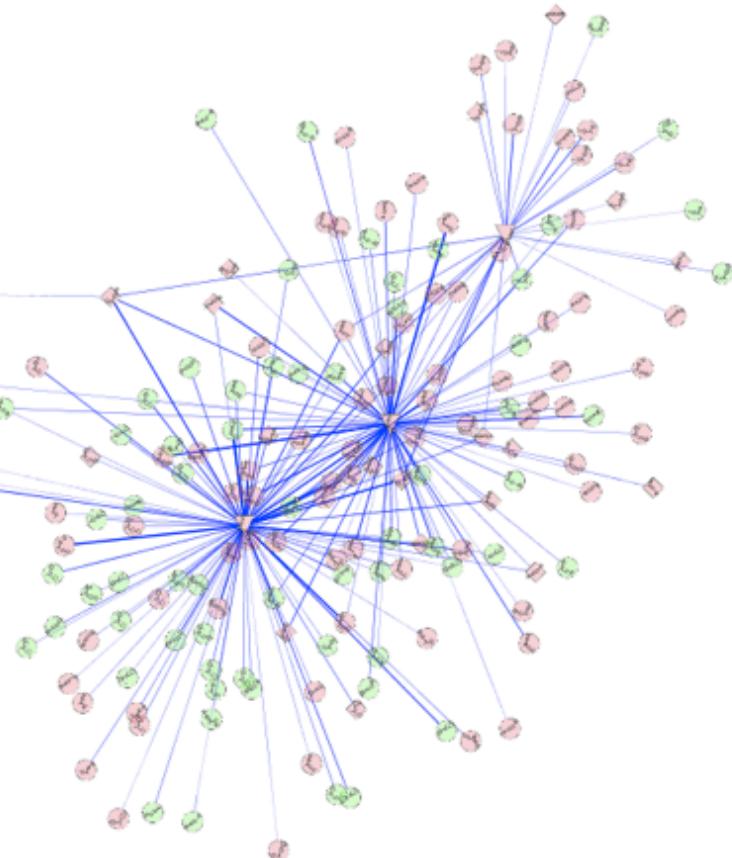
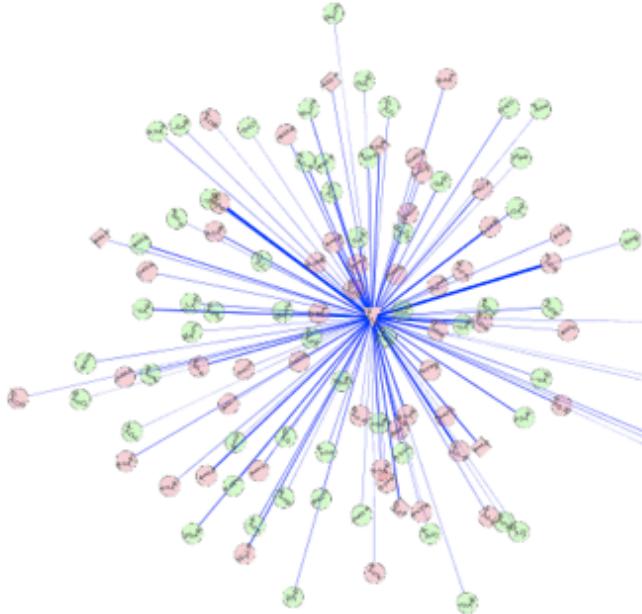
sequence similarity



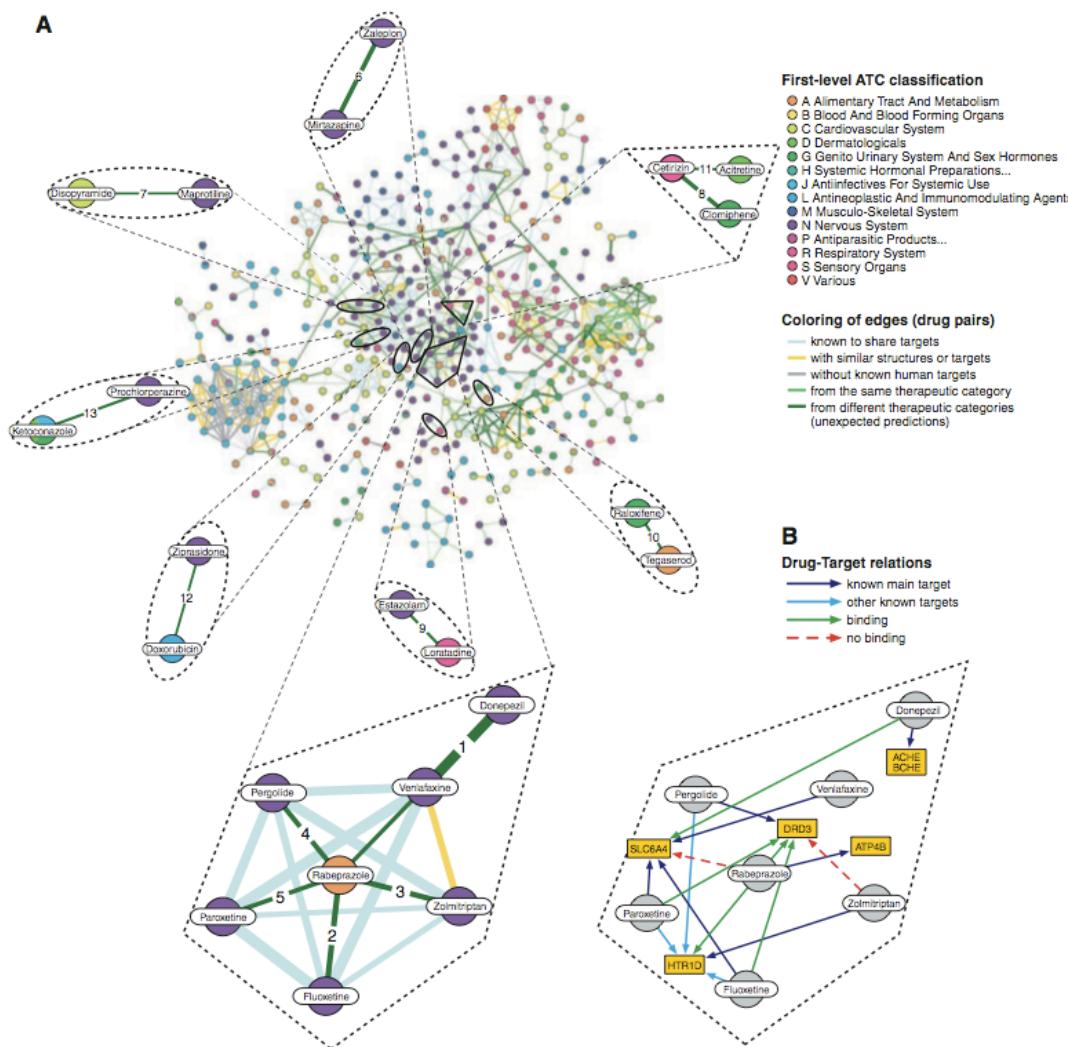
shared protein domains

similar molecular functions

chemical similarity



shared side effects

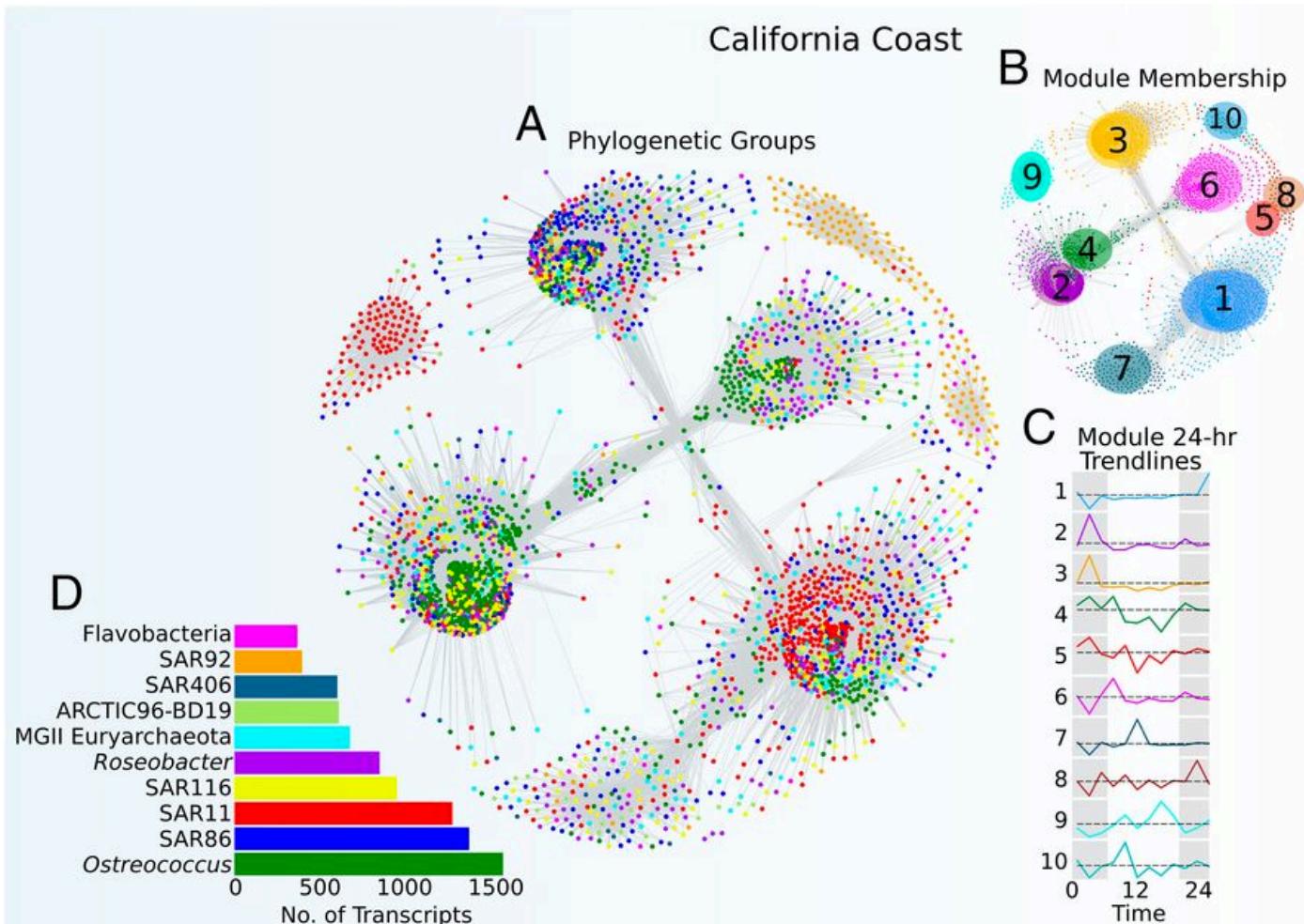
A

shared protein targets

networks are everywhere

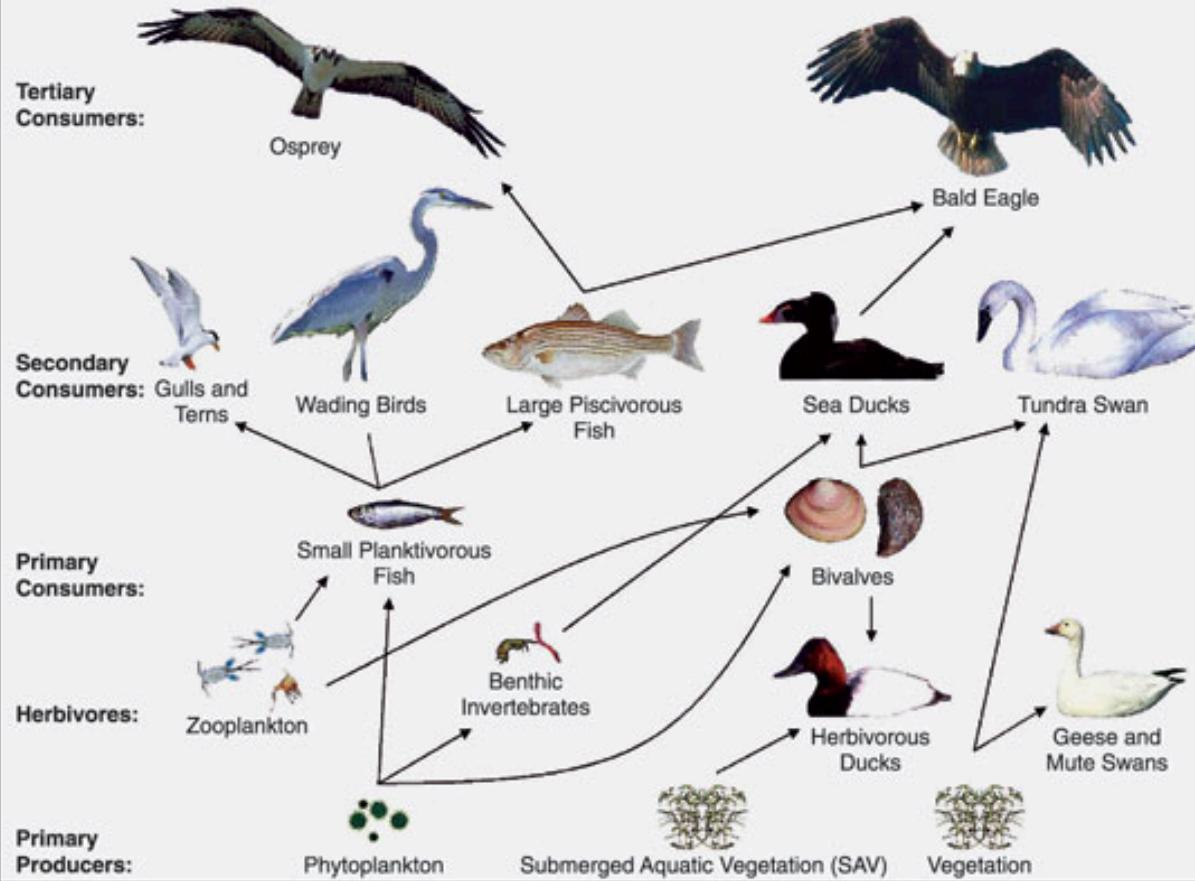
species networks

microbial communities

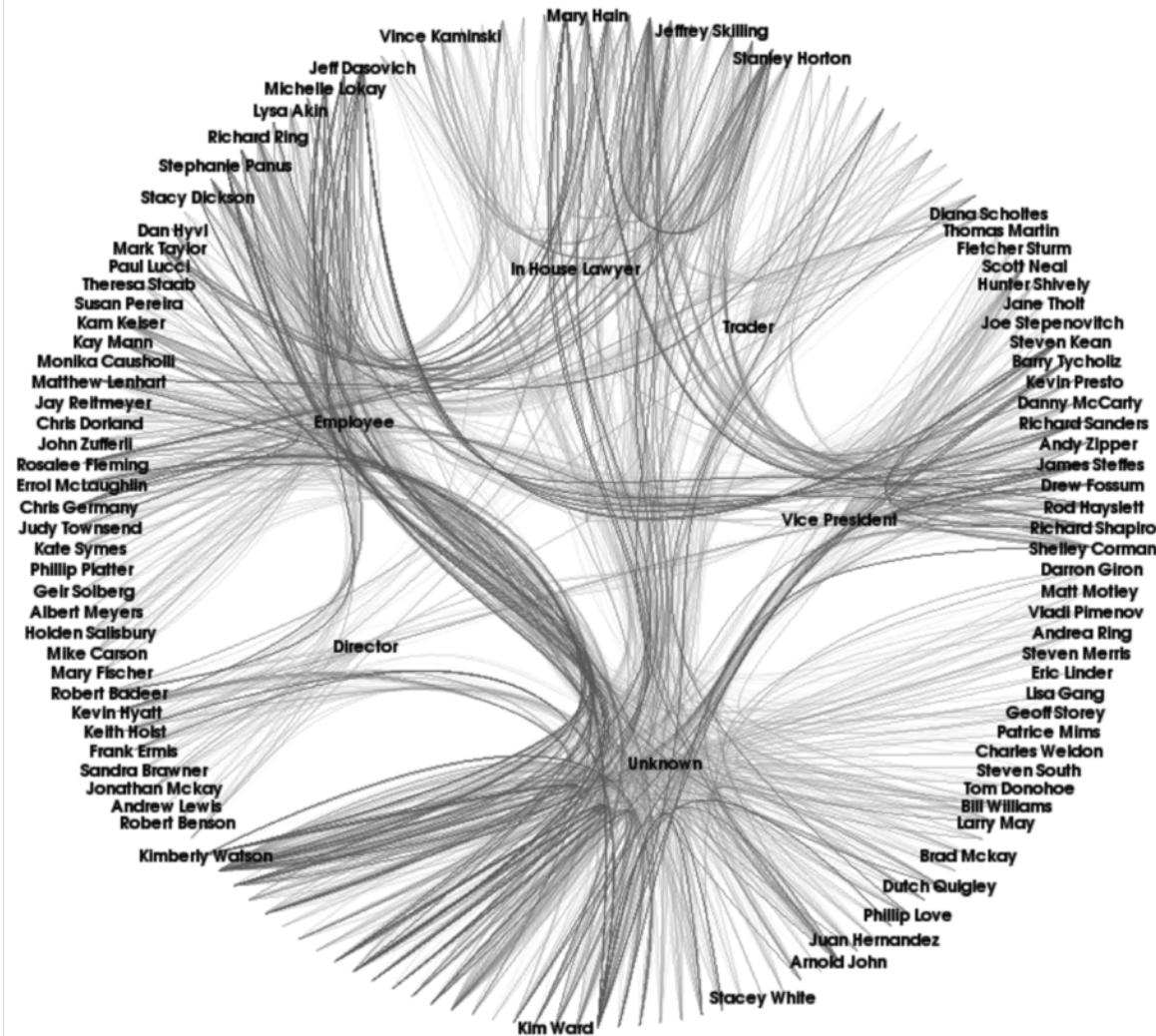


food webs

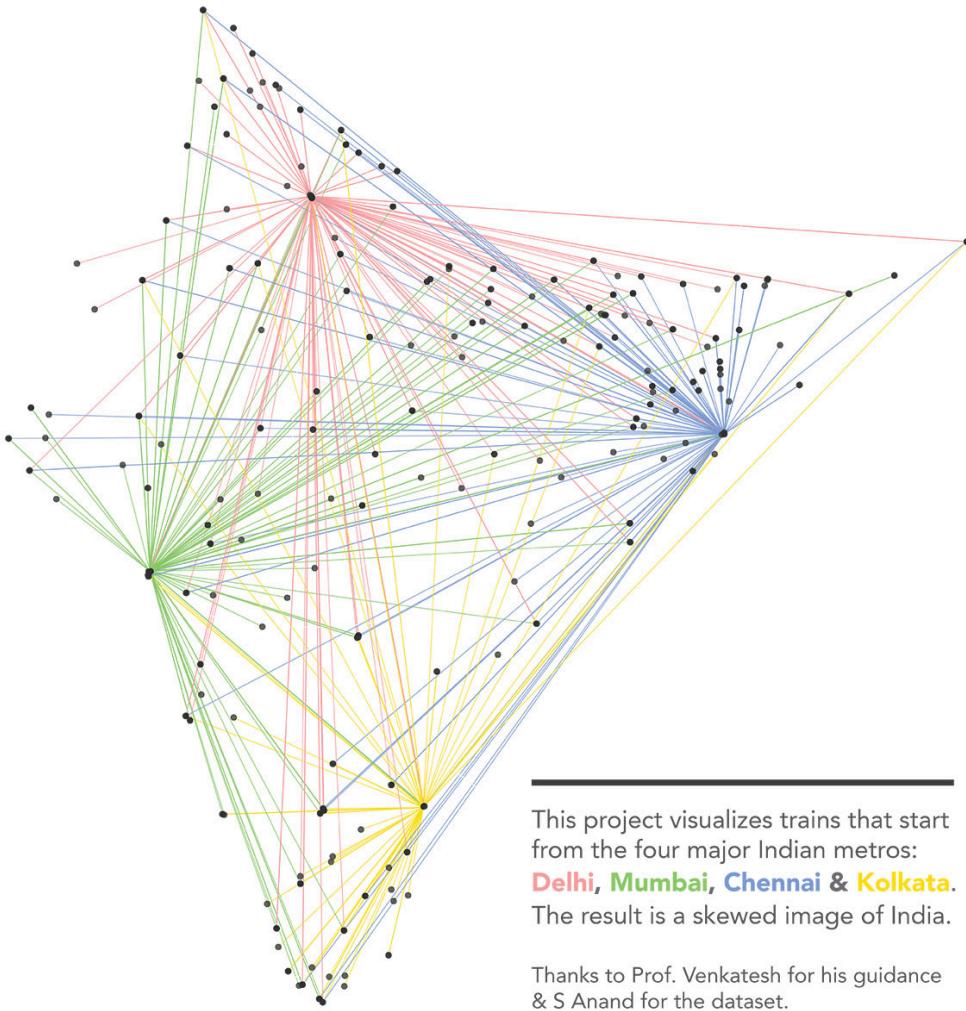
Chesapeake Bay Waterbird Food Web



email networks



Indian railway map



This project visualizes trains that start from the four major Indian metros:
Delhi, Mumbai, Chennai & Kolkata.
The result is a skewed image of India.

Thanks to Prof. Venkatesh for his guidance
& S Anand for the dataset.