NDEx in 2019
Workflows and Application Integration

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Social Media, Photos? Yes, Please.

@NDExProject

link to demos, slides:
https://bit.ly/2McHI5D
NDEx, A Public Database of Networks

NDEx is a Platform Integrated with Cytoscape

- **Find** networks to use in applications.
- **Store** networks in your private account.
- **Share** your networks - "DropBox for networks".
- **Disseminate** your networks.
- **Publish** your networks as computable, actionable data.
- **Integrate** networks with your applications.

CIViC

The Cancer Proteome Atlas

Enable Scientific Discovery through Functional Proteomics

CRAVAT

MSigDB Molecular Signatures Database

CDGNet
A New Way to Integrate with NDEx

Web Apps
- Your Web App

Services
- Your Service
- NDEx Server
- Search Service

Open in Cytoscape

Pioneered with CRAVAT!
"Search" is an Aggregator of Analyses

Search Service

Aggregator

Enrichment vs Sets of Pathways in NDEx

Query Interactomes in NDEx to Find Gene Neighborhoods

Next... Next... Next...
NAGA Uses NDEx

NAGA Service

Investigate Ranked Gene Set

Get Reference Interactome

Send GWAS Summary Statistics
Get Reprioritized Gene Set + Network

Open Network in Cytoscape

NDEx Server

Search Service

Open Network in Cytoscape

CytoCcape
Binary interactions of the Parsimonious Composite Network (PCNet) as described in the "Integrating networks improves gene set recovery" results section of the paper from Huang and Carlin et al. 2018. This network was shown to have higher overall performance on recovering the collection of literature-based disease-associated gene sets than any single network from the compendium of 21 networks studied by Huang and Carlin et al. PCNet is a union of all molecular interactions across the 21 evaluated molecular networks on the condition that the interaction appears in at least 2 of the molecular networks.

This network belongs to the NDE Network Set associated with the 2018 Huang and Carlin et al. Cell Systems paper.

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wikipathways: WP35 - G Protein Signaling Pathways - Homo sapiens
Nodes: 129, Edges: 24 Hit/Query = 8/25

cptac: Sustaining proliferative signaling
Nodes: 586, Edges: 713 Hit/Query = 13/25

wikipathways: WP3929 - Chemokine signaling pathway - Homo sapiens
Nodes: 236, Edges: 75 Hit/Query = 9/25

wikipathways: WP289 - Myometrial Relaxation and Contraction Pathways - Homo sapiens
Nodes: 275, Edges: 84 Hit/Query = 9/25

wikipathways: WP4249 - Hedgehog Signaling Pathway - Homo sapiens
Nodes: 93, Edges: 30 Hit/Query = 6/25

cptac: Inducing angiogenesis
Nodes: 167, Edges: 198 Hit/Query = 7/25

wikipathways: WP4223 - Ras Signaling - Homo sapiens
Nodes: 274, Edges: 94 Hit/Query = 8/25

wikipathways: WP35 - G Protein Signaling Pathways - Homo sapiens
Nodes: 129, Edges: 24 Hit/Query = 8/25
Highlight and Zoom to Query Genes
Open Pathway in Cytoscape
Query Interactomes: String
Query Interactomes: Human Protein Atlas
MSigDB Collaboration
DDOT and HiView Use NDEx

Open Subsystem in Cytoscape

Save Subsystem Networks

Get Interactomes and Hierarchies

Get Networks

NDEx Search Portal

Open Pathway or Interactome Query in Cytoscape

Search Service

DDOT

Get Interactomes

Output Hierarchies

Investigate Subsystem Gene Set
DNA Repair Hierarchy in HiView
Subsystem 818 of DNA Repair Hierarchy in HiView
HiView Lens: the Subsystem in Other Interactomes
Open the Subsystem in Cytoscape
Pathways Related to the Subsystem by Enrichment
Zoom to the Query Genes - The Cohesin Complex
S:595 Corresponds to the Cohesin Complex
Thanks!

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