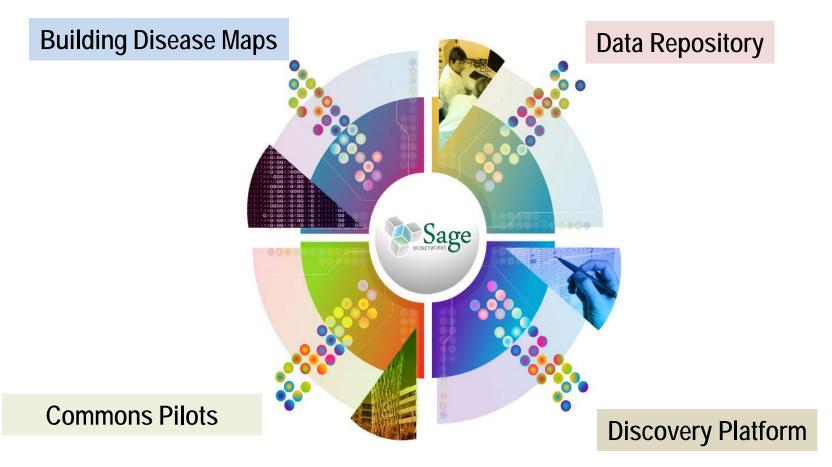
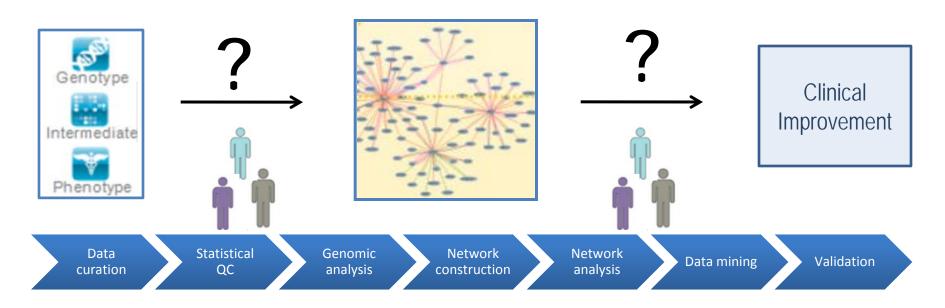
Sage Bionetworks Mission

Sage Bionetworks is a non-profit organization with a vision to create a "commons" where integrative bionetworks are evolved by contributor scientists with a shared vision to accelerate the elimination of human disease



Need: Community-based analysis is required to build accurate models of disease



Within the analytical community:

- Quality assessment of data, tools and models
- Reproducibility of models
- Reusability of data
- Validation of models across multiple disease models and patient subtypes

Across the field of biology:

- Validation of model predictions in experimental/clinical setting
- Accelerated pace towards improved therapeutic development

Watch What I Do, Not What I Say

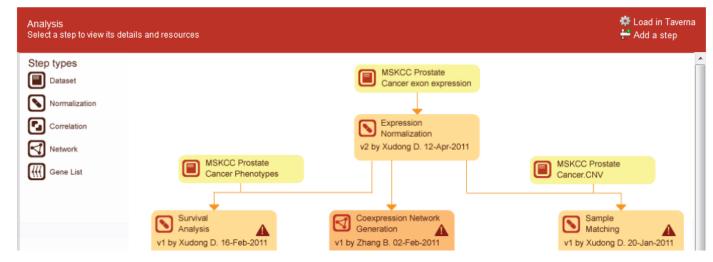


Home > All Projects > Federation Warburg Project > Network Generation Analysis

Network Generation Analysis

Privacy Setting: Public » Learn more ...

Overview		🖨 Follow this analysis	Notes for this analysis	
In this analysis, we generate a list of key drivers for the network model governing prostate cancer. The	Created by:	Xudong Dai on 01-Deo-2011	Expression Normalization rerun Xudong Dai 12-Apr-2011	
methodology is based on the Rosetta Bayesian network approach	Last modified by Version:	; Xudong Dai on 12-Apr-2011 2.0	Gene List Selection run Xudong Dai 16-Feb-2011	-
	Public datasets	MSKCC Prostate Cancer - exon expression	Network Module run Xudong Dai 15-Feb-2011 🤍 🤜	
" Read more	used:	MSKCC Prostate Cancer - QC'd phenotypes MSKCC Prostate Cancer - CNV	OK, ready to go . Xudong Dai 20-Jan-2011	
	Public tools used:	Coexpression Module Bayesian Network Generation	We need to build the priors for sample matching before . Jun Zhu 20-Jan-2011	
	Public networks generated:	Warburg Cancer Network		-



Real-time tools to track data analysis projects

Reduce, Reuse, Recycle

-

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Datasets	Tools	Networks	People	Projects			Q	Advanced Search
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	onal disease	d a catalog of datase models. The goal is t			nalysis and building tasets for use by the entire	and quality	you would like to hav controlled to Sage Bio	
ILTER LIST: By H	Keywords(s)	Any Sam	ple Size 🔻 A	Il Species 👻 All	Tissues 👻 All Disease	s v 🗓	Add / remove column	s
Dataset Name	Layers	Number of Samples	Status	Species	Tumor / Tissue Type	Disease	Investigator	Created On
<u>/ISKCC Prostate</u> Cancer	S 😭 🔢	261	Current	Human	Prostate	Cancer	Charles Sawyers	11-Apr-2011
<u>Nouse Model of</u> Diet-Induced Atherosclerosis	F	111	Current	Mouse	Liver	Metabolic Disease	Jake Lusis	11-Apr-2011
<u>Nouse Model of</u> Sexually Dimorphic Atherosclerotic Traits	8 😭 💷	334	Current	Mouse	Muscle, Liver, Brain, Adipose	CVD	Jake Lusis	11-Apr-2011
luman Liver Cohort		517	Current	Human	Liver	CVD	Fred Guengrich/Steve Strom/ Erin Schuetz	11-Apr-2011
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Cancer Cell line Panel	S 🖀 🔠	649	Current	Human	Cell Line	Cancer	Richard Wooster	11-Apr-2011
Harvard Brain Tissue Resource Center	**	803	Current	Human	Brain visual cortex, Brain cerebellum, Brain prefrontal cortex	Neurological Disease	Francine Benes/ Eric Schadt	11-Apr-2011
<u>Nouse Model of Blood</u> Pressure	S 😭 💷	350	Current	Mouse	Kidney cortex, Liver, Kidney medulla, Adipose	CVD	Eric Schadt	11-Apr-2011
.FN-Kronos-PHASE I	8 🈭 🔛	364	Current	Human	Brain Cerebellum, Brain Parietal Cortex, Brain Temporal Cortex, Brain Frontal	Alzheimers	Amanda Myers	11-Apr-2011

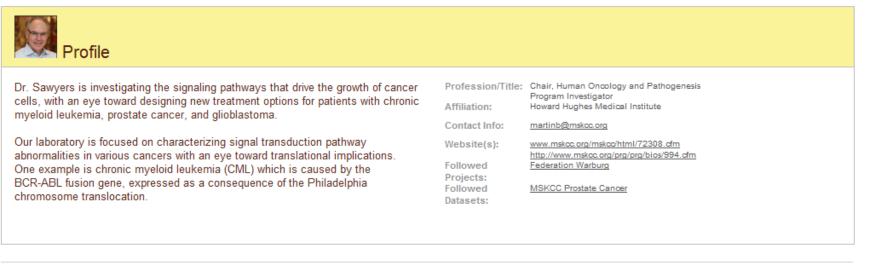
A Repository of Data, Tools, and Models

Most of the People You Need to Work with Don't Work with You



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Charles Sawyers, Howard Hughes Medical Institute



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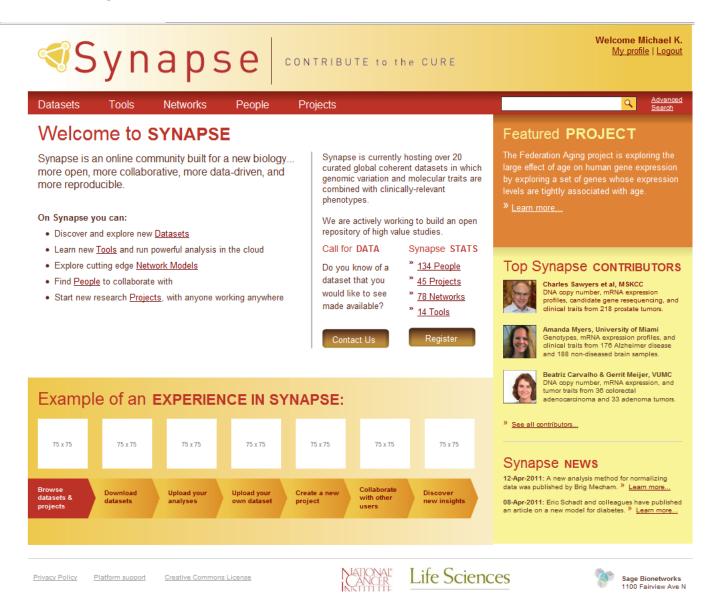




Sage Bionetworks 1100 Fairview Ave N Seattle WA 98109 sage@sagebase.org

An online community to connect people and projects

My Other Computer is Amazon



Cloud-based data stores and compute resources

Do: What will the Synapse Platform and Sage Commons Enable?

- Development of Robust, Reproducible, and Reusable analytical methods
- Integration of Data, Tools and Methods from across community
- Development of a **Disease Model Repository**
- Forum for **New Collaborations** between technically and geographically distinct scientific groups
- Access to **Cloud-Compute resources** co-located with large-scale data
- See also the **Platform Vision Document** posted on our wiki



Translation of Data to Knowledge to Improved Therapeutic Approaches to Disease: An improved molecular understanding of the causes of disease leading to quicker, more rational and more successful development of new drugs

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Welcome to SYNAPSE

Tools

Synapse is an online community built for a new biology... more open, more collaborative, more data-driven, and more reproducible.

On Synapse you can:

- Discover and explore new Datasets
- · Learn new Tools and run powerful analysis in the cloud
- Explore cutting edge <u>Network Models</u>
- · Find People to collaborate with
- Start new research Projects, with anyone working anywhere

Synapse is currently hosting over 20 curated global coherent datasets in which genomic variation and molecular traits are combined with clinically-relevant phenotypes.

We are actively working to build an open repository of high value studies.

Call for DATA	Synapse STATS
Do you know of a dataset that you would like to see made available?	 <u>134 People</u> <u>45 Projects</u> <u>78 Networks</u> <u>14 Tools</u>
Contact Us	Register

Featured **PROJECT**

The Federation Aging project is exploring the large effect of age on human gene expression by exploring a set of genes whose expression levels are tightly associated with age.

Top Synapse contributors



Charles Sawyers et al, MSKCC DNA copy number, mRNA expression profiles, candidate gene resequencing, and clinical traits from 218 prostate tumors.



Amanda Myers, University of Miami Genotypes, mRNA expression profiles, and clinical traits from 176 Alzheimer disease and 188 non-diseased brain samples.



Beatriz Carvalho & Gerrit Meijer, VUMC DNA copy number, mRNA expression, and tumor traits from 36 colorectal adenocarcinoma and 33 adenoma tumors.

» See all contributors...

Synapse News

12-Apr-2011: A new analysis method for normalizing data was published by Brig Mecham. » Learn more ...

08-Apr-2011: Eric Schadt and colleagues have published an article on a new model for diabetes. » Learn more ...

Example of an EXPERIENCE IN SYNAPSE:











Datasets	Tools	Networks	People	Projects			a	Advand Search
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staast Name	Layers	Number of Sa	amples Status	Species	Tumor / Tissue Ty	pe Disease	Investigator	Created On
SKCC Prostate		261	Current	Human	Prostate	Cancer	Charles Sawyers	11-Apr-201
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larvard Brain Tissu Resource Center	• 🔊 🆀 🖩	803	Current	Human	Brain visual corte Brain cerebellum, Brain prefrontal cortex	<, Neurological Dis	sease Francine Benes/ Eric Schadt	11-Apr-20
<u>louse Model of Bloc</u> Pressure	<u>od</u> 🗗 🎦 🛄	350	Current	Mouse	Kidney cortex, Liv Kidney medulla, Adipose	er, CVD	Eric Schadt	11-Apr-201
FN-Kronos-PHASE	」 ♬ ☎ ⅲ	364	Current	Human	Brain Cerebellum, Brain Parietal Corl Brain Temporal Cortex, Brain Fro		Amanda Myers	11-Apr-20

Cortex

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 MSKCC Prostate Cancer

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Overview

Expand

Genetic and epigenetic alterations have been identified that lead to transcriptional Annotation of prostate cancer genomes provides a foundation for discoveries that can impact disease understanding and treatment. Concordant assessment of DNA copy number, mRNA expression, and focused exon resequencing in the 218 prostate cancer tumors represented in this dataset haveidentified the nuclear receptor coactivator NCOA2 as an oncogene in approximately...

Disease(s):	Cancer
Species:	Human
Tissue Type(s):	GCD
Tissue/Tumor:	Prostate
Reference Publication:	Integrative genomic profiling of human prostate cancer. Taylor BS et al., Cancer Cell. 2010 Jul 13:18(1):11-22.
Other Publications:	0 <u>view</u>
Status:	Current
Version:	1.0.0

Posted:	
Creator:	Charles Sawyers
Curated On:	13-3cp 2000
Contributor(s)/Institution	:Memorial Sloan Kettering Cancer Center
Followers:	7 <u>view</u>
Number of Samples:	261
Number of Downloads:	32
Download Availability:	unspecified
Release Notes:	view

Dataset Select a na		w sample data	🔮 Downloa	d Dataset
Name	Туре	Version	Number of S	Download
Curated phenotypes	*	1.0.0	261	download
sequencing	^{₽3} a	1.0.0	50	download
CNV	p ²³	1.0.0	230	download
<u>miRNA</u> expression		1.0.0	142	download
exon expression		1.0.0	184	download
QCed phenotypes	**	1.0.0	261	download

Conversations and Events for this Dataset	🖸 View All 📑 Add a note
New analysis using this dataset in the Narburg Project <u>Xudong D.</u> 21-Nov-20	
The paper references 149 matched norn have this data? Sam S. 22-Dec-2010	nal samples. Do you
We have only able to obtain 29 matched Matt F. 22-Nov-2010	d normal samples.
New analysis using this dataset in the <u>Brig M</u> 01-Apr-2011	MetaGEO Project 💙
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Analyses using this Dataset	🗔 View A 🖑 Sugges	ll st an analysis
Analysis	Project	Last Modified
Network Generation	Federation Warburg	12-Apr-2011
Network Survey	Federation Warburg	23-Mar-2011
Interactome	Federation Warburg	04-Mar-2011
GSE 21034	MetaGEO	2-Apr-2011

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Charles Sawyers, Howard Hughes Medical Institute



Dr. Sawyers is investigating the signaling pathways that drive the growth of cancer cells, with an eye toward designing new treatment options for patients with chronic myeloid leukemia, prostate cancer, and glioblastoma.

Our laboratory is focused on characterizing signal transduction pathway abnormalities in various cancers with an eye toward translational implications. One example is chronic myeloid leukemia (CML) which is caused by the BCR-ABL fusion gene, expressed as a consequence of the Philadelphia chromosome translocation.

Profession/Title: Affiliation:	Chair, Human Oncology and Pathogenesis Program Investigator Howard Hughes Medical Institute
Contact Info:	martinb@mskcc.org
Website(s):	www.mskcc.org/mskcc/html/72308.cfm http://www.mskcc.org/prg/prg/bios/994.cfm
Followed	Federation Warburg
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MSKCC Prostate Cancer

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Genetic and epigenetic alterations have been identified that lead to transcriptional Annotation of prostate cancer genomes provides a foundation for discoveries that can impact disease understanding and treatment. Concordant assessment of DNA copy number, mRNA expression, and focused exon resequencing in the 218 prostate cancer tumors represented in this dataset haveidentified the nuclear receptor coactivator NCOA2 as an oncogene in approximately ...

Disease(s):	Cancer
Species:	Human
Tissue Type(s):	GCD
Tissue/Tumor:	Prostate
Reference Publication:	Integrative genomic profiling of human prostate cancer. Taylor BS et al., Cancer Cell. 2010 Jul 13:18(1):11-22.
Other Publications:	0 <u>view</u>
Status:	Current
Version:	1.0.0

Posted:	11-Apr-2011
Creator:	Charles Sawyers
Curated On:	13-Sep-2008
Contributor(s)/Institution	n:Memorial Sloan Kettering Cancer Center
Followers:	7 <u>view</u>
Number of Samples:	261
Number of Downloads:	32
Download Availability:	unspecified
Release Notes:	view

Dataset Layers Select a name to view sample data							
Name	Туре	Version	Number of S	Download			
Curated phenotypes	*	1.0.0	261	download			
sequencing	^{Ra} a	1.0.0	50	download			
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<u>miRNA</u> expression		1.0.0	142	download			
exon expression	•	1.0.0	184	download			
QCed phenotypes	1	1.0.0	261	download			

Conversations and Second View All Events for this Dataset Add a note	÷	A tł
New analysis using this dataset in the Federation Warburg Project <u>Xudong D.</u> 21-Nov-2010	Â	A
The paper references 149 matched normal samples. Do you have this data? Sam S. 22-Dec-2010		N
We have only able to obtain 29 matched normal samples. Matt F. 22-Nov-2010	Ш	
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Appreciate the help. We can post new version of the

Analyses using this Dataset	ं View All ₩ Suggest an analysis			
Analysis	Project	Last Modified		
Network Generation	<u>Federation</u> <u>Warburg</u>	2-Apr-2011		
Network Survey	Warburg	23-Mar-2011		
Interactome	Federation Warburg	04-Mar-2011		
GSE 21034	MetaGEO	2-Apr-2011		

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Federation Warburg Project

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Follow this project Send leaders a message In oncology, the Warburg effect is the observation that most cancer cells predominantly produce energy by a Project formed: 01-Nov-2010 high rate of glycolysis followed by lactic acid fermentation in the cytosol, rather than by a comparatively low rate Leaders: Xudong Dai, Mariano Alvarez, Andrew of glycolysis followed by oxidation of pyruvate in mitochondria like most normal cells. The latter process is Beck aerobic (uses oxygen). Malignant rapidly-growing tumor cells typically have glycolytic rates that are up to 200 Members: 8 view times higher than those of their normal tissues of origin; this occurs even if oxygen is plentiful. Publications: 5 view Status: Active The aim of this project is to improve understanding of the mechanism by which cancer cells undergo a transition in their metabolic state associated with immortalization. Project Web Site: Federation Google Site

" Read more ...

Overview

Analyses Select a name details and res	e to view the analysis sources	🔜 Add analysis		Conversations and Events for this Project	🖸 View All 📑 Add a note	•	Project History		💽 View All
Analysis Name		Modified by / Date		Expression Normalization step in Networ updated Xudong D. 12-Apr-2011	k Generation 🔻		Action	User	Date
	xpre sion Normalizatio tep un lated	on Xudong D. A 12-Apr-2011	A.	Thanks Brig, can you have a look at my ner Xudong D. 12-Apr-2011	w results?		Step updated Document updated	Xudong D. Eric S.	12-Apr-2011 / 11-Apr-2011
InteractomeP	rediction Factor rediction tep created	Mariano A. 02-Mar-2011		I've looked at this data and found a huge b may get cleaner results if you use my norm		ш	Document updated Document updated Step created	Marino A. Xudong D. Andrew B.	11-Apr-2011 09-Apr-2011 21-Mar-2011
	orrelation calculation tep updated	Andrew B. 25-Mar-2011		let me know if you need help. Brig M. 09-Nov-2010 Looks good to me.			Step created Analysis created	Andrew B. Andrew B.	20-Mar-2011 20-Mar-2011
				Marino A. 22-Mar-2011			Document created Member added	Xudong D. Antonina M.	19-Mar-2011 18-Mar-2011
				New analysis Network Survey created A 21-Mar-2011	ndrew Beck 🛛 🔻		Step updated Step created	Mariano A. Mariano A.	02-Mar-2011 01-Mar-2011
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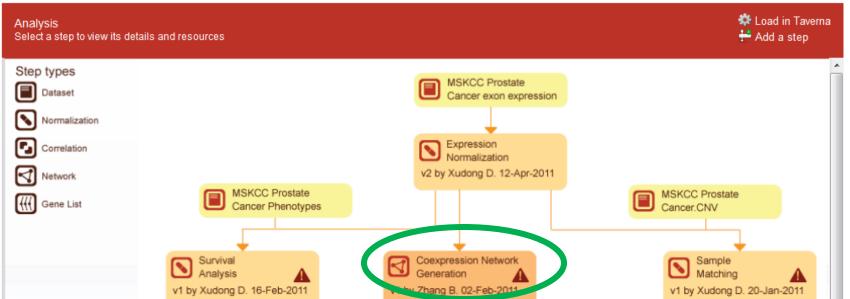
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Overview		Arr Follow this analysis	Notes for this analysis 🔂 View 📑 Add	
In this analysis, we generate a list of key drivers for	Created by:	Xudong Dai on 01-Dec-2011	Expression Normalization rerun Xudong Dai 12-Apr-2011	
the network model governing prostate cancer. The methodology is based on the Rosetta Bayesian network approach	Last modified by	: Xudong Dai on 12-Apr-2011	Gene List Selection run Xudong Dai 16-Feb-2011	-
	Version: Public datasets	2.0 MSKCC Prostate Cancer - exon expression	Network Module run Xudong Dai 15-Feb-2011	-
" Read more	used:	MSKCC Prostate Cancer - QC'd phenotypes MSKCC Prostate Cancer - CNV	OK, ready to go.	
	Public tools	Coexpression Module	Xudong Dai 20-Jan-2011	
	used:	Bayesian Network Generation	We need to build the priors for sample matching before Jun Zhu 20-Jan-2011	
	Public networks generated:	Warburg Cancer Network		





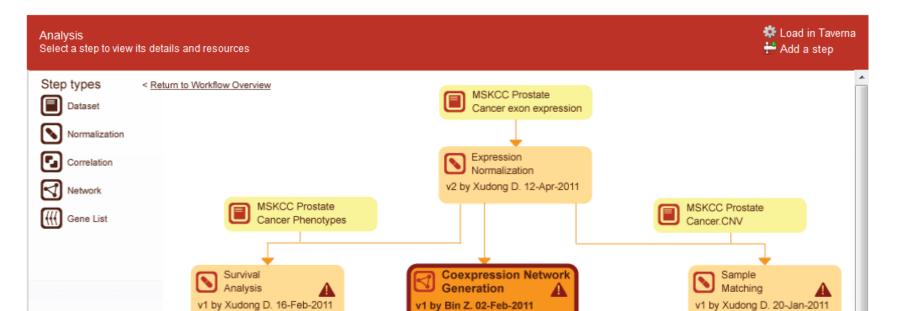
Advanced Q Datasets Tools Networks People Projects Search

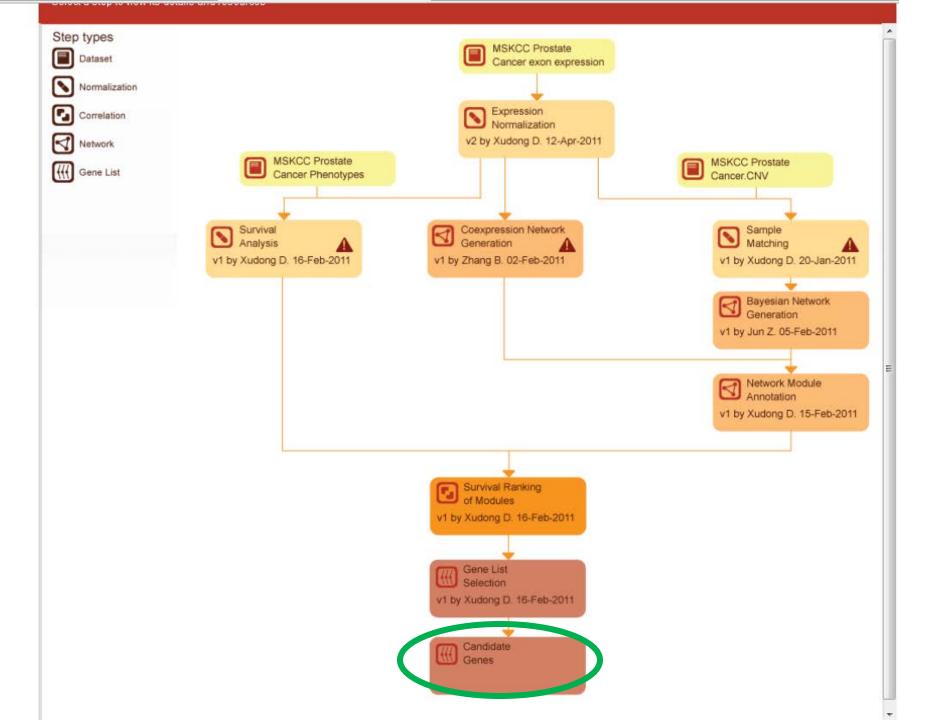
Home > All Projects > Federation Warburg Project > Network Generation Analysis > Coexpression Network Generation Step

Coexpression Network Generation Step

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Overview		Rerun this step	Notes for this step	🛄 View All 📑 Add a note
Warning: This input has changed since the latest version	of this analysis step.			
In this step, we generate a coexpression network	Created by:	Bin Zhang on 15-Feb-2011		
based on gene expression levels as measured by	Last modified by	; Bin Zhang on 15-Feb-2011		
affymetrix arrays. [*] <u>Read more</u>	Inputs:	Normalized Expression		
Read more	Outputs:	Warburg Cancer Network		
	Tool:	CoexNet.SNW		
	Documentation:	<u>CoexNet.SNW</u>		







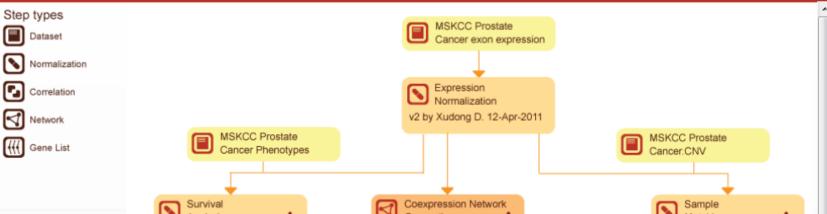
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signELUA.R × P metaGeo.R × P DemoScript.R × $\neg \Box$ Workspace History $-\Box$ C 📊 🔲 Source on Save 🛛 🔍 🗡 = 🚔 📑 Run 📑 🏞 📑 Source 🕣 Load 🗸 🔚 Save 🗸 📑 Import Dataset 🖌 🎻 Clear All client) Values 2 synapseLogin() entityId 15627 layer PhenotypeLayer [1] 4 ### do this ahead of time Dataset[1] 5 project <- createEntity(Project(list(name="Mikes Playground")))</pre> parent 6 dataset <- createEntity(Dataset(list(name="Results Dataset", parentId = propertyValue(proj</pre> 7 ### 8 9 myDataset <- propertyValue(dataset, "id")</pre> 10 11 ## download the sawyers phenotypes and list the contents 12 sawyersPhenotypes <- loadEntity(4635)</pre> 13 names(sawyersPhenotypes) 14 ls(sawyersPhenotypes\$objects) 15 16 ## pull out the data and modify it 17 ptCopy <- sawyersPhenotypes\$objects\$phenotypes Files Plots Packages Help $\neg \Box$ 18 ptCopy\$gleasonScore <- "fakeScore"</pre> Q Install Packages 0 Check for Updates 19 3 affy Methods for Affymetrix Oligonucleotide Arrays 20 🔳 • 2:1 🚺 (Top Level) 🗘 R Script 🗘 ⊗ <u>affydata</u> Affymetrix Data for Demonstration Purpose \odot Tools for parsing Affymetrix data files <u>affyio</u> Console ~/R/ @ $\neg \Box$ Copyright (C) 2011 The R Foundation for Statistical Computing affyPLM Methods for fitting probe-level models ISBN 3-900051-07-0 Θ affyQCReport QC Report Generation for affyBatch objects Platform: x86_64-pc-mingw32/x64 (64-bit) Annotation tools for Affymetrix biological metadata annaffy R is free software and comes with ABSOLUTELY NO WARRANTY. \odot annotate Annotation for microarrays You are welcome to redistribute it under certain conditions. AnnotationDbi Annotation Database Interface Type 'license()' or 'licence()' for distribution details. Θ Biobase Biobase: Base functions for Bioconductor Natural language support but running in an English locale biomaRt Interface to BioMart databases (e.g. Ensembl, COSMIC , Wormbase and Gramene) R is a collaborative project with many contributors. String objects representing biological sequences, and matching algorithms Θ Biostrings Type 'contributors()' for more information and bitops Functions for Bitwise operations 'citation()' on how to cite R or R packages in publications. \odot boot Bootstrap Functions (originally by Angelo Canty for S) Type 'demo()' for some demos, 'help()' for on-line help, or caret Classification and Regression Training 'help.start()' for an HTML browser interface to help. Θ Functions for Classification class Type 'q()' to quit R. cluster Cluster Analysis Extended Rousseeuw et al. [Workspace loaded from ~/R/.RData] Θ codetools Code Analysis Tools for R > library(synapseClient) compiler The R Compiler Package (C) 🔫 1 <u>datasets</u> The R Datasets Package

RStudio

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20 (<u>affy</u>	Methods for Affymetrix Oligonucleotide Arrays	8 🔺
4:1		affydata	Affymetrix Data for Demonstration Purpose	8
Console ~/R/ 🔗 🔮 👝 🗌		<u>affyio</u>	Tools for parsing Affymetrix data files	8 =
Platform: x86_64-pc-mingw32/x64 (64-bit)	E	affyPLM	Methods for fitting probe-level models	8
R is free software and comes with ABSOLUTELY NO WARRANTY.	E	affyQCReport	QC Report Generation for affyBatch objects	8
You are welcome to redistribute it under certain conditions.		annaffy	Annotation tools for Affymetrix biological metadata	•
Type 'license()' or 'licence()' for distribution details.		annotate	Annotation for microarrays	8
Natural language support but running in an English locale		AnnotationDbi	Annotation Database Interface	8
Racurar ranguage support but running in an English rotare		Biobase	Biobase: Base functions for Bioconductor	•
R is a collaborative project with many contributors.			Interface to BioMart databases (e.g. Ensembl, COSMIC ,Wormbase and Gramene)	8
Type 'contributors()' for more information and 'citation()' on how to cite R or R packages in publications.			String objects representing biological sequences, and matching algorithms	8
			Functions for Bitwise operations	8
Type 'demo()' for some demos, 'help()' for on-line help, or 'help.start()' for an HTML browser interface to help.			Bootstrap Functions (originally by Angelo Canty for S)	8
Type 'q()' to quit R.				8
			Classification and Regression Training	8
[Workspace loaded from ~/R/.RData]			Functions for Classification	
> library(synapseClient)			Cluster Analysis Extended Rousseeuw et al.	8
> synapseLogin()		-	Code Analysis Tools for R	8
Loading Tcl/Tk interface done		<u>compiler</u>	The R Compiler Package	8
•		datasets	The R Datasets Package	0 v