

Science Communication & Impact

Steven B. Roberts

School of Aquatic and Fishery Sciences
University of Washington

robertslab.info
@sr320



2014 Annual Conference
JUNE 8-10/Vancouver

Science Communication & Impact

What ~~faculty~~ I think about

Steven B. Roberts

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robertslab.info
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2014 Annual Conference
JUNE 8-10/Vancouver

Open Science

- You are free to share!
- Our lab practices open notebook science.
- We use a variety of platforms for communication.

robertslab.info

sr320@uw.edu

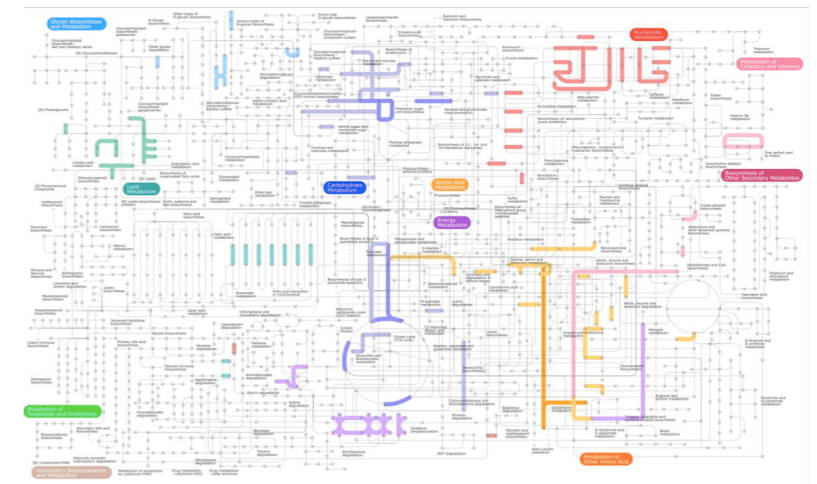
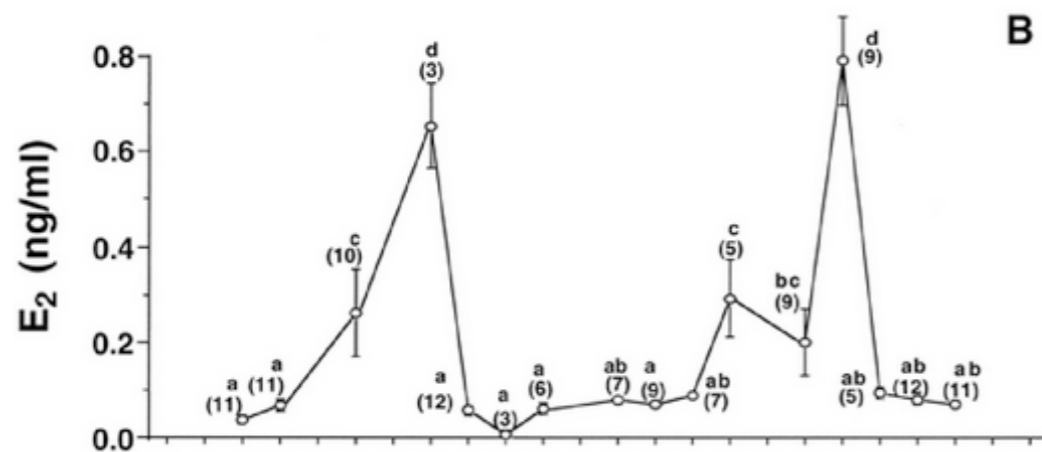
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Bio

- ★ 2014 Associate Professor - University of Washington
- 2007 Assistant Professor
- 2003 Research Scientist - Marine Biological Laboratory
- 2002 Post-doc
- 1998 PhD Student - University of Notre Dame

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Bio

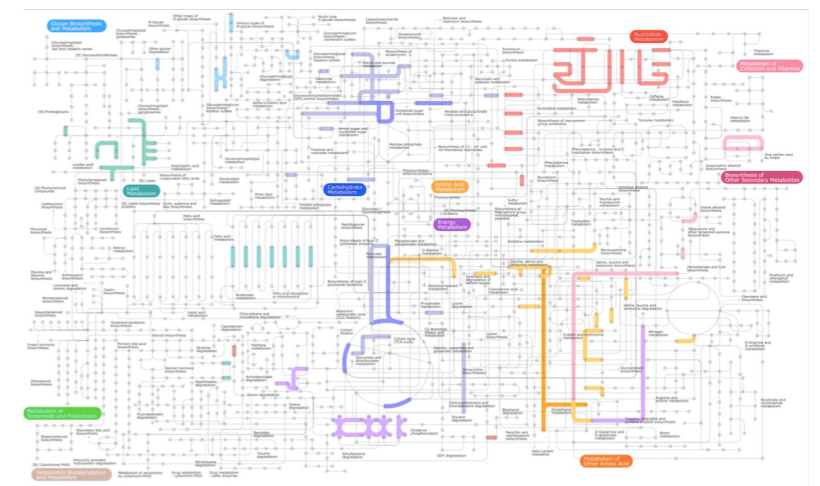
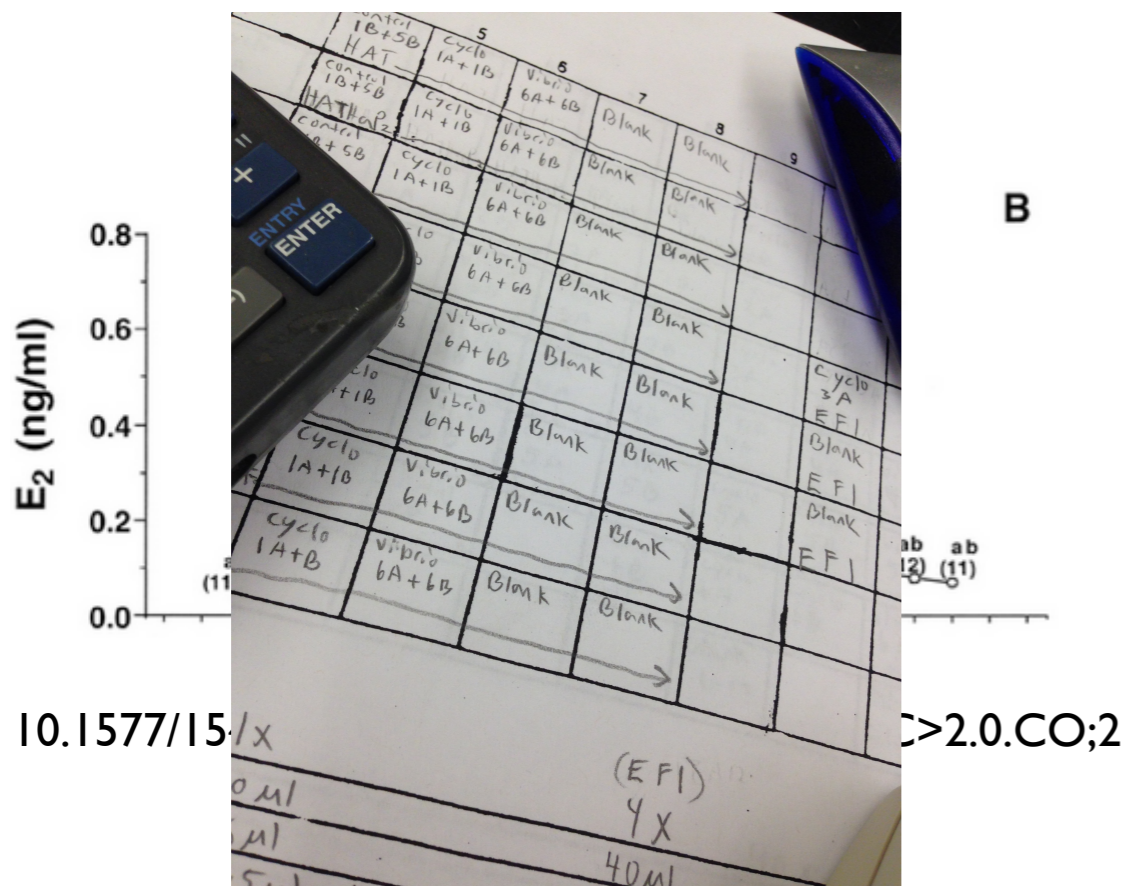
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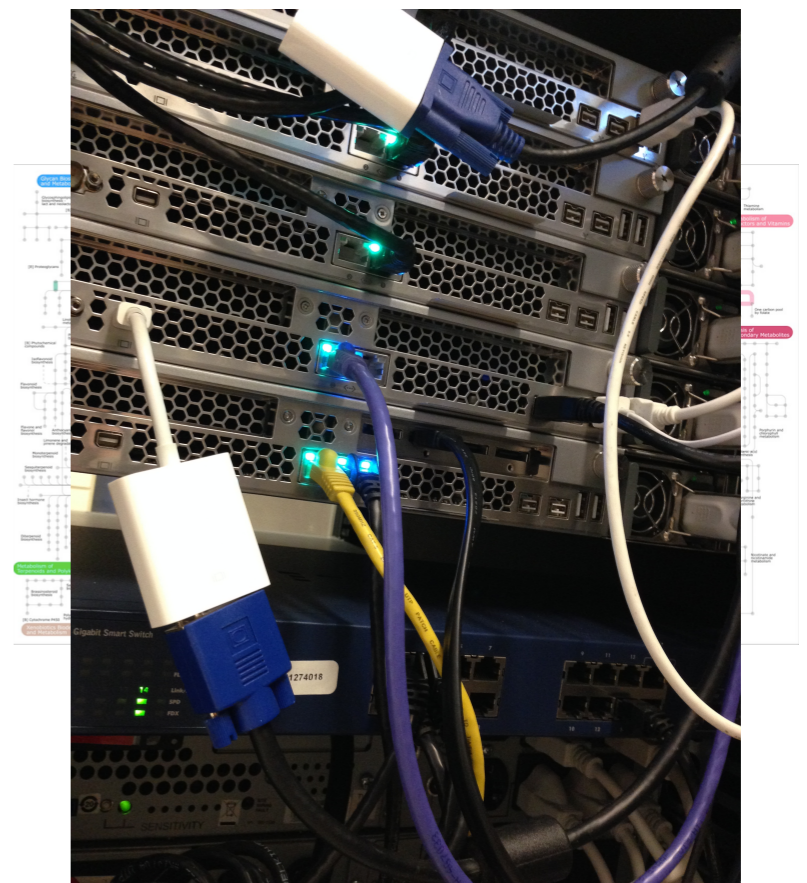
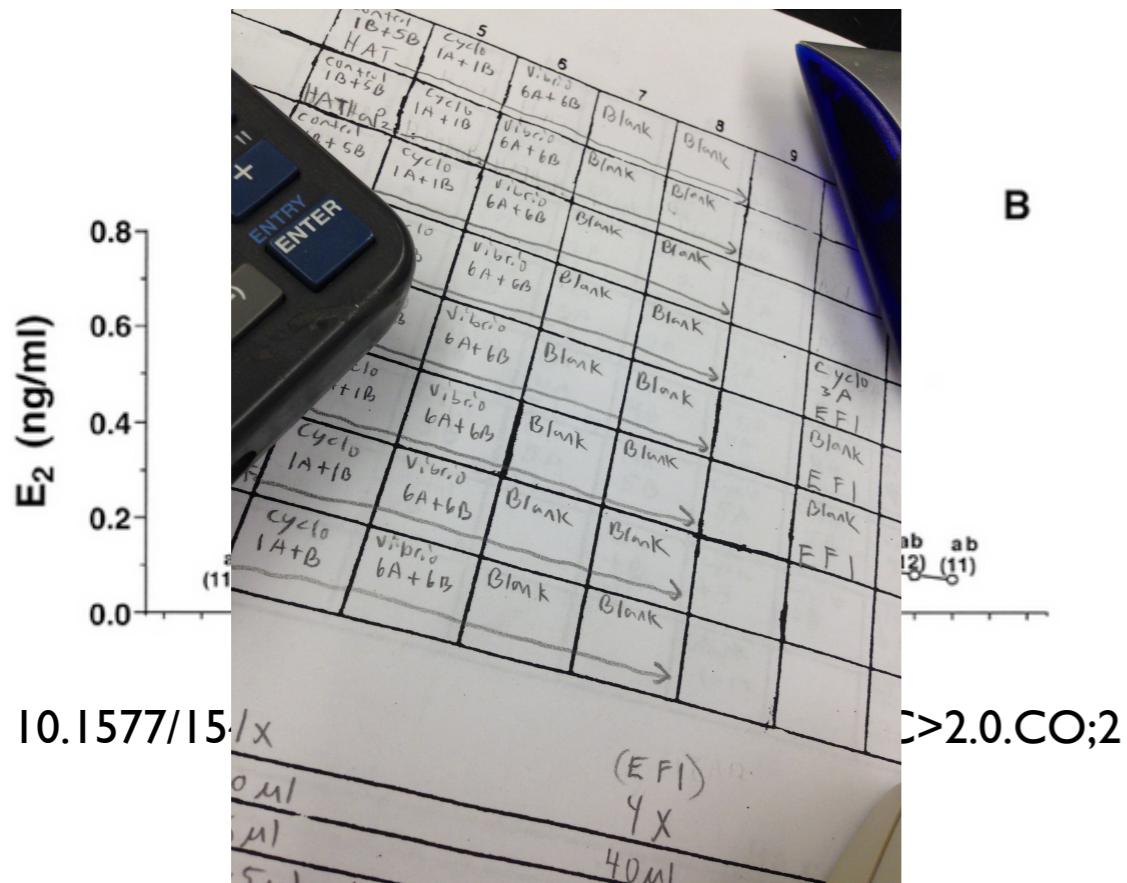
1998 PhD Student - University of Notre Dame



10.1093/conphys/cot009

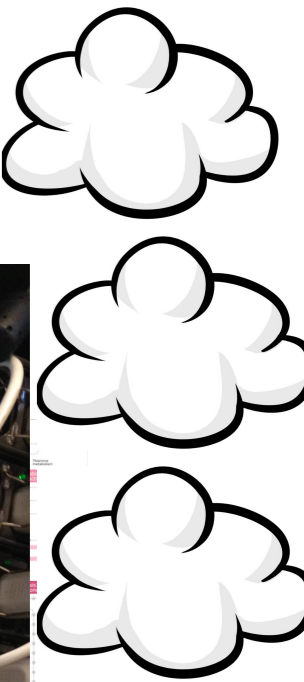
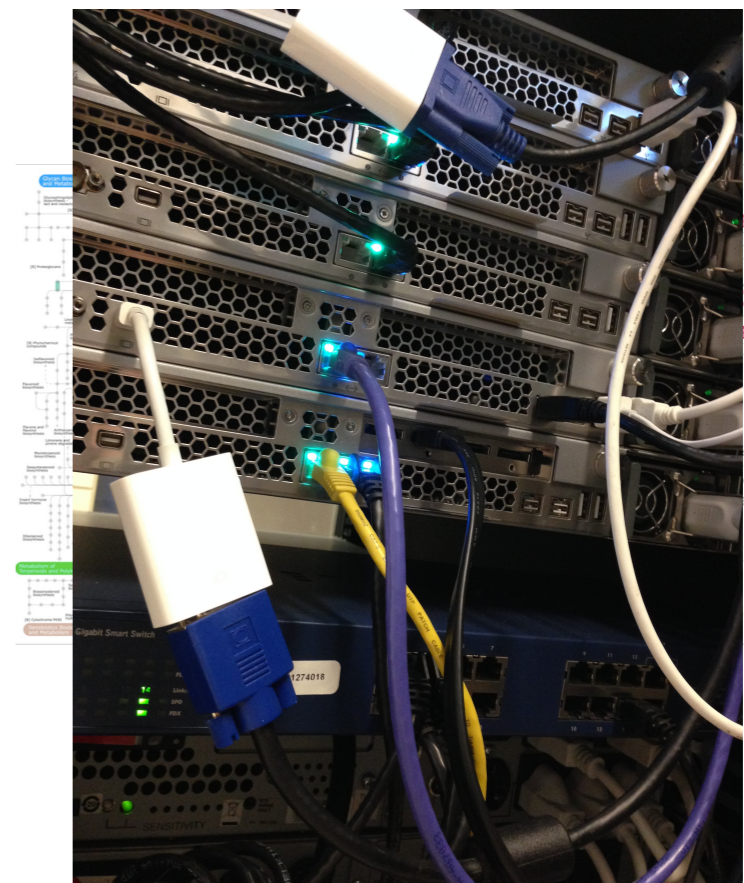
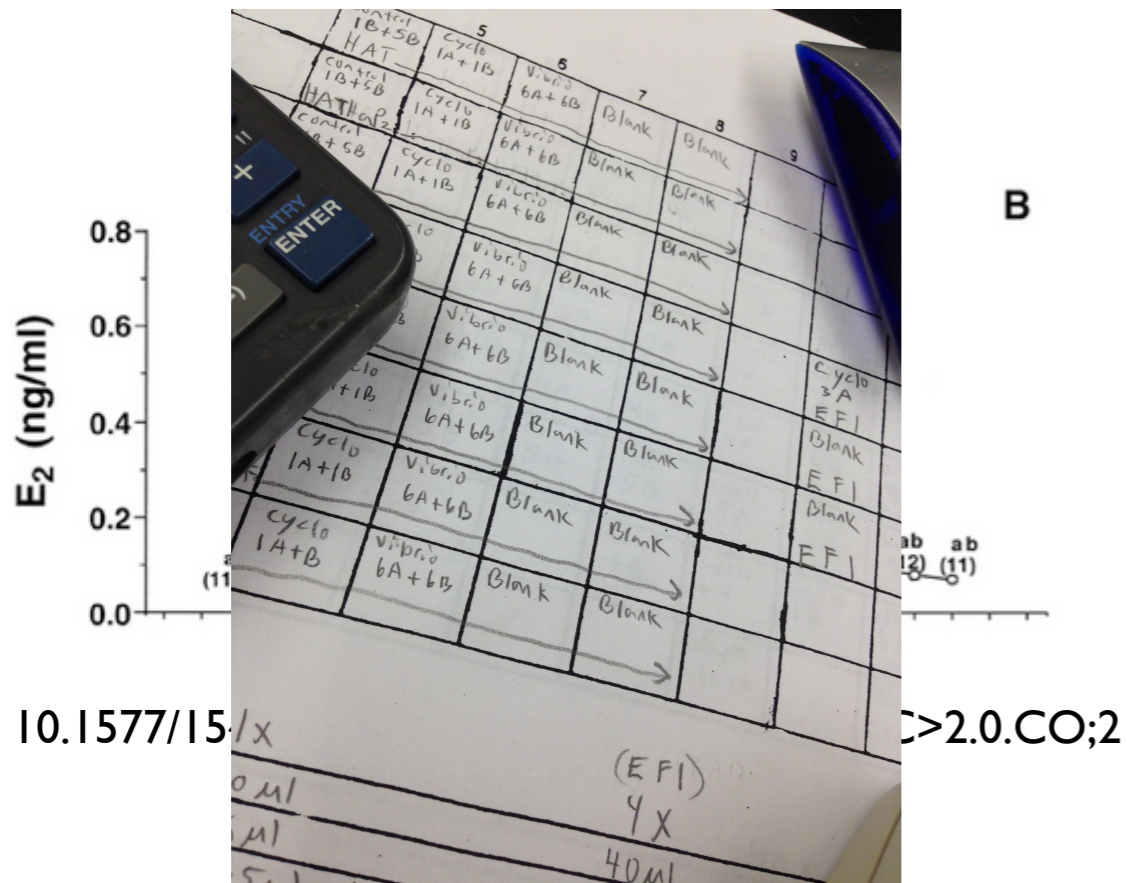
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Idea Generation

Data Acquisition
and Analysis

Publication

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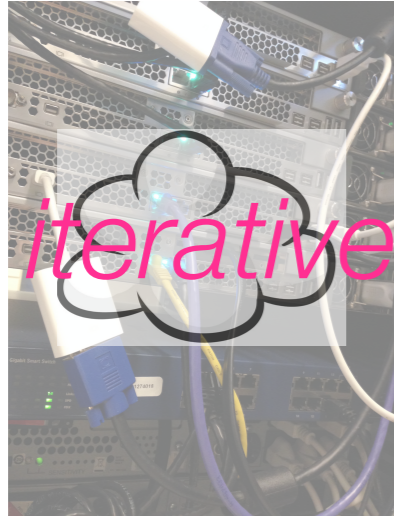
Pinboard



Idea Generation Publication

Publication

**Data Acquisition
and Analysis** Publication
Publication



lab notebooks



IP[y]: IPython
Interactive Computing

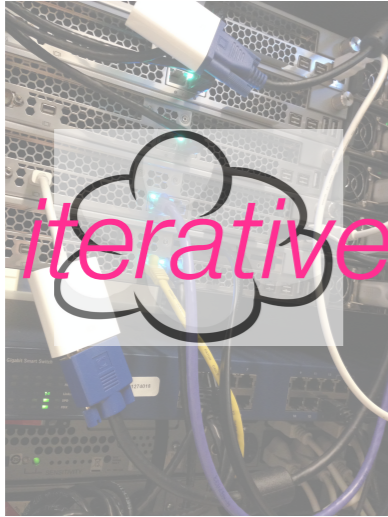


Open
Notebook
Science

Idea Generation Publication

Data Acquisition Publication

and Analysis Publication



lab notebooks



IP[y]: IPython
Interactive Computing



Automating a Workflow: Beyond Blast - to GO Slim

The concept is that you can take a fasta file in a working directory and end up with GO slim information all within a single notebook that is automated. Current writing (and overwriting) as scratch file to SQLShare. Assumptions are that you are working in a directory with fasta file named query.fa. And blast algorithms are

```
In [13]: #allows plots to be shown inline
%pylab inline

Populating the interactive namespace from numpy and matplotlib

In [4]: #Setting Working Directory
wd="/Volumes/web/whale/fish546/qpx_go_val"
#Setting directory of Blast Databases
dbd="/Volumes/Bay3/Software/ncbi-blast-2.2.29\+/db/"
#Database name
dbn="uniprot_sprot_r2013_12"
#Blast algorithm
ba="blastx"
#Location of SQLShare python tools; you can empty (") if tools are in PATH
spd="/Users/sr320/sqlshare-pythonclient/tools/"

In [5]: cd {wd}

/Volumes/web/whale/fish546/qpx_go_val

In [5]: !{ba} -query query.fa -db {dbd}{dbn} -out {dbn}_{ba}_out.tab -evalue 1E-50 -num_threads 4 -max_hsps_per_
BLAST Database error: No alias or index file found for protein database [/Volumes/Bay3/Software/ncbi-bla
/db/uniprot_sprot_r2013_12] in search path [/Volumes/web/whale/fish546/pipeline_test_dir4::]

In [6]: !head -1 {dbn}_{ba}_out.tab

QPX_transcriptome_v1_Contig_2    sp|P52712|CBPX_ORYSJ    43.75    416    213    12    2095    869
7    3e-98    326

In [17]: #Translate pipes to tab so SPID is in separate column for Joining
!tr '|' '\t' <{dbn}_{ba}_out.tab > {dbn}_{ba}_out2.tab

In [18]: !head -1 {dbn}_{ba}_out2.tab

In [8]: #Uploads formatted blast table to SQLshare; currently has generic name and meant to be temporary: Warning
!python {spd}singleupload.py -d scratchblast_out {dbn}_{ba}_out2.tab

...

In [9]: !python {spd}fetchdata.py -s "SELECT * FROM [sr320@washington.edu].[scratchblast_out]blast Left Join [sr

In [10]: !head -2 {dbn}_join2goslim.txt

...

In [11]: !python {spd}singleupload.py -d scratchjoin_slim {dbn}_join2goslim.txt

processing chunk line 0 to 18037 (0.0718240737915 s elapsed)
pushing uniprot_sprot_r2013_12_join2goslim.txt...
parsing 9A18D989...
finished scratchjoin_slim

In [12]: #Sets GO aspect
!python {spd}fetchdata.py -s "SELECT Distinct Column1 as query, Column3 as SPID, GOSlim_bin FROM [sr320@

In [13]: !head justslim.txt

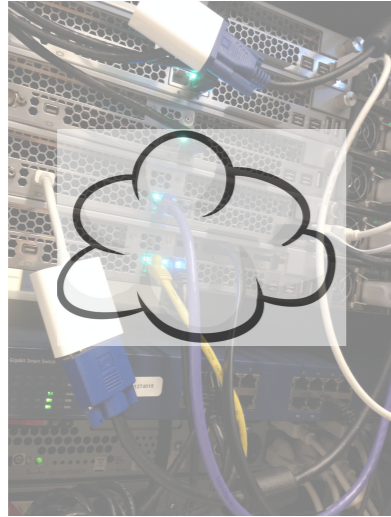
...

In [15]: from pandas import *
```

Idea Generation Publication

**Data Acquisition
and Analysis** Publication
Publication
Publication

universal challenges



archiving metadata

version control

simple sharing

data management

self-discoverability

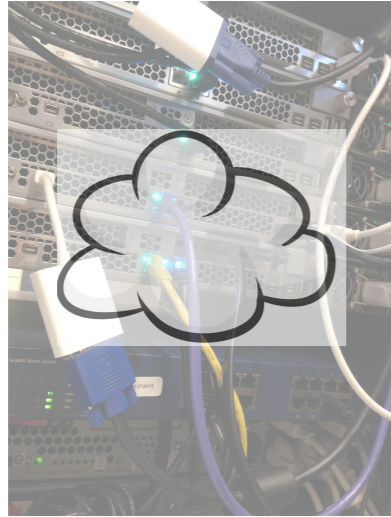
provenance

collaboration

Idea Generation Publication

**Data Acquisition
and Analysis** Publication
Publication
Publication

universal challenges



archiving metadata

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our current ~~solution~~ - analyses on local web server (NAS)

Idea Generation

Publication

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Publication



Authorea

Write science together.

Authorea is the collaborative platform for research.

PeerJ PrePrints - where biology is heading

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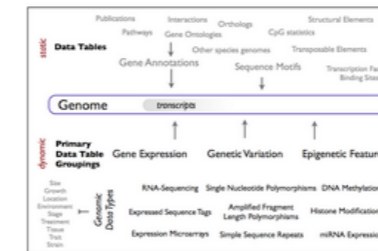
sr320 edited this page on Feb 7 · 23 revisions

This wiki serves as the *primary means for documentation* for project qdod: **querying disparate oyster datasets.**

In brief, data in the form of delimited text files is aggregated into [SQLShare](#) where they can be easily queried. The simplest way to start exploring the uses for this system is to interact with SQLShare using the simple web interface. All you need to get started is a Google account. [Please see this page for a beginner's guide to SQLshare.](#)

There is a python client for advanced users.

Below is schematic representation of the different types of datasets.



Reference Genome Sequence files are described on [this page](#).

Steven Roberts
Associate Professor (Marine Biology)
University of Washington

Research statistics: 10556 views, 114 shares

Active categories: Marine Biology, Molecular Biology, Bioinformatics, Physiology, Genetics

Working with... Colleen Burge, Emma Timmins-Schiffman, Claire Olson, Mackenzie Gavery




Related authors: Emma Timmins-Schiffman, Claire Olson, Mackenzie Gavery, Samuel White, Michael O'Donnell


Most popular uploads: Herring Hepatic Transcriptome 34300 contigs.fa (4923 views, 16 shares), Herring Testicular Transcriptome 31545 contigs.fa (758 views, 18 shares)

Recently used tags: thraustochytrid, qpx, clam, quahog, Gene regulation, oyster, preprint, abalone, aquaculture, bivalves



Steven Roberts

 [figshare](#)  [GitHub](#)  [Google Scholar](#)

 [Open Access](#)

Bronze level award

Steven has made 33% of 61 listed articles free for anyone to read.

[Products \(112\)](#) > [with metrics \(79\)](#) > [this week \(30\)](#)

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Article

Is There a Relationship between DNA Methylation and Phenotypic Plasticity in Invertebrates?



(2012) Roberts, Gavery. *Frontiers in Physiology*

[highly cited](#) [highly saved](#) [+2](#) [highly saved](#)
[highly discussed](#)

Development of Genomic Resources for Pacific Herring through Targeted Transcriptome Pyrosequencing

(2012) Roberts, Hauser, Seeb et al.. *PLoS ONE*

[highly cited](#) [highly saved](#) [highly discussed](#)
[viewed](#) [+1](#) [viewed](#) [+14](#)

RNA-Seq Reveals an Integrated Immune Response in Nucleated Erythrocytes

(2011) Morera, Roher, Ribas et al.. *PLoS ONE*

[highly saved](#) [highly discussed](#) [cited](#)
[viewed](#) [+4](#) [viewed](#) [+24](#)

Elevated pCO₂ causes developmental delay in early larval Pacific oysters, *Crassostrea gigas*



(2012) *figshare*.

[highly discussed](#) [highly discussed](#) [highly viewed](#)

Genomic resource development of shellfish of conservation concern

(2012) *figshare*.

[highly discussed](#) [highly discussed](#) [highly viewed](#)

Rank and Order: Evaluating the Performance of SNPs for Individual Assignment in a Non-Model Organism

(2012) Storer, Pascal, Roberts et al.. *PLoS ONE*

[highly saved](#) [+1](#) [cited](#) [viewed](#) [discussed](#)
[viewed](#) [+7](#)

DNA methylation as a mechanism to increase adaptive potential in invertebrates

(2012) *figshare*.

[highly viewed](#) [highly discussed](#) [discussed](#)

Single nucleotide polymorphism (SNP) discovery and applications of SNP genotyping in non-model

[highly cited](#) [highly saved](#) [+4](#)

metrics

FigShare

Steven Roberts @sr320 · May 8

Stein: "#reproducibility is just a synonym for actually right" #uwrepro modular.math.washington.edu

3 3

Twitter

Steven Roberts @sr320 · May 8

Stark: "key to reproducibility is in the training" #uwrepro

3

Steven Roberts @sr320 · May 8

Freire: noWorkflow -supporting infrastructure to run scientific experiments w/o workflow management system github.com/gems-uff/nowor... #uwrepro

3 View summary

	Post	Total Reach?
	Roberts Lab shared a link.	--
	#TBT #wayback	--
	Who is doing Science today?	17
	Who is doing Science today?	16
	Roberts Lab shared a link.	38

Facebook

Subject areas

Aquaculture, Fisheries and Fish Science

Marine Biology

Molecular Biology

66 111 24
Visitors Views Downloads

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PeerJ altmetrics

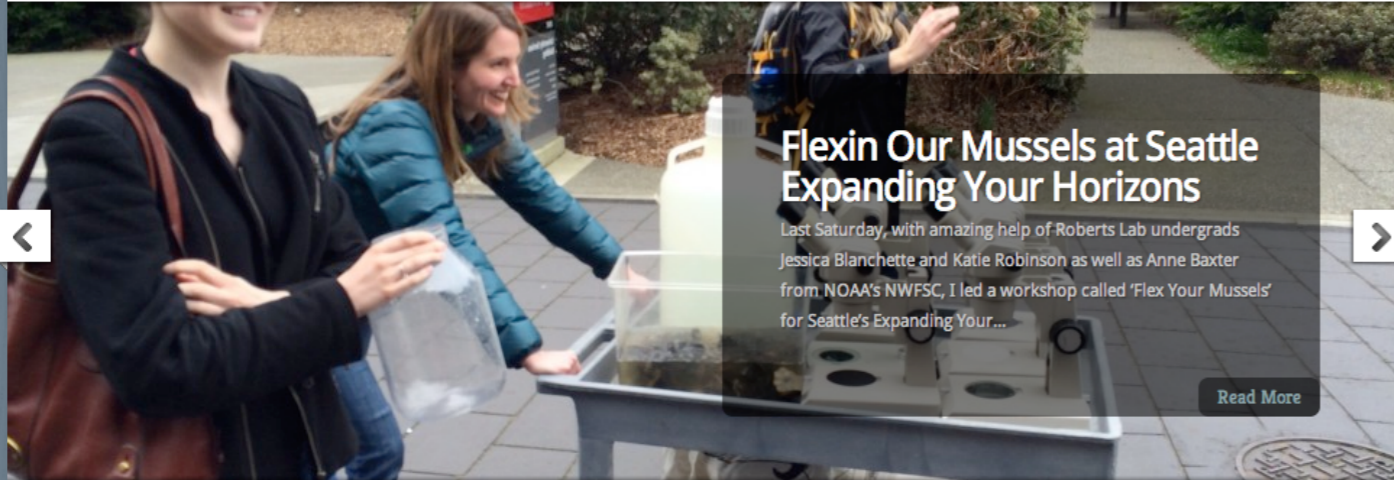
Top referrals unique visitors

news-oceanacidification-icc.org 18

dataset	4923 views 16 shares
dataset	758 views 18 shares
fileset	671 views 14 shares
dataset	464 views 5 shares
paper	433 views 1 shares
paper	331 views 9 shares

Web Analytics





Flexin Our Mussels at Seattle Expanding Your Horizons

Last Saturday, with amazing help of Roberts Lab undergrads Jessica Blanchette and Katie Robinson as well as Anne Baxter from NOAA's NWFSC, I led a workshop called 'Flex Your Mussels' for Seattle's Expanding Your...

Read More

Research

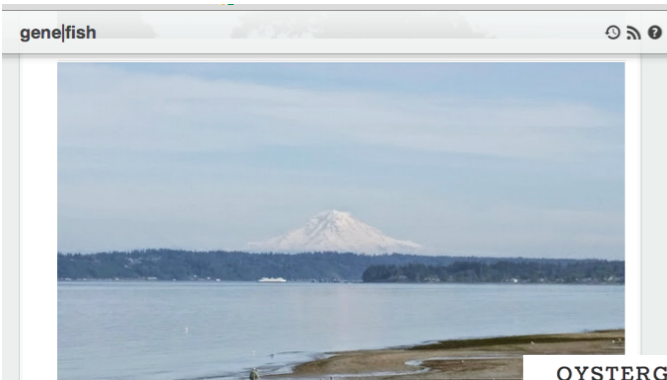
Research in our lab focuses on characterizing physiological responses of

Open Science

We practice open science with lab members maintaining online electronic lab

News and Notes

- Congrats to Claire Olson - recipient of College travel award! [5/14]



OYSTERGEN.ES

from Jake Heare Research Central <http://ift.tt/1oUbogs> by Jake Heare via IFTTT

#IFTTT #Jake Heare Research Central #jake #ons #notebook 1 week ago

A Wrap-up of the 2014 eScience in the Cloud Workshop - Azure 4 Research - Site Home MSDN Blogs



Exploring the biology of oysters, a few hundred base pairs at a time.

About this Site

This site is intended to serve as a portal for sharing research data, resources, and information as it pertains to active research efforts that intersect the fields of shellfish genomics and environmental science. The site currently highlights two species, a photo album and a blog.

qdod 2.0

As part of an ongoing effort to make it easier to Query Disparate Oyster Datasets we have published a new set of documentation for the project. In brief, data in the form of delimited text files is aggregated into SQLShare where they can be easily queried.

is developed to serve as a portal for information on active research on ocean acidification within the School of Aquatic and Fishery Sciences at the University of Washington. Project highlights are provided below with occasional points found in the adjacent column. In general most of our research focuses on low changing ocean conditions impact marine invertebrates.

PROJECT: OCEAN ACIDIFICATION AND EMERGING DISEASES IN THE PACIFIC NORTHWEST

The goal of this project is to characterize the factors that threaten the aquaculture industry and wild shellfish. The primary approaches include a series of laboratory experiments and environmental sampling. The research effort has been developed to test the following hypothesis: Environmental stressors (elevated temperature and carbon dioxide) will enhance disease expression and reduce larval bivalve survival. More specifically we are testing the impact of single and multiple biotic and abiotic

SEARCH

FUNDING

- Washington Sea Grant
- NOAA Subaward/Kennedy Grant Program
- 104% \$1.75 Successful Funded Award
- Crowdfunding Campaign
- 65 Project Funders @ RocketHub!
- School of Aquatic and Fishery

Ocean Acidification

Research Notes from the School of Aquatic and Fishery Sciences

HOME POST FRIEDMAN LAB ROBERTS LAB PRESENTATIONS OUTREACH



LINK

[Shotgun proteomics reveals physiological response to ocean acidification in Crassostrea gigas | Ocean acidification.](#)

Comments Off

Posted on May 20, 2014 in Link Tagged emma, proteomics, research Edit

IMAGE

Set-up



Wiki Home

Projects

Recent Changes

Pages and Files

Members

Search

home

This wiki has been developed as a resource for lab personnel and students to access information and publish research activities using an [open notebook science](#) based system. All lab notebooks can be accessed via the side menu. The Roberts Lab is in the [School of Aquatic and Fishery Sciences](#) within the [College of Environment](#) at the [University of Washington](#). More information can be found concerning [research](#), [personnel](#), and [outreach](#) on the [Roberts Lab Official Webpage](#).

Laboratory Reference Material

- [Data and Resource Sharing Plan](#)
- [Laboratory Protocols](#)
- [Emergency Contact Information](#)
- [UW Lab Safety Manual](#)
- [Code Repository](#)
- [UW Biosafety Manual](#)
- [Chemical Inventory](#)

Lab Activity and Communication

- [Lab Meetings](#)
- [IPUS: Information for Prospective Undergraduate Students](#)
- [Lab Calendar](#)

Data Repositories

- [The Eagle](#)
- [CLC Genomics Server](#) (password protected)
- [Primer Database](#)
- [NGS Library Info](#)
- [crassostreome](#)



Roberts Lab Website

metrics

FigShare

Steven Roberts @sr320 · May 8

Stein: "#reproducibility is just a synonym for actually right" #uwrepro modular.math.washington.edu

3 3

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Freire: noWorkflow -supporting infrastructure to run scientific experiments w/o workflow management system github.com/gems-uff/nowor... #uwrepro

3

View summary

Open Access

Bronze level award

Steven has made 33% of 61 listed articles free for anyone to read.

ImpactStory

dataset	4923 views	16 shares
dataset	758 views	18 shares
fileset	671 views	14 shares
dataset	464 views	5 shares
paper	433 views	1 shares
paper	331 views	9 shares

changes behavior, for the better.

Post	
Roberts Lab shared	
#TBT #wayback	--
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highly discussed

highly cited

highly saved

highly discussed

viewed +1

viewed +14

Web Analytics

Facebook

Subject areas

Aquaculture, Fisheries and Fish Science

Marine Biology

Molecular Biology

66

Visitors

111

Views

24

Downloads

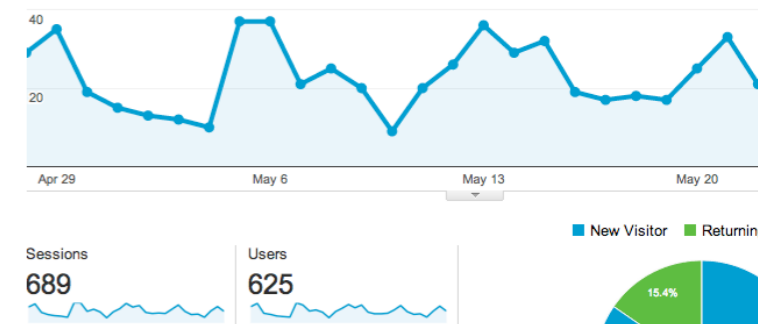
View all metrics + mentions on the Web

PeerJ altmetrics

Top referrals unique visitors

news-oceanacidification-icc.org

18

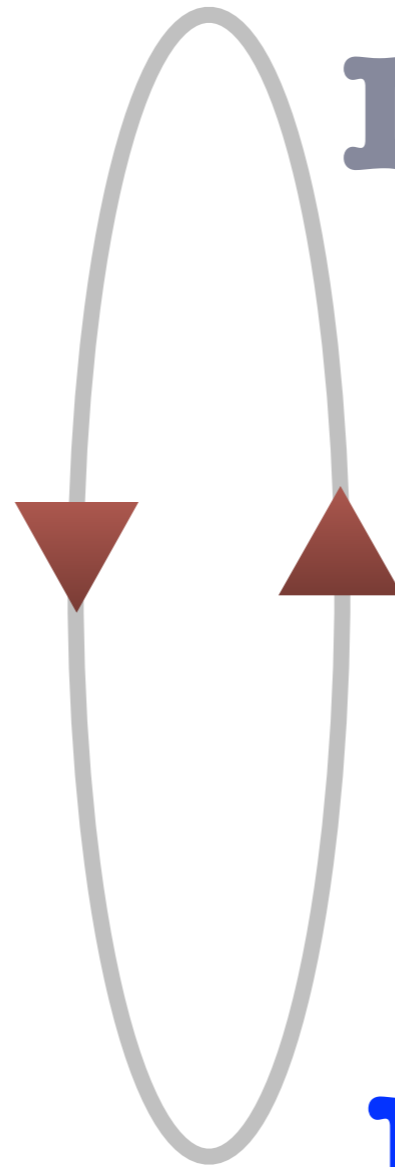


Open Science

**Getting
Information**

**Sharing
Information**

Idea Generation Publication
 Publication
Data Acquisition Publication
and Analysis Publication



1) Ease of Effort

2) Greatest Impact

3) *Self Discoverability*

thanks

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