

DNA Sequence Bioinformatics Analysis with the Galaxy Platform

University of São Paulo, Brazil
28 July - 1 August 2014

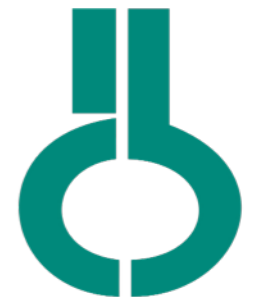
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Universidade de São Paulo



ICB USP



Sociedade Brasileira de Imunologia



The Week's Agenda

- Mon Introductions: Cloud Computing, Nuvem Cloud, Basic Analysis in Galaxy
- Tues Workflows, Sharing, Quality Control, ChIP-Seq
- Wed ChIP-Seq cont., Genome Assembly, RNA-Seq
- Thur RNA-Seq continued, SNP and Variant Calling
- Fri Intro to Command Line, Genome Annotation using MAKER, CloudMan and AWS

bit.ly/gxyusp2014

Friday Agenda

9:00 Genome Annotation Using Maker; Intro to command line and AWS

20 minute Break at around 10:20

12:00 Lunch

2:00 Open Discussion and Q & A

2:15 Setting up your own Galaxy Server on AWS

20 minute Break at around 3:20

4:30 Wrapup

5:00 Done

Acknowledgements

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Dannon Baker

Robson de Souza
José Belizario

Shannan Ho Sui

UC Davis Genome Center Bioinformatics Core

Anton Nekrutenko and Jen Jackson

Carson Holt, Barry Moore, Daniel Ence, Mike Campbell, Mark Yandell

You

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You

The Galaxy Team



Enis Afgan



Dannon Baker



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Marten Cech



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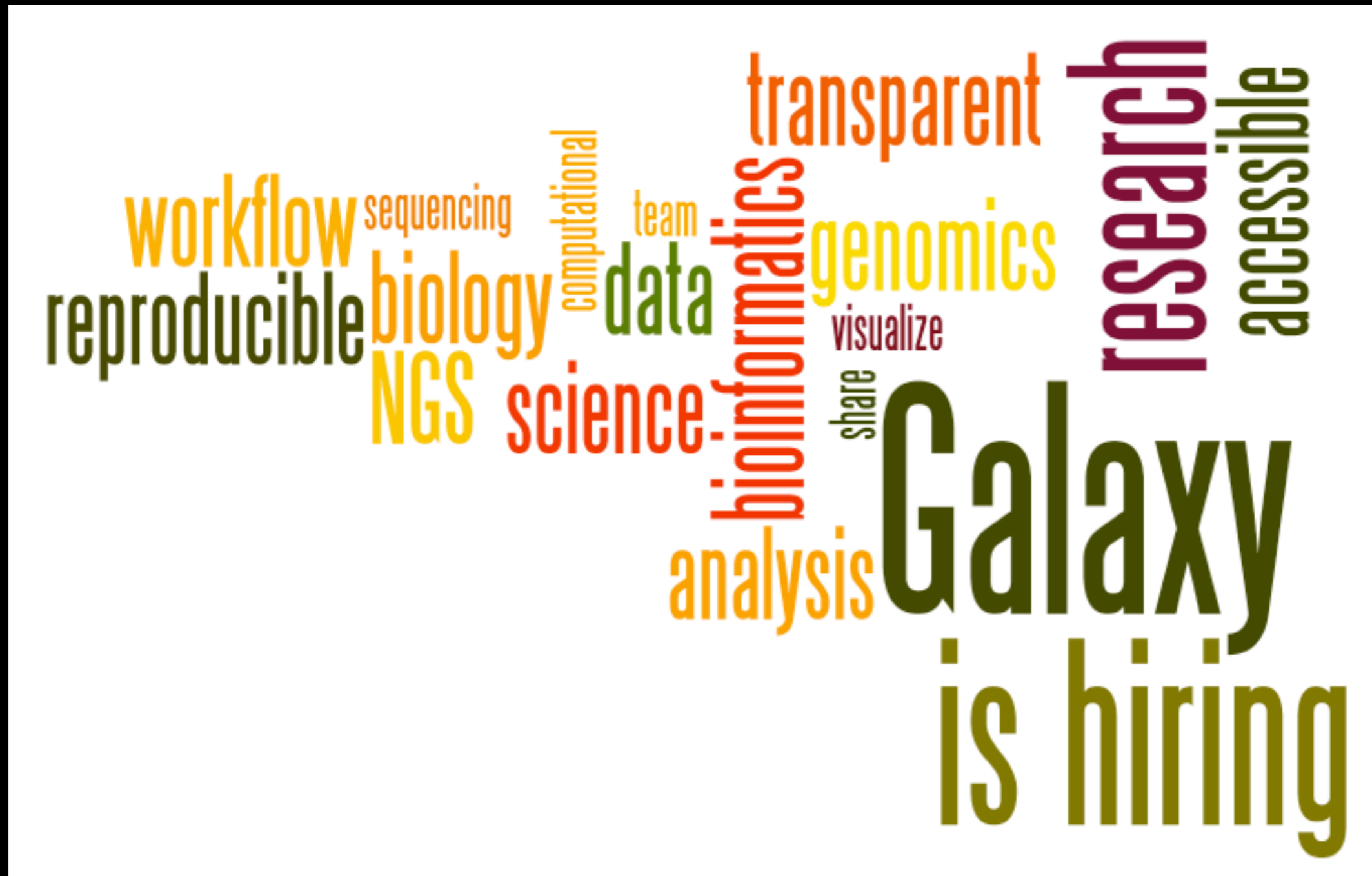
Nick Stoler



James Taylor

<http://wiki.galaxyproject.org/GalaxyTeam>

Galaxy is hiring post-docs and software engineers



Please help.

<http://wiki.galaxyproject.org/GalaxyIsHiring>

Amazon

We are going to spend all day in **Amazon web Services (AWS)** - for both MAKER and CloudMan.

We are going to use **IAM**, a lightweight shared user space similar to what we did on Nuvem

Pay attention to IDs and naming conventions - otherwise we step on each other.

AWS Login

See your email inbox for an email from me.
Use the same number you used on Nuvem.
Find that number in the list of logins

Here's an example entry for user #58

```
-----  
LoginURL: https://900090895588.signin.aws.amazon.com/console  
Username: USP_58  
Password: KobleTil58  
  
cluster_name: USP_58_cluster  
password: ConnectNow1  
access_key: AKIAI6SDW7T45KLZV2IA  
secret_key: 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
```

MAKER

I am completely borrowing the GMOD MAKER workshop created by the MAKER team for the annual GMOD school.

Going to briefly introduce genome annotation concepts and then dive into MAKER.

Copious thanks to the MAKER team for allowing me to do this.

MAKER

Tutorial:

<http://bit.ly/gmodmaker2014>

Slides:

<http://www.slideshare.net/barrymoore/gmod-2014-maker>

Video:

<http://youtu.be/uA96tSSaqLk>

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Galaxy CloudMan

<http://usegalaxy.org/cloud>

- Start with a **fully configured and populated** (tools and data) Galaxy instance.
- Allows you to scale up and down your compute assets as needed.
- Someone else manages the data center.
- **Cloud1-4 used this**



- **You will set up an instance now**

<http://aws.amazon.com/education>

Could follow the step by step instructions on the wiki, but ... AWS has revamped it's interface.

Galaxy Wiki Login | Search:

CloudMan/AWS/GettingStarted

Getting Started with Galaxy CloudMan

This page provides a step-by-step instructions on how to start your own instance of Galaxy on [Amazon Web Services \(AWS\) Elastic Compute Cloud \(EC2\)](#). More general information and instructions about Galaxy CloudMan (GC) can be found [here](#).

Contents

1. [Step 1: One Time Amazon Setup](#)
2. [Step 2: Starting a Master Instance](#)
3. [Step 3: Galaxy CloudMan Web Interface](#)
4. [Step 4: Use Galaxy as you normally would](#)
5. [Step 5: Shutting Down](#)

AWS

- Get Started
- Capacity Planning
- AMIs
- ↑ CloudMan

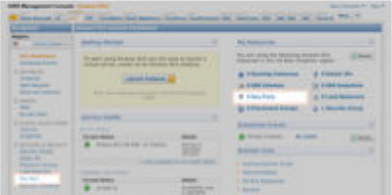
Step 1: One Time Amazon Setup

1. Because AWS services implement pay-as-you-go access model for compute resources, it is necessary for every user of the service to *register with Amazon*. You will need a credit card to register. (You can apply for a [AWS Education Grant](#) after you register).
2. Once your account has been approved by Amazon (note that this may take up to one business day), *log into the EC2 AWS Management Console* and set your AWS Region to *US East (Virginia)*. This is the only region Galaxy CloudMan is fully supported in at this time (see [screenshot 1.2](#)).
3. Click **Network & Security** → **Key Pairs** or **My Resources** → **n Key Pairs** (see [screenshot 1.3](#) - if it does not look like this, then try using the Chrome browser) and then click **Create Key Pair**. Enter a memorable name for the key pair, e.g., GalaxyCloud and click **Create**.
4. *Save your private key!* The previous step creates the key pair and downloads a copy to your machine with the name `MemorableName.pem`. Save this file and protect it like you would your password. The key pair can be used to access started instances from

Step 1 Screenshots



1.2. Set region



AWS Credentials

LoginURL: <https://900090895588.signin.aws.amazon.com/console>

Username: USP_58

Password: KobleTil58

cluster_name: USP_58_cluster

password: ConnectNow1

access_key: AKIAI6SDW7T45KLZV2IA

secret_key: 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

Instant CloudMan

<http://usegalaxy.org/cloudlaunch>

The image shows two overlapping screenshots of the Galaxy web interface. The top screenshot displays the main dashboard with a 'New Cloud Cluster' button highlighted in the 'Cloud' menu. The bottom screenshot shows the 'Launch a Galaxy Cloud Instance' form with the following fields:

- Cluster Name:
- Password:
- Key ID:
- Secret Key:
- Instance Share String (optional):
- Instance Type:

At the bottom of the form, there is a message: "Requesting the instance may take a moment, please be patient. Do not refresh your browser or navigate away from the page" and a "Submit" button.

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Your Feedback: **WE NEED IT**

<http://bit.ly/gxyuspTellUs>

Questions & Support

<http://galaxyproject.org/search/>

<https://biostar.usegalaxy.org/>

<https://wiki.galaxyproject.org/Support>

Upcoming Events

<http://bit.ly/gxyEvents>

Project and Community News

<http://announce.list.galaxyproject.org/>

<http://bit.ly/gxyuspTellUs>

Thanks



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