Summer Genomics Workshop

DR PERI BOLTON

17 MAY – 20 AUGUST

Overview

Introductions
5 min ea

Expectations

Schedule &
Structure

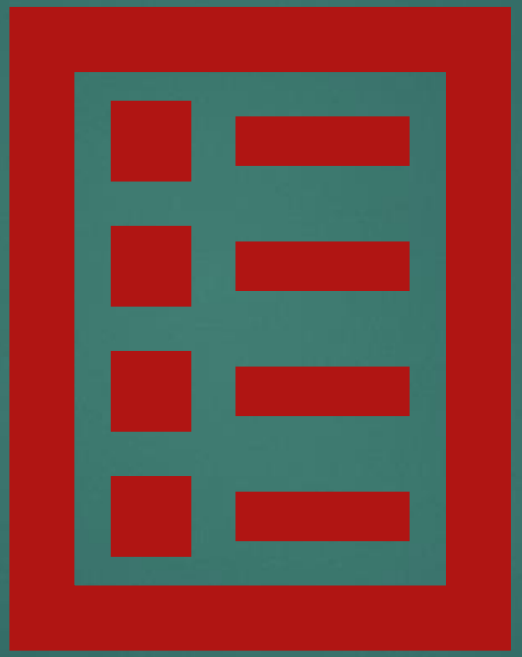
Goal setting
30 min

Dr Peri Bolton

- Based in Washington DC
- Whole genome sequencing, GBS, RNAseq
- Conservation, evolutionary and behavioral ecology – smattering of systematics

Your turn…

Expectations



Overall course expectations

- Hybrid of 1 on 1 mentoring, group learning and structured activities.
- Minimum 1-2 hrs zoom time per week
- Sometimes more zoom (for tutorials etc)
- Total time spent on your project 12-14 hrs
- Communication and honesty
- Respect each other and all humans
- No grades

Phases and Deliverables

- Week 2: Timeline and goals for the summer project
- Week 9: Paper outline
- Week 11: A Figure + Code for the Group
- Week 14: Paper draft & Presentations

Student-mentor relationship

- You need to be prepared for the one on one meeting – drive the meeting agenda.
- I will keep up to date with your analyses and goals
- My role is to guide you and provide technical assistance, not make all your decisions and keep you organized.

Structure and Schedule

Regular features

Weekly

- 1:1 meeting 1 hr on Zoom
- Weekly coding session + Q&A + Goal accountability and celebration
- Weekly writing session (recommended)

Fortnightly (every two weeks)

- Reading group – rotating paper lead

Other programming

- Week 1: Goal Setting (today ~ 30 min)
- Week 2: Week 4: Introduction to Unix (~ 2hrs zoom time over 2 days)
- Week 3: Gene Models and DNA Alignment
- …
- Week 14: Writing Retreat (+ Final Presentations) TBD (4-5 days)

Accountability Group(s)

Monday in Slack Channel – share project goals for the week

Thursday/Friday mornings (starting Week 2) 9am-1030 am

- Timed focus work session on work related to project (~ 1hr min)
- Group Q&A about work (15-30 min)
- Share progress, and how they track against your goals.
- Week 2 we will share the relevant parts of our summer timeline.

Accountability Group(s)

Writing accountability groups

- weekly (or daily) practice of writing for at least half an hour

- share specific writing goals (15 min), write (30 min), and share progress (15 min).

- could be for any writing project

Longer pieces of structured work time

- Slack or Zoom
- Pomodoro method

Reading Group

Fortnightly (every two weeks) for ~1 hr

Friday at 12pm

Papers relating to bioinformatics and genomics

Paper lead responsibilities

- Help to pick the paper (by the Monday of the same week)
- Input on discussion questions
- Keep group on track

Everybody's responsibilities:

- Read the paper!
- Put one discussion question into the slack channel prior to session time

Reading Group

Zotero group library for papers

Let me know if you have been unable to access the papers

This week on Friday 12pm: Kevin leads

Received: 24 January 2018 | Revised: 23 June 2018 | Accepted: 26 June 2018

DOI: 10.1111/mec.14792

NEWS AND VIEWS

WILEY MOLECULAR ECOLOGY

Opinion

These aren't the loci you'e looking for: Principles of effective SNP filtering for molecular ecologists

Shannon J. O'Leary[1] | Jonathan B. Puritz[2] | Stuart C. Willis[1,3] | Christopher M. Hollenbeck[4] | David S. Portnoy[1]

Slack

DMs plus channels

#general

#goals-accountability – share Monday goals, celebrate successes, coordinate working bees.

topic specific channels

#social – place for memes, happy hour scheduling etc.

Use Slack to ask questions – and help eachother

Goal Setting

Largely derived from the National Center for Faculty Development:

"Semester Plan and "How to align your time with your priorities"

This lecture

- Set medium-term goals and make a timeline for the summer
- Set a weekly schedule aligned with your goals
- End of Week 2 (Friday) draft summer goals for sharing

Challenges

- Unstructured time
- Priotising “urgent” but unimportant tasks.
- Varied commitments
- Lack of understanding on how long things take

Solution

- Set short, medium-term and long-term goals
- SMART goals
- Identify and work with your needs and your most productive times
- What keeps you motivated?

Medium term goals

Identify Summer Goals

- Relating to this project
- Other thesis projects
- Personal goals

- “Do genomic analyses for bioinformatics project”
- “Write draft manuscript for bioinformatics project”

Identify Summer Goals

- SMART Goals
- **S**pecific – what will we accomplish
- **M**easurable – (Milestone) How will we know when it's done?
- **A**ttractive – **A**ssignable, **A**ction oriented – who is doing it, what **actions?**
- **R**ealistic – is it achievable in the time-frame?
- **T**ime-oriented – deadlines and frequency of actions

"Do genomic analyses for bioinformatics project" – "Complete DESeq2 analysis by August 2021"

Map the steps

Break the goal down into Projects and Tasks.

To Do:
1. Long term storage solutions for raw data
2. Fastqc
3. Adapter trimming

To Do:
1. Identify reference and annotation files
2. Run STAR software

1. Raw Data Process Raw data

2. Produce Alignment

3. DESeq2

GOAL: Complete DESeq2 analysis by August 2021

For you

- Have some ideas on what analyses you would like to conduct (Proposal)
- Are they ordered? One follows another?
- Look at some genomics papers around your question to get a feel for the kinds of analyses required.
- It's okay if you don't know all the steps for the analyses now
  - This can be fleshed out
  - I will help you throughout the course to do this.

Put it on your calendar

- Calendar reminders for target dates
- Holistic approach
  - Table
  - Gantt Chart

Week Date	Project 1 Milestone	Project 2 Milestone
1st June	Draft Timeline	Methods Sampling Section drafted
7th June		Methods Statistical analysis drafted
…	…	…

Gantt Chart

- Hierarchically structured
- Time bound
- Associated with to-do lists for projects

	Status	April	May				June				Jul						
Project			6th	13th	20th	27th	3rd	10th	17th	24th	1st	8th	15th	22nc	29th	5th	12th
PhD																	
Introduction																	
Chapter 1: Commentary																	
Chapter 2: Paternity																	
Analysis adjustments and re-write	95%	ready to submit															
Chapter 3: Population Structure																	
Clean new data	95%																
Analyse new data	0%																
Writing	50%									Submitted							
Chapter 4: Historical and Contemporary Diversity																	
Clean new data	95%																
Analyse new data	0%																
DiyABC analysis	0%																
Writing	0%																
Chapter 5: Effective Population Size Estimation																	
Clean new data																	
Analyse new data																	
Writing	0%																
Chapter 6: Selection and Head-colour																	
Analysis	95-100%																
Writing	0%																
Discussion																	
Writing	0%																
Captivity Project																	
Pilot Extractions																	
Roll out website																	
Roll out sampling packs																	

SMBE: Conference

For you

- Friday Week 2 (June 4th)
- Summer Goals for Workshop (Share with the group)
- Draft timelines

To-Do Lists

- Make them specific, time bound and achievable. Sound familiar?
- Don't set to-do list tasks like "write introduction of manuscript"
- OR: Write 1 paragraph on the introduction by Tuesday.
- OR: Write half an hour every day this week

Aligning your time – Weekly Plan Method

Skeleton Calendar

- Calendar
- What are the existing non-negotiable events?
  - Drs appointments
  - Family dinners
  - Teaching commitments
- 5 minutes

To Do List

10-15 minutes

Brain dump all the tasks that need to get done.

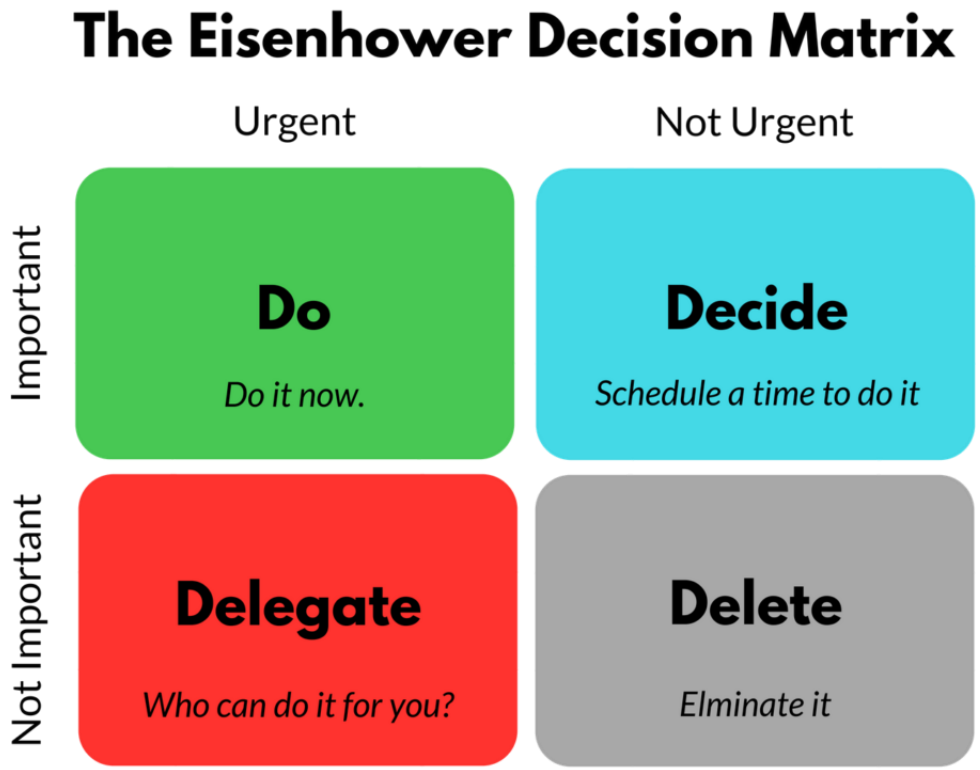
Categorize them: Projects 1,2,3, Outreach, Personal, etc.

Are they SMART?

* The ones aligned with your medium and long term goals.

Teaching	Research Project 1
Write Lecture for next week	Set up X analysis
Write tutorial	Write methods section on sampling

Assessing Priority



Most medium-long term goals are Important but not Urgent.

Regularly review your goals to remind you of importance

Image from luxafor.com

Scheduling

15 minutes

Schedule the starred items first

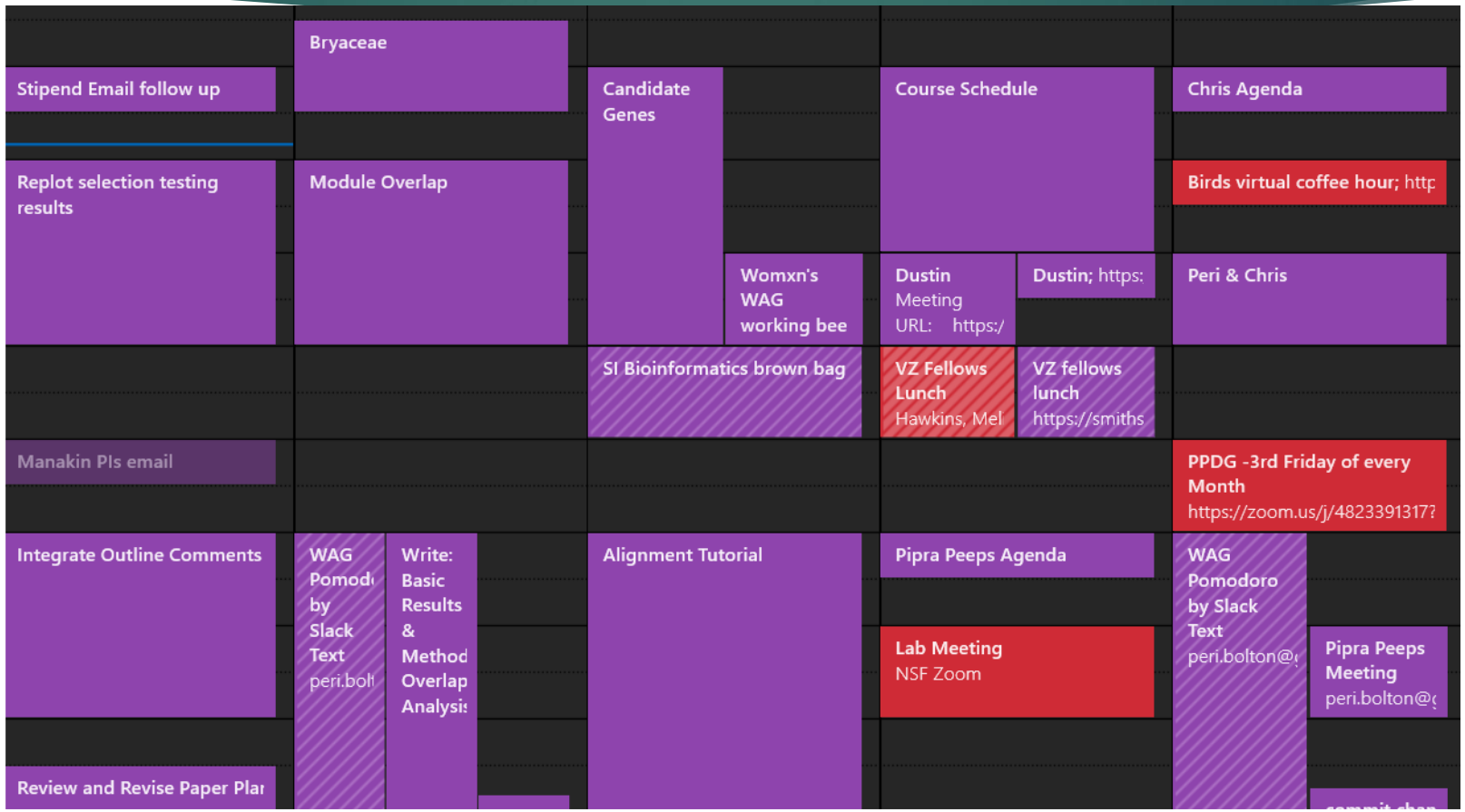
- Am I being realistic?

Buffer time between tasks for “urgent important” and spillover.

What to do with the rest?

- Forget it/shelve it, delegate
- Renegotiate deadlines
- Are my standards unrealistic?

Last week's Calendar



Resources

https://www.sciencemag.org/careers/2013/12/goal-setting-strategies-scientific-and-career-success

https://irp.nih.gov/blog/post/2016/07/using-smart-goals-to-make-scientific-progress

https://www.facultydiversity.org/webinars/summerplan21

https://www.facultydiversity.org/webinars/21sundaymeet

Software:

- Trello – checklists and hierarchical structures
- Google Keep – Simple checklists
- OneNote…
- Pen and Paper

Questions?