PI's guide to lab staff's at-home classroom

Writing Assignments

- Write a mini-review article related to thesis topic.
- Write a mini-review based on introduction section from your fellowship application.
- Write manuscript: even if the data is not yet collected the methods and intro can be written now!
- Grant proposals – start with aims page first, then background etc.
- Write methods sections for whatever you are working on.
- **Suggested scientific writing resource:** "How to write a scientific paper" by Kari Saramaki
  Available on Amazon. $5.99 for Kindle, $8.99 for paperback

Podcasts

- NINDS "building the nerve" podcast about how NIH works, how to interact with PO, etc.
  http://ninds.buzzsprout.com/

YouTube Videos:

- LEADERSHIP LAB: The Craft of Writing Effectively - YouTube

Free Webinars

- ***JAX webinars on breeding colony management, transgenic mice and more! https://www.jax.org/education-and-learning/on-demand-videos**
  - Essentials in maintaining healthy mice to support research excellence
  - Optimizing mouse breeding schemes
  - Achieving reproducible mouse studies
  - Research using aged B6 mice – considerations, applications, and best practices
  - Generate quality data by ensuring health and genetic quality of your mouse colonies
  - Everything but the experiment: tips for working with diabetic mice
  - Best practices for efficient mouse colony management
  - Protect your research, know you B6 mouse
  - Cre-lox basics: cre-lox technology in mouse modeling
  - Making sense of mouse nomenclature and promoting genetic stability.

NIH VideoCasts – **choose from 10,663 videos, conferences and webinars!**

- **https://videocast.nih.gov**
- **A few examples:**
  - Alzheimer's disease-related dementias summit 2019
  - Pain in animals workshop 2019: cross-species measurement of acute pain
  - 2019 BRAIN Initiative Investigators:Understanding Brain Development: from embryos to organoids
  - Clinical neuroscience grand rounds: deep brain stimulation (DBS) for Parkinson's disease

Online Courses – Free from Jax –

https://www.jax.org/education-and-learning/course-and-conferences/minicourses

- **Certificate program:** Beginner's Guide to Inbred, Outbred, Hybrid, Mutant & Transgenic Mice
  - Common laboratory mouse strains: A beginner's guide
  - Mutant and transgenic mouse strains: a beginners guide.
  - Beyond genes: epigenetics, environment and health
- **Certificate program:** Introduction to the Laboratory Mouse
  - History and development of the mouse model system
  - Basics of mouse genetics
  - Reproductive biology of the labor army mouse
- **Certificate program:** Introduction to CRISPER/Cas9 and Cre-Lox Technologies
  - Basics of CRISPR/Cas9

- Cre-lox technology in mouse modeling
- Diversity outbred mice

Online Courses from Coursera

- Link: https://www.coursera.org/
- Examples: R Programming, Data science: Foundations using R specialization

Online Courses – Free from EdX

- Link: https://www.edx.org/
- Example courses: Human Neuroanatomy, Introduction to animal behavior, Computational neuroscience: neuronal dynamics of cognition, etc

Online Excel Courses - Free

- Links: https://www.udemy.com/topic/excel/free/

Graduate Level Courses – Free from Khan Academy

- Link: https://www.khanacademy.org/
- Examples: Cognition, Parkinson's Disease, Epilepsy, Diabetes, Drug Abuse and Addiction, Endocrine System, Stroke, etc.

Textbooks – Free for a limited time from Cambridge

- Link: https://www.cambridge.org/core/what-we-publish/textbooks
- Has topics on Life Sciences, Psych, Stats, Computer Science, etc.

Professional Development

- *Set major goals for next 5 years and the work backwards in 6 month chucks to figure out what you should be doing along the way to achieve these. What can be done via online courses, webinars, or books?

In-depth Peer-Reviews linking Basic and Clinical Science

www.uptodate.com
www.nature.com/nrdp/

Microscopy Primers

Basics

- https://www.jove.com/science-education/5040/introduction-to-fluorescence-microscopy Seeing filter cubes, more on FL
- https://www.jove.com/science-education/10501/confocal-fluorescence-microscopy-technique-to-determine-localization Explaining confocal and how to prepare samples
- https://www.jove.com/science-education/5656/scanning-electron-microscopy-sem Introduction to SEM
- https://www.jove.com/science-education/5642/live-cell-imaging-of-mitosis Preparing live samples
- https://www.jove.com/science-education/5648/fm-dyes-in-vesicle-recycling Learning background subtraction

Tissue Prep

- https://www.jove.com/science-education/5039/histological-sample-preparation-for-light-microscopy Tissue section protocols

Advanced

- https://www.jove.com/video/58154/correlative-light-electron-microscopy-clem-for-tracking-imaging-viral
- https://www.jove.com/video/53966/using-light-sheet-fluorescence-microscopy-to-image-zebrafish-eye
- https://www.jove.com/video/53988/a-guide-to-structured-illumination-tirf-microscopy-at-high-speed-with
- https://www.jove.com/video/56911/ratiometric-calcium-imaging-individual-neurons-behaving
- https://www.jove.com/video/3452/high-content-screening-in-neurodegenerative-diseases

Online Courses - Free from iBiology

- Link: www.iBiology.org
- Microscopy courses and advanced fluorescence methods.