Ted Laderas, PhD

(Please note: relevant accomplishments to application are **bolded**)

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TEACHING STATEMENT

Effective communication, hands-on learning, and mentoring are core to my teaching philosophy. I am a strong believer in enabling students in self-directed learning through hands-on workshops including both practical skills in bioinformatics (software development, design, and data analysis and visualization) and social skills essential to collaboration (interpretation and scientific communication). In terms of practical skills, I have developed and contributed to a number of courses (Analytics, RBootcamp, Network Analysis, and BD2K skills courses) and workshops in a large variety of software development and communication topics. These topics include software design, interactive visualization, exploratory data analysis, and presentation of results. In terms of fostering social and collaborative skills in students, I am a founder and co-leader of BioData-Club, a collaborative forum for students and postdocs to share and teach each other practical skills for success in a research environment. Through BioDSP, I have informally mentored a number of students through feedback and collaboration on workshops and presentations. I believe that by "training the trainers", we can more effectively educate students in these skills in Data Science and Analytics. In order to accomplish this training of trainers, my course materials are openly available for use and modification by other teachers. Because of my dedication to teaching and incorporation of student feedback, I have consistently high ratings from students in terms of teaching both long-form courses and short-term workshops.

CURRENT ACADEMIC COURSES I TEACH

- **A1.** *BMI569/669 Data Analytics*, co-taught with Kaiser Permanente (Brian Sikora and Delilah Moore). Summer Quarter, 2015-Present.
- **A2.** *NEU640 Python Bootcamp for Neuroscientists.* Taught with Daniela Sadieri, Lucille Moore, Charles Heller, Stephen David, Brad Buran. Winter Quarter, 2018.
- **A3.** *BMI551/561 BCBII Statistical Methods in Computational Biology.* Co-instructor with Shannon McWeeney and James Jacobs. Winter Quarter, 2014-Present.
- **A4.** *HSMP/PHE410 Introduction to Health Informatics.* Course Co-Director with Bill Hersh. Spring Quarter, 2018.
- **A5.** *BMI 533/633 Data Harmonization and Standards for Translational Research.* Course to be taught Spring Quarter, 2019. Course is co-designed with Christina Zheng and Melissa Haendel.

COURSES WHICH I HAVE GUEST TAUGHT

- **A6.** BMI523 Clinical Research Informatics. 2017.
- **A7.** BMI567 Network Science and Biology. 2015-2017.
- **A8.** BMI535 Management and Processing of Large Scale Data. 2018.
- **A9.** CSE631 Data Visualization. 2017-2018.

TEACHING EXPERIENCE (relevant accomplishments are bolded)

Lectures and Interactive Workshops are linked where possible.

1. *Exacloud Training Workshop.* Guest lecture for BMI535, Management and Processing of Large Scale Data. Winter 2018.

2. *A gRadual intRoduction to Shiny.* Workshop for Portland R user group. Winter 2018.

3. *How are Systems Science and Data Science Connected?*. Seminar for Portland State Systems Science Program. Winter 2018.

4. *Python Bootcamp For Neuroscientists*. Ted Laderas, Brad Buran, Daniela Sadieri, Charles Heller, Michael Mooney, Lisa Karstens, and Stephen David. 5 day in-person workshop for introductory Python using Neuroscience data. Winter 2018.

5. *Actionable Gene Variants*. Guest Lecture for BMI 523 Clinical Research Informatics. November 2017.

6. *Exploratory Data Analysis and Statistics*. Workshop with Jessica Minnier for OHSU Data Science Institute 2017.

7. *R-Bootcamp (tidyverse version on DataCamp)*. Active exercises for learning introductory R using the tidyverse. Written with Jessica Minnier and Chester Ismay. 2017. Code and teaching material available at https://github.com/laderast/RBootcamp

8. *A gRadual intRoduction to the* `tidyverse`. Workshop given with Chester Ismay for Cascadia-R 2017 introducing visualization and data cleaning using the `tidyverse`.

9. *Assessing Cardiovascular Risk*. 2 night Workshop for Portland State University Students teaching Exploratory Data Analysis and Machine Learning on a synthetic patient cohort. With David Dorr. May 2017.

10. *An Intro to GitHub Pages*. Workshop given with Robin Champieux and Eric Leung on setting up a personal GitHub webpage. April 2017.

11. *An Intro To Data Carpentry*. Lecture given with Eric Leung about the tidyverse suite of packages for data wrangling and visualization. March 2017.

12. *The Magic of Markdown*. Updated for 2017, including examples of using Zotero as citation manager. March 2017. doi:10.5281/zenodo.495614

13. *Shiny Tutorial for CSE631*. Workshop on developing interactive visualizations using Shiny for CSE631 Data Visualization course. November 2016. DOI: 10.5281/zenodo.495621

14. *Analytics Course*. New Course material in SQLite, Logistic Regression and Analysis. August 2016. doi:10.5281/zenodo.495623

15. *Exploring the DREAM Viral Respiratory Dataset using Shiny*. Tutorial in Exploratory Data Analysis (EDA) using *data.table* and *Shiny*. July 2016.

16. *Introduction to Exploratory Data Analysis using Shiny* - Interactive workshop in using a Shiny Dashboard to conduct EDA on a dataset for BD2K Advanced Skills Course. May 2016. doi:10.5281/zenodo.495618

17. *Introduction to Machine Learning using Markdown* - Interactive workshop using Markdown to explore machine learning algorithms for BD2K Advanced Skills Course. May 2016.

18. *Clustering Algorithms*. Lecture given for Statistical Methods class. February 2016.

19. *iGraph Tutorial*. Introductory lecture for the igraph package in R for network analysis course. November 2015. doi:10.5281/zenodo.495616

20. *The Magic of Markdown*. Introduction to Markdown in both R, GitHub pages, and Pandoc. BioDSP October 2015. doi:10.5281/zenodo.495614

21. *Pharmacogenomics* Lecture for Analytics Course, August 2015.

22. *Introduction to Clustering*. Interactive slides for understanding clustering. doi:10.5281/zenodo.495624

23. *Introduction to ggvis*. Lecture/Workshop given for OHSU Bioinformatics Discussion for Students and Postdocs, April 2015.

24. *Introduction to ggplot2*. Lecture/Workshop given for OHSU Bioinformatics Discussion for Students and Postdocs, March 2015. doi:10.5281/zenodo.495622

25. *Exacloud Tutorial* - A DIY tutorial to running jobs on Exacloud, OHSU's cluster computing environment. November 2015. With Ryan Swan.

26. *Shiny Tutorial* - A do it yourself tutorial to try out Shiny, ggplot2, and dplyr for interactive graphics. September 2015. doi:10.5281/zenodo.495620

27. *Analytics Course.* Instructor. Hybrid Online/On-campus joint course with DMICE and Kaiser Permanente Analytics group. August 2015.

28. *R-Bootcamp.* Massively Open Online Course available at: http://dx.doi.org/10.5281/zenodo.13756. With contributions from Eric Leung, Dian Chase, Tracy Edinger, Clint Olson, and Gabrielle Chonoo. 2014-Present

29. *Your In-silico Lab Notebook: Best Practices 2015.* Lecture/Workshop given for OHSU BioDSP group, January 2015.

30. *Everything you wanted to know about bioinformatics but were afraid to ask.* Lecture/Workshop given for OHSU PhD/Postdoc Fellows meeting, October 2014.

31. *List Comprehensions in Python.* Lecture given for Bioinformatics Programming and Scripting Course, Fall 2012.

32. *Introduction to Unit Testing.* Lecture given for Bioinformatics Programming and Scripting Course, Fall 2012.

33. *Introduction to Numerical Python (NumPy).* Lecture given for Bioinformatics Programming and Scripting Course, Fall 2012.

34. *Introduction to SciPy.* Lectures given for Bioinformatics Programming and Scripting Course, Fall 2012.

35. *An Introduction to ODE Models.* Lecture given for Systems Biology Class, 2012.

36. *Integrating Data for Systems Biology.* Lecture given for Systems Biology Class, 2012.

37. *Work Smarter, Not Harder: Productivity Tools and You.* Lecture given for PhD/Postdoctoral meeting, 2011.

38. *Bayesian Networks.* Lecture given for Statistical Methods in Bioinformatics Class, 2011.

39. *Gibbs Samplers.* Lecture given for Statistical Methods in Bioinformatics Class, 2011. doi:10.6084/m9.figshare.4829530

40. *Workshop on Strings and Matrices in R.* Workshop given for Statistical Methods in Bioinformatics class. 2011.

41. *Introduction to R Workshop.* Workshop given for Statistical Methods in Bioinformatics class. 2011.

42. *Extended Dependency Analysis.* Presentation given for Information Theory Independent Study 2010.

43. *Conant's Laws of Information that Govern Systems.* Presentation given for Information Theory Independent Study, 2010.

44. *Ashby's Law of Requisite Variety and Conant's Information Transfer in Regulation.* Presentation given for Information Theory Independent Study, 2010.

45. *Lab: Using Consense-Cluster to explore the Bittner dataset.* Laboratory given as part of Microarray Analysis Course, OHSU, 2006.

46. *Data Science for Basic Scientists.* Invited talk for OHSU Symposium on Educational Excellence. April 2017. doi:10.6084/m9.figshare.4876811.v3

SERVICE STATEMENT

I try to be a good academic citizen at OHSU and beyond. I currently participate in the DMICE BCB (Bioinformatics and Computational Biology) Faculty Division meeting, the DMICE Mentoring committee, and have participated in the BCB Curriculum Retreat in order to plan upcoming coursework at DMICE. Beyond OHSU, I believe that we need to increase public engagement of science and increase outreach and

mentoring of next-generation science students, especially from disadvantaged populations will enable these students to succeed in STEM-based careers. As a former student of Saturday Academy's scientific mentoring program, I want to contribute back to this community and engage potential STEM students through student outreach and mentoring. I am also involved in outreach through the development of course material for the Biocatalyst training program through Oregon Bioscience Association, which provides bioscience training for unemployed or under-employed professionals, as well as the Portland R User Group, co-organizing Portland's first R Statistical Programming Conference, Cascadia R.

SERVICE ACCOMPLISHMENTS/APPOINTMENTS (relevant accomplishments bolded)

- **S1**. Currently serving on DMICE Assessment Planning committee, DMICE Bioinformatics & Computational Biology Division committee, and DMICE BMI Curriculum Committee.
- **S2**. Co-Founder of BioData Club group for students, postdocs, and staff at OHSU. Managed speakers, developed free workshops for students, and provided feedback for student presentations. BioData Club is currently at 137 members ranging from OHSU and PSU staff, faculty, students and postdocs, providing a unique opportunity to share information and provide peer mentoring to students across the organizations.
- **S3**. Co-organizer for Cascadia R Conference 2017 and 2018.
- **S4**. Contributor to instructor lesson materials to Software Carpentry.
- **S5**. Participant/Instructor for PDX Data Rescue/Open Data Day.
- **S6**. Documentation support for Science Hack Day PDX 2017.
- **S7**. My mentees include Jason Li, Aurora Blucher, Eisa Mahyari, and Lawrence Hsu.
- **S8**. Mentor, National Library of Medicine Fellows Meeting at OHSU. 2017-2018.

Ongoing Support Related to Education

- **G1**. T15LM009461 (supplement) Hersh (PI) 7/01/1992-6/01/2018 *Biomedical Informatics Research Training at Oregon Health & Science University.* Supplement to develop Data Science Materials for T15 training grant. Role: educational developer and instructor.
- **G2**. 1U24TR002306-01 Haendel (PI) 9/01/2017-9/01/2019 *A National Center for Digital Health Informatics Innovation.* We propose to create a national network for enabling digital health research, innovation, and continuous improvement. The goal is to use information science to impact the way that health care functions and the lives of those it serves. Role: education, software development, and data management advocate.

Completed Research Support Related to Education

- **G3**. T15LM009461
  Hersh (PI) 7/01/1992-6/30/2017 *Biomedical Informatics Research Training at Oregon Health & Science University.* Predoctoral and postdoctoral training grant in biomedical informatics. Role: Predoctoral Fellow (2009-14); Postdoctoral Fellow (2014-2015)
- **G4**. BD2K Training Grant Dorr, D (Co-PI), Haendel, M (Co-PI), McWeeney, S (Co-PI) 2015-2017 *Big Data to Knowledge.* The goal of this project is to develop training materials in data science. Role: educational developer and instructor.

AWARDS

- NLM Predoctoral Fellowship. 2009-2013.
- NLM Postdoctoral Fellowship. 2014-2015.
- Certificate of Appreciation for open educational resource development. Medical Informatics and Clinical Epidemiology 2017.