

## **Laura L. Almstead, PhD**

### **CONTACT INFORMATION**

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### **EDUCATION**

*Yale University School of Medicine, Department of Genetics, New Haven, CT 2007 – 2011*

Mentor: Dr. Daniel DiMaio

Position: Postdoctoral Fellow

*Stanford University, Department of Microbiology & Immunology, Stanford, CA, 2001 – 2007*

Advisor: Dr. Peter Sarnow

Degree: Ph.D. in Microbiology and Immunology (June 2007)

*Williams College, Williamstown, MA, 1997 – 2001*

Advisor: Dr. Deborah L. Weiss

Degrees: B.A. Magna Cum Laude (June 2001)

Highest Honors in Chemistry (June 2001)

Program in Biochemistry and Molecular Biology (June 2001)

### **TEACHING EXPERIENCE**

Senior Lecturer, University of Vermont, Burlington, VT

HCOL 2000 There's Science in My Food, Spring 2024 – present

This Honors College Sophomore Seminar uses food science as a lens to help students gain and practice skills required for designing effective analyses. Hands-on activities help reinforce basic food science concepts and experimental design skills. Other skills emphasized include identifying useful and reliable references, translating science to a general audience, and reading scientific publications.

NFS 2183 Introduction to Biochemistry, Fall and Summer 2011 – 2016, Fall 2017 – present

One-semester, upper-level biochemistry course designed for Nutrition & Food Science majors.

Topics include biomolecule structures and properties, enzyme kinetics, carbohydrate and lipid metabolism, regulation and integration of metabolic processes, and gene expression. This is a

required course for all Nutrition & Food Science majors. *Prior to 2023, the course number was NFS 183.* (enrollment = ~30 – 40 students)

NFS 1072 Kitchen Science, Fall 2021 and 2022, Spring 2018 – present

An integrated class-lab introductory course focused on teaching students basic chemistry, physics, and biology concepts that explain culinary phenomena. Hands-on laboratories and interactive demonstrations allow students to visualize and explore scientific principles in the context of foods and food preparation techniques, and help students gain experience in data analysis, presentation, and interpretation. Required course for Nutrition & Food Science majors in the Food Sciences concentration. *Prior to 2023, the course number was NFS 072.* (enrollment = 16 students)

**BIOL 1400 Principles of Biology 1, Summer 2017 – present, Fall 2012 – present**

Introductory non-majors course also required for some life science-related majors. Large lecture with laboratory component. Topics include cell molecules and structure, cellular energy transformation, information processing, cell division, inheritance, and microevolution. Major emphasis on the scientific process. *Prior to 2023, the course number was BIOL 001.* (enrollment = >200 students)

**BIOL 1450 Principles of Biology 2, Spring 2012 – present**

Introductory non-majors course also required for some life science-related majors. Large lecture with laboratory component. Topics include plant and animal homeostatic systems, speciation, phylogenetic trees, animal behavior, and ecology. Major emphasis on the process of science. *Prior to 2023, the course number was BIOL 002.* (enrollment = >200 students)

**NFS 243 Advanced Nutrition, Spring 2022**

An upper-level course that provides students an opportunity to pull together and extend the nutrition and metabolism concepts learned in previous courses, and to use them to interpret nutrition research and answer common nutrition-related questions. Topics include metabolism of carbohydrates, lipids, and proteins with an emphasis on regulatory mechanisms as well as nutritional genomics. Some classes are devoted to a discussion of published research that addresses a popular nutrition topic. These discussions help build student's skills related to effectively reading scientific publications and critiquing scientific analyses. They also expose students to a range of study types that are common in the field of nutrition. As a capstone to the course, students explore a nutrition-related question/topic of your choice and create a final project that communicates what we know based on current research to a general audience. This is a required course for all Nutrition & Food Sciences majors. (enrollment = ~35 to 50 students)

**NFS 187 Introduction to Biochemistry: Laboratory, Summer and Fall 2012 – 2016, Fall 2017 – Fall 2021**

Laboratory associated with NFS 183 Introduction to Biochemistry. Techniques include spectrophotometry, electrophoresis, and mass spectrometry. Solely responsible for two sections during summer semester (materials preparation, teaching, grading). Responsible for all course materials (see Curriculum Development section) and overseeing the course with the assistance of a graduate student laboratory coordinator. Sections are taught by graduate student teaching assistants.

HCOL 186 Science in the News, Spring 2016 – Spring 2017

An Honors College Sophomore Seminar course that uses evaluation of current news reports on scientific findings and primary scientific literature as a framework to help students develop skills necessary to become self-directed learners and effective researchers.

BCOR 011 Exploring Biology, Fall 2011

Introductory biology course for students in the integrated biological sciences program. Topics include cell structure and function, gene expression and regulation, cell division, inheritance, and DNA technologies.

Guest Lecturer, Yale University, New Haven, CT

Cellular and Molecular Biology of Cancer, Winter 2009 – 2011

Molecular Virology of Animal Viruses, Fall 2010

Department of Genetics Graduate Student Seminar, Winter 2009

Teaching Assistant, Stanford University, Stanford, CA

Biochemical Structure, Metabolism, and Energetics, Winter 2002

Topics in Microbiology, Spring 2003

Laboratory Teaching Assistant, Williams College, Williamstown, MA

Biochemistry I and II, Fall 2000 – Spring 2001

Organic Chemistry I and II, Fall 1999 – Spring 2000

Introductory Chemistry II, Spring 1999

Advanced Introductory Chemistry I, Fall 1998

Grader, Williams College, Williamstown, MA

AIDS: The Disease and Search for a Cure, Spring 2001

Professional Development

Center for Teaching & Learning Faculty Associate, Fall 2020 – present

Activities include individual consults to assist other faculty members, helping to envision and run workshops, and developing resources to help faculty use teaching technologies to accomplish their pedagogical goals.

Yale Scientific Teaching Fellow, Fall 2010

Nine-week training course in using scientific teaching methods to teach science with a competitive application process. Topics included fundamentals of scientific teaching, assessment, how people learn, active learning, diversity in the classroom, and instructional technologies.

Preparing Future Science Faculty: Teaching Your Own Course, Spring 2010

Learning to Mentor the Next Generation of Scientists (seminar series), Spring 2010

Fundamentals of Teaching in Science, Yale University, Winter 2009

## **CURRICULUM DEVELOPMENT**

### New Course Development

- Honors College Sophomore Seminar course titled There's Science in My Food (2024)
- Integrated class-lab introductory food science course titled Kitchen Science (2018)
- Honors College Sophomore Seminar course titled Science in the News (2016)

### NFS 2183 Introduction to Biochemistry

Re-designed course to specifically tailor it to the needs of Nutrition and Food Science and Dietetics majors. Changes included removing/adding topics, choosing new readings, and developing examples and problem solving activities related to nutrition and metabolism.

### NFS 187 Introduction to Biochemistry: Laboratory

Developed entirely new curriculum and accompanying laboratories for NFS 183. The new curriculum reinforces concepts covered in NFS 183. Additionally, labs were designed to promote student interest and engagement by connecting more directly to things relevant to Nutrition & Food Science and Dietetics majors (e.g. assessing dye concentrations of sports drinks; using lactase isolated from Lactaid pills in enzyme kinetic analyses; isolating and separating proteins from two types of brewing yeasts). My work included:

- creating and testing all laboratories
- writing all laboratory materials (e.g. student laboratory handouts, assignments and grading rubrics, laboratory report guidelines)
- implementing pre-lab quizzes to promote student preparation
- developing an Excel workshop to develop students' data analysis skills
- implementing a lab report peer review and oral presentation to develop students' communication skills
- implementing final Laboratory Practical exam to foster knowledge retention
- developing GTA guides for each laboratory to assist them in being effective instructors
- generating laboratory set-up and reagent preparation guides for the laboratory coordinator

### BIOL 1400 and BIOL 1450: Principles of Biology

Restructured laboratory curriculum to focus on immersing students in the scientific process. Emphasis was put on concepts not as easily covered in lecture such as designing appropriate experiments, understanding statistical analyses, and analyzing data. Changes included:

- developing six entirely new laboratories and significantly re-designing remaining labs
- developing new materials for all laboratories including student handouts, assignments and rubrics, laboratory report guides, and GTA guides
- implementing workshops focused on reading primary literature to emphasize scientific writing style and Excel to help develop students' data analysis skills

### BCOR 012 Exploring Biology Laboratory

Developed a Scientific Writing Workshop laboratory and associated materials. Workshop includes a peer review process through which students can both give feedback and get ideas for improving their own writing. Revised and updated laboratory handouts and associated course materials.

### Other

- Created asynchronous online labs for BIOL 001 and BIOL 002 (now BIOL 140/1450) for summer 2020/2021, and to run in parallel with in-person labs AY 2020-2021 in response to COVID-19 health and safety regulations. Included creating new course materials including student handouts, assignments/rubrics, and lab video outlines.
- On-line lectures with associated assessment questions for NFS 053 Basic Concepts of Foods; topics include introduction to food chemistry (molecules, molecular interactions), gluten, starch chemistry and potatoes, egg proteins and curds.

### **ADVISING and MENTORING**

Primary advisor for undergraduate students in the biological sciences major. Advisees include students from multiple colleges within the University of Vermont.

Internship Students, Nutrition and Food Sciences

- Emily Batinsey – summer 2023

Identify food science and nutrition topics that would align with Vermont High School science standards with the goal of developing outreach materials

- Brayden Deraney – spring 2024

Develop hands-on learning activities doable in a home kitchen that use food to help students visualize basic scientific concepts including writing procedures, creating data collection tables, and constructing post-activity questions.

Laboratory mentor for multiple students in graduate school and as a postdoctoral researcher.

Mentor to undergraduate females through Women in Science at Yale.

### **ACADEMIC SERVICE**

Patrick Leahy Honors College Council, Fall 2023 – present

Invited manuscript reviewer, University of California Press, Summer 2023

Associate Provost for Academic Affairs Advisory Committee, Fall 2018 – Spring 2019

NEASC (now NECHE) Accreditation Standard Four Subcommittee, Fall 2017 – Fall 2018

Educational Stewardship Committee, Fall 2016 – Spring 2020

Faculty Senate Curricular Affairs Committee, Spring 2015 – Spring 2022

Chair, Spring 2016 – Spring 2021

Curriculum Committee, College of Agriculture & Life Sciences, Fall 2014 – Spring 2016

Co-Chair, Fall 2015 – Spring 2016

Awards Committee, College of Agriculture & Life Sciences, Fall 2014 – Spring 2015

Plant Biology Curriculum Committee, Fall 2013 – Spring 2014

Grant Reviewer

- Engaged Practices Innovation, 2016 – 2019

One-year grants to stimulate the development of innovative projects that increase student engagement, thereby leading to increased retention and persistence to graduation.

- REACH Grant Program, 2013 – 2014

Awards University funds to faculty in diverse disciplines to promote innovative research projects whose impacts are likely to extend beyond the University.

Ad Hoc Reviewer (via Daniel DiMaio), Journal of Virology, 2008 – 2011

Women in Science at Yale, Yale University, 2008 – 2011

Chemistry Students Advisory Committee, President, Williams College, 1999 – 2001

Chemistry Department Job Search Student Advisory Committee, 1999 and 2000

Purple Key Society Volunteer, Williams College, 1999 – 2001

Reading for the Blind & Dyslexic Volunteer, Berkshire/Williamstown Regional Unit, 1999 – 2001

## **ADMINISTRATIVE ACTIVITIES**

Interim Co-Director of the Environmental Science Program, University of Vermont, Spring 2014

Responsibilities included participating in admitted student visiting day activities, helping incoming students select fall courses, and advising current Environmental Science Students.

## **GRANTS, AWARDS & HONORS**

Carrigan Award for Excellence in Undergraduate Teaching and Advising, 2017

Nominated for Kroepsch-Maurice Excellence in Teaching Award, 2013 and 2015

Ruth L. Kirschstein NIH F32 Individual Postdoctoral Fellowship, 12/2008 – 11/2010

NIH T32 Training Grant, 12/2007 – 11/2008

Publication noted in Editor's Choice section of *Science*, "Probing Neurodegeneration," May 2007, 316: 955.

National Science Foundation Graduate Fellowship Honorable Mention, 2002

Cellular and Molecular Biology Predoctoral Training Grant, 2002 – 2004

James F. Skinner Prize in Chemistry, 2001

Awarded to the chemistry graduate showing a distinguished record in chemistry, and an outstanding promise for teaching and scholarship.

Beckman Scholar, 2000 – 2001  
Phi Beta Kappa, inducted Spring 2000  
Class of 1960 Scholar in Chemistry, 2000  
Class of 1960 Scholar in Biochemistry and Molecular Biology, 2000  
Whitehead Scholar, Summer 1999  
Robert C. Byrd Merit Scholarship, 1997 – 2001  
National Merit Scholar, 1997

## RESEARCH EXPERIENCE

### Postdoctoral Research, Yale University School of Medicine, New Haven, CT, 2007 – 2011

Mentor: Dr. Daniel DiMaio

- Identifying Requirements for Irreversible Rb Pathway-Induced Senescence in Cancer Cells
- Investigating the Role of microRNAs in Rb Pathway-Induced Senescence
- Examining the Growth-Dependence of Primary Cervical Cancer Cells on HPV Oncogene Expression
- Genetic Screens to Assess Simian Virus 40 and Human Papillomavirus Infection

### Graduate Research, Stanford University, Stanford, CA, 2001 – 2007

Advisor: Dr. Peter Sarnow

- Inhibition of U snRNP Biogenesis by a Virus-Encoded Protease

### Senior Honors Thesis Research, Williams College, Williamstown, MA, 2000 – 2001

Advisor: Dr. Deborah L. Weiss

- Characterization of the NEG-1 Binding Protein Complex: A Negative Regulator of the Interleukin-4 Gene

### Whitehead Scholar Research Program, The Whitehead Institute, Cambridge, MA, Summer 1999

Advisor: Dr. David M. Sabatini

- Exploring the effects of the immune suppressive drug rapamycin on human B-lymphocytes (BJAB cells)

## PRESENTATIONS, PUBLICATIONS, & POSTERS

### Presentations

**Almstead, Laura.** “Kitchen Science: Exploring the Science of Food & Cooking.” *American Chemical Society, Green Mountain Local Chapter*. Burlington, VT. June 2019.

**Almstead, Laura.** “Regulation of Gene Expression by microRNAs During Rb Pathway-Induced Senescence: B-MYB and DNA Methyltransferases.” *Biology of Aging Seminar*. New Haven, CT. February 2011.

- Almstead, Laura.** “Studying Cellular Pathways through Viral Disruption: Inhibition of U snRNP Biogenesis in Poliovirus Infection.” *Union College Chemistry Department Seminar Series*. Schenectady, NY. May 2008.
- Almstead, Laura.** “Reduced Sm Core Assembly In Poliovirus Infection.” *Bay Area RNA Club*. San Francisco, CA. May 2006.
- Almstead, Laura.** “Inhibition of U snRNP Biogenesis by a Virus-Encoded Proteinase.” *Translation Supergroup Meeting*. Berkeley, CA. December 2006.
- Almstead, Laura.** “Cleavage of Gemin3 During Poliovirus Infection.” *EUROPIC 2005*. Lunteren, Netherlands. May 2005.

### Publications

- Almstead, Laura** and Miller, Becky. “Higher Exam scores when more Mastering homework is attempted.” (February 18, 2015) *MasteringBiology Case Study*.  
<http://www.pearsonmylabandmastering.com/northamerica/masteringbiology/educators/index.html>
- Thomas Magaldi, **Laura L. Almstead**, Stefania Bellone, Edward Prevatt, Alessandro Santin, and Daniel DiMaio. “Primary Cervical Carcinoma Cells Require Human Papillomavirus E6 and E7 Expression for Ongoing Proliferation.” (2012) *Virology*. 442: 114-24.
- Ivan Martinez, **Laura L. Almstead**, and Daniel DiMaio. “MicroRNAs and Senescence.” (2011) *Aging (Albany NY)*. 3: 77-78.
- Ivan Martinez, Demian Cazalla, **Laura L. Almstead**, Joan A. Steitz, and Daniel DiMaio. “miR-29 and miR-30 Regulate B-MYB Expression During Cellular Senescence.” (2011) *Proc Natl Acad Sci*. 108: 522-527.
- Laura L. Almstead** and Peter Sarnow. “Inhibition of U snRNP biogenesis by a virus-encoded proteinase.” (2007) *Genes & Development*. 21: 1086-1097.

### Posters

- Laura L. Almstead** and Peter Sarnow. “Reduced Sm Core Assembly in Poliovirus Infection.” *Cellular and Molecular Biology Symposium*. Stanford, CA. May 2006.
- Laura L. Almstead** and Peter Sarnow. “Cleavage of Gemin3 During Poliovirus Infection.” *Cellular and Molecular Biology Symposium*. Stanford, CA. May 2005.
- Laura L. Almstead** and Peter Sarnow. “Examining the Role of Gemin3 Cleavage in Poliovirus Infection.” *Cellular and Molecular Biology Symposium*. Stanford, CA. May 2004.
- Laura L. Almstead** and Deborah Weiss. “Characterization of the NEG-1 Binding Protein Complex.” *Beckman Scholar Symposium*. Irvine, CA. July 2001.