

# IAP 2019

## For Credit

### 7.102 -- Introduction to Molecular Biology Techniques

January 10 – 31, daily from 1-5 p.m.

Building 68, Room 089

Level: U | 6 units (0-5-1) | Can be repeated for credit.

Instructors: Prof. [Adam Martin](#), Dr. [Mandana Sassanfar](#)

Prerequisites: 7.01x or AP Biology – Note that this course is not a substitute for 7.02

This intensive 3-week “boot-camp” style course will provide hands-on instruction in basic molecular biology and microbiology techniques including sterile techniques, isolation and quantification of nucleic acid (DNA) and protein, agarose and SDS-PAGE gel electrophoresis, PCR, Cloning, microscopy, DNA sequence analysis, and bioinformatics. In addition students will learn to classify bacteria based on their shape, membrane structure and metabolism. Emphasis will be on real-world application, experimentation and troubleshooting in preparation for a successful UROP experience. Priority will be given to 5-7 majors doing 5-7 lab track 1, and freshmen with no prior research experience.

Students will be expected to spend every afternoon from 1-5pm in the lab. Labs may start earlier on some days.

[Apply by December 7, 2018](#). The class is limited to 18 students. No listeners. Do not preregister on WebSIS. Applicants will be informed by December 17.

## Non-Credit

### 7.S390 – Pre-7.01 at MITx: Getting up to Speed in Biology

This course opens January 22 and is self-paced.

Level: U | Credit: None

Instructors: [Prof. Hazel Sive](#) and [Dr. Diviya Ray](#)

Pre-7.01 provides background highly useful for succeeding in 7.01 Introductory Biology. It includes cell biology, biochemistry, molecular biology, genetics and DNA engineering. Pre-7.01 is designed for students with little Biology background, including seniors who have not yet completed the 7.01 GIR, and need a refresher course. This online subject includes lectures with practice problems, additional assessments and an exam.

You can find Pre-7.01r/Getting up to Speed in Biology at a link to be posted in the near future. Students must first register in order to be able to access the link.

A self-assessment quiz is included to indicate whether this subject will be useful to you. Please contact [Prof. Sive](#) or [Dr. Ray](#) with questions.

## 7.S390 – Pre-7.01 at MITx: Getting up to Speed in Biology

January 14 – 17, daily from 3:30-5:30p.m.

Whitehead Institute, 7th-floor classroom

Level: G | Credit: None

Instructors:

- [Tomáš Pluskal](#), PhD (Postdoc, Weng Lab; Main developer of MZmine2)
- [Tim Fallon](#) (Graduate student, Weng Lab)
- [Caroline Lewis](#), PhD (Director, Whitehead Metabolite Profiling Core Facility)

Goals of the course:

- Design and interpretation of an untargeted metabolomics experiment
- Hands on work with sample preparation and instrumental setup.
- Hands on work with LC/MS data analysis using MZmine2

[Course syllabus](#)

[Course sign up by google doc](#)

## A Sampling of Careers in Science

This program will cover career paths for Biology PhDs. Please join us for seven exciting discussions featuring speakers who are at the top of their respective fields.

### Academic and Industrial Postdocs

Monday, January 7th 1–2:30 pm, 68-181

Florencia Rago, Investigator, Novartis

Claire Metrick, Postdoc, Biogen

Alex Jaeger, Postdoc, Koch Institute

Fabiana Duarte, Postdoc, Broad Institute

Are you considering doing a postdoc, but uncertain about academia vs. industry? Come learn about how to choose and the differences in experiences and career trajectories between them.

### Scientific Communication

Tuesday, January 22nd 1–2:30 pm, 68-181

Diana Chien, Program Director, MIT BE, Communication Lab

April Pawluk, Scientific Editor, Cell

Vivian Siegel, Lecturer/MIT Department of Biology Scientific Communications

Jessica Polka, Executive Director, ASAPbio

Science is communicated to entertain, inform, and persuade diverse audiences through many types of media. In this panel, four professionals at different stages of their careers will share

their experiences communicating science and empowering others to communicate science on a daily basis.

### **Education and Outreach**

Wednesday, January 23rd 1:30–3 pm, 68-181

Lourdes Aleman, Associate Director, MIT Teaching + Learning Lab

Melanie Berkmen, Associate Professor, Suffolk University

Jennifer Novotney, Public Programs Coordinator, MIT Museum

Mary Ellen Wiltout, Lecturer/MITx Curriculum Development Specialist for Biology

Do you enjoy teaching and helping people connect with science? Come hear about careers that are focused on science education and outreach and learn how you can share your love of science with the next generation.

### **Biotech Entrepreneurship**

Wednesday, January 30th 1:30-3 pm, 68-181

Nate Tedford, Head of Foundry Operations, Ginkgo Bioworks

Avak Kahvejian, Partner, Flagship Pioneering, Founding President of Cygnal Therapeutics and Rubius Therapeutics

Lauren Foster, Associate Director, MIT Technology Licensing Office

Rachel Meyers, Entrepreneur-in- Residence, Third Rock Ventures

Are you interested in starting your own biotech company? Are you curious about how technology developed at MIT is licensed to industry and startups? How can you fund your scientific ideas into a new business? Come hear from experts that span the entrepreneurial ecosystem in the Kendall Square area. Our panelists will share their experiences translating scientific advances to the private sector.

### **Consulting and Investment in Life Sciences**

Friday, February 1st 11 am–12:30 pm, Koch Institute Auditorium

Adrian Lukas Slusarczyk, Inhouse Consulting Manager, Merck Group

Brenda Goguen, Principal, Clarion Healthcare

Paulina Hill, former Principal, Polaris Partners

Devin Quinlan, Associate, MPM Capital

Curious about life science careers beyond bench research? Join our panel discussion to learn about careers in healthcare consulting and investment, as well as opportunities available to MIT graduates and how to prepare to make this career transition. Our speakers include both seasoned experts and recent graduates, who will share advice on long-term career strategy as well as practical tips for job applications in these fields.

### **Finding and Managing a Faculty Position**

Friday, February 8th 11:30 am–1 pm, 68-181

Mansi Srivastava, Assistant Professor, Harvard University

Madeleine Oudin, Assistant Professor Tufts University

Tuomas Tammela, Assistant Member, Memorial Sloan Kettering Cancer Center

Joey Davis, Assistant Professor, MIT

Michael Laub, Professor, HHMI and MIT

This year's panel discussion will include previous MIT trainees who have successfully

transitioned to faculty, as well as faculty members with experience in faculty search committees. Come hear their perspectives.

### **How To: Scientific Skills Not Taught in Class**

MIT Biology presents a selection of workshops on skills for communication and career advancement.

### **Citizenship in Science**

Monday January 7th 4–6 pm, 68-181

Angela DePace, Associate Professor, Harvard Medical School

Stephen Harrison, Professor, Harvard Medical School

Eric Lander, Professor, MIT and Harvard

Being a scientist also means being a member of a community. In a scientific community that is fast-expanding, members are challenged to balance individual and group responsibilities. In this panel, we will address questions such as: How can one be a good scientific-community member? How can we improve community relations in science? We hope to encourage a meaningful discussion about fostering a scientific community that is universally beneficial.

### **How to Make Scientific Figures with Adobe Illustrator**

Monday January 14th 2–4:00 pm, 68-181

Darcy Greer Gordon, MITx Digital Learning Fellow

Graphical representations are essential to scientific communication. Learn the principles behind what makes an effective scientific figure using Adobe Illustrator. We recommend bringing a laptop with Adobe Illustrator, and encourage bringing your own work, although examples and a workshop assignment will be provided.

### **How to Network in Science**

Thursday, January 17th 1–2:30 pm, 68-181

Robert Dolan, Assistant Director for Postdoctoral Scholars, MIT Career Advising & Professional Development

Do you want to develop skills and strategies to better connect with scientists? Find out about how to make the most out of networking events and build lasting professional relationships in science. Learn about how to hone your soft skills and conduct informational interviews for career success.

### **How to Craft Your CV and LinkedIn Profile**

Tuesday January 29th 1–3 pm, 68-181

Robert Dolan, Assistant Director for Postdoctoral Scholars, MIT Career Advising & Professional Development

First impressions are important when it comes to job-hunting. The first step comes in the form of your CV or professional social media profile. If you want to crush this barrier, come hear the keen insights of our in-house veteran of career development, Bob Dolan.

## **How to Get Your First Grant—Guide to NIH K99**

Wednesday January 30th 11–12:30 pm, 68-181

Pau Creixell, Postdoc, Koch Institute

Diego Huet, Postdoc, Whitehead Institute

Rebecca Lamason, Assistant Professor, MIT

Ankur Jain, Assistant Professor, MIT

Penny Beuning, Professor, Northeastern University

Grantsmanship is an essential skill for scientists. Come join us for a panel discussion to hear all about writing and reviewing for NIH grants. We will use the NIH K99–R00 Pathway to Independence Award as an example to discuss about grantsmanship for trainees. Hear from a K99 reviewer and recent awardees—both postdocs and junior faculty who have recently transitioned to independent positions.

## **Getting Published**

Monday, February 4th 1–2:30 pm, 68-181

John Pham, Editor-in-Chief, Cell

Quincey Justman, Editor-in-Chief, Cell Systems

Kevin Struhl, Professor, Biological Chemistry and Molecular Pharmacology, Harvard Medical School and Senior Editor, eLife

While most of us execute rigorous and important research, the art of getting that research accepted into a high profile journal is often mysterious. A panel of seasoned scientific editors will share advice on how to help editors appreciate the importance of your work, and other pointers on getting published. Vivian Siegel, herself a journal editor since 1994 (including as former Editor-in-Chief of Cell and founding Executive Director of PLOS), will moderate the discussion.

## **How to Give Engaging Research Talks**

Thursday, February 14th 11 am–12:30 pm, 68-181

Claus O. Wilke, Chair of Department of Integrative Biology, Professor at the University of Texas

A well-crafted presentation can elevate the impact of your work. Professor Claus O. Wilke, author of the book “Fundamentals of Data Visualization,” will share his tips to ensure an engaging and memorable scientific talk.

## **Biology at the Interface**

### **Size Matters: The Curious Features of Mammalian Cell Size Regulation**

Thursday, January 10th, 10:30-11:30 am, 68-181

Marc Kirschner

John Franklin Enders University Professor

Department of Systems Biology

Harvard University

## **Physical Concepts and Computational Models in Immunology**

Tuesday, January 15th, 1:00-2:00 pm, 68-181  
Arup Chakraborty  
Departments of Chemical Engineering, Chemistry and Physics  
Institute of Medical Engineering and Sciences  
Massachusetts Institute of Technology

## **Mollusks to Medicine**

Wednesday, January 16th, 10:00-11:00 am, Koch Institute Auditorium  
Mande Holford  
Department of Chemistry and Biochemistry  
Hunter College

## **A trip to the Evolutionary Repair Shop**

Friday, January 18th, 1:00-2:00 pm, Whitehead Auditorium  
Andrew Murray  
Herchel Smith Professor of Molecular Genetics  
Professor of Molecular and Cellular Biology  
Director, John Harvard Distinguished Science Fellows Program  
Harvard University