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 trouble shooting 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
Florenicia 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 Wiltrout, 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