

IAP 2018

For Credit

7.102 -- Laboratory in Molecular Biology

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 17, 2018 and is self-paced

Level: U | Credit: None

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

Pre-7.01r provides background useful for succeeding in 7.01 Introductory Biology. It includes cell biology, biochemistry, molecular biology and genetics. 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. The online subject includes lectures with practice problems, additional assessments and an exam.

To assess whether a student will learn new material in Pre- 7.01, students are encouraged to take a [“Self assessment” quiz](#).

Students must register in order to be able to access this link.

Students are invited to complete an optional questionnaire that is posted at the above link. Please email the completed form to [Dr. Ray](#).

Biology at Transformative Frontiers

“Reading and Writing DNA, Organs, and Ecosystems”
Wednesday, January 24, 1:30 – 2:30 p.m., Stata Center, 32-123

George M. Church
Professor of Genetics, Harvard Medical School

“RNA as Medicine”
Tuesday, January 30, 1-2 p.m., KI Auditorium, 76-156

Melissa Moore
Chief Scientific Officer, mRNA Research Platform at Moderna Therapeutics Inc.

“Targeted Protein Degradation for Fast Biology”
Thursday, February 1, 1:30-2:30 p.m., Stata Center, 32-123

Jay Bradner, MD
President of the Novartis Institutes for BioMedical Research

“TBD”
Friday, February 9, 2-3 p.m., KI Auditorium, 76-156

Patrick O. Brown
CEO and Founder, Impossible Foods Inc.

Taking the Next Step in Academic Science

Alternative Careers in Academia
Friday, January 12, 1-2:30 p.m., McGovern Auditorium, Whitehead Institute

Dr. Mary Ellen Wiltrout, Lecturer/MITxCurriculum Development Specialist for Biology
Dr. Jiaying Tan, Senior Scientific Editor at Cell
Dr. Priya Budde, Senior Corporation & Foundation Relations Officer at the Whitehead Institute
Dr. Kateryna Kozyrytska, Field Marketing Manager, North America at Sartorius

As a biologist, you can make an impact everywhere. We have invited speakers who have launched successful and rewarding careers after being trained as biologists. Even though they did not continue staying in the research lab, they have shaped our scientific community in their new jobs. Please come and join us for discussion if you are also interested in exploring these opportunities.

Finding and Managing a Faculty Position
Thursday, January 18, 12 – 1:30 p.m., 68-181

Michael Birnbaum, Assistant Professor of Biological Engineering, MIT
Eliezer Calo, Assistant Professor of Biology, MIT
Rebecca Lamason, Assistant Professor of Biology, MIT
Stefani Spranger, Assistant Professor of Biology, MIT

When considering applying to faculty positions, how targeted should your search be? How can you tell a good fit from a bad one? How can you get your application to the YES pile? How should you prepare for the interview? What are the most important steps after you have accepted a faculty position? Come hear the perspectives of recently hired professors at MIT.

Leadership – Lessons academics could learn from business schools
Monday, January 29, 12 – 1:30 p.m., 68-181

Teresa M. Amabile, Professor of Business Administration, Harvard Business School
Carl M. Cohen, President, Science Management Associates
Ann Herrmann-Nehdi, CEO, Herrmann Solutions
Charles E. Leiserson, Professor of Computer Science and Engineering, MIT
John Olson, Director, Genetic Validation, Pfizer

Do you aim to lead a creative, scientific or engineering team in the near future but do not quite know where to start? Come to hear the advice from leadership and mentoring experts on DOs and DON'Ts for successful team leadership.

Aligning Assessments to Course Goals: An Interactive Workshop
Wednesday, January 31, 2-4 p.m., 68-181

Darcy G. Gordon, Ph.D. and Swati B. Carr, Ph.D.
MITx Biology Digital Learning Lab Fellows

Teaching is central to an academic career, yet many feel uncertain about teaching assignments, as a TA or instructor, due to lack of experience or training. A vital first step to becoming an effective and efficient instructor is knowing what you want your students to learn, and how to measure their achievement. During this focused and interactive workshop, participants will work with their own course materials (or materials from a teaching assignment) to define learning goals and objectives and design effective assignments that

align to those student outcomes. Whether you are a first-time TA, a postdoc preparing for a faculty position, or current faculty, we invite you bring any materials or ideas related to a single unit or topic that you plan on teaching to workshop with your colleagues.

Perspectives in Academic Science

Friday, February 16, 1-2:30 p.m., 68-181

Join four distinguished faculty as they discuss their perspectives on how science has changed over the course of their careers. Whether you are an undergrad considering science, a grad student or postdoc finding your way in academia, or a young professor looking to build a legacy, come hear and discuss about the past, present, and future of this joint venture we call academic science.

A Sampling of Careers in Science

New Models for Science Communication

Thursday, January 11, 1-2:30 p.m., 68-181

Richard Sever, Co-founder, BioRxiv

Eric Boodman, Reporter, STAT News

Megan Talkington, Senior Science Writer, Broad Institute

Vivian Siegel, Director of Communications, MIT Biology

Yarden Katz, Fellow, Departmental Fellow in Systems Biology, Harvard Medical School

Innovative science needs innovative communication. Come join the discussion on how science communication shapes the way scientists find and share new discoveries, the ways that new platforms are broadening audiences of your research, and the responsibilities that come with spreading “world-changing” discoveries.

Panel on Careers in Science Policy

Wednesday, January 18, 1:30-3 p.m., 68-181

Alison Leaf, PhD, Hellman Fellow in Science and Technology Policy at American Academy of Arts and Sciences

Julie McNamara, MSc, Energy Analyst with the Climate and Energy Program at the Union of Concerned Scientists.

Daniel Pomeroy, PhD, Program Manager for MIT’s Policy Lab

If you enjoy thinking about how science can improve the world, come learn about careers in science policy. Panelists will explain how science policy affects allocation of laboratory funding and how discoveries are translated into new technology and laws.

Careers in Biotechnology

Wednesday, January 17, 1-2:30 p.m., 68-181

Dr. Daniel Grenfell-Lee, Site Leader and Director Biotech Fermentation & DSP at DSM Nutritional Products
Dr. Ryan Philippe, Director of Innovation at ManusBio.
Dr. Janice Lee, Scientist at Takeda Oncology
Dr. Michele Maxwell, Principal Scientist, Translational Research at ALS Therapy Development Institute

Learn about the opportunities and challenges of working in the fast-paced and rapidly developing field of Research and Development in biotechnology. Thought leaders from the biotech industry will share their experiences and guidance for those interested in entering the field.

Career Panel on Consulting and Investment in Healthcare **Tuesday, January 23, 1-3 p.m., 68-181**

Seamus Levine-Wilkinson, Ph.D. – Manager at Clarion Healthcare
Maria Denslow, Ph.D. – Healthcare Lead Knowledge Analyst at BCG
Jason Ruth, Ph.D. – Associate at 5AM Ventures
Burt Adelman, M.D. – Senior Advisor at Novo Ventures

Panelists represent a cross section of the consulting & investment industry in healthcare. We have a consultant from a boutique firm, a knowledge expert in a large consulting firm, a venture capitalist, and a corporate investor. The panel will give you a good sense about the breadth of opportunities in the consulting and investment world, and how one can transition into these careers after school. The panelists also represent a good example of how much fluidity there is between these career options.

Perspectives on Entrepreneurship **Friday, January 26, 1-2 p.m., 3-270**

Melina Fan, Co-founder and Director of Scientific Outreach, Addgene
James Wilson, CEO, ZEA Biosciences
Diana Bernstein, Associate, Flagship Pioneering
Daniel J. Mandell, CEO, GRO Biosciences

What does it take to translate an idea from bench to business? Hear from founders of successful biotech start-ups, both non-profit and for-profit, about the paths they took to build their organizations, and from a Flagship Pioneering associate about how these teams are discovered and developed in the fast-moving world of venture capital.