

University of Pennsylvania

Biomedical Research Academy 2025 Syllabus

The Biomedical Research Academy has three components— lecture, journal clubs, and lab. Lectures will be held in the Levin Building Auditorium (aka Tedor Family Auditorium) and will run from 9-10:50 AM. Journal club meetings will be held in Williams Hall from 11:10-12:05 PM, or 12:10-1:10 PM. Lab sessions will be held in Leidy Labs, Levin Labs and Williams Hall at 1:30 PM and will run until approximately 4:30 PM.

Day 1 will have a unique schedule, with NO journal clubs meeting, and lab taking place at 10:45 AM for some of you and 1:30 PM for most of you.

Co-Director and Lecturer:

Kieran Dilks, PhD

Co-Director and Academy Coordinator:

Ryan Dilks

Teacher, Cherokee High School

Course Materials:

Students will have access to all academy materials via Canvas. Students should bring a personal laptop/chromebook and writing materials to all components of the academy.

Dress Code for Lab:

Some of the materials that you will be working with are hazardous. Therefore, you must dress appropriately.

- **Long pants only.** Shorts of any length are prohibited.
- **Open-toed shoes and sandals are prohibited.** No part of your foot should be visible.
- **Shirts must cover shoulders, back, and midriff, and must have sleeves.** A short-sleeved shirt is acceptable. No part of your abdomen, back or shoulders should be visible.

Schedule of Class Topics, Guest Talks and Laboratories

Monday, July 7th

9-10 AM: Orientation to Program
10 -11 AM: Introductory Lesson – Nucleic Acids and the Bead Game

Tuesday, July 8th

9-10 AM: Introductory Lesson Part 2 - The Biological Divorce of Information Storage and Activity
10-11 AM: Fundamentals of Biomedical Research

Wednesday, July 9th

9-10 AM: Guest Lecture – [Dr. Cesar de la Fuente](#); Discovering Novel Antimicrobial Peptides
10-11 AM: Guest Lecture – [Dr. Nicholas Betley](#): Characterization of Behavioral Neural Circuits

Thursday, July 10th

9-10 AM: Guest Lecture – [Dr. Michael Lampson](#): Genetic Violations of Mendel's First Law
10-11AM: Guest Lecture – [Dr. Noor Mormin](#): Engineering the Immune System to Combat Disease

Friday, July 11th

9-10 AM: Antibiotic Resistance: Time to Panic?
10-11 AM: Guest Lecture - [Dr. Dustin Brisson](#): Pathogen Ecology & [Finding Balance in College](#)

Monday, July 14th

9-10 AM: CRISPR-Cas-9: A Historical Perspective
10-11 AM: Guest Lecture – [Ms. Grace Li \(Hensley Lab\)](#) - Human Antibody Responses to Viral Infection

Tuesday, July 15th

9-10 AM: Analyzing Nucleic Acids: Diagnostics and Discovery
10-11 AM: Guest Lecture: [Ms. Kaitlyn Toy \(Burslem Lab\)](#): Expanding the Genetic Code

Wednesday, July 16th

9-10 AM: Going from Experiment to Model
10-11 AM: Guest Lecture - [Ms. Sarah Grandinetter \(Musunuru Lab\)](#): In-patient CRISPR-Cas9 Gene Editing to Treat Disease

Thursday, July 17th

9-10AM: Molecular Talk - Viruses Making “Informed” Biological Decisions
10-11 AM: Guest Lecture - [Dr. Nancy Spinner](#): Discovery of Disease-Associated Mutations Using Genomics

Friday, July 18th

9-10 AM: Gene Expression Regulation and Disease
10-11 AM: Biomedical Research Ethics

Monday, July 21st

9-10 AM: The Birth and Maturation of the Molecular Dogma
10-11 AM: Guest Research Talk - [Dr. Henry Daniell](#): Developing New and Affordable Biopharmaceuticals

Tuesday, July 22nd

9-10 AM: Guest Lecture – [Dr. Nancy Bonini](#): Neurodegeneration Mechanisms
10-11 AM: Dr. Nancy Bonini Interview and Q&A Session

Wednesday, July 23rd

9-10 AM: Guest Lecture – [Ms. Karen Xu \(Mauck Lab\)](#) - Development of Biopolymer Hydrogels in Soft Tissue Repair
10-11 AM: Guest Lecture – [Dr. Mark Goulian](#): Deconstructing Biological Circuits

Thursday, July 24th

Morning Session: 9-11 AM STUDENT JOURNAL CLUB PRESENTATIONS*
Afternoon Session: 1-3 PM STUDENT JOURNAL CLUB PRESENTATIONS*

Friday, July 25th

Morning Session: 9-11 AM STUDENT JOURNAL CLUB PRESENTATIONS*
Afternoon Session: 1-3 PM STUDENT JOURNAL CLUB PRESENTATIONS*

*You will be assigned to either the morning or the afternoon session on both Thursday and Friday. You are expected to attend all student journal club presentations during your assigned session. You are free to attend the other sessions, but are not required to do so.