



# Barnard Biology Research Symposium 2019

Thursday, May 9th | Diana Center Event Oval | 9:30 am to 3:30 pm

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Department of Biology

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## Barnard Biology Research Symposium

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We are delighted to welcome you to the annual Barnard Biology Research Symposium! This symposium is dedicated to showcasing and celebrating the exemplary work of our Guided Research & Seminar and Senior Thesis Research students. Under the guidance of their dedicated mentors, both at Barnard and throughout New York City, our students have spent the 2018-2019 academic year working independently on projects ranging from those in cell biology to animal behavior to clinical trials.

Today, we feature the meticulous and painstaking work of our presenters and congratulate them and their mentors on their steadfast commitment to their research! We hope today's presentations and posters will inspire the next generation of Barnard Biology majors to follow boldly in their footsteps in the pursuit of knowledge across biological disciplines.

We encourage you to join us today for both sessions, the first of which will feature presentations by our Senior Thesis Research students from 9:30 am to 1:00 pm, followed by the Guided Research & Seminar poster session from 2:00 to 3:30 pm.

Warmly,

The Barnard Biology Department

## Schedule of Events

- 9:15 am to 9:30 am — Continental Breakfast
- 9:30 am to 9:45 am — Opening Remarks by Professors Jessica Goldstein, JJ Miranda, and Alison Pischedda

### ***SESSION ONE***

- 9:45 am to 11:15 am — Senior Thesis Research Student Presentations
- 11:15 am to 11:30 am — Break
- 11:30 am to 1:00 pm — Senior Thesis Research Student Presentations

### ***SESSION TWO***

- 2:00 pm to 2:15 pm — Welcome Remarks
- 2:15 pm to 2:30 pm — Poster Oral Abstracts
- 2:30 pm to 3:30 pm — Guided Research & Seminar Student Poster Session

A detailed schedule, including presenters and project titles, is provided on the following pages. Research mentors and their respective institutional affiliations are listed below each title.

## Senior Thesis Research (2019)



(From left to right.) Front: Jiani Liang, Kira Mitchel, Elizabeth (Betsy) Ladyzhets, and Binita Shah. Back: Natalie Kolba, Anita Pilar Montero, Joanly Sanchez, Hanna Scholze, Shannon MacLeod, Lillian Lawrence, Julia Pickel, and Nicki Mohamaddi.

Biology majors enroll in Senior Thesis Research to satisfy their senior capstone requirement for the major. This year-long course requires students to work on independent research projects under the guidance of their mentors. It culminates in both a scientific paper and a 15-minute research talk presented in today's first session.

## Session One: Senior Thesis Research Presentations

9:45 am Elizabeth (Betsy) Ladyzhets

**Survey of deciduous tree and shrub biomass construction costs at Black Rock Forest demonstrates connection between ecological role and plant physiology**

Kevin L. Griffin (Department of Ecology, Evolution, and Environmental Biology, Columbia University)

10:00 am Binita Shah

**Structures of intermediates in bacterial translation elongation using cryo-electron microscopy**

Joachim Frank and Ziao Fu (Department of Biochemistry and Molecular Biophysics, Columbia University Irving Medical Center)

10:15 am Anita Pilar Montero

**The effects of maternal social integration and connectivity on offspring survival in a facultatively social mammal**

Daniel T. Blumstein and Dana Williams (Department of Ecology and Evolutionary Biology, University of California, Los Angeles)

10:30 am Joanly Sanchez

**Transcriptional activation of metallothionein-3 (MT-3) through hypoxia: What is the role of the hypoxia response elements (HREs) in the metallothionein-3 (MT-3) promoter in hypoxia-mediated expression?**

Mary Sever (Department of Chemistry, Barnard College)

10:45 am Natalie Kolba

**Regulation and function of the NO-cGMP pathway in *Drosophila melanogaster* sensory neurons**

Wesley B. Grueber (Department of Physiology and Cellular Biophysics, Mortimer B. Zuckerman Mind Brain Behavior Institute)

11:00 am Shannon G. MacLeod

**Characterizing the heat shock response in the alfalfa leafcutter bee**

Jonathan W. Snow (Department of Biology, Barnard College)



11:15 am Break

11:30 am Kira Mitchel

**Comparison of skeletal patterning following conditional deletion of *Hoxa5* in somites and lateral plate mesoderm**

Jennifer H. Mansfield (Department of Biology, Barnard College)

11:45 am Hanna Scholze

**Targeting the NAD salvage pathway in diffuse large B-cell lymphoma**

Riccardo Dalla-Favera and Claudio Scuoppo (Department of Pathology and Cell Biology, Institute for Cancer Genetics, Columbia University Irving Medical Center)

12:00 pm Julia Pickel

**Repeat culture as a predictor for fungal corneal ulcer treatment outcomes in the Mycotic Antimicrobial Localized Injection Trial**

Jennifer Rose-Nussbaumer (Proctor Foundation for Research in Ophthalmology, University of California San Francisco)

12:15 pm Jiani Liang

**Interrogating neuralized 1b function in  $\beta$  cells**

Utpal Pajvani (Department of Medicine: Division of Endocrinology, Columbia University Irving Medical Center)

12:30 pm Lillian Lawrence

**Investigating the role of Trans-Lesion Synthesis (TLS) of DNA in maintaining genome stability in the context of BRCA1 deficiency**

Alberto Ciccia and Angelo Taglialatela (Department of Genetics and Development, Columbia University Irving Medical Center)

12:45 pm Nicki Mohammadi

**Understanding the effect of cell adhesion molecules on *C. elegans* behavior**

Oliver Hobert and Emily Berghoff (Department of Biological Sciences, Columbia University)



## Guided Research & Seminar (2019)

(From left to right.) Front: Sophia Liu, Tasneem Ebrahim, and Eva Schwartz. Back: Iasha Khan, Liza Casella, Anastasija Čupić, Dunay Bach, Nora McNamara-Bordewick, and Nina Tang. Not pictured: Jerica Tan and Zaza Vongkusolkiet.

Biology majors enroll in Guided Research & Seminar to satisfy two of three required upper-level biology labs for the major. This year-long course requires students to work on independent research projects under the guidance of their mentors. It culminates in both a scientific paper and the poster presented in today's second session.

## Session Two: Guided Research & Seminar Poster Session

### Poster 1 Dunay Bach

#### **Thermal stress induces tissue damage in the honey bee midgut**

Jonathan W. Snow (Department of Biology, Barnard College)

### Poster 2 Liza Casella

#### **Defining critical features of the immune microenvironment in neural tumors**

Yvonne Saenger (Department of Medical Hematology and Oncology, Columbia University Irving Medical Center), Robyn Gartrell (Department of Pediatrics, Columbia University Irving Medical Center), and Andrew Silverman (Department of Pediatrics, New York Presbyterian Hospital)

### Poster 3 Anastasija Čupić

#### **Towards understanding the role of LGP2 in the regulation of the antiviral innate immune response**

Adolfo García-Sastre and Lisa Miorin (Department of Microbiology, Global Health, and Emerging Pathogens Institute, Icahn School of Medicine at Mount Sinai)

### Poster 4 Tasneem Ebrahim

#### **How does glucose affect the epigenome?**

Songtao Jia and Kehan Bao (Department of Biological Sciences, Columbia University)

### Poster 5 Iasha Khan

#### **Understanding the role of the Cathepsin K expression downstream of the CD200-CD200R pathway in cutaneous squamous cell carcinoma metastasis**

David Owens (Department of Dermatology, Pathology, and Cell Biology, Columbia University Irving Medical Center)

### Poster 6 Sophia Liu

#### **Does a spoonful of sugar help the alcohol go down? Improving the palatability of ethanol increases consumption levels**

John I. Glendinning (Department of Biology, Barnard College)



## Poster 7 Nora McNamara-Bordewick

**Characterizing the effects of pharmacologic proteasome inhibition on the parasite *N. ceranae* and its honey bee host**

Jonathan W. Snow (Department of Biology, Barnard College)

## Poster 8 Eva Schwartz

**bc1 complex assembly in yeast mitochondria**

Alexander Tzagoloff and Leticia V.R. Franco (Department of Biological Sciences, Columbia University)

## Poster 9 Jerica Tan

***In vitro* generation of human hypothalamic AGRP neurons**

Claudia Doege (Department of Pathology and Cell Biology, Columbia University Irving Medical Center)

## Poster 10 Nina Tang

**Mechanisms of cefepime resistance in cefepime-resistant piperacillin-tazobactam susceptible gram-negative bacterial clinical isolates**

Anne-Catrin Uhlemann (Department of Medicine: Division of Infectious Diseases, Columbia University Irving Medical Center)

## Poster 11 Zaza Vongkusolkit

**Quantification of neuroendocrine cells in wild-type mouse prostate**

Michael M. Shen (Department of Medicine: Division of Hematology and Oncology, Herbert Irving Comprehensive Cancer Center, Columbia University Irving Medical Center) and Eva Y. Leung (Department of Nutrition and Metabolic Biology, Columbia University Irving Medical Center)