

Motasem ElGamel

Pittsburgh, PA

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Research Interests: Theoretical Biophysics, Complex Systems, Emergent Phenomena, Stochastic Physics, Statistical Mechanics, Cell Size Control, and Microbial Ecology.

Education

University of Pittsburgh <i>Physics - Ph.D. (expected 2025)</i> <i>Advisor: Prof. Andrew Mugler.</i>	2021 - Present <i>Pittsburgh, PA</i>
University of Pittsburgh <i>Physics - M.Sc.</i>	2019 - 2021 <i>Pittsburgh, PA</i>
University of Science and Technology at Zewail City <i>Physics - B.Sc. (Graduated Magna Cum Laude)</i>	2015 - 2019 <i>Giza, Egypt</i>

Fellowships and Awards

Outstanding Presentation Award Pitt Grad Expo 2024 <i>Dietrich School of Arts and Sciences, University of Pittsburgh</i> <ul style="list-style-type: none">Awarded to the talk: “Clone size statistics of tumor-inhabiting bacteria”.	2024
Andrew W. Mellon Predoctoral Fellowship <i>University of Pittsburgh</i> <ul style="list-style-type: none">Awarded school-wide to doctoral students of exceptional promise and ability across the disciplines.	2023-2024
Best Poster Award at the Physics of Life 2023 Conference, Harrogate, UK <ul style="list-style-type: none">Awarded to the poster presentation: “Effects of molecular noise on cell size control”.	2023
Pitt Graduate and Professional Student Government (GPSG) Travel Grant <i>University of Pittsburgh</i>	2023
Thomas-Lain Fund Scholarship Essay Competition <i>Department of Physics and Astronomy, University of Pittsburgh</i>	2023

Competitive Programs

Finalist in the DBIO Early Career Prize Session <i>APS March Meeting 2024</i>	March 2024 <i>Minneapolis, MN</i>
Les Houches Theoretical Biophysics Summer School 2023 <i>École de physique des Houches</i>	July 2023 <i>Les Houches, France</i>
NSF Center for the Physics of Biological Function - Physics of Life Symposium <i>CUNY and Princeton University</i>	November 2022 <i>New York City, NY</i>

Publications

Published

2. **M. ElGamel** and A. Mugler. Effects of molecular noise on cell size control. *Phys. Rev. Lett.*, 132:098403, 2024
 - Press release ([link](#))
1. **M. ElGamel**, H. Vashistha, H. Salman, and A. Mugler. Multigenerational memory in bacterial size control. *Physical Review E*, 108(3):L032401, 2023

Workshops and Summer Schools

Les Houches Theoretical Biophysics Summer School 2023

École de physique des Houches

July 2023

Les Houches, France

NITMB Ecological Dynamics of Microbial Communities: New Approaches Workshop

National Institute of Theory and Mathematics in Biology

May 2024

Chicago, IL

Talks and Presentations

Invited talks

SIAM Conference on the Life Sciences 2024

Invited talk: "Clone size statistics of tumor-inhabiting bacteria"

June 2024

Portland, OR

Competitively selected talks

APS March Meeting 2024

Selected talk for DBIO Early Career Prize Session: "Clone size statistics of tumor-inhabiting bacteria".

March 2024

Minneapolis, MN

Gordon Research Conference and Seminar

Selected talk and poster presentation: "Effects of molecular noise on cell size control".

January 2023

Ventura, CA

NSF Center for the Physics of Biological Function - Physics of Life Symposium

Selected talk: "Theory of cell size homeostasis".

November 2022

New York City, NY

The 2nd Biology for Physics Conference

Selected talk: "Multigenerational memory in bacterial size control".

July 2022

Barcelona, Spain

Contributed, seminar, and poster presentations

NITMB Ecological Dynamics of Microbial Communities: New Approaches Workshop

Lightning talk: "Clone size statistics of tumor-inhabiting bacteria"

May 2024

Chicago, IL

University of Pittsburgh Grad Expo 2024

Contributed talk: "Clone size statistics of tumor-inhabiting bacteria"

March 2024

Pittsburgh, PA

Applied Math Seminar, Department of Mathematics, University of Pittsburgh

Seminar: "Growth Dynamics of Tumor-Inhabiting Bacteria"

March 2024

Pittsburgh, PA

Les Houches Theoretical Biophysics Summer School 2023

Poster presentation: "Theory of noisy population growth in bacteria".

July 2023

Les Houches, France

Physics of Life 2023 Conference

Poster presentation: "Effects of molecular noise on cell size control".

March 2023

Harrogate, UK

APS March Meeting 2023

Contributed talk: "Adder minimizes cell size noise in bacteria".

March 2023

Las Vegas, NV

APS March Meeting 2022

Contributed talk: "Multigenerational memory in cell size homeostasis".

March 2022

Chicago, IL

Teaching Experience

Graduate Teaching Assistant

University of Pittsburgh

- PHYS 0110: Introduction to Physics 1.
- PHYS 0111: Introduction to Physics 2.
- PHYS 0174: Basic Physics for Science and Engineering 1.
- Lead recitations, held office hours, prepared quizzes, graded exams and wrote up homework solutions.

Undergraduate Junior Teaching Assistant

University of Science and Technology at Zewail City

- PHYS 101: Introduction to Physics 1.
- PEU 438: Compact Objects.

Mentoring, Outreach and Service

Journal Reviewer

- Reviewed articles for *Physical Review Letters*, *Physical Review E*, *Physical Review X Life*, *Physical Review X*, and *Springer's Bulletin of Mathematical Biology*.

Research Mentor

Department of Physics and Astronomy, University of Pittsburgh

- Mentored undergraduate students Jianan Zhao and Lucas Ribaud* in research.
- * Awarded the Emil Sanielevici Undergraduate Research Scholarship for his research on concentration-based cell size control in yeast.

Peer-Mentor in the Alumni Mentorship Program

Zewail City Alumni Association

- Mentored one undergraduate student.

Graduate Student Mentor

Department of Physics and Astronomy, University of Pittsburgh

- Mentored two incoming graduate students.

Zewail City Science Festival

University of Science and Technology at Zewail City

- A public event that aims to deliver scientific concepts in a simplified manner to the public and spread the culture of science.
- Participated as an organizer, wrote a scientific talk for the public audience, and gave a mathematics talk.

Skills

Programming Languages: C++, Python, Matlab, Mathematica, LabVIEW.

Techniques: Monte Carlo, Stochastic Simulation Algorithm.

Certificates: Neural Networks and Deep Learning ([link](#)).