

Vinayak Mathur

Assistant Professor of Biology

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Education

Ph.D. Biology, University of Pennsylvania 2009- 2015
B.E. Biotechnology, Manipal Institute of Technology, Manipal, India 2005- 2009

Research Experience

Georgetown University

Postdoctoral Researcher in the Rosenwald Lab, Department of Biology 2015 - 2017
Advisor: Prof. Anne Rosenwald

- Investigating the role of diet on the gut microbiome of silver-spotted skipper caterpillars using metagenomics approach
- Examining cell wall integrity and oxidative stress in *Candida glabrata*
- Teaching bioinformatics modules to faculty and students across the country as part of the NSF funded Genome Solver Project (genomesolver.org) and measuring faculty training and student performance gains in bioinformatics

University of Pennsylvania 2009 – 2015

PhD, Department of Biology

Advisor: Prof. Paul Schmidt

Dissertation Title: Short term adult plasticity in *Drosophila melanogaster* and its role in climatic adaptation

- Analyzed whole-genome RNASeq data to study response to environmental variables

University of Chicago 2009

Research Scholar, Ecology and Evolutionary Biology Department

Advisor: Prof. Trevor Price

- Studied the phylogeography and phylogenetics of Himalayan passerine bird species based on mitochondrial DNA sequencing

Centre for Cellular and Molecular Biology, Hyderabad, India 2008

Summer Research Fellow

Advisor: Prof. Rakesh Aggarwal.

- Developed a SSR-enriched genomic library for use in development of novel microsatellite markers in a crocodile species (Gharial).

Wildlife Institute of India, Dehradun 2007

Research Intern in the Wildlife Forensic Laboratory

Advisor: Dr. Sudhanshu Mishra

- Received foundational training in molecular genetics laboratory techniques

Publications

Rachel Sweeney, Ryan Real, **Vinayak Mathur**. (2020) *Studying horizontal gene transfer between bacteria and Microviridae phages to identify the evolutionary history of bacteriophage-host relationships*. **Cabrini University Journal of Undergraduate Research**. 2020: 44-61

Vinayak Mathur, Gaurav Arora, Vinodh Ganesan, Hita Gupta, Marina Kazarian, Anne Rosenwald. (2020) *Genome Solver: Building faculty skills in bioinformatics. Cultivating Scientific Curiosity*. **QUBES Educational Resources**. doi: 10.25334/G1B-JJ53

Sally Molloy, Bill Davis, Elizabeth Moy, G. Christian Jernstedt, Melinda Harrison, **Vinayak Mathur**, Matt Mastropaolo. (2020) *Reflective Writing Tools: Building Skills and Habits of Thinking in Becoming a Scientist*. **HHMI Science Education Alliance (SEA) Faculty Group**. **QUBES Educational Resources**. doi: 10.25334/2PD1-NT03

Vinayak Mathur, Gaurav Arora, Mindy McWilliams, Anne G. Rosenwald. (2019) *Genome Solver Project: Faculty training and student performance gains in bioinformatics*. **Journal of Microbiology and Biology Education**. 20(1):20.1.4

Anne Rosenwald, Gaurav Arora, **Vinayak Mathur**. (2019). *Complete Set of Lessons. Genome Solver, /groups/genomesolver, (Version 2.0)*. **QUBES Educational Resources**. doi:10.25334/E4GQ-2S85

Vinayak Mathur and Paul S Schmidt. (2016) *Adaptive patterns of phenotypic plasticity in laboratory and field environments in Drosophila melanogaster*. **Evolution**. doi:10.1111/evo.13144

Daniel K. Fabian, Justin B. Lack, **Vinayak Mathur**, Christian Schlötterer, Paul S. Schmidt, John E. Pool, Thomas Flatt. (2015) *Spatially varying selection shapes life history clines among populations of Drosophila melanogaster from sub-Saharan Africa*. **Journal of Evolutionary Biology** 28(4):826-40

In Review:

Patrick Muller, Hita Gupta, Rishi Patel, **Vinayak Mathur**. (2021) *Investigating the role of the major capsid protein as a biomarker for Horizontal gene transfer between bacteria and bacteriophages*. **Phage: Therapy, Applications, and Research**.

Richard Zhu and **Vinayak Mathur**. (2021) *Prophages present in Acinetobacter pittii influence bacterial virulence, antibiotic resistance, and genomic structure*. **Phage: Therapy, Applications, and Research**.

Danica Bajaj, Alok Shah, Paulina Tein, **Vinayak Mathur**. (2020) *Impacts of e-cigarette use on the Human body and associated Microbiome*. **YSJournal**.

Teaching Experience

Courses taught at Cabrini University 2018-2020:

Course Number	Course Name	Semesters Taught
BIO 101	Biological Sciences I	Fall 2018, 2019, 2020
BIO 100	Intro to Biology	Fall 2018
BIO 102	Biological Sciences II	Spring 2019, 2020, 2021
BIO 102L	Biological Sciences II - Lab	Spring 2020
BIO 280	Virus Discovery	Fall 2019
BIO 331	Neuroscience	Fall 2018, 2020
BIO 352	Bioinformatics	Spring 2019, 2021
BIO 401	Lab Experience Neuropsychology	Spring 2020
BIO/CHE 444	Science Major Senior Seminar	Fall 2019, Spring 2020
MBIO 531	Advanced Neuroscience	Fall 2018, 2020
MBIO 652	Advanced Computational and Molecular Biology	Spring 2019, 2021

Conference Papers and Presentation

NEMPET Conference, Blue Mountain Lake, NY Poster presentation on “Prophages present in <i>Acinetobacter pittii</i> influence bacterial virulence, antibiotic resistance, and genomic structure”	2021
SEAPhages Faculty Conference, Ashburn, VA (Virtual) Poster presentation on “Reflective Writing Tools: Building Skills and Habits of Thinking in Becoming a Scientist”	2021
Invited Speaker , Peddie School Genetic Engineering Week, Hightstown, NJ Oral presentation on “Bioinformatics: Opportunities and Challenges”	2021
Transforming Research in Undergraduate STEM Education, St. Paul, MN Poster presentation on “Faculty training and student performance gains in bioinformatics”	2017
Society for Advancement of Biology Education Research Meeting, MN Poster presentation on “Faculty training and student performance gains in bioinformatics”	2017
Undergraduate Bioinformatics Education Conference, Latrobe, PA Selected Oral Presentation on “Faculty training and student performance gains in bioinformatics”	2017
Young Investigators Meeting, Chicago, IL Poster presentation on “Analyzing student learning using bioinformatics”	2016

course modules as a platform for student engagement in research”	
ASM Conference for Undergraduate Educators, MD Microbrew Chalk talk on “Genome Solver: Creating a Community Science Project in Bioinformatics”	2016
Society for Advancement of Biology Education Research Meeting, MN Poster presentation on “Analyzing student learning using bioinformatics course modules as a platform for student engagement in research”	2016
Ecological Genomics Symposium, Manhattan, KS Selected Oral Presentation on “Short term adult plasticity in <i>Drosophila melanogaster</i> and its role in climatic adaptation”	2015
Invited Speaker , Wildlife Institute of India, Dehradun, India Oral presentation on “Population specific stress response in <i>Drosophila melanogaster</i> in a lab versus field setting”	2015
Evolution Conference, Raleigh, NC Oral presentation on “Stress response and climatic adaptation in <i>Drosophila melanogaster</i> ”	2014
Evolution Conference, Raleigh, NC Poster presentation on “Population specific differential thermal stress response in <i>Drosophila melanogaster</i> in a lab versus field setting”	2014
Society for Molecular Biology and Evolution Conference, San Juan, PR Poster presentation on “Stress response and climatic adaptation in <i>Drosophila melanogaster</i> ”	2014
Penn Princeton Rutgers Columbia Conference, Rutgers University, NJ Oral presentation on “Population specific differential thermal stress response in <i>Drosophila melanogaster</i> ”	2014
Evolution Conference, Snowbird, UT Oral presentation on "Population specific stress tolerance response in <i>Drosophila melanogaster</i> "	2013
Evolution Conference, Ottawa, Canada Poster presentation on “Comparing the population specific stress response in <i>Drosophila melanogaster</i> in a field versus lab setting”	2012
Evolution Conference Norman, OK Oral presentation on “The impact of altitudinal variation in African populations of <i>Drosophila melanogaster</i> ”	2011

Bioinformatics Workshops

Co-taught the Genome Solver workshops to faculty and students on bioinformatics tools and introduced the Community Science Project, which investigates horizontal

gene transfer between bacteriophages and their host bacteria, at the following institutions:

QUBES Mini-Workshop (Online)	August 2020
QUBES Mini-Workshop (Online)	December 2020
Harford Community College, Bel Air, MD	January 2016
University of West Florida, Pensacola, FL	March 2016
Simmons College, Boston, MA	March 2016
North Carolina A&T University, Greensboro, NC	June 2016
James Madison University, Harrisonburg, VA	July 2016
ASM Conference on Undergraduate Education, North Bethesda, MD	July 2016
Johnson County Community College, Overland Park, KS	January 2017
CCURI Lab Methods workshop, Tulsa, OK	May 2017
Ouachita Baptist University, Arkadelphia, AR	June 2017
University of California- Davis, Davis, CA	June 2017
University of Kentucky, Lexington, KY	August 2017

Mentoring

Francisca Mukova, Undergraduate – Cabrini University (Borneman Summer Fellowship Awardee, Summer 2021)	2021-present
Ariana Rivera, Undergraduate – Cabrini University	2019-present
Darian Labroschiano, Undergraduate – Cabrini University	2019-present
Patrick Muller, Graduate student – Cabrini University Master’s Thesis	2019-2020
Rachel Sweeney, Undergraduate – Cabrini University (Borneman Summer Fellowship Awardee, Summer 2019)	2019-2020

Student Presentations

Ariana Rivera, Pennsylvania Academy of Science	2021
Darian Labroschiano, Pennsylvania Academy of Science	2021
Rachel Sweeney, Pennsylvania Academy of Science (Abstract accepted)	2020
Ariana Rivera and Darian Labroschiano, Pennsylvania Academy of Science (Abstract accepted)	2020

University Service

Antiracist Book group facilitator at Cabrini University	2021
Member, Who’s Who student award judging committee	2021
Chair, Faculty Development and Events Committee at Cabrini University	2020-present
Member, Inclusivity Council at Cabrini University	2018-present
Member, Graduate Assessment Group at Cabrini University	2018-present
Member, Cabrini University Academic Efficiency Team	2020
Dissertation committee member for Crystal Carter, School of Education Cabrini University	2020
Reviewer for Journal of Undergraduate Research at Cabrini University	2019-2021
Member, Student Grievance Board at Cabrini University	2018-2019

Mentorship Chair, Georgetown University Postdoctoral Association	2016-2017
Graduate Student Government Representative at UPenn	2013- 2015
Vice President of Social Activities for School of Arts and Sciences	2014- 2015
Student Government at UPenn	
Member of Students Confronting Racism and White Privilege at UPenn	2013-2015
Biology Department Representative to School of Arts and Sciences	2011-2012
Student Government at UPenn	

Outreach

Invited Speaker at a Career Service Panel on “Interviewing for Faculty Positions” at the University of Pennsylvania, Philadelphia	2019
Judge for MCGSO Student Research Day Georgetown University Medical Center, Washington DC	2017
Judge for Georgetown University Undergraduate Research Conference Georgetown University, Washington DC	2017
Volunteer for Carnegie Institute Community Science Day Carnegie Institute of Science, Washington DC	2016
Presenter for the Early Access to Graduate Research Program (EAGR) Franklin Institute, Philadelphia PA	2016
Speaker at the Community Soil Day Crandall Garden Farm, Ramsey, MN	2016
Volunteer for Science Education Academy Community Science Carnival White Rock Baptist Church, Philadelphia	2014
Activity leader at the Philadelphia Water Community Outreach Program	2013
Volunteer for Biology Department High School Science Day University of Pennsylvania, Philadelphia	2012, 2015
Volunteer for Philadelphia Science Festival The Franklin Institute, Philadelphia	2011

Fellowships, Awards and Certifications

Cabrini University Summer Grant	2020
Beta Beta Beta Biological Honor Society	2019
American Society of Microbiology Teaching Fellow	2017
Center for Teaching and Learning Certificate	2015
Andy Binns Impact Award for Outstanding Service to the Graduate and Professional Student Community at the University of Pennsylvania	2015
Biology Department Telfer Award for Research Travel (\$500)	2014
GAPSA Travel Award (\$500)	2014
GAPSA Travel Award (\$500)	2013
University of Pennsylvania Teaching Fellowship	2010 - 2015
University of Pennsylvania Educational Fellowship	2009

Professional Development

Academics for Black Wellness and Survival training	June 2020
HHMI SEAPHAGES Phage Discovery and Bioinformatics training	December 2018
ASM Teaching Fellows Program	Jan – June 2017
CCURI Lab Methods Workshop, Tulsa Community College	May 2017
CASE Based Active Learning Workshop, Trinity Washington University	March 2017