

Neem Jitendra Patel

Berkeley, CA • neempatel@berkeley.edu

EDUCATION

University of California, Berkeley, Berkeley, CA

Doctoral Candidate: Microbiology

Expected graduation: December 2022

New York University, New York, NY

Master of Science: Biology

Concentration in Bioinformatics & Systems Biology

Degree Conferred: May 2016

Georgia State University, Atlanta, GA

Bachelor of Science: Biological Studies, minor in Chemistry

Concentration in Applied & Environmental Microbiology

Bachelor of Interdisciplinary Studies: Italian Studies

Degrees Conferred: December 2012

President's List 2010 & 2011, Dean's List 2009 & 2011

Studies abroad: Università degli Studi di Perugia, Italy, Spring 2009

RESEARCH EXPERIENCE

University of California - Berkeley, Berkeley, CA

August 2017 – Present

Graduate Research Scientist, *Traxler Lab*

Elucidation of soil microbial community succession and metabolism in post-fire environments.

Project Aims:

- Experimental design of ecological fieldwork experiments and sample collection regiment.
- Development of novel isolation methods to target organisms of interest.
- Utilization of amplicon sequencing and bioinformatic analysis to understand long-term community dynamics.
- Application of RB-TnSeq to determine essential and critical genes involved in the utilization of PyOM and PAHs.

New York University, New York, NY

June 2014 – July 2017

Assistant Research Scientist, *Hochwagen Lab*

Investigation and characterization of the mechanical processes underlying meiosis and meiotic recombination in *Saccharomyces cerevisiae*.

Projects and Collaborations:

- Main project: Characterized the role of RTF1, a Paf1C subunit, during meiotic prophase I. Applied various molecular biology, genetics, whole genome sequencing methods and bioinformatics analyses.
- Development of a novel method to map and characterize meiotic resection tracts with the application of NGS technologies.
- Collaboration with the Shinohara Lab (Osaka, Japan). Determined the influence of RTF1, on meiotic DSB formation and distribution with the utilization of ssDNA microarrays and southern blotting.
- Collaboration with the San Segundo Lab (Salamanca, Spain). Applied ChIP-Seq and bioinformatic analyses to map the genome-wide deposition of histone variant H2A.Z (HTZ1) during meiotic progression.
- Collaboration with the Fung Lab (UCSF). Utilized ssDNA microarrays and bioinformatic analyses of telomerase mutants to elucidate genome-wide effects on meiotic DSB formation.

New York University, New York, NY

February 2014 – June 2014

Graduate Research Assistant, *Carlton Lab*

Development of NGS methods to determine the multiplicity of malaria infections and identify early signs of drug failure against *P. falciparum* and *P. vivax* malaria in patients in India.

In collaboration with the NIH, CSCMi, NIMR and PSU

Project Aims:

- Established Ion Torrent PGM™ amplicon sequencing methods and bioinformatics models to determine the multiplicity of mixed genotype infections.
- Applied PGM™ amplicon sequencing methods to analyze clinical malaria samples. Compared samples prior to and following drug therapy to monitor any changes in the frequencies of individual clones, which may indicate the emergence of drug resistance

Otogenetics Corporation, Norcross, GA

January 2013 – November 2013

Project Technician, *Supervised by Dr. Natalie McDonald*

Processed client samples for RNA-sequencing using Illumina platforms.

- Independently processed and performed quality control analyses of RNA, cDNA and final libraries for NGS
- Utilized various methods for RNA extraction from a diverse range of samples.
- Collaborated with and aided the DNA-sequencing team when needed.

Georgia State University, Atlanta, GA

January 2010 – January 2013

Undergraduate Research Assistant, *Chin Lab*Identified key microbial species involved in degradation and natural attenuation of petroleum contaminated soils in Bay Jimmy, Louisiana following the April 2010 *DeepWater Horizon* oil spill.

- Isolated and cultivated anaerobic PAH-degrading microorganisms from oil-contaminated sediments collected in Bay Jimmy, Louisiana.
- Cultivation methods utilized include pure cultures, microcosms, enrichment cultures, agar-shake method, dilution to extinction and other high-trough put methodology.
- Assessed, measured and graphed growth curves of new isolates
- Isolated nucleic acids (RNA, DNA and proteins) from environmental samples and pure cultures for PCR and sequencing. Genes under investigation: BssA, McrA, DssR and 16s rRNA (archaea & bacteria) for population analysis.
- Performed transformations and cloning of PCR products following purification.
- Bioinformatics (gene sequencing, primer design and analysis) using BIO Edit and sequence alignment using NCBI BLAST for species identification.

TEACHING & MENTORSHIP**University of California - Berkeley**, Berkeley, CAGraduate Student Mentor, *Traxler Lab*

August 2019 – Present

Mentorship, training and collaboration with undergraduate student mentees in academic laboratory research.

Graduate Student Instructor

August 2021 – December 2021

Bio 1B Lab – General Biology for Majors. Lab instruction, preparation of course materials, and creation of weekly quizzes. Supported undergraduate students in access and understanding of course materials. Topics covered: Evolution & Phylogenetics, Ecology, and Organismal Biology.

GIGS Student Mentor

August 2019 – May 2020

Getting into Graduate School (GiGS) Mentors. Worked with 2 undergraduates during the academic year and beyond to support them in the achievement of their post-graduation goals. This includes assisting and advising students in graduate program selection, graduate school/internship applications, funding research opportunities and programs.

Graduate Student Instructor

January 2019 – May 2019

PMB 11 - Fungi, History and Society. Lab instruction, creation of weekly quizzes, general course work preparation and grading with Professor Dr. Thomas Bruns.

New York Academy of Sciences, New York, NY

May 2015 – August 2016

Credentialed NYAS Education Fellow

Development and execution of a summer teaching and training program working with middle school-aged students from groups traditionally underrepresented in the STEM fields. Gained experience in classroom management, working with English language learners, diverse populations of students, and exposure to other youth development principles.

Georgia State University, Atlanta, GA

August 2011 – December 2012

Supplemental Instructor

Lead a study group for students taking “high-risk” courses: aided students in development of problem-solving skills, provided additional material and notes and encouraged active participation and feedback. Supplemental Instruction was provided for Organic Chemistry I & II, Introductory Biology for non-majors and Principles of Biology I & II for majors.

ACADEMIC SERVICE & OUTREACH**University of California - Berkeley**, Berkeley, CA

Womxn of Color Initiative (WOCI), Project Director

August 2021 – Present

Advocated for and provided programming and events to engage and support academic and professional womxn of color. Helped coordinate the annual Empowering Womxn of Color Conference (EWOC); one of the longest running conferences in the nation which addresses the needs and concerns of womxn of color. As the WOCI project director it is my responsibility to advance issues facing our community through several avenues, including through the Campus Affairs, DE&I committees or the Graduate Assembly.

Graduate Assembly Delegate

August 2017 – May 2022

Served as the graduate student representative for the Graduate Group in Microbiology. As the delegate it is my responsibility to serve as an advocate for the graduate students in my department through drafting, approving and passing resolutions and engaging in democratic election of leadership of the graduate assembly.

Graduate Assembly Case Manager

December 2020 – May 2021

Supervised by the Vice President of Equity and Inclusion (VPEI) and Student Advocate Office (SAO). Worked with graduate student SAO cases related to basic needs, with a focus on rental and food assistance, and supported both the VPEI and Student Advocate Office on researching, drafting and establishing campus-level policies supporting graduate student needs.

GA Environmental Sustainability Project, Project Director - November 2020 – May 2021

GA Environmental Sustainability Project, Co-Project Director - December 2019 – May 2020

GA Environmental Sustainability Project, Art Exhibition Curator - October 2018 – April 2019

The GA Environmental Sustainability Project (ESP) was created to manage the Earth Action Initiative (EAI) conference, and to serve as the Graduate Assembly's lead advocate for environmental justice and sustainability on campus, with an interdisciplinary, intersectional, and community-oriented approach. As a Project Director I managed the administrative and advocacy responsibilities and organized the annual EAI conference. In addition to EAI, I organized regular environmental sustainability and climate justice events for our community. ESP has been financially supported by The Green Initiative Fund and the Graduate Assembly.

OTHER WORK EXPERIENCE

Olive Bistro, Atlanta, GA

April 2010 – December 2012

Shift Supervisor, Server and Barista

Provided customer service and ensured customer satisfaction. Managed the front of house staff by ensuring proper presentation of food and service provided by staff. Resolved all guest complaints with professionalism.

Morgan Memorial Hospital, Madison, GA

August 2004 - June 2005

CNA, Laboratory Assistant

Collected samples and conducted routine laboratory tests. Responsible for completing daily office tasks.

GRANTS & AWARDS

- The Green Initiative Fund Grant, "Earth Action Initiative," \$16000.00 May 2020.
- Kase-Tsujimoto Graduate Fellowship, "Microbial community succession and primary metabolism in post-fire environments," \$30000.00 May 2018.
- NYU Masters Research Grant, "A genome-wide method to measure the length of meiotic DNA resection tracts at single-nucleotide resolution," \$1500.00 November 2015.
- NYU Masters Research Grant, "A genome-wide method to measure the length of meiotic DNA resection tracts at single-nucleotide resolution," \$1500.00 November 2014.

PUBLICATIONS

- Fischer MA¹, **Patel NJ**¹, de Lorimier PJ, Traxler MF. "Prescribed fire selects for a pyrophilous soil subcommunity in a northern California mixed conifer forest." Department of Plant and Microbial Biology, UC Berkeley: Berkeley, CA. In review June 2022: EMI.
- González-Arranz S, Gardner JM, Yu Z, **Patel NJ**, Heldrich J, Santos B, Carballo JA, Jaspersen SL, Hochwagen A, San-Segundo PA. "SWR-1 Independent Association of H2A.Z to the LINC Complex Promotes Meiotic Chromosome Motion." Department of Biology, New York University: New York, NY. Accepted October 2020: Front Cell Dev Biol.
- Smith AL, Oke A, Pollard M, Anderson CM, Zhuge T, Yam P, Gromova T, Conant K, Chu DB, **Patel NJ**, Gonzalez F, Stoddard C, Burgess S, Hochwagen A, Marshall WF, Blackburn E, Fung JC. "A New Role for Telomerase in Promoting Meiotic Homolog Pairing Fidelity." Department of Biology, New York University: New York, NY. Published May 2019: BioRxiv.
- Markowitz TE, Suarez D, Blitza HG, **Patel NJ**, Markhard AL, MacQueen AJ, Hochwagen A. "Reduced dosage of the chromosome axis factor Red1 selectively disrupts the meiotic recombination checkpoint in *Saccharomyces cerevisiae*." Department of Biology, New York University: New York, NY. Accepted July 2017: PLoS Genet.

- Gothwal SK, **Patel NJ**, Colletti MM, Sasanuma M, Hochwagen A, Shinohara A. “The Double-Strand Break Landscape of Meiotic Chromosomes is Shaped by the Paf1 Transcription Elongation Complex in *Saccharomyces cerevisiae*.” Department of Biology, New York University: New York, NY. Accepted January 2016: Genetics.

ACADEMIC PRESENTATIONS

- Fischer MA¹, **Patel NJ**¹, de Lorimier PJ, Traxler MF. “Prescribed fire alters soil microbial community substructure and selects for pyrophilous genera in a northern California mixed conifer forest.” Department of Plant and Microbial Biology, UC Berkeley: Berkeley, CA. International Society of Microbial Ecology, 18th International Symposium, Lausanne, CH. August 2022.
- Fischer MA¹, **Patel NJ**¹, de Lorimier PJ, Traxler MF. “Prescribed fire alters soil microbial community substructure and selects for pyrophilous genera in a northern California mixed conifer forest.” Department of Plant and Microbial Biology, UC Berkeley: Berkeley, CA. Joint Berkeley Initiative for Microbiome Sciences, Berkeley, CA. May 2022.
- **Patel NJ**, Fischer MA, Carver AA, Stillman K, Bruns T, Traxler M. “Characterization of *Pyronema omphalodes* in its Post-Fire Environment.” Department of Plant and Microbial Biology, UC Berkeley: Berkeley, CA. International Society of Microbial Ecology, 17th International Symposium, Leipzig, DEU. August 2018.
- Perry VR, Sanderson MA, **Patel NJ**, Sutton NA, Deocampo DM, Chin KJ. “Seasonal variation in metabolic activity of anaerobic microbial communities in salt marsh sediments impacted by the *Deepwater Horizon* oil spill.” Department of Biology & Department of Geosciences, Georgia State University: Atlanta, Ga. American Society of Microbiology, General Meeting, Denver, CO. May 2013.
- Perry VR, Sanderson MA, **Patel NJ**, Sutton NA, Deocampo DM, Chin KJ. “Metabolic activity of anaerobic microbial communities in salt marsh sediments impacted by the *Deepwater Horizon* oil spill.” Department of Biology & Department of Geosciences, Georgia State University: Atlanta, GA. Gulf of Mexico Research Initiative, New Orleans, LA. January 2013.
- Chin KJ, Perry VR, Kanak AS, Sanderson MA, Orr KA, **Patel NJ**, Sutton N, Bullows J. “Key to Bioremediation: How Anaerobic Microbes Can Help Clean Up Oil Spills.” Department of Biology, Georgia State University: Atlanta, GA. February 2012.

PRESS & PUBLIC PRESENTATIONS

- Invited speaker. BLISS Science, Law & Policy Microsymposium, March 2019. “Microbial Community Succession and Metabolisms in Fire-Affected Soils.”
- Student Spotlight. Berkeley Rausser, College of Natural Resources, September 2019. “StudentSpotlight: Neem Patel.” <https://nature.berkeley.edu/news/2019/07/neem-patel>
- Invited speaker. CLEAR Pubscience, April 2021. “Phoenixes of the Forest: Bacterial Life after Fire.”
- Author. Berkeley Science Review, May 2021. “From the Field - Life after fire: microbial phoenixes of the forest.” <https://berkeleysciencereview.com/article/2021/05/28/from-the-field-life-after-fire-microbial-phoenixes-of-the-forest>

COMMUNITY SERVICE & AFFILIATIONS

| | |
|--|--|
| Sustainable Energy Coalition - Organizer | Skype A Scientist |
| Greenpeace USA – Organizer | Trees Atlanta and Habitat for Humanity, GA |
| World Wildlife Fund | National Honors Society |
| WonderRoot Center for Arts & Social Change | Division of Family and Social Services, GA |
| Georgia Wildlife Federation | Red Cross Blood Drive – Volunteer |
| Bay Area Scientists in Schools | New York Academy of Sciences - Youth Mentor |
| Plant & Microbial Biology - Peer Mentor | NYAS Global STEM Alliance - Next Scholars Mentor |
| | Plant & Microbial Biology - DEI Committee |

LANGUAGES & SKILLS

- Fluent in English, Hindi, Gujarati and Italian. Conversational in Spanish, French and Portuguese.
- Proficiency with the Microsoft Office Suite: Word, Excel, PowerPoint and Entourage
- Proficiency with the Adobe Creative Cloud: Illustrator, Lightroom and Photoshop
- Proficiency with R, Python, Bio Python, Unix and NCBI & BLAST databases
- Experienced user of Laboratory Information Management Systems
- Licensed Certified Nursing Assistant (Georgia, USA)
- First Aid & CPR Certified: American Heart Association Health Care Provider Program
- Wilderness First Aid & CPR Certified: Sierra Rescue International