

VIJAY K. PARASHAR

DATE: 11/08/2017

PRESENT TITLE: Assistant Professor

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<http://xtalsmgddp.wixsite.com/parasharlaboratory>

ACADEMIC APPOINTMENT:

Assistant Professor (Tenure-track), 08/2017 –onwards
Medical Laboratory Sciences,
University of Delaware, Newark, DE.

Assistant Professor (Tenure-track), 03/2014 – 08/2017
Oral Biology Department,
Rutgers School of Dental Medicine, Rutgers University, Newark, NJ.

EDUCATION:

A. Doctor of Philosophy (PhD) 2001-2006
Department of Microbiology,
Panjab University, Chandigarh, India.
Mentor: Dr. Prince Sharma

B. Masters of Science 1999-2001
Department of Biotechnology,
Thapar University, Patiala, India

C. Bachelor of Science (Undergraduate): 1996-1999
Department of Biology,
Panjab University, Chandigarh, India

POSTGRADUATE TRAINING:

A. Post-Doctoral Research Associate 01/2008-03/2014
Department of Microbiology, Biochemistry and Molecular Genetics,
New Jersey Medical School, Rutgers University, Newark, NJ.
Mentor: Dr. Matthew B. Neiditch

B. Post Doctoral Research Fellow 06/2006-12/2007
Department of Chemistry (Biochemistry division),
Wayne State University, Detroit, MI.
Mentor: Dr. Ashok Bhagwat

CURRENT GRANT SUPPORT:

- **Funding Organization:** NIH (NIGMS)
Mechanism: Maximizing Investigators' Research Award (MIRA) for New and Early Stage Investigators (an outstanding investigator award)
Role: Principal Investigator
Award Number 1R35GM119504

Title of Award: Structural biology of c-di-AMP signaling in Gram-positive bacteria
Inclusive Dates of Funding 08/2016-07/2021
Amount (\$) Awarded (total) \$1,642,800 (five year)

- **Funding Organization: Charles & Johanna Busch Biomedical Grants**
Role: Principal Investigator
Title of Award: Development of novel antibiotic adjuvants targeting cyclic-di-AMP metabolism in Gram-positive bacteria
Inclusive Dates of Funding 08/2016-07/2018
Amount (\$) Awarded \$37,000/year (direct cost)

PAST GRANT SUPPORT:

Funding Organization: New Jersey Health Foundation
Role: Principal Investigator
Title of Award: Structural and Functional Characterization of c-di-AMP degradation in bacteria
Inclusive Dates of Funding 07/2014-06/2015
Amount (\$) Awarded \$35,000/year (direct cost)

CERTIFICATION:

Attended a boot camp on Single Particle Cryo-Electron Microscopy at Rutgers Institute for Quantitative Biomedicine (January 3-13, 2017)

Certificate course in introduction to the principles and practice of clinical research” conducted by NIH (2013)

PUBLICATIONS:

1. Underbayev C, Kasar S, Ruezinsky W, Degheidy H, Schneider JS, Marti G, Bauer S, Fraidenraich D, **Parashar V**, Raveche E & Batish M. Role of mir-15a/16-1 in early B cell development in a mouse model of chronic lymphocytic leukemia: the quest for the cell of origin. ***Oncotarget***. 2016 DOI: 10.18632/oncotarget.11290.
2. **Parashar V**, Aggarwal C, Federle MJ, Neiditch MB. Rgg protein structure-function and inhibition by cyclic peptide compounds. ***Proc Natl Acad Sci USA***. 2015 Apr; 9(8): 499-506.
3. Wilson R, Kumar P, **Parashar V**, Vilchèze C, Veyron-Churlet R, Freundlich JS, Barnes SW, Walker JR, Marchiano, Shenai S, Colangeli R, Jacobs WR, Neiditch MB, Kremer L, Alland D. (2013) Highly efficient antituberculosis activity of a new class of thiophene compounds which target the Mycobacterium tuberculosis Polyketide Synthase Pks13 and inhibit mycolic acid production. ***Nat Chem Biol***. 2013 Aug;9(8):499-506. doi: 10.1038/nchembio.1277
4. **Parashar V**, Konkol MP, Kearns DB, Neiditch MB. (2013) A Plasmid-Encoded Phosphatase Regulates *Bacillus subtilis* Biofilm Architecture, Sporulation, and Genetic Competence. ***J Bacteriol***. 195 (10) Published ahead of print 22 March 2013, doi: 10.1128/JB.02030-12
5. **Parashar V**, Jeffrey PD, Neiditch MB (2013) Conformational change-induced repeat domain expansion regulates Rap phosphatase quorum-sensing signal receptors. ***PLoS Biol***. 11(3): e1001512. doi:10.1371/journal.pbio.1001512

Parashar et al., PLoS Biol. 2013 featured in:

Introductory primer article by an expert:

Perego, M. (2013) Forty years in the making: understanding the molecular mechanism of peptide regulation in bacterial development. ***PLoS Biol*** 11(3): e1001516. doi:10.1371/journal.pbio.1001516

Introductory PLoS Biologue by PLoS Biology Editor:

<http://blogs.plos.org/biologue/2013/03/20/are-we-quorate-yet-return-to-bug-signalling/>

6. Sambanthamoorthy K, Sloup RE, **Parashar V**, Smith JM, Kim EE, Semmelhack MF, Neiditch MB, Waters CM. (2012) Identification of small molecules that antagonize diguanylate cyclase enzymes to inhibit biofilm formation. ***Antimicrob Agents Chemother.*** 56(10):5202-11.
7. Mirouze N, **Parashar V**, Baker MD, Dubnau DA, Neiditch MB. (2011) An atypical Phr peptide regulates the developmental switch protein RapH. ***J Bacteriol.*** 193(22):6197-206.
8. Sambanthamoorthy K, Gokhale AA, Lao W, **Parashar V**, Neiditch MB, Semmelhack MF, Lee I, Waters CM. (2011) Identification of a novel benzimidazole that inhibits bacterial biofilm formation in a broad-spectrum manner. ***Antimicrob Agents Chemother.*** 55(9):4369-78.
9. **Parashar V**, Mirouze N, Dubnau DA, Neiditch MB. (2011) Structural basis of response regulator dephosphorylation by Rap phosphatases. ***PLoS Biol.*** 8;9(2):e1000589. doi:10.1371/journal.pbio.1000589
10. **Parashar V**, Capalash N, Sharma P. (2007) Demonstration of REBASE-assisted restriction mapping to determine the recognition site of unknown restriction endonucleases. ***Biochem Mol Biol Educ.*** 35(5):337-41.
11. **Parashar V**, Capalash N, Xu SY, Sako Y, Sharma P. (2006) TspMI, a thermostable isoschizomer of XmaI (5'C/CCGGG3'): characterization and single molecule imaging with DNA. ***Appl Microbiol Biotechnol.*** 72(5):917-23.
12. Sharma, P., D'Souza, DR., Bhandari, D., **Parashar, V.**, Capalash, N. (2003) Demonstration of the Principles of Restriction Endonuclease Cleavage Reactions Using Thermostable Bfl I from *Anoxybacillus flavithermus*. ***Biochem Mol Biol Educ.*** 31:392-96

PATENTS

Technology Transfers

Licensed New England Biolabs (NEB, Ipswich, MA) for production and commercialization of a thermostable type II restriction endonuclease, TspMI, (5'C/CCGGG3'). TspMI was discovered and characterized during my PhD work in 2006. NEB is currently selling TspMI under catalog number [R0709](#).

Patents

- Inventor on a patent (pending) on “Engineered Ligand Switchable Affinity Reagents” filed with the United States Patent and Trademark Office (USPTO) (2012)
- Inventor on a patent (pending) on “Identification of small molecules that are antagonists of bacterial diguanylate cyclase enzymes” filed with the United States Patent and Trademark Office (USPTO) (2010)

HONORS AND AWARDS:

- Received an excellence in research award from New Jersey Health Foundation for 2016-17
- Selected to receive free FDA-approved compound library (worth \$10,000) from Rutgers Translational Science through internal competition (2016).
- Nominated for Blavatnik award (NYAS) by Rutgers University (2013).
- Selected internationally amongst 20 participants to attend *Summer School in Nanobiotechnology, Osaka University, Japan*. Awarded funds for travel and

accommodation (2004).

- Received travel award for 5th NEB meeting on restriction /modification systems, Bristol, United Kingdom (2004).

SERVICE ON EDITORIAL BOARD:

Editorial board member: *Scientific Reports*, Nature publishing group (January 2015 –present)

PEER REVIEWED ARTICLE:

Frontiers in Microbiology (2015)

MEMBERSHIPS, OFFICES AND COMMITTEE ASSIGNMENTS IN PROFESSIONAL SOCIETIES:

- Member of the New York Academy of Sciences (NYAS), New York, 2006- present
- Member of American Heart Association Society, 2013-present

SERVICE ON SCHOOL COMMITTEES:

- Member of Student-Faculty Relations Committee (2014- current)
- Member of Faculty Affairs Committee (2016- current)
- Associate faculty member in the Graduate School of Biomedical Sciences (June 2014-Present)

SERVICE ON GRADUATE SCHOOL COMMITTEES:

Masters student qualifying committees (2): Ms. Chaitra Parthiban, MS in Biomedical Science (2015); Mr. Anoop Nandanor, MS in Dentistry (2015).

SERVICE TO THE COMMUNITY:

Poster judge for Balbo day, Rutgers School of Dental Medicine (2015 and 2016)

PRESENTATIONS:

- Talk entitled “*Small molecules, big effects: structural biology of bacterial signal transduction*” at Department of Biological Sciences, University of Delaware, DE (2017) -Platform speaker
- Talk entitled “*How bacteria make decisions?*” at Rutgers School of Dental Medicine, NJ (2016) -Platform speaker
- Talk entitled “*Small molecules, big effects: c-di-AMP signaling in Gram –positive bacteria*” at Oral Biology Department, Rutgers University, NJ (2016) -Platform speaker
- Talk entitled “*How bacteria talk?*” at Oral Biology Department, Rutgers, NJ (2015) -Platform speaker
- Invited talk entitled “*Structural Biology of Bacterial Signal Transduction*” at Oral Biology Department, Rutgers University, NJ (2013) -Platform speaker
- Invited talk entitled “*A Spring-Loaded Mechanism Regulating Bacterial Quorum Sensing*” at Department of Biochemistry and Molecular Biology, Rutgers, NJ (2013) -Platform speaker
- *New York Structural Biology Discussion Group 7th Winter Meeting*, NYAS, NY (2012) –Poster presenter
- *Gordon Research Conference on Sensory Transduction in Microorganisms*, CA (2012)-Poster presenter
- *New York Bacillus Interest Group (NYBIG) meetings*, New York University, NY (2008, 2010 & 2012) -Platform speaker

- 5th *New England Biolabs Meeting on Restriction / Modification Systems*, Bristol, United Kingdom (2004) -Poster presenter

TEACHING EXPERIENCE:

A. Course Lectures:

Teaching Oral Biology course (OBIO7307) to students at Rutgers School of Dental Medicine (2014, 2015, and 2016).

B. Research Training (during postdoctoral research)

- Supervised a Master's thesis student (2012)
- Supervised and designed project for a Master's thesis student (2012)
- Supervised an undergraduate student for summer internship (2011)
- Supervised four PhD students for their laboratory rotation projects (2007-2012)
- Mentored one high school student (2009)
- Trained 3 graduate students and laboratory personnel in protein purification techniques (2006-2007)
- Served as a tutor in the *Advances in Molecular Biology and Biotechnology* for first year Master's students (2003-2005)
- Mentored four Masters students for their thesis project (2003-2005)

PRIMARY MENTORSHIP OF CANDIDATES FOR POSTGRADUATE DEGREE:

- *Master of Science in Dentistry Thesis Students (3)*: Ushma Vyas (July 2015 to December 2015); Haifa Alkhodier (July 2014 to March 2015); Hafsa Effendi (July 2016- September 2016)
- *GSBS Master's Rotation students (9)*: Mohammed Shomrat (2014); Haetnim Kim (2016), Haritha Nallaparaju (2016), Brent Vasquez (2015), Jesse Wagner (2014), Juhi Shah (2014); Parita Ratnani (2017); Harpreet Kaur (2017)
- *Intern students (9)*: Rakesh Chanda (2014); Anita Kabaria (2016); Shreya Bambhure (2016); Kevin Cheng (2015); Rajani Bhore (2015), Shreya Bambhure (2016); Anita Kabaria (2016); Kinjal Mehta (2017); Mina Wasfy (2017)
- *Summer 8-week Research Program for Dental students (2)*: Andrew Huy (2015 summer); Kevin Cheng (2016 summer)
- *Summer Undergraduate 8-week Research Program at GSBS (3)*: Alison Schroeder (2014); Brady Goulden (2015); Chris Hogge (2016)

PRIMARY MENTORSHIP OF POSTDOCTORAL FELLOWS:

- Ketan Patel, May 2015-October 2016
- Anirudha Dutta, January 2017-Present