Rahul P. Patel

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EDUCATION

2018-Present	University of North Carolina-Chapel Hill	PhD	Neuroscience Thesis Advisor: Mark Zylka Thesis: Developing Scalable Technologies to Measure Spontaneous Pain in Rodents
2013-2017	Rutgers University	B.A.	Cell Biology and Neuroscience Psychology Minor

SELECTED PREVIOUS RESEARCH EXPERIENCE

2015-2018	Dr. Eric Hargreaves, Division of Neurosurgery, Rutgers-RWJMS *Regression Modeling of Deep Brain Stimulation Device Longevity*
2014-2018	Dr. Federico Sesti, Department of Neuroscience and Cell Biology, Rutgers-RWJMS *-Modulation of Cytoskeletal Dynamics under Conditions of Cellular Stress* *-Development of a High-Throughput C.elegans Assay Designed to Expedite Drug Discovery*
2014-2014	Dr. Jianmin Chen, Department of Cell Biology and Neuroscience, Rutgers University *Role of Ataxia-telangiectasia Mutated in the Pathology of Alzheimer's Disease*
2014-2014	Dr. Tracey Shors, Department of Psychology, Rutgers University *Stress of Sexual Aggression and its Effects on Neurogenesis and Learning*

PUBLICATIONS

Chen CH*, **Patel R*,** Bortolami A, Sesti F. (2020). A novel assay for drug screening that utilizes the heat shock response of *Caenorhabditis elegans* nematodes. PLOS ONE 15(10): e0240255. *contributed equally to this work

Patel R, Sriramoji S , Marucci M , Ibrahim A, Shah S , Sesti F. (2017). Cytoskeletal Remodeling via Rho GTPases during Oxidative and Thermal Stress in *Caenorhabditis elegans*. *Biochemical and Biophysical Research Communications*, 492: 338-342. PMID: 28859988.

Patel R and Sesti F. (2016). Oxidation of ion channels in the aging nervous system. *Brain Research*, 1639: 174-85. PMID: 26947620.

PATENTS

US Patent App. 16/468,239 — Federico Sesti and **Rahul Patel**
"Screening for Agents that Target the Actin Cytoskeleton Using Recombinant *C. elegans* Expressing Human Genes"

GRANTS & FELLOWSHIPS

2021	UNC-CH	Collaborative Cross Pilot Program($8,544)(**Co-I**)
2020-2023	National Science Foundation	Graduate Research Fellowship ($138,000)(**Recipient**)
2019	NINDS	Neuroscience Predoctoral Training Grant (**Trainee**)
2018	National Science Foundation	PFI-Tech Transfer ($200,000) (**Consultant**, PI: Sesti)
2017	National Science Foundation	Innovation Corps Award ($50,000) (**EL**, PI: Sesti)
2017	Rutgers University	Aresty Undergraduate Research Fellowship ($900)
2016	Rutgers University	Aresty Undergraduate Research Fellowship ($1,000)

HONORS & AWARDS

2014	Rutgers University	Aresty Research Center Research Assistant Stipend Award ($1,000)
2015	Rutgers University	Interdisciplinary Boot Camp in Quantitative Biology Scholar
2015	Rutgers University	Aresty Research Center Conference Travel Award (for the Society for Neuroscience 45th Annual Meeting) ($400)
2016	Rutgers University	Aresty Research Center Conference Travel Award (for the Society for Neuroscience 46th Annual Meeting) ($500)
2016	Mt. Sinai School of Medicine	Undergraduate Research Symposium in Biological, Chemical, Structural, and Computational Sciences 1st Place Poster Award ($100)
2016	Society for Neuroscience	Early Career Policy Ambassadorship Program
2017	F.U.N	Faculty for Undergraduate Neuroscience (F.U.N) Travel award for SfN 2017 ($750)
2018	NSF	Honorable Mention for NSF GRFP
2019	NIH	Scholarship to attend The Whole Scientist Workshop ($500)
2019	The Jackson Laboratory	Travel Award to attend The Whole Scientist Workshop ($500)
2019	UNC-NCSU BME Dep.	1st Place Poster Presentation at 2019 Departmental Retreat ($50)
2020	UNC School of Medicine	Single-cell RNAseq data analysis workshop

TEACHING

2014-2016	Rutgers University	Writing Center Tutor
2015-2017	Rutgers University	PSY340: Abnormal Psychology (Undergraduate TA)
2020-Current	UNC-Chapel Hill	NCSI 222: Learning (Guest Lecturer)

INDUSTRY COLLABORATIONS

2017-2020	Eli Lilly and Company	**Rahul Patel** and Federico Sesti Validation of *C.elegans* based Drug Discovery Platform
2018-2020	Merck and Company	**Rahul Patel** and Federico Sesti Automation of a *C.elegans* based Drug Discovery Platform

ORAL PRESENTATIONS

1. **Rahul Patel** and Andrea Giovannucci. "Optical Dissection of Motor Learning". First-Year Data Blitz, Neuroscience Curriculum Retreat 2019. Haw River, Summit Center, Browns Summit, NC; May 9th, 2019.
2. **Rahul Patel** and Federico Sesti. "Heat shock as a Novel Paradigm for Drug Discovery". Amedeo Avogadro University of Eastern Piedmont, Department of Health Sciences. Novara, Italy. July 27th, 2018.
3. **Rahul Patel** and Eric Hargreaves. Deep brain stimulation battery longevity of Medtronic Activa PC neurostimulators; parameter contribution using linear regression models. 47th Annual Meeting of the Society for Neuroscience. Washington, DC. November 12th, 2017
4. **Rahul Patel** and Federico Sesti. "Actin Remodeling during Oxidative and Thermal Stress". Aresty Research Colloquium. Rutgers University, New Brunswick, NJ. May 3rd, 2017
5. **Rahul Patel** and Federico Sesti. "Elucidating the role of the actin cytoskeleton in the thermal stress response of cells". Aresty Research Colloquium. Rutgers University, New Brunswick, NJ. May 4th, 2016
6. **Rahul Patel** and Federico Sesti. "Modulation of Rho GTPases Activity During Aging and Thermal Insult". Rutgers Worm Super-Group Meeting. Nelson Biology Laboratories, Piscataway Township, NJ. February 24th, 2016
7. **Rahul Patel** and Eric Hargreaves."DBS Battery Decay of Activa PC Neurostimulators; Initial Clinical Data". 2nd Annual Delaware Valley Regional Movement Disorder Meeting. City Tavern, Philadelphia, PA. December 3rd, 2015

8. **Rahul Patel** and Federico Sesti. "Genetic intervention on Rho signaling ameliorates the toxic effects of Aβ42 in *Caenorhabditis elegans* neurons". Aresty Research Colloquium. Rutgers University, New Brunswick, NJ. May 1st, 2015

ABSTRACTS AND POSTER PRESENTATIONS

1. **RP. Patel,** C. Zhou, CJ. Bennett, MH. Eybposh, R.Rucho, G. Labrozzi, C. Cai, R. Kolagani, J. Turner, A. Huang, F. Frohlich, A. Giovannucci. Eye-Blink Conditioning in Awake and Intact Ferrets. 49th Annual Meeting of the Society for Neuroscience. Chicago, IL; October 19th-23rd, 2019.
2. **R Patel**, C Cai, C Bennett, MH Eybposh, R Roucho, G Labrozzi, C Zhou, R Kolagani, C Ha, J Turner, A Huang, F Frohlich, A Giovannucci. Dissecting the role of cerebellar neural populations in associative learning. 2019 UNC/NCSU Joint Department of Biomedical Engineering Departmental Retreat; Durham, NC; September 27th, 2019.
3. G Labrozzi*, C Bennett*, J Turner, A Kouminov, **R Patel**, MH Eybposh, R Kolagani, C Cai, R Warren, N Pegard, A Giovannucci. A Low-Cost Hardware Setup for Tracking Animal Behavior and Learning. 2019 UNC/NCSU Joint Department of Biomedical Engineering Departmental Retreat; Durham, NC; September 27th, 2019.
4. **R. Patel,** C. Cai, MH. Eybposh, C. Zhou, C. Bennett, J. Turner, G. Labrozzi, R. Roucho, A. Huang, F. Frohlich, A. Giovannucci. Dissecting the Role of Cerebellar Neural Populations in Associative Learning. Gordon Research Conference Cerebellum. Les Diablerets CH-1865, Switzerland; July 14-19th, 2019.
5. **R. Patel**, H. Eybposh, R. DiPaola, D. Schneider, S. Wong, A. Giovannucci, S. Danish, E. Hargreaves. Deep brain stimulation battery longevity of medtronic activa PC neurostimulators; parameter contribution using linear regression models and machine learning. Carolina Neurostimulation Conference. Chapel Hill, North Carolina; May 5-6th, 2019.
6. **Rahul Patel**, Bei Liu, Joline Tung, Orrin Stone, and Klaus Hahn. Probe and Control Protein Activities During Phagocytosis. 2018 BBSP and PREP Poster Session. Chapel Hill, NC; November 12th, 2018.
7. Federico Sesti and **Rahul Patel**. Cytoskeletal remodeling via Rho GTPases during oxidative and thermal stress. 62nd Annual Meeting of the Biophysical Society. San Francisco, California; February 18-21, 2018.
8. **RP. Patel**, RJ DiPaola, DP. Schneider, S. Wong, SF. Danish, and EL. Hargreaves. Deep brain stimulation battery longevity of Medtronic activa pc neurostimulators; parameter contribution using linear regression models. 47th Annual Meeting of the Society for Neuroscience. Washington, DC; November 11-15th, 2017.
9. EL. Hargreaves, **RP. Patel**, RJ. Dipaola, S.Wong, DL. Caputo, and SF, Danish. Deep Brain Stimulation (DBS) battery longevity of Medtronic Activa SC is briefer than preceding Soletra models, a within subject analysis. The International Parkinson and Movement Disorder Society (MDS). Vancouver, BC; June 4-8th
10. **Patel R**, Duffy J, and Sesti F. High-Throughput Pharmacology: C.elegans for target specific and phenotypic screening. 12th Annual Conference of Protein Kinases in Drug Discovery. San Diego, CA; February 8-9th, 2017.
11. Hargreaves EL, **Patel RP**, DiPaola RJ, and Danish SF. Battery longevity of Medtronic Activa family of neuromodulation devices: nonlinear regression of clinical battery decay curves and supplemental end of service thresholds. 46th Annual Meeting of the Society for Neuroscience. San Diego, CA; November 12-16th, 2016
12. **Patel RP**, DiPaola RJ, Danish SF, Wong S, and Hargreaves EL. Deep brain stimulation Activa SC neurostimulator battery longevity: Initial clinical data. 46th Annual Meeting of the Society for Neuroscience. San Diego, CA; November 12-16th, 2016.
13. **Patel R**, Sriramoji S, and Sesti F. Oxidative Stress Susceptible Guanine Nucleotide Exchange Factor 1 (OSG-1) meditated thermotolerance in the heat shock response of *C.elegans*. Undergraduate Research Symposium in Biological, Chemical, Structural, and Computational Sciences. Ichan School of Medicine, Mount Sinai; New York City, NY; September 17th, 2016.
14. **Patel RP**, Scurato NM, and Sesti F. Oxidative Stress Susceptible Guanine Nucleotide Exchange Factor 1 (OSG-1) meditated thermotolerance in the heat shock response of C.elegans. 10th Annual William Paterson University Research Symposium. Wayne, NJ. April 9th, 2016.

15. Hargreaves EL, **Patel RP**, Wong S, DiPaola RJ, Mammis A, and Danish SF. Battery Longevity of Activa PC: Initial Clinical Data and Nonlinear Regression of Battery Decay Curves. 19th Annual Meeting of the North American Neuromodulation Society. Las Vegas, NV; December 10-13th, 2015.
16. **Patel R**, Marucci M, Patel D, and Sesti F. Rho signaling is implicated in the heat shock response of C. elegans. 1st Annual Brain Health Institute Symposium. Jersey City, NJ. October 26th, 2015.
17. **Patel R**, Duan Z, and Sesti F. Guanine nucleotide exchange factor OSG-1 confers functional aging via dysregulated Rho signaling in *Caenorhabditis elegans* neurons. 45th Annual Meeting of the Society for Neuroscience. Chicago, IL; October 17-21, 2015.
18. **Patel R**, DiPaola RJ, Danish SF, Wong S and Hargreaves EL. Deep brain stimulation battery decay of Activa PC neurostimulators; initial clinical data. 45th Annual Meeting of the Society for Neuroscience. Chicago, IL; October 17-21, 2015.

ENTREPENURIAL VENTURES

2021-Present Hypothesis to Hardware, LLC (**CEO and Founder**)

SOCIETY MEMBERSHIPS

2015-2021 Society for Neuroscience
2017-2021 Society for Laboratory Automation and Screening
2021-Present International Association for the Study of Pain

LEADERSHIP & SERVICE

2014-2017 Peer Reviewer, IMPULSE - The Premier Undergraduate Neuroscience Journal
2014-2015 Global Health Chair, American Medical Student Association
2014-2015 Treasurer, Reach Out and Read
2014-2016 Founder and President, Knights Against Neurological Diseases and Disorders
2015 Panelist, Rutgers Writing Program: "Successful Science & Technical Writing, Effective Research, and Winning Grant Proposals"
2016 2016 Hill Day Participant, Society for Neuroscience
2016-2016 Public Education Intern, Society for Neuroscience
2016 Poster Presenter, Society for Neuroscience 46th Annual Meeting Advocacy Reception
2016-2017 Undergraduate Representative, New Jersey Society for Neuroscience Chapter
2017 2017 Hill Day Participant, Society for Neuroscience
2017 Panelist, Rutgers iJobs Initatitive (NIH Broadening Experiences in Scientific Training (BEST), Science Policy Careers Panel
2018-2021 Advocacy Committee Member, Society for Laboratory Automation and Screening
2019 Carolina Neurostimulation Conference Planning Committee Member (Data Analysis)
2019-Present Student Selected Speaker Committee Member, Neuroscience Curriculum, UNC-CH
2020 Speaker, United States Graduate School Admissions Process, ScienceBeyondBooks

SCIENCE WRITING AND COMMUNICATION

Rahul Patel. Why Our Undergraduate Perspectives Matter in Advocacy. Neuronline. November 29th, 2016.
Rahul Patel. Image of the Week: Look Inside the Dentate Gyrus. Brainfacts.org. July 8th, 2016.
Rahul Patel. Image of the Week: Signaling Across Brain Regions. Brainfacts.org. July 25th, 2016.
Rahul Patel. Image of the Week: The Brain's Stop Signs. Brainfacts.org. August 19th, 2016.
Rahul Patel. Image of the Week: The Cells Behind Movement and Coordination. Brainfacts.org. September 9th, 2016.
Rahul Patel. Scientific Advocacy: Initiating Conversation with Local Policymakers. Neuronline. January 12th,

2017.
Rahul Patel. The Effects of Federal Funding on the Undergraduate Research Experience. The Examiner-Rutgers' Pre-Health Journal. April 25th, 2017.
Rahul Patel. The Benefits of Taking a Gap Year before Grad School. Neuronline. August 29th, 2018.
Rahul Patel. How to Prepare for Your Grad School Interview Weekend. Neuronline. December 21st, 2018.
Rahul Patel. Questions to Answer Before You Choose a Grad Program. Neuronline. February 19th, 2019.
Rahul Patel and Rachel Gilfarb(host). Measuring Spontaneous Pain. Why the F*** should we care? April 4th, 2021

MENTORING

Current:
University of North Carolina-Chapel Hill: Tracy Ann Boodhoo (03/2021-Current, 4th year Computer Science major), Rohan Ray (02/2021-Current, 1st year Neuroscience and Computer Science major), Maggie Snyder (07/2021-Current, 4th year Biomedical Engineering major, BME Honor's Thesis Student), Abigail Trocinski (01/2021-Current, 2nd year Biology and Neuroscience major).
Previous:
University of North Carolina-Chapel Hill: Catherine Bennet (05/2019-12/2019, 4th year Biomedical Engineering Major, 2019 UNC Office of Undergraduate Research Travel Awardee ($300), 2019 UNC/NCSU Departmental Retreat 3rd place best Poster Design Winner), Gabrielle Labrozzi (05/2019-07/2020, 4th Year Biomedical Engineering Major, Honors Thesis Student, 2019 UNC/NCSU Departmental Retreat 3rd place best Poster Design Winner, 2019 UNC/NCSU Abram's Scholar ($2,500 Fellowship), Current: PhD Student at Case Western Reserve University in the Biomedical Engineering PhD Program), Ramya Kolagani (08/2019-07/2020, 3rd year Neuroscience Major, Honors College), Miles Lee (02/20-07/2020, 2nd year Biomedical Engineering Major), Ross Rucho (05/2019-08/2019, 4th year Biomedical Engineering and Computer Science Double Major), Nicholas Ringelberg (06/2019-07/2019, B.A., Rotation MD/PhD student).
North Carolina State University: Joseph Turner (05/2019-08/2019, Summer of Learning and Research (SOLAR) student, 3rd place best elevator pitch talk in SOLAR program, 1st year Biomedical Engineering Major).
Rutgers: Michael Munafo (2017-2018, B.A., Cell Biology and Neuroscience Major and Aresty Undergraduate Research Fellow), Ge Bai (2018-2018, 3rd Year Cell Biology and Neuroscience Major and Aresty Undergraduate Research Fellow), Uma Komatreddy (2018-2018, 3rd Year Cell Biology and Neuroscience Major and Aresty Undergraduate Research Fellow), and Mathujan Yogarajah (2018-2018, 2nd Year Cell Biology and Neuroscience Major)
The College of New Jersey: Aziz Ibrahim (2016-2018, 2nd year student in Biology and Political Science, Contributing author on Patel et al., 2017)