Pratik Kumar, PhD

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EDUCATION & PROFESSIONAL APPOINTMENTS

Postdoc	HHMI Janelia Research Campus, VA, USA	Luke Lavis/Martin Schnermann (NCI/NIH)		2019–
PhD	Stony Brook University, NY, USA	Chemistry	Scott Laughlin	2019
MS/BS	IISER-Kolkata, India	Chemistry	Rituparna Roy	2013
Diploma	JNCASR, Bangalore, India	Chemistry	Jayanta Haldar	2012

Marine Biological Association, Plymouth, UK	Electrophysiology & Imaging (virtual)	2021
HHMI Janelia Research Campus, VA	Scientists Teaching Science	2020
Marine Biological Laboratory, Woods Hole, MA	Microscopy (OMIBS)	2018
Alan Alda center for Communicating Sciences, NY	Science Communication	2015–18

HONORS & AWARDS

Outstanding Doctoral Student, Maria Tzamarioudaki Memorial Award**,** Stony Brook University 2019

Outstanding Service award, Department of Chemistry, Stony Brook University 2019

New York State Graduate Student Employee Union Professional Development Award 2019

The Histochemical Society Travel Award 2018

Marine Biological Laboratory Scholarship 2018

Distinguished Travel Award by Graduate Student Organization, Stony Brook University 2018
Nominated by the Dept. of chemistry and then selected from the pool of all departmental nominations

ACS Biological Chemistry Travel Award 2017

Best poster Award, Institute of Chemical Biology & Drug Discovery, Stony Brook University 2017

SUNY Research Foundation Professional Development Award 2017

ACS Interdivisional Sci-Mix, ACS-San Francisco 2017
One of the 18 posters (out of ~200) selected from the ACS Biological Chemistry division

3MT-People's Choice Award (3-minute thesis), Stony Brook University 2017

Departmental Distinguished Research Award, Stony Brook University 2016

German Research Foundation Travel Award, Lindau Nobel Laureate Meetings, Germany 2013

Dept. of Science & Technology (India) Travel Award, Asian Science Camp, South Korea 2011

POCE Fellowship, JNCASR, India 2009–11

INSPIRE Fellowship, Department of Science & Technology, India 2008–13

PATENT

Scott T. Laughlin, **Pratik Kumar**, Ting Jiang, Wei Huang. Compositions and methods for modular control of bioorthogonal ligation, WO2020113077, 2020.

PUBLICATIONS (Google Scholar | ORCID: 0000-0002-9516-0212)

1. **Pratik Kumar** & Luke D. Lavis (Invited). Melding synthetic molecules and genetically encoded proteins to forge new tools for neuroscience. Annual Review of Neuroscience, submitted.
2. **Pratik Kumar**, David Shukhman, & Scott T. Laughlin. Stable cyclopropene-containing analog of the amino acid neurotransmitter glutamate. Tetrahedron Letters**,** 2019, 60, 1476–1480.
3. **Pratik Kumar**, Omar Zainul, Frank Camarda, Ting Jiang, John Mannone, & Scott T. Laughlin. Second generation caged cyclopropenes with improved kinetics for controlling bioorthogonal reactivity. Organic Letters, 2019, 21, 3721-3725.
4. Ting Jiang, **Pratik Kumar**, Wei Huang, Wei-Siang Kao & Scott T. Laughlin. Modular enzyme- and light-based activation of the cyclopropene-tetrazine ligation. ChemBioChem, 2019, 20(17), 2222–2226.
5. **Pratik Kumar** & Scott T. Laughlin (Invited Book chapter). Modular activatable bioorthogonal reagents. Methods in Enzymology, 2019, 622, 153–182.

6. **Pratik Kumar**, Ting Jiang, Omar Zainul, A. Preston, J. Farr, S. Li, Pavit Suri, & Scott T. Laughlin. Lipidated cyclopropenes via a stable 3-N spirocyclopropene scaffold. Tetrahedron Letters, 2018, 59, 3435–3438.
7. **Pratik Kumar***, Ting Jiang*, Sining Li, Omar Zainul, & Scott T. Laughlin. Caged cyclopropenes for spatiotemporal control of bioorthogonal reactivity. Organic & Biomolecular Chemistry, 2018, 16(22), 4081-4085. Featured on RSC blog: "Reactivity Caging Strategy for Controlling Bioorthogonal Reactivity"
8. **Pratik Kumar**, Omar Zainul, & Scott T. Laughlin. Inexpensive multigram-scale synthesis of cyclic enamines and 3-N spirocyclopropyl systems. Organic & Biomolecular Chemistry, 2018, 16(4), 652–656.
9. **Pratik Kumar**, David Shukhman, & Scott T. Laughlin. A light-activatable, cyclopropene-containing analog of the amino acid neurotransmitter glutamate. Tetrahedron Letters, 2016, 57, 5750–5752.
10. Jiaul Hoque, **Pratik Kumar**, Vinod K. Aswal, & Jayanta Haldar. Aggregation properties of amide bearing cleavable gemini surfactants by small angle neutron scattering and conductivity studies. Journal of Physical Chemistry B, 2012, 116(32), 9718-9726.
11. Jiaul Hoque, Padma Akkapeddi, Venkateswarlu Y., Divakara SSM Uppu, **Pratik Kumar**, & Jayanta Haldar. Cleavable cationic antibacterial amphiphiles: synthesis, mechanism of action, and cytotoxicities. Langmuir, 2012, 28(33), 12225-12234. Indian news: "Scientist Invents Biodegradable Detergent"

ORAL PRESENTATIONS

Invited

1. **Sabarmati Young Researcher Seminar Series**, Biological Engineering, IIT Gandhinagar 2021
   Multifunctional fluorescent dyes as molecular tools beyond imaging
2. **Project SEED, American Chemical Society** 2021
   Illuminating biology through fluorescent dyes
3. **SUNY-Suffolk community college**, Department of Natural Sciences, NY, USA 2018
   Activatable bioorthogonal reactions for biology

Conference

4. **IndiaBioscience PDF Meeting** 2021
   Chemigenetic multifunctional fluorophores
5. **HHMI-Janelia Research Campus** |Flash talk 2018
   Modular activatable cyclopropenes for spatiotemporal control of bioorthogonal reactivity
6. **New York Academy of Sciences—Chemical Biology Symposium**, NY, USA 2018
   Activatable cyclopropenes for spatiotemporal control of bioorthogonal reactivity

SELECTED POSTER PRESENTATIONS

1. **HHMI-Janelia Research Campus**, ProbeFest, VA, USA 2018
   Light- and enzyme-activatable cyclopropenes
2. **Rockefeller University**, Tri-Institutional Chemical Biology Symposium, NY, USA 2018
   Caged cyclopropenes for spatiotemporal control of bioorthogonal reactivity
3. **Gordon Research Seminars** & **Gordon Research Conference**, Bioorganic Chemistry, NH, USA 2018
   Caged cyclopropenes for spatiotemporal control of bioorthogonal reactivity
4. **NERCBI and Yale Chemical Biology Symposium**, CT, USA 2018
   Caged cyclopropenes for spatiotemporal control of bioorthogonal reactivity
5. **Icahn School of Medicine-Mount Sinai** & **ICB&DD-Stony Brook University**, Joint symposium on Frontiers in Chemical Biology and Drug Discovery, NY, USA | **Best poster award** 2017
   3*N* spirocyclopropenes provide spatiotemporal control of bioorthogonal reactivity
6. **New York Academy of Sciences**, Chemical Biology Symposium, NY, USA 2017
   Cyclopropene neurotransmitters for biorthogonal imaging of neural circuits
7. **Gordon Research Seminars** & **Gordon Research Conference**, High-Throughput Chemistry and Chemical Biology, NH, USA 2017
   Caged cyclopropenes for spatiotemporal control of bioorthogonal reactivity
8. At both **ACS National Meeting** & **ACS interdivisional Sci-Mixer presentation**, CA, USA 2017
   Cyclopropene neurotransmitters for biorthogonal imaging of neural circuits

9. **Stony Brook University**, Chemistry Research Day, NY, USA 2015
   Cyclopropene analogs of neurotransmitters for illuminating neural circuits
10. **Stony Brook University**, Chemistry Research Day, NY, USA 2014
    Fluorescent boronic acid probe as transsynaptic tracer of neural circuitry

PROFESSIONAL SERVICE

Reviewer| Journals: RSC Organic & Bimolecular Chemistry (2020–), ChemBioChem (2020–)
Meetings: European Molecular Imaging Meeting (2021), Gordon Research Seminars-Bioorganic Chemistry (2022), 70th Lindau Nobel Laureate Meetings

Co-Chair, Gordon Research Seminars-Bioorganic Chemistry 2022
Janelia Association of Research Scientists 2021–
Moderator, 70th Lindau Nobel Laureate Meeting Open Exchange Sessions 2021
Discussion leader, Gordon Research Seminars-Bioorganic Chemistry 2019
Vice-Chair, Gordon Research Seminars-Bioorganic Chemistry 2019
President, Graduate Chemical Society, SBU Apr 2017–Apr 2019
President, Student Invited Speaker Committee, Stony Brook Chemistry Spring 2017
Moderator (& organizer), Grad. Chemical Society career panel on non-academic careers Spring 2016
Moderator (& organizer), Graduate Career Association career panel on entrepreneurship Fall 2015
Vice-President, Graduate Career Association, SBU Fall 2015–Spring 2016
Senator for Chemistry at Graduate Student Organization, SBU 2015–Spring 2018
Public Relations officer, Graduate Chemical Society Spring 2015–Apr 2017

TEACHING EXPERIENCE

Graduate assistant, NMR facilities, SBU 2018, Spring 2019
Trained undergraduate, graduate, and postdoctoral trainees on setting up and analyzing ^{1}H, ^{13}C, COSY, and DEPT NMR on 400/500/700 MHz NMR instruments. Also, performed routine maintenance such liquid-nitrogen/helium refills.

Graduate assistant, Mass spectrometry facilities, SBU 2018, Spring 2019
Trained undergraduate-, graduate-, and postdoctoral-trainees on how to run and analyze liquid samples on ESI-mass spectrometer; run and obtain high-resolution mass-spectra of liquid samples; run solid samples on TLC-inject mass spectrometer; and properly maintain mass spectrometers.

Teaching assistant, Advanced organic chemistry lab, SBU Spring 2015
Led ~4 lectures on NMR and weekly laboratory course for ~30 chemistry-majors on how to set up multistep organic reactions; monitor the progress of reactions; purify reaction intermediates; analyze GC data; acquire and analyze IR data; analyze ^{1}H & ^{13}C NMR data; report spectroscopic and experimental data; and follow proper lab-safety techniques.

Teaching assistant, Undergraduate organic chemistry lab, SBU Fall 2013–Spring 2014
Led a weekly laboratory course for ~30 pre-med students on how to set up organic reactions; isolate and purify an reaction product; analyze GC data; analyze IR data; report experimental data; and follow proper lab-safety techniques.

Volunteer, High-School Chemistry, India Fall 2012, Summer 2013
Taught chemistry to underprivileged, primarily Hindi-speaking high schoolers preparing for an exam in English

MENTORING EXPERIENCE(TOTAL = 13)

3 PhD (rotation and 1st year of their PhD):
Wei Huang (Chemistry/Chemical Biology, co-authors on two manuscripts) Nov 2017–Dec 2018
Wei-Siang Kao (Chemistry/Chemical Biology, co-authors on two manuscripts) Nov 2017– Dec 2018
Ting Jiang (Chemistry/Chemical Biology, co-authors on four manuscripts) Nov 2016–Dec 2017

3 PhD rotation students: Lei Chen, Yilin Ma, Beilei Jiang 2016, 2017
1 MS student: Sining Li (Chemistry, co-authors on three manuscripts) Jan 2016–Apr 2017
5 Undergraduate students:
Nayarit Tineo (Biology, worked with Omar Zainul through SBU-INSPIRE program) Spring 2018
John Mannone (Chemistry, awarded URECA summer research fellowship) Nov 2017–Apr 2019
Frank Camarda (Pharmacology, co-authors on two manuscript) Nov 2017–Apr 2019

Omar Zainul (Pharmacology, and co-authors on four manuscripts) Sep 2016–Apr 2018
Awarded URECA summer research fellowship and Sigma-Xi Undergraduate Research Award

David Shukhman (Biochemistry, co-authors on one manuscript) Aug 2014–Apr 2016

1 High School student: Pavit Suri (W.T. Clarke high School, co-author on one manuscript) Summer 2017

OUTREACH

ACS Project SEED Speaker 2021

Science Coach, American Chemical Society 2020

Judge, Annual Biomedical Research Conference for Minority Students (ABRCMS) 2020

Volunteer, Janelia RESET team 2020
Teaching biology labs (~once/month) at nearby diverse and low-income elementary schools

"Life as a scientist and career in scientific research", Suffolk Community College, NY, USA 2018

Science Fair Judge for WAC Lighting Foundation Invitational science fair, NY 2017, 2018, 2021

Science Competition Judge for 5th Annual Nassau County science fair, NY 2017

3MT (3-minute thesis) **Judge**, SBU 2017

Graduate Chemical Society **research photo contest** winner, SBU 2016, 2017

Founder, *BrainChem* (~500 subscribers) 2016
A page for non-scientists where we explain interesting tidbits about chemistry and ecology using simple graphics