

Curriculum Vitae

Ishmail Abdus-Saboor

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Last updated: Feb 2021

Positions

Columbia University

- 2021– Principal Investigator, Zuckerman Mind Brain Behavior Institute
- 2021– Assistant Professor, Department of Biological Sciences

University of Pennsylvania

- 2018–2021 Mitchell & Margo Blutt Presidential Assistant Professor of Biology
- 2014–2018 Postdoctoral Fellow, Dpt. of Neuroscience, Advisor: Wenqin Luo, M.D., Ph.D.

Weill Cornell Medicine

- 2012–2014 Postdoctoral Fellow, Neuroscience, Advisor: Benjamin Shykind, Ph.D.

Education

- 2012 **University of Pennsylvania**
Ph.D., Cell and Molecular Biology, Advisor: Meera Sundaram, Ph.D.
- 2006 **North Carolina A&T State University**
B.S., Animal Science, *summa cum laude*

Awards and Honors

- 2021 Alfred P. Sloan Research Fellowship
- 2020 Rita Allen Foundation Scholar in Pain Award
- 2018 NIH Mitchell Max Award for Excellence in Pain Research
- 2017 NIH K99/R00 Pathway to Independence Award
- 2015 Burroughs Wellcome Fund PDEP Fellowship
- 2012 Tom Kadesch Prize in Genetic Research
- 2009 NIH Predoctoral Training Program in Genetics
- 2006 Gloria Twine Chisum Graduate Fellowship

Editorial Board Service

- 2020– Editorial Advisory Board, *Cell Reports*
- 2020– Reviewing Editor, *eLife*

Publications

Research Papers

Principal Investigator

- [17] Toussaint A., Foster W., Jones J.M., Kaufmann S., Wachira M., Hughes R., Bongiovanni A.R., Famularo S.T., Dunham B., Schwark R., Fried N.T., Wimmer M., **Abdus-Saboor I.** “Chronic paternal morphine exposure increases sensitivity to morphine-derived antinociception.”

bioRxiv doi.org/10.1101/2021.02.07.430143 (2021)

- [16] Jones J.M., Foster W., Twomey C.R., Burdge J., Ahmed O.M., Pereira T.D., Wojick J.A., Corder G., Plotkin J.B., **Abdus-Saboer I.** “A machine-vision approach for automated pain measurement at millisecond timescales.” *eLife* 9:e57258 (2020).
- [15] Rossi H.L., See L.P., Foster W., Pitake S., Gibbs J., Schmidt B., Mitchell C.H., **Abdus-Saboer I.** “Evoked and spontaneous pain assessment in a dental pulp injury model.” *Scientific Reports* 17;10(1):2759 (2020).
- [14] Pitake S., Middleton L.J., **Abdus-Saboer I.**, Mishra S.K. “Inflammation induced sensory nerve growth and pain hypersensitivity requires the N-type calcium channel Cav2.2.” *Front Neurosci.* 19;13:1009 (2019).

Postdoctoral Fellow

- [13] **Abdus-Saboer I.**, Fried N.T., Lay M., Burdge J., Swanson K., Fischer R., Jones J., Dong P., Cai W., Guo X., Tao Y.X., Bethea J., Ma M., Dong X., Ding L., Luo W. “Development of a mouse pain scale using sub-second behavioral mapping and statistical modeling.” *Cell Reports* 6;28(6):1623-1634 (2019).
- [12] Olson W., **Abdus-Saboer I.**, Cui L., Burdge J., Raabe T., Ma M., Luo W. “Sparse genetic tracing reveals regionally specific functional organization of mammalian nociceptors.” *eLife* 12;6:e29507 (2017).
- [11] Cui L., Miao X., Liang L., **Abdus-Saboer I.**, Olson W., Fleming M.S., Ma M., Tao Y.X., Luo W. “Identification of early RET+ deep dorsal spinal cord interneurons in gating pain.” *Neuron* 91, 1–17 (2016).
- [10] **Abdus-Saboer I.**, Al Nufal M.J., Agha M.V., Ruinart de Brimont M., Fleischmann A., Shykind B.M. “An expression refinement process ensures singular odorant receptor gene choice.” *Current Biology* 26, 1083–90 (2016).
- [9] Fleischmann A., **Abdus-Saboer I.**, Sayed A., Shykind B. “Functional interrogation of an odorant receptor locus reveals multiple axes of transcriptional regulation.” *PLoS Biology* 11(5):e1001568 (2013).

Graduate Student

- [8] **Abdus-Saboer I.**, Stone C.E., Murray J.I., Sundaram M.V. “The Nkx5/Hmx homeodomain protein MLS-2 is required for proper tube cell shape in the *C.elegans* excretory system.” *Developmental Biology* 366, 298–307 (2012).
- [7] **Abdus-Saboer I.**, Mancuso V.P., Murray J.I., Palozola K., Norris C., Hall D.H., Howell K., Huang K., Sundaram M.V. “Notch and Ras promote sequential steps of excretory tube development in *C.elegans*.” *Development* 138, 3545–3555(2011).

Protocols

- [6] Burdge J., Fried N., **Abdus-Saboer I.** “Using high-speed videography for objective and reproducible pain measurement on a mouse pain scale.” **Star Protocols** 2, 100322 (2021)

Invited Reviews

- [5] Inclan-Rico J.M., Kim B.S.*, **Abdus-Saboer I.*** “Beyond somatosensation: Mrgprs in mucosal tissues.” **Neuroscience Letters** Feb 11;135689 (2021) (* joint corresponding authors)
- [4] Fried N.T., Chamesian A., Zylka M.J., **Abdus-Saboer I.** “Improving pain assessment in mice and rats with advanced videography and computational approaches.” **Pain** 161(7):1420-1424 (2020).
- [3] Schaffler M.D., Middleton L.J., **Abdus-Saboer I.** “Mechanisms of tactile sensory phenotypes in autism: current understanding, and future directions for research.” **Current Psychiatry Rep.** 5;21(12):134 (2019).
- [2] **Abdus-Saboer I.**, Fleischmann A., Shykind B. “Setting limits: maintaining order in a large gene family.” **Transcription** 5:e28978 (2014).

Book Chapters

- [1] **Abdus-Saboer I.**, Luo W. “Measuring mouse somatosensory reflexive behaviors with high-speed videography, statistical modeling, and machine learning” in “**Contemporary approaches to the study of pain: from molecules to neural networks.**” (Editor: Rebecca Seal) **Springer Nature**, 2021 (in press)

Grant Support

- 9/2021 – 8/2023 Alfred P. Sloan Research Fellowship. \$75,000 direct costs. Role: Principal Investigator.
- 9/2020 – 8/2023 Rita Allen Foundation Scholar in Pain Award. “Discovering behavioral signatures of pain at millisecond timescales.” \$150,000 direct costs. Role: Principal Investigator.
- 9/2017 – 8/2021 NIH K99/R00 Pathway to Independence Award (DE026807). “Determining the functions of molecularly defined populations of nociceptors in spinal and dental pain.” \$1,116,555 total costs. Role: Principal Investigator.
- 9/2015 – 8/2018 Burroughs Wellcome Fund Postdoctoral Enrichment Program. “Defining the neural mechanisms mediating crosstalk between touch and pain.” \$60,000 direct costs. Role: Principal Investigator
- 6/2016 – 12/2017 Burroughs Wellcome Fund Collaborative Research Travel Grant. “Optogenetic and brain imaging investigation of pain neural circuitry.” \$8,000 direct costs. Role: Principal Investigator; Co-Investigator: Jin Lee, Stanford

9/2014 – 7/2017 NIH IRACDA Postdoc Fellowship (K12 GM081295). “Dissect neural mechanisms underlying the crosstalk between touch and pain.”

9/2009 – 8/2011 NIH Predoctoral Training Program in Genetics (T32 GM008216)

Invited Research Talks

77. University of Washington , Department of Biological Structure Seminar Series	12/9/21
76. Salk Institute for Biological Sciences , Thursday Seminar Series	4/8/21
75. Williams College , Class of 1960 Scholar Speaker Series	3/31/21
74. University of Southern California , Neurobiology Seminar Series	3/22/21
73. Texas Pain Research Consortium , Seminar Series	3/15/21
72. George Washington University , IBS Neuroscience Seminar Series	3/11/21
71. University College London , Gatsby Computational Neuroscience Series	3/5/21
70. University of Chicago , Neuroscience Seminar Series	2/23/21
69. New York University School of Medicine , Marie Daly Speaker Series	2/19/21
68. Duke University , Department of Neurobiology Seminar Series	2/16/21
67. Allen Institute for Brain Science , Inaugural Black History Month Seminar Series	2/9/21
66. Middlebury College , Neuroscience Seminar Series	2/5/21
65. University of California San Diego , Neuroscience Seminar Series	1/12/21
64. Northeastern University , Biology Colloquium	12/7/20
63. Washington University in St. Louis , Anesthesiology Research Seminar Series	12/1/20
62. Weill Cornell Medicine , Frontiers in Neuropsychiatry Seminar Series	11/24/20
61. University of Pittsburgh & Carnegie Mellon University , CNBC ERC Series	11/18/20
60. UT Health San Antonio , Dpt of Pharmacology & Center for Biomedical Neuroscience	11/11/20
59. Johns Hopkins University , Department of Biology Seminar Series	11/5/20
58. University of Iowa , Neuroscience Institute Seminar Series	10/30/20
57. Neuromatch Meeting , Keynote Talk	10/28/20
56. University of Michigan , Department of Molecular, Cell, Developmental Biology	10/16/20
55. Johns Hopkins University , Department of Biochemistry and Molecular Biology	10/12/20
54. Columbia University , Zuckerman Institute, Breakthroughs in Neuroscience Series	9/29/20
53. National Institutes of Health , Animal Genetics Consortium	9/24/20
52. Drexel University , Department of Neurobiology and Anatomy Seminar Series	9/23/20
51. Georgetown University , Department of Pharmacology and Physiology	9/10/20
50. National Institutes of Health , Early Career Investigators in Addiction Neuro Series	8/12/20
49. Johns Hopkins University , Department of Pharmacology & Molecular Sciences	7/22/20
48. Stanford University & Chinese Academy of Sciences ; Neuro Zoom	7/6/20
47. University of Virginia , Neuroscience Department, <u>Inaugural Juneteenth Lecture</u>	6/15/20
46. Pain Research Forum ; moderated by Cheryl Stucky, Wisconsin	3/24/20
45. Rowan University , Molecular and Cellular Biosciences Seminar Series	2/28/20
44. Temple University , Neuroscience Seminar Series	2/12/20
43. Keystone Symposium , Pain: Aligning the Target, Colorado	2/3/20
42. University of Pennsylvania , Dermatology Research Seminar Series	1/14/20
41. University of Pennsylvania , Neuroscience Graduate Group Public Lecture on Pain	12/5/19
40. University of Pennsylvania , Psychology Department Colloquium Series	12/2/19
39. University of Texas at Dallas , School of Behavioral and Brain Sciences	11/7/19

38. **Lasalle University**, Department of Biology 10/1/19
37. **University of Illinois at Chicago**, Integrative Neuroscience Seminar Series 9/26/19
36. **Fox Chase Cancer Center**, Molecular Therapeutics Department 6/20/19
35. **University of Maryland Baltimore County**, Dpts. of Biology; Chemistry/Biochemistry 5/8/19
34. **University of Washington**, Neuroscience Seminar Series 3/14/19
33. **North Carolina A&T State University**, Department of Biology 1/23/19
32. **University of California Santa Cruz**, Dpt. Molecular, Cell, Developmental Biology 1/14/19
31. **St. Joseph's University**, Department of Biology 11/14/18
30. **University of Pennsylvania**, Center for Neurobiology and Behavior Seminar 10/26/18
29. **Mid-Atlantic Pharmacology Society Meeting**, Philadelphia, PA 9/27/18
28. **University of Pennsylvania**, mindCORE Seminar Series 9/4/18
27. **Gordon Conference**, Molecular and Cellular Neurobiology, Hong Kong 7/3/18
26. **National Institutes of Health**, Pain Consortium Symposium 5/31/18
25. **Rockefeller University**, Sense to Synapse Conference 5/12/18
24. **Vanderbilt University School of Medicine**, Emerging Scholars Lecture 5/3/18
23. **Meharry Medical College**, Department of Biochemistry and Cancer Biology 5/2/18
22. **Bryn Mawr College**, Chemistry Colloquia Series 4/16/18
21. **Duke University**, Department of Pharmacology 2/20/18
20. **New York University**, Department of Oral Surgery 2/7/18
19. **University of Pennsylvania**, Department of Biology 1/11/18
18. **University of Pennsylvania**, Department of Oral Surgery & Pharmacology 12/14/17
17. **Johns Hopkins University**, Department of Pharmacology & Molecular Sciences 12/12/17
16. **Temple University**, Center for Substance Abuse Research 12/7/17
15. **Society for Neuroscience Meeting**, Washington D.C. 11/11/17
14. **Haverford College**, Department of Biology 4/3/17
13. **Syracuse University**, Department of Biology 3/10/17
12. **Rutgers University Camden**, Department of Biology 1/19/17
11. **Swarthmore College**, Department of Biology 11/30/16
10. **Mount Holyoke College**, Department of Biological Sciences 11/8/16
9. **University of Pennsylvania Dental School**, Levy Series 10/27/16
8. **Bucknell University**, Department of Biology 10/3/16
7. **Rutgers University Camden**, Department of Biology 3/10/16
6. **Virginia Tech University**, Department of Biochemistry 1/13/16
5. **2nd International Symposium on Olfaction**, Paris 9/19/13
4. **University of Pennsylvania**, Genetics Symposium 11/28/12
3. **University of Pennsylvania**, Cell and Molecular Biology Annual Symposium 10/11/11
2. **International C.elegans Meeting**, Los Angeles, CA 6/26/11
1. **Society for Developmental Biology Meeting**, Phila., PA, award for best talk 6/3/11

Podcast Interviews

3. Carry the One Radio: The Science Podcast 11/2/20
 - "Pain Part 1: The Invisible Disease"
 - "Pain Part 2: Chronicles of Pain, Treatment and Research"
2. Penn Science Policy and Diplomacy Group Podcast 2/18/20
1. HBCU Digest Radio 7/26/18

- “HBCU Voices of STEM Excellence”

Classes Taught (percentage denotes portion of the course)

University of Pennsylvania

BIOL 221: Molecular Biology and Genetics. 50%, 120 students. Spring 2021

BIOL 221: Molecular Biology and Genetics. 50%, 150 students. Spring 2020

BIOL 221: Molecular Biology and Genetics. 50%, 130 students. Spring 2019

Rutgers University–Camden

BIO 50:120:110 Biology of Disease: History of Biological Discoveries. 100%, 40 students. Spring 2016

BIO 50:120:110 Biology of Disease: History of Biological Discoveries. 100%, 40 students. Fall 2016

Lincoln University

BIO 313: History of Biology. 100%, 15 students. Fall 2015

Lectures in various courses

NGG 588: Topics in Translational Neuroscience, Spring 2020

Penn Summer Academies: Neuroscience Research Academy, 2019

Penn Summer Academies: Biomedical Research Academy, 2019

CAMB 550: Genetic Principles, University of Pennsylvania School of Medicine, 2015

B1 204: Genetics and Evolution, Georgian Court University, 2015

Research Advising in Abdus-Saboar lab: (*denotes underrepresented minority)

Postdoctoral Fellows

2021–present Anissa Jhumka

2018–2021 Heather Rossi (currently Research Associate in Herbert lab at Penn)

Doctoral Students

2020–present Ryan Schwark, Neuroscience

2020–present Justin Burdge, Biology

2018–present Leah Middleton, Neuroscience

2018–present Melanie Schaffler*, Neuroscience

Technicians

2020–present Isabella Succi

2018–2021 William Foster

2018–2020 Jessica Jones* (currently PhD student at University of Washington)

Undergraduates

2019–2021 Justin Arnold*, Biological Basis of Behavior

2019–2021 Lucie Pham, Biology

2019–2020 Samuel Kaufmann, Biology

2018–2019 Justin Burdge, Health and Societies (currently PhD student in Abdus-Saboar lab)

2019 Emma Lu, Biology

2018–2019 Migyana Thomas*

Summer Interns

2020 Kayla Dennis*
2020 Camille Harrison*
2020 Meghan Wachira*
2019 Isabella Succi (currently technician in Abdus-Saboor lab)
2019 Syphane Gibbs* (currently PhD student at University of Virginia)
2019 Racquel Amadi*
2019 Mariatu Fayia*

Awards to Trainees

Leah Middleton NIH F31 NRSA Predoctoral Fellowship (NINDS)
Justin Burdge NIH T32 Genetics Predoctoral Training Grant at Penn
Samuel Kaufman Benjamin Franklin Scholars Grant; Pincus-Magaziner Family Grant

Professional Service

- Session Chair: US Association for the Study of Pain Annual Meeting (2020), Keystone Symposium Pain Meeting (2020)
- Journal Reviewer: Cell Reports, eLife, Nature Communications, Journal of Neuroscience, Neuroscience, Pain, eNeuro, Molecular Pain, Neuroscience Letters, PLoS One
- Study Section/Grant Reviewer: NIH/NINDS (2020), Department of Defense (2020), Burroughs Wellcome Fund (2019)

University Service

University of Pennsylvania

2020–2021 Seminar Committee, Biology Department
2020 Ad hoc Faculty Recruitment Committee, Biology Department
2020 Recruitment Day Chair for Ph.D. admissions weekend, Biology Department
2020–2021 Member, Dean’s Council on Diversity
2020–2021 Seminar Committee, Department of Neuroscience
2020–2021 Faculty Advisory Board, E.E. Just Biomedical Society for underrepresented minority PhD students in Biomedical Graduate Studies
2019–2020 Member, Dean’s Committee for “Mapping the Mind”
2018–2020 Co-Director, Mentoring Circle Program for underrepresented minority students

Graduate Student Qualifying Exam and/or Thesis Advisory Committees

Columbia University

Eliza Jaeger (Maria Tosches lab), Biological Sciences Graduate Group, 2021
Yasmin Ramadan (Oliver Hobert lab), Biological Sciences Graduate Group, 2021

University of Pennsylvania

Brandon Bastien (Michael Hart lab), Neuroscience Graduate Group. 2020 – 2021

Jessica Wojick (Greg Corder lab), Biology Graduate Group, 2020
 Michelle Klima (Nick Betley lab), Neuroscience Graduate Group. 2020 – 2021
 Melina Gyparaki (Melike Lakadamyali lab), Biology Graduate Group. 2019 – 2021
 Bishwas Sharma (Brian Gregory lab), Biology Graduate Group. 2019 – 2021
 Luigim Cifuentes (Marc Fucillo lab), Neuroscience Graduate Group. 2019
 Yongjun Li (Amita Sehgal lab), Biology Graduate Group, 2019
 Linyang Ju (Shelley Berger lab), Biology Graduate Group, 2019

Outreach as Faculty

2021 Speaker, Zuckerman Institute, Grad Student & Postdoc Diversity Funding Opportunities at NIH
 2021 Black-in-Stem conversation with Rutgers Camden MARC students
 2021 Speaker, Penn’s MindCORE, “*Beyond the CV: Stories from Faculty*”
 2020 Speaker, Harvard Medical School Black Postdoctoral Association
 2020 External Participant, Monell Chemical Senses Center, Diversity Journal Club
 2020 Research Seminar, Penn SUIP and DAPPG underrepresented minority interns
 2020 Feature Interview for middle school book project “*Healthy NewsWorks*”
 2020 Panelist, Postdoc Association (BPP) event, “Pursuing an Academic Career”
 2019 Research Seminar, Penn SUIP underrepresented minority interns
 2019 Panelist for mindCORE event, “*Navigating the academic job market*”
 2019 Abdus-Saboor lab Science Day for 25 elementary students in West Philly
 2019 Panelist, Center for Teaching and Learning “*Workshop on Inclusive Teaching*”
 2019 Research Seminar Speaker for SUIP underrepresented minority interns
 2019 Research Seminar, ABRCMS Biomedical Research Conference, California
 2018 Panelist, Lasalle University STEM underrepresented minority day
 2018 Invited Research Seminar, Penn Neuroscience Honors Society
 2018 Speaker, SMASH STEM program for high school minority students

TV Special, Media Coverage, Feature Stories

- Nature Biotechnology, 2021. Highlighted during Black History Month.
- Rita Allen Foundation, 2020. “*Announcing the 2020 Rita Allen Foundation Award in Pain Scholars*”
- Cell Press, 2020. “*100 inspiring black scientists in America.*”
- Katherine Baillie, 2019. “*The Science of Sensations*” Penn Today.
- Stephanie Stahl, 2018. “*From Central High School to His Own Lab, Penn Scientist Focused on Finding Better Treatments for Pain.*” **CBS Local News TV Special.**
- Marla Vacek Broadfoot, 2018. “*How early STEM program and mentors paved the way for a career in science.*” Burroughs Wellcome Fund Feature Article.
- Gregory Richter, 2018. “*PennPORT (al) into a Thriving Science Career.*” Penn Medicine News.

Career Development

Penn Faculty Pathways Program	2019 – 2020
First Two Years Program, Penn School of Arts and Sciences	2018 – 2020
Rising Stars in Biomedical, MIT	2017
BRAINS Fellowship, University of Washington	2017
Future Faculty Development Program, Virginia Tech	2016

Neuroscience Scholars Program Associate, Society for Neuroscience
NextProf Future Faculty Workshop, University of Michigan

2014 – 2016
2015

Scientific Society Memberships

- US Association for the Study of Pain
- International Association for the Study of Pain
- Society for Neuroscience