Ishmail Abdus-Saboor
Mitchell J. Blutt and Margo Krody Blutt Presidential Assistant Professor

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PERSONAL DATA
Born May 19, 1984 in Philadelphia, PA

EDUCATION
B.A., Central High School, Philadelphia, PA 2002
B.S., Animal Science, *summa cum laude*, North Carolina A&T University 2006
Ph.D., Cell and Molecular Biology, University of Pennsylvania (with Meera Sundaram) 2012

POSTGRADUATE TRAINING
Postdoc, Weill Cornell Medical College (with Benjamin Shykind) 2012 – 2014
Postdoc, K99/R00 Award, University of Pennsylvania (with Wenqin Luo) 2014 – 2018

FACULTY APPOINTMENT
Mitchell J. Blutt and Margo Krody Blutt Presidential Assistant Professor,
Department of Biology, SAS, University of Pennsylvania July 1, 2018 – present

OTHER APPOINTMENTS
Visiting Scholar, New York University 2018 – 2019
Member, Penn Mahoney Institute for Neurosciences 2018 – present
Faculty Affiliate, Penn MindCORE 2018 – present
Graduate Group Memberships in Perelman School of Medicine: Cell and Molecular Biology (CAMB), Neuroscience (NGG), and Pharmacology (PGG) 2018 – present

PEER-REVIEWED PUBLICATIONS (*equal contributions)

As a graduate student

1. **Ishmail Abdus-Saboor***, Vincent P. Mancuso*, John I. Murray, Katherine Palozola, Carolyn Norris, David Hall, Kelly Howell, Kai Huang, Meera V. Sundaram. Notch and Ras promote sequential steps of excretory tube development in *C.elegans*. **Development** 138, 3545–3555 (2011).

Research Highlight in **Nature Reviews Molecular Cell Biology** 12, 549 (2011).

2. **Ishmail Abdus-Saboor**, Craig Stone, John I. Murray, Meera Sundaram. 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).

As a postdoctoral fellow

3. Alexander Fleischmann, **Ishmail Abdus-Saboor**, Atef Sayed, Benjamin Shykind. Functional interrogation of an odorant receptor locus reveals multiple axes of transcriptional regulation. **PLoS Biology** 11(5):e1001568 (2013).

4. **Ishmail Abdus-Saboor**, Alexander Fleischmann, Benjamin Shykind. Setting limits: maintaining order in a large gene family. **Transcription** 5:e28978 (2014).

5. **Ishmail Abdus-Saboor**, Muhammad Al-Nufal, Maha Agha, M. Ruinart de Brimont, Alexander Fleischmann, Benjamin Shykind. An expression refinement process ensures singular odorant receptor gene choice. **Current Biology** 26, 1083–90 (2016).

6. Lian Cui*, Xuerong Miao*, Lingli Liang, **Ishmail Abdus-Saboor**, William Olson, Michael Fleming, Minghong Ma, Yuanxiang Tao, Wenqin Luo. Identification of early RET+ deep dorsal spinal cord interneurons in gating pain. **Neuron** 91, 1–17 (2016).

7. William Olson, **Ishmail Abdus-Saboor***, Lian Cui*, Justin Burdge, Tobias Raabe, Minghong Ma, and Wenqin Luo. Sparse genetic tracing reveals regionally specific functional organization of mammalian nociceptors. **eLife** 6:e29507 (2017).

As a principal investigator

8. **Ishmail Abdus-Saboor***, Nathan Fried*, Mark Lay, Kathryn Swanson, Justin Burdge, Jessica Jones, Peter Dong, Weihua Cai, Xinying Guo, Yuan-Xiang Tao, Roman Fischer, John Bethea, Minghong Ma, Xinzhong Dong, Long Ding, Wenqin Luo. Development of a mouse pain scale using sub-second behavioral mapping and statistical modeling. **Cell Reports** 28, 1-12 (2019).

9. Saumitra Pitake, Leah Middleton, **Ishmail Abdus-Saboor**, Santosh K Mishra. Inflammation induced sensory nerve growth and pain hypersensitivity requires the N-type calcium channel Cav2.2. (in revision at **Frontiers in Neuroscience**)

10. Hiroki Kittaka, Jennifer DeBrecht, **Ishmail Abdus-Saboor**, Santosh K Mishra. Differential contribution of sensory TRP channels to bioactive lipid S1P. (in revision at **Molecular Pain**)

11. Melanie Schaffler, Leah Middleton, **Ishmail Abdus-Saboor**. Mechanisms of tactile sensory phenotypes in autism: current understanding, and future directions for research. (in revision at **Current Psychiatry Reports**)

Manuscripts in preparation

Alexander Tuttle, Nathan Fried, Mark Zylka, **Ishmail Abdus-Saboor**. Improving preclinical pain models using emerging machine learning and artificial intelligence technologies. (invited review for **Pain**)

Heather Rossi, Lily Pachanin, Claire Mitchell, **Ishmail Abdus-Saboor**. Evoked and spontaneous pain assessment in a dental pulp injury model. (preparing for Scientific Reports)

Joshua Wheeler, Saumitra Pitake, John M. Davis, **Ishmail Abdus-Saboor***, Santosh Mishra*. Region specific neural circuits for itch. *co-senior authors

Jessica Jones, Justin Burdge, William Foster, Colin Twomey, Joshua Plotkin, **Ishmail Abdus-Saboor**. Automated pain assessment with millisecond resolution markerless tracking. (preparing for PNAS)

AWARDS AND HONORS

Gloria Twine Chisum Fellow, University of Pennsylvania	2006
Tom Kadesch Prize in Genetic Research	2012
NIH IRACDA Penn-PORT Fellow	2014
BRAINS Fellow, University of Washington	2017
Rising Stars in Biomedical, MIT	2017
NIH K99/R00 Pathway to Independence Award	2017
Emerging Scholars Lecture, Vanderbilt University School of Medicine	2018
NIH Mitchell Max Award for Pain Research	2018
Mitchell J. Blutt and Margo Krody Blutt Presidential Endowed Chair	2018 – 2023
Keynote Speaker, Lehigh Valley Molecular and Cell Biology Society Meeting	2020

GRANT SUPPORT

Current Research Grants:

NIH K99/R00 Pathway to Independence Award (DE026807) 9/2017 – 8/2021
"Determining the functions of molecularly defined populations of nociceptors in spinal and dental pain."
Role: PI, $955,440 total.

Supplement to R00 Award (DE026807)
Research Supplement to Promote Diversity in Health-Related Research
12/2018 – 12/2020
Role: PI, $161,115 total.

Pending Research Grants:

NIH R21 Exploratory/Development Research Grant 1/2020 – 12/2021
"Investigating the manipulation of host sensory neuronal circuitry by *B. burgdorferi"*
Role: PI, $275,000 direct costs.
Co-I: Dustin Brisson

Completed Research Grants:

Burroughs Wellcome Fund Postdoctoral Enrichment Program (PDEP) 9/2015 – 8/2018

"Defining the neural mechanisms mediating crosstalk between touch and pain."
Role: PI, $60,000 total.

Burroughs Wellcome Fund Collaborative Research Travel Grant 6/2016 – 12/2017
"Optogenetic and brain imaging investigation of pain neural circuitry."
This grant formed a research collaboration with the Lee laboratory at Stanford University to map brain activity during peripheral optogenetic neural activation.
Role: PI, $8,000 total.

NIH IRACDA Postdoc Fellowship (K12 GM081295) 9/2014 – 7/2017
"Dissect neural mechanisms underlying the crosstalk between touch and pain."
$190,488 total.

NIH Training Program in Genetics (T32 GM008216) 2009 – 2011
Funding for students whose research was directed towards basic genetic mechanisms.
$65,000 total.

INVITED RESEARCH TALKS (*talks by trainees in Abdus-Saboor lab)

2020

University of Chicago, Biochemistry and Molecular Biophysics Seminar Series
Rowan University, Molecular and Cellular Biosciences Seminar Series
Bowdoin College, Departments of Biology and Neuroscience
Lehigh Valley Molecular and Cell Biology Society Meeting (Keynote Speaker)
NYU School of Medicine, Marie M. Daly Speaker Series

2019

University of Washington (Seattle), Neuroscience Seminar Series
University of Texas at Dallas, School of Behavioral and Brain Sciences
Fox Chase Cancer Center, Molecular Therapeutics Department
North Carolina A&T University, Department of Biology
University of Maryland Baltimore County, Biological Sciences/Chemistry & Biochemistry
University of California Santa Cruz, Molecular, Cell, Developmental Biology Department
Society for Neuroscience Meeting (Pain/Itch Nanosymposium)*
University of Pennsylvania, Psychology Colloquium Series
Annual Biomedical Research Conference for Minority Students (ABRCMS) Meeting
University of Illinois at Chicago, Laboratory of Integrative Neuroscience Seminar Series

2018

Duke School of Medicine, Department of Pharmacology
Vanderbilt School of Medicine, Emerging Scholars Lecture
Rockefeller University, Sense to Synapse Conference
Bryn Mawr College, Chemistry Colloquia Series
Penn, Biology Seminar Series
NYU School of Dentistry, Department of Oral Surgery
Meharry Medical College, Department of Biochemistry and Cancer Biology
Annual NIH Pain Consortium Symposium
Gordon Conference on Molecular Cellular Neurobiology, Hong Kong
University of Pennsylvania, mindCORE Seminar Series
Mid-Atlantic Pharmacology Society Meeting on Opioids and Analgesia
St. Joseph's University, Department of Biology and Behavioral Neuroscience Program

University of Pennsylvania, Department of Biology Annual Retreat
University of Pennsylvania, Center for Neurobiology and Behavior Seminar Series

2017

Johns Hopkins School of Medicine, Department of Pharmacology
Society for Neuroscience Meeting (Touch, Pain, Itch Nanosymposium)
MIT, Rising Stars in Biomedical
University of Alabama at Birmingham, Annual IRACDA Conference
Syracuse University, Department of Biology
Haverford College, Department of Biology
Rutgers University, Biology Seminar Series
Penn Dental School, Department of Oral Surgery & Pharmacology
Temple University, Center for Substance Abuse Research

2016

Virginia Tech University, Department of Biochemistry
Rutgers University, Biology Seminar Series
Swarthmore College, Department of Biology
Penn Dental School, Research Seminar Series
Bucknell University, Department of Biology
Mount Holyoke College, Department of Biological Sciences

2013

College de France, Paris, International Symposium on Olfaction

2012

Penn, Department of Genetics Symposium (received Tom Kadesch Award)

2011

UCLA, International *C.elegans* Meeting
Mid-Atlantic Society of Developmental Biology Meeting
(received travel award for best graduate student talk)
Penn, Annual Cell and Molecular Biology Graduate Group Symposium

CLASSES TAUGHT AT PENN

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

Additional Penn course lectures
Summer High School Program's Neuroscience Research Academy, Summer 2019.
Summer High School Program's Biomedical Research Academy, Summer 2019.

MENTORSHIP (*underrepresented minority)

Postdoctoral Fellows and Research Associates

Heather Rossi, PhD, 2018 – present. PhD from University of Florida.
Saumitra Pitake, PhD, 2018 – present. PhD from St. John's University.

Doctoral Students

Melanie Schaffler* (Neuroscience), 2018 – present. BA from Wesleyan University.
Leah Middleton (Neuroscience), 2018 – present. BA from Mount Holyoke College.

Rotation Students

Melanie Schaffler*, 2018

Leah Middleton, 2018
Justin Burdge, 2019

Research Specialists
Jessica Jones*, 2018 – present. BS from UCSC.
William Foster, 2018 – present. BA from Haverford College.

Undergraduates
Justin Burdge, fall 2018 – spring 2019. Beginning PhD in Penn Biology fall of 2019.
Migyana Thomas*, fall 2018 – spring 2019.
Samuel Kaufmann, spring 2019 – present.
Emma Lu, spring 2019 – present.
Lucie Pham, summer 2019 – present.
Justin Arnold*, fall 2019 –
Isabella Succi, summer 2019 (student at St. Joseph's University).
Syphane Gibbs*, summer 2019 (student at North Carolina A&T University).
Racquel Amadi*, summer 2019 (student at Xavier University of Louisiana).

Co-sponsor 399 Independent Study
2018 – 2019: Victoria Yin, Maryann Villeda, Aiysha Scott*

High School Students
Teresa Cato, summer 2019
Mariatu Fayia*, summer 2019

Honors and Awards to Trainees
Samuel Kaufmann: Pincus-Magaziner Family Undergraduate Research and Travel Fund;
Benjamin Franklin Scholars Summer Funding
Melanie Schaffler*: President of E.E. Just Biomedical Society

SERVICE

Academic Community
Journal Reviewer (2017 – present): Molecular Pain, PLOS One, Neuroscience Letters
Grant Reviewer (2018 – present): Burroughs Wellcome Fund graduate student fellowship;
Research Grants Council of Hong Kong
Invited Speaker, NIH Advancing Diversity Programs Conference 2019
Panelist for D-SPAN F99/K00 and ENDURE URM trainees, Soc. Neuroscience Meeting 2019
Host Lab for Rutgers-Camden T34 MARC program 2019 –
Panelist for PROMISE Summer Success Institute Conferenec, UMBC 2019

Penn Community
Host Lab/poster judge/seminar speaker for SUIP underrepresented minority interns 2019 –
Host Lab for SAS Science Outreach Initiative for Philadelphia high school interns 2019 –
Host Lab for DAPPG underrepresented minority interns 2019 –
MindCORE Research advisory committee 2019 – 2020
Invited Speaker, Penn High School day for local students 2019

Neuroscience Graduate Group (NGG) rotation talks reviewer 2018
Panelist for Neuroscience Graduate Group (NGG) event at Soc. Neuroscience Meeting 2018
Invited Research Seminar, Undergraduate Neuroscience Honors Society 2018

Prelim Committees
Luigim Cifuentes, Neuroscience, 2019

School of Arts and Sciences
Africana Studies Advisor-Mentor Program (mentor 5-7 students/year) 2019 –

Biology Department
Co-Director (with Mecky Pohlschroder), Mentoring Circles for URM undergraduates 2018 –
Curriculum committee 2019 – 2020

Thesis Committees
Melina Gyparaki, Biology, 2019 – present
Bishwas Sharma, Biology, 2019 – present

Prelim Committees
2019: Yongjun Li, Linyang Ju

Major Advising
2 Biology majors: 2018 – 2019

Community at Large
Abdus-Saboor lab Science Day: hosted 25 elementary students from Jubilee School in West Philadelphia for hands-on science demonstrations related to our research 2019
Invited Speaker, SMASH STEM program for low-income high school students, Penn 2018
Invited Speaker, Lasalle University STEM underrepresented minority panel 2018

MEDIA COVERAGE
https://philadelphia.cbslocal.com/video/3933074-from-central-high-school-to-his-own-lab-penn-scientist-focused-on-finding-better-treatments-for-pain/

ADDITIONAL TRAINING AND CAREER DEVELOPMENT
Penn Faculty Pathways Program 2019 – 2020
Teaching Science Seminar – Penn Center for Teaching and Learning 2019 – 2020
SAS Dean's Office "First Two Years" program 2018 – 2019
BWF Prior PDEP Awardee Junior Faculty Meeting 2018
CrawFly Invertebrate Neurophysiology summer course, Cornell University 2017
Future Faculty Development Program, Virginia Tech 2016
Neuroscience Scholars Program Associate, Society for Neuroscience 2014 – 2016
NextProf Future Faculty Workshop, University of Michigan 2015

Ishmail's Mentoring Committee (2018 – 2024)
Drs. Nancy Bonini, Marc Schmidt, Michael Granato

PROFESSIONAL SOCIETY MEMBERSHIPS

Society for Neuroscience	2014 – present
International Association for the Study of Pain	2018 – present
American Association for the Advancement of Science	2019 – present