CURRICULUM VITAE

ATANU DUTTAROY

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http://www.huagingresearch.org/training.html

EDUCATION

Ph. D. 1989 University of Calcutta, India (Zoology) Thesis Title: *Genetic analysis of some haplo-abnormal regions in Drosophila melanogaster genome and their effect on gene expression*. Prof. Asish K. Duttagupta, Advisor

M. Sc. 1980 (Zoology) University of Burdwan, India Specialization Cytogenetics.

B. Sc (Honors). 1978. University of Burdwan, India (Zoology Honors).

APPOINTMENTS

2011-present	Professor. Department of Biology, Howard University, Washington DC,
2006 –2011.	Associate Professor. Department of Biology, Howard University, Washington DC
1999-2006	Assistant Professor. Department of Biology, Howard University, Washington DC
2005-2012	Director of Graduate Studies, Biology Department, Howard University
1996-1998	Teaching/Research Associate (Faculty intern): University of Maryland
1994-1996	Postdoctoral Fellow, Lady Davis Institute for Medical Research The Jewish general hospital. McGill University, Montreal, Canada.
1991-1994	Postdoctoral Fellow, Department of Molecular Biology and Genetics, University of Guelph, Canada,
1989-1991	Postdoctoral Fellow, Department of Molecular and Cell Biology University of Connecticut, Storrs, CT.

AWARDS AND HONORS

- E. E. Just Research Achievement Award, Sigma-Xi Scientific Research Society, Howard, University chapter, 2004.

- NIH Peer Review Panel, CMAD/NIA, 2006
- NIH Peer Review Panel, CMAD/NIA, 2007
- F31 NIH/NRSA Pre-doctoral Fellowship, 2008, NIH Special Emphasis Panel, 2007
- NIH Challenge Grants review panel in Health and Science Research, 2009
- American Federation for Aging Research Review Panel, 2011-2012
- NSF Physiological Mechanisms and Biomechanics Program panel, 2014.
- NIH/NIGMS Pathway to independence award (K99/R00) panel, 2015
- NIMHD Specialized Centers of Excellence on Minority Health and Health Disparities (U54) 2017.
- Member Peer review Panel, Hevolution, an international effort to accelerate progress in healthy aging research.
- Curent member, NIGMS TWD-A Training and Workforce Development Standing Study Section.

PUBLICATIONS (*Graduate student, #Postdoctoral fellow)

- Md Shah Jalal , Atanu Duttaroy (2024) Maternal Spargel/dPGC-1 is critical for embryonic development and influences chorion gene amplification via Cyclin E activity. **Developmental Biology** 516 (2024) 158–166.
- Swagota D. Roy*, Sabarish Nagarajan, Md. Shah Jalal*, Md. Abul Basar, Atanu Duttaroy (2023) New mutant alleles for Spargel/dPGC-1 highlights the function of Spargel RRM domain in oogenesis and expands the role of Spargel in embryogenesis and intracellular.transport***. G3,*** 2023, 13(9), https://doi.org/10.1093/g3journal/jkad142

- Sobitan A, Edwards W, Jalal SM, Kolawole A, Ullah H, Duttaroy A, Li J, and Teng S (2022). Prediction of the Effects of Missense Mutations on Human Myeloperoxidase Protein Stability Using In Silico Saturation Mutagenesis. **Genes** 2022, 13, 1412. doi.org/10.3390/genes13081412

- Fernando LM, Adeel S, Basar MA, Allen AK, Duttaroy A (2021) In-gel SOD assay reveals SOD-2 is the single active, water-soluble SOD enzyme in *C. elegans*. **Free Radical Research** 55:6, 619-624. DOI: 10.1080/10715762.2021.1979228.

- Basar MA, Williamson K, and **Duttaroy A** (2019) Spargel/dPGC-1 is essential for ovarian growth. **Developmental Biology** 454: 97–107. https://doi.org/10.1016/j.ydbio.2019.06.020

- Bailey D, Basar MA, Nag S, Bondhu N, Teng S and **Duttaroy A** (2017) The essential requirement of an animal heme peroxidase protein during the wing maturation process in Drosophila. **BMC Developmental Biology** 17:1-11. DOI

10.1186/s12861-016-0143-8.

- Mukherjee S, Basar MA, Davis C and **Duttaroy A** (2014) Emerging functional similarities and divergences between Drosophila Spargel/dPGC-1and mammalian PGC-1 protein. **Frontiers in Genetics** 5:1-6. doi:10.3389/fgene.2014.00216

- Mukherjee S* and **Duttaroy A** (2013) Spargel/dPGC-1 is a new downstream effector in the Insulin-TOR signaling pathway in Drosophila. **Genetics** 195: 433-441.

- Armstrong N*, Ramamoorthy M, Lyon D, Jones K, and **Duttaroy A** (2013) Mechanism of Silver Nanoparticles Action on Insect Pigmentation Reveals Intervention of Copper Homeostasis. **PLoS One** 8(1): e53186.

- Vrailas-Mortimer A, delRivero, T, Mukherjee S[*], Nag S[#], Giatanidis A, Consoulas C, **Duttaroy A**, and Sanyal S (2011) A muscle-specific p38 MAPK/Mef-2/MnSOD pathway regulates stress, motor function, and life span in Drosophila. **Developmental Cell** 21:783-795.

- Mukherjee S[*], Forde R[*], Belton A[*], and **Duttaroy A** (2011) SOD2, the principal scavenger of superoxide, is dispensable for embryogenesis and imaginal tissue development but essential for adult survival. **FLY** 5**:** 39 (see also cover photograph).

- Godenschwege T, Forde R[*], Davis C[#], Paul A[*], Beckwith K[*], **Duttaroy A** (2009) Mitochondrial Superoxide Radicals Differentially Impacts Muscle Activity and Neural Functions in Drosophila. **Genetics** 183: 175–184.

- Piazza N, Hayes M, Martin I, **Duttaroy A**, Grotewiel M, Wessells R (2009) Multiple measures of functionality exhibit progressive decline in a parallel,stochastic fashion in Drosophila Sod2 null mutants. **Biogerontology**. 10:637-48.

- Wicks S, Bain N, **Duttaroy A**, Hilliker AJ, Phillips JP (2009) Hypoxia rescues early mortality conferred by superoxide dismutase deficiency. **Free Radic Biol Med**. 2009 Jan 15; 46:176-81.

- Paul A[*], Belton A[*], Nag S[#], Martin I, Grotewiel MS and **Duttaroy A** (2007) "Reduced mitochondrial SOD displays mortality characteristics reminiscent of natural aging." **Mechanisms of Aging and Development** 128: 706-716.

- Dora Dias-Santagata, **Duttaroy A** and Feany MB (2007) "Tau-induced neuro-degeneration is modulated by oxidative stress and activates the JNK pathway in *Drosophila."* **Journal of Clinical Investigation** 117:236–245.

- Belton A[*], Paul A[*], and **Duttaroy A** (2006) Deletions encompassing the Manganese superoxide dismutase gene in the *Drosophila melanogaster* genome **Genome** 49: 746-749.

- **Duttaroy A**, Paul A*, Kundu M*, and Belton A* (2003) A *Sod2* null mutation confers severely reduced adult life span in Drosophila. **Genetics** 165:2295-2299. (see also *perspective* by J Tower 'There is a problem in the furnace in Sci. Aging. Knowl. Environ 2004 (1), pe 1 (2004).

- Paul A*, and **Duttaroy, A** (2003) Genomic regions responsible for Manganese superoxide dismutase regulation in *Drosophila melanogaster*. **Aging Cell** 2: 223-231. (see also cover photograph).

- **Duttaroy, A** (2002) Asymmetric exchange is associated with P element induced male recombination in *Drosphila melanogaster*. **Heredity** 89:114-119.

- Wanga J, **Duttaroy A**, and Anderson WA (2002) Expression of NK2 homologous transcripts during zebrafish development**. J. submicrosc. Cytol. Pathol**. 34: 233-239.

- **Duttaroy A**, Bourbeau D, Wang X-L, and Wang E (1998) Altered expression of the translational elongation factor, EF-1a and its impact on apoptotic cell death rate. **Experimental Cell Research** 238: 168-176.

- **Duttaroy A**, Quian J-F, Smith JS, and Wang E (1997) Upregulated $p21^{CIP1}$ expression is part of the regulation quantitatively controlling serum deprivation-induced apoptosis. **Journal of Cellular Biochemistry** 64: 434-446.

- **Duttaroy A**, Parkes T, Emtage P, Kirby K, Boulianne GL, Wang X, Hiliker AJ, and Phillips JP (1997) The Manganese Superoxide Dismutase Gene of Drosophila: Structure, expression, and evidence for regulation by MAP Kinase. **DNA and Cell Biology** 16: 391-399

- **Duttaroy A**, Medinger R, Kirby K, Carmichael S, Hilliker AJ, Phillip JP (1994) A manganese superoxide dismutase-encoding cDNA from *Drosophila melanogaster*. **Gene** 143: 223 - 225.

- McCarron M, **Duttaroy A**, Doughty G, Chovnick A (1994) Drosophila P element transposase induces male recombination additively and without a requirement for P element excision or insertion. **Genetics** 136 : 1013- 1023.

- Campbell S, **Duttaroy A,** Katzen A, Chovnick A (1991) Cloning and characterization of the *Scalloped* locus in *Drosophila melanogaster*. **Genetics** 127: 367 - 380.

- **Duttaroy A**, McCarron M, Sitaraman K, Doughty G, Chovnick A (1990) The relationship between P elements and male recombination in *Drosophila melanogaster***. Genetics** 124: 317.

- McCarron M, **Duttaroy A**, Doughty G, Chovnick A (1989) P element transposase induces male recombination in *Drosophila melanogaster*. **Genetical Research** 54: 137- 141.

- Bose D and **Duttaroy A** (1986) A case of variegation at the level of chromosome organization. **Chromosoma** 94: 87-93.

- **Duttaroy A**, Manna PK and Duttagupta AK (1984) Genetic analysis of a Minute mutation in the distal region of the second chromosome of *Drosophila melanogaster*. **J.Biosciences** 6: 87-95.

BOOK CHAPTERS AND REVIEWS

Lee S, **Duttaroy A**, Wang E(1996) EF-1α-S1 gene family and regulation of protein synthesis during aging. In Modern Cell Biology Series on **Cellular Aging and Cell Death**: 139-151. Wiley-Liss , Inc.

Lee S, Leblanc A, **Duttaroy A**, Wang E (1995) Terminal differentiation dependent alteration in the expression of translation elongation factor-1a and its sister gene, S1, in neurons. **Experimental Cell Research** 219: 589-597.

FUNDED RESEARCH SUPPORT

ACTIVE

1. National Institutes of health R25AG047843 (9/1/14- 8/31/2026)
Role: Principal Investigator
Project Title: Advancing aging research through development of minority gerontologists. Award Total: $3.8 million.

2. National Institutes of health 1R25AG086106-01 The Howard University Expanding Research in Alzheimer's Disease and Related Dementias Postbaccalaureate Research Education Program (HU-ERA-PREP). (5/15/2024 to 4/30/2029)
Role: **Multiple PI grant with Joanne Allard, Atanu Duttaroy, Sudha Sharma**.
Total cost: $2,142,090.

3. National Science Foundation: FAIN 2406155. Targeted Infusion Project: Advancing Computational Biology training for undergraduate students at Howard University. (12/01/24-11/30/27). Role: **Coprincipal Investigator**. Shaolei Teng- PI. Total Cost: $400,000.

COMPLETED RESEARCH SUPPORT

1. National Science Foundation, IOS - 1832026 (08/01/18 – 7/31/21)
Role**: Principal Investigator**
Project Title: Excellence in Research: Involvement of MEF-2 transcription factor in mitochondrial stress response through SOD2. Total Cost: $411, 125. Under no cost

extension till 8/31/22.

2. National Science Foundation EF-0830093 9/1/08 to 8/31/13
Role**: Co-Principal Investigator.** Mark Weisner (PI)
Project Title: Centre for Environmental Implications of Nanotechnology (CEIN) in partnership with Duke University.
Total Cost: $357,000

3. National Institutes of Health, 2 U54 NS039407-06A1 (9/1/05 to 8/31/10)
Role**: Investigator, Project-2.** Warner Graf (PI)
Project Title: Central autonomic control, aging, and oxidative stress
Total Cost (project 2): $750,000

4. National Institutes of Health 1R15 AG025754-01 (3/1/06 to 2/29/09)
Role: **Principal Investigator**
Project Title: ROS induced cellular toxicity and tissue damage assessment.
Total Cost: $300,000

5. National Institutes of Health, 1R15 AG 17846-01 (9/01/00 to 8/31/03)
Role: Principal Investigator
Project Title: Manganese superoxide dismutase and *in vivo* aging.
Total Cost: $150,000.

6. American Federation for Aging Research (AFAR) 6/01/01 to 5/31/03
Role: **Principal Investigator**
Project Title: Genomic regions involved in Manganese superoxide dismutase regulation in *Drosophila melanogaster*. Total Cost: $50,000

RESEARCH MENTORSHIP

Graduate Research Mentor (* underrepresented minority)

Current

1. Mohammed Shah Jalal. Project Title: Reduced maternal Spargel/dPGC-1 negatively impact eggshell patterning embryonic growth, and oocyte cytoskeleton organization.

Completed

1. Swagota D Roy, Ph. D Project title: Spargel/dPGC-1 is vital for embryogenesis while its RRM domain plays some essential role in protein trafficking during oogenesis. June 2023.

2. *Tomilowo Abijo, Ph, D
Project Title: dPGC-1/Spargel serves a novel pro-apoptotic function during wing morphogenesis in Drosophila. May 2018.

3. Md. Abul Basar, Ph. D

Project Title: Spargel/dPGC-1 is essential for nutrient coordinated ovarian growth through insulin signaling. July 2018.

4. *Dondra Bailey, Ph. D
Project Title: Essential role of a novel peroxidase enzyme in Drosophila wing maturation process. May 2015.

5. *Najealicka Armstrong, Ph. D
Project Title: "Biological Mechanism of Silver Nanoparticle Toxicity." May 2014.
Current: Postdoctoral Fellow, Howard University.

6. Subhas Mukherjee, Ph. D
Project Title: "Association of Manganese Superoxide Dismutase and dPGC-1 in mitochondrial health, ROS metabolism affecting pre- and postnatal development and cell growth." April 2013.

7. *Renee Forde, Ph. D
Project Title: "Specific tissue requirement for SOD2 highlights the importance of muscle against the high flux of mitochondrial superoxides." April 2010.

8. *Amy Belton, Ph. D
Project Title: "The Isolation and Functional Characterization of a *Drosophila* manganese superoxide dismutase mutant." April 2007.

9. Anirban Paul, Ph. D Project title: "*In vivo* regulation of Manganese superoxide dismutase activity and its role in aging and neurodegeneration in *Drosophila melanogaster*." December 2005.

Undergraduate Research mentor

Sonaike Adeneke (2011 Honors Thesis), Shaleeka Cornelius (2013 Honors thesis), Jahniece Willaims (2016, Honors Thesis), Ayomidipupo Fadaka (2024, Honors Thesis).

Doctoral Committees

- Marcus Hodges, Major Advisor-Prof. Clarence Lee, 2005.
- Ketgurah Willams, Major Advisor-Prof. Winston Anderson, 2005.
- Junia Jean-Gilles, Major Advisor- Dr. Brodrick Eribo, 2005.
- Supriyo De, Major Advisor- Prof. Sisir K Dutta, 2006.
- Yongqing Chen, Major Advisor- Prof. Sisir K. Dutta, 2006.
- Solomon Gebru, Major Advisor- Prof. Winston Anderson, 2006.
- Dereje Desta Demete, Major Advisor-Prof. Clarence Lee, 2007.
- Deborah Williams Ward, Genetics and Human Genetics, 2007.
- Xunqin Yin, Major Advisor- Prof. William Eckberg, 2007.
- Kimberly Jones, Major Advisor- Prof. William Eckberg, 2009.
- Jocelyn Myers, Major Advisor-Prof. Clarence Lee. 2010.
- Uvetta Dozier, Major Advisor- Dr. Hemayet Ullah. 2010.

- Mary Ayuk, Major Advisor- Prof. Clarence Lee, 2010.
- Rakeb Abbey, Major Advisor-Prof. Clarence Lee (current).
- Nabanita Sen, Major Advisor- Dr. Hemeyet Ullah, 2012
- Hermann Fennel, Major Advisor- Dr. Hemayet Ullah, 2012.
- Ruby Boatang, Major Advisor- Dr. Anna Allan, 2014.
- Michelle Fernando, Major Advisor, Dr. Anna Allen, 2020
- Ph. D External Examiner, Kolkata University, 2019. Title" To identify genetic and epigenetic associations with Psoriasis. Candidate- Ms. Aditi Chandra.

SERVICE

2013-2022	Chair, Appointment and Promotion Committee
2005-2012	Director of Graduate Studies, Department of Biology.
2007	Member executive Committee, Department of Biology
2008-2020	Chair, Safety committee, Dept. of Biology
2004-05	Chair, Faculty Search Committee Dept. of Biology
2008-09	Chair, Faculty Search Committee, Dept. of Biology
2008-09	Member, Biology Department curriculum committee
2005	Member, Biology Department curriculum committee
2007-2010	Biology Department Representative to Natural Science Division, College of arts and sciences
2010-2011	Member, Interdisciplinary curriculum development committee, College of Arts and Sciences
2010-2015	Member, Institutional Biosafety Committee

Professional service

Journal Reviews: Aging Cell, FEBS Letter, Journal of Gerontology, Mechanisms of Aging and Development, Journal of Biological Chemistry, Age, Brain Research, Genetics, Neuroscience, Current Biology, PLoS One, Brain and Behavior.
Review Editor, Frontiers in Genetics of Aging.

Guest Editor, PLoS Genetics (One paper)

Review panel

NIH Peer Review Panel, CMAD/NIA, 2006

NIH Peer Review Panel, CMAD/NIA, 2007

F31 NIH/NRSA Pre-doctoral Fellowship, 2008

NIH Special Emphasis Panel, 2007

NIH Challenge Grants review panel in Health and Science Research, 2009

American Federation for Aging Research Review Panel, 2011-2012

NSF Physiological Mechanisms and Biomechanics Program panel, 2014.

NIH/NIGMS Pathway to independence award (K99/R00) panel, 2015.

NSF,/AGEP Summer Research Program Mentor

HUSEM (Howard University Science, Engineering and Math) Mentor

NSF/LS-AMP Mentor.

NIMHD Specialized Centers of Excellence on Minority Health and Health Disparities (U54) 2017

INVITED SEMINARS AND SYMPOSIA

Howard University, Department of Physiology, College of Medicine, April 4th, 2016.

Howard University, Department of Pharmacology, College of Medicine, Spring 2015

Massachusetts Institute of Technology, HHMI Special Seminar Series, June 26, 2014.

Florida Atlantic University, Department of Biology, April 20, 2007

National Institutes of Health, Drosophila Research Group, December, 2006

University of Maryland, Colloquium series on Genetics of Eukaryotic Model System (GEMS). Group member since 2001. One presentation per year.

Symposium on the Environmental Impact of Nanomaterials, Duke University, April 19-20, 2010.

Uniformed Services University of Health sciences, Bethesda, MD, January 17, 2012.

PUBLISHED ABSTRACTS

(*Graduate student, #Postdoctoral fellow)

- M.A. Basar, Kishana Williamson, Atanu Duttaroy "Spargel/dPGC-1 is involved in Insulin-TOR signaling, nutrient sensing and Oogenesis." The Allied Genetics Conference, Florida, July, 2016.
- Dondra Bailey*, Sanjay Nag, Mohammed Basar, Atanu Duttaroy " Absence of mitochondrial SOD2 in *Drosophila* induces a novel peroxidase, which plays an essential role during adult wing maturation. 56th Annual Drosophila Research Conference Chicago, IL March 4 - 8, 2015.
- Kristopher Beckwith*, Peter Kibanyi*, Eva Polston, and **Atanu Duttaroy**. Brain Vacuolization and Muscle Protein Aggregation as Potential Biomarkers of Aging in Drosophila. *Molecular genetics of Aging meeting, Cold Spring Harbor Laboratory, NY* October 7-11, 2012.
- Subhas Mukherjee*, Claudette Davis#, **Atanu Duttaroy**. Spargel a mammalian PGC-1 homologue is involved in Insulin and TOR signaling. *Drosophila Research Conference, March 7-11, 2012, Chicago, IL.*
- Kristopher Beckwith*, Eva Polston, **Atanu Duttaroy**. In the fly brain vacuolization occurs progressively as a function of age but is not associated with brain cell loss. *Drosophila Research Conference, March 30-April 3, 2011, San Diego, CA*
- Sanjay Nag# and **Atanu Duttaroy.** A myeloperoxidase like protein in *Drosophila melanogaster. Drosophila Research Conference, March 30-April 3, 2011, San Diego, CA*
- Claudette Davis#, Renee Forde*, Subhas Mukherjee*, Sanjay Nag#, Kristopher

Beckwith* and **Atanu Duttaroy** "Mitochondrial Superoxide Radicals Differentially Affect Muscle Activity and Neural Function." *Specialized Neuroscience Research Program, July 21-23, 2010, San Juan Puerto Rico.*

- Sanjay Nag#, **Atanu Duttaroy**. "Transcriptional activation of novel signaling molecules in response to stress." *51st Annual Drosophila Research Conference*, Washington, DC, April 7-10, 2010.
- Claudette P. Davis#, Sanjay Nag#, Najealicka Armstrong*,**Atanu Duttaroy**. "*Drosophila* spargel extends lifespan and has connections to insulin signaling." *51st Annual Drosophila Research Conference,* Washington DC, April 7-10, 2010.
- **Atanu Duttaroy**, Subhas Mukherjee*, Forde Renee* "SOD2, the principal scavenger of mitochondrial superoxide, is essential for adult survival but dispensable for pre-adult development." *51st Annual Drosophila Research Conference*, Washington DC, April 7-10, 2010.
- **Atanu Duttaroy**, Claudette Davis#, Sanjay Nag#, Renee Forde*. Overexpression of
- Drosophila CG9809 a mammalian PGC-1 ortholog extends life span in Drosophila. *Gordon Research Conference on Biology of Aging*. February 15-20, 2009. Ventura, CA
- Subhas Mukherjee*, Renee Forde*, **Atanu Duttaroy**, SOD2, a mitochondrial antioxidant enzyme is essential for adult health, not for development. *Molecular genetics of Aging meeting at Cold Spring Harbor Laboratory*, September 24-28, 2008.

TEACHING

Molecular Genetics (4 credit hours Graduate + upper level undergraduate): This course is offered in the fall semester each year. It covers various modern concepts where molecular biology and genetics are combined. The laboratory section of the course provides hands on experience on various molecular techniques designed in relation to classroom discussion. This course is particularly popular among graduate students all over the Howard University campus.

Advanced Molecular Techniques and Applications (4 credit hours, Graduate + upper level undergraduate): This is an upper level course and students with sufficient background in molecular genetics/ molecular biology/microbiology are encouraged to take this course. A variety of recent molecular biological tools and procedures are discussed that prepare our students to find jobs in the local biotechnology job market. Although this is not a core course, almost all graduate students working in the molecular and cell biology concentration consider taking this course. This course also attracts graduate students from departments all over the campus including Human Genetics, Biochemistry and Molecular Biology, and Pharmacy.

Graduate Seminar (1 credit hour, Graduates only): This is a core graduate course, which is offered both in the fall and spring semesters. All incoming graduate students in the biology department take this course as part of their core requirement.

Independent Investigation (3 cr,hr, undergraduates only): This course provides research opportunities for undergraduate students. Each year, one or two undergraduate students are enrolled in this course to perform research in my lab.

Directed Reading (1 credit hors, undergraduates only): In this course, undergraduate students review the literature on a specific research topic.

WORKSHOPS AND PANEL PARTICIPATION

Participant National Institute on Aging/Brookedale Foundation Summer Institute on Aging Research, July 7-13, 2001, Arlie, VA.

Summer training course on Aging Research, University of Michigan, June 2-6, Ann Arbor Michigan, 2002.