

Keka C. Biswas

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Education

Ph.D. University of New Mexico, Department of Biology, Albuquerque, NM, USA. Doctor of Philosophy in Biology Advisor: Dr Larry L. Barton.	1998
M.Sc. University of Nagpur, Department of Zoology, Nagpur, India. Master of Science in Zoology Advisor: Dr V. G Meshram	1989
B.Sc. University of Nagpur, Department of Zoology, Nagpur, India Bachelor of Science in Microbiology. Advisor: Dr S. Kasbekar	1987
B.Ed. University of Nagpur, Department of Education, Nagpur, India Bachelor of Education in Teaching.	1991

Professional Experience

Lecturer, University of Alabama in Huntsville, Department of Biological Sciences, Huntsville, Alabama	2024 – Present
Clinical Instructor, University of Alabama in Huntsville, Department of Biological Sciences, Huntsville, Alabama.	2022– 2024
Part time Instructor, University of Alabama in Huntsville, Department of Biological Sciences, Huntsville, Alabama	2019 – 2022
Instructor, University of Delaware, Department of Medical Laboratory Sciences, Newark, DE.	2016 – 2019
Bioterrorism Microbiologist, Dept of Health and Social Services DPHL Smyrna, Delaware 19977.	2015 – 2018
Associate Adjunct Professor, Department of Biological Sciences, Delaware State University, Dover DE 19901.	2010-2015
Assistant Professor, Department of Biology and Environmental Sciences, Wesley College, N State Street, Dover, DE 19901; USA	2005-2010
Graduate Research Assistant, Department of Biology, University of New Mexico. 1993- 1998	

*From 2001-2005, Nashville TN, raising family

Other Relevant Training

University of Tennessee in Knoxville: Certification in online teaching and online course development, 2023

Teaching Repertoire

Anatomy and Physiology courses taught as instructor on record three years total including DTCC, DSU and UAH)

- Essentials of Anatomy and Physiology
- Anatomy and Physiology I & II
- Comparative Vertebrate Anatomy
- Human Biology
- Human Diseases
- Advanced Anatomy and Physiology

Other introductory, undergraduate, and graduate level service courses taught as instructor on record.

- General Microbiology
- Introductory Microbiology
- Environmental Microbiology
- Infection and Immunity
- Immunology
- Applied Toxicology
- Microbial Physiology
- Cell and Developmental Biology
- Virology
- Molecular Genetics
- Principles of Ecology
- General Chemistry
- Chemistry for Health Sciences
- Forensic Chemistry
- Chemistry for Allied Health
- Medical Terminology
- General and Advanced Biochemistry

Selected Publications

2024 Role of inter- and extra-lesion tissue, transfer learning, and fine-tuning in the robust classification of breast lesions Iulia-Nela Anghelache Nastase, Simona Moldovanu, Keka C. Biswas & Luminita Moraru. *Scientific Reports volume 14*, 22754
<https://www.nature.com/articles/s41598-024-74316-5>

2023 Moldovanu S, Miron M, Rusu C-G, Biswas KC, Moraru L. (2023) “Refining skin lesions classification performance using geometric features of super pixels”. *Scientific Reports 13*:11463. <https://www.nature.com/articles/s41598-023-38706-5>

2021 Skin Lesion Classification Based on Surface Fractal Dimensions and Statistical Color Cluster Features Using an Ensemble of Machine Learning Techniques Simona Moldovanu, Felicia Anisoara, Damian Michis, Keka C. Biswas, Anisia Culea-Flores and Luminita Moraru. *Cancers* 2021, 13. <https://www.mdpi.com/2072-6694/13/21/5256>

2021 Towards accurate diagnosis of skin lesions using feedforward back propagation neural networks. Moldovanu, S.; Cristian-Dragos, O.; Biswas-Choudhury, K.; Moraru, L. *Diagnostics*. 2021, 11(6), 936.

2011 A novel method for the measurement of elemental selenium produced by bacterial reduction of selenite. Biswas, K. C., Barton, L. L., Tsui, W.L., Shuman, K., Gillespie, J., Ezeb, C.S. *Journal of Microbiological Methods*, 2011, 86:140-144.

2010 Hydrolytic and Photolytic Degradation of Oxytetracycline Xuang R.; Arisi, L.; Wang, Q.; Scott, R.; and Biswas, K. C. *Journal of Environmental Health Sciences, Part B*. 2010, 45:73-81.

2009 Molybdate Reduction by Sulfate Reducing Bacteria. Biswas, K. C.; Woodward, N. A.; Xu, H.; Barton, L. L. *BioMetals*, 2009, 22, 131-139.

2008 “Trace Metal Homeostasis in Bacteria” Biswas, K. C.; Barton, L. L.; An invited talk at the Bio- metals Symposium at the University of Santiago, Spain, July 14-17, 2008. (Presented by Larry L. Barton) <http://www.usc.es/congressos/biomet08>

2008 “Measuring the Rate of Elemental Selenium Formation by Environmental Bacteria “ Biswas, K. C.; Gillespie, J.; Shuman, K. E.; Barton, L. L.; 2008. American society for microbiology 108th General meeting, Boston, MA June 2-5.

2001 Volatile ketone formation in bacteria: Release of 3-oxopentanoate by soil pseudomonads during growth on heptanoate. Matiassek, M. G.; Biswas- Choudhury, K.; Nemecek, M.; Fall, R. *Current Microbiology*, 2001, 42, 276-281

2000 TEM investigation of U⁶⁺ and Re⁷⁺ reduction by *Desulfovibrio desulfuricans*, a sulfate reducing bacterium. Xu, H.; Barton, L. L.; Biswas-Choudhury, K.; Wang P- Z.Y. Department of Energy. Scientific and Technical Information. 2000

1998 Bacterial reduction of soluble uranium: The first step of in situ immobilization of uranium Barton, L. L.; Biswas-Choudhury, K.; Thompson, B. M.; Steenhoudt, K.; Groffman, A. R. *Radioactive waste management*

Work Experience

Work Experience at Delaware Public Health Laboratory (DHSS/DPHL 2015- 2018)

- Maintain Proficiency in procedures in the LRN (Laboratory Response Network) Select Agent program and Food Emergency Response Network Outbreak Response Testing.
- Maintain Proficiency with Laboratory Information Management system (LIMS) Specimen tracking and order review.
- Served as one of the leads in LRN/PHEP activities
- Performed site visits to Sentinel labs and served as a liaison with hospital activities

- Provided Bioterrorism and Bio safety related training to internal and external laboratory staff as part of job duties of a Bioterrorism Microbiologist at DPHL.
- Oversee updates and tracking of plans, training and documents for laboratory staff.
- Performed high Complexity testing in infectious disease sections, adhering to testing methods within the guidelines of CLIA regulations.
- Maintained the Standard Operating Procedures, Inventory and Quality Control/Assurance documents in the infectious disease sections. Reviewed the work of others for accuracy and proper interpretation of results.
- Served as a scientist in the Division of Microbiology to conduct both conventional microbiology and specialized microbiology-based procedures/assays; interpreted and reported results on clinical specimens and environmental samples submitted to the State Public Health Laboratory for detection and/or characterization of infectious disease agents. Additionally responded to increasing testing associated with epidemics, disease outbreak investigations, and seasonal surveillance testing as circumstances warrant.

Teaching Experience

1. Teaching and instruction at University of Tennessee in Knoxville

Taught Immunology, Virology and General Microbiology for the Department of Microbiology at University of Tennessee in Knoxville

2. Teaching and Instruction at University of Alabama in Huntsville in different permutation combination of at least three to four courses per semester (Spring 2019 - Present)

Medical Terminology (BYS 320)

Introduction to Biotechnological Understanding of Biological Systems (BYS 311)

Infection and Immunity (BYS 214)

Cell & Developmental Biology (BYS 300)

Organismal Biology (BYS 120)

Molecular Biology of the Cell (BYS 543)

Elementary Biochemistry (BYS 301/CH 301)

Anatomy and Physiology I & II (BYS 215 and 216)

3. Teaching and Instruction at Alabama A&M University:

In the past have taught lower-level Biology Courses for majors (BIO 103, Principles of Biology lecture and Lab Fall 2018) and non-majors (BIO 102 General Biology, Spring 2019) as an Adjunct Faculty at Alabama A&M University.

4. Teaching and Instruction at Delaware Technical Community College and Delaware State University.

Instructor on record for Anatomy and Physiology I & II (BIO 120 and BIO 121) at DTCC. In addition to General Biology, I am the instructor on record for Human Biology, Human Diseases and Comparative Vertebrate Anatomy at Delaware State University, Dover DE.

5. Have worked on expanding research capabilities in HBCU and four-year colleges and medical/molecular microbiology for securing grants and expanding on the experience of having successfully written and secured funding on NSF EPSCoR and INBRE grant.

Other Teaching Experience

2017 Guest Lecturer, Select agents and BSL3 Public Health Labs, University of Delaware, Newark DE

2017 Organized, coordinated, and taught DPHL workshops with sentinel laboratory microbiologist and local laboratories, health professionals, and educational institutions to identify health threats, alert health authorities and train laboratory staff and other health care providers.

2016 Course co- Instructor and co-Developer, Best Teaching Practices for Graduate teaching assistants, Department of Biology Delaware State University.

2010- 2015 Taught, developed, and coordinated courses in Biology, Exercise Science, Chemistry, Anatomy and Physiology with the nursing department at Delaware State University and Delaware Technical and Community College.

2005 -2010 Taught and mentored undergraduate students and Masters students in Molecular Microbiology and at Wesley College as an Assistant Professor.

Professional Service

Services at University of Alabama in Huntsville:

Fall 2024 Department of Biological Sciences, Served in the BYS PhD program review committee.

2024-2025, College of Science , Currently serving in the college of science faculty feedback committee, a platform for regular and informal opportunity to communicate with CoS leadership.

2016 Health Care Professional Development Workshop Presenter, Developer and Coordinator, Delaware Public Health Services DHSS workshop at DPHL

2014 Committee Member, Served on the College of Mathematics, Natural Sciences and Technology Academic Advisor Search Committee at Delaware State University.

2010 Scholar's Day, Undergraduate research awards and scholarship committee Wesley College, Dover DE 19901.

2005-2010 Have been the Academic advisor of 16 undergraduate and graduate students. Provided academic and career advice to students and promoted student leadership and enrichment experiences.

Student Supervision (Research Training)

Graduate Student Advising (In collaboration with nursing department Wesley College)

- Nursing student Dorothy Eyong defended her master's Thesis, Dec 2010 under my supervision as an Advisor on research work done in the newly established molecular microbiology lab at Wesley college, Summer 2009. (This is a collaborative effort with nursing department graduate program chair Dr. Judy Strasser and Dr. Lucille Gambardella; Professor and chair nursing program at Wesley College).
- Dorothy is currently a nursing faculty at Delaware Technical and Community College (Terry Campus), Dover DE.

Undergraduate Student Advising

- Since Fall of 2007, 15 undergraduates have been mentored in the laboratory of Environmental microbiology, with one of them Jacquelyn Gillespie, the first undergraduate research intern graduated in May 2008 after completing of her senior thesis.
- She is working presently in a veterinary hospital. Shannon Carter and Kevin Shuman have been accepted into the doctoral program at the University of Delaware.
- • The rest of the student interns are well placed either in graduate schools or have entered the work force. Currently there are three student interns who are working in the lab and have just completed

Outreach

- 2021- 2023 STEM DAY: Judging and evaluating undergraduate and graduate oral research presentations at Alabama A&M University Annual STEM DAY.
- 2023 Taught a semester course in Organismal Biology (BYS 120) at Jemison High School under Huntsville City Schools as part of an outreach program that UAH has put in place. The Division of Educational Outreach's mission is to connect educators and students with collaborative programs and services that provide ongoing, innovative, and sustainable, high-quality professional learning opportunities that improve the quality of instruction and positively affect student achievement in the classroom.
- 2023, April Volunteered with Department of Biological Sciences faculty at the UAH Girls in Science and Engineering Days at the Shelby center for Science and Technology.NSF EPSCoR summer, 2010 research internship with me.

Funding and Awards

May 2015 NSF- EPSCoR Seed Grant: Characterization of Airborne pathogens, heavy metals and Estrogenic hormones From Chicken House particulates. \$ 30,000 (Co-Pi with Dr Qiquan Wang from Delaware State University) Funded.

June 2008 -July 2012, NSF EPSCoR RII -2: Delaware EPSCoR Research Infrastructure Improvement. (RII-2) Proposal: Building research and education infrastructure to enhance environmental science and its application in Delaware. June 2008- July 2012. \$ 750,000 (Co- investigator on the grant with University of Delaware). The total grant is in the amount of \$ 20M (\$ 15 M from the NSF and \$ 5M from the State)

May 2009 -May 2014, NIH-INBRE: \$ 958, 449 in direct cost plus \$ 88,446 in overhead, May 2009-2014. Co- investigator on the grant with University of Delaware.

Feb 2008- May 2008, NSF EPSCoR RII: Selenium Detoxification of Soils, \$ 25,000 (Co-PI on the Grant with University of Delaware

May 2010 NSF- ARI R2: Transitioning Undergraduate Research in Science at Wesley to meet the Challenges of the 21st century. (Co- PI with M. J. D'Souza).

June 2010, Proposal Submission: NSF S-STEM grant: Scholarships for undergraduates in the Honors Science and Mathematics programs at Wesley college (Wesley-Honors-STEM). (Co- PI on the grant with faculty from Science, Environmental Science, Mathematics, Honors Program Director and Vice President of Academic affairs.

Graduate Research Funding Travel Grant. Department of Biology. University of New Mexico, Albuquerque, NM (\$1,500)
