

Keka C. Biswas, Ph. D

**Email:** [kcb0015@uah.edu](mailto:kcb0015@uah.edu)

University of Nagpur, India, Microbiology, B.Sc., 1987

University of Nagpur, India, Zoology, M.Sc., 1989

University of Nagpur, India, Biology and Chemistry, B.Ed;1991

University of New Mexico, Albuquerque NM, USA, Biology, Ph.D., 1998

University of Colorado, Boulder, CO, USA, Postdoctoral Research in Biochemistry; 1999 -2001

### **Employment History**

- Part Time Instructor, University of Alabama at Huntsville, Department of Biological Sciences, Spring 2019-present
- Adjunct Faculty, Alabama A &M University, Dept of Biological and Environmental Sciences, Fall 2018 –Spring 2019
- Lecturer, University of Delaware, Dept of Medical Laboratory Sciences, Fall 2016- Spring 2018.
- Bioterrorism Microbiologist, Delaware Public Health Laboratory, Dec 2015- January 2017
- Adjunct Associate Professor, Dept of Biological Sciences, Delaware State University, Spring 2011- Fall 2015
- Instructor, Delaware Technical Community College, Terry Campus, Fall 2014
- Assistant Professor, Wesley College, Dept. of Sciences (Biology and Environ. Studies),2005-2010
- Post-Doctoral Research Associate (Environmental Biochemistry), UC Boulder, Fall 1999-2001
- Research Assistant, graduate student (Environmental Microbiology), University of New Mexico, Albuquerque, NM Fall 1993- Summer 1998

\*From **2001-2005**, Nashville TN, raising family

### **Teaching Repertoire**

- Principles of Biology
- Introductory Microbiology
- Microbiological
- Infection and Immunity
- Microbial Physiology
- Comparative Vertebrate Anatomy
- Cell and Developmental Biology
- Molecular Biology
- Anatomy and Physiology I and II
- Human Biology
- Human Diseases
- General Chemistry
- Chemistry for Health Sciences
- Forensic Chemistry
- Chemistry for Allied Health
- Medical Terminology
- Language of Medicine
- Research Methods
- Applied Toxicology
- General Biochemistry
- Introductory Biochemistry

# Work Experiences

## Current Work Experience (FALL 2018- Spring 2021)

- Currently teaching courses for the Department of Biological Sciences, UAH, Spring 2019 - Spring 2021. Teaching a Hybrid online course in Medical Terminology (BYS 320). This class is directed towards pre-Med, Nursing, Biology majors. Additionally, teaching courses in Infection and Immunity( BY214) , Elementary Biochemistry( BY301/CH301) and Cell Developmental Biology(BYS 300) at UAH.
- 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.
- 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 grants.

## Work Experience at Delaware Public Health Laboratory, DHSS ( December 2015- January 2017)

- 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 the area of 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.

## Work /Teaching Experience:

### Teaching and Instruction at University of Alabama at Huntsville (Spring 2019 - Spring2021)

- Medical Terminology
- Infection and Immunity
- Elementary Biochemistry
- Cell & Developmental Biology

**Teaching and Instruction at Delaware State University, Dover DE 19901 ( Spring 2011- Fall 2015)**

- Biol 100 Fundamentals of Biology ( 4 Cr)
- Biol 101 General Biology (4 Cr)
- Biol 101 General Biology Lab (4 Cr)
- Biol 102 General Biology ( 4 Cr)
- Biol 102 General Biology Lab
- Biol 103 Human Biology (4 Cr)
- Biol 111 Human Diseases (4 Cr)
- Biol 107 Human Heredity ( 3 Cr)
- BI 215 Cell Biology ( 3 Cr)
- BI 310 Molecular Biology ( 3 Cr)
- Biol 507 Laboratory/ Field Teaching Methods in Biology ( 3 Cr)
- Chem 101 General Chemistry ( 4 Cr)
- Chem 107 Chemistry for Health Sciences ( 4 Cr)
- Chem 202 Forensic Chemistry ( 3 Cr)

**Teaching and Instruction at Delaware Technical Community College, Dover, DE 19901 ( Fall 2014- Summer 2015)**

- Biol 120 Anatomy and Physiology I Lecture and Laboratory (5 Cr)
- Biol 121 Anatomy and Physiology II, Lecture and Laboratory ( 5 Cr)

**Teaching and Instruction at Wesley College , Dover DE, 19901 (Fall 2005- Fall 2010)**

- BI 140 The Scientific Process
- CH 130 Chemistry for Allied Health ( 4 Cr)
- CH130 Chemistry for Allied Health Laboratory
- CH 326 Biochemistry (3 Cr)
- BI 265/ 365 Directed Research( 3 Cr)
- ES / BI 406/506 Research Methods ( 2 Cr)
- ES/ BI 407/507 Experimental and Project Research ( 3 Cr)
- ES 600 Environmental Sciences Thesis and Integrated Research ( 3 Cr)
- ES / NR Applied Toxicology ( 3 Cr)

**Teaching and Instruction at Delaware Technical Community College, Dover, DE 19901 ( Fall 2014- Summer 2015)**

- Biol 120 Anatomy and Physiology I Lecture and Laboratory (5 Cr)
- Biol 121 Anatomy and Physiology II, Lecture and Laboratory ( 5 Cr)

**Teaching and Instruction at Wesley College , Dover DE, 19901 (Fall 2005- Fall 2010)**

- BI 140 The Scientific Process
- CH 130 Chemistry for Allied Health ( 4 Cr)
- CH130 Chemistry for Allied Health Laboratory
- CH 326 Biochemistry (3 Cr)
- BI 265/ 365 Directed Research( 3 Cr)
- ES / BI 406/506 Research Methods ( 2 Cr)
- ES/ BI 407/507 Experimental and Project Research ( 3 Cr)
- ES 600 Environmental Sciences Thesis and Integrated Research ( 3 Cr)
- ES / NR Applied Toxicology ( 3 Cr)

**Teaching and Instructions at University of New Mexico, Albuquerque, NM (Fall 1993-Summer 1998)**

- Biol 123 Biology For Health Related Science, Lab ( 3 Cr)
- Biol 351 General Microbiology (3Cr)
- Biol 460 Microbial Physiology ( Lecture for one semester) ( 3 Cr)

### **1. Professional Activities: Publications:**

1. 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.
2. Hydrolytic and Photolytic Degradation of Oxytetracycline Xuang R.; Arisi, L.; Wang, Q.; Scott, R.; and Biswas, K. C. *J. of Environmental Health Sciences*, Part B. **2010**, 45:73-81.
3. Molybdate Reduction by Sulfate Reducing Bacteria. Biswas, K. C.; Woodward, N. A.; Xu, H.; Barton, L. L. *BioMetals*, **2009**, 22, 131-139.
4. "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>
5. Volatile ketone formation in bacteria: Release of 3-oxopentanoate by soil pseudomonads during growth on heptanoate. Matiasek, M. G.; Biswas- Choudhury, K.; Nemecek, M.; Fall, R. *Current Microbiology*, **2001**, 42, 276- 281
6. "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 108<sup>th</sup> General meeting, Boston, MA June 2-5.
7. "Biodegradation of Steroidal Pharamaceuticals by Environmental Bacterial isolates " Shuman, K. E.; Biswas, K. C.; D'Souza, M.; **2009**. 237th American Chemical Society Meeting. Salt Lake City UT. March 22-25.
8. 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
9. 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 and environmental restoration*. 1998, 20, 141-151.
10. Removal of uranyl ion by anaerobic bacteria. Barton, L. L.; Biswas-Choudhury, K.; Thompson, B. M.; Steenhoudt, K.; Thombre, M. *International journal of environmental conscious design and manufacturing*. 1995, 4, 3-4.

11. Volatile ketone formation in bacteria: Release of 3-oxopentanoate by soil pseudomonads during growth on heptanoate. Matiasek, M. G.; Biswas- Choudhury, K.; Nemecek, M.; Fall, R. *Current Microbiology*, **2001**, 42, 276- 281
12. “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 108<sup>th</sup> General meeting, Boston, MA June 2-5.
13. “Biodegradation of Steroidal Pharamaceuticals by Environmental Bacterial isolates “Shuman, K. E.; Biswas, K. C.; D’Souza, M.; **2009**. 237th American Chemical Society Meeting. Salt Lake City UT. March 22-25.
14. 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
15. 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 and environmental restoration*. 1998, 20, 141-151.
16. Removal of uranyl ion by anaerobic bacteria. Barton, L. L.; Biswas-Choudhury, K.; Thompson, B. M.; Steenhoudt, K.; Thombre, M. *International journal of environmental conscious design and manufacturing*. 1995, 4, 3-4.

#### **4.Grants and Awards**

1. NSF EPSCoR RII: Selenium Detoxification of Soils, Funded, Feb 2008- May 2008, \$ 25,000 (Co investigator on the grant with university of Delaware ) **Funded**
2. **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 ) **Funded**
3. **NIH-INBRE:** \$ 958, 449 in direct cost plus \$ 88,446 in overhead, May 2009-2014. Co-investigator on the grant with University of Delaware. **Funded**
4. **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**.
5. **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). 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.

6. **Services:** Services at Delaware State University and at Other Institutions  
**Advising**

- Have successfully worked with a class of 70- 80 students during fall and spring semesters, at Delaware State University for the past three years, teaching various courses to freshman level undergraduate students, guiding them through their coursework and other lab related activities.
- Have trained and mentored a graduate student, **Mariah Wilson** at Delaware State University in teaching methods in a classroom and laboratory setting. The student is currently assigned to teach at a local middle school science class.
- With the aim of having undergraduate students at Wesley College do research in environmental toxicology/ microbial molecular biology/ Pharmaceutical toxicology I proposed the establishment of a research laboratory which is now successfully training students in various aspects of Environmental Microbiology. Initial funds to Wesley College from NSF EPSCoR (along with other partner institutions like DBI, University of Delaware, Delaware State University and DTCC) were used to formulate the groundwork to establish this Laboratory and conduct research under my direction in February 2008.
- A major accomplishment (using EPSCoR funds) was outfitting the lab with molecular biology capability and research conducted in the laboratory getting National recognition: Kevin Shuman's project being awarded the certificate of Merit and him being one of the undergraduate recipients of the National award from the Division of Environmental Chemistry at ACS.
- **Academic Advising:** Have been the academic advisor of 16 undergraduates and have been guiding them towards the completion of their degree.
- **Graduate Advising:** Nursing student Dorothy Eyong defended her Master's Thesis, Dec 2010 under my supervision as a co-advisor on work done in the newly established molecular microbiology lab, 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 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 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 NSF EPSCoR summer, 2010 research internship with me.
- **Services at Delaware State University:**

Served on the CMNST (College of Mathematics, Natural Sciences and Technology) Academic Advisor Search Committee.

**7. Committee Work:** Have been actively involved in

- Scholars Day committee
- Institutional Review Board
- Search Committee for a Nursing Faculty in Psych Mental Health
- Search Committee For CMNST Academic Advisor