Curriculum Vitae

Bernard S. Munge, Ph.D.

Department of Chemistry
Salve Regina University
100 Ochre Point Avenue
Newport, RI. 02840-4192

Phone: +1-401-341-3252
FAX: +1-401-341-2941
Email: bernard.munge@salve.edu

EDUCATION
Ph.D., University of Connecticut: Chemistry, 2003
Postdoctoral Fellowship, New Mexico State University: Sensor Chip Lab, (8/03 - 8/04)
M.S., University of Nairobi: Chemistry, 1994
B.S., University of Nairobi: Chemistry (*Summa Cum Laude*), 1992

Research and Professional Experience

2019 – 2024	C-AIM, NSF/RI-EPSCOR – Salve Lead
2017 – Present	Professor
2016 – 2019	Chairman, Department of Chemistry
2010 - 2016	Associate Professor of Chemistry
2004 – 2009	Assistant Professor of Chemistry, Salve Regina University
2005 (summer)	University of Connecticut, CT., Visiting Research Professor

Awards and Honors
Tenure Award 2010
Randolph T. Major Memorial Lecture Series, UCONN, Best Poster Award, 2003
Society for Electroanalytical Chemistry (SEAC) Travel Award to PITTCON conference for outstanding student in graduate career, 2003
Doctoral Dissertation Fellowship, University of Connecticut, 2002
DAAD (Germany Academic Exchange Service) M.S. scholarship, University of Nairobi, 1992
B.S. *Summa Cum Laude*, University of Nairobi, 1992

GRANTS
The RI Consortium for Coastal Ecology Assessment, Innovation & Modeling, a Track 1 EPSCoR Grant, RI C-AIM/NSF-EPSCoR (2017-2024). In this statewide Collaborative project, I was involved in the Development of Simple, low cost, sensitive Nanostructured Microfluidic-based Sensors for the Detection of Seawater nutrients in Collaboration with Dr Jason Dwyer (URI, Department of Chemistry, Drs. Geoffrey Bothun and .

IDea Network of Biomedical Research Excellence, RI (RI-INBRE), SURF Grant Award # 2P20GM103430 from National Institute of Health (NIGMS/NIH) "Nano-Biomarker Arrays for Cutaneous T-Cell Carcinoma"
US $ 25,290 May 2018 April 30, 2019– PI: Bernard S. Munge

Rhode Island Science and Technology Advisory Council (STAC). Engineering Reliable and Affordable Tools for Environmentally and Economically-Driven Aquatic Monitoring
US $ 80,000 2019
PIS: Jason Dwyer (URI, Chemistry), Amit Basu (Brown, Chemistry), Bernard Munge (SRU, Chemistry)

IDea Network of Biomedical Research Excellence, RI (RI-INBRE), **SURF Grant Award # 2P20GM103430** from National Institute of Health (NIGMS/NIH) "Nano-Biomarker Arrays for Cutaneous T-Cell Carcinoma"
US $ 25,290 2017 – PI: Bernard S. Munge

IDea Network of Biomedical Research Excellence, RI (RI-INBRE), **SURF Grant Award # 2P20GM103430** from *National Institute of Health* (NIGMS/NIH) **"Nano-Biomarker Arrays for Cutaneous T-Cell Carcinoma"**
US $ 25,000 2014 – *PI:* Bernard S. Munge
The goal of this proposal is to develop a simple, rapid, low cost, ultra-sensitive nanomaterial-based array to measure collections of early cancer biomarker proteins in serum and tissue lysate for cutaneous T cell lymphoma (CTCL).

IDea Network of Biomedical Research Excellence, RI (RI-INBRE) **Grant Award # P20RR016457** from *National Institute of Health* (NCRR/NIH) **"Biomarker Arrays for Tobacco-Related Cancer Diagnostics"**
US $ 410,020 (2009-2014) – *PI:* Bernard S. Munge
The goal is to develop nanomaterial-based sensor for electrochemical detection of disease markers focused on tobacco related cancers

IDea Network of Biomedical Research Excellence, RI (RI-INBRE) **Grant Award # P20RR016457** from ***National Institute of Health*** **(NCRR/NIH)** "Nanomaterial-Based Bioelectronic Detection of Disease Markers"
US $ 394,144 (2006-2009) – *PI:* Bernard S. Munge
The goal is to develop nanomaterial-based sensor for electrochemical detection of disease markers

Rhode Island Science and Technology Advisory Council (STAC), **Grant Award # RIRA-2008-19**
"Surface Modification of Solid-State Nanopores for Genomic Analysis"
US $148,049.98 Jan 2008 - Dec. 2008
PIs: John Oliver, Bernard Munge
The goal is to develop a rapid, low cost method for sequencing DNA subspecies for various diseases, which would lead to personalized medicine.

Rhode Island Science and Technology Advisory Council (STAC), **Grant Award # RIRA-2008-48**
"Novel Drugs for the Treatment of Congestive Heart Failure and Asthma"
US $106,657 Jan 2008 - Dec. 2008
PIs: A. Kovoor, Bernard Munge, D. Rowley, J. Celver
The goal is to develop a nanomaterials-based method for high throughput screening of novel drugs for the treatment of congestive heart failure and asthma.

Other unsuccessful Grant Applications

Rhode Island Science and Technology Advisory Council (STAC), **2015,** "Nanotextured Gold Surfaces on Rigid and Paper-based Platforms for Sensing Environmental Contaminants"
US$ 100,000 Jan 2016 – Dec. 2016
PIs: Geoffrey Bothum, Jason Dwyer and Bernard Munge
The goal of this proposed project is to create advanced nanosensing technologies for detecting contaminants (nutrients and pollutants) in fresh and salt waters that are robust and cost-effective, and that provide high accuracy and low limits-of-detection (LOD).

This was a collaborative grant application involving Dr. Geoffrey Bothum, *Department of Chemical Engineering, University of Rhode Island*, Dr. Jason Dwyer, *Department of Chemistry, University of Rhode Island* and Dr. Bernard S. Munge, *Department of Chemistry, Salve Regina University*.

"Nano-Biomarker Arrays for Cutaneous T-Cell Carcinoma" R15 grant proposal submitted to the ***National Cancer Institute***, ***National Institute of Health (NCI/NIH)***.
US$ 360,019 2013 – 2016 - *PI*: Bernard S. Munge
The goal of this proposal is to develop a simple, rapid, low cost, ultra-sensitive nanomaterial-based array to measure collections of early cancer biomarker proteins in serum and tissue lysate for cutaneous T cell lymphoma (CTCL). Early and accurate diagnosis of CTCL has long been an elusive target for clinicians, pathologists, and patients alike and diagnosis can typically take on average 5 to 6 years. Most patients with early-stage CTCL discover what ailment afflicts them only after multiple skin biopsies and endless doctors' visits.

This grant proposal was developed in collaboration with Dr. Marshall E. Kadin, Professor of Dermatology & Skin Surgery, *Roger Williams Medical Center, Boston University.*

TEACHING RESPONSIBILITIES

Regularly teaches (2004 -Present)
PHY 205 Principles of Physics I (Calculus based) – Lecture & Labs
PHY 206 Principles of Physics II (Calculus based) – Lecture & Labs
PHY 201 General Physics I (Algebra-based) - Lecture & Labs
PHY 202 General Physics II (Algebra-based) - Lecture & Labs
CHM 301 Analytical Chemistry with Labs
CHM 309 Instrumental Analysis with Labs
CHM 410 Topics in Chemistry and Research (Capstone Course)
CHM 497 Undergraduate Research I
CHM 498: Undergraduate Research II
Have Taught
SCI105 Integrated Science w/Computers
SCI 103Physical Science
CHM130: Chemistry in Society
NSS – New students Seminars

CURRICULUM DEVELOPMENT

As the Chair, Department of Chemistry (2016-2019), Salve Regina University, I lead the Department in Developing 4 new Academic Programs, **BS in Biochemistry, BA in Chemistry, Bachelor of Arts in Chemistry and Secondary Education (BAS)** for high school teachers. Also, in collaboration with the Mathematical Science Department developed **Engineering (3+2 dual Degree),** where students take pre-Engineering courses at Salve for 3 years and 2 years at St. Louis Missouri graduating with dual degrees, a BA in Chemistry from Salve and a BS in Chemical Engineering or Biomedical Engineering. Alternatively, students could also take the accelerated (3 +3) leading to a BA in Chemistry and a Master of Science in Engineering.

Teaching Pedagogy Conferences and Workshops Attended

New England Faculty Development Consortium (NEFDC) Conference. **Reclaiming Innovation: Promoting Students' Ownership of Learning through Social Media**. New England Institute of Technology, East Greenwich, RI. November 13, **2015**

New England Faculty Development Consortium (NEFDC) Conference. **Challenges and Opportunities for Educators of the Future. Pre-conference Workshop. Experiential Education**, College of the Holy Cross in Worcester, MA November 20-21, **2014**

SERVICE RESPONSIBILITIES

Faculty Salaries and Benefits Committee (FACSB), 2006 – present; Co-chair 2013-present
Served as a member in the FACSB committee since 2006. The Committee is mandated by the faculty assembly to review on a yearly basis faculty salaries and benefits and advise the president.

Curriculum Committee (Elected for a 3 year term) - Member 2012 – 2015
Elected member by Salve Regina University's Faculty Assembly to serve in the Curriculum Committee, 2012 – 2014. This committee deals with all matters pertaining to curriculum including new course development, new programs and curriculum revision/changes etc.

3rd Year Tenure Review (Appointed by the Provost) – Member 2012 – 2013
This committee was tasked with reviewing the tenure progress of tenure track faculty members. The committee evaluates progress made in scholarship, teaching and service and provides important feedback, mentorship and guidance to junior faculty as they prepare for tenure and promotion.

Faculty Search Committee (Appointed by the Provost) – Member 2011, 2012, 2013
Committee appointment by the University Provost to search for new faculty in the Department of Chemistry

Elections Committee (Elected for a 3 year term) - Member, 2008 - 2011
Elected member by Salve Regina University's Faculty Assembly to serve in the Election's Committee, 2008 - 2011. The Committee carries out all faculty elections according to established procedures and monitors and adapts, when needed, the implementation of these procedures.

Governor's Blue-Ribbon Panel on Mathematics and Science, Rhode Island, 2004/05:
Participated in the Governor's blue-ribbon panel on Mathematics and Science, RI. The committee chaired by the Rhode island's Governor was tasked with developing action plans to improve the way that students learn and teachers teach in the critical areas of math and science education in Rhode Island. It focused on laying out a series of steps to make the practical application of these subjects a more integral part of a student's education.

Peer Reviewer, 2004 - present
Reviews Research Grant Proposals submitted to the *National Science Foundation (NSF),* a major government funding Agency and also articles submitted for publication in the following peer reviewed journals of science: *Biophysical Chemistry, Journal of Electroanalytical Chemistry, Electroanalysis, Analytical Chemistry, Biosensor Bioelectronics etc.*

Library Committee, 2004 to 2007
Appointed by the Chair, Department of Chemistry as the Departments representative. Duties involve working with the Chemistry's faculty to identify any teaching materials they need and insuring that they are available in the library.

New Student Seminar
Taught and Advised students in NSS 2008 to 2009

Writing Across the Curriculum - 2004

Participated in Writing Across the Curriculum (WAC) workshop. This area combines service, research and teaching. The goal is to enhance writing skills for teachers across different disciplines.

Diversity Committee (Appointed by Sr. Leona Misto, VP for Mission Integration), 2008 to 2010
Served as a member of the steering committee on Diversity Discussion group headed by Sr. Leona Misto, Vice President for Mission Integration. The mission of the University calls upon us to "…*work for a world that is harmonious, just and merciful."* The goals are to open discussions around campus about diversity and to encourage faculty to become more proactive teachers.

Mercy/Chaos Committee (Appointed by Sr. Leona Misto, VP for Mission Integration) – Member 2006 - 2008
Served in a *Mercy/Chaos Discussion* group headed by Sr. Leona Misto, Vice President for Mission Integration. The mission of Salve Regina University closes with the statement: *"In keeping with the traditions of the Sisters of Mercy, and recognizing that all people are stewards of God's creation, the University encourages students to work for a world that is harmonious, just and merciful."* The purpose of this project was to analyze how our respective disciplines help students to work toward the goal of a merciful world, by reflecting on how mercy is understood and realized in different academic disciplines.

RESEARCH INTERESTS

Our research focuses on the development of chemical and biological sensors. We span the traditional areas of bioanalytical chemistry, biology and material science, focusing on the development of nanomaterials-based sensor arrays for applications in biomedical diagnostics and environmental monitoring. One ongoing project focuses on biosensor arrays for the early detection of cancer biomarker proteins in serum. Broadly defined as measurable or observable factors that indicate normal biological processes, disease processes or responses to a therapeutic intervention, biomarkers can include physical symptoms, secreted proteins, mutated DNAs and RNAs, cell death or proliferation, and serum concentrations of small molecules such as glucose or cholesterol. The development of low-cost, reliable methods for simultaneously measuring panels of protein biomarkers is critically important for early detection of cancer, disease monitoring and personalized cancer therapy. Our long-term goal is to develop a simple, rapid device capable of simultaneously measuring a panel of 4-8 cancer biomarkers for point-of-care clinical application at the physician's office. This will dramatically reduce health care costs and lead to accurate cancer diagnosis, disease monitoring and patients' response to therapy and allow early detection of disease relapse.

We are also involved in statewide collaborative research focused on developing micro-fluidic sensors with integrated nanoscale architectures and supramolecular chemistries for real-time, low-cost, rapid detection of nutrients and pollutants in ocean waters. These projects provide research opportunities for our students and expose them to many bioanalytical techniques that are applied to synthesize nanoparticles, fabricate the immunosensors/chemical sensors, characterize and analyze the biosensor chemistry. These include voltammetry, UV-Vis spectroscopy, surface plasmon resonance, electrochemiluminescence, screen printing (fabrication), quartz crystal microbalance, spectroelectrochemistry, Fourier-transform infrared spectroscopy, Raman spectroscopy and surface chemistry techniques. These research experiences are leading to unique career opportunities for our students. Our students are not only learning science but also doing science.

PUBLICATIONS (Peer Reviewed Journal Articles)

Bernard S. Munge, Thomas Stracensky*, Kathleen Gamez*, Dimitri DiBiase*, James F. Rusling. **Multiplex Immunosensor Arrays for Electrochemical Detection of Cancer Biomarker Proteins.** *Electroanalysis* **2016**, (11):2644-2658

Rusling, J., Munge, B. S., Sardesai, N.; Malhotra, R., Chikkaveeraiah, B. **Nanoscience-Based Electrochemical Sensors and Arrays for Detection of Cancer Biomarker Proteins. In *Nanobioelectrochemistry*.** Crespilho, F. N. editor, Springer Heidelberg, New York, Dordrecht, London, **2012**; pp. 1-26.

Malhotra, R., Patel, V., Chikkaveeraiah, B. V., Munge, B. S., Cheong, S. C., Zain, R. B., Abraham, M, T., Dey, D. K., Gutkind, J. S., Rusling, J. F. **Ultrasensitive Detection of Cancer Biomarkers in the Clinic by Use of a Nanostructured Microfluidic Array**. *Anal. Chem*., **2012**, 84, 6249–6255.

Bernard S. Munge, Amy L. Coffey*, Jaimee M. Doucette*, Brian K. Somba, Ruchika Malhotra, Vyomesh Patel, J. Silvio Gutkind, James F. Rusling **"Nanostructured Immunosensor for Attomolar Detection of Cancer Biomarker Interleukin-8 Using Massively Labeled Superparamagnetic Particles"** *Angew. Chem. Int. Ed.* **2011** 50, 7915-7918.

Bernard S. Munge, Jacqueline Fisher*, Lines N. Millord*, Colleen E. Krause*, Richard S. Dowd*, James F. Rusling, "**Sensitive Electrochemical Immunosensor for Matrix Metalloproteinase-3 based on Single-wall Carbon Nanotubes"** *Analyst,* **2010**, 135, 1345–1350.

Bernard S. Munge, Richard S. Dowd*, Colleen E. Krause*, Lines N. Millord*, **"Ultrasensitive ;Hydrogen Peroxide Biosensor based on Enzyme bound to Layered Non-Oriented Multiwall Carbon Nanotubes/Polyelectrolyte Electrodes"** *Electroanalysis* **2009**, 21, No. 20, 2241 – 2248.

James F. Rusling, Xin Yu, Bernard S. Munge, Sang N. Kim, Fotios Papadimitrakopoulos, **In Single-wall Carbon Nanotube Forests in Biosensors: *Engineering the Bioelectronic Interface: Applications to Analyte Biosensing and Protein Detection*** (Ed. J. Davis). Royal Society of Chemistry (RSC), **2009**, pp.95-119.

Bernard S. Munge, Colleen E. Krause*, Ruchika Malhotra, Vyomesh Patel, J. Silvio Gutkind, James F. Rusling, **"Electrochemical Immunosensors for Interleukin-6. Comparison of Carbon Nanotube forest and Gold Nanoparticle platforms"** *Electrochem. Commun*. **2009**, 11, 1009-1012.

Gary C. Jensen, Xin Yu, Joseph D. Gong, Bernard Munge, Ashwin Bhirde, Sang N. Kim, Fotios Papadimitrakopoulos, James F. Rusling**. "Characterization of Multienzyme-Antibody-Carbon Nanotube Bioconjugates for Immunosensors"** *J. Nanoscience Nanotech*. **2008**, 8, 1-7.

Yu, X.; Bernard Munge; Patel, V.; Jensen, G.; Bhirde, A.; Gong, J. D.; Kim, S. N.; Gillespie, J.; Gutkind, J. S.; Papadimitrakopoulos, F.; Rusling, J. F. **"Carbon Nanotube Amplification Strategies for Highly Sensitive Immunodetection of Cancer Biomarkers"** *J. Amer. Chem. Soc*.; **2006**; *128*; 11199-11205.

Khrisna Alcantara, Bernard Munge, Zeus Pendon, Harry A. Frank, James. F. Rusling **"Proton Gated Electron Transfer involving the Mn4 Cluster of Spinach Photosystem II Reaction Center Protein"** *J. Amer. Chem. Soc*.; **2006**, *128*, 14930-14937.

Bernard Munge, G. Liu, G. Collins, J. Wang **"Multiple Enzyme Layers on Carbon Nanotubes for Ultrasensitive Electrochemical Detection Down to 80 DNA Copies"** *Anal. Chem.* **2005,** *77*, 4662-4666.

J. Wang; G. Liu, Bernard Munge, L. Lin , Q. Zhu **"DNA-based Amplified Bioelectronic Detection and Coding of Proteins"** *Angew. Chem. Int. Ed.* **2004**, 43, 2158-2161.

G. N. Kamau, G. Bernard Munge, "**Selective Control and Rate Enhancement of reactions involving Catalytic Reduction of Organohalides and reduced form of Myoglobin in Microemulsions"** *Pure Appl. Chem.* **2004**, 76(4), 815-828.

Bernard Munge, Somes K. Das, Robielyn Ilagan, Zeus Pendon, Jing Yang, Harry A. Frank, and James F. Rusling, **"Electron Transfer Reactions of Redox Cofactors in Spinach Photosystem I Reaction Center Protein in Lipid Films on Electrodes"** *J. Amer. Chem. Soc*., **2003**, *125*, 12457-12463.

Bernard Munge, C. Estavillo, J. B. Schenkman, J. F. Rusling, **"Optimizing Electrochemical and Peroxide-Driven Oxidation of Styrene with Ultrathin Polyion Films containing Cytochrome P450$_{cam}$ and Myoglobin",** *ChemBiochem*, **2003**, *4*, 82-89.

G. N. Kamau, G. Momanyi, Bernard Munge, J. F. Rusling **"Myoglobin co-adsorbed on electrodes from Microemulsions provide Reversible Electrochemistry and Tunable Electrochemical Catalysis"** *Langmuir* **2003**, 19, 6976-6981.

Bernard Munge, Z. Pendon, H. A. Frank, J. F. Rusling **"Electrochemical reactions of Redox Cofactors in *Rhodobacter Sphaeroides* Reaction Center Proteins in lipid films"** *Bioelectrochemistry* **2001**, 54, 145-150.

J. F. Rusling, L. Zhou, Bernard Munge, J. Yang, C. Estavillo, J. B. Schenkman **"Applications of Polyion films containing Biomolecules to Sensing Toxicity"** *Faraday Discussions* **2000**, 116, 77-87.

Y. Lvov, Bernard Munge, O. Giraldo, I. Ichinose, S. L. Suib, J. F. Rusling **"Films of Manganese Oxide Nanoparticles with Polycations or Myoglobin from Alternate-layer Adsorption"** *Langmuir* **2000**, 16, 8850-8857.

D. Orata, A. Matheka, Bernard Munge, **"Quantitative Aspects of Charge Transfer in Polyaniline during its Electrodeposition and Electrochemical Degradation"** *Macromol. Chem. Phys*. **1994**, 195, 3003-7.

CONFERENCE PRESENTATIONS

2021 RI-INBRE & RI NSF EPSCoR C-AIM, Summer Undergraduate Research Fellowship (SURF) Conference, July 30, 2021, URI, Center for Biotechnology & Life Sciences Paramaz Avedisian '54 Hall, College of Pharmacy Fascitelli Center for Advanced Engineering. [1]Siyeong Park, [2]Tania Silva de Oliveira, [2]Arijit Bose, Ph.D., [1]Bernard Munge, Ph.D.; [1]Chemistry, Salve Regina University, Newport, RI, [2]Chemical Engineering, URI, Kingston RI. "Nanostructured Sensor for Electrochemical Detection of Phosphate based on Carbon Black decorated with Gold Nanoparticle (CB-AuNP)."

2021 RI-INBRE & RI NSF EPSCoR C-AIM, Summer Undergraduate Research Fellowship (SURF) Conference, July 30, 2021, URI, Center for Biotechnology & Life Sciences Paramaz Avedisian '54 Hall, College of Pharmacy Fascitelli Center for Advanced Engineering**.** Molly Black, Caitlin Bessette, Bernard Munge, Ph.D.; Chemistry, Salve Regina University, Newport, RI "Microfluidic Immunosensor Based On Poly-Horseradish Peroxidase For Electrochemical Detection Of Cancer Biomarkers Proteins, Interleukins IL-22 And IL-6 in Serum"

RI-INBRE and RI NSF EPSCoR, 11th Annual RI Summer Undergraduate Research Fellows Conference (SURF). College of Pharmacy and Center for Biotechnology & Life Sciences, URI, Kingston RI. July 27, (2019). Cameron Collins, Thorston Brochu, Te'Rell Knox and Bernard S. Munge,

Ph.D " Microfluidic Immunosensor Array for Electrochemical Detection of Interleukin 17A and Interleukin 17F Cancer Biomarker Proteins in Serum samples."

RI-INBRE and RI NSF EPSCoR, 11th Annual RI Summer Undergraduate Research Fellows Conference (SURF). College of Pharmacy and Center for Biotechnology & Life Sciences, URI, Kingston RI. July 27, (2019). Issaiah Burch and Bernard S. Munge, Ph.D. "Nanostructured sensor for electrochemical Detection of Nitrites in Sea Water samples."

RI-INBRE and RI NSF EPSCoR, 11th Annual RI Summer Undergraduate Research Fellows Conference (SURF). College of Pharmacy and Center for Biotechnology & Life Sciences, URI, Kingston RI. July 27, (2019). Joshua Jeudy and Bernard S. Munge, Ph.D. "Nanostructured Sensor for Electrochemical Determination of Phosphates in Narragansett Bay Sea water."

255th ACS National Meeting, New Orleans, LA, March 18-22, 2018. Bernard S. Munge, Samantha Nedder, Megan Boisclair, Viginia Trudel "Electrochemical immunosensor for simultaneous determination of IL-6 and IL-22 in serum using nanostructured electrode array coupled to PEG-multilabeled magnetic particle and a microfluidic device"

RI-INBRE and RI NSF EPSCoR, 10th Annual RI Summer Undergraduate Research Fellows Conference (SURF). College of Pharmacy and Center for Biotechnology & Life Sciences, URI, Kingston RI. July 28, (2017). Megan B. Boisclair, Samantha R. Nedder, Virginia A. Trudel & Bernard S. Munge "Multiplex Electrochemical Detection of Ll-6 And Il-22 Biomarkers Using a Microfluidic Device.

251st American Chemical Society (ACS) National Meeting, March 13-17, (2016), San Diego CA. Gamez, K., Morganti, C., DiBiase, D., Munge, B. S., "Microfluidic Immunosensor Arrays based on Multi-labeled PEG-coated Magnetic beads for Detection of 2 Cancer Biomarker Proteins in Serum."

RI-INBRE and RI NSF EPSCoR, 8th Annual RI Summer Undergraduate Research Fellows Conference (SURF). College of Pharmacy and Center for Biotechnology & Life Sciences, URI, Kingston RI. July 31, (2015). Gamez, K., Morganti, C., DiBiase, D., Munge, B. S., "Studies towards the Development of a Rapid Gold Nanoparticles Modified Screen-printed Carbon Electrochemical Immunosensor Array for Cancer Markers."

RI-INBRE and RI NSF EPSCoR, 8th Annual RI Summer Undergraduate Research Fellows Conference (SURF). College of Pharmacy and Center for Biotechnology & Life Sciences, URI, Kingston RI. July 31, (2015). Stracentsky, T., Oliveira, M., Munge. B. S., "Sensitive Cancer Biomarker Detection System Using Electrogenerated Chemiluminescence of Luminol."

NIH, NIGMS 5th Biennial National IDeA Symposium of Biomedical Research Excellence, Washington D.C., June 16-18, (2014). Morganti, C., Smith, M., Somba, B. K., Munge, B. S., "Characterization of a Polyethylene-Glycol-Protected, Multi-labeled Magnetic Bead Bioconjugate for Immuno-Electrochemical Detection of Cancer Biomarker Proteins."

7th Annual Rhode Island SURF Conference , College of Pharmacy and Center for Biotechnology & Life Sciences, University of Rhode Island, Kingston, RI August 1, (2014). Morganti, C., Gamez, K., Munge, B. S., "Microfluidic-Immunosensor Array for Multiplex Electrochemical Detection of Two Cancer Biomarker Proteins in Serum."

7th Annual Northeast Undergraduate Research Development Symposium (NURDS), University of New England (UNE), Biddeford, ME., March 7-8, (2015). Morganti, C., Gamez, K., and Munge, B. S.

"Microchip based Immunosensor Array for Electrochemical Detection of IL-6 and IL-8 Cancer Biomarker Proteins in Serum using PEG coated multi-labeled bioconjugate."

RI NIH IDeA Symposium. RI-STAC, RI-COBREs and RI-INBRE, Warren Alpert Medical School of Brown University, Providence, April 2, (2015). Stracensky, T., Munge, B. S., "Electro-optical Electrochemiluminescence (ECL) Based Immunosensor Array for Detection of Interleuikin-8, Cancer Biomarker protein in serum."

5th Northeast Regional IDeA Conference University of Delaware, Newark, Delaware August 14-16, (2013). Smith, M. C. Morganti, C. M. and Munge, B. S., "Microfluidic Based Immunosensor for Electrochemical Detection of Protein Cancer Biomarkers p53 and VEGF in Serum."

5th Northeast Regional IDeA Conference, University of Delaware, Newark, Delaware August 14-16, (2013). Somba, B. K., and Munge, B. S., "Multiplex Nanostructured Microfluidic Immunosensor Array based on PEG-coated Multi-labeled Conjugate for Ultrasensitive Electrochemical Detection of Protein Cancer Biomarkers in Serum."

5th Annual Northeast Undergraduate Research Development Symposium (NURDS), University of New England (UNE), Biddeford, ME., March 2-3, (2013). Lombardo, K., Keras, G., Smith, M. and Munge, B. S., "Novel Multi-Labeled Magnetic Beads with Polymer Brushes for Ultra-Sensitivity Electrochemical Detection of Protein Cancer Biomarkers."

6th Annual Northeast Undergraduate Research Development Symposium (NURDS), University of New England (UNE), Biddeford, ME., March 6-8, (2014), Somba, B. K., Munge, B.S., "Rapid, Ultrasensitive Nanostructured Microfluidic Array for Electrochemical Detection of Cancer Biomarker Proteins."

PITTCON Conference, Philadelphia, PA, March 17-21, (2013). Munge, B. S., and Somba, B. K., "Electrochemical Immunosensor Array for Ultrasensitive Detection of two Cancer Biomarker Proteins in Serum."

The 4th Biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE), Washington, DC, June 25-27, (2012). Munge, B. S., Somba, B. K. "Multiplex Electrochemical Immunosensor for Protein Cancer Biomarkers using Nanostructured Electrode Arrays."

The 4th Biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE), Washington, DC, June 25-27, **(2012)**. Lombardo, K., Keras, G., Smith, M., Munge, B. S., "Novel Multi-Labeled Magnetic Beads with Polymer Brushes for Ultra-Sensitivity Electrochemical Detection of Protein Cancer Biomarkers."

2012 RI Summer Undergraduate Research Fellowship (SURF) Conference, Center for Biotechnology & Life Sciences, July 27, (2012). Antonopoulos, A. and Munge, B. S., "Label Free Surface Plasmon Resonance (SPR) Immunoassay for the Detection of Interleukin-8 Cancer Biomarker."

243rd American Chemical Society National Meeting, San Diego, CA March 25-29, (2012). Munge, B. S., Coffey, A. L, Doucette, J. M. et al. "Nanostructured Immunosensor for Attomolar Detection of Cancer Biomarkers Using Massively Labeled Superparamagnetic Particles."

Invited speaker, 4th Northeast Regional IDeA meeting, Newport RI, August 10-12, (2011). Munge, B. S., Coffey, A. L., Doucette, J. Somba, B. K. "Arrays for Immunoelectrochemical Detection of Oral Cancer Biomarker Proteins in Serum."

RI-INBRE Summer Undergraduate Research Fellows (SURF) Conference. July 29, (2011). Alex A. and Munge, B.S., "Label free Surface Plasmon Resonance (SPR)-based Immunosensor for the Detection of Interleukin-8 Cancer Biomarker in serum."

4th Northeast Regional IDeA Symposium, Newport RI, August 10-12, (2011). Keras, G., Lombardo, K, "Sensitive Electrochemical Immunosensor of a Cancer Biomarker, Phosphorylated P53 Based on Gold Nanoparticles (AuNP) Decorated Electrode."

4th Northeast Regional IDeA Symposium, Newport RI, August 10-12. 2011. Somba, B. K., Munge, B. S., "Dual Gold Nanotube Screen Printed Electrode Array Decorated with Gold Nanoparticles for Immunoelectrochemical Detection of two Cancer Biomarkers for Head and Neck Squammous Cell Carcinoma."

PITTCON Conference, Atlanta, GA, March 13-17, (2011). Munge, B. S., Coffey*, A. L, Doucette*, J. M., "Dual Amplification Strategy for Ultrasensitive Immunosensor for Cancer Biomarker Based on Nanoparticles and Multienzyme labels."

NIH, NCRR Third Biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE), Bethesda, Maryland, June 16-18, (2010). Sullivan*, M., Dowd*, R., Munge, B. S., "Magnetic beads amplification strategy for sensitive electrochemical detection of cancer biomarkers in serum."

NIH, NCRR Third Biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE), Bethesda, Maryland, June 16-18, (2010). Coffey*, A., Doucette*, J. M., Munge, B.S., "Nanoparticle based immunosensor for sensitive electrochemical detection of cancer biomarker proteins in serum."

5th Biology New England South (BioNES) Meeting, Rogers William University, Bristol, RI, December 3, (2010). Coffey*, A. L., Doucette*, J. M., *Munge, B. S., "Ultrasensitive Electrochemical Immunosensor for Head and Neck Squamous Cells Carcinoma (HNSCC) Biomarkers Based on Nanoparticles Decorated Electrodes and Multilabel Amplification."

PITTCON Conference, Orlando, FL, Feb 28 – March 5, (2010). Munge, B. S., Fisher*, J., Millord*, L. N., Krause*, C. E., Dowd*, R. S., "Sensitive Electrochemical Immunosensor for Matrix Metalloproteinase-3 based on Single-wall Carbon Nanotubes."

Regional IDeA Symposium on Biomedical Research Excellence, Whitefield, NH, August 5-7, (2009). Coffey*, A. Doucette*, J., Munge, B. S., "Sensitive Electrochemical Immunosensor for Interleukin 8 (IL-8), Cancer Biomarker Protein Based on Gold Nanoparticle platform."

Regional IDeA Symposium on Biomedical Research Excellence, Whitefield, NH, August 5-7 (2009). Dowd*, R., Sullivan*, M, Munge, B. S., "Ultrasensitive Immunosensor for Interleukin 6 (IL-6), Cancer Biomarker Protein Using Gold Nanoparticle Decorated Electrodes and Magnetic Particles Amplification."

2nd Rhode Island Research Alliance Symposium, Rhode Island Convention Center, RI, October 2, (2009). Munge, B. S., "Nanomaterial-based Electrochemical Detection of Cancer Biomarker Proteins in Serum."

4th Biology New England South (BioNES) Meeting, Rogers William University, Bristol, RI, December 4, (2009). Dowd*, R. S., Sullivan*, M., Munge, B. S., "Interleukin 6 (IL-6) Electrochemical Immunosensor Based on Gold Nanoparticles Coupled with Magnetic Beads Amplification Strategy."

4th Biology New England South (BioNES) Meeting, Rogers William University, Bristol, RI, December 4, (2009). Coffey*, A. Doucette*, J., Munge, B. S., "Interleukin 8 (IL-8) Electrochemical Immunosensor Based on Gold Nanoparticles."

1st Annual Northeast Undergraduate Research Development Symposium (NURDS), University of New England (UNE), Biddeford ME, March 27-28, (2009). Colleen Krause*, Ruchika Malhotra, James F. Rusling, Bernard S. Munge. "Electrochemical Immunosensor for Iinterleukin-6. A comparative study using carbon nanotube and gold nanoparticle platform."

1st Annual Northeast Undergraduate Research Development Symposium (NURDS) University of New England (UNE), Biddeford ME, **March 27-28, (2009**). Richard Dowd*, Colleen Krause*, Lines Millord*, "Ultrasensitive Hydrogen Peroxide Biosensor based on Enzyme bound to Layered Non-oriented Multiwall Carbon Nanotubes/Polyelectrolyte Electrodes."

NIH, NCRR 2nd Biennial National IDeA Symposium, Washington DC, **August 6 - 8, (2008),** Bernard S. Munge, Jacqueline Fisher*, Lines Millord*, Colleen Krause*, "Nanomaterials-Based Immunoassay for Sensitive Electrochemical Detection of Matrix Metalloproteinase-3 (MMP-3), Cancer Biomarker in Serum."

NIH, NCRR 2nd Biennial National IDeA Symposium, **Washington DC, August 6 - 8, (2008**). Colleen Krause*, Richard Dowd*, Bernard S, Munge, "Sensitive Electrochemical Immunoassay of a Biomarker α-Fetoprotein Based on Carbon Nanotubes."

NIH, NCRR 2nd Biennial National IDeA Symposium, **Washington DC, August 6 - 8, (2008).** Peter Maricic*, Andrew Hall*, Bernard S. Munge, "Integrated Carbon Nanotube-Polyguanine Functionalized Polymeric Nanoparticles for Sensitive Immunodetection of Prostate Specific Antigen (PSA) in Serum."

Center for Molecular Toxicology, RI-INBRE 2008 Summer Undergraduate Research Fellows Meeting, **Ryan Center, University of Rhode Island (URI), August 4, 2008.** David Augustoski*, Bernard Munge, "DNA Molecular Interactions Studies using Quartz Crystal Microbalance (QCM) for Nanopore DNA Sequencing Application."

Rhode Island Research Alliance Symposium "Emerging Biomedical and Life Sciences Research in RI", RI Convention Center, June 3, 2008. Bernard Munge, Jacqueline Fisher*, Lines Millord*, and Colleen Krause*, "Polymeric Beads Amplification Strategy for Sensitive Electrochemical Detection of Matrix Metalloproteinase-3, a Cancer Biomarker Protein in serum."

COBRE/INBRE Symposium 2007. Cancer, Development, and Regenerative Medicine, Rhode Island Convention Center, Providence, Rhode Island, May 30, 2007.Kathryn Leonard* and Bernard S. Munge, "Electrochemical Detection of Prostate Carcinoma Biomarkers using Nanotechnology."

Center for Molecular Toxicology, RI-INBRE 2007 Summer Undergraduate Fellows Meeting, **Ryan Center, University of Rhode Island, August 10, 2007.** Andrew Hall* and Bernard Munge, "Sensitive Electrochemical Immunosensor for Prostate Specific Antigen a Prostate Carcinoma Biomarker protein" Center for Molecular Toxicology."

Center for Molecular Toxicology, RI-INBRE 2007 Summer Undergraduate Fellows Meeting, **Ryan Center, University of Rhode Island, August 10, 2007.** Colleen Krause* and Bernard Munge, "Nanomaterials-Based Immunoassay of Human Platelet Factor-4 (PF4), a Cancer Biomarker Protein."

Center for Molecular Toxicology, RI-INBRE 2007 Summer Undergraduate Fellows Meeting, Ryan Center, University of Rhode Island, August 10, 2007. Jacqueline Fisher* and Bernard Munge, "Sensitive Electrochemical Immunoassay of Matrix Metalloproteinase-3, a Cancer Biomarker Protein Based on Vertically-Aligned Single-Wall Carbon Nanotube Arrays."

2nd Northeast Regional IDeA Meeting, **Burlington, Vermont, August 15-17, 2007**. Bernard Munge and Jacqueline Fisher*, "Sensitive Immunoassay of Matrix Metalloproteinase-2, a Cancer Biomarker Protein Based on Vertically-Aligned Single-wall carbon Nanotubes Arrays."

Rhode Island Network for Molecular Toxicology, RI-INBRE 2007 Annual Winter Retreat, Ochre Court Ball Room, Salve Regina University, Newport Rhode Island, January 26, 2007,. Bernard S. Munge, Colleen Krause*, Phelipe Hurt*, Lines Millord*, Jaqueline Fisher*, Kathyrn Leonard*, Andrew Hall*, "Electrochemistry and Catalysis of Horseradish Peroxidase and Myoglobin Covalently bound to Vertically Aligned Carbon Nanotubes Arrays."

The 2006 IEEE Workshop on Body sensor Networks, MIT Media Lab and MIT Wong Auditorium, Cambridge MA, USA, April 3-5, (2006.) Joseph Gong, Gary Jensen, A. Bhirde, Xin Yu; Bernard Munge, Voymesh Patel, Sang Nyon Kim; Silvio Gutkind,Fotios Papadimitrakopoulos, James F. Rusling, "Single-walled Carbon-nanotube forest immunosensor for amplified detection of Cancer Biomarkers"

125th Chemistry Alumni Symposium, **University of Connecticut**, Storrs Connecticut, September 29, (2006) Bernard Munge. "Carbon Nanotubes amplified immunosensor for Detection of Cancer Biomarkers"

Center for Molecular Toxicology, RI-INBRE 2006 Summer Undergraduate Research Fellows Meeting, Whispering Pines Conference Center, University of Rhode Island's W. Alton Jones Campus in Exeter RI, June 16, 2006. Bernard Munge "Nanomaterial-Based Bioelectronic Detection of Disease Markers".

231st American Chemical Society (ACS) National Meeting, Atlanta GA, March 26-30, (2006), Bernard S. Munge, Guodong Liu, Greg Collins, Joseph Wang. "Layered Enzyme-Polymer films on Carbon Nanotubes Template for Electrochemical Detection Down to 80 DNA Copies"

209th Electrochemical Society (ECS) Meeting, Denver, Colorado, May 7-12 (2006), Krishna Alcantara, Bernard Munge, Zeus Pendon, harry A. Frank, James F. Rusling, "Proton-gated Electron Transfer involving the Mn4 Cluster of Spinach Photosystem II Reaction Center Protein"

232nd American Chemical Society (ACS) National Meeting, San Francisco, CA, September 10-14 (2006) James F. Rusling, Xin Yu, Gary Jensen, Joseph Gong, Ashwinkumar Bhirde, Bernard S. Munge, Voymesh Patel, Fotios Papadimitrakopoulos, Sang-Nyon Kim, Silvio Gutkind, "Carbon nanotube amplification strategies for highly sensitive immunodetection of cancer biomarkers"

204th Electrochemical society (ECS) Meeting, Orlando, FL, Oct 12-16, (2003) James. F. Rusling, Bernard Munge, Somes K. Das, Robielyn Ilagan, Zeus Pendon, Jing Yang, Harry A. Frank "Electron transfer reactions of redox cofactors in Spinach Photosystem I reaction center protein in lipid films on electrodes"

PITTCON Conference, Orlando, FL, March 8-14, (2003) Bernard Munge, C. Estavillo, J. B. Schenkman, James F. Rusling "Optimizing Electrochemical and Peroxide-driven Oxidation of styrene with ultrathin polyion films containing Cytochrome P450cam and Myoglobin proteins in lipid films"

PITTCON Conference, New Orleans, LA, March 17-22, (2002) Bernard Munge, Z. Pendon, Harry A. Frank, James F. Rusling, "Electrochemical reactions of redox cofactors in *Rhodobactor shaeroides* reaction center proteins in lipid films"

201st Electrochemical society (ECS) Meeting, Philadelphia, **PA**, May 12-17, 2002), James F. Rusling, Bernard Munge, L. Espinal, S. Suib, N. Hu, Y. Zhou "Protein-Nanoparticle Films"

219th American Chemical Society (ACS) National Meeting, San Francisco, CA, March 26-30, (2000) James F. Rusling, Xiaolin Zu, Zhongqing Lu, Bernard Munge, Z. Zhang, N. Hu, Hongyan Ma, J. B. Schenkman "Films for electrode-driven catalysis with heme enzymes"

219th American Chemical Society (ACS) National Meeting, San Francisco, CA, March 26-30, (2000) James F. Rusling, Bernard Munge; John B. Schenkman, Yuri M. Lvov "Biomolecular films with electrochemical and enzyme activity constructed layer-by-layer"

Faraday Discussions (2000), 116, 77-87; discussion 171-90, James F. Rusling, L. Zhou, Bernard Munge, J. Yang, C. Estavillo, J. B. Schenkman "Applications of Polyion films containing Biomolecules to Sensing Toxicity"

PROFESSIONAL MEMBERSHIPS

American Association for the Advancement of Science (AAAS)
American Chemical Society (ACS)
Society for Electroanalytical Chemistry (SEAC)
Electrochemical Society (ECS)

References upon Request