

Curriculum Vitae

Andrea Nicole Matti

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Education

B.Sc. Chemistry, Madonna University, Livonia, MI, 07/2004
Senior Thesis: Improvement of Statin Efficacy on Cholesterol Control

Ph.D. Chemistry, Michigan State University, East Lansing, MI 09/2009
Thesis: Investigating the Mechanism of Hypoxia-induced Release of ATP from Erythrocytes and its Role in Nitric Oxide Production

Teaching Experience

Senior Lecturer
Wayne State University 2014-present

Courses taught:

Chemical Skills and Reasoning: Reasoning and mathematical skills needed for development of a scientific approach in chemistry. Measurements and Calculations, Matter, Chemical Foundation, Nomenclature, Chemical Reactions, Reactions in Aqueous Solutions, Chemical Composition, Chemical Bonding, Gases, Liquids and solids, Solutions, Acids and Bases, Chemical Equilibrium, Oxidation-Reduction

General Chemistry II (Analytical Chemistry lab: Percent weight determination, Difunctional weak base determination, Multicomponent spectrophotometric analysis, Solid phase extraction, Gas chromatography, Determination of ascorbic acid by iodometric titration

RCN Coordinator for ReBUILD Detroit: Developed and implemented a Research Coordinated Network for a \$21 million grant awarded to Wayne State to help retention rates in underrepresented students. RCN course is a research-based laboratory course in which students are introduced into research as one of the first courses offered.

Service:

- Board member – ACS-Student Affiliates
- Analytical Chemistry Research Coordination Network (RCN) course coordinator for REBUILD Detroit grant.

- Learning Community director for prep Chemistry course
- Wrote and directed event for Science Olympiad 2015/2016

Instructor
University of Detroit-Mercy

2012-2014

Courses taught:

General Chemistry II: Effects of intermolecular forces, properties of solutions, mechanisms and rates of chemical reactions, principles of chemical equilibrium, aqueous acid-base equilibria, applications of aqueous equilibria, spontaneity of chemical processes, electron transfer reactions, the transition metals

General Chemistry II lab (4 semesters, 6 sections) : Molecular weight by freezing point depression, Le Chatelier's principle, factors affecting reaction kinetics, water hardness and softening by titration, interpreting water quality reports, dye concentration in Gatorade, K_a determination, K_{sp} of Borax, Electrochemistry, Iron content by complexation

Organic Chemistry II lab (3 semesters) : Synthesis of aspirin, reductive amidation, catalytic hydrogenation, aldol condensation, solvent-free Wittig reaction, caffeine extraction, Diels-Alder cycloaddition, electrophilic aromatic substitution, organometallic catalysis

Instrumental Analysis lab (graduate course): Atomic absorption spectroscopy of Iron, liquid chromatography of Gatorade, gas chromatography of gasoline, fluorescence of Nitric oxide, UV-absorption of oxy- vs. deoxy-hemoglobin, IR spectroscopy of various pharmaceuticals, liquid chromatography and mass spectroscopy of serotonin and dopamine

Organic Chemistry I lecture: Atom bonding, lewis structures, resonance, IUPAC nomenclature, isomers, mechanisms ($AN+DN$, $SN1$, $SN2$, $E1$, $E2$), organic separation and spectroscopy techniques (GC-MS, NMR)

Service:

- University of Detroit-Mercy Pre-Med Club advisor

Teaching Assistant
Michigan State University

2007-2008

Courses taught:

General Chemistry I: Elements and compounds, reactions, stoichiometry, thermochemistry; atomic structure; chemical bonding; states of matter; solutions; acids and bases; aqueous equilibria.

Principles of Chemistry I (General and descriptive chemistry) : Atomic structure; chemical bonding and molecular structure; solid state; main group chemistry; acids and bases; transition metal chemistry; coordination chemistry and theories of bonding.

Teaching Assistant
Wayne State University

2005 – 2007

Courses taught:

General Chemistry (Chemistry skills and reasoning): Reasoning and mathematical skills needed for development of a scientific approach in chemistry

General Chemistry II (Analytical Chemistry): Study and use of acid-base redox, solubility precipitation, and complex forming reactions and equilibria in qualitative and quantitative chemistry

General Chemistry II Lab (Analytical Chemistry Laboratory): Study and use of acid-base redox, solubility precipitation, and complex forming reactions and equilibria in qualitative and quantitative chemistry

Work/Research Experience

Post-doctoral Fellow/Laboratory Manager.

Role of Protein Phosphatase 2A in beta cell apoptosis

Wayne State University, MI

07/2011-07/2012

- Managed research efforts in the laboratory
- Responsible for all licenses, certifications and protocols, including, but not limited to animal and pharmaceutical
- Performed and planned microbiological research on apoptotic pathways in beta cells modeling diabetes
- Presented work at conferences
- Wrote manuscripts/reviews for publication in competitive journals
- Assisted in writing grants to funding agents such as NIH
- Responsible for all ordering and instrumentation upkeep
- Performed in vivo experiments on rats including islet isolation

- Cultured human and animal pancreatic beta cell lines
- Started journal club for Wayne State University's Pharmaceutical Sciences

Post-doctoral Fellow.

Host microbial interactions, University of Michigan

10/2009-04/2011

- Planned experiments to lead to publication in highly competitive journals
- Cultured human and animal airway epithelial cell lines
- Cultured various strains of bacteria and virus
- Wrote manuscripts for publication
- Attended/presented research at various conferences
- Performed microbiological experiments on the inflammatory response from co-infections with virus and bacteria
- Performed in vivo experiments in mice including co-infection, gavaging and lung isolation

Funding:

General Chemistry Preparatory Course Learning Community Proposal, 2014

Professional Organizations

American Chemical Society

- Division of Analytical Chemistry

Sigma Zeta – Madonna University (2004)

Kappa Gamma Pi – Madonna University (2004)

Presentations

Presentations at National and International Conferences:

Faris, Andrea, Spence, Dana M. (2007). The correlation between hypoxia induced ATP release and RBC deformability. Poster presented at the Association for Lab Automation Conference, Palm Springs, CA

Faris, Spence, Dana M. (2007). Use of Raman spectroscopy for early detection of breast cancer. Oral presentation at Wayne State University, Detroit, MI

Faris, Andrea, Spence, Dana M. (2008). Impaired release of a nitric oxide stimulus from diabetic erythrocytes exposed to hypoxia. Poster presented at Neurodiab Conference, Orvieto, Italy

Faris, Andrea, Spence, Dana M. (2009). Hypoxia-induced release of ATP from erythrocytes and its role in nitric oxide production. Oral presentation at University of Michigan, Ann Arbor, MI

Faris, A.N., Ganesan, S., Chatteraj, S., Sajjan, U. (2010). Rhinovirus infection suppresses *Non-typeable Hemophilus Influenzae*-induced inflammatory responses *in vivo and in vitro*. Poster presented at American Thoracic Society Conference, New Orleans, LA

Ganesan, S., Faris, A., Comstock, Adam., Margolis, B., Hershenson, Marc., Sajjan, U. (2011). Rhinovirus compromises and delays repair of barrier function of airway epithelial cells. Poster to be presented at American Thoracic Society Conference, Denver, CO

Ganesan, S., Faris, A., Comstock, A., Curtis, J., Martinez, F., Hershenson, M., Sajjan, U. (2011). Expression of Foxo3A is decreased in COPD airway epithelial cells. Poster presented at American Thoracic Society Conference, Denver CO

Ganesan, S., Faris, A., Comstock, A., Curtis, J., Martinez, F., Hershenson, M., Sajjan, U. (2011). Quercetin augments clearance of rhinovirus infection and improves lung function in mouse model of COPD. Poster presented at American Thoracic Society Conference, Denver CO

Andrea Matti, Timothy Hadden, Anjaneyulu Kowuru (2012). Hyperactivation of Protein Phosphatase 2A in Models of Glucolipotoxicity and Diabetes. Poster presented at VA Medical Center Research Day, Detroit, MI

Andrew L. Feig^{1*}, Kristen Abraham², Jeanne Andreoli³, Steven Chang², Stephanie Conant², Heather Dillaway¹, Kendra Evans², Karen Frederick³, Abigail Fusaro³, Weilong Hao¹, Jacob Kagey², Gary Kuleck², Kate Lanigan², Ambika Mathur¹, Andrea Matti¹, Dajena Tomco³, Sally Welch³ (2016) Freshman-Level Research-based Laboratories and the Transition from Student to Researcher within the ReBUILDetroit Program. ACS National Conference. San Francisco, CA.

Katherine C. Lanigan, Andrea Matti, Dajena Tomco, Kendra Evans (2016) University of Detroit Mercy, Wayne State University, Marygrove University, University of Detroit Mercy. Implementation of a research-based laboratory course for first year undergraduate students as part of a research collaboration network. ACS National Conference. San Francisco, CA.

Publications

Faris, A. and Spence, D.M. Measuring the simultaneous effects of hypoxia and deformation on ATP release from erythrocytes. *The Analyst*, vol: 133. 678-682. **2008.**

Letourneau, S., Hernandez, L., **Faris, A.N.**, Spence, D.M. Evaluating the effects of estradiol on endothelial nitric oxide stimulated by erythrocyte-derived ATP using a microfluidic approach. *Anal. Bioanal. Chem.*, vol: 397(8). 3369-3375. **2010.**

Faris, A., Tolan, N. and Spence, D.M. Deciphering the role of hypoxia-induced ATP release erythrocytes in endothelium-derived nitric oxide production. (In preparation). **2010.**

Faris, Andrea and Spence, D.M. The role of the erythrocyte as a diagnostic tool. (In preparation). **2010.**

Ganesan, S, **Faris, Andrea.**, Comstock, Adam T., Chatteraj, Sangbrita S., Chatteraj, Asamanja, Curtis, Jeffrey L., Martinez, Fernando J., Zick, Suzanna, Hershenson, Marc B., Sajjan, Uma S. Quercetin prevents progression of disease in elastase/LPS-exposed mice by negatively regulating MMP expression, *Respiratory Research*. vol: 11 131. **2010.**

Chatteraj SS, Ganesan S, Comstock A, **Faris A**, Lee W, Sajjan US *Pseudomonas aeruginosa* suppresses interferon response to rhinovirus infection in cystic fibrosis bronchial epithelial cells. *Infect. Immun.* vol. 79(10). 4131-45. **2011.**

Comstock, Adam T., Ganesan, Shyamala, **Faris, Andrea N.**, Margolis, Benjamin L., Hershenson, Marc B., Sajjan Umadevi S. Rhinovirus-induced barrier dysfunction in polarized airway epithelial cells is mediated by NADPH oxidase 1. *J. Virol.* vol: 85(13). 6795-808. **2011.**

Ganesan S, **Faris AN**, Comstock AT, Sonstein J, Curtis JL, Sajjan US. Elastase/LPS-exposed mice exhibit impaired innate immune responses to bacterial challenge: role of scavenger receptor A. *Am J Path.* vol: 180(1) 61-72. **2012.**

Matti Andrea, Kyathanahalli Chandrashekara, Kowluru Anjaneyulu. Protein Farnesylation is requisite for mitochondrial fuel-induced insulin release. *Islets.* vol: 4:1 1-4. **2012.**

Kowluru A, **Matti A.** Hyperactivation of protein phosphatase 2A in models of glucolipotoxicity and diabetes: potential mechanisms and functional consequences. *Biochem. Pharmacol.* Vol: 84(5) 591-7. **2012.**

Arora DK, Machhadieh B, **Matti A**, Wadzinski BE, Ramanadham S, Kowluru A. High Glucose Exposure Promotes Activation of Protein Phosphatase 2A in Rodent Islets and INS-1 832/13 β -Cells by Increasing the Posttranslational Carboxymethylation of Its Catalytic Subunit.. Endocrinology. Epub ahead of print. Endocrinology 155:380-91, 2014

References

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Senior Lecturer
Wayne State University Department of Chemistry
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