

CURRICULUM VITAE

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EDUCATION:

- 1972 B.S. in **Physics (Molecular Biophysics)**, Yerevan University, Armenia.
1979 Ph.D. in **Biology**, Institute of Cell Biology, St. Petersburg, Russia.
Ph.D. Dissertation: "Kinetic Characterization of Ion Transport Across Ion-Selective Bilayer Lipid Membranes"

PROFESSIONAL APPOINTMENTS:

- 2008-pr. Associate Professor, Department of Physics, University of Central Florida, Orlando, FL
2001-2008 Associate Professor, Biomolecular Science Center, Burnett College of Biomedical Sciences, University of Central Florida, Orlando, FL
1999-2001 Associate Professor of Research in Molecular Biosciences, University of Kansas, Lawrence, KS
1995-1999 Assistant Professor of Research in Molecular Physiology and Biological Physics, University of Virginia Medical School, Charlottesville, VA
1992-1995 Research Associate, Department of Molecular Physiology and Biological Physics, University of Virginia Medical School, Charlottesville, VA
1977-1992 Research Scientist, Institute of Cell Biology, Academy of Sciences USSR, Leningrad, Russia
1974-1977 Ph.D. Student with Prof. A. Lev, Institute of Cell Biology, Academy of Sciences USSR, Leningrad, Russia.

RESEARCH INTERESTS:

Molecular biophysics; Biotechnology; Structure and function of proteins studied by protein engineering, spectroscopy, and computational techniques; Amyloidogenesis; Biomembrane structure and function; Interfacial enzymology; Protein-membrane interactions; Membrane electrostatics; adhesion and fusion; Enzymatic biofuel technologies.

FIELDS OF EXPERTISE AND SKILLS:

Biophysics: Extensive experience in the field of lipid monolayers, vesicles, and bilayers, including free and substrate-supported membranes; Reconstitution of peptides and proteins in membranes; Structural analysis of membrane proteins by a variety of spectroscopic techniques; UV-visible spectroscopy; Light scattering; Electron paramagnetic resonance; Fourier transform infrared spectroscopy, including isotope-edited and attenuated total reflection spectroscopy; Fluorescence spectroscopy, including resonance energy transfer and quenching; Circular dichroism; Particle electrophoresis.

Biochemistry: Basic assays of protein and lipid biochemistry (e.g. protein purification techniques, column chromatography, electrophoresis, immunoblotting, HPLC, protein and lipid labeling with fluorescent or other spectroscopic probes, etc.); Peptide ligation and creation of segmentally isotope-labeled proteins; Enzyme assays, etc.

Molecular Biology: Basic gene manipulation techniques (e.g., plasmid construction using cDNA libraries, subcloning, mutagenesis, etc.); Protein expression in prokaryotic and insect cell systems; Protein engineering; Production of semisynthetic proteins, including chimeras, for structural studies.

Theory and Computation: Membrane electrostatics; Quantitative description of interactions of ions, peptides, and proteins with membranes; Analysis of interactions between macromolecular assemblies using extended and improved versions of the Gouy-Chapman-Stern and DLVO theories; Analysis of protein structure based on backbone atom coordinates using new algorithms; Determination of the configuration of protein-membrane complexes using a combination of homology modeling, polarized FTIR and fluorescence techniques, and new analytical geometry algorithms.

COMPLETED RESEARCH SUPPORT:

- 1993- “Structural Basis of the Regulation of Sarcoplasmic Reticulum Ca^{2+} -ATPase by Phospholamban”
1995: Principal Investigator: Suren A. Tatulian
Agency: American Heart Association (Virginia Affiliate)
The objective of this project was to determine the structure of phospholamban, an integral membrane protein that regulates the function of sarcoplasmic reticulum Ca^{2+} -ATPase.
- 1995- “Mechanisms of Interfacial Activation of Phospholipase A_2 ”
1997: Principal Investigator: Suren A. Tatulian
Agency: Research & Development Committee, University of Virginia
The aim of this project was to identify the structural basis for the interfacial activation of secretory phospholipase A_2 .
- 1996- “Structure and Function of the Cardiac Regulatory Protein Phospholamban”
2000: Principal Investigator: Suren A. Tatulian
Agency: American Heart Association (National)
This project was aimed at the identification of structural interactions between sarcoplasmic reticulum Ca^{2+} -ATPase and phospholamban underlying the regulation of the Ca^{2+} -ATPase.
- 2001- “Regulation of Calcium Transport in Cardiac Muscle”
2006: Principal Investigator: Thomas C. Squier (Co-PI: Suren A. Tatulian, 25 % commitment)
Agency: NIH (R01)
The goal of this project was to identify the physical mechanisms that regulate calcium sequestration by Ca^{2+} -ATPase in cardiac sarcoplasmic reticulum membrane.
- 2001- “Regulatory Mechanisms of Secretory Phospholipases A_2 ”
2006: Principal Investigator: Suren A. Tatulian
Agency: NIH (R01)
The aim of this project was to determine the mechanisms of secretory phospholipase A_2 .
- 2004- “Acquisition of a Novel Raman and Fourier Transform Infrared Microscope for Research

- 2006: and Education in Biomaterials, Nanoscience, and Forensics”
Principal Investigator: Alfons Schulte (Co-PI: Suren A. Tatulian, 10 % commitment)
Agency: National Science Foundation (Equipment Grant)
Development of a combined Raman/FTIR microscope SameSpot technology to ensure that the Raman and FTIR measurements are made simultaneously on the same sample.
- 2006- “pH-Induced Changes in Cholera Toxin Interaction with the Eukaryotic Cell”
2008: Principal Investigator: Kenneth Teter (Co-PI: S. A. Tatulian, 10 % commitment)
Agency: NIH (R03)
The purpose of this project was to document acid-induced alterations to cholera toxin by the infected eukaryotic cell.
- 2007- “Toxin Thermal Instability and Its Role in Host-Toxin Interactions”
2013: Principal Investigator: Kenneth Teter (Co-PI: S. A. Tatulian, 25 % commitment)
Agency: NIH (R01)
The goal of this project is to establish a novel mechanism underlying bacterial toxin internalization, in which toxin thermal instability plays a major role.
- 2008- “Identification of Regulatory Domains that Mediate the Membrane Binding of BAX”
2013: Principal Investigator: Annette R. Khaled (Co-PI: S. A. Tatulian, 25 % commitment)
Agency: NIH (R01)
This project is aimed at identification of the regulatory mechanisms of membrane binding of the proapoptotic protein Bax.
- 2012- Molecular Mechanisms of Membrane Binding and Activation of Human Akt2 Enzyme
2013 Principal Investigator: S. A. Tatulian
Agency: UCF Office of Research and Commercialization, SEED Grant
The goal of this project was to study the mechanism of membrane binding and activation of human Akt2 enzyme.

CURRENT RESEARCH SUPPORT:

- 2012- Mechanisms of Membrane Translocation by Protein Toxins
2014 Principal Investigator: S. A. Tatulian
Agency: NIH (R03)
The project aims at identification of the molecular basis of membrane translocation by diphtheria toxin.
- 2012- A Novel Mechanism for Toxin Export from the Endoplasmic Reticulum to the Cytosol
2017 Principal Investigator: Kenneth Teter (Co-PI: S. A. Tatulian, 20 % commitment)
Agency: NIH (R01)
The overall goal of this project is to define the molecular mechanism for CTA1 translocation and its subsequent activation in the cytosol.

PENDING RESEARCH PROJECTS:

- 2014- Disassembly and Activation of the Cytolethal Distending Toxin
2019 Principal Investigator: Kenneth Teter (Co-PI: S. A. Tatulian, 20 % credit)
Agency: NIH (R21)
This project will demonstrate how physiological conditions in the host endomembrane system induce structural changes and disassembly of the cytolethal distending toxin.

- 2014- Enzymatic Algal Oil Extraction and Biodiesel Production
2016 Principal Investigator: S. A. Tatulian
Agency: DOE
The objective of this project is to develop a novel enzymatic technology for algal oil extraction and biodiesel production.

PROFESSIONAL MEMBERSHIP:

American Physical Society	(2008-present)
American Chemical Society	(2005-present)
Biophysical Society	(1992-present)
American Association for the Advancement of Science	(2001-present)

SYNERGISTIC ACTIVITIES/AWARDS:

1. Executive Editor, Journal of Physical Chemistry and Biophysics (2010-pr.)
(<http://www.omicsonline.org/editorialboardJPCB.php>)
2. Member: the Editorial Board of Biochemistry Insights (2006-pr.)
(<http://www.la-press.com/biochemistry-insights-journal-j95>)
3. Member, the Editorial Board of the World Journal of Biological Chemistry (2014-pr.)
(<http://www.wjgnet.com/1949-8454/edboard.htm>)
4. Founding member and coordinator of the UCF Biophysics Group (2002-pr.)
(<http://biophysics.cos.ucf.edu>).
5. Recipient of SEED grant from UCF Office of Research and Commercialization (2012)
6. Recipient of instrumentation award from the UCF Presidential Initiative to Fund Major Research Equipment, 2002 (J-810 spectropolarimeter, Jasco).
7. Recipient of Research Incentive Award, University of Central Florida, 2006.

SERVED AS REVIEWER FOR 35 PEER-REVIEWED JOURNALS:

ACS Applied Materials & Interfaces; Amino Acids; Analytical Biochemistry; Applied Biochemistry and Biotechnology; Biochemical Journal; Biochemical Pharmacology; Biochemistry; Biochimica et Biophysica Acta; Biochimie; Biology of the Cell; Biomacromolecules; Biophysical Chemistry; Biophysical Journal; Chemistry and Physics of Lipids; Chemosphere; Current Nanoscience; European Journal of Biochemistry; FEBS Journal; International Journal of Molecular Sciences; International Journal of Pharmaceutics; Journal of American Chemical Society; Journal of Biological Chemistry; Journal of Biological Physics; Journal of Cell Biology; Journal of Colloid and Interface Science; Journal of Membrane Biology; Journal of Molecular Biology; Journal of Molecular Structure; Journal of Physical Chemistry; Journal of Structural Biology; Langmuir; Proteins: Structure, Function, and Bioinformatics; The Journal of Physical Chemistry Letters; Toxins, World Journal of Biological Chemistry

NSF PANEL REVIEWER:

NSF Panel P112008 (Contaminated Water)
September 2011
Have reviewed six SBIR proposals
Participated in reviews/panel discussions of 16 SBIR proposals

NSF Panel P110930 (Biodiesel & Conversion of Syngas to Liquid Fuel)

March 2011

Have reviewed six SBIR proposals

Participated in reviews/panel discussions of 12 SBIR proposals

NSF Panel P110931 (Bio-energy)

March 2011

Have reviewed six SBIR proposals

Participated in reviews/panel discussions of 12 SBIR proposals

NSF Panel P102062 (Bio-Energy II)

August 2010

Have reviewed six SBIR proposals

Participated in reviews/panel discussions of 13 SBIR proposals

NSF Panel P100941 (Algal Biofuels)

March 2010

Have reviewed seven SBIR proposals

Participated in reviews/panel discussions of 16 SBIR proposals

NSF Panel P100915 (Bio-fuels)

March 2010

Have reviewed six SBIR proposals

Participated in reviews/panel discussions of 16 SBIR proposals

NSF Panel P091948 (Bioenergy Algal Biofuels)

September 2009

Have reviewed seven SBIR proposals

Participated in reviews/panel discussions of 16 SBIR proposals

NSF Panel P090678 (Bioinstrumentation)

February 2009

Have reviewed six SBIR proposals

Participated in reviews/panel discussions of 10 SBIR proposals

NSF Panel P080947 (Imaging)

April 2008

Have reviewed and participated in panel discussions of three SBIR/STTR proposals

NSF Panel P070700 (Imaging)

March 2007

Have reviewed four SBIR/STTR proposals

Participated in reviews/panel discussions of nine SBIR/STTR proposals

AD HOC REVIEWER OF GRANTS/PROPOSALS:

- Reviewer of US Dept. of State's Civilian Research & Development Foundation (CRDF) proposals:
- proposal ID: 10505 (2001)
- proposal ID: STCU # UK-5507 (2011)

- Reviewer of National Fellowships Committee for Sigma Delta Epsilon, Graduate Women in Science (www.gwis.org). (2010)
- Reviewer of NSF Proposal 1012844 (Chemistry of Life Processes) (2010)
- Reviewer of two grant applications for the Wellcome Trust (UK), in 2002 and 2003.
- Reviewer of NSF Proposal 1350260 (Career) (2013)

TEACHING ACTIVITIES:

- Biomedical Sciences Graduate Program core course “Structure and Function of Biomolecules” (lectures). (Fall 2003-2011; Spring 2004, 2005)
- Graduate course “Frontiers in Biomolecular Sciences” (seminars). (Spring 2005-2008, Fall 2004, 2006)
- Graduate course “Laboratory Methods in Molecular Biology” (lectures and lab) (Fall 2007, served as the coordinator of the course)
- Undergraduate course (lectures) “College Physics I” (PHY 2053C) (Fall 2008, 2009; Spring 2011, 2013)
- Undergraduate course (recitations) “College Physics I” (PHY2053L) (Fall 2008, 2009; Spring 2010, 2011, 2013)
- Undergraduate course (lectures) “College Physics II” (PHY 2054C) (Spring 2009, 2012, 2014; Fall 2010, 2011, 2013; Summer 2012)
- Undergraduate course (recitations) “College Physics II” (PHY 2054L) (Spring 2009, 2012, 2014; Fall 2010 through 2013; Summer 2012)
- Undergraduate course (lectures) “Physics for Scientists and Engineers II” (PHY2049) (Fall 2012)

POSTDOCTORAL FELLOWS AND STUDENTS SUPERVISED AND MENTORED:

POSTDOCTORAL FELLOWS (5):

Alex Pastoukhov	(2002-2003)
Shan Qin	(2002-2005)
Shuhua Tan	(2003-2004)
Abhay Pande	(2003-2006)
Kathleen Nemec	(2012-2014)

GRADUATE STUDENTS (8):

Past:

Kathleen N. Nemec, Biomol. Sci. PhD Program (2002-2006). Graduated with Ph.D. in Biomolecular Sciences in 2006. Currently research associate at UCF.

Casey Schwarz, Physics PhD student, was supported and trained in my lab in Spring 2009.

Supriyo Ray, Biomed. Sci. PhD Program (Fall 2007- summer 2011), Supriyo graduated in summer 2011 with PhD in Biomedical Sciences. Currently postdoc at UCSD, San Diego, CA.

Pranav Garg, Biotechnology Graduate Program (Spring 2010-summer 2011), Pranav graduated in summer 2011 with MS in Biotechnology.

Thywill Sabblah, Biomedical Sciences Graduate Program, did rotation in my lab in fall 2011, worked on the thermal stability of bee venom PLA2.

Ruhi Thorat, Physics Graduate Program, Conducted Independent Studies in my lab in fall 2012, was trained in infrared spectroscopy and circular dichroism of proteins, peptides, and lipids.

Present:

Greg Goldblatt, 2nd year PhD student, Biomedical Sciences PhD Program, currently working on a project to identify the structural basis of the cytotoxicity of the Alzheimer's amyloid β peptide.

Co-presenter at 8th Annual UCF Graduate Research Symposium (May 2013).

Co-author of an invited talk at the 15th European Conference on Spectroscopy of Biological Molecules (Oxford Univ., England, Aug. 2013). J.O. Matos, G. Goldblatt, S.A. Tatulian, "Structural Mechanism for Fibrillogenesis of Alzheimer's Amyloid β Peptide and the Effect of Pyroglutamylation."

Co-author of poster presentation at 5th Annual Graduate Research Colloquium, August 15, 2013, Burnett School of Biomedical Sciences, UCF: J. O. Matos, G. Goldblatt, B. Chen, J. Jeon, M. Ishigami, Q. Wang, S.A. Tatulian, "Modulation of the Structure and Fibrillogenesis of Alzheimer's Amyloid β Peptide by Pyroglutamylation."

Co-author of a poster presented at the Biophysical Society 58th Annual Meeting, Feb. 15-19, 2014, San Francisco: J. O. Matos, G. Goldblatt, J. Gornto, and S.A. Tatulian "Pyroglutamylated Amyloid- β Peptide Reverses Cross β -sheets by a Prion-like Mechanism."

Co-author of a manuscript submitted to the Journal of Physical Chemistry: J.O. Matos, G. Goldblatt, J. Jeon, B. Chen, and S.A. Tatulian "Pyroglutamylated Amyloid- β Peptide Reverses Cross β -sheets by a Prion-like Mechanism"

Jason Matos, 2nd year MS student, Biotechnology Graduate Program. Currently working on the structure of Alzheimer's amyloid β peptide. Will graduate in spring 2014.

First author of poster presentation at Biophysical Society 57th Annual Meeting in 2013: Matos, J. O., Bulson, J., and Tatulian, S. A. Effect of Membrane Cholesterol on the Structure of Alzheimer's Amyloid- β Peptide in Lipid Bilayers.

First author of poster presentation at 5th Annual Graduate Research Colloquium, August 15, 2013, Burnett School of Biomedical Sciences, UCF: J. O. Matos, G. Goldblatt, B. Chen, J. Jeon, M. Ishigami, Q. Wang, S.A. Tatulian, Modulation of the Structure and Fibrillogenesis of Alzheimer's Amyloid β Peptide by Pyroglutamylation.

First author of an invited talk at the 15th European Conference of Spectroscopy on Biological Molecules (Oxford Univ., England, Aug. 2013). J.O. Matos, G. Goldblatt, S.A. Tatulian, Structural Mechanism for Fibrillogenesis of Alzheimer's Amyloid β Peptide and the Effect of Pyroglutamylation.

First author of a poster presented at the Biophysical Society 58th Annual Meeting, Feb. 15-19, 2014, San Francisco: J. O. Matos, G. Goldblatt, J. Gornto, and S.A. Tatulian "Pyroglutamylated Amyloid- β Peptide Reverses Cross β -sheets by a Prion-like Mechanism."

First author of a manuscript submitted to the Journal of Physical Chemistry: J.O. Matos, G. Goldblatt, J. Jeon, B. Chen, and S.A. Tatulian "Pyroglutamylated Amyloid- β Peptide Reverses Cross β -sheets by a Prion-like Mechanism"

UNDERGRADUATE STUDENTS (27):

Jennifer L. Scott, worked in my lab in 2007 as an Honors in the Major student. In 2007 published a paper in Biochemistry based on her work in my lab. Moved to the Med. School of the University of Miami.

Christopher Reid Reilly, worked in my lab as an Honors in the Major student in Fall 2009-Spring 2010 semesters, won the 2nd place in UCF Undergraduate Research Showcase in April 2010 (Life Sciences). Defended HIM thesis in April 2010. Currently at the College of Medicine of UCF, Orlando.

Erica Jackson, UCF graduate of Spring 2010. Conducted undergraduate research in my lab within the SMART program in 2009-2010, published an abstract in Biophys. J. Currently at the Med. School of the University of South Florida, Tampa.

Ramone Eldemire, UCF senior. Recipient of Office of Undergrad. Research Award for Spring and Summer 2010. Recipient of RAMP/YES Fellowship - Research Path, College of Engineering & Computer Science, Academic Affairs Office, UCF. Presented a talk at YES Stem Scholarship Program of UCF on April 1 2011 “Mechanisms of Interfacial Activation of Human and Bee Venom Phospholipase A2 Enzymes.”

Keith Manning, UCF graduate of 2011, did Directed Independent Studies with me in spring 2011. Presented a poster at UCF Undergraduate Research Forum on April 1, 2011: Keith Manning and Ramone Eldemire, “Mechanisms of Interfacial Activation of Human and Bee Venom Phospholipase A2 Enzymes.”

Yuri Matos, UCF junior (2011) (MolBio-BS). Conducted research in my lab in fall 2011 on the mechanisms of temperature-induced activation of phospholipase A2 enzymes.

Joselyn Morales, UCF senior (2013) (MolBio-BS). Recipient of Research and Mentoring Program (RAMP) award for 2011-2012. Conducted research in my lab on the membrane pore forming mechanism by Alzheimer β -amyloid peptide. Project title” Mechanisms of Membrane Destabilization by Alzheimer’s β -Amyloid Peptide.” Presented an abstract at Biophysical Society 57th Annual Meeting in 2013: Morales, J., and Tatulian, S. A. Membrane Destabilization by Alzheimer’s β -Amyloid Peptide. Currently at the MS in Medical Sciences Program of the Georgetown University.

Heather Lesch, UCF junior (2011) (MolBio-BS). Conducted research in my lab in fall 2011-spring 2012 semesters on the membrane pore forming mechanism by Alzheimer β -amyloid peptide.

Michael Davis, Conducted research in my lab in spring 2012 as an EXCEL Program student on the structural basis for the neurodegenerative effect of Alzheimer β -amyloid peptide.

Jeff Bulson, UCF senior, Currently (fall 2012-spring 2014) conducts biophysical research in my lab on peptide pores in membranes. Co-author of a poster presented at Biophysical Society 57th Annual Meeting in 2013: Matos, J. O., Bulson, J., and Tatulian, S. A. Effect of Membrane Cholesterol on the Structure of Alzheimer’s Amyloid- β Peptide in Lipid Bilayers.

Gabriela Carmo, UCF sophomore (Bio-BS), conducted Directed Independent Research in my lab in spring 2013 (EXCEL program) on recombinant expression and purification of diphtheria toxin T-domain. Recipient of Study Abroad Scholarship for spring 2014 (Univ. of Surrey, UK)

Sarah Bober, UCF sophomore (Biomed-BS) Directed Independent Research in spring 2013 (EXCEL program) on the membrane pore formation by Alzheimer’s amyloid beta peptide. Undergraduate research (volunteering) through spring 2014.

Louis Maxwell, UCF junior (Bio-BS), Work-study undergraduate student, summer-fall 2013.

Katia Kyriakoulis, UCF junior (Biomed-BS), undergraduate intern, summer 2013.

Madeline Davis, UCF sophomore (Biomed-BS), undergraduate intern, summer/fall 2013. Directed Independent Research: spring 2014.

Jerica Loeprich, UCF junior, Health Sciences - Pre-Clinical, undergraduate intern, summer 2013

Jeremy Gornto, UCF senior, Health Sciences - Pre-Clinical, undergraduate intern, summer 2013-spring 2014. Co-author of a poster presented at the Biophysical Society 58th Annual Meeting, Feb. 15-19, 2014, San Francisco: J. O. Matos, G. Goldblatt, J. Gornto, and S.A. Tatulian "Pyroglutamylated Amyloid- β Peptide Reverses Cross β -sheets by a Prion-like Mechanism"

Charan Reddi, UCF senior, Biotechnology BS Program, volunteer in summer/fall 2013; Directed Independent Studies in fall 2013 (MCB 4912_0003)

Andrew Amicarelli, UCF junior (Biomed-BS) was mentored and conducted undergraduate research in my lab in spring/summer 2013. Directed Independent Studies in fall 2013 (MCB 4912_0003)

Pooran Patel, UCF junior (Biomed-BS), fall 2013-spring 2014, Undergraduate studies on the structure of A β peptide.

Angelica Durski, junior majoring in Biomedical Sciences, conducted undergraduate research on the mechanism of membrane pore formation by the A β peptide, spring 2014

Irina Morgunova, first year UCF undergraduate transfer student majoring in Biomedical Science. Directed Independent Research on the mechanism of membrane pore formation by the A β peptide, spring 2014

Luz Diaz, sophomore majoring in Biomedical Sciences, spring 2014

Kelly Alcuis, junior majoring in Biomedical Sciences, undergraduate research, spring 2014

Lisa Pressendo, freshman in the Burnett Honors College, undergraduate research, spring 2014.

Luis Alva, junior majoring in Biomedical Science, undergraduate research on expression and purification of diphtheria toxin transmembrane domain, spring 2014.

Jacqueline Williams, sophomore, Biomedical Sciences major, zero credit Directed Independent Research, summer 2014.

HIGH SCHOOL STUDENTS (4):

Denise Feradov, Lake Brantley High School junior, won the 1st place at the Seminole County (FL) Regional Science and Engineering Fair in 2008 based on her work in my lab.

Audrey Leasure and **Gennifer Rubin**, Lake Highland Preparatory School juniors, won the 1st place and the Grand Prize in the Team Project category at the Orange County (FL) Science & Engineering Fair in February 2009 based on their work done in my lab.

Emily Welch, Lake Highland Preparatory School junior, 2nd place at the Orange County (FL) Science & Engineering Fair (Feb. 2010).

SERVICE:

- 2002-2006 PhD Advisory Committee for Kathleen N. Nemec (Biomolecular Sciences, UCF, advisor: Suren Tatulian), Graduated with PhD in Aug. 2006
- 2007-2011 PhD Advisory Committee for Supriyo Ray (Biomolecular Sciences, UCF, advisor: Suren Tatulian) Supriyo graduated with PhD in summer 2011.
- 2004-2005 PhD Advisory Committee for George Kyriazis (Biomolecular Sciences, UCF, advisor: Tony Zervos)
- 2005-2009 PhD Advisory Committee for Lawrence Ayong (Biomolecular Sciences, UCF, advisor: D. Chakrabarti), Graduated with PhD in Sep. 2009
- 2007-2012. PhD Advisory Committee for Michael Taylor (Biomolecular Sciences, UCF, advisor: Ken Teter). Mike graduated with PhD in spring 2012.
- 2008-2011 PhD Advisory Committee for Silki Arora (Physics PhD Program, UCF, advisor: Alfons Schulte) Silki graduated with PhD in summer 2011.
- 2008-2010 PhD Advisory Committee for Pansy Patel (Dept. of Chemistry, UCF, advisor: Artem Masunov). Pansy graduated with PhD in April 2010.
- 2008-pr. PhD Advisory Committee for Helen Burrell (Biomolecular Sciences, UCF, advisor: Ken Teter)
- 2008-2012 PhD Advisory Committee for Rebecca Boohaker (Biomolecular Sciences, UCF, advisor: Annette Khaled). Rebecca graduated in Summer 2012
- 2008-2010 PhD Advisory Committee for Zhenyu Zhou (Physics PhD Program, UCF, advisor: Weili Luo)
- 2009-2010 PhD Advisory Committee for Carlos Toro (Chemistry Dept., UCF, advisor: F. E. Hernandez) Carlos graduated with PhD in August 2010.
- 2011-pr. PhD Advisory Committee for Yuqing Lin (Physics Dept., UCF, advisor: Lee Chow)
- 2011-pr. PhD Advisory Committee for Michael Kaliszewski (Biomedical Sciences, UCF, advisor Ella Bossy-Wetzel)
- 2012-pr. PhD Advisory Committee for Esha Sehanobish (Biomedical Sciences, UCF, advisor Victor Davidson)
- 2012-pr. PhD Advisory Committee for Brian Dow (Biomedical Sciences, UCF, advisor: Victor Davidson)
- 2013-pr. PhD Advisory Committee for Aiqun Huang (Physics Graduate Program, UCF, advisor: Aniket Bhattacharya)
- 2013-pr. PhD Advisory Committee for Jaekyun Jeon (Physics Graduate Program, UCF, advisor: Bo Chen)
- 2013-pr. PhD Advisory Committee for Xin Qiao (Physics Graduate Program, UCF, advisor: Bo Chen)
- 2011-2013 MS Advisory Committee for Carly Bader (Biomedical Sciences, UCF, advisor: Ken Teter)
- 2011-2013 MS Advisory Committee for Neyda VanBennekom (Biomedical Sciences, UCF, advisor: Ken Teter)
- 2006-2008 MS Advisory Committee for Dennis Ganyc (Biomolecular Sciences, UCF, advisor: William Self)
- 2006-2007 MS Advisory Committee for Harminder D. Singh (Biomolecular Sciences, UCF, advisor: P. E. Kolattukudy), Graduated with MS in 2007
- 2006-2009 MS Advisory Committee for Patricia Scaglione (Biomolecular Sciences, UCF, advisor: Kenneth Teter), Graduated with MS in 2009
- 2010-2011 MS Advisory Committee for Pranav Garg (Biotechnology Graduate Program, UCF, advisor: S. Tatulian). Graduated with MS in Biotechnology in 2011.

- 2006-2007 HIM advisory committee for Natalia Spinelli (Dept. of Mol. Biol. & Microbiol. UCF, advisor: Saleh Naser), Graduated in March 2008
- 2006-2007 HIM advisory committee for Natalie Villani (Dept. of Mol. Biol. & Microbiol. UCF, advisor: Laurence von Kalm), Graduated in 2007
- 2009-2010 HIM advisory committee for Christopher Reid Reilly (Dept. of Mol. Biol. & Microbiol. UCF, advisor: Suren A. Tatulian), Graduated in June 2010
- 2008-2010 HIM advisory committee for Elizabeth Haynes (Dept. of Mol. Biol. & Microbiol. UCF, advisor: Kenneth Teter), Graduated in June 2010
- 2012-2013 HIM advisory committee for Jesse Harrison (Burnett School of Biomedical Sciences UCF, advisor: Herve Roy)
- 2013-pr. HIM advisory committee for Laura Herndon (Burnett School of Biomedical Sciences UCF, advisor: Ken Teter)
- 2010-2011 Search Committee for faculty recruitment to the Dept. of Physics, UCF
- 2006-2009 Curriculum Committee of the Biomolecular Science PhD Program
- 2006 Search Committee for faculty recruitment to the Biomolec. Science Center, UCF
- 2006 Committee for American Chemical Society (Florida division) Summer Research Fellowships
- 2006 Curriculum Committee for BS/MS Biotechnology Program, UCF
- 2009-2013 UCF Physics Dept. Diversity Committee
- 2009-2012 UCF Physics Dept. Graduate Affairs Committee
- 2012-pr. UCF Physics Dept. Colloquium Committee
- 2013-pr. UCF Physics Dept. Lecturer Promotion Committee
- 2013-pr. UCF College of Sciences Dean's Advisory Council Member

RESEARCH ACCOMPLISHMENTS:

(a) *Physical Chemistry of Phospholipid Bilayers:*

- Determination of the membrane surface charge density by the Gouy-Chapman-Stern (GCS) theory and by a new "potentiodynamic" method (papers # 62, 65, 70).
- Detection and characterization of shifts in the surface potential of phosphatidylcholine liposomes at the lipid phase transition (papers # 54, 56, 59, 63, 66, 69).
- Determination of ion binding parameters based on extrema and charge reversal of ion concentration-dependence of membrane surface potential (papers # 46, 50).
- Investigation of the effects of inorganic ions on membrane interactions using light scattering, neutron diffraction, and the theory of disjoining pressure (papers # 52, 53, 57).

(b) *Protein Structure and Function:*

- Identification of functionally important structural intermediates of amyloid β peptide (paper # 5).
- Characterization of folding intermediates of *E. coli* outer membrane protein A (OmpA) bound to bilayers of varying fluidity (paper # 49).
- Functional reconstitution and determination of the structure and orientation of phospholamban, a regulatory protein of sarcoplasmic reticulum Ca^{2+} -ATPase (papers # 47, 48).
- Development of a method for studying structural interactions between integral membrane proteins by isotope-edited ATR-FTIR spectroscopy and structural characterization of regulatory interactions between Ca^{2+} -ATPase and phospholamban (paper # 36).
- Detection and structural characterization of functionally important, pH-dependent conformational changes in reconstituted influenza hemagglutinin (papers # 43, 45).
- Determination of the structure of the transmembrane and fusion domains of influenza hemagglutinin (papers # 38, 44).

- Development of a “synergistic” concept of interfacial activation of phospholipase A₂ based on structural effects upon membrane binding (papers # 34, 37).
- Development of methods for quantitative characterization of protein dynamic structure based on amide hydrogen/deuterium exchange as measured by FTIR spectroscopy, and characterization of the structure of *Streptomyces lividans* K⁺ channel (paper # 40).
- Identification of the regulatory role of the N-terminal helix of phospholipases A₂ (papers # 28,32)
- Structural characterization of the membrane-bound human 5-lipoxygenase (papers # 30, 31).
- Characterization of novel mechanisms of endoplasmic reticulum-to-cytosol translocation of bacterial toxins (papers # 1, 2, 9, 12-15, 17-20, 24, 25).
- Identification and characterization of a novel protein, CDP138, which mediates glucose transporter incorporation into cell plasma membrane (paper # 11)
- Identification of a novel type of transmembrane pore formed by peptides (papers # 7, 8)
- Structural characterization of peptides bound to graphene and graphite (paper # 10)
- Development of novel algorithm for determination of helix orientations in proteins (paper # 22).

c) *Protein-membrane Interactions*

- Discovery of a Ca²⁺-regulated membrane binding mechanism for soy lipoxygenase (paper # 39)
- Detection and characterization of structural effects in interfacial enzymes upon activation via membrane binding (papers # 26, 28, 30-32, 34, 35, 37, 39, 42).
- Development and application of a theory for quantitative characterization of membrane binding of peripheral proteins based on spin-label EPR measurements (paper # 35).
- Development and application of a novel technique for determination of the configuration of protein membrane complexes (papers # 28, 29, 32, and PDB entry 1YSK).
- Identification of isoform-specific membrane insertion of phospholipase A₂ (papers # 23, 27).
- Reviews on interactions of peptides and proteins with membranes (papers # 33, 41; book ch. # 3).
- Reviews on membrane electrostatics and ion binding (paper # 54; book chapters 1, 2)

CITATION INDEX:

My publications have been cited in peer-reviewed journals over 2,000 times as of March 2014 (source: Web of Science).

h-INDEX AS OF MAY 2014: 24

PEER-REVIEWED PUBLICATIONS:

(PAPERS THAT RECEIVED ≥24 CITATIONS ARE HIGHLIGHTED)

1. Banerjee, T., Taylor, M., Jobling, M.G., Burrell, H., Yang, Z., Serrano, A., Randall K. Holmes, R.K., Tatulian, S.A., Teter, K. ADP-Ribosylation Factor 6 Acts as an Allosteric Activator for the Folded but not Disordered Cholera Toxin A1 Polypeptide (*submitted for publication*)
2. Burrell, H., Taylor, M., Banerjee, T., Tatulian, S.A., Teter, K. Co- and Post-Translocation Roles for Hsp90 in Cholera Intoxication. (*submitted for publication*)
3. Jeon, J., Qiao, X., Cole, A.L., Matos, J.O., Bautista, S., Castillo, J., Hung, I., Gan, Z., Tatulian, S.A., Cole, A.M., and Chen, B. Morphology-Dependent HIV-Enhancing Effect of Semen-Derived Enhancer of Viral Infection. (*submitted for publication*).
4. Dow, B.A., Sukumar, N., Matos, J.O., Choi, M., Schulte, A., Tatulian, S.A., and Davidson, V.L. (2014) The sole tryptophan of amicyanin enhances its thermal stability but does not influence the electronic properties of the type 1 copper site. *Arch. Biochem. Biophys.* **550-551**, 20-27

5. Matos, J.O., Goldblatt, G., Jeon, J., Chen, B., and Tatulian, S.A. (2014) Pyroglutamylated Amyloid- β Peptide Reverses Cross β -sheets by a Prion-like Mechanism. *J. Phys. Chem. B* **118(21)**, 5637-5643
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8. Tatulian, S. A., Garg, G., Nemeč, K. N., Chen, B., and Khaled, A. R. (2012) Molecular Basis for Membrane Pore Formation by Bax Protein Carboxyl Terminus. *Biochemistry* **51(46)**, 9406-9419.
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16. Tatulian, S. A. (2010) Structural analysis of proteins by isotope-edited FTIR spectroscopy. *Spectroscopy* **24**, 37-43.
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INVITED BOOK CHAPTERS:

1. Tatulian, S. A. (1993) Ionization and Ion Binding. in *Phospholipids Handbook* (Cevc, G., ed.), 1st Edition, Marcel Dekker, New York, Chapter 14, pp. 511-552. (81 citations)
2. Tatulian, S. A. (1999) Surface Electrostatics of Biological Membranes and Ion Binding. in *Surface Chemistry and Electrochemistry of Membranes* (T. S. Sørensen, ed.) Marcel Dekker, New York, Chapter 22, pp.871-922. (37 citations)
3. Tatulian, S. A. (2013) Structural Characterization of Membrane Proteins and Peptides by FTIR and ATR-FTIR Spectroscopy. In: *Lipid-Protein Interactions: Methods and Protocols* (Kleinschmidt, J. H., ed.), Chapter 9, pp. 177-218. Humana Press, New York, NY.

EDITORIAL:

1. Tatulian, S. A. (2012) Trends in American Biomedical Research: Science, Money, and Politics. (Editorial) *J. Phys. Chem. Biophys.* **2(1)** March 2012.

PRESENTATIONS AT CONFERENCES/SYMPOSIA/SEMINARS:

1. Taylor, M., Banerjee, T., Jobling, M.G., Burress, H., Serrano, A., Yang, Z., Holmes, R.K., Tatulian, S.A., & Teter, K. (2014) ADP-ribosylation factor 6 actd as an allosteric activator for the folded but not disordered cholera toxin A1 polypeptide. American Society for Microbiology 114th General Meeting, May 17-20 2014, **Boston MA**.
2. Burress, H., Romero, A., Tatulian, S.A., & Teter, K. (2014) Hsp90 and Hsc70 Perform Overlapping but Distinct Roles in the Processing of Cholera Toxin. American Society for Microbiology 114th General Meeting, May 17-20 2014, **Boston MA**.
3. Tatulian, S.A., Bhattacharya, A. (2014) Introductory Physics for Life Sciences; Why and How? Poster Presentation at the UCF Summer Faculty Development Conference, May 5-8 2014. **Orlando, FL**.
4. Matos, J.O., Goldblatt, G., Gornto, J. & Tatulian, S.A. (2014) Pyroglutamylated Amyloid- β Peptide Reverses Cross β -sheets by a Prion-like Mechanism. Biophysical Society 58th Annual Meeting, **San Francisco, CA**, Feb. 15-19, 2014. *Biophys. J.* 106(2), p. 684a-685a.
5. Taylor, M., Banerjee, T., Ray, S., Burress, H., Tatulian, S.A. & Teter, K (2014) Substrate-Induced Unfolding of Protein Disulfide Isomerase Displaces the Cholera Toxin A1 Subunit from its Holotoxin. Biophysical Society 58th Annual Meeting, **San Francisco, CA**, Feb. 15-19, 2014. *Biophys. J.* 106(2), p. 472a.
6. Burress, H., Taylor, M., Banerjee, T., Bader, C., Tatulian, S.A. & Teter, K. (2014) Structural and Functional Interactions between Hsp90 and the Cholera Toxin A1 Subunit. Biophysical Society 58th Annual Meeting, **San Francisco, CA**, Feb. 15-19, 2014. *Biophys. J.* 106(2), p. 469a.
7. Matos, J.O., Goldblatt, G., & Tatulian, S.A. (2013) Structural Mechanism for Fibrillogenesis of Alzheimer's Amyloid β Peptide and the Effect of Pyroglutamylation. Invited lecture at the 15th European Conference of Spectroscopy on Biological Molecules (Oxford Univ., Aug. 27, 2013). **Oxford, England**. <http://www.stfc.ac.uk/ECSBM/Speakers/43411.aspx>
8. Matos, J. O., Bulson, J., & Tatulian, S. A. (2013) Effect of membrane cholesterol on the structure of Alzheimer's amyloid β peptide in lipid bilayers. Biophysical Society 57th Annual Meeting, **Philadelphia, PA**, Feb. 2-6 2013. *Biophys. J.* 104(2), p. 239a.
9. Morales, J., & Tatulian, S. A. (2013) Membrane destabilization by Alzheimer's amyloid β peptide. Biophysical Society 57th Annual Meeting, **Philadelphia, PA**, Feb. 2-6 2013. *Biophys. J.* 104(2), p. 239a-240a.
10. Lin, Y., Rudzevich, Y., Wearne, A., Lumpkin, D., Morales, J., Nemeč, K. N., Tatulian, S. A., Lupan, O., & Chow, L. (2012) Study of vesicle size distribution dependence on pH value based on a nanopore resistive pulse method. The 5th Annual NanoScience Technology Symposium: Nanotechnology Frontiers in Medicine, Materials and Energy (NanoFlorida 2012), Sep. 28-29 2012, University of South Florida, **Tampa, FL**.
11. Tatulian, S. A. Garg, P., Nemeč, K. N., & Khaled, A. R. (2012) Molecular Basis for Membrane Pore Formation by Bax Protein Carboxyl Terminus. Biophysical Society 56th Annual Meeting, **San Diego, CA**, Feb. 25-29 2012. *Biophys. J.* 102(3), p. 93a.
12. Ray, S., Haynes, L., Banerjee, T., Tatulian, S. A. & Teter, K. (2011) Mechanism of Saporin Entry into the Target Cell Cytosol. Biophysical Society 55th Annual Meeting, **Baltimore, MD**, March 5-9, 2011. *Biophys. J.* 100(3), p. 208a.
13. Garg, P., Tatulian, S. A., Khaled, A. R. & Nemeč, K. (2011) Biophysical Characterization of Peptide-Membrane Interactions and Membrane Permeabilization. Biophysical Society 55th Annual Meeting, **Baltimore, MD**, March 5-9, 2011. *Biophys. J.* 100(3), p. 40a.

14. Eldemire, R., Reilly, C. R. & Tatulian, S. A. (2011) Mechanisms of Interfacial Activation of Human and Bee Venom Phospholipase A₂ Enzymes. Biophysical Society 55th Annual Meeting, **Baltimore, MD**, March 5-9, 2011. *Biophys. J.* 100(3), p. 509a.
15. Tatulian, S. A. (2011) Analysis of Structure and Function of Membrane Proteins by Infrared Spectroscopy, Fluorescence, and Circular Dichroism. Invited talk at ESP&G Colloquium Seminar Series, University of South Florida, **St. Petersburg, FL**, April 22, 2011.
16. Tatulian, S. A. (2010) Peripheral Membrane Protein Structure and Function: Lessons from Phospholipase A₂ and Lipoxygenase. BIT Life Sciences' 3rd Annual Conference PepCon-2010. **Beijing, China**, March 21-24, 2010 (<http://www.bitlifesciences.com/pepcon2010/Program.asp>)
17. Tatulian, S. A. (2010) New trends in protein engineering. Talk at UCF Biophysics Group seminar. **Orlando, FL**. October 22, 2010.
18. Tatulian, S. A. (2010) Structural Insight into the Mechanism of Interfacial Enzymes from Evanescent Wave Vibrational Spectroscopy. Talk at the International Conference "Vibrations at Surfaces", UCF, **Orlando, FL**. March 10-13, 2010. (<http://vas13.cos.ucf.edu>)
19. Urbauer, J. L., Nemecek, K. N., and Tatulian, S. A. (2010) New insights into the interfacial activation of secreted phospholipase A₂. *Biophys. J.* 98, No 3 (Abstract Issue), 648a. 54th Biophysical Society Annual Meeting. **San Francisco, CA**, Feb. 20-24, 2010.
20. Ray, S., Jackson, E., and Tatulian S. A. (2010) Unusual thermal stability of human secreted phospholipase A₂. *Biophys. J.* 98, No 3 (Abstract Issue), 86a-87a. 54th Biophysical Society Annual Meeting. **San Francisco, CA**, Feb. 20-24, 2010.
21. Tatulian, S. A. (2009) Biomembrane Structure and Function by Combination of Site-directed Labeling and Spectroscopy. Talk at UCF Biophysics Group seminar. Sep. 16, 2009, University of Central Florida. **Orlando, FL**.
22. Tatulian, S. A. (2009) Structural Analysis of Macromolecular Complexes by Isotope-edited FTIR Spectroscopy. XIII European Conference on the Spectroscopy of Biological Molecules. Aug. 28-Sep. 2, 2009, **Palermo, Italy** (<http://www.ecsbn.eu>).
23. Nemecek, K. N. Pande, A. H., Qin, S., Tatulian, S. A., and Khaled, A. R. (2009) Bax C-terminal Peptide – Insights into Membrane Interactions. *Biophys. J.* Abstract Issue (Feb. 2009), 531a. 53rd Biophysical Society Annual Meeting. **Boston, MA**, Feb. 28-March 4, 2009.
24. Tatulian, S. A., and Ray, S. (2009) Changes in the Secondary and Tertiary Structures of Secreted Phospholipase A₂ upon Activation. *Biophys. J.* Abstract Issue (Feb. 2009), 593a. 53rd Biophysical Society Annual Meeting. **Boston, MA**, Feb. 28-March 4, 2009.
25. Ray, S., Scott, J. L., and Tatulian, S. A. (2008) Contributions of Membrane Insertion and Angular Orientation in the Interfacial Activation of Phospholipase A₂. *Biophys. J.* 94, 2046. 52nd Biophysical Society Annual Meeting. **Long Beach, CA**, Feb. 2-6, 2008.
26. Pande, A. H., Qin, S., Nemecek, K. N., and Tatulian, S. A. (2007) Real-Time Correlations between Membrane Binding Mode, Conformational Changes, and Activity of Phospholipase A₂. 51st Biophysical Society Annual Meeting. **Baltimore, MD**, March 3-7, 2007.
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