

Edwin Li, Ph.D.
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Saint Joseph's University
Department of Biology
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Education

1994 B. S. Chemical Engineering, Rutgers University, New Brunswick, NJ
1997 M.S. Chemical Engineering, University of Rhode Island, Kingston, RI
2001 Ph.D. Chemical Engineering, University of Rhode Island, Kingston, RI
Advisor: Dr. Mercedes Rivero-Hudec
2002 – 2004 Postdoctoral Training. Materials Science and Engineering, Johns Hopkins University, Baltimore, MD
Advisor: Dr. Kalina Hristova

Academic Employment

2016 - present Associate Professor of Biology, Saint Joseph's University
2010 – 2016 Assistant Professor of Biology, Saint Joseph's University
2009 – 2010 Alexander von Humboldt Research Fellow, Technical University of Munich, Germany
2008 – 2010 Associate Research Scientist, Johns Hopkins University
2005 – 2008 Assistant Research Scientist, Johns Hopkins University

Courses Taught

Undergraduate:

Bio 101/101L (Cells), lecture and laboratory, introductory course for science majors
Bio 165/165L (Exploring the Living World), lecture and laboratory, general education course for non-science majors
Bio 421/621 (Molecular and Cell Biophysics), lecture and laboratory, upper level course for science majors and graduate students
Bio 424/624 (Biotechnology), lecture and laboratory, upper level course for science majors and graduate students

Graduate:

Bio 550 (Research Techniques), course for first-year M.S. and M.A. students
Bio 552 (Graduate Seminar), course for M.S. and M.A. students
Bio 707 (Biotechnology), course for M.S. and M.A. students

Journal Articles (Peer-Reviewed)

[†]denotes mentored M.S. or M.A. student at SJU

- The pathogenic A391E mutation in FGFR3 induces a structural change in the transmembrane domain dimer. Mudumbi K[†], Julius A, Herrmann J, Li E. Journal of Membrane Biology, 2013, 246(6):487-493.
- Increased expression of the integral membrane proteins EGFR and FGFR3 in anti-apoptotic Chinese hamster ovary cell lines. Ohsfeldt E, Huang SH, Baycin-Hizal D, Kristoffersen L, Le TMT, Li E, Hristova K, Betenbaugh MJ. Biotechnology and Applied Biochemistry, 2012, 59(3):155-162
- Transmembrane helix dimerization: beyond the search for sequence motifs. Li E, Wimley W, Hristova K. Biochimica Biophysica Acta – Biomembranes, 2012, 1818(2):1698-1705.
- Assembly of the m2 tetramer is strongly modulated by lipid chain length. Schick S, Chen L, Li E, Lin J, Köper I, Hristova K. Biophysical Journal, 2010, 99(6):1810-1817.
- Receptor tyrosine kinase transmembrane domains: Function, dimer structure and dimerization energetics. Li E, Hristova K. Cell Adhesion and Migration, 2010, 4(2):249-254.

- Increased expression of the integral membrane protein ErbB2 in Chinese hamster ovary cells expressing the anti-apoptotic gene Bcl-xL. O'Connor S, Li E, Majors BS, He L, Placone J, Baycin D, Betenbaugh MJ, Hristova K. Protein Expression and Purification, 2009, 67(1):41-47.
- Utility of surface-supported bilayers in studies of transmembrane helix dimerization. Li E, Merzlyakov M, Lin J, Searson P, Hristova K. Journal of Structural Biology, 2009, 168(1):53-60.
- Quantitative measurements of protein interactions in a crowded cellular environment. Li E, Placone J, Merzlyakov M, Hristova K. Analytical Chemistry, 2008, 80(15):5976-85.
- Surface supported bilayer platform for studies of lateral association of proteins in membranes (Mini Review). Merzlyakov M, Li E, Hristova K. Biointerphases, 2008, 3(2):FA80.
- Effect of pathogenic cysteine mutations on FGFR3 transmembrane domain dimerization in detergents and lipid bilayers. You M, Spangler J, Li E, Han X, Ghosh P, Hristova K. Biochemistry, 2007, 46(39):11039-11046.
- Surface-supported bilayers with transmembrane proteins: role of the polymer cushion revisited. Merzlyakov M, Li E, Gitsov I, Hristova K. Langmuir, 2006, 22(24):10145-10151.
- Spectral Förster resonance energy transfer detection of protein interactions in surface-supported bilayers. Merzlyakov M, Li E, Casas R, Hristova K. Langmuir, 2006, 22(16):6986-6992.
- Role of receptor tyrosine kinase transmembrane domains in cell signaling and human pathologies. Li E, Hristova K. Biochemistry, 2006, 45(20):6241-6251.
- The achondroplasia mutation does not alter the dimerization energetics of the fibroblast growth factor receptor 3 transmembrane domain. You M, Li E, Hristova K. Biochemistry, 2006, 45(17):5551-5556.
- Transmembrane helix heterodimerization in lipid bilayers: probing the energetics behind autosomal dominant growth disorders. Merzlyakov M, You M, Li E, Hristova K. Journal of Molecular Biology, 2006, 358(1):1-7.
- Directed assembly of surface-supported bilayers with transmembrane helices. Merzlyakov M, Li E, Hristova K. Langmuir, 2006, 22(3):1247-1253.
- FGFR3 dimer stabilization due to a single amino acid pathogenic mutation. Li E, You M, Hristova K. Journal of Molecular Biology, 2006, 356(3):600-612.
- Sodium dodecyl sulfate-polyacrylamide gel electrophoresis and Förster resonance energy transfer suggest weak interactions between fibroblast growth factor receptor 3 (FGFR3) transmembrane domains in the absence of extracellular domains and ligands. Li E, You M, Hristova K. Biochemistry, 2005, 44(1):352-360.
- Imaging Förster resonance energy transfer measurements of transmembrane helix interactions in lipid bilayers on a solid support. Li E, Hristova K. Langmuir, 2004, 20:9053-9060.
- Pollution prevention guideline for academic laboratories. Li E, Barnett SM, Ray B. Journal of Chemical Education, 2003, 80:45-49.
- An alternative confirmatory test for silver ion in quantitative analysis. Kirschenbaum LJ, Resende E, Li E, Ruekberg B. Journal of Chemical Education, 2001, 78:1524.
- Application of temperature control strategies to the growth of hen egg-white lysozyme crystals. Schall CA, Riley JS, Li E, Arnold E, Wiencek JM. Journal of Crystal Growth, 1994, 165:299-307.

Published Abstracts and Meeting Presentations (Not Peer-Reviewed)

Published Abstracts and National Conferences (Not Peer-Reviewed)

[†]denotes mentored M.S. or M.A. student at SJU, [‡]denotes mentored undergraduate student at SJU

- The roles of the juxtamembrane cysteine and glutamine residues in mucin 1 (MUC1) dimerization. Li E, Herrera R[†], Cani K[†], Freeman C[†]. The FASEB Journal, 2018, 32(1 Supplement):815.2. Presented at the 2018 Annual Meeting of the American Society for Biochemistry and Molecular Biology.

- Measuring the cAMP/PKA signaling pathway in stress-induced sleep using *C. elegans* as a model organism. Schuck R[‡], Cianciulli A[‡], Buerkert T[‡], Li E, Nelson M. The FASEB Journal, 2018, 32(1 Supplement):533.83. Presented at the 2018 Annual Meeting of the American Society for Biochemistry and Molecular Biology.
- Role of the transmembrane domain of mucin 1 nuclear localization. O'Connor G[‡]. The FASEB Journal, 2017, 31(1 Supplement):603.21. Presented at the 2017 Annual Meeting of the American Society for Biochemistry and Molecular Biology.
- The dynamics of an infrared light-activated adenylyl cyclase during the manipulation of behavior in *C. elegans*. Szurgot M[‡], Janton FM[‡], Nelson M. The FASEB Journal, 2017, 31(1 Supplement):614.34. Presented at the 2017 Annual Meeting of the American Society for Biochemistry and Molecular Biology.
- Understanding the mechanism of mucin 1 dimerization. E Li. Presented at the 2017 Humboldt Colloquium, Global Research in the 21st Century: Perspectives of the U.S. Humboldt Network.
- Determining the CQC-mediated interactions in the mucin 1 homodimer. Bilyk E[‡], Freeman C[‡], Stachowski T[‡], Li E. Biophysical Journal, 2016, 110(3):581a. Presented at the 2016 Annual Meeting of the Biophysical Society.
- Combining cAMP optogenetics with in vivo measurements to study sleep in *Caenorhabditis elegans*. Szurgot[‡] M, Vance[‡] R, Li E and Nelson M. Presented at the 2015 Annual Meeting of the American Society for Cell Biology.
- Elucidating the structural consequences of CQC-mediated dimerization of MUC1. Stachowski T[‡], Li E. The FASEB Journal, 2015, 29(1 Supplement):574.21. Presented at the 2015 Annual Meeting of the American Society for Biochemistry and Molecular Biology.
- Beyond Collaboration: Building a Life Science Community of Practice for Science. Fritz C, Li E, Forster BM, Jurkiewicz M, Snetselaar K. Annual Meeting of the American Society for Biochemistry and Molecular Biology, 2015.
- Determining the key residues within the MUC1 transmembrane domain dimer. Li E, Stachowski T[‡], Freeman C[‡]. Molecular Biology of the Cell, 2014, 25. Presented at the 2014 Annual Meeting of the American Society for Cell Biology.
- Measuring the dimerization propensities of mucin 1 transmembrane and juxtamembrane domains. Li E, Moll C[‡], Eichman B[‡], King J[‡]. Biophysical Journal, 2014, 106(2):91a. Presented at the 2014 Annual Meeting of the Biophysical Society.
- Understanding the physical principles that mediate MUC1-C homodimerization. King J[‡], Schoepe I[‡], Iaccarino N[‡], El-Naccache D[‡], Martin J[‡], Li E. Biophysical Journal, 2013, 104(8):1833. Presented at the 2013 Annual Meeting of the Biophysical Society.
- The role of SmXXXSm motifs in wild-type and Ala391Glu FGFR3 transmembrane domain dimerization. Mudumbi K[‡], Li E, Eichman B[‡], Julius A[‡]. Biophysical Journal, 2013, 104(2):245a. Presented at the 2013 Annual Meeting of the Biophysical Society.
- The role of two SmXXXSm motifs in the dimerization of the FGFR3 transmembrane domain. Mudumbi K[‡], Li E. Biophysical Journal, 2012, 102(3):649a-650a. Presented at the 2012 Annual Meeting of the Biophysical Society.
- Structural studies of the FGFR3 dimer. Li E, Mudumbi B[‡], Eichman B[‡]. Molecular Biology of the Cell, 2012, 23. Presented at the 2012 Annual Meeting of the American Society for Cell Biology.
- The role of the CQC motif in the dimerization of MUC1. King J[‡], Iaccarino N[‡], Montone G[‡], Schoeppe I[‡], Li E. Molecular Biology of the Cell, 2012, 23. Presented at the 2012 Annual Meeting of the American Society for Cell Biology.
- Effect of FGFR3 juxtamembrane domain on FGFR3 dimerization. Sarabipour S, Li E, Hristova K. Biophysical Journal, 2011, 100(3):546a. Presented at the 2011 Annual Meeting of the Biophysical Society.
- EGFR ligand-mediated activation: insights from a quantitative study in mammalian membranes. Li E, Placone J, Hristova K. The FASEB Journal, 2009, 23:681.2.

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- Integration of plasma membrane in supported lipid bilayers. Hagerty N, Li E, Hristova K. Biophysical Journal, 2009, 96(3):392a.
- A phosphorylation-based model for EGFR activation as a function of ligand concentration. Li E, Placone J, Hristova K. Biophysical Journal, 2009, 96(3):329a.
- Membrane protein expression in anti-apoptotic mammalian cells. O'Connor S, He L, Li E, Betenbaugh M, Hristova K. Biophysical Journal, 2007, 392a.
- Studies of molecular mechanism of FGFR3 associated pathogenesis in cells. He L, Li E, O'Connor S, Placone J, Hristova K. Biophysical Journal, 2007, 558a.
- Quantitative FRET imaging of membrane protein interactions in cells. Merzlyakov M, Chen L, Li E, Hristova K. Biophysical Journal, 2007, 558a.
- Measurements of FGFR3 dimerization in the plasma membrane using Forster resonance energy transfer. Li E, Chen F, Merzlyakov M, Placone J, Hristova K. Biophysical Journal, 2007, 558a.
- FGFR3 transmembrane domain dimerization in lipid bilayers: probing the energetics behind an autosomal dominant growth disorder. Hristova K, Li E, Merzlyakov M. Biochemistry and Cell Biology, 2006, 84(6):1072.
- FRET in liposomes: measurements of transmembrane helix dimerization in the native bilayer environment. You M, Li E, Wimley W, Hristova K. Biophysical Journal, 2005, 88(1):223a.
- A surface-supported bilayer platform for probing transmembrane helix dimerization. Merzlyakov M, Li E, Hristova K. Biophysical Journal, 2005, 88(1):369a.
- Measurements of transmembrane helix dimerization in lipid bilayer environments. Li E, You M, Hristova K. Biophysical Journal, 2004, 86(1):375a.

Other Presentations (Not Peer-Reviewed)

[†]denotes mentored M.S. or M.A. student at SJU, [‡]denotes mentored undergraduate student at SJU

- Elucidating the structural consequences of CQC-mediated dimerization of MUC1. Stachowski T[‡], Li E. Sigma Xi Regional Meeting at Saint Joseph's University, 2015.
- Determining the key residues within the MUC1 transmembrane domain dimer. Li E, Stachowski T[‡], Freeman C[‡]. Saint Joseph's University Celebration of Student Achievement, 2015.
- Measuring the dimerization propensities of MUC1 transmembrane and juxtamembrane domains. Eichman B[‡], Moll C[‡], King J[†], Li E. Sigma Xi Regional Meeting at Saint Joseph's University, 2014.
- Determination of structural differences between the FGFR3 wild-type and G380R transmembrane domain dimer. Collins J[‡], Vance R[‡], Li E. Saint Joseph's University Celebration of Student Achievement, 2014.
- The role of two SmXXXSm motifs in the dimerization of the FGFR3 transmembrane domain. Mudumbi K[†] and Li E. Regional Biophysical Society Meeting at Lehigh University, 2012.
- Effects of G380R, G382D, and A391E pathogenic mutations in the dimerization of FGFR3 transmembrane domain. Muretta M[‡], Li E. Saint Joseph's University Celebration of Student Achievement, 2012.
- Probing the heterodimerization of MUC1 and FGFR3 transmembrane domains with the ToxR activity assay. Montone G[‡], Li E. Saint Joseph's University Celebration of Student Achievement, 2011.

Invited Talks

- Exploring STEM Career Paths and Their Related Skills. Panelist at the 2017 Preparing Science Professionals Symposium at the University of Kentucky.
- Career Opportunities at Primarily Undergraduate Institutions: Finding a Job and Finding Success. Panelist at the 2014 Annual Meeting of the Biophysical Society.
- Academic & Diverse Career Paths for Postdocs. Panelist at the 2015 Annual Johns Hopkins Postdoctoral Retreat.

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- Departmental Seminar. October 2015, University of Rhode Island, Department of Chemical Engineering.

Awards

- Outreach Seed grant from the American Society for Biochemistry and Molecular Biology. Li E, Fritz C, 2014. The three-year grant is being used to run a science café program at a local neighborhood restaurant and pub.
- Hands-on Opportunities to Promote Engagement in Science (HOPES) grant from the American Society for Biochemistry and Molecular Biology. Li E, Fritz C, Forster B, 2013. The one year grant was used to develop a 5-week hands-on lesson on mutations and genetic disorders to be taught by undergraduate students at a local high school.

Membership and Service in Professional Societies

Biophysical Society

Education Committee, 2013 – present.

Student Research Achievement Award (SRAA), judge, 2012.

Student Research Achievement Award (SRAA), judge, 2011.

American Society for Biochemistry and Molecular Biology

Public Outreach Committee, K-12 Education Subcommittee, 2016 – present.

American Society for Cell Biology

Sigma Xi, the Research Society

Mentored Undergraduate Students (Class Year)

Patrick Gray ('11)	Independent Study (spring '11). Graduated from Temple University School of Medicine. Currently a Pediatric Resident at the Children's Hospital of Philadelphia.
Nicholas Iaccarino ('13)	Summer scholar (summer '11) and Independent Study (spring '13). Graduated from Philadelphia College of Osteopathic Medicine. Currently a Family Medicine Resident at St. Joseph Medical Center.
Sean Forrest ('13)	Volunteer.
Bernadette Eichman ('14)	Summer scholar (summer '12) and Honor's thesis. Currently at Philadelphia College of Osteopathic Medicine.
Gina Montone ('14)	Summer scholar (summer '11 and '12). Currently at Drexel University College of Medicine.
Meghan Muretta ('15)	Summer scholar (summer '12).
Nicholas Shafer ('15)	Independent Study (spring '14).
Timoty Stachowski ('15)	Summer scholar (summer '14) and Independent Study (fall '14). Currently in the Ph.D. program at the Roswell Park Cancer Institute of the University of Buffalo.
Eilish Welsh ('15)	Summer scholar (summer '13). Currently at Case Western Reserve University School of Dental Medicine.
Emily Bilyk ('16)	Summer scholar (summer '15). Currently at Philadelphia College of Osteopathic Medicine.
Daniel Buhalo ('16)	Volunteer.
Joseph Collins ('16)	Summer scholar (summer '13 and '14). Currently at the Cummings School of Veterinary Medicine at Tufts University.

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Christina Freeman ('16)	Summer scholar (summer '14). Currently in the Biophysics Ph.D. program at the University of Michigan.
Christopher Moll ('16)	Summer scholar (summer '13). Currently at Philadelphia College of Osteopathic Medicine.
Ryan Vance ('16)	Volunteer. Currently at Cooper Medical School of Rowan University.
Brendan Gleason ('17)	Volunteer. Currently at the Sidney Kimmel Medical College at Thomas Jefferson University.
Mary Szurgot ('17)	Summer scholar (summer '15, '16). Currently in the Ph.D. program in the Department of Biophysics and Biochemistry at the University of Pennsylvania.
Gerald O'Connor	Summer scholar (summer '16) and Independent Study (fall '16).
Thomas Campion ('18)	Volunteer.
Roberto Herrera ('18)	Summer scholar (summer '17) and Independent Study (spring '18). Currently at the University of Puerto Rico School of Medicine.
Ryan Schuck ('18)	Summer scholar (summer '16, '17) and Independent Study (fall '17). Currently in the Biology MS program at Saint Joseph's University.
Andrew Myers ('18)	Volunteer (fall '14, spring '15).
Ksandros Cani ('19)	Summer scholar (summer '17).
Taylor Micua ('19)	Summer scholar (summer '18) and Independent Study (spring '19).
Nicole Butch ('21)	Summer scholar (summer '18).

Mentored International Undergraduate Research Students

Mikaela Albrecht	Technical University of Munich (summer '14).
Selina Jansky	University of Bonn (summer '14), DAAD award.
Julia Martin	Technical University of Munich (fall '12).
Roman Prechtl	Technical University of Munich (spring '13).
Isabella Schöppe	University of Erlangen-Nurnberg (summer '12), DAAD award.
Ayse Julius	Intern from the Technical University of Munich (summer '11).

Mentored M.S. and M.A. Students (Class Year)

Krishna Mudumbi (M.S., '13)	Currently a Post-Doctoral Fellow at Yale School of Medicine, in Dr. Mark Lemmon's lab.
Jessica King (M.S., '13)	Currently a research specialist in the laboratory of Dr. Gerald Schellenberg in the Department of Pathology at the University of Pennsylvania School of Medicine.
Darine El-Naccache (M.A., '13)	Currently in the Ph.D program at Rutgers New Jersey Medical School

Student Awards

Jessica King (MS, '13)	Travel award from the American Society for Cell Biology, 2012.
Bernadette Eichman (BS, '14)	DAAD Research Internships in Science and Engineering award, 2013.
Mary Szurgot (BS, '17)	Saint Joseph's University McNulty Fellow, 2015.