

ANNE SKAJA ROBINSON

EDUCATION

- 1994 **Ph.D., Chemical Engineering** University of Illinois at Urbana-Champaign
Dissertation: “*Engineering the Yeast Secretory Pathway: The role of BiP and PDI in the secretion of foreign proteins in Saccharomyces cerevisiae.*”
Advisors: Prof. Douglas A. Lauffenburger, Prof. K. Dane Wittrup
- 1989 **M.S., Chemical Engineering** The Johns Hopkins University
Thesis: “*Isolation and Characterization of Proteolytic Enzymes from the Hyperthermophilic Archaeobacterium Pyrococcus furiosus.*”
Advisor: Prof. Robert M. Kelly
- 1988 **B.S., Chemical Engineering** The Johns Hopkins University
Departmental Honors

PROFESSIONAL EXPERIENCE

- Carnegie Mellon University, College of Engineering**
2018-present Head and Trustee Professor of Chemical Engineering
- Tulane University, School of Science and Engineering, Chemical and Biomolecular Engineering**
2018-2020 Adjunct Professor, Dept of Chemical and Biomolecular Engineering
2012-2018 Chair, Chemical and Biomolecular Engineering and
Catherine and Henry Boh Professor in Engineering
- University of Delaware, College of Engineering**
2012-present Adjunct Professor, Department of Chemical and Biomolecular Engineering
2008-2011 Professor and Associate Chair for Biochemical Engineering
2003-2008 Associate Professor
1997-2003 Assistant Professor
- Massachusetts Institute of Technology, Department of Biology**
1994-1997 Postdoctoral Fellow

ACADEMIC HONORS

- 2022 Marvin J. Johnson Award in Microbial & Biochemical Technology, American Chemical Society BIOT Division
- 2016 Fellow, American Institute of Chemical Engineers
- 2015 Biotechnology Progress Award for Excellence in Biological Engineering Publication, Society for Biological Engineering (SBE), an AIChE Technological Community
- 2015 Perlman Awardee, American Chemical Society (ACS) BIOT division
- 2013 American Institute of Chemical Engineers (AIChE) Women's Initiatives Committee's (WIC) Mentorship Excellence Award
- 2012 Van Lanen Award, American Chemical Society BIOT Division
- 2011 Fellow, American Institute for Medical and Biological Engineering
- 2002 Outstanding Junior Faculty Member, College of Engineering, University of Delaware

- 2002 NSF Presidential Early Career Award in Science and Engineering (PECASE/Career)
~400 Career Awards/year. PECASE award for subset of Career Award winners – 20
awarded for all NSF Directorates in 2000, of which only 2 were to chemical engineers.
- 2002 DuPont Young Professor
- 2000 National Academy of Engineering, Sixth Annual Frontiers in Engineering,
One of 100 invited participants, Irvine, CA
- 1996-97 NIH Postdoctoral Fellowship
- 1992-94 Clare Booth Luce Graduate Fellowship (~350 awarded since 1970)
- 1989-92 Department of Defense Fellowship (NDSEG) (~100 awarded/yr)
- 1988-89 NSF Creativity Award for Scientists and Engineers
~20 awarded/yr following review of proposal and personal interview
- 1988 National Science Foundation Fellowship awarded
- 1988-89 Tau Beta Pi Fellowship (~30 awarded/yr)
- 1984-88 Beneficial Hodson Scholarship, Johns Hopkins University (~15 awarded/yr)

PATENTS

- A) Kelly, R.M., A.K.S. Robinson, I.I. Blumentals, S.H. Brown, and C.B. Anfinsen. "Proteolytic Enzymes from Hyperthermophilic Bacteria and Processes for Their Production." Patent # 5,242,817. Filed 9/12/89. Accepted 9/7/93. Licensed to Takara Shuzo.
- B) Robinson, A.S. and K.D. Wittrup. "Methods for Increasing Secretion of Overexpressed Proteins." Patent # 5,773,245. Filed 10/92. Accepted 6/30/98.
- C) Robinson, A.S., D. Foguel, J.L. Silva, C.R. Robinson. "Use of Hydrostatic Pressure to Inhibit and Reverse Protein Aggregation and Facilitate Protein Refolding." US Patent # 7,615,617. Filed 10/99. Issued 11/10/09.

BOOK PUBLICATIONS

- 1) Russell, T.W.F., Robinson, A.S., and Wagner, N.J., (2008) Mass and Heat Transfer: Analysis of Mass Contactors and Heat Exchangers, Cambridge University Press, Cambridge, UK (www.cambridge.org/9780521886703).
- 2) Robinson, A.S., ed (2011) Production of Membrane Proteins – Strategies for Expression and Isolation, Wiley VCH. (<http://onlinelibrary.wiley.com/book/10.1002/9783527634521>)

JOURNAL PUBLICATIONS (* = CORRESPONDING AUTHOR, † = UNDERGRADUATE STUDENT)

- 1) Blumentals, I. I., R. M. Kelly, A. K. Skaja [Robinson] and J. Shiloach* (1987) "Effect of Culturing Conditions on the Production of Exotoxin A by *Pseudomonas aeruginosa*." *Ann N Y Acad. Sci.* **506**, 663-668.
- 2) Blumentals, I. I., A. S. Robinson and R. M. Kelly* (1990) "Characterization of Sodium Dodecyl Sulfate Resistant Proteolytic Activity in the Hyperthermophilic Archaeobacterium *Pyrococcus furiosus*." *Appl. Envir. Microbiol.* **56**, 1992-1998.
- 3) Blumentals, I.I., S.H. Brown, R.N. Schicho, A.K. Skaja [Robinson], H.R. Costantino, and R.M. Kelly*. (1990) "The Hyperthermophilic Archaeobacterium, *Pyrococcus furiosus*: Development of Culturing Protocols, Perspectives on Scale-Up, and Potential Applications." *Ann. N.Y. Acad. Sci.*, **589**, 301-314.
- 4) Robinson, A.S. and K.D. Wittrup* (1993) "Role of the Protein Folding Chaperone BiP in Secretion of Foreign Proteins in Eucaryotic Cells." in *Protein Folding: In vivo and In vitro*. ACS Symposium Series 526. Jeffrey Cleland, Ed., 121-132.

- 5) Robinson, A.S., V. Hines, and K.D. Wittrup* (1994) "Overexpression of Protein Disulfide Isomerase Increases Secretion of Foreign Proteins in the Yeast *Saccharomyces cerevisiae*." *Bio/Tech.* **12**, 381-384.
- 6) Wittrup*, K.D., A.S. Robinson, R.N. Parekh, and K.J. Forrester (1994) "Existence of an Optimal Expression Level for Secretion of Foreign Proteins in Yeast." *Ann. N.Y. Acad. Sci.* **745**, 321-330.
- 7) Robinson, A.S. and K.D. Wittrup* (1995) "Constitutive Overexpression of Secreted Heterologous Proteins Decreases Extractable BiP and PDI Levels in *Saccharomyces cerevisiae*." *Biotech Prog.* **11**, 171-177.
- 8) King*, J., C. Haase-Pettingell, A.S. Robinson, M. Speed, and A. Mitraki (1996) "Thermolabile Folding Intermediates: Inclusion Body Precursors and Chaperonin Substrates" *FASEB J.*, **10**, 57-66.
- 9) Robinson, A.S., J.A. Bockhaus†, A.C. Voegler, and K.D. Wittrup* (1996) "Reduction of BiP levels decreases heterologous protein secretion in *Saccharomyces cerevisiae*" *J. Biol. Chem.* **271**, 10017-10022.
- 10) Robinson, A.S. and D.A. Lauffenburger* (1996) "Model for ER Chaperone Dynamics and Secretory Protein Interactions." *AIChE J.* **42**, 1443-1453.
- 11) Robinson, A.S. and J. King* (1997) "Disulfide-Bonded Intermediate on the Folding and Assembly Pathway of a Non-Disulfide Bonded Protein." *Nature Struct. Biol.*, **4**, 450-455.
- 12) Foguel, D., Robinson, C.R., Caetano de Sousa Jr., P., Silva, J. L. and A. S. Robinson* (1999), "Hydrostatic Pressure Rescues Protein Aggregates", *Biotech. Bioeng.* **63**, 552-558.
- 13) Haase-Pettingell, C., Betts, S., Raso, S.W., Stuart, L., Robinson, A. and J. King* (2001), "Role for Cysteine Residues in the In Vivo Folding and Assembly of the Phage P22 Tailspike," *Protein Sci.* **10**, 397-410.
- 14) Kauffman, K., P. Dhurjati, A.S. Robinson, and F.J. Doyle* III "Framework for Modeling Information Flow in Biological Processes: Application to the Unfolded Protein Response." *Proc. IFAC Conf. Comput. Appl. Biotech (CAB)*, 2001.
- 15) Kauffman, K., Pridgen, E.M. †, Doyle, F.J. III, Dhurjati, P., and A.S. Robinson* (2002) "Decreased Protein Expression and Oscillating BiP Levels Result during Heterologous Protein Expression in *S. cerevisiae*," *Biotech. Prog.*, **18**, 942-940 DOI: 10.1021/bp025518g
- 16) Sinacola, J. and A.S. Robinson* (2002) "Rapid refolding and polishing of single-chain antibodies from *E. coli* inclusion bodies" *Protein Exp. Purif.*, Vol. 26, No. 2, Nov 2002, pp. 301-308.
- 17) Smith, J.D. and A.S. Robinson* (2002) "Overexpression of an archaeal enzyme in a eucaryotic host: A secretion bottleneck at the ER," *Biotech. Bioeng.*, **79**, 7, p. 713-723. DOI: 10.1002/bit.10367
- 18) Lefebvre, B.G., and A.S. Robinson* (2003), "Pressure treatment of tailspike aggregates rapidly produces on-pathway folding intermediates," *Biotech. Bioeng.*, **82**, 5, p. 595-604. DOI: 10.1002/bit.10607
- 19) Danek, B.L., and A. S. Robinson* (2003) "Non-native interactions between cysteines direct productive assembly of P22 tailspike protein," *Biophys J.*, **85**, 5, p. 1-11.
- 20) Butz, J., Niebauer, R. T., and A.S. Robinson* (2003), "Co-expression of molecular chaperones does not improve the heterologous expression of mammalian G-protein coupled receptor expression in yeast," *Biotech. Bioeng.*, **84**, 3, p. 292-304. DOI: 10.1002/bit.10771.
- 21) Gage, M.J. and A.S. Robinson* (2003) "C-terminal Hydrophobic Interactions Play a Critical role in Oligomeric Assembly of the P22 Tailspike Trimer," *Protein Sci.*, **12**, 12, p. 2732-47.
- 22) Smith, J.D., Tang, B.C. †, and A.S. Robinson* (2004) "Protein disulfide isomerase, but not binding protein, overexpression enhances secretion of a non-disulfide-bonded protein in yeast", *Biotech. Bioeng.*, **85**, 3, p. 340-50. DOI: 10.1002/bit.10853
- 23) Niebauer, R. T. and A.S. Robinson* (2004) "*Saccharomyces cerevisiae* protein expression: From protein production to protein engineering" in Protein Expression Technologies, Horizon Scientific Press, François Baneyx, ed.

- 24) Lefebvre, B.G., Gage, M.J., and A.S. Robinson* (2004) "Maximizing Recovery of Native Protein from Aggregates by Optimizing Pressure Treatment," *Biotechnology Progress*, **20**, 2, p. 623-629.
- 25) Lefebvre, B.G., Comolli, N.K. †, Gage, M.J. and A.S. Robinson* (2004), "Pressure dissociation studies provide insight into oligomerization competence of temperature-sensitive mutants of P22 tailspike," *Protein Sci.*, **13** (6) 1538-46. DOI: 10.1110/ps.03579304
- 26) Danek, B.L. and A. S. Robinson* (2004) "P22 tailspike trimer assembly is governed by interchain redox associations," *Biochem. Biophys. Acta*, **1700**(1):105-16.
- 27) Niebauer, R.T., Wedekind, A. † and A.S. Robinson* (2004) "Decreases in yeast expression yields of the human adenosine receptor are a result of translational or post-translational events", *Protein Exp. Purif.*, **37** (1) 134-143. DOI: 10.1016/j.pep.2004.06.001
- 28) Xu, P., Raden, D., Doyle, F.J. III, and A.S. Robinson* (2005) "Analysis of unfolded protein response during single-chain antibody expression in *Saccharomyces cerevisiae* reveals different roles for BiP and PDI in folding", *Metabolic Engineering*, **7** (4) 269-279.
- 29) Gage, M.J., Zak, J. † and A.S. Robinson* (2005) "Three Amino Acids that are Critical to Formation and Stability of the P22 Tailspike Trimer", *Protein Science*, **14** (9) 2333-43. DOI: 10.1110/ps.051394605
- 30) Smith, J.D., Richardson, N.E. and A.S. Robinson* (2005) "Elevated expression temperature in a mesophilic host results in increased secretion of a hyperthermophilic enzyme and decreased cell stress," *Biochem. Biophys. Acta*, **1752** (1) 18-25.
- 31) Raden, D., Hildebrandt, S., Xu, P., Bell, E. †, Doyle, III, F.J. and A.S. Robinson* (2005), "Analysis of cellular response to protein overexpression." IEE Proceedings: Systems Biology **152** (4) 285-289. PMID: 16986272
- 32) Niebauer, R. T., and A.S. Robinson* (2006) "Exceptional total and functional yields of the human adenosine (A2a) receptor expressed in the yeast *Saccharomyces cerevisiae*", *Prot. Exp. Purif.*, **46**, p. 204-211.
- 33) Gage, M.J., Lefebvre, B.G., and A.S. Robinson* (2006) "Determinants of Protein Folding and Aggregation in P22 Tailspike," in Misbehaving Proteins, ACS Publications, eds. Regina Murphy and Amos Tsai.
- 34) Kim, J. and Robinson, A.S.* (2006) Dissociation of intermolecular disulfide bonds in P22 tailspike protein intermediates in the presence of SDS, *Protein Science*, **15** (7), p. 1791-3.
- 35) Wedekind, A.L. †, O'Malley, M., Niebauer, R.T., and Robinson, A.S.* (2006) Optimization of the Human Adenosine A_{2a} Receptor Yields in *Saccharomyces cerevisiae*, *Biotechnology Progress*, **22**(5):1249-55. PMID:17022661; DOI: 10.1021/bp050431r
- 36) Powers, S.L., Robinson, C.R., and Robinson, A.S.* (2007) Denaturation of an Extremely Stable Hyperthermophilic Protein Occurs via a Dimeric Intermediate, *Extremophiles*, **11**(1):179-89.
- 37) Forsten-Williams*, K.F., Cassino, T.R., Delo, L.J., Bellis, A.D., Robinson, A.S., and Ryan, T.E., (2007) Enhanced Insulin-like Growth Factor-I (IGF-I) Cell Association at Reduced pH is Dependent on IGF Binding Protein-3 (IGFBP-3) Interaction, *Journal of Cellular Physiology*, **210**(2):298-308.
- 38) Famá, M.C., Raden, D., Zacchi, N., Lemos, D.R., Robinson, A.S., and Silberstein, S. * (2007) "The *Saccharomyces cerevisiae* YFR041C/ERJ5 gene encoding a type I membrane protein with a J domain is required to preserve the folding capacity of the endoplasmic reticulum" *Biochim Biophys Acta*, **1773**(2):232-42.
- 39) Bane, S.E., Velasquez, J.E. †, and A.S. Robinson* (2007) "Expression and purification of milligram levels of inactive G-protein coupled receptors in *E. coli*", *Protein Expression and Purification*, **52**(2):348:355. PMID: 17166740; DOI: 10.1016/j.pep.2006.10.017
- 40) Powers, S.L. and A.S. Robinson* (2007) "PDI Improves Secretion of Redox-Inactive b-glucosidase", *Biotech Prog.*, Mar-Apr;23(2):364-9. E-pub Feb 22, DOI: 10.1021/bp060287p

- 41) McCusker, E., Bane, S.E., O'Malley, M., and A.S. Robinson* (2007), "Heterologous GPCR expression: A bottleneck to obtaining crystal structures", *Biotech Progress*, May-Jun;23(3):540-7. PMID:17397185
- 42) O'Malley, M., Lazarova, T., Britton, Z.T., and Robinson, A.S.* (2007) "High-level expression in *Saccharomyces cerevisiae* enables isolation and spectroscopic characterization of functional human adenosine A_{2a} receptor", *J. Struct Biol.*, 159(2): 166-178. PMID: 17591446
- 43) McCusker, E., and Robinson, A.S.*, (2008) Refolding of G protein α subunits from inclusion bodies expressed in *Escherichia coli*, *Protein Exp. Purif.*, Apr;58(2): 342-55. PMID: 18249008
- 44) Hildebrandt, S., D. Raden, L. Petzold, A.S. Robinson, and F.J. Doyle III* (2008) "A top-down approach to mechanistic biological modeling: application to the single-chain antibody folding pathway", *Biophysical Journal*, 95(8):3535-58. Epub 2008 Jul 18. PMID: 18641066
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- 46) Spatara ML, Roberts CJ, Robinson AS* (2009) "Kinetic folding studies of the P22 tailspike beta-helix domain reveal multiple unfolded states." *Biophys Chem*. 141(2-3):214-21. PMID: 19258192
- 47) Xu, P. and Robinson, A.S.* (2009) "Decreased secretion and unfolded protein response up-regulation are correlated with intracellular retention for single-chain antibody variants produced in yeast" *Biotech & Bioeng*, 104(1):20-9. PMID: 19415776
- 48) O'Malley MA, Mancini JD[†], Young CL, McCusker EC, Raden D, Robinson AS*(2009) "Progress toward heterologous expression of active G-protein-coupled receptors in *Saccharomyces cerevisiae*: Linking cellular stress response with translocation and trafficking." *Protein Sci*. 18(11):2356-2370. PMID: 19760666; DOI: 10.1002/pro.246
- 49) Spatara, ML and Robinson, AS* (2010) "Transgenic mouse and cell culture models demonstrate a lack of mechanistic connection between endoplasmic reticulum stress and tau dysfunction" *Journal of Neuroscience Research*, 88(9):1951-61. PMID: 20143409
- 50) O'Malley, MA, AN Naranjo, T Lazarova, AS Robinson* (2010) "Analysis of Adenosine A_{2a} Receptor Stability: Effects of Ligands and Disulfide Bonds", *Biochemistry*, Nov 2;49(43):9181-9. PMID: 20853839
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- 52) O'Malley, MA, Helgeson, ME, Wagner, NJ and AS Robinson* (2011) Morphology and Composition of Cholesterol-rich Micellar Nanostructures Determine Transmembrane Protein (GPCR) Activity, *Biophysical Journal*, 100(2): L11-13. PMID: 3021673.
- 53) Sahin, E, JL Jordan, ML Spatara, AN Naranjo, WF Weiss IV, AS Robinson, EJ Fernandez*, CJ Roberts* (2011) "Computational Design and Biophysical Characterization of Aggregation-Resistant Point Mutations for γ D Crystallin Illustrate a Balance of Conformational Stability and Intrinsic Aggregation Propensity", *Biochemistry*, Feb 8;50(5):628-39. PMID: 21184609
- 54) Young CL, Yuraszcek T, Robinson AS* (2011) "Decreased secretion and unfolded protein response upregulation," *Methods Enzymol*. 491:235-60. PMID: 21329804
- 55) Robinson, A.* (2011) "New Tools for Breaking Barriers to GPCR Expression in *E. coli*" *Journal of Molecular Biology*. 408 (4): 597-598 PMID: 21420418
- 56) Britton, Z., Young, C., Can, Ö., McNeely, P., Naranjo, A. and Robinson, A. S.* (2012) Membrane Protein Expression in *Saccharomyces cerevisiae*, in *Production of Membrane Proteins: Strategies for Expression and Isolation* (ed A. S. Robinson), Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany. doi: 10.1002/9783527634521.ch2

- 57) O'Malley, Michelle A., Matthew E. Helgeson, Norman J. Wagner, Anne S. Robinson* (2011) "Toward Rational Design of Protein Detergent Complexes: Determinants of Mixed Micelles that are Critical for the *in vitro* Stabilization of a G-protein Coupled Receptor", *Biophysical Journal*, 101 (8): 1938-1948. DOI: 10.1016/j.bpj.2011.09.018 PMID: 22004748
- 58) Griesemer, M, Young, CL, Doyle III, FJ, Robinson, AS and L Petzold* (2012) Spatial Localization of Chaperone Distribution in the Endoplasmic Reticulum of Yeast, *IET Systems Biology*, 6(2):54-63. <http://dx.doi.org/10.1049/iet-syb.2011.0006>
- 59) Young, CL, ZT Britton, AS Robinson* (2012) "Recombinant Protein Expression and Purification: A Comprehensive Review of Affinity Tags and Microbial Applications" *Biotechnology Journal*, May;7(5):620-34. doi: 10.1002/biot.201100155. Epub 2012 Jan 10. PMID: 22442034
- 60) Young, CL, DL Raden, J Caplan, K Czymmek, AS Robinson* (2012) "Cassette Series Designed for Live-Cell Imaging of Proteins and High Resolution Techniques in Yeast", *Yeast*, Mar;29(3-4):119-36. doi: 10.1002/yea.2895. Epub 2012 Apr 4. PMID: 22473760
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- 63) Young, CL, DL Raden, AS Robinson* (2013) Analysis of ER Resident Proteins in *S. cerevisiae*: Implementation of H/KDEL Retrieval Sequences, *Traffic*, 14(4):365-81. DOI: 10.1111/tra.12041. PMID: 23324027
- 64) Morozova, OA, ZM March[†], AS Robinson, and DW Colby* (2013) Conformational features of tau fibrils from Alzheimer's disease brain are faithfully propagated by unmodified recombinant protein, *Biochemistry*, 52(40):6960-7. <http://dx.doi.org/10.1021/bi400866w> PMID: 24033133
- 65) Maurer, Ronald W., Alan K Hunter, Xiangyang Wang, William K Wang, Anne S Robinson, and Christopher J. Roberts* (2013) Folding and aggregation of a multi-domain engineered immunotoxin, *Biochemical Engineering Journal*, 81: 8-14. <http://dx.doi.org/10.1016/j.bej.2013.09.015>.
- 66) Blanco, M, Sahin, E, Robinson, A, Roberts, C* (2013) Coarse-Grained Model for Colloidal Protein Interactions, B₂₂, and Protein Cluster Formation, *The Journal of Physical Chemistry, Part B*, Dec 19;117(50):16013-28. doi: 10.1021/jp409300j PMID: 24289039
- 67) Maurer, RW, AK Hunter, AS Robinson*, and CJ Roberts* (2014) Aggregates of alpha-chymotrypsinogen anneal to access more stable states, *Biotechnology & Bioengineering*, 111 (4): 782-791. doi: 10.1002/bit.25129 PMID: 24122552
- 68) St. Amand, MM, Ogunnaike, BA, and Robinson, AS* (2014) Development of At-Line Assay to Monitor Charge Variants of mAbs During Production, *Biotechnology Progress*, 30: 249–255. DOI: 10.1002/btpr.1848 PMID: 24382831
- 69) St. Amand, MM, K Tran[†], D Radhakrishnan, AS Robinson, BA Ogunnaike* (2014) Controllability Analysis of Protein Glycosylation in CHO cells, *PLoS One*, 9(2): e87973. DOI: 10.1371/journal.pone.0087973
- 70) Wu, H, R Kroe-Barrett, S Singh, AS Robinson, CJ Roberts* (2014) Competing aggregation pathways for monoclonal antibodies, *FEBS Letters* 588(6): 936-941. <http://dx.doi.org/10.1016/j.febslet.2014.01.051>
- 71) Costanzo, JA, CJ O'Brien, K Tiller[†], E Tamargo[†], AS Robinson, CJ Roberts, and EJ Fernandez* (2013) Conformational stability as a design target to control protein aggregation, *Protein Eng, Des, & Sel*, 27 (5): 157-167. 10.1093/protein/gzu008
- 72) St. Amand, MM, D Radhakrishnan, AS Robinson, BA Ogunnaike* (2014) Identification of Manipulated Variables for a Glycosylation Control Strategy, *Biotech Bioeng*, Oct;111(10):1957-70. doi: 10.1002/bit.25251.

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- 74) Young, CL and AS Robinson* (2014) Protein Folding and Secretion: Mechanistic Insights Advancing Recombinant Protein Production in *S. cerevisiae*, *Current Opinion in Biotechnology*, 30: 168-177. DOI: 10.1016/j.copbio.2014.06.018
- 75) Naranjo, AN, A Chevalier[†], GD Cousins[†], E Ayettey[†], EC McCusker, C Wenk, AS Robinson* (2015) Conserved disulfide bond is not essential for the adenosine A2A receptor: extracellular cysteines influence receptor distribution within the cell and ligand-binding recognition, *BBA Biomembranes*, 1848: 603-614 Available on-line Dec 5 2014 DOI: 10.1016/j.bbamem.2014.11.010
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- 77) Wu, H, K Truncali, J Ritchie, R Kroe-Barrett, S Singh, AS Robinson, and CJ Roberts* (2015) Weak protein interactions and pH- and temperature-dependent aggregation of human Fc1, *mAbs*, 7 (6): 1072-1083 DOI:10.1080/19420862.2015.1079678
- 78) O'Brien, C, M Blanco, J Costanzo, M Enterline, EF Fernandez, AS Robinson*, CJ Roberts* (2016) Modulating Non-Native Aggregation and Electrostatic Protein-Protein Interactions with Computationally Designed Single-Point Mutations, *Prot Eng Des & Sel* 29 (6): 231-243., doi: 10.1093/protein/gzw010
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- 80) St. Amand, MM, J Hayes, D Radhakrishnan, J Fernandez, B Meyer, AS Robinson, BA Ogunnaike* (2016) Identifying a Robust Design Space for Glycosylation during Monoclonal Antibody Production, *Biotech Prog*, Sep;32(5):1149-1162. doi: 10.1002/btpr.2316. Epub 2016 Jul 1.
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- 85) Radhakrishnan, D., Robinson, A.S. and B. Ogunnaike* (2018) Controlling the glycosylation profile in mAbs using time-dependent media supplementation. *Antibodies*. 7(1), 1; <https://doi.org/10.3390/antib7010001>
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- 87) Swonger, K., AS Robinson* (2018) Fluorescence Anisotropy for Determination of Ligand-binding Kinetics of Membrane Proteins, *Current Protocols in Protein Science*, 93, e63. doi: [10.1002/cpps.63](https://doi.org/10.1002/cpps.63)

- 88) Radhakrishnan, D., EA Wells and AS Robinson* (2018) Strategies to enhance productivity and modify product quality in therapeutic proteins, *Current Opinion in Chemical Engineering*, 22: 81-88. <https://doi.org/10.1016/j.coche.2018.09.005>
- 89) Jain, A., Stradley, S.[†] and AS Robinson* (2018) The A_{2A}R C-terminus Provides Improved Total and Active Expression Yields for Adenosine Receptor Chimeras, *AIChE Journal*, 64 (12): 4297-4307 DOI: [10.1002/aic.16398](https://doi.org/10.1002/aic.16398)
- 90) McGraw, C., Yang, L., Levental, I., Lyman, E. and A.S. Robinson* (2019) Membrane cholesterol depletion reduces downstream signaling activity of the adenosine A_{2A} receptor, *BBA – Biomembranes* 1861 (4): 760-767 [10.1016/j.bbamem.2019.01.001](https://doi.org/10.1016/j.bbamem.2019.01.001)
- 91) Oseid, D.E., Song, L., Lear, S.[†], and A.S. Robinson* (2020) Nuclear translocation of the unliganded glucocorticoid receptor is influenced by membrane fluidity, but not A_{2A}R agonism, *Steroids* 160:108641. doi: [10.1016/j.steroids.2020.108641](https://doi.org/10.1016/j.steroids.2020.108641)
- 92) Jain, A.R., Britton, Z.T., Markwalter, C.E.[†], and A.S. Robinson* (2020) Improved ligand-binding and signaling-competent human NK₂R yields in yeast using a chimera with the rat NK₂R C-terminus enable NK₂R-G protein signaling platform, *Prot Eng Des & Sel* 32(10):459-469. doi: [10.1093/protein/gzaa009](https://doi.org/10.1093/protein/gzaa009).
- 93) Jain, A. and A.S. Robinson* (2020) Functional expression of adenosine A₃ receptor in yeast utilizing a chimera with the A_{2A}R C-terminus, *Intl Journal of Molecular Sciences* in Special Issue, “Targeting the Untargeted Proteome: From Structure-Based Inhibitor Discovery to Chemical Biology and Beyond”, 21(12):4547. doi: [10.3390/ijms21124547](https://doi.org/10.3390/ijms21124547)
- 94) Wells, E., Song, L., Greer, M.[†], Luo, Y., Kurian, V., Ogunnaike, B.A., Robinson, A.S.* (2020) Media supplementation for targeted manipulation of monoclonal antibody galactosylation and fucosylation, *Biotechnology & Bioengineering* 117: 3310– 3321. DOI: [10.1002/bit.27496](https://doi.org/10.1002/bit.27496)
- 95) Jain, A., McGraw, C., and A.S. Robinson* (2020) The specificity of downstream signaling for A₁ and A_{2A}R does not depend on the C-terminus, despite the importance of this domain in downstream signaling strength, *Biomedicines* 8(12) 603 doi: [10.3390/biomedicines8120603](https://doi.org/10.3390/biomedicines8120603)
- 96) Song, L., Wells, E., Robinson, A.S.* (2021) Critical molecular and cellular contributors to tau pathology, *Biomedicines*, in Special Issue, “Molecular Research of Alzheimer's Disease”, 9 (2): 190
- 97) Koretz, K.S., C. McGraw, S. Stradley[†], A. Elbaradei, N. Malmstadt, A.S. Robinson* (2021) Characterization of binding kinetics of A_{2A}R to Gα_s protein by surface plasmon resonance, *Biophys J*, 120 (9), pp. 1641-1649 DOI: [10.1016/j.bpj.2021.02.032](https://doi.org/10.1016/j.bpj.2021.02.032)
- 98) Meric, G., S. Naik, A. K. Hunter, A.S. Robinson*, C. J. Roberts* (2021) Challenges for Design of Aggregation-Resistant Variants of Granulocyte Colony-Stimulating Factor, *Biophys. Chem.*, 277:106630 DOI: [10.1016/j.bpc.2021.106630](https://doi.org/10.1016/j.bpc.2021.106630).
- 99) Song, L., Oseid, D.E., Wells, E.A., Coaston, T.[†], and A.S. Robinson* (2021) Heparan sulfate proteoglycans (HSPGs) serve as the mediator between monomeric tau and its subsequent intracellular ERK1/2 pathway activation, *J. Molecular Neuro.*, J Mol Neurosci 72, 772–791 (2022). <https://doi.org/10.1007/s12031-021-01943-2>
- 100) McGraw C, Koretz KS, Oseid D, Lyman E, Robinson AS. Cholesterol Dependent Activity of the Adenosine A_{2A} Receptor Is Modulated via the Cholesterol Consensus Motif. *Molecules*. 2022; 27(11):3529. <https://doi.org/10.3390/molecules27113529>

PEER-REVIEWED CONFERENCE PROCEEDINGS

- 1) Hildebrandt, S., D. Raden, E. Bell[†], A.S. Robinson, and F.J. Doyle III* (2005) “Modeling the Unfolded Protein Response in *Saccharomyces Cerevisiae*”, Proc. Int. Conf. Foundations of Systems Biology, Santa Barbara, California. [not indexed]
- 2) Griesemer, M., Young, C., Raden, D., Petzold, L., Robinson, A.S., Doyle, F.J.* (2007) “Computational Modeling of Chaperone Interactions in the Endoplasmic Reticulum of *Saccharomyces cerevisiae*.” Proc. Int. Conf. Foundations of Systems Biology, Stuttgart, Germany.

- 3) Yuraszeck, T., Raden, D, Robinson, A.S., and Doyle, F.J.* (2007) “Microarray Analysis of the Unfolded Protein Response in *S. cerevisiae* Reveals Evidence of Down-regulation.” Proc. Int. Conf. Foundations of Systems Biology, Stuttgart, Germany.
- 4) Yuraszeck, Theresa M., Pierre Neveu, Maria Rodriguez-Fernandez, Anne Robinson, Kenneth S. Kosik, Francis J. Doyle III (2009) Development of a mathematical model to investigate the pathophysiology of tau protein.” Proc. Int. Conf. Foundations of Systems Biology, Denver, CO.

COURSES TAUGHT

University of Delaware, Department of Chemical Engineering

- Mass and Heat Transfer, CHEG 342, '98-'01, '05-'07, '09-'11
 - Undergraduate level, 40-85 students, 2 sections
 - Developed textbook with colleagues TW Fraser Russell and Norman J Wagner, (2008) Mass and Heat Transfer: Analysis of Mass Contactors and Heat Exchangers, Cambridge University Press, Cambridge, UK (www.cambridge.org/9780521886703) and course website www.mht.che.udel.edu
- Unit Operations Laboratory, CHEG 345, '02-03
 - Undergraduate level, ~45 students
 - Developed new laboratory module on antibody-antigen interactions
 - Coordinated laboratory course for all students
- Molecular and Cellular Engineering, CHEG 667 '98-'01
 - Undergraduate elective course, ~25 students
 - Developed new course materials
- Biochemical Engineering, CHEG 620, '02-'03, '06, '09-'10
 - Undergraduate elective course (required of biochemical minor), ~40 students
- Multidisciplinary Biotechnology, CHEG/BISC/BUAD 650, '04-'06
 - Graduate elective course, 10-20 students
 - New course implemented as part of IGERT training program
 - Co-taught with Business faculty
- Biotechnology Lab course, CHEG/CHEM 468, W05, F05
 - Undergraduate course, 5-15 students
 - Co-taught and implemented new biotechnology lab with Chemistry faculty member
 - Sought funding from Engineering and Science Deans to develop course and buy equipment

Tulane University, Department of Chemical and Biomolecular Engineering

- Molecular and Cellular Engineering, S'12, S'13, S'14, F'16
 - Undergraduate/graduate elective course, ~10-20 students
 - Developed new course materials
- Transport II (Mass and Heat Transfer) F'15
 - Undergraduate level, ~30 students
- Graduate Mentoring Seminar F'16, S'17, F'17, F'18
 - Developed material on laboratory safety, publishing and paper writing, and advisor selection

Carnegie Mellon University, Department of Chemical Engineering

- Sophomore Seminar, F'19
 - Organized as a professional development course, with modules on networking, resume building, ethics, research, and other relevant topics
- Graduate Professional Development Seminar F '20 (virtual), F'21, F'22

- Developed material on laboratory safety, publishing and paper writing, conflict management, and advisor selection

INVITED SEMINARS

Department of Chemical Engineering, Univ. Florida, April 2022
Department of Chemical and Biomedical Engineering, West Virginia Univ., April 2022
Department of Chemical Engineering, Univ. Washington, May 2022
Department of Chemical Engineering, Univ Michigan, March 2021 (virtual)
Department of Chemical Engineering, Texas A&M, March 2021 (virtual)
Department of Chemical Engineering and Materials Science at Michigan State, February 2021 (virtual)
Department of Chemical and Biomolecular Engineering, UC Irvine, February 2021 (virtual)
Invited Talk at Protein Engineering Session, 11th International Conference on Biomolecular Engineering, January 2021 (virtual)
Molecular Biophysics/Structural Biology Seminar Series, Univ. of Pittsburgh, January 2020
Department of Chemical Engineering, University of Virginia, December 2019
Department of Chemical Engineering, Ohio State University, November 2019
Department of Chemical Engineering, Virginia Commonwealth University, October 2019
Department of Chemical Engineering, NYU, September 2019
Department of Chemical Engineering, Worcester Polytechnic Institute, March 2019
Department of Chemical Engineering, Vanderbilt University, April 2018
Biophysical Society National Meeting, Bioengineering Subgroup, “The role of cholesterol in membrane protein activity”, February 2018
Bioengineering Program, University of California, Santa Barbara, January 2018
Department of Chemical and Biomolecular Engineering, Johns Hopkins University, December 2017
Department of Chemical Engineering, University of Washington, Seattle, October 2017.
Department of Chemical & Biomolecular Engineering, University of Houston, September 2017.
Baton Rouge Community College, March 2017
Department of Chemical & Biomolecular Engineering, University of Alabama, October 2016.
CHI GPCR-Based Drug Discovery, Invited Speaker, Cambridge, MA, September 2016
University of Delaware COBRE Membrane Protein Symposium, Invited Speaker, April 2016
Department of Chemical Engineering, Purdue University, September, 2015.
Department of Chemical and Biomolecular Engineering, Clemson University, April, 2015.
Department of Chemical and Biomolecular Engineering, University of California at Riverside, December 2013.
Department of Chemical and Biomolecular Engineering, The Johns Hopkins University, October 2013.
Department of Chemical and Biomolecular Engineering, Texas A&M University, September 2013.
Department of Chemical and Biomolecular Engineering, University of Connecticut, April 2013.
Department of Chemical and Biomolecular Engineering, University of California at Berkeley, April 2013.
Department of Chemistry, University of New Orleans, March 2013
Department of Biochemistry and Cellular and Molecular Biology Department, University of Tennessee, January 2013
Department of Chemical and Biomolecular Engineering, University of Maryland at College Park, January 2013.
Department of Biochemistry, Tulane University Medical School, December 2012
Department of Chemical and Biomolecular Engineering, Columbia University, October 2012.

AS Robinson, "Elucidating Mechanisms of Heterologous GPCR Expression and Trafficking in *S. cerevisiae*" FASEB Molecular Biophysics of Membranes, Snowmass, CO, June 2012
Department of Chemical and Biomolecular Engineering, University at Buffalo, April 2012.
Department of Chemistry, Lehigh University, February 2011
Department of Chemical and Biological Engineering, Rice University, February 2011
Department of Chemical and Biological Engineering, Northwestern University, December 2010
Department of Biomedical Engineering, Purdue University, October 2010
Department of Chemical and Biological Engineering, Rensselaer Polytechnic Institute, April 2010
Department of Chemical and Biological Engineering, Tufts University, March 2010
"Understanding Aggregation Pathways and the Benefits of Working Under Pressure", ACS National Meeting, Session in honor of Frederick Heineken, March 2010
Department of Biological Engineering, Massachusetts Institute of Technology, February 2010
"G-Protein coupled receptor expression: Engineering Protein Expression by Understanding Biological Interactions", CHI conference "Membrane Proteins—Extraction, Expression & Purification," San Diego, CA January 2010.
Department of Chemical and Biological Engineering, University of Wisconsin, October 2009
"Molecular and Cellular Engineering Strategies for Optimizing Protein Production", Invited Seminar at the New York Academy of Sciences 3rd Annual Advances in Biomolecular Engineering: Protein Design Symposium (<http://www.nyas.org/events/eventDetail.asp?EMSID=471>), June 2009
Department of Chemical and Biomolecular Engineering, Tulane University, March 2009
Department of Chemical and Biomolecular Engineering, NC State University, November 2008
Department of Chemical and Biological Engineering, Iowa State University, November 2008
School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, November 2007, ACS Progress/Dreyfus Lectureship Award
Department of Chemical Engineering, University of South Carolina, April 2007
Department of Chemical Engineering, University of Massachusetts, Amherst, February 2007
Department of Chemical Engineering, West Virginia University, January 2007
Department of Chemical Engineering, University of Virginia, October 2006
Department of Chemical and Biomolecular Engineering, University of Illinois, Urbana-Champaign, September 2006
The Structure and Function of the Biological Membrane, Invited Speaker, Swiss NCCR Structural Biology, May 2006
Institute for Cellular Engineering, U. Mass, Keynote Speaker, Amherst, May, 2006
Difficult to Express Proteins, Invited Speaker, CHI Conferences, April 2006
Department of Chemical Engineering, UC Santa Barbara, February 2006
Department of Chemical Engineering, Rutgers University, NJ, November 2005
Department of Chemical Engineering, Pennsylvania State University, State College, PA, March, 2005
Department of Chemical Engineering, Drexel University, Philadelphia, PA, February 2004.
Bioscience Symposium, University of Maryland at College Park, November 2003.
Department of Chemical Engineering, University of Kansas, October 2003.
Department of Chemical Engineering, University of Wisconsin, Madison, WI, October 2002.
Merck Pharmaceuticals, West Point, PA, September 2002
Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA April 2002.
Department of Chemical Engineering, Cornell University, Ithaca, NY, March 2002.
Department of Chemical Engineering, University of Texas, Austin, TX, March 2002.
Department of Chemical Engineering, University of Florida, Gainesville, FL, February 2002.
Department of Chemical Engineering, University of Pennsylvania, Philadelphia, PA, January 2002.

New Directions in Biotechnology Workshop, Biophysical Society Annual Meeting, February 2001, Boston, MA.

Department of Chemical Engineering, University of Virginia, Charlottesville, VA, February 2001.

Molecular Cell Biology and Biotechnology program, Virginia Polytechnic Institute, Blacksburg, September 2000.

Department of Chemical Engineering, University of Massachusetts at Amherst, December 1999.

Department of Chemical Engineering, Johns Hopkins University, November 1999.

Department of Biology, University of Delaware, October 1998.

DuPont Chemical Co., Wilmington, Delaware, October 1998.

Department of Agricultural Sciences, University of Delaware, October 1998.

Brasilian Biochemical Society, XXVII Annual Meeting, Caxambu, MG, Brasil, May 1998.

3-Dimensional Pharmaceuticals, Exton, PA, January 1998.

North Carolina State University, Department of Chemical Engineering, April 1997.

University of Wisconsin, Department of Chemical Engineering, March 1997.

University of Delaware, Department of Chemical Engineering, March 1997.

STUDENT CONFERENCE PRESENTATIONS (SELECTED FROM LAST 10 YEARS)

- 1) Young, Carissa L., Zachary T. Britton, Theresa Yuraszeck, Kirk Czymmek, Francis J. Doyle, III, Anne S. Robinson (Presentation) Single-cell analysis of Cellular and Endoplasmic Reticulum Quality Control (ERQC) in *S. cerevisiae*. 3rd International Conference on Biomolecular Engineering (ICBE), San Francisco, CA, January 2011. *Selected as a featured presentation in the Biophysical and Microscale Analyses of Molecular and Cellular Function session
- 2) Naranjo, A. N., O'Malley, M. A., Chevalier, A. N., Robinson, A. S., "Exploring the Trafficking, Ligand-Binding Activity, and Unfolding of a model GPCR," Biophysical Society 55th Annual Meeting, March 9th, 2011, Baltimore, MD.
- 3) Naranjo, A. N., O'Malley, M. A., Chevalier, A. N., Robinson, A. S., "Exploring the Trafficking, Ligand-Binding Activity, and Unfolding of a model GPCR," 241th American Chemical Society Meeting and Exposition, March 27th, 2011, Anaheim, CA.
- 4) Britton, Z. T., C. E. Markwalter, C. L. Young, and A. S. Robinson. Elucidating Mechanisms of Heterologous Neurokinin 2 Receptor Expression and Trafficking in *S. cerevisiae* Through Receptor Chimeras. 241st ACS National Meeting, Anaheim, CA. March 2011.
- 5) Britton, Z. T. and A. S. Robinson. Optimizing Functional Production of Human Adenosine A2b Receptor in *S. cerevisiae*. 241st ACS National Meeting, Anaheim, CA. March 2011.
- 6) Z. T. Britton, C. L. Young, C. E. Markwalter, A. S. Robinson. Optimizing Functional Production of Heterologous GPCRs in *S. cerevisiae* through a Novel Yeast Expression Cassette. 4th Annual Frontiers at the Chemistry and Biology Interface Symposium, University of Delaware, Newark, DE. (April 2011).
- 7) Naranjo, A. N., O'Malley, M. A., Chevalier, A., Robinson, A. S. "Exploring the trafficking, ligand-binding activity, and unfolding of a model GPCR." Cold Harbor Spring Asia Conference on Membrane Proteins: Structure and Function, May 16th, 2011, Suzhou, China (invited talk)
- 8) St. Amand, M., K. Tran, D. Radhakrishnan, A.S. Robinson, B. A. Ogunnaike. "Controllability Analysis of Protein Glycosylation in CHO Cells". AIChE National Meeting, Model Based QbD, Minneapolis MN, Oct 2011.

- 9) St. Amand, M., A. S. Robinson and B. A. Ogunnaike. "Towards Online Control of Glycosylation in MAbs". ACS Conference, Cell Culture Process Dev. Accomplishments and Challenges, San Diego CA, March 2012
- 10) St. Amand, M., A. S. Robinson and B. A. Ogunnaike. "Towards Online Control of Glycosylation in MAbs". Poster, Cell Culture Engineering Conference XXIII, Scottsdale AZ, April 2012
- 11) P. M. McNeely, A. S. Robinson. "Recombinant GPCR oligomerization effects on downstream signaling in yeast." ACS National Meeting, Biomolecular and Biophysical Processes: Assembly, Stability, and Engineering in Model Protein Systems, New Orleans, LA, March 2013
- 12) C. J. O'Brien, M. A. Blanco, J. A. Costanzo, E. J. Fernandez, A. S. Robinson, C. J. Roberts. "Combining theory and experiment for rational design of single-charge altering point mutations to reduce multidomain protein aggregation." ACS National Meeting, Biomolecular and Biophysical Processes: Protein Engineering and Characterization, New Orleans, LA, March 2013
- 13) A. N. Naranjo, A. S. Robinson "Exploring the stability and activity of a model GPCR in various biomimetic systems." ACS National Meeting, Biomolecular and Biophysical Processes, New Orleans, LA, March 2013
- 14) P. M. McNeely, A. S. Robinson, In silico analysis of GPCR dimerization and downstream signaling. ACS National Meeting, Upstream Processes: Advances in Cell and Tissue Culture, New Orleans, LA, March 2013
- 15) A. N. Naranjo, J. Katsaras, A. S. Robinson. "Isolating a class A G protein coupled receptor in its active conformation using short chain lipids: Doing away with detergents." Liposomes, Lipid Bilayers and Model Membranes, 246th ACS Spring National Meeting, New Orleans, LA, March 2013
- 16) C. J. O'Brien*, M. A. Blanco, J. A. Costanzo, E. J. Fernandez, A. S. Robinson, C. J. Roberts, "Combining theory and experiment for rational design of single-charge-altering point mutations to reduce multi-domain protein aggregation" 246th ACS Spring National Meeting, New Orleans, LA, March 2013
- 17) Claire McGraw, Hussain Dahodwala, Anne S. Robinson, "Role of Cholesterol in Expression and Activity of the Human Adenosine A2a Receptor, a GPCR", 247th ACS National Meeting and Exposition: Chemistry and Materials for Energy, Dallas, TX, March 16-20, 2014
- 18) Naranjo, A. N., Katsaras, J., Robinson, A. S., "Stability and ligand binding kinetics of a model GPCR in membrane mimetic environments", 247th ACS National Meeting and Exposition: Chemistry and Materials for Energy, Dallas, TX, March 16-20, 2014
- 19) McNeely, PM; Naranjo, AN; and Robinson, AS. "Kinetic properties of G protein-coupled receptor (GPCR) ligand binding by fluorescence anisotropy and computational modeling." 247th ACS National Meeting and Exposition: Chemistry and Materials for Energy, Dallas, TX. March 16-20, 2014
- 20) McNeely, PM and Robinson, AS. Cholesterol effects on the ligand-binding activity of recombinant human G protein-coupled receptors (GPCRs). 247th ACS National Meeting and Exposition: Chemistry and Materials for Energy, Dallas, TX. March 16-20, 2014
- 21) Claire McGraw (Poster), Anne S. Robinson, "Role of Cholesterol in Trafficking and Activity of the Human Adenosine A2a Receptor" FASEB: Molecular Biophysics of Membranes, Big Sky, Montana, June 29-July 4, 2014
- 22) Claire McGraw, Anne S. Robinson "Membrane Cholesterol Adenosine A2a Receptor" 251st ACS National Meeting and Exposition: Computers in Chemistry, San Diego, CA, March 13-17, 2016

- 23) Jain, Abhinav R. and Anne S. Robinson, "Human GPCR expression and signaling in yeast: design and optimization of the host/protein platform for therapeutic development", 251st ACS National Meeting and Exposition: Computers in Chemistry, San Diego, CA, March 13-17, 2016
- 24) Jain, Abhinav R. (Poster), Claire McGraw and Anne S. Robinson, "Improving expression in yeast of A1 adenosine receptor using chimeric receptors," FASEB Molecular Biophysics of Membrane, Snowmass, CO, July 2016.
- 25) McGraw, Claire (Talk), Anne S. Robinson, "Membrane Cholesterol and the Adenosine A2a Receptor", 61st Annual meeting of the Biophysical Society, New Orleans, LA, February, 2017
- 26) Wells, Evan A (poster), Anne S Robinson, "Characterization of Human IgG1 Fc Region Stability and Aggregation Propensity", Biophysical Society 61st Annual Meeting, New Orleans, LA, February 2017.
- 27) Swonger, Kirsten N. (poster) Annie Tir, Anne S. Robinson "Contribution of mutations and C-terminal tail to adenosine A2A receptor activity and stability", Biophysical Society 61st Annual Meeting, New Orleans, LA, February 2017.
- 28) Swonger, Kirsten N. (poster) Annie Tir, Anne S. Robinson "Effects of the A2AR C-terminus on receptor stability", Biochemical and Molecular Engineering; July 2017.
- 29) Jain, Abhinav R. (poster) Claire McGraw and Anne S. Robinson, "Improving expression in yeast of A1 adenosine receptor using chimeric receptors: design and optimization of the host/protein platform for therapeutic development", Biophysical Society 61st Annual Meeting, New Orleans, LA, February 2017
- 30) Jain, Abhinav R. (speaker), Yeast as a model to study biased signaling of GPCRs, American Chemical Society National Meeting, February 2019.
- 31) A Jain, Z Britton, A Robinson, Improved expression of human tachykinin NK2 receptor using a receptor-receptor chimera with the rat homologue, American Chemical Society National Meeting, February 2019.
- 32) KS Koretz (speaker), C McGraw, AS Robinson, Characterization of A2AR and G Protein Coupling by Surface Plasmon Resonance, Biophysical Society National Meeting, San Francisco, CA February 2020.
- 33) Claire McGraw; Kirsten Koretz (Presenter); Edward Lyman; Anne Robinson, Effects of allosteric cholesterol association to A2AR and cholesterol consensus motif variants on experimental ligand binding, G protein coupling, and further downstream signaling markers

GRADUATE RESEARCH THESES

PhD Students

- 1) Brian Lefebvre, May 2002; High Pressure Dissociates Tailspike Aggregates and Promotes Native Structure Formation; Assistant Professor, Rowan University, NJ (2004-2008); Senior Fermentation Scientist, Cargill
- 2) James Butz, June 2002; Characterizing and Optimizing GPCR Expression in Yeast; 2005-2006, Senior Scientist, Schering-Plough; 2006-2011, Associate Principal Scientist, Schering-Plough, NJ. Current position, Principal Scientist, Merck & Co.
- 3) Brenda Danek, March 2003; Characterization of the Role of Disulfides in Folding of Tailspike Protein; J.D., 2008, NYU; current position: Associate, Intellectual Property Litigation, Latham & Watkins

- 4) Jessica Sinacola, August, 2003; Characterization and Reversal of the Aggregation of Single-Chain Antibodies; current position, Senior Principle Scientist, Sterile Process Technology & Engineering, Merck & Co, West Point, PA.
- 5) Jason Smith, July 2003; Folding and Expression of Extremophilic Enzymes; 2003-2006 Postdoctoral Fellow, Carnegie Mellon University; 2006-2007, Product Development Engineer, Cohera Medical, Pittsburgh, PA; Manager of Research and Development at Carmell Therapeutics (2007-2018); current position: Assistant Teaching Professor and Associate Director of Partnerships, Carnegie Mellon University
- 6) Ronald Niebauer, July 2005; Using GFP as a Sensor for Optimizing Expression of GPCRs; current position, Biotechnology Patent Examiner, US Patent Office, Washington, DC.
- 7) Junghwa Kim, June 2006; Roles of Folding Intermediate Conformation and Transient Disulfide Bonding on the Folding of P22 Tailspike Protein; current position, Senior Scientist, Celgene.
- 8) Sara Lawrence Powers, July 2006; Characterization and Expression of an Extremely Stable Hyperthermophilic Protein; 2006-2008, Postdoctoral Fellow, Wistar Institute; current position, R&D Scientist, Biomatrix.
- 9) Ping Xu, July 2006; Sensing and Analyzing the Unfolded Protein Response during Heterologous Protein Production; Postdoc Associate, Cornell Weill Medical College (2007-2011); current position, Sr. Scientist I, Bristol Myers Squibb.
- 10) Steven Bane, May 2007; Expression and Characterization of the Human Neurokinin 1 receptor from *E. coli*; Process Engineer, Sterile Process Technology & Engineering, Merck & Co, West Point, PA, 2007-2011; current position, Principal Scientist, Amgen
- 11) Emily McCusker, December 2007; Overcoming Expression Obstacles in Producing Functional Components of the G-Protein Coupled Receptor Pathway; (2013-2017) Senior Medical Science Liaison, Teva Pharmaceuticals; current position, Associate Director, Clinical Development at Allergan
- 12) Michelle Spataro, May 2009; Protein folding and aggregation *in vitro* and *in vivo*; Postdoc UD (2010-2011); Manager, Novartis Vaccines (2011-2013); Investigator, Glaxo Smith Kline (2013-2018); current position: Principle Scientist, Takeda (formerly Shire)
- 13) Michelle O'Malley, August 2009; Expression, Purification, and Biophysical Characterization of G-Protein Coupled Receptors Expressed from *Saccharomyces cerevisiae*; Postdoc Fellow, MIT (2009-2012); current position, Full Professor, UC Santa Barbara
- 14) Carissa Young, December 2012; Interrogation of Quality Control Mechanisms and Protein Trafficking in *Saccharomyces cerevisiae*; Postdoc, MIT (2012-2015) Senior Scientist, Applied Biomath (2015-2018); current position, Sr. Scientist, CMC Modeling, Cell Therapy, Takeda
- 15) Zachary Britton, December 2012; Novel Approaches to the Expression and Purification of G Protein-coupled Receptors; current position, Scientist I, MedImmune
- 16) Melissa St. Amand, September 2013 (co-advised, BA Ogunnaike, Univ Delaware); Toward Online Quality Control during Biopharmaceutical Production; Postdoc, NIH, NIDDK (2013-2015); current position, Senior Research Engineer, Schaefer Corp.
- 17) Andrea Naranjo, October 2014; Stability and Activity of a GPCR *in vivo* and in Membrane Mimetic Environments; current position, post-doctoral fellow, NIH

- 18) Helen (Haixia Wu), Sept 2015 (co-advised, CJ Roberts, Univ Delaware); pH and Temperature-dependent Mechanisms of Non-Native Aggregation of Anti-CD40 IgG1; Scientist, Boehringer-Ingelheim
- 19) Patrick McNeely, May 2016; Receptor-receptor, Ligand, and Membrane Interactions of the Adenosine A_{2A} Receptor; Research Engineer, Apogee Research
- 20) Ronald Maurer, July 2016 (co-advised, CJ Roberts, Univ Delaware); Biophysical Characterization of Folding and Aggregation Behavior in Model Single and Multi-Domain Proteins; Senior Scientist, Process Development, Bristol-Myers Squibb Co.
- 21) Devesh Radhakrishnan, October 2016 (co-advised, BA Ogunnaike, Univ Delaware); Modeling, Estimation, and Control of Glycosylation in Monoclonal Antibodies Produced in CHO Cells; Senior Scientist I, Manufacturing Sciences Division, Biomarin
- 22) Christopher O'Brien, December 2017 (co-advised with CJ Roberts, UD); Colloidal Protein-Protein Interactions as a Design Target for Aggregation Resistance; Scientist II, Sanofi
- 23) Claire McGraw, April 2018; Role of Cholesterol in the Function of the G Protein Coupled Receptor Adenosine A_{2A} Receptor; Lecturer in Biology, Duquesne University
- 24) Kirsten Swonger Koretz, May 2019, Effects of the adenosine A_{2A} receptor C-terminus on ligand binding, stability, and downstream signaling; Postdoc, Carnegie Mellon University
- 25) Abhinav Jain, September 2019, G Protein Coupled Receptor Expression and Signaling in Yeast: Design and Optimization of Host/Protein Platform for Therapeutic Development; Upstream Process Development Scientist, IGM Biosciences
- 26) Daniel Oseid, January 2020, Investigating the role of the membrane & cellular stress in neurodegenerative disorders; Senior Consultant, MicroBio Consulting, LLC.
- 27) Evan Wells, December 2020, Post-translational modifications to recombinant proteins: Roles in antibody production and protein aggregation; Janssen Pharma.
- 28) Gulsum Meric 2021 (co-advised with CJ Roberts, UD), Towards Aggregation-resistant Protein Design; Scientist at Coriolis Pharma (Munich, Germany)

PhD students in progress:

- 1) John Pettersen, (2019-present) Development of in vitro drug discovery methods for G-protein coupled receptors
- 2) Leran (Lynn) Mao (2020-present, co-advised with J Schneider, CMU), Dynamic detection and control of protein glycosylation
- 3) Sarah Sonbati, (2021-present) Expression, Purification, and In Vitro Aggregation of Microtubule-Associated Protein Tau

MChE Thesis Students

- 1) Sujata Bhatia, BChE/MChE, May 1999, Novel Role for Cysteines in *in vivo* folding of P22 Tailspike Protein; M.D./Ph.D, UPenn, 2003; Medical Research Scientist, DuPont Central Research & Development, Wilmington, DE, 2003-2011; Assistant Director for Undergraduate Studies in Biomedical Engineering, Harvard University 2011-2015; 2016-present, Continuing Track Professor, Dept of Chemical & Biomolecular Engineering, University of Delaware

- Honors include: 1998 Barry M. Goldwater Award, 1999 AIChE Student Paper Award, 1999 NSF and NDSEG graduate fellowships
- 2) Nicole Sheatsley Richardson, March 2005; Optimizing Extremophile Expression in Yeast; Centocor, Malvern, PA, 2005-2008
- 3) Nathaniel Macapagal, May 2011; Characterization of the Folding and Assembly of Single-Chain Antibodies; current position, Scientist I, Purification Process Sciences, MedImmune.
- 4) Nikki Ross, January 2012; The Role of Oxidative Stress on Tau Protein Homeostasis in Neurodegenerative Diseases; PhD, University of Delaware, 2015; Scientist, Codiak Biosciences
- 5) Farzana Quddus, August 2015, Process Engineering, Shire
- 6) Emily Wilkinson, August 2015, Clinical Director, Crane Rehab Center
- 7) Bryan Goldman, December 2015; The Effects of Oxidative Stress on Adenosine Receptors in *Saccharomyces cerevisiae*; currently in medical school

Non-thesis MS students research supervision

- 1) Deepro Banerjee (MS 2019); current position, PhD student in Human Genetics Lab (PI, Girirajan) at Penn State
- 2) Yaxin Yang (MS BPTE, 2023)
- 3) Jaanaki Raghunath (MS BPTE, 2023)

PhD Thesis Committees (since 2011):

- Rubo Zheng (2014, advisor Vijay John, Tulane) Multifunctional and Supramolecular Materials through the Hydrophobic Effect
- Xuguang Chen (2014, advisor WT Godbey, Tulane) Advanced transitional cell carcinoma treatments via expression-targeted gene delivery and minicell technology
- Yunlun Fang (2015, advisor WT Godbey, Tulane) Urine-based cancer detection via expression-targeted gene delivery
- Pavlos Kotidis (2021, advisor Cleo Kontoravdi, UCL) Enhanced understanding of protein glycosylation in CHO cells through computational tools and experimentation
- Connor Valentine (2022, advisor Lynn Walker, Carnegie Mellon Univ) Self-assembled structures with crystalline order in aqueous block polymer systems: Understanding nanoscale structure and material processing to achieve desirable properties
- Deyu (Lydia) Wang (2022, advisor Lynn Walker Carnegie Mellon Univ) Developing a droplet-based tool to quantify viscosity of concentrated protein solutions
- Long Chen (2022, advisor Ed Lyman, Univ Delaware) computational modeling of G protein coupled receptors
- Namit Chaudhary (2023, advisor Kathryn Whitehead, Carnegie Mellon Univ) Engineering Lipid Nanoparticles for Safe and Efficacious Drug Delivery During Pregnancy
- Rose Doerfler, (2023, advisor Kathryn Whitehead, Carnegie Mellon Univ) Engineering of Breast Milk Cells for Infant Therapy
- Virginia Lane DiNenna (2023, advisor James Schneider Carnegie Mellon Univ) Identification of miRNA biomarkers for routine adventitious agent detection
- Mariah Arral, (advisor Kathryn Whitehead, Carnegie Mellon Univ) Effects of Age and Sex on Lipid Nanoparticle Mediated mRNA Delivery
- Hannah Fox Yankello (advisor Liz Wayne, Carnegie Mellon Univ) Self-assembled structures with crystalline order in aqueous block polymer systems: Understanding nanoscale structure and material processing to achieve desirable properties
- Jordan Berger (advisor Chris Roberts, Univ Delaware), Biophysical characterization and stability of proteins at high pressure

Graduate Student Training: Chemistry-Biology Interface Program, IGERT program, and Neuroscience program (6 -8 weeks in laboratory)

Mark Harrison, PhD candidate, Neuroscience program, Fall 2017
Nancy Kim, Ph.D. candidate, Bioinnovation program, Spring 2016
Benjamin Vinson, Ph.D. candidate, Bioinnovation program, Fall 2013
Patrick McNeely, Ph.D. candidate, Chemical Engineering, Spring 2009
Scott Crown, Ph.D. candidate, Chemical Engineering, Spring 2009
Matthew Weitzman, Ph. D. candidate, Biology, Fall 2007
Angela Petiak, Ph.D. candidate, Biology, Fall 2006
Rebecca Brummitt, Ph.D. candidate, Chem. Eng, Spring 2006
David Johnson, Ph.D. candidate, Chem. Eng, Spring 2006
Sara Lawrence, Ph.D. candidate, Chem. Eng, Spring 2002
Chad Blamey, Ph.D. candidate, Chemistry, Winter 2001
Brenda Danek, Ph.D. candidate, Chem. Eng, Spring 1999
Steven Swann, Ph.D. candidate, Chemistry, Fall 1998

UNDERGRADUATE RESEARCH

Senior Theses

- 1) Jonathan Dueber (BS, 1999, Chemistry & Biochemistry) Expression, purification and refolding of tailspike aggregates; PhD (2005) UC San Francisco, Dept of Biochemistry; Postdoctoral Fellow, California Institute for Quantitative Biomedical Research (QB3), University of California, Berkeley; current position, Assistant Professor, Department of Bioengineering, UC, Berkeley, 2008-present
- 2) Alexander Harris (BS, 2000) The Role of Stress in Protein Expression in Yeast
- 3) Eveline Tseng (BS, 2000) Analysis of the Interactions between human A_{2a} and BiP
- 4) Kathryn Whitehead (BS, 2002) Role of Additives in Preventing Aggregation of P22 Tailspike; PhD (2007) Chemical Engineering, UC Santa Barbara, NSF Graduate Fellow Honorable Mention; postdoctoral associate, MIT, laboratory of Robert Langer; current position, assistant professor, Carnegie Mellon University.
- 5) Noelle Comolli (BS, 2003) Tsf Mutations Alter the Rate and Pathway for Tailspike Aggregation, PhD (2007) Chemical Engineering, Drexel University; postdoc in Neurobiology & Anatomy, Drexel University; current position, Associate Professor of Chemical Engineering, 2008-present.
- 6) Eric Pridgen (BS, 2003) Molecular Sensors for Detecting Cellular Stress; Process Engineer for Merck for 3 years; (PhD, 2012) MIT, NDSEG Department of Defense Graduate Fellow 2007-2010; in medical school at Stanford
- 7) Benjamin Tang (BS, 2003) Role of Chaperones in Extremophile Expression in Yeast; PhD (2008) Johns Hopkins University; currently Assistant Adjunct Professor at University of California, San Francisco.
- 8) Dana Ungerbuehler (BS, 2003) Cysteine Mutation Effects on Tailspike Folding; MMDP Analyst, Merck Manufacturing Management Development Program for 2 years; MD (2009) Rutgers Medical School; currently Junior AOA, Robert Wood Johnson Hospital.
- 9) Jennifer Zak [Grey] (BS, 2003) Role of Salt Bridging in Trimer Assembly of Tailspike; Process Engineer for Merck for 3 years; UD MBA (2008); currently Associate Director, Merck Vaccine Strategy, Merck & Co., Inc., Global Vaccine Technology & Engineering.

- 10) Amy VanFossen (BS, 2004) Stress Response in GPCR Expression in Yeast; PhD in Chemical Engineering (2010) NC State University; currently at Agrivida, Medford MA.
- 11) Alison Wedekind (BS, 2005) Optimization and Characterization of G-Protein Coupled Receptor Expression in Yeast; M.S. (2007) Chemical Engineering at University of Minnesota; Eleven Biotherapeutics (2010-2014); currently PhD student at MIT Biological Engineering
- 12) Elizabeth Bell (BS, 2005) Sublocalization of the Chaperone BiP within the Endoplasmic Reticulum of Yeast Cells and its Role in Protein Expression; 2004 Barry M. Goldwater Award, Project/Operations Manager, Agilent Technologies
- 13) Elizabeth Oeffinger (BS, 2006) Tailspike Beta Helix Variants: Effects of Sequence on Aggregation Propensity; M.S. (2008) Chemical Engineering, Princeton University.
- 14) J. Dominic Mancini (BS, 2008) The unfolded protein response in G-protein coupled receptor expression in yeast; currently Scientist I, Process Development/Vector Core, bluebird bio.
- 15) Lindsay (Schmiedel) Morse (BS 2009) Analyzing Spatial Localization of Proteins of the Endoplasmic Reticulum in Budding Yeast, *S. cerevisiae*, during Cell Division; currently Staff Engineer, Merck & Co.
- 16) Carly (Fleagle) Chisholm (BS 2009) Evaluating the unfolded protein response of *Saccharomyces cerevisiae*; PhD, 2015 University of Colorado; currently, Scientist, Large Molecule-Drug Product Development, Janssen Pharmaceuticals
- 17) Amy (Chevalier) Bendell (BS 2011) Trafficking and G Protein-Coupling of Adenosine A_{2A} Receptor Variants in HEK 293 Cells; currently PhD student at UPenn. Scientist, In Vitro Diagnostic Solutions.
- 18) Sierra Lear (BS 2018, Neuroscience and Chemical Engineering double major) Investigating Interactions Between Biological Stress and Adenosine A_{2A} Receptor Signaling in Alzheimer's Disease; currently PhD student at UC Berkeley Dept of Bioengineering.
- 19) Steven Stradley (BS 2019, Chemical Engineering) Characterizing the effect of G α s on the binding affinity of the adenosine A_{2A} receptor to fluorescent ligands, PhD student at CalTech

High school student summer research mentoring

- Jacqueline Gomez (ACS Project Seed, S11)
- Joshua Losoya (ACS Project Seed, S10)
- Luke Scholato (ACS Project Seed, S10)
- Esther Ayettey (ACS Project Seed, S09)

Undergraduate research training

- Juyeon Ha (BS 2022 Carnegie Mellon, CIT Honors)
- Madison Greer (BS 2021, Carnegie Mellon University)
- Elizabeth Isabell (BS 2020, Neuroscience, Tulane University)
- Aomeng Cui (BS 2019, Columbia University)
- Steven Stradley (BS 2019, Tulane University)
- Chris Aubin (BS 2018, Tulane University)
- Rachel Galaska (BS 2018, Univ Dayton)
- Hailey Day (BS 2018, Tulane University)

- Annie Tir (BS 2018, Tulane University)
- Sierra Lear (BS 2018, Tulane University)
- Katherine Cooke (BS 2017, Yale University)
- Justin Huckaby (BS 2016, Louisiana State University)
- Kate Freer (BS 2016, Neuroscience, Tulane University)
- Daphne Chan (BS 2015, Tulane University)
- Catherine Tucker (BS 2014, Cell and Molecular Biology, Tulane University)
- Cody Kamoku (BS 2014, Tulane University)
- Elsie Rodebeck (BS 2013, Biomedical Engineering, Tulane University)
- Jessica Gryga (BS 2012, University of Delaware)
- Chet Markwalter (BS 2012, University of Delaware)
- Karen Roberts (BS 2012, University of Delaware)
- Alicia Abedi (BS 2011, University of Delaware)
- Elizabeth Hanle (BS 2011, University of Delaware)
- Jacob Brady (BS 2011, University College of London, Biochemistry)
- Mark Richards (BS 2009, University of Delaware)
- Joshua Stottman (BS 2008, University of Delaware)
- Wayne Gibson (BS 2008, University of Delaware)
- Javier Velasquez (BS 2007, University of Delaware)
- Carine Tata (BS 2007, Chemistry and Biochemistry, University of Delaware)
- Erich Bozenhardt (BS, 2006, University of Delaware)
- Jessica Pippins (BS, 2006, University of Delaware)
- Matthew DeSeino (BS 2006, University of Delaware)
- Michael Schweizer (BS 2004, University of Delaware)
- Matt Eggers (BS, 2003, University of Delaware)
- Raymond Michael Hartley (BS, 2003, University of Delaware)
- Joe Peltier (BS, 2001, Washington University, St. Louis)
- Adi Kumiadi (BS, UMBC, 2001)
- Margaret Gentile (BS, 2000, University of Maryland)
- John Ristuccia (BS/Biotechnology, University of Delaware, 1998)

Undergraduate Senior Thesis Committees

Joanna Adadevoh, BS 2012 (Ogunnaike) The Effect of Ammonia on the Glycosylation Pattern of Monoclonal Antibodies
Jing Lu, BS 2012 (Antoniewicz) *Thermus Thermophilus* as a Model Organism for Thermophilic Bacteria
Manuel Rafael Jiménez Díaz, BS 2010 (Papoutsakis)
Daniel Miller, BS 2009 (Lenhoff)
Stephanie Myrick, BS 2009, Chemistry (Sullivan)
Kristen Stoeber, BS 2004 (C. Robinson)
Matthew Panzer, BS 2002 (Lenhoff)
Porntula Panorchan, BS 2002 (Edwards)
Brian Eng, BS 2001 (Doyle)
Kara Odom, BS 1998 (Zydney)

POST-DOCTORAL STUDENTS SUPERVISED

- Dr. Matthew Gage (2002-2005) PhD 2001, Biochemistry, Purdue University; Present Position: Associate Professor of Chemistry, University of Massachusetts, Lowell
- Dr. David Raden (2002-2009) PhD 2000, Biochemistry, U. Mass. Medical School; current position, Assistant Professor, Department of Biological Sciences at University of Delaware
- Dr. Asokan Anbanandam (Feb-Aug 2007) PhD 1999, Chemistry, Indian Institute of Technology, jointly advised by Prof. Tatyana Polenova; current position: Director, University of Kansas COBRE Biomolecular NMR Laboratory
- Dr. Özge Can (Feb 2009-May 2010) PhD 2008, Cleveland State University; current position Associate Professor of Medical Biochemistry, Acibadem University School of Medicine, Istanbul, Turkey
- Dr. Hussain Dahodwala (2012-2014) PhD 2011, Chemical Engineering, Rensselaer Polytechnic Institute; current position, postdoctoral fellow, Univ. of Delaware
- Dr. Arash Foroutan (2013-2015) PhD 2012, Department of Biochemistry and Molecular Biology, Universitat Autònoma de Barcelona, Spain; Current position, Visiting Scholar, Brohawn Laboratory, UC Berkeley
- Dr. Kory Blocker (2014-2016) PhD 2011, Department of Chemical Engineering, University of Delaware; current position, Associate Director, Upstream Process Development, Gene Therapy Program at University of Pennsylvania
- Dr. Liqing Song (2019-present) PhD 2018, Department of Chemical Engineering, Florida State University
- Dr. Kirsten Swonger Koretz (2019-present) PhD 2019, Department of Chemical and Biomolecular Engineering, Tulane University

PROFESSIONAL SERVICE**National and local organization leadership**

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|--------------|--|
| 2020-2022 | National Research Council <i>Committee on Chemical Engineering: Challenges and Opportunities in the 21st Century</i> |
| 2020-present | Advisory Board Member, Univ Washington Department of Chemical Engineering |
| 2019-2022 | AAAS, Section M (Engineering) Member-At-Large |
| 2010-present | Advisory Board Member, Northwestern University Department of Chemical and Biological Engineering |
| 2006-present | Member, Advisory Committee for Pharmaceutical Sciences, Food and Drug Administration |
| 2019-2021 | Fellows Council, AIChE |
| 2018 | Co-chair, ECI Cell Culture Engineering Meeting |
| 2015-2017 | Board of Directors, AIChE |
| 2013-2016 | Board of Directors, Council for Chemical Research |
| 2008-2011 | ACS BIOT Division Awards Chair |
| 2010 | Advisory Board Member, UMBC Department of Chemical and Biological Engineering |
| 2009 | Co-Chair – Biochemical Engineering XVI |
| 2007-2009 | Advisory Board, BioXXcel Educational Project (NSF DUE 0633373, PI: Komives; co-PIs: Fernandez, Beitle) |
| 2007 | Vice-Chair – Biochemical Engineering XV |
| 2006 | Chair – American Chemical Society BIOT Division |
| 2005 | Chair Elect – American Chemical Society BIOT Division |

- 2004 Program Co-Chair – American Chemical Society BIOT Division
- 2001 Member, NSF Future of Engineering Education Workshop, July 16-17 2001
- 2000 Chair and Organizer – Mid-Atlantic BioEngineering Consortium (MABEC) Conference,
- 1995-97 Provost’s National Advisory Board for the Initiative to Diversify the Professoriate in Engineering and Science, MIT

Session Chair or Co-Chair

- 2019 Session co-Chair, Upstream Processes – Expression, 1st Gordon Res. Conf. on Dev. of Bio-therapeutics and Vaccines, Galveston, TX
- 2013 Co-chair, Quality by Design Workshop, 2013 Biochemical Engineering Meeting, Beijing, China
- 2010 Co-chair, Follow-On Biologics: Host Expression, 2010 ACS Mtg, SF
- 2006 Co-Chair, Membrane Protein Expression and Characterization, 2006 ACS Mtg, SF
- 2002 Chair, Protein Engineering and Biocatalysis, 2002 AIChE Fall Meeting, Indianapolis
- 2001 Chair, Advances in Protein Expression, 2001 AIChE Fall Meeting, Reno
- 2000 Co-Chair, Advances in Protein Expression, 2000 AIChE Fall Meeting, Los Angeles
- 1999 Chair, Young Faculty Forum, 1999 AIChE Fall Meeting, Dallas
- 1999 Co-chair, Advances in Protein Expression, 1999 AIChE Fall Meeting, Dallas
- 1999 Chair, Biosensors Session, 1999 Organic Thin Films Gordon Conference, Newport, RI
- 1998 Co-chair, Young Faculty Forum, 1998 AIChE Fall Meeting, Miami
- 1998 Co-chair, Protein Folding and Stability session, ACS BIOT Division, Boston, MA

Reviewer for the following journals and organizations

- Biotechnology and Bioengineering* Advisory Board (since 2010)
- Editorial Board, *Biotechnology Journal* (since 2010)
- Editorial Board, *Biotechnology Notes* (since 2019)

Society journal reviewer, Alzheimer’s & Dementia: the Journal of the Alzheimer’s Association
AIChE Journal
Applied Environmental Microbiology
Biochemistry
Biophysical Journal
Biotechnology Progress
Enzyme and Microbial Technology
Industrial & Engineering Chemistry Research
Journal of the American Chemical Society
Journal of Biotechnology
J. Molecular Biology
Nature Biotechnology
PLOS Biology
Protein Science

Cambridge University Press

National Science Foundation

- Chair, ASEE/NSF Graduate Research Fellowships Chem. Eng. Panel
- Ad hoc reviewer for Biology and Engineering Directorates
- Panel reviewer for Exploratory Research in Biosystems at the Nanoscale
- Panel reviewer for CAREER awards
- Panel reviewer for MathBio awards
- Panel reviewer for ASEE/NSF Graduate Research Fellowships

Member, NSF Future of Engineering Education Workshop, July 16-7 2001
 National Institutes of Health
 Reviewer, ZRG1 IMST-K (14) B, 2012
 MSF-B Ad Hoc member, 2011
 Chair, Special Emphasis Panel ZGM1 MBRS-2 (CO), 2008
 SBIR panel review (DDD – BCMB), 2007
 Protein Structure Initiative II (P50) study section, 2005
 BBKA / MSF-B Ad Hoc member, 2004
 Program Project Grant panel review – P01 ZRG1 BIO 01, 2002
 SBIR panel review (ZRG1 SSS-2), 2002
 Petroleum Research Fund, American Chemical Society
 U.S. Civilian Research and Development Foundation (CRDF)

Society Member

1986- Tau Beta Pi
 1988- Sigma Xi Research Society
 1986- American Institute of Chemical Engineers (AIChE)
 1992- American Chemical Society (ACS)
 1997- Biophysical Society
 1995- Protein Society

UNIVERSITY

2020-2021 Provost's Academic Freedom Commission
 2020-2021 Vice Provost for Research COVID Task Force
 2015-2018 Newcomb Foundation Advisory Board of Trustees
 2015 Provost's Task Force on Academic Collaborations
 2012-2018 Tulane Engineering Forum committee
 2012-2018 Tulane Honors Day (UG) recruiting events – speaker and mentor
 2012-2016 Tulane Faculty Senate
 2011 University of Delaware Science and Engineering Scholars selection committee
 2008-2009 College of Health Sciences Dean search committee, University of Delaware
 2004-2008 IGERT Director, University of Delaware
 1999-2007 Met with prospective students at Blue and Gold Days, Delaware Decision Days, Delaware Discovery Days, DuPont Scholars Weekends, made follow-up phone calls to encourage enrollment
 2001-2006 Health Sciences Education Advisory Committee, University of Delaware
 2001-2002 Plant Sciences Faculty Search Committee, University of Delaware
 2001 -2006 Howard Hughes Medical Institutes (HHMI) Undergraduate Research Advisory Board member, University of Delaware
 1999-2001 HHMI Undergraduate Summer Research Reviewer, University of Delaware

COLLEGE

2018-present College Leadership Team
 2019-2020 Materials Science and Engineering, Department Head Search Committee (Chair)
 2012-2018 Executive Committee, School of Science and Engineering
 2012-2014 Graduate Studies Committee
 2009-2011 Director of Bioengineering Graduate Program, University of Delaware
 2010-2011 Member, Biocluster Search Committee, University of Delaware

2010-2011	BMEG Executive Committee, University of Delaware
2010	Chair, Sponsored Projects Search Committee, University of Delaware
2009-2010	Chair, Biocluster Search Committee, University of Delaware
1999-2006	Society of Women Engineers (SWE) Faculty Advisor, University of Delaware
2005, 2006	Materials Science P& T Committee, University of Delaware
2002	College of Engineering Merit Award committee, University of Delaware
1999	Engineering Concepts Workshop – organized material to aid local high school teachers develop biotechnology lectures

DEPARTMENT

2018-present	Department Head, Chemical Engineering
2020-2022	Faculty Search Committee
2014-2018	Mentor, Julie Albert, Nich Sandoval
2014-2015	Graduate committee
2012-2015	Faculty search committee member
2012-2014	Graduate committee, chair
2010-2011	Faculty search committee member
2008-2011	Associate Chair for Biochemical Engineering
2010	Graduate Curriculum Committee
2007-2011	mentor, Millie Sullivan
2010-2011	mentor, David Colby, April Kloxin, Thomas Epps
2010	Graduate Coordinator Search Committee, Administrative Search Committee, Level 6, Level 7
2007	Department Chair search committee member
2001-2002, 2004-2007	Faculty search committee member
2000-2010.1	Undergraduate Advisor
2001-2002	Departmental Seminar Coordinator
2001-2002	Curriculum committee member
2001	Chair, Bioengineering Curricula committee
2002	Administrative Coordinator Search committee
2000	Department Chair search committee member
2000	Administrative Coordinator Search committee
1999-2000	Associate Professor search committee member
1998	Ph.D. Written qualifier exam, co-organized with Raul Lobo