Gregory Alan Weiss
Curriculum Vitae

Professor of Chemistry, Molecular Biology and Biochemistry, and Pharmaceutical Sciences
Vice Chair, Department of Chemistry, University of California, Irvine

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Personal

Born July, 1970 in New York City, NY.
Married to Kim M. Weiss.

Education

- *Postdoctoral Fellow*, Protein Engineering, **Genentech, Inc.**, 1997-2000.
- *Ph.D. and A.M.*, Chemical Biology, **Harvard University**, 1992-1997.
- *B.S.*, Chemistry, **U.C. Berkeley**, 1988-1992.

Research Experience

2009-	*Professor of Chemistry, Molecular Biology and Biochemistry*, *Pharmaceutical Sciences (2019-),* University of California, Irvine (with tenure)
2006-2009	*Associate Professor of Chemistry, Molecular Biology and Biochemistry*, University of California, Irvine (with tenure)
2000-2006	*Assistant Professor of Chemistry*, *Molecular Biology and Biochemistry* University of California, Irvine
1997-2000	*Postdoctoral Fellow* with Dr. James A. Wells, Genentech, Inc.
1992-1997	*Graduate Student* with Professor Stuart L. Schreiber, Harvard University
1990-1992	*Undergraduate Researcher* with Professor Paul A. Bartlett, U.C. Berkeley
1989-1990	*Research Assistant*, Lawrence Livermore National Laboratory

Other Professional Activities

2009-present	Co-Program Leader, Biotechnology, Imaging and Drug Development Program of the Chao Family Comprehensive Cancer Center
2020-present	Vice Chair for Safety, UCI Department of Chemistry
2019-present	Co-Founder and Scientific Advisory Board Chair, Debut Biotechnology
2017-present	Distinguished Visiting Professor, University of Johannesburg, South Africa
2015-present	Co-Founder, Chief Scientific Officer, Member of the Board of Directors, PhageTech, Inc.
2010-present	Associate Editor and Editor, *Current Protocols in Chemical Biology*
2013-present	Member, Advisory Board of the Cancer Research Institute, UC Irvine
2018-2019	Co-Founder, Member of the Board of Directors, Synthase, LLC
2010-2013	Vice Chair, UCI Department of Chemistry
2008-2018	Member or Chair, Scientific Advisory Board, Phylogica Ltd.
2012-2016	Member, NIH NANO study section
2010-2012	Elected Co-Chair, Global Young Academy (elected twice by scientists in >50 countries)
2012	Member, NCI Macromolecular Crystallography site visit and review team
2009-2011	Member, Scientific Advisory Board, Molecular Express, Inc.
2009, 2010	US Representative, Annual Meeting of New Champions, World Economic Forum, Dalian & Tianjin, China (selected by the US National Academy of Sciences)
2008-2009	Co-Chair, Organizing Committee, National Academy of Sciences Indo-US Kavli Frontiers in Science Symposium

2008-2009 Member, NSF Proposal Review Panels
2007 Outstanding Professor from the U.C. Irvine School of Physical Sciences (selected by the graduating seniors in the class of 2008)
2006-2009 UC Biotechnology Research Education Program, Executive Committee member
2001-present Ad Hoc Member, NIH study sections (>20 times including ALY, F04A, F04B, F32, and SBCA study sections)

Awards

2022 Faculty Mentor Award, UCI School of Biological Sciences
2021 Chancellor's Award for Undergraduate Research
2020 Honorary Member of the Young Academy of Spain
2020-2022 Faculty Innovation Fellow at UCI
2019 Industry-University Partnership Award presented by the UCI Institute for Clinical and Translational Sciences
2018 UCI's Entrepreneurial Leader of the Year
2015 Ig Nobel Prize in Chemistry for leading the team that "unboiled an egg"
2013 Short-listed best undergraduate textbook (*Introduction to Bioorganic Chemistry and Chemical Biology* by D.L. Van Vranken and G.A. Weiss) by the Society of Biology
2013 Elected Fellow, American Association for the Advancement of Science (AAAS)
2004 U.C. Irvine, School of Physical Sciences, Innovation Award
2004 U.C. Irvine, School of Physical Sciences, Award for Contributions to Undergraduate Education
2002-2005 Arnold & Mabel Beckman Foundation Young Investigator
2001-2008 Faculty of 1000, Founding Member, Chemical Biology of the Cell Section
1997 Ruth Kirschstein National Research Service Award (post-doctoral fellowship, funding returned to NIH)
1993-1996 NIH Biochemistry Training Grant
1992 High Honors at undergraduate graduation
1992 Phi Beta Kappa
1992 American Institute of Chemists Award
1990-1992 Department of Chemistry Scholarship, U.C. Berkeley
1988-1992 Chancellor's Scholarship, U.C. Berkeley

Memberships

2017- Synthetic and Chemical Biology Club, U.C. Irvine
2006- Cancer Research Institute, U.C. Irvine
2002- Institute for Genomics and Bioinformatics, U.C. Irvine
2000- Chao Family Comprehensive Cancer Center, U.C. Irvine
2000- Center for Viral Research, U.C. Irvine
1993- American Chemical Society
1989- American Association for the Advancement of Science

U.C. Irvine Publications (*Corresponding Author)

Peer-reviewed journal articles unless otherwise noted.

112. King, E., Maxel, S., Zhang, Y., Kenney, K., **Weiss, G.A.,** Luo, R., Li, H.* (2022). Orthogonal glycolytic pathway enables directed evolution of noncanonical cofactor oxidase. Submitted.

111. Sen, S.R., Sanders, E.C., Santos, A.M., Bhuvan, K., Tang, D.Y., Gelston, A.A., Miller, B.M., Ricks-Oddie, J.L., **Weiss, G.A.*** (2022). Evidence for deleterious effects of immunological history in SARS-CoV-2. *PLOS ONE*. In press.

110. Dyer, R.P., Isoda, H.M., Salcedo, G.S., Speciale, G., Fletcher, M.H., Le, L.Q., Liu, Y., Malik, S.Z., Vazquez-Cintron, E.J., Chu, A.C., Rupp, D.C., Jacky, B.P.S., Nguyen, T.T.M., Steward, L.E.,

Majumdar, S., Brideau-Andersen, A.D.*, **Weiss, G.A.*** (2022). Reengineering the specificity of the highly selective *Clostridium botulinum* protease via directed evolution. *Sci. Rep*. **12**: 9956.

109. Spano, M.B., Pamidi, A.S., **Weiss, G.A.*** (2022). An open source, 3D-printed TrapGuard to protect oil-sealed vacuum pumps from cold trap warming. *J. Org. Chem.* In press. Published as a "Note" and featured on the journal cover.

108. Sanders, E.C., Sen, S.R., Gelston, A.A., Santos, A.M., Luo, X., Bhuvan, K., Tang, D.Y., Raston, C.L., **Weiss, G.A.*** (2022). Under 5 minute immunoblot assays by Vortex Fluidic Device acceleration. *Angew. Chem. Int. Ed.*:e202202021.

107. Turvey, M.W., Gabriel, K.N., Lee, W., Taulbee, J.J., Kim, J.K., Chen, S., Lau, C.J., Kattan, R.E., Pham, J.T., Majumdar, S., Garcia, D., **Weiss, G.A.***, **Collins, P.G.*** (2022). Single-Molecule Taq DNA polymerase dynamics. *Science Advances.* **8**: eabl3522.

106. Dyer, R.P., **Weiss, G.A.*** (2022). Making the cut with protease engineering. *Cell Chem. Biol.* **29**:177-190. Review.

105. Bhasin, A., Coi, E.J., Drago, N.P., Garrido, J.E., Sanders, E.C., Shin, J., Andoni, I., Kim, D.-H., Fang, L., **Weiss, G.A.*** Penner, R.M.* (2021) Enhancing the sensitivity of the Virus BioResistor by over-oxidization: Detecting IgG antibodies. *Anal. Chem.* **93**: 11259-11267.

104. Sen, S.R.†, Sanders, E.C.†, Gabriel, K.N.†, Miller, B.M., Isoda, H.M., Salcedo, G.S., Garrido, J.E., Dyer, R.P., Nakajima, R., Jain, A., Caldaruse, A.M., Santos, A.M., Bhuvan, K., Tifrea, D.F., Ricks-Oddie, J.L., Felgner, P.L., Edwards, R.A., Majumdar, S**., Weiss, G.A.*** (2021). Predicting COVID-19 severity with a specific nucleocapsid antibody plus disease risk factor score. *mSphere*. **6**: e00203-e00221. †Co-equal contributors.

103. Lee, S.-H., Moody, I., Zeng, Z., Fleischer, E.B., **Weiss, G.A.**, Kenneth J. Shea* (2021). Synthesis of a high affinity complementary peptide–polymer nanoparticle (NP) pair using phage display. *ACS Appl. Bio. Mater.* **4**: 2704–2712.

102. Luo, X., Al-Antaki, A.H.M., Igder, A., Stubbs, K.A., Su, P., Zhang, W., **Weiss, G.A.**, Raston, C.L. (2020). Vortex fluidic-mediated fabrication of fast gelated silica hydrogels with embedded laccase nanoflowers for real-time biosensing under flow. *ACS Appl. Mater. Interfaces.* **12**: 51999-52007.

101. Bhasin, A., Drago, N.P., Majumdar, S., Sanders, E.C., **Weiss, G.A.*,** Penner, R.M.* (2020). Viruses masquerading as antibodies in biosensors: The development of the Virus BioResistor. *Acc. Chem. Res.* **53**: 2384-2394. Review. Lightly peer-reviewed.

100. Spano, M.B., Tran, B.H., Majumdar, S., **Weiss, G.A.*** (2020) 3D-Printed labware for high-throughput immobilization of enzymes. *J. Org. Chem.* **85**: 8480-8488.

99. Nguyen, D., Behrens, D.M.†, Sen, S.†, Najdahmadi, A., Pham, J.N., Speciale, G., Lawrence, M.M., Majumdar, S., **Weiss, G.A.*,** Botvinick, E.L.* (2020) A photo-stable and proteolysis-resistant FRET-based calcium biosensor. *Anal. Chem.* **92**: 7683–7689. †Co-equal contributors.

98. Richardson, M.B., Gabriel, K.N., Garcia, J.A., Ashby, S.N., Dyer, R.P., Kim, J.K., Lau, C.J., Hong, J., Le Tourneau, R.J., Sen, S., Narel, D.L., Katz, B.B., Ziller, J.W., Majumdar, S., Collins, P.G., **Weiss, G.A.*** (2020). Pyrocinchonimides conjugate to amine groups on proteins via imide transfer. *Bioconjugate Chem.* **31**: 1449-1462.

97. Bhasin, A., Sanders, E.C., Ziegler, J.M., Briggs, J.S., Drago, N.P., Attar, A.M., Santos, A.M., True, M.Y., Ogata, A.F., Yoon, D.V., Majumdar, S., Wheat, A.J., Patterson, S.V., **Weiss, G.A.***, Penner,

R.M.* (2020). Virus BioResistor (VBR) for the detection of the bladder cancer marker DJ-1 in urine at 10 pM in one minute. *Anal. Chem.* **92**: 6654-6666.

96.Totoiu, C.A., Phillips, J.M., Reese, A.T., Majumdar, S., Girguis, P.R., Raston, C.L, **Weiss, G.A.*** (2020). Vortex fluidics-mediated DNA rescue from formalin-fixed museum specimens. *PLOS One*. **15**: e0225807.

95. Attar, A.M., Richardson, M.B., Speciale, G., Majumdar, S., Dyer, R.P., Sanders, E.C., Penner, R.M.*, **Weiss, G.A.*** (2019). Electrochemical quantification of glycated and non-glycated human serum albumin in synthetic urine. *ACS Appl. Mater. Inter.* **11:** 4757–4765.

94. Hoffmann, K., Milech, N., Juraja, S.M., Cunningham, P.T., Stone, S.R., Francis, R.W., Anastasas, M., Hall, C.M., Heinrich, T., Bogdawa, H.M., Winslow, S., Scobie, M.N., Dewhurst, R.E., Florez, L., Ong, F., Kerfoot, M., Champain, D., Adams, A.M., Fletcher, S., Viola, H.M., Hool, L.C., Connor, T., Longville, B.A.C., Tan, Y.-F., Kroeger, K., Morath, V., **Weiss, G.A.**, Skerra, A., Hopkins, R.M., Watt, P.M. (2018). A platform for discovery of functional cell-penetrating peptides for efficient multi-cargo intracellular delivery. *Sci. Rep.* **8**: 12538.

93. Britton, J.*, Majumdar, S., **Weiss, G.A.*** (2018). Continuous flow biocatalysis. *Chem. Soc. Rev.* **47**:5891-5918.

92. Smith, J.N., Edgar, J.M., Iftikhar, M. Fong, J.C., Balk, J.M., Olsen, T.J., Majumdar, S., Fishman, D.A., **Weiss, G.A.*** (2018). Directed evolution and biophysical characterization of a full-length, soluble, human caveolin-1 variant. *BBA - Proteins Proteom.* **1866**: 963-972.

91. Bhasin, A., Ogata, A.F., Briggs, J., Tam, P.Y., Tan, M.X., **Weiss, G.A.*** Penner, R.M. (2018). The Virus BioResistor: Wiring virus particles for the direct, label-free detection of target proteins. *Nano Lett*. **18**: 3623-3629.

90. Richardson, M.B.*, Brown, D.B., Vasquez, C.A., Ziller, J.W., Johnston, K.M., **Weiss, G.A.*** (2018). Synthesis and explosion hazards of 4-azido-L-phenylalanine. *J. Org. Chem.* **83**: 4525-4536. Reported in *Chem.& Eng. News* by Carmen Drahl on April 9, 2018. Commentary by Derek Lowe's "In the Pipeline Blog" on April 27, 2018. 2nd most downloaded paper published in *JOC* for 2018. Altmetric score: 69.

89. **Weiss, G.A.*** (2017). Editorial overview: How to generate molecular diversity, the most important process in biology. *Curr. Opin. Chem. Biol.* **41**: A3-A5. Lightly peer-reviewed.

88. Pugliese, K.P.*, **Weiss, G.A.*** (2017). Recent progress in dissecting molecular recognition by DNA polymerases with non-native substrates. *Curr. Opin. Chem. Biol.* **41**: 43-49.

87. Meneghini, L.M., Tripathi, S., Woodworth, M.A., Majumdar, S., Poulos, T.L., **Weiss, G.A**.* (2017). Dissecting binding of a β-barrel membrane protein by phage display. *Mol. Biosyst.* **13**: 1438-1447.

86. Britton, J., Stubbs, K.A., **Weiss, G.A**.*, Raston, C.L.* (2017). Vortex fluidic chemical transformations. *Chem.-Eur. J.* **23:** 13270-13278.

85. Britton, J., Dyer, R.P., Majumdar, S., Raston, C.L.*, **Weiss, G.A**.* (2017). Ten-minute protein purification and surface tethering for continuous-flow biocatalysis. *Angew. Chem. Int. Ed. Engl.* **56**: 2296-2301.

84. Ogata, A., Edgar, J.M., Majumdar, S., Briggs, J.S., Patterson, S., Tan, M.X., Kudlacek, S.T., Schneider, C.A., **Weiss, G.A.***, Penner, R.M.* (2017). A virus-enabled biosensor for human serum albumin. *Anal. Chem.* **89**: 1373-1381.

83. Britton, J., Smith, J.N., Raston, C.L.*, **Weiss, G.A.*** (2017). Protein folding using a vortex fluidic device. *Methods Mol. Biol.* **1586**:211-220. Not peer-reviewed.

82. Britton, J., Raston, C.L.*, **Weiss, G.A**.* (2016). Rapid protein immobilization for thin film continuous flow biocatalysis. *Chem. Commun.* **52**: 10159-10162.

81. Britton, J., Meneghini, L.M., Raston, C.L.*, **Weiss, G.A.*** (2016). Accelerating enzymatic catalysis using vortex fluidics. *Angew. Chem. Int. Ed. Engl.* **55**: 11387-11391.

80. Gul, O.T., Pugliese, K.M., Choi, Y., Sims, P.C., Pan, D., Rajapakse, A.J., **Weiss, G.A**.*, Collins, P.G.* (2016). Single molecule bioelectronics and their application to amplification-free measurement of DNA lengths. *Biosensors.* **6**: 29. Special Issue on Graphene and Carbon Nanotube Based Biosensors.

79. Britton, J., Castle, J.W., **Weiss, G.A.***, Raston, C.L.* (2016). Harnessing thin film continuous-flow assembly lines. *Chem.-Eur. J.* **22**: 10773-10776.

78. Gilliam, A.J.H., Smith, J.N., Flather, D., Johnston, K.M., Gansmiller, A.M., Fishman, D.A., Edgar, J.M., Balk, M., Majumdar, S., **Weiss, G.A.*** (2016). Affinity-guided design of caveolin-1 ligands for deoligomerization. *J. Med. Chem*. **59:** 4019-4025.

77. Mohan, K., **Weiss, G.A.*** (2016). Chemically modifying viruses for diverse applications. *ACS Chem. Biol.* **11**: 1167-1169. Peer-reviewed review article.

76. Mohan, K., **Weiss, G.A.*** (2015). Engineering chemically modified viruses for prostate cancer cell recognition. *Mol. Biosyst.* **11:** 3264-3272.

75. Pugliese, K.M., Gul, O.T., Choi, Y., Olsen, T.J., Sims, P.C., Collins, P.G.*, **Weiss, G.A.*** (2015). Processive incorporation of deoxynucleoside triphosphate analogs by single-molecule DNA Polymerase I (Klenow Fragment) nanocircuits. *J. Amer. Chem. Soc.* **137**: 9587-9594.

74. Mohan, K., Penner, R.M.*, **Weiss, G.A.*** (2015). Biosensing with virus electrode hybrids. *Curr. Protoc. Chem. Biol.* **7**: 53-72. Lightly peer-reviewed by the editor.

73. Akhterov, M.V., Choi, Y., Olsen, T.J., Sims, P.C., Iftikhar, M., Gul, O.T., Corso, B.L., **Weiss, G.A.***, Collins, P.G.* (2015). Observing lysozyme closing and opening motions by high-resolution single molecule enzymology. *ACS Chem. Biol.* **10**: 1495-501.

72. Yuan, T.Z., Ormonde, C.F.G., Kudlacek, S.T., Kunche, S., Smith, J.N., Brown, W.A., Pugliese, K.M., Olsen, T.J., Iftikhar, M., Raston, C.L.*, **Weiss, G.A.*** (2015). Shear stress-mediated refolding of proteins from aggregates and inclusion bodies. *ChemBioChem.* **16**: 393-396. Widely reported in the popular and science media. Altmetric score: 723.

71. Eldridge, G.M.*, **Weiss, G.A.*** (2015). Identifying reactive peptides from phage-displayed libraries. *Methods Mol. Biol.* **1248**: 189-199. Not peer-reviewed.

70. Alhoshani, A., Vithayathil, R., Bandong, J., Chrunyk, K.M., Moreno, G.O., **Weiss, G.A.**, Cocco, M.J.* (2014). Glutamate provides a key structural contact between reticulon-4 (Nogo-66) and phosphocholine. *BBA – Biomembranes*. **1838:** 2350-2356.

69. Mohan, K., **Weiss, G.A.*** (2014). Dual genetically encoded phage-displayed ligands. *Anal. Biochem.* **453**: 1-3.

68. Sims, P.C., Moody, I.S., Choi, Y., Dong, C., Iftikhar, M., Corso, B.L., Gul, O.T., Collins, P.G.*, **Weiss, G.A.*** (2013). Electronic measurements of single-molecule catalysis by cAMP-dependent protein kinase A. *J. Amer. Chem. Soc.* **135**: 7861-7868.

67. Olsen, J., Choi, Y., Sims, P.C., Gul, O.T., Corso, B.L., Dong, C., Brown, W.A., Collins, P.G.*, **Weiss, G.A.*** (2013). Electronic measurements of single-molecule processing by DNA polymerase I (Klenow Fragment). *J. Amer. Chem. Soc.* **135**: 7855-7860.

66. Mohan, K., Donavan, K.C., Arter, J.A., Penner, R.M.*, **Weiss, G.A.*** (2013). Sub-nanomolar

detection of prostate specific membrane antigen in synthetic urine by synergistic dual, ligand phage. *J. Amer. Chem. Soc.* **135**: 7761-7767.

65. Choi, Y., **Weiss, G.A.***, Collins, P.G.* (2013). Single molecule bioelectronics. *Handbook of Bioelectronics.* Cambridge University Press. Not peer-reviewed, review article.

64. Choi, Y., **Weiss, G.A.***, Collins, P.G.* (2013). Single molecule recordings of lysozyme activity. *Phys. Chem. Chem. Phys.* **15**: 14879-14895. Non-peer-reviewed, review article.

63. Choi, Y., Olsen, T.J., Sims, P.C., Moody, I.S., Corso, B.L., Dang, M.N., **Weiss, G.A.***, Collins, P.G.* (2013). Dissecting single-molecule signal transduction in carbon nanotube circuits with protein engineering. *Nano Lett.* **13**: 625-631.

62. Yuan, T.Z., Overstreet, C.M., Moody, I.S., **Weiss, G.A.*** (2013). Protein engineering with biosynthesized libraries from *Bordetella bronchiseptica* bacteriophage. *PLOS One.* **8**: e55617.

61. Donavan, K.C., Arter, J.A., **Weiss, G.A.***, Penner, R.M.* (2012). Virus-poly(3,4-ethylenedioxythiophene) biocomposite films. *Langmuir* **28**: 12581-12587.

60. Moody, I.S., Choi, Y., Olsen, T.J., Sims, P.C., Collins, P.G.*, **Weiss, G.A.*** (2012). Dissecting lysozyme by single-molecule techniques. Chapter in *Lysozyme: Sources, Functions, and Role in Disease*. Nova Science Publishers. pp. 193-214. Not peer-reviewed, review article.

59. Moody, I.S., Verde, S.C., Overstreet, C.M., Robinson, Jr., W.E.*, **Weiss, G.A.*** (2012). *In vitro* evolution of an HIV integrase binding protein from a library of C-terminal γS-crystallin variants. *Bioorg. Med. Chem. Lett.* **22**: 5584-5589.

58. Arter, J.A., Diaz, J.E., Donavan, K.C., Yuan, T.Z., Penner, R.M.*, **Weiss, G.A.*** (2012). Virus-polymer hybrid nanowires tailored to detect prostate-specific membrane antigen. *Anal. Chem.* **84:** 2776-2783.

57. Choi, Y., Moody, I.S., Sims, P.C., Hunt, S.R., Corso, B.L., Seitz, D., Blaszczak, L.C., Collins, P.G.*, **Weiss, G.A.*** (2012). Single molecule dynamics of lysozyme processing distinguishes linear and cross-linked peptidoglycan substrates. *J. Am. Chem. Soc.* **134**: 2032-2035.

56. Overstreet, C.M., Yuan, T.Z., Levin, A.M., Kong, C., Coroneus, J.G., **Weiss, G.A.*** (2012). Self-made phage libraries with heterologous inserts in the Mtd of *Bordetella bronchiseptica*. *Protein Eng. Des. Sel.* **25:** 145-151.

55. Choi, Y., Moody, I.S., Sims, P.C., Hunt, S.R., Corso, B.L., Perez, I., **Weiss, G.A.***, Collins, P.G.* (2012). Single molecule lysozyme dynamics monitored by an electronic circuit. *Science.* **335**: 319-324. Reviews include: H.P. Lu (2012). *Science* **335**: 300-301. M. Papatriantafyllou (2012). *Nat. Rev. Mol. Cell Biol.* **13**: 138. I. Kaganman (2012). *Nat. Methods* **9**: 226. B. Halford (2012). *Chem. Eng. News* **90**: 28.

54. Vithayathil, R., Hooy, R.M., Cocco, M.J., **Weiss, G.A.*** (2011). The scope of phage display for membrane proteins. *J. Mol. Biol.* **414**: 499-510.

53. Eldridge, G.M., **Weiss, G.A.*** (2011). Hydrazide reactive peptide tags for site-specific protein labeling. *Bioconjugate Chem.* **22**: 2143-2153.

52. Diaz, J.E., Lin, C.-S., Kunishiro, K., Feld, B.K., Avrantinis, S.K., Bronson, J., Greaves, J., Saven, J.G., **Weiss, G.A.*** (2011). Computational design and selections for an engineered, thermostable terpene synthase. *Prot. Science.* **20**: 1597-1606.

51. Majumdar, S., Hajduczki, A., Vithayathil, R., Olsen, T.J., Spitler, R.M., Mendez, A.S., Thompson, T.D., **Weiss, G.A.*** (2011). *In vitro* evolution of ligands to the membrane protein caveolin. *J. Amer. Chem. Soc.* **133**: 9855-9862.

50. Donavan, K., Arter, J.A., Pilolli, R., Cioffi, N., **Weiss, G.A.***, Penner, R.M.* (2011). Virus-PEDOT composite films for impedance-based biosensing. *Anal. Chem.* **83**: 2420-2424.

49. Loo, Y.-H., **Weiss, G.A.**, Alper, H. (2011). Building successful university-business partnerships. *Chem. Eng. Prog.* **107**: 6. Not peer-reviewed, commentary article.

48. Hajduczki, A., Majumdar, S., Fricke, M., Brown, I.A.M., **Weiss, G.A.*** (2011). Solubilization of a membrane protein by combinatorial supercharging. *ACS Chem. Biol.* **6**: 301-307.

47. Arter, J.A., Taggart, D.K., McIntire, T.M., Penner, R.M.*, **Weiss, G.A.*** (2010). Virus-PEDOT nanowires for biosensing. *Nano Lett.* **10**: 4858-4862.

46. Brück, T., Beaudry, C., Hilgenkamp, H. Karoonuthaisiri, N., Salah-Eldin Mohamed, H., **Weiss, G.A.*** (2010). Empowering young scientists. *Science* **328**: 17. Editorial. Also, published letter in response to correspondence in *Science* (2010) **328**: 626-627. Not peer-reviewed, editorial.

45. Lamboy, J.A., Arter, J.A., Knopp, K.A., Der, D., Overstreet, C.M., Palermo, E., Urakami, H., Yu, T.-B., Tezgel, O., Tew, G.N., Guan, Z., Kuroda, K., **Weiss, G.A.*** (2009). Phage wrapping with cationic polymers eliminates non-specific binding between M13 phage and high pI target proteins. *J. Amer. Chem. Soc.* **131**:16454-16460.

44. Lamboy, J.A., Tam, P.Y., Lee, L.S., Jackson, P.J., Avrantinis, S.K., Lee, H.J., Corn, R.M., **Weiss, G.A.*** (2008). Chemical and genetic wrappers for improved phage and RNA display. *ChemBioChem.* **9**: 2846-2852. Featured on the journal cover.

43. Majumdar, S., Hajduczki, A., Mendez, A.S., **Weiss, G.A.*** (2008). Phage display of functional, full-length human and viral membrane proteins. *Bioorg. Med. Chem. Lett.* **8**: 5937-5940.

42. Yang, L.-M., Diaz, J.E., McIntire, T., **Weiss, G.A.***, Penner, R.M.* (2008). Direct electrical transduction of antibody binding to a covalent virus layer using electrochemical impedance. *Anal. Chem.* **80**: 5695-5705. Accelerated article.

41. Goldsmith, B., Coroneus, J.G., Lamboy, J.A., Kane, A.A., Collins, P.G.*, **Weiss, G.A.*** (2008). Mechanism-guided improvements to the single molecule oxidation of carbon nanotube sidewalls. *ChemPhysChem*. **9**: 1053-1056.

40. **Weiss, G.A.***, Penner, R.M.* (2008). The promise of phage display for analytical chemistry: bioaffinity sensing of almost anything and everything. *Anal. Chem.* **80**: 3082-3089.

39. Goldsmith, B.R., Coroneus, J.G., Kane, A.A., **Weiss, G.A.**, Collins, P.G.* (2008). Monitoring single molecule reactivity on a carbon nanotube. *Nano Lett.* **8**: 189-194.

38. Yang, L.-M.C., Diaz, J.E., McIntire, T.M., **Weiss, G.A.***, Penner, R.M.* (2008). Covalent virus layers for mass-based detection. *Anal. Chem.* **80**: 933-943.

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Funding

ACTIVE

Principal Investigator | Dates of Project | Role
E. Botvinick | 06/01/2017 to 05/30/2023 | Co-PI
Source: The Leona M. and Harry B. Helmsley Charitable Trust (2018PG-T1D008) | Total Direct Costs: ≈$210,000 (Weiss)

Title of Project (or Subproject)
Development of a Multi-Analyte Sensor - Glucose, Lactate, Oxygen, Ketones, Insulin for people with T1D
This proposal aims to accelerate the development of in vivo sensors to improve the artificial pancreas through engineering receptors for insulin and other hormones.

ACTIVE

Principal Investigator | Dates of Project | Role
G.A. Weiss | 07/01/16 to 01/05/24 | PI
Source: Allergan Aesthetics an AbbVie Company (108201209000) | Annual Direct Costs: ≈$231,000

Title of Project (or Subproject)
Turnover-Based Selections for Re-Targeting Protease Catalysis
In this proposal, selections for BOTOX protease turnover will be combined with enzyme kinetics to provide iterative rounds of selection and dissection.

ACTIVE

Principal Investigator | Dates of Project | Role
H. Li | 09/01/21 to 08/31/23 | Co-I
Source: ARPA-E (DE-AR0001508) | Weiss Annual Direct Costs: ≈$190,000

Title of Project (or Subproject)
Carbon-Efficient Conversion of Carboxylic Acids to Fuels and Chemicals
This proposal develops a cell-free enzymatic process to the production of negative carbon compounds.

ACTIVE

Principal Investigator | Dates of Project | Role
Van Etten, R. | 09/11/1997 - 01/31/21 | Co-I
Source: NIH/NCI (2 P30 CA 062203-20) | Annual Direct Costs: $16,442

Title of Project (or Subproject)
Cancer Center Support Grant

The Cancer Center Support Grant provides support for administration and infrastructure for the Chao Family Comprehensive Cancer Center. Dr. Weiss is the Program Leader of the Biotechnology, Imaging, and Drug Discovery Program.

PREVIOUS

Principal Investigator | Dates of Project | Role
G.A. Weiss | 11/1/2020 – 10/30/2021 | PI
Source: California Breast Cancer Research Program | Annual Direct Costs: $100,628
Title of Project (or Subproject)
A Virus BioResistor to Detect Anti-SARS-CoV-2 Antibodies for COVID-19 Disease Status Monitoring
This project expands on the Weiss-Penner labs prior studies aimed at understanding immune responses to SARS-CoV-2 and developing better diagnostic devices for COVID-19.

PREVIOUS

Principal Investigator | Dates of Project | Role
G.A. Weiss | 07/01/2016 to 12/31/2021 | Co-PI
Source: NIH, NHGRI (1R01HG009188-01) | Annual Direct Costs: $389,000
Title of Project (or Subproject)
DNA Sequencing Using Single Molecule Electronics
This project focuses on development of a new, all-electronic DNA sequencing method, based on single DNA polymerase molecules bound to nanoscale electronic transistors.

PREVIOUS

Principal Investigator | Dates of Project | Role
G.A. Weiss | 06/1/2020 – 05/31/2021 | PI
Source: UCI COVID-19 Research Accelerator Funding Track (CRAFT) | Annual Direct Costs: $25,000
Title of Project (or Subproject)
Virus BioResistor to Detect Anti-SARS-CoV-2 Antibodies for COVID-19 Disease Status Monitoring
Using a combination of antibody epitope mapping and Virus BioResistors, this project examined antibody fingerprints associated with COVID-19 immune responses.

PREVIOUS

Principal Investigator | Dates of Project | Role
G.A. Weiss | 06/1/2020-05/31/2021 | PI
Source: Allergan Foundation | Annual Direct Costs: $25,000
Title of Project (or Subproject)
Virus BioResistor to Detect Anti-SARS-CoV-2 Antibodies for COVID-19 Disease Status Monitoring
Using a combination of antibody epitope mapping and Virus BioResistors, this project examined antibody fingerprints associated with COVID-19 immune responses.

PREVIOUS

Principal Investigator | Dates of Project | Role
G.A. Weiss | 07/01/2016 to 6/30/2021 | PI
Source: NIH, NCI (1R33CA206955-01) | Annual Direct Costs: $249,000
Title of Project (or Subproject)
Monitoring Recurrent Bladder Cancer with Electro-Phage Biosensors
In this proposal scored 19 by the ZCA1 TCRB-9 study section, the development of phage-based biosensors for quantitating tumor-specific biomarkers will allow detection of recurrent bladder cancer.

PREVIOUS

Principal Investigator | Dates of Project | Role
R.M. Penner | 07/01/2018 to 6/30/2021 | Co-I
Source: NSF (CBET 1803314) | Annual Direct Costs (Weiss): ≈$33,003
Title of Project (or Subproject)
The Impedance-Transduced BioResistor (ITBR): A Biosensor Architecture for the Rapid, Sensitive, and Label-Free Quantitation of Proteins

This project aims to develop a new type of biosensor capable of exceptionally fast and quantitative sensing.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	10/01/18 to 09/30/19	PI
Source: Synthase, LLC (SI-210601)	Total Direct Costs: ≈$16,000	

Title of Project (or Subproject)
Continuous Flow Biosynthesis
This research contract explores the development of enzymes for continuous flow applications.

PREVIOUS

Principal Investigator	Dates of Project	Role
E. Botvinick	07/01/2016 to 06/30/2020	Co-I
Source: JDRF (Juvenile Diabetes Research Foundation) (2-SRA-2017-330-Q-R)	Annual Direct Costs: $286,000 (Weiss)	

Title of Project (or Subproject)
Modification of the Human Insulin Receptor for In-Vivo Monitoring
This project aims to develop an insulin monitor for integration with an artificial pancreas to measure insulin levels continuously for weeks.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	09/01/13 to 07/31/17	Co-PI
Source: NIH, NIGMS (1R01GM106957-01)	Total Direct Costs: $760,000	

Title of Project (or Subproject)
DNA Polymerase with Single-Molecule Resolution: Activity, Inhibition, and Drug Resistance
This project examines DNA polymerase, its variants and orthologs at the single-molecule level using a carbon nanocircuit to monitor the enzyme during catalysis and inhibition.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	08/01/12 to 04/30/17	PI
Source: NIH, NIGMS (1R01 GM100700-01)	Total Direct Costs: $760,000 (No cost extensions)	

Title of Project (or Subproject)
Membrane Protein Co-Crystallization with Highly Crystalline and Soluble Proteins
In this research project, new types of protein libraries will be sifted to identify high affinity binders or unnatural ligands to membrane proteins.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss (PI: R. Martin)	08/01/11 to 07/31/16	Co-I
Source: NIH, NEI (1R01EY021514-01)	Total Direct Costs: $25,000 (Weiss)	

Title of Project (or Subproject)
Solid-state NMR Methods for Investigating Native and Aggregated Eye Lens Proteins
This grant funds studies aimed at understanding the basis for protein aggregation in genetic cataract disease.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	07/01/15 to 03/31/18	PI
Source: PhageTech (PHAGE-203015)	Total Direct Costs: $124,119 (Weiss)	

Title of Project (or Subproject)
Sensors for the Detection of Genitourinary Cancers and Albuminuria
This contract funds foundational science necessary to develop phage-based biosensors before clinical trials.

PREVIOUS

Principal Investigator: P.G. Collins
Dates of Project: 07/01/15 to 03/31/17
Role: Co-I
Source: NSF (1531833)
Total Direct Costs: $294,903 (Collins)
Title of Project (or Subproject)
Development of a Microscope with Simultaneous Electrical and Optical Measurement of Single Molecules
The goal of this MRI instrument development project is to design, assemble, and test a new type of microscope for single-molecule biophysics of protein function. No funding accrues to the Weiss lab.

PREVIOUS

Principal Investigator: R.W. Martin
Dates of Project: 02/01/16 to 01/31/17
Role: Co-I
Source: NIH / SIG
Total Direct Costs: $160,611.62
Title of Project (or Subproject)
Purchase of a Multi-Angle Light Scattering System with Integrated Size Exclusion Chromatography
The system will be used to measure the absolute molecular weight and oligomeric state of proteins independent of retention time, as well as the second virial coefficient, which is a direct measure of aggregation propensity.

PREVIOUS

Principal Investigator: P.G. Collins
Dates of Project: 11/01/14 to 12/31/16
Role: Co-I
Source: Illumina, Inc. (IL-201607)
Total Direct Costs: $86,000
Title of Project (or Subproject)
DNA Base Discrimination with Nanocircuits
The major goal of this collaborative project with Illumina Inc. is to explore polymerase-based nanocircuits and their suitability for distinguishing different DNA base pairs.

PREVIOUS

Principal Investigator: G.A. Weiss (PI: G. Fuji)
Dates of Project: 07/01/11 to 03/31/12
Role: Co-I
Source: NIH, NCI (HHSN261201100068C)
Total Direct Costs: $47,323
Title of Project (or Subproject)
Viratrodes: Biosensors for the Detection of Circulating Tumor Cells and Cancer Biomarkers
In this project, biosensors for detecting and quantifying circulating tumor cells in prostate and other cancers will be developed.

PREVIOUS

Principal Investigator: G.A. Weiss
Dates of Project: 01/01/15 to 12/31/15
Role: PI
Source: Chao Family Comprehensive Cancer Center, UC Irvine
Total Direct Costs: $25,000
Title of Project (or Subproject)
Moving Bioelectronic Sensors of Urinary Cancer Biomarkers from the Bench to the Clinic
This project prepares biomarker-based sensors for prostate and kidney cancer for clinical trials.

PREVIOUS

Principal Investigator: G.A. Weiss
Dates of Project: 09/01/13 to 08/31/14*
Role: PI
Source: Life Technologies
Annual Direct Costs: $181,207
Title of Project (or Subproject)
DNA Polymerase-Conjugated Nanocircuits for Human Identification by STR Sequence

This project focused on the development of a carbon nanotube-based DNA sequencing system.

PREVIOUS

Co-Principal Investigator	Dates of Project	Role
G.A. Weiss	01/01/10 to 07/01/14	Co-PI
Source: UC Multi-Campus Research Program	Total Direct Costs: $282,357	

Title of Project (or Subproject)
California Center for Antiviral Drug Discovery
In the Weiss laboratory, this award funds discovery of new anti-HIV compounds targeting HIV Vif.

PREVIOUS

Co-Principal Investigator	Dates of Project	Role
G.A. Weiss	03/01/08 to 02/28/14	Co-PI
Source: NSF-National Science Foundation/CHE-0755547	Total Direct Costs: $23,000	

Title of Project (or Subproject)
Chem-SURF (Summer Undergraduate Research Fellowship)
This award supports a Research Experience for Undergraduates site designed to bring undergraduates from non-research universities to experience cutting edge chemical research to UC Irvine. The funding exclusively supports undergraduate education.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	09/01/08 to 08/01/13	PI
Source: NIH (1R01 CA133592-01)	Total Direct Costs: $871,500	

Title of Project (or Subproject)
Single Molecule Enzymology with Carbon Nanocircuits
This project leverages advances in single molecule nanocircuits to investigate the kinetics and mechanisms of individual molecules, comparing wild-type and mutants.

PREVIOUS

Co-Investigator	Dates of Project	Role
G.A. Weiss	04/01/11 to 03/31/12	Co-I
Source: AAAS	Total Direct Costs: $23,000	

Title of Project (or Subproject)
Training in Nanobiotechnology for Detection of Environmental Viruses
This project initiates a long-term collaboration between investigators from Morocco and the US to develop new methods for identifying and diagnosing pathogenic viruses found in environmental samples.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	08/01/06 to 07/31/11	PI
Source: NIH (1R01 GM078528-01)	Total Direct Costs: $891,000	

Title of Project (or Subproject)
Engineering Soluble Aggregation-Prone and Membrane-Bound Proteins
This proposal describes new approaches to expedite the structural genomics of challenging proteins.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	09/01/06 to 02/28/09	PI
Source: California HIV/AIDS Research Program (IDEA award, ID06-I-181)	Total Direct Costs: $100,000	

Title of Project (or Subproject)
Dissection of HIV Nef by Combinatorial Mutagenesis

This project proposes to expand the anti-HIV arsenal through the development of inhibitors targeting HIV Nef.

PREVIOUS

Co-Investigator	Dates of Project	Role
G.A. Weiss (PI: Fuji)	08/01/08 to 07/31/09	Co-I
Source: NIH (1 R43 AI074163)	Total Direct Costs: ≈$100,000	

Title of Project (or Subproject)
Development of Virus Electrodes for Fungal Pathogen Detection
This proposal describes new sensors for *Aspergillus* infection based upon covalent virus surfaces with phage-displayed binders to infection markers.

PREVIOUS

Co-Investigator	Dates of Project	Role
G.A. Weiss (PI: G. Fuji)	12/01/06 to 08/30/08	Co-I
Source: NIH (1R43CA11955-01)	Total Direct Costs: $105,021 (Weiss)	

Title of Project (or Subproject)
Selection and Characterization of PSMA Ligands from Phage-Displayed Libraries
This proposal applies phage-displayed combinatorial libraries to target a prostate cancer-specific marker with anti-cancer therapies and diagnostic imaging agents.

PREVIOUS

Co-Investigator	Dates of Project	Role
G.A. Weiss (PI: P. Collins)	05/01/04 to 08/31/08	Co-I
Source: NSF (EF-0404057)	Total Direct Costs: $300,000 (Weiss)	

Title of Project (or Subproject)
Direct Electronic Sensing of Biomolecular Activity and Signaling
This proposal describes electronic architectures for molecular sensing based on carbon nanotube nanoelectronic devices.

PREVIOUS

Co-Investigator	Dates of Project	Role
G.A. Weiss (PI: P. Felgner)	06/15/04 to 12/14/06	Co-I
Source: NIH (1R43AI058365-01)	Total Direct Costs: $215,000 (Weiss)	

Title of Project (or Subproject)
Vaccinia Proteome Reagents from Phage Display
This proposal describes plans to identify receptors with high affinity and specificity for every protein in the vaccinia proteome.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	12/01/05 to 11/30/06	PI
Source: Pacific Southwest Regional Center of Excellence for Biodefense (NIAID, NIH)	Total Direct Costs: $25,000	

Title of Project (or Subproject)
Molecular Evolution of Viruses for Biodefense Sensors
This pilot project aims to develop ultra-sensitive devices for the detection of biodefense agents including botulinum toxin.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	06/01/04 to 05/30/06	PI
Source: ACS Petroleum Research Fund Type G	Total Direct Costs: $35,000	

Title of Project (or Subproject)
Library Approaches to Exploring Terpene Cyclase Enzyme Mechanisms

The overarching aim of this proposal is to decipher how terpene cyclase enzymes accomplish complex organic synthesis.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	09/01/02 to 08/31/05	PI
Source: Arnold and Mabel Beckman Foundation Young Investigator Award (BF-30212)	Total Direct Costs: $240,000	

Title of Project (or Subproject)
Molecular Recognition by Libraries of HIV Nef and Streptavidin
This proposal funds research to dissect molecular recognition between canonically strong and weak receptor-ligand interactions, streptavidin-biotin and Nef-CD4, respectively.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	08/03/04 to 08/02/05	PI
Source: UCI School of Physical Sciences Innovation Fund	Total Direct Costs: $20,000	

Title of Project (or Subproject)
Targeting Ovarian and Prostate Cancer Markers with Phage-Displayed Libraries
This proposal funds identification of ligands to cancer-specific markers.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	05/01/03 to 05/02/04	PI
Source: Camille & Henry Dreyfus Foundation Special Grant Program In the Chemical Sciences	Total Direct Costs: $27,500	

Title of Project (or Subproject)
Equipment for Undergraduate Chemical Biology Laboratory
This proposal funds acquisition of equipment for an upper division, undergraduate laboratory for students to learn cutting edge experimental techniques in chemical biology.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	07/01/00 to 06/02/04	PI
Source: UCI School of Physical Sciences	Total Direct Costs: $550,000	

Title of Project (or Subproject)
Start-up Funding
Start-up funds were used to construct phage display libraries, hire students and post-docs and purchase equipment.

PREVIOUS

Principal Investigator	Dates of Project	Role
G.A. Weiss	07/01/01 to 06/30/02	PI
Source: U.C. Cancer Research Coordinating Committee	Total Direct Costs: $50,000	

Title of Project (or Subproject)
Ovarian Cancer Binding by Phage-Displayed Peptides
This project investigated using phage-displayed peptides to recognize and potentially diagnose ovarian cancer.

Invited Seminars

229. COSMOS program, UCI Chao Family Comprehensive Cancer Center, Orange, CA – July 21, 2022

228. Achievement Institute for STEM Scholars, Chapman University, Orange, CA – July 14, 2022
227. California State University, San Marcos, CA – March 8, 2022
226. Seattle Study Group, Dana Point, CA – January 26, 2022
225. Society for Industrial Microbiology and Biotechnology annual meeting, Austin, TX – August 11, 2021
224. WHO Working Group on COVID-19 Diagnostics, Virtual – November 4, 2020
223. Women in Science "Science in COVID Era," Virtual – October 24, 2020
222. PEGS Boston, Virtual – September 1, 2020
221. Festival of Biologics, San Diego, CA – March 2-4, 2020
220. UCI, Dept. of Chemical and Biomolecular Engineering, Irvine, CA – January 31, 2020
219. CHI PepTalk, San Diego, CA – January 21, 2020
218. ABRCMS Conference, Anaheim, CA – November 2, 2019
217. Novozymes R&D Technology Conference, Copenhagen, Denmark – September 20, 2019
216. National Science and Technology Development Agency, Bangkok, Thailand – July 11, 2019
215. International Conference on Graphene and Nanomaterials, Bangkok, Thailand – July 9, 2019
214. Bioelectronics Gordon Research Conference, Proctor Academy, NH – June 16, 2019
213. Claremont Colleges, Pomona, CA – April 24, 2019
212. Rice University, Dept. of Chemistry, Houston, TX – April 17, 2019
211. PEGS Boston, Keynote presentation, Boston, MA – April 8, 2019
210. Susan Komen Foundation Metastatic Breast Cancer Conference, Irvine, CA – March 30, 2019
209. University of Texas, Austin, Division of Molecular Pharmaceutics and Drug Delivery, Austin, TX – March 26, 2019
208. California State University, Los Angeles – March 4, 2019
207. Rice University, Dept. of BioEngineering, Houston, TX – January 8, 2019
206. National Academies New Voices Symposium, Irvine, CA – September 12, 2018
205. SleepScore Labs, Carlsbad, CA – August 10, 2018
204. Advanced Genomic Technologies, Boston, MA – May 30, 2018
203. PEPTALK Conference, San Diego, CA – January 9-10, 2018
202. California State University, Fullerton, CA – November 2, 2017
201. Telethon Kids Institute, Perth, Australia – October 12, 2017
200. Flinders University, Adelaide, Australia – October 6, 2017
199. ComBio Conference, Adelaide, Australia – October 4, 2017
198. University of Johannesburg, Soweto campus, South Africa – August 9, 2017
197. University of the Witwatersrand, Johannesburg, South Africa – August 7, 2017
196. North-West University, Potchefstroom, South Africa – August 3, 2017
195. University of Pretoria, Pretoria, South Africa – August 2, 2017
194. University of Johannesburg, APK campus, South Africa – August 1, 2017
193. Merck & Co., Kenilworth, New Jersey – June 20, 2017
192. Concordia University, ACS Awards Dinner – April 26, 2017
191. California State University, Los Angeles – April 14, 2017
190. University of California, Davis, CA – January 10, 2017
189. Caltech, Entrepreneur's Forum, Pasadena, CA – November 12, 2016
188. University of Southern California, Los Angeles, CA – November 10, 2016
187. San Diego State University, San Diego, CA – October 14, 2016
186. International Conference on Organic Chemistry, Las Vegas, NV – August 11, 2016
185. Vertex Pharmaceuticals, La Jolla, CA – July 21, 2016
184. Retrophin, Cambridge, MA – June 10, 2016
183. TEDx talk – Costa Mesa, CA – May 14, 2016
182. University of Chicago, Chicago, IL – May 10, 2016
181. California State University, Long Beach, Keynote address at Southern California Undergraduate Research Conference – Long Beach, CA, April 23, 2016
180. National Achievement Rewards for College Scientists Foundation, Irvine, CA – February 3, 2016
179. Osher Lifelong Learning Institute, Irvine, CA – January 15, 2016
178. Georgia Tech, Atlanta, GA – November 18, 2015

177. Protein Engineering Summit Europe, Phage Display track, Lisbon, Portugal – November 4, 2015
176. Protein Engineering Summit Europe, Protein Expression track, Lisbon, Portugal – November 2, 2015
175. California State University, Long Beach – Long Beach, CA, October 27, 2015
174. National Institutes of Health (NIH), Bethesda, MD – October 21, 2015
173. UC Irvine, Department of Biological Chemistry, Irvine, CA – October 14, 2015
172. TEDx talk, Irvine, CA – October 3, 2015
171. Bioorganic Chemistry Gordon Research Conference, Andover, NH – June 11, 2015
170. Global Young Academy, Annual General Meeting Montebello, Quebec, Canada – May 26, 2015
169. Keynote Presentation at Undergraduate Research Opportunities Symposium, UC Irvine, Irvine, CA – May 16, 2015
168. UCSF, Jim Wells 65th Birthday symposium, San Francisco, CA – April 25, 2015
167. UC Irvine, Distinguished Seminar in Epidemiology, Irvine, CA – April 10, 2015
166. UC Irvine, Associated Students of UCI Faculty Seminar – March 31, 2015
165. Year of the Phage Symposium, San Diego, CA – January 9-10, 2015
164. Irvine Pharmaceutical Services, Irvine, CA – September 19, 2014
163. Banyan Biomarkers, San Diego, CA – September 18, 2014
162. PhageTech, Irvine, CA – September 17, 2014
161. Wayne St. University, Frontiers in Chemistry Seminar, Detroit, MI – September 15, 2014
160. American Chemical Society national meeting, San Francisco, CA – August 14, 2014
159. Physics at the Nanoscale 2014 (two presentations), Devět Skal, Czech Republic – June 9-10, 2014
158. UC Irvine CEO Roundtable Executive Retreat, Napa Valley, CA – May 2, 2014
157. Isis Pharmaceuticals, Carlsbad, CA – April 2, 2014
156. University of Washington, Seattle, WA – February 26, 2014
155. Stanford University, Stanford, CA – February 10, 2014
154. Oklahoma State University, Distinguished Seminar in Biochemistry, Norman, OK – November 4, 2013
153. Central European Institute of Technology (CEITEC) – Brno, Czech Republic, October 4, 2013
152. California State University, San Marcos – San Marcos, CA, September 19, 2013
151. Chao Family Comprehensive Cancer Center, Prostate Cancer DOT, Irvine, CA – September 18, 2013
150. Cancer Research Institute, University of California, Irvine – June 26, 2013
149. San Gorgonio section of American Chemical Society meeting – Chino, CA, May 8, 2013
148. Ferring Research Institute – San Diego, CA, April 19, 2013
147. Claremont Colleges – Claremont, CA, April 16, 2013
146. Nanomedicine Symposium at Florida International University – Miami, FL, February 18, 2013
145. California State University, Los Angeles – Los Angeles, CA, January 15, 2013
144. Arizona State University – Tempe, AZ, November 30, 2012
143. Concordia University – Irvine, California, November 12, 2012
142. University of Twente – Twente, Netherlands, November 2, 2012
141. Scripps Research Institute – La Jolla, CA, October 18, 2012
140. California State University, San Bernadino – San Bernadino, CA, October 11, 2012
139. California State University, Long Beach – Long Beach, CA, October 4, 2012
138. University of Sydney – Sydney, Australia, September 2, 2012
137. University of Queensland – Brisbane, Australia, August 31, 2012
136. University of Melbourne – Melbourne, Australia, August 29, 2012
135. University of Western Australia – Perth, Australia, August 24, 2012
134. Phylogica – Perth, Australia, August 23, 2012
133. University of Pretoria – Pretoria, South Africa, May 24, 2012
132. Global Young Academy General Assembly meeting – Johannesburg, South Africa, May 21, 2012
131. UC Irvine Cancer Research Symposium – Irvine, CA, May 5, 2012
130. Keynote Presentation at the Phage Display at the Protein Engineering Summit – Boston, MA, May

1, 2012
129. Mainz University – Mainz, Germany, April 3, 2012
128. Leibniz-Institut für Molekular Pharmakologie im Forshungsverbund – Berlin, Germany, March 29, 2012
127. Lepoldina Nationale Akademie der Wissenschaften – Halle, Germany, March 26, 2012
126. California Lutheran University – Thousand Oaks, CA, March 19, 2012
125. Structure and Engineering of Difficult Proteins – San Francisco, CA, February 19-20, 2012
124. AAAS Annual Meeting – Vancouver, Canada, February 18, 2012
123. California State University, Los Angeles – Los Angeles, CA, December 2, 2011
122. Chao Family Comprehensive Cancer Center – Palm Springs, CA, November 12, 2011
121. University of California, Riverside – Riverside, CA, November 7, 2011
120. San Diego State University – San Diego, CA, October 31, 2011
119. IAP: Global Network of Science Academies – Mexico City, Mexico, October 18, 2011
118. Los Alamos National Laboratory – Los Alamos, New Mexico, August 18, 2011
117. Scripps Research Institute – La Jolla, CA, April 18, 2011
116. Bowdoin College – Brunswick, Maine, April 8, 2011
115. GlaxoSmithKline – Waltham, MA, April 6, 2011
114. Western Washington University – Bellingham, Washington, January 14, 2011
113. University of Texas, Southwestern Medical Center – Dallas, Texas, November 16, 2010
112. Orange Coast College – Costa Mesa, CA, October 27, 2010
111. California State University, San Bernardino – San Bernardino, CA, October 21, 2010
110. Whittier College – Whittier, CA, October 8, 2010
109. California State University, Fullerton – Fullerton, CA, September 2, 2010
108. U.C. Irvine, Minority Scientists Program – Irvine, CA, August 20, 2010
107. U.C. Irvine, CEO Roundtable Executive Retreat – Sausalito, CA, May 1, 2010
106. Entrepreneur's Forum – Irvine, CA, April 23, 2010
105. Cypress College – Cypress, CA, April 22, 2010
104. V Nicaraguan Biotech Conference (via Skype) – Managua, Nicaragua, April 22, 2010
103. Iowa State University – Ames, Iowa, April 8, 2010
102. Dow Corning – Midland, MI, March 23, 2010
101. InterAcademy Panel General Assembly – London, UK, January 15, 2010
100. Wake Forest University Comprehensive Cancer Center – Winston-Salem, North Carolina, December 3, 2009
99. University of Arizona – Tucson, AZ, October 30, 2009
98. Leibniz-Institut für Molekular Pharmakologie im Forshungsverbund – Berlin, Germany, October 12, 2009.
97. Cambridge Healthtech Institute Phage Display Conference – Hannover, Germany, October 6, 2009
96. New York University – New York City, NY, September 25, 2009
95. Albert Einstein College of Medicine – New York City, NY, May 19, 2009
94. Physical Optics Corporation – Torrance, CA, May 8, 2009
93. U.C. Irvine Strategic Partners for the Evaluation of Cancer Signatures Symposium – Laguna Beach, CA, January 16, 2009
92. U.C. Irvine LifeChips International Symposium – Irvine, CA, January 9-10, 2009
91. The Telethon Institute for Children's Research – Perth, Australia, November 26, 2008
90. Phylogica – Perth, Australia, November 24, 2008
89. Genentech – South San Francisco, CA, September 23, 2008
88. CODA Genomics – Laguna Hills, CA, August 7, 2008
87. IBC Beyond Antibodies Conference – La Jolla, CA, July 28, 2008
86. Dow-Corning – Midland, MI, July 17, 2008
85. Lawrence Berkeley National Laboratory – Berkeley, CA, July 15, 2008
84. U.C. Irvine LifeChips Workshop on Cancer, Stem Cells, and Micro/nanotechnology – Irvine, CA, May 30, 2008
83. U.C. Irvine Campuswide Symposium on Basic Cancer Research – Irvine, CA, May 3, 2008
82. Cambridge Healthtech Institute Phage Display Conference – Cambridge, MA, April 28, 2008

81. U.C. Irvine, Department of Pathology – Irvine, CA, March 21, 2008
80. Lund University – Lund, Sweden, March 16, 2008
79. Saddleback College – Mission Viejo, CA, March 7, 2008: Distinguished Guest Lecture
78. Materials Research Society Symposium MM: Biomolecular and Biologically Inspired Interfaces and Assemblies – Boston, MA, November 26-30, 2007
77. U.C. San Diego – La Jolla, CA, November 5, 2007
76. Georgia State University – Atlanta, GA, September 21, 2007
75. Lawrence Livermore National Laboratory – Livermore, CA, March 5, 2007
74. California State University, Fullerton – Fullerton, CA, February 28, 2007
73. NANOWorld, Loyola Marymount University – Los Angeles, CA, January 24, 2007
72. AvidBiotics – San Francisco, CA, December 19, 2006
71. UCLA – Los Angeles, CA, December 6, 2006
70. University of California, Riverside – Riverside, CA, November 8, 2006
69. NSF Workshop in Physical Organic Chemistry – San Gabriel, CA, October 27-31, 2006
68. Université de Montréal – Montréal, Canada, October 13, 2006
67. San Diego State University – San Diego, CA, October 6, 2006
66. University of Maryland – Rockville, Maryland, June 5, 2006
65. Cambridge Healthtech Institute Phage Display Conference – Cambridge, MA, April 24-26, 2006
64. Harvey Mudd College – Claremont, CA, March 22, 2006
63. Palm Springs Symposium on HIV/AIDS – Palm Springs, CA, March 2-4, 2006
62. The Scripps Research Institute – La Jolla, CA, December 12, 2005
61. University of Minnesota – Minneapolis, Minnesota, December 8, 2005
60. Harvard University – Cambridge, MA, November 7, 2005
59. University of Massachusetts Medical Center – Worcester, MA, November 4, 2005
58. U.C. Irvine, Department of Chemistry – Irvine, CA, October 26, 2005
57. Santa Clara University – Santa Clara, CA, October 7, 2005
56. Michigan State University – East Lansing, MI, September 7, 2005
55. Purdue University – Lafayette, IN, September 6, 2005
54. Arnold & Mabel Beckman Foundation Young Investigator Symposium – Irvine, CA, August 27, 2005
53. U.S. Food and Drug Administration – Irvine, CA, June 22, 2005
52. Gordon Research Conference (Bioorganic Chemistry) – Proctor, NH, June 16, 2005
51. Tufts University – Medford, MA, May 19, 2005
50. Cornell University – Ithaca, NY, May 18, 2005
49. Stanford University – Stanford, CA, March 30, 2005
48. American Chemical Society National Meeting – San Diego, CA, March 13, 2005
47. University of Illinois at Urbana-Champaign – Urbana-Champaign, IL, March 3, 2005
46. University of Wisconsin, Madison – Madison, WI, March 1, 2005
45. University of Illinois at Chicago – Chicago, IL, February 28, 2005
44. Caltech – Pasadena, CA, February 2, 2005
43. University of Pittsburgh – Pittsburgh, PA, January 7, 2005
42. Memorial Sloan Kettering Institute – New York City, NY, December 14, 2004
41. Columbia University – New York City, NY, December 10, 2004
40. Target-Based Compound Libraries Conference – San Diego, CA, December 6-8, 2004
39. Celera Genomics – South San Francisco, CA, December 2, 2004
38. U.C. San Francisco – San Francisco, CA, November 17, 2004
37. Genentech, Inc. – South San Franscisco, CA, November 16, 2004
36. U.C. Irvine, Department of Physiology and Biophysics – Irvine, CA, September 13, 2004
35. University of Delaware – Newark, DE, September 8, 2004
34. Johns Hopkins University – Baltimore, MD, September 7, 2004
33. Gordon Research Conference (Combinatorial Chemistry) – Oxford, UK, August 22-26, 2004
32. U.C. Santa Cruz – Santa Cruz, CA, May 10, 2004
31. U.C. Irvine, Department of Cell and Developmental Biology – Irvine, CA, April 15, 2004
30. American Chemical Society National Meeting – Anaheim, CA, March 28, 2004
29. Pennsylvania State University – State College, PA, December 16, 2003

28. University of Pennsylvania – Philadelphia, PA, December 15, 2003
27. University of California, Irvine, Department of Chemistry – Irvine, CA, November 19, 2003
26. Iowa State University – Ames, IA, November 4, 2003
25. Pioneer Hi-Bred / DuPont – Ames, IA, November 3, 2003
24. University of California, Irvine, Department of Microbiology – Irvine, CA, October 16, 2003
23. California State University, Fullerton – Fullerton, CA, October 10, 2003
22. American Chemical Society National Meeting – New York City, NY, September 8, 2003
21. University of California at San Diego – San Diego, CA, June 9, 2003
20. University of Rochester – Rochester, NY, June 2, 2003
19. Dyax Corp. – Cambridge, MA, May 14, 2003
18. Lawrence Livermore National Laboratory – Livermore, CA, February 4, 2003
17. Xenon Genetics – Vancouver, Canada, January 20, 2003
16. Understanding Phage Display 2003 – Vancouver, Canada, January 17-20, 2003
15. University of California, Irvine, Institute of Genomics and Bioinformatics – Irvine, CA, September 24, 2002
14. University of California, Irvine, Department of Molecular Biology and Biochemistry – Irvine, CA, June 21, 2002
13. Phage Display: The Chemistry Set for Proteins – Cambridge, MA, April 22-23, 2002
12. University of Maryland, Baltimore County – Baltimore, MD, March 5, 2002
11. Viruses: the environment and cancer – Monterey, Mexico, November 8-10, 2001
10. Synthesis and Structure of Biological Macromolecules Symposium – Irvine, CA, September 22, 2001
9. IBM, Industry Solutions Laboratory – White Plains, NY, September 11, 2001
8. Children's Hospital Los Angeles, University of Southern California – Los Angeles, CA, August 6, 2001
7. Hitachi Chemical Research – Irvine, CA, July 20, 2001
6. Nanogen – La Jolla, CA, May 11, 2001
5. California State University Long Beach – Long Beach, CA, April 25, 2001
4. Phage Display Technologies Conference – Cambridge, MA, April 9, 2001
3. University of California, Irvine – Irvine, CA, November 7, 2000
2. Chao Family Comprehensive Cancer Center Retreat – Oxnard, CA, October, 2000
1. University of California, Irvine – Irvine, CA, October 11, 2000

Teaching Experience

Chemistry 51A,B,C, & LC: *Introduction to Organic Chemistry* (2001, 2005-present) – The sophomore organic chemistry series emphasizes mechanistic organic chemistry as a tool both to manipulate and understand our surroundings.

Chemistry 128: *Introduction to Chemical Biology* (2003-2018) – Using the tools of arrow pushing and mechanistic organic chemistry, this upper division course surveys the chemical basis for life, ranging from the Central Paradigm of Molecular Biology to viruses. The course introduces students to cutting-edge concepts in chemical biology, and concludes with an assignment to devise an original research proposal.

Chemistry 128L: *Chemical Biology Laboratory* (2002-2003) – Devised when no examples of chemical biology lab courses were offered, this course was designed to introduce upper-division undergraduates to key laboratory skills in chemical biology. The experiments, adapted for undergraduate pedagogy, emphasize discovery, and draw from a wide variety of techniques in chemical biology – including combinatorial synthesis, phage display, and toxicity assays.

Chemistry 219: *Graduate Chemical Biology* (2002-2003, 2016, 2018) – This course, which was initiated and developed by GAW, surveys current topics at the forefront of chemical biology, including mechanistic enzymology, post-translational modification reactions, protein engineering and chemical genetics. The course concludes with an assignment to write a research proposal.

Chemistry 220: *Graduate Bioorganic Chemistry* (2000-2003) – This course examines the mechanism of action for a broad range of cytotoxic agents.

Significant Departmental Service

Vice Chair for Safety (2020-present)
Chair and Member, Mass Spec Facility Oversight Committee (2016-present)
Chair, Chemical Biology Faculty Search Committee (2018-2020)
Member, Committee for Faculty Hiring and Composition (2016-2018)
Chair, Chemical Biology Faculty Search Committee (2017-2018)
Member, Department Program Review Subcommittee – Evaluation of Graduate Program (2016-2017)
Mass Spec Director Search Committee, Chair (2016-2017)
Mass Spec Proteomics Staff Search Committee, Chair (2016-2017)
Chair, Chemistry Education in the 21st Century Committee (2013-2014)
Member, Graduate Admissions and Recruiting Committee (2000-2013)
Vice Chair, Graduate Affairs (2010-2013)
Chair, Graduate Admissions and Recruiting Committee (2010-2013)
Member, Graduate Student Awards Committee (2010-2013)
Chair, Chemical Biology faculty search committee (2008-2009)
Chair, Undergraduate and TA Awards Committee (2006-2013)
Chair, Sophomore Organic Chemistry Steering Committee (2008-2010)
Member, Space Planning Committee (2008-2013)
Member, Advanced Laboratory Issues Committee (2007-2013)
Chair, Organic Chemistry Seminars Committee (2001-2002, 2004-2005)
Member, Parallel Synthesis Facility Oversight Committee (2004-2005)
Member, EKC Lee Fellowship and Distinguished Lectureship Committee (2002-2003)

Significant University Service

Co-Program Leader, Biotechnology, Imaging, and Drug Discovery Program (formerly, Chemical and Structural Biology Program) of the Chao Family Comprehensive Cancer Center (2009-present)
Member, Cancer Research Institute Advisory Board (2013-present)
Faculty Representative, Beall Applied Innovation Board of Directors (2019-present)
Member, Advisory Committee of the Minority Science Programs (2018-present)
Member, Campus-wide Honors Program Board (2017-2020)
Chemistry Representative to Physical Sciences Steering Committee (2017-2019)
Representative to the UCI Faculty Senate Representative Assembly (2017-2019)
Chair, School of Physical Sciences Executive Committee (2018-2019)
Member, UC Irvine, CFCCC Director Designate Search Committee (2011-2012)
Member, UC Irvine, Center for Immunology Advisory Board (2013-2018)
Member, Executive Committee of the University of California Biotechnology Research Education Program (2006-2009)
Member, Council on Undergraduate Admissions and Relations with Schools (2008-2011)
Faculty Advisor, UC Irvine Chemistry House (2000-2006)
Member, Workgroup on UC Irvine Graduate Student Residential Life (2005)
Member, UC Irvine DNA and Protein Sequencing Oversight Committee (2003-2005)

Significant Service to the Scientific Community

Grant reviewer to the NIH (2001, 2003-present) – Standing member of NANO study section, and ad hoc member of >20 study section meetings including ALY, F04A, F04B, F32, S10, SBCA, and NANO.

Co-Chair, 2009 Indian-American Frontiers of Science Symposium Organizing Committee, sponsored by the US National Academy of Sciences and the Kavli Foundation.

Member, Science Foundation of Ireland – Biochemistry study section (2007-2008)

Reviewer of grant proposals submitted to the NSF, the ACS Petroleum Research Foundation, the

Science Foundation of Ireland, the Research Corporation, the US Civilian Research and Development Foundation, the Swiss NSF, and the Marsden Foundation.

Reviewer of papers submitted for publication (2000-present) – Includes peer review for *Analytical Chemistry; Archives in Biochemistry and Biophysics; Angewandte Chemie; Biochemica Biophysica Acta; Biochemistry; Biotechniques; Biotechnology and Bioengineering; BMC Biotechnology; ChemBioChem; Chemical Reviews; Chemistry & Biology; FEBS Letters; Journal of the American Chemical Society; Journal of Organic Chemistry; Journal of Virology; Organic & Biomolecular Chemistry; Nature; Nature Biotechnology; Nucleic Acids Research; Proceedings of the National Academy of Sciences, USA; Protein Engineering, Design and Selection; Protein Science; Proteins; Vaccine.*

Chair and Organizer of conferences and sessions at conferences – American Chemical Society National Meeting – New York City, NY, September 8, 2003; Gordon Research Conference in Bioorganic Chemistry – Proctor, NH, June 18, 2003; Cambridge Healthtech Institute Molecular Display Conference – Cambridge, MA, 2003-08; National Academy of Sciences Indo-US Kavli Frontiers in Science Symposium – Irvine, CA, January 18-20, 2007 and Agra, India, March 1-4, 2009 (Co-Chair, Organizing Committee).

Associate Editor and Editor, Current Protocols in Chemical Biology (2010-present)

Consulting

Debut Biotechnology (2019-present, Co-Founder, SAB Chair, Board Secretary; equity)
Janux (2017-present; paid; equity)
PhageTech, Inc. (2014-present; Co-Founder, Board Member, Chief Scientific Officer; equity)
Allergan (2011-2017; paid)
Synthase (2017-2018; Co-Founder, Board Member; equity)
Phylogica, Ltd. (2007-2018; Chair or Member, Scientific Advisory Board; paid)
Group IV (2012; pro bono unpaid)
Molecular Express (2004-2011; Member, Scientific Advisory Board; pro bono unpaid)
Coda Genomics (2006-2010; pro bono unpaid)
Dow-Corning (2008-2010; paid)
Physical Optics Corporation (2009-2010; paid)
Pacific Marine Mammal Center (2008; pro bono unpaid)
Immport Therapeutics (2003-2006; pro bono unpaid)

Significant Community Service

IUSD Ask-A-Scientist-Night Participant (2001-2022)
UCI COSMOS Guest Lecturer (2001)
UCI AGEP and UC LEADS Speaker (2003)
UCI Academy for Lifelong Learning lecturer (2004)
McFadden Intermediate School Career Day speaker (2005)
Media contact (various)
Panelist, Intelligent Design Forum (May 10, 2006)
Speaker, Irvine Unified School District Career Day (2011, 2012, 2014-2018)