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DOB: 1/29/1966, New Haven, CT

Education

1984 - 1988	Harvard College (Cambridge, MA), A.B. with honors, Classics
Summer 1987	Aegean Institute (Galatas, Greece) with honors in Greek and classical drama
2000 - 2006	Ph.D. Biochemistry, Vanderbilt University. Mentor: Walter Chazin Dissertation Title: Probing functional diversity of EF-hand calcium-binding proteins through mutant design and structural analysis
2006 - 2008	Postdoctoral Training: Vanderbilt University. Mentor: Jens Meiler

Academic Appointments

1990 - 1995	Research Asst. in Jim Forman's lab, Immunology at UTSW Med. Ctr., Dallas, TX
1995 - 1996	Research Asst. in the Embryonic Stem Cell Core Lab at VUMC
1996 - 1997	Research Asst. in Mark Magnuson's lab, Molecular Physiol. and Biophys., VUMC
1997 - 2000	Manager of Dave Piston's Cell Imaging Core Lab at VUMC
2009 - 2011	Research Instructor, Dept. of Biochemistry and V.U. Center for Structural Biology
2011 - 2016	Research Assistant Professor, Dept. of Biochemistry and Ctr. for Structural Biology
2016 - present	Research Associate Professor, Dept. of Biochemistry and Ctr. for Structural Biology
2016 - present	Program Director in Personalized Structural Biology / Precision Medicine

Employment (other than academic appointments)

1989 - 1990	Peace Corps Volunteer, building potable water systems in Cañar, Ecuador

Teaching

June 2007	Vanderbilt University Center for Structural Biology Workshop: *Molecular Visualization Tools and Analysis* (with Eric Dawson)
Aug. 2007	Short Course at Vanderbilt Institute of Chemical Biology (with Jens Meiler and Eric Dawson) *Methods and Advances in Computational Biology: How to Build a Homology Model of My Protein*
Fall 2007- 08	Assisted Jens Meiler with sessions for high-school students in the *Vanderbilt School for Math and Science*
Fall 2007-2010	Taught *IGP Flextime sessions* on Molecular Visualization with Eric Dawson
Spring 2007-17	Assisted Terry Lybrand and guest lectured in *Chemistry 233/333/5410: Methods in Molecular Modeling*
Fall 2007-18	Taught the lab sessions and guest lectured for Jens Meiler in Chemistry 238/337/5420: *Computational Structural Biology*
May 2008	Vanderbilt University Center for Structural Biology Workshop: *Molecular*

	Visualization and Modeling: Proteins and DNA
Fall 2008-9	Molecular visualization demonstrations for Vanderbilt's *Undergraduate Open House*
Spring 2010-19	Developed computational lectures for Biochemistry 300: *Introduction to Structural Biology* (Walter Chazin, course director)
2011-18	Taught bi-annual international *Rosetta Workshops* with members of the Meiler lab
July 2013	Presented workshop on *Molecular Dynamics using AMBER* at Leipzig University with Terry Lybrand
Dec. 2014	Taught practical sessions of *Computational Structural Biology with Rosetta* at Leipzig University with members of the Meiler lab
May 2015	Taught *Workshop on Protein-Protein Docking with Rosetta* to Tina Iverson's lab
Feb. 2016	Taught *Molecular Visualization and Analysis* section in Fundamentals of Microbiology & Immunology (Borden Lacy, course director)
Fall 2016-18	Taught *Protein Modeling and Simulation* section in BMIF 6310 Foundations of Bioinformatics (Carlos Lopez, course director)
Apr. 2017	Taught Rosetta Workshop at *Vanderbilt Symposium on Modeling Immunity* with members of the Meiler lab

Grant Support

R01-DK51610 (Strange, K. - salary support only)	2009 – 2009	20% effort
Regulation of an Osmosensitive ClC Anion Channel by STE20 Kinase Signaling		
R01 DK055748 (Matusik, R. - salary support only)	2009 - 2014	10% effort
Control of Prostate-Specific Gene Expression		
R01 GM073845 (Egli, M. - salary support only)	2009 - 2011	20% effort
Structural Biology of the S. Elongatus Circadian Clock		
R01 GM055237 (Egli, M. - salary support only)	2009 - 2013	20% effort
Structure and Function of Nucleic Acid Therapeutics		
2009 Translational Grant [V Foundation for Cancer Research] (Pao, W)	2011 - 2011	20% effort
Identification of Novel Small Molecule Inhibitors Selective Against a Major Drug Resistance Mutation in Lung Cancer		
R01 DK082884 (Denton, J. - salary support only)	2010 - 2015	17% effort
Molecular Pharmacology and Physiology of Kidney Potassium Transport		
R01 HL71544 (Bock, P. - salary support only)	2012 - 2016	20% effort
Mechanisms of Staphylocoagulase-Activated Blood Clotting		
SPORE in Breast Cancer (Arteaga, C via core charges)	2016 - 2016	20% effort
Vanderbilt-lngram Cancer Center (VICC) Breast Cancer SPORE Grant		
V2015-018 [V Foundation for Cancer Research] (Lovly, C. - salary support)	2016	3% effort
EGFR Tandem Duplication Mutations (TDMs) as a novel oncogenic driver and therapeutic target in lung and brain cancer		
AACR-Genentech BioOncology Career Dev. (Lovly, C. - salary support only)	2016 - 2018	10% effort
Novel and therapeutically actionable EGFR rearrangements in lung cancer		
R01 CA224899 (Arteaga, C. - salary support only)	2018 - 2023	30% effort
Role of HER2 mutations in breast cancer progression and response to targeted therapies		

Publications

Bunick CG, Nelson MR, Mangahas S, Hunter MJ, Sheehan JH, Mizoue LS, Bunick GJ, Chazin WJ. **Designing sequence to control protein function in an EF-hand protein**. *J Am Chem Soc.* 126(19): 5990-8, 2004.

Hu H, Sheehan JH, Chazin WJ. **The mode of action of centrin: Binding of Ca^{2+} and a peptide fragment of Kar1p to the C-terminal domain**. *J Biol Chem.* 279(49): 50895-903, 2004.

Sheehan JH, Bunick CG, Hu H, Fagan PA, Meyn SM, Chazin WJ. **Structure of the N-terminal calcium sensor domain of centrin reveals the biochemical basis for domain-specific function**. *J Biol Chem.* 281(5): 2876-81, 2006.

Fallen K, Banerjee S, Sheehan J, Addison D, Lewis LM, Meiler J, Denton JS. **The Kir channel immunoglobulin domain is essential for Kir1.1 (ROMK) thermodynamic stability, trafficking and gating.** *Channels* 3(1): 57-68, 2009.

Kaufmann KW, Lemmon GH, Deluca SL, Sheehan JH, Meiler J. **Practically useful: what the Rosetta protein modelling suite can do for you**. *Biochemistry* 49(14): 2987-2998, 2010.

Dave S, Sheehan JH, Meiler J, Strange K. **Unique gating properties of C. elegans ClC anion channel splice variants are determined by altered CBS domain conformation and the R-helix linker**. *Channels.* 4(4): 289-301, 2010.

Lo WY, Lagrange AH, Hernandez CC, Harrison R, Dell A, Haslam SM, Sheehan JH, Macdonald RL. **Glycosylation of beta2 subunits regulates GABAA receptor biogenesis and channel gating**. *J Biol Chem.* 285(41): 31348-61, 2010.

Olmsted IR, Xiao Y, Cho M, Csordas AT, Sheehan JH, Meiler J, Soh HT, Bornhop DJ. **Measurement of aptamer-protein interactions with back-scattering interferometry.** *Anal Chem.* 83(23): 8867-70, 2011.

Yang R, Shi J, Byeon IL, Ahn J, Sheehan JH, Meiler J, Gronenborn AM, Aiken C. **Second-site suppressors of HIV-1 capsid mutations: restoration of intracellular activities without correction of intrinsic capsid stability defects.** *Retrovirology. 9*(30), 2012.

Egli M, Pattanayek R, Sheehan JH, Xu Y, Mori T, Smith JA, Johnson CH. **Loop-Loop Interactions Regulate KaiA-Stimulated KaiC Phosphorylation in the Cyanobacterial KaiABC Circadian Clock**. *Biochemistry*. 52(7):1208-20, 2013.

Combs SA, Deluca SL, Deluca SH, Lemmon GH, Nannemann DP, Nguyen ED, Willis JR, Sheehan JH, Meiler J. **Small-molecule ligand docking into comparative models with Rosetta.** *Nature Protocols.* 8(7):1277-98, 2013.

Akram ON, DeGraff DJ, Sheehan JH, Tilley WD, Matusik RJ, Ahn JM, Raj GV. **Tailoring Peptidomimetics for Targeting Protein-protein Interactions**. *Molecular Cancer Research*. 12(7):967-78, 2014.

Grabowska MM, Elliott AD, DeGraff DJ, Anderson PD, Anumanthan G, Yamashita H, Sun Q, Friedman DB, Hachey DL, Yu X, Sheehan JH, Ahn JM, Raj GV, Piston DW, Gronostajski RM, Matusik RJ. **NFI transcription factors interact with FOXA1 to regulate prostate-specific gene expression.** *Mol Endocrinol.* 28(6):949-64, 2014.

Donahue JP, Levinson RT, Sheehan JH, Sutton L, Taylor HE, Meiler J, D'Aquila RT, Song C. **Genetic Analysis of the Localization of APOBEC3F to Human Immunodeficiency Virus Type 1 (HIV-1) Virion Cores.** *J Virol.* 89(4):2415-24, 2015.

Swale DR, Sheehan JH, Banerjee S, Husni AS, Nguyen TT, Meiler J, Denton JS. **Computational and functional analyses of a small-molecule binding site in ROMK**. *Biophys J.* 108(5):1094-1103, 2015.

Gallant JN, Sheehan JH, Shaver TM, Bailey M, Lipson D, Chandramohan R, Red Brewer M, York SJ, Kris MG, Pietenpol JA, Ladanyi M, Miller VA, Ali SM, Meiler J, Lovly CM. **EGFR kinase domain duplication (EGFR-KDD) is a novel oncogenic driver in lung cancer that is clinically responsive to afatinib.** *Cancer Discov.* 5(11):1155-63, 2015.

Crofford LJ, Nyhoff LE, Sheehan JH, Kendall PL. **The role of Bruton's tyrosine kinase in autoimmunity and implications for therapy.** *Expert Rev Clin Immunol.* 12(7):763-73, 2016.

Konduri K, Gallant JN, Chae YK, Giles FJ, Gitlitz BJ, Gowen K, Ichihara E, Owonikoko TK, Peddareddigari V, Ramalingam SS, Reddy SK, Eaby-Sandy B, Vavalà T, Whiteley A, Chen H, Yan Y, Sheehan JH, Meiler J, Morosini D, Ross JS, Stephens PJ, Miller VA, Ali SM, and Lovly CM. **EGFR fusions as novel therapeutic targets in lung cancer**. *Cancer Disc.* 6(6):601-11, 2016.

Swale D, Kurata H, Kharade S, Sheehan J, Raphemot R, Voigtritter K, Figueroa E, Meiler J, Flobaum A, Lindsley C, Hopkins C, Denton J. **ML418: The first selective, sub-micromolar pore blocker of Kir7.1 potassium channels.** *ACS Chem. Neurosci.* 7(7):1013–1023, 2016.

Bender BJ, Cisneros A 3rd, Duran AM, Finn JA, Fu D, Lokits AD, Mueller BK, Sangha AK, Sauer MF, Sevy AM, Sliwoski G, Sheehan JH, DiMaio F, Meiler J, Moretti R. **Protocols for Molecular Modeling with Rosetta3 and RosettaScripts**. *Biochemistry* 55(34):4748-63, 2016.

Hanker AB, Brewer MR, Sheehan JH, Koch JP, Sliwoski GR, Nagy R, Lanman R, Berger MF, Hyman DM, Solit DB, He J, Miller V, Cutler RE Jr, Lalani AS, Cross D, Lovly CM, Meiler J, Arteaga CL. **An Acquired HER2(T798I) Gatekeeper Mutation Induces Resistance to Neratinib in a Patient with HER2 Mutant-Driven Breast Cancer.** *Cancer Disc.* 7(6):575-585, 2017.

Kharade SV, Sheehan JH, Figueroa EE, Meiler J, Denton JS. **Pore Polarity and Charge Determine Differential Block of Kir1.1 and Kir7.1 Potassium Channels by Small-Molecule Inhibitor VU590.** *Mol Pharmacol.* 92(3):338-346, 2017.

Croessmann S, Sheehan JH, Lee KM, Sliwoski G, He J, Nagy R, Riddle D, Mayer IA, Balko JM, Lanman R, Miller VA, Cantley LC, Meiler J, Arteaga CL **PIK3CA C2 Domain Deletions Hyperactivate Phosphoinositide 3-kinase (PI3K), Generate Oncogene Dependence, and Are Exquisitely Sensitive to PI3Kα Inhibitors.** *Clin Cancer Res.* 24(6):1426-1435, 2018.

Sivley RM, Sheehan JH, Kropski JA, Cogan J, Blackwell TS, Phillips JA, Bush WS, Meiler J, Capra JA. **Three-dimensional spatial analysis of missense variants in RTEL1 identifies pathogenic variants in patients with Familial Interstitial Pneumonia.** *BMC Bioinformatics.* 19(1):18, 2018.

Carnes SK, Sheehan JH, Aiken C. **Inhibitors of the HIV-1 capsid, a target of opportunity.** *Curr Opin HIV AIDS.* 13(4):359-365, 2018.

Newman JH, Shaver A, Sheehan JH, Mallal S, Stone JH, Pillai S, Bastarache L, Riebau D, Allard-Chamard H, Stone WM, Perugino C, Pilkinton M, Smith SA, McDonnell WJ, Capra JA, Meiler J, Cogan J, Xing

K, Mahajan VS, Mattoo H, Hamid R, Phillips JA 3rd, Undiagnosed Disease Network. **IgG4- related disease: Association with a rare gene variant expressed in cytotoxic T cells.** *Molecular Genetics & Genomic Medicine.* Early View doi: 10.1002/mgg3.686 2019.

Posters and presentations

1/05/2002	Presented poster at Keystone symposium, Frontiers in Structural Biology, Breckenridge, CO: *Structure and calcium-binding properties of caltractin*.
10/25/2004	Spoke at Tennessee Structural Biology Symposium, at St. Jude Children's Research Hospital, Memphis : *Understanding the molecular basis of calcium-driven conformational changes.*
8/04/2009	Poster at RosettaCon, Leavenworth, WA: *Comparative Modeling Applications of Rosetta at the Vanderbilt Center for Structural Biology.* (Dawson ES, Sheehan JH)
7/17/2010	Poster at Tennessee Structural Biology Symposium at St. Jude Children's Research Hospital, Memphis : *Molecular Dynamics Simulations of Homo-DNA.* (Sheehan JH, Smith JA, Egli M)
9/07/2011	Invited speaker at University of Colorado, Denver: *Applying Modeling and Simulation to Transcription Factors, Ion Channels, and Nucleic Acids.*
6/04/2012	Invited to chair a panel discussion at CBSB12 at UT Knoxville: *From Computational Biophysics to Systems Biology.*
9/23/2016	2nd place poster at VUMC Personalized Medicine Day 2016: *The Program in Personalized Structural Biology at Vanderbilt University.* (Sheehan JH, Sivley RM, Sliwoski G, Kroncke BM, Mendenhall JL, Li B, Sanders CR, Capra JT, Meiler J)
5/24/2017	1st place poster at Vanderbilt Ingram Cancer Center Scientific Retreat 2017: *The Program in Personalized Structural Biology at Vanderbilt University.* (Sheehan JH, Sivley RM, Sliwoski G, Kroncke BM, Mendenhall JL, Li B, Sanders CR, Capra JT, Meiler J)