BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors.

NAME OF INVESTIGATOR	POSITION TITLE
Adam Frost	Assistant Professor, Department of Biochemistry University of Utah School of Medicine Huntsman Cancer Institute
eRA COMMONS USER NAME (credential, e.g., agency login) FROSTAD	

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Brigham Young University, Provo UT	BS	2000	Biochemistry
Yale University, New Haven CT	PhD	2008	Cell and Structural Biology
Yale University, New Haven CT	MD	2009	General Medical Studies
University of California San Francisco, SF CA	Post-doc	2011	Genetics and Cell Biology

A. Personal Statement

When I matriculated into Yale's MD/PhD program my goals were unclear beyond knowing that I was interested in both science and medicine. Eight years later my enthusiasm for basic science trumped and I decided to focus on fundamental discovery over clinical practice. During my PhD training in structural biology I witnessed amazing accomplishments in DNA sequencing, genetic engineering, and light microscopy. I was motivated by the idea that we are moving toward a time when structural and functional knowledge of multi-component complexes will be rate-limiting challenges in our efforts to understand biology and pathology. For my post-doctoral work I undertook a genome-scale, unbiased strategy for finding and functionally annotating multi-component complexes. By assembling genetic interaction maps comparing pathways in two model organisms, *S. pombe* and *S. cerevisiae*, I discovered a dozen conserved protein complexes that function in a diversity of processes from cell cycle control to lysosome homeostasis and translational quality control. As an independent investigator I have assembled a team that is capable of combining structural methods, cell biology and genetics to advance our understanding of these higher-order complexes and their roles in health and disease.

B. Positions

2000-2009 MSTP MD/PhD Program, Yale University School of Medicine, CT
Mentor: Vinzenz Unger, PhD. Co-mentor: Pietro De Camilli, MD

2009-2011 Post-Doctoral Scholar, University of California, San Francisco, CA
Mentor: Jonathan Weissman, PhD

2011-present Assistant Professor, Department of Biochemistry and Huntsman Cancer Institute, University of Utah School of Medicine, Salt Lake City, UT

C. Honors and Awards

- NIH Director's New Innovator Award Program Grantee (2013)
- Searle Scholar (2013)
- Howard Hughes Medical Institute Fellow of the *Life Sciences Research Foundation* (2009)
- Yale University School of Medicine Dissertation Award and Farr Scholarship Lecture (2009)
- Sara and Frank McKnight Fellowship, UT Southwestern Medical Center, Declined (2008)
- Epilepsy Foundation Pre-Doctoral PhD Research Training Fellowship (2006)
- Invited Student Delegate to the 45th Annual International Academy of Achievement (2006)
- The Milton C. Winternitz Prize in Pathology, Yale University School of Medicine (2004)
- NIH NIGMS, Medical Scientist Training Program Grant GM-07205 (2000)
- *Cum laude* in Honors Chemistry and Biochemistry, Brigham Young University (2000)
- Barry M. Goldwater Scholar, National Scholarship for Math, Science and Engineering (1999)
- Most Outstanding Undergraduate Inorganic Chemistry Student Award (1995)
- Mangum-Lewis Academic Scholarship (Full Tuition, Books, Stipend) (1995)

C. Publications

1. Jackson M.E., **Frost A.**, Moghaddam B. (2001) Stimulation of prefrontal cortex at physiologically relevant frequencies inhibits dopamine release in the nucleus accumbens. ***Journal of Neurochemistry***. 78:4 pp 920-3.
   PMID: 11520912

2. ***Cole, C.D., ***Frost, A.**, Thompson, N., Cotten, M., Cross, T.A., & Busath, D.D. (2002) Noncontact Dipole Effects on Channel Permeation. VI. 5F- and 6F-Trp Gramicidin Channel Currents. ***Biophysical Journal*** 83:4 pp 1974-1986. ***these authors contributed equally to this work.
   PMID: 12324416; PMCID: PMC1302287

3. Lax, I., Wong, A., Lamothe, B., Lee, A., **Frost, A.**, Hawes, J., & Schlessinger, J. (2002) The Docking Protein FRS2 Controls a MAP Kinase-Mediated Negative Feedback Mechanism for Signaling by FGF Receptors. ***Molecular Cell*** 10 pp 709-719.
   PMID: 12419216
   http://f1000.com/prime/1010369 *F100 Prime Factor 2*

4. Roux, A., Uyhazi, K., **Frost, A.**, and De Camilli, P. (2006) GTP-dependent twisting of dynamin implicates constriction and tension in membrane fission. ***Nature*** 441, 528-531.
   PMID: 16648839
   http://f1000.com/prime/1007616 *F100 Prime Factor 10*

5. **Frost, A.**, De Camilli, P., and Unger, V. M. (2007). F-BAR Proteins Join the BAR Family Fold. ***Structure*** *15*, 751-753.
   PMID: 17637334

6. **Frost, A.,** Perera, R., Roux, A., Spasov, K., Egelman, E., De Camilli, P., and Unger, V. M. (2008) Structural Basis of Membrane Invagination by F-BAR Domains. ***Cell*** 132, 807-817.
   PMID: 18329367; PMCID: PMC2384079
   http://www.sciencedirect.com/science/article/pii/S0092867408002730 Research Highlight, Cell
   http://www.nature.com/nature/journal/v456/n7224/full/456842b.html Research Highlight, Nature
   http://f1000.com/prime/1103374 *F1000 Prime Factor 6*

7. **Frost, A.,** Unger, V. M. and De Camilli, P. (2009). Boomerangs, Bananas and Blimps: Structure and Function of F-BAR Domains in the Context of the BAR Domain Superfamily. ***The Pombe Cdc15 Homology Proteins.*** *Landes Biosciences.* Ed. Pontus Aspenström. ISBN: 978-1-58706-313-8
   Bookshelf ID: NBK7021
   http://www.landesbioscience.com/curie/chapter/3985/

8. **Frost, A.,** Unger, V.M., and De Camilli, P. (2009) the BAR Domain Superfamily: Membrane-Molding Macromolecules. ***Cell*** 137, 191-196.
   PMID: 19379681

9. Guerrier, S., Coutinho-Budd, J., Sassa, T., Chen, K., Wei-Lin, J., **Frost, A**., and Polleux, P. (2009) The F-BAR domain of srGAP2 induces membrane protrusions required for neuronal migration and morphogenesis. ***Cell*** 138, 990-1004. (Cover)
   PMID: 19737524; PMCID: PMC2797480
   http://www.sciencedirect.com/science/article/pii/S1534580709003505 Research Highlight, Cell
   http://f1000.com/prime/1163867 *F1000 Prime Factor 4*

10. **Frost, A.** (2011) Membrane Trafficking: decoding vesicle identity through contrasting chemistries. ***Current Biology*** Oct 11;21(19):R811-3.
    PMID: 21996503

11. Mim, C. Cui, H., Gawronski-Salerno, J.A., **Frost, A.,** Lyman, E., Voth, G.A., and Unger, V.M. Structural Basis of Membrane Bending by the N-BAR Protein Endophilin. ***Cell*** (2012) *149*, 137-145
PMID: 22464326; PMCID: PMC3319357

12. Busath D.D., Woodbury D.J., and **Frost, A**. Endosis and Exosis: New Names for Fusion and Budding. ***J Membrane Biology*** (2012) DOI 10.1007/s00232-012-9439-1
PMID: 22653449

13. **Frost A.***, Elgort M.G., Brandman O., Ives C., Collins S.R., Miller-Vedam L., Weibezahn J., Hein M.Y., Poser I., Mann M., Hyman A.A., Weissman J.S. Functional repurposing revealed by comparing *S. pombe* and *S. cerevisiae* genetic interactions. ***Cell*** (2012) Jun 8;149(6):1339-52. (Cover)
***Corresponding author**
PMID: 22682253; PMCID: PMC3613983
http://www.nature.com/nrg/journal/v13/n7/full/nrg3276.html Research Highlight, Nature Reviews Genetics

14. Brandman, O., Stewart-Ornstein, J., Wong, D., Larson, A., Williams, C.C., Li, G.W., Zhou, S., King, D., Shen, P.S., Weibezahn, J., Dunn, J.G., Rouskin, S., Inada, T., **Frost, A.***, Weissman, J.S.***** A Ribosome-Bound Quality Control Complex Triggers Degradation of Nascent Peptides and Signals Translation Stress. ***Cell*** (2012) Nov 21; 11(5):1042–1054
***Co-corresponding authors**
PMID: 23178123; PMCID: PMC3534965
http://www.nature.com/nrm/journal/v14/n1/full/nrm3499.html?WT.ec_id=NRM-201301
Research Highlight, Nature Reviews Molecular and Cellular Biology
http://f1000.com/prime/717968380 *F1000 Prime Factor 3*

15. Koirala, S., Guo, Q., Kalia, R., Bui, H.T., Eckert, D.M., **Frost, A.***, Shaw, J.M.* Interchangeable Adaptors Regulate Mitochondrial Dynamin Assembly for Membrane Scission. ***PNAS*** (2013) Mar 25; 110(15):E13442-E1351
***Co-corresponding authors**
PMID: 23530241; PMCID: PMC3625255

D. Professional Activities

Ad hoc reviewer:
eLIFE, Science, PNAS, Developmental Cell, EMBOJ, Journal of Molecular Biology, Journal of Cell Biology, Current Biology, Nature Cell Biology, Current Opinion in Structural Biology, ACS Biochemistry, Biophysical Journal, Cell Reports

Review Editor:
Frontiers in Membrane Traffic

E. University Community Activities

Health Sciences Level

2012 - Present	Faculty Member, Core Research Facilities, Cell Imaging/Fluorescence Microscopy Facility, Oversight Committee
2012 - Present	Faculty Member, Research Microscopy Facility, Center for Advanced Microscopy Oversight Committee
2012 - Present	Faculty Chair, Core Research Facilities, Electron Microscopy Core Facility Oversight Committee

Programs, Centers & Institutes

2011 - 2013	Member, Biological Chemistry Graduate Program, Admissions committee
2013 - 2014	Chair, Biological Chemistry Graduate Program, Admissions committee

F. Invited Presentations:

Conference Presentations

International

2007 61st Annual Meeting of the Symposium of the Society of General Physiologists. Membrane Biophysics of Fusion, Fission, and Rafts in Health and Disease. Marine Biological Laboratory. Woods Hole, MA, USA

2007 1st International Conference on PCH/F-BAR Proteins: Adaptor Proteins for Macromolecualr Complexes. Schloβ Waldthausen, Mainz, Germany

2008 4th International Conference on Structural Analysis of Supramolecular Assemblies by Hybrid Methods. Lake Tahoe, CA, USA

2011 Sixth International Fission Yeast Meeting. Harvard University, Boston, MA, USA

2013 Synaptic Vesicle Biogenesis, Janelia Farm Research Campus, Virginia, USA

National

2012 3rd Annual Delaware Membrane Protein Symposium, Newark, DE

2013 Structural Biology Related to HIV/AIDS, NIH, Bethesda, MD

Invited/Visiting Professor Presentations

International

2013 1st Annual Workshop on Cryo-Techniques for Electron Microscopy. Department of Nanochemistry, Instituto Italiano Di Tecnologia, Genova, Italy

2013 Department of Biochemistry Seminar Series, University of Geneva, Geneva, Switzerland

National

2011 Department of Cell Biology Informal Seminar, Yale University, New Haven, CT

2012 Department of Cell Biology & Molecular Biology Seminar Series, University of Maryland, College Park, MD

2013 Weill Institute for Cell and Molecular Biology, Cornell University, Ithaca, NY