BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Ren, Gang (Gary)	Staff Scientist (Principal Investigator) Lawrence Berkeley National Laboratory, Berkeley, CA, USA
eRA COMMONS USER NAME (credential, e.g., agency login) gangren	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Lanzhou University, Gansu Prov., China	B.S.	06/90	Theoretical Physics
Lanzhou University, Gansu Prov., China	M.S.	06/93	Theoretical Physics
University of Science and Technology Beijing, China	Ph.D.	06/97	Material Physics (Electron Microscopy)
The Scripps Research Institute, La Jolla, CA	Postdoc.	07/97-01/04	Cell Biology (Cryo-Electron Microscopy)

A. Positions and Honors

Positions and Employment

1997-2004 Postdoctoral Fellows (American Heart Association Postdoctoral Fellowship and University of California AIDS Research Postdoctoral Fellow)
Department of Cell Biology, The Scripps Research Institute, La Jolla, CA
2004-2006 Staff Scientist (Non-PI)
The National Center for Macromolecular Imaging, Baylor College of Medicine, Houston, TX
2006-2010 UCSF Keck Fellow (Principal Investigator)
Biochemistry and Biophysics Department, University of California, San Francisco, CA
2008-2011 Tenfei Visiting Professor,
Department of Applied Physics, Xi'an Jiaotong University, China
2010- Staff Scientist (Principal Investigator)
The Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA

Other Experience and Professional Memberships

1998- Member, American Heart Association
1998- Member, American Biophysical Society
2006- Member, American Chemical Society

Honors

1986-90 Honors Student Award for academic excellence in physics, Lanzhou University, China.
1988 First Place Award, University-wide competition in mathematics, Lanzhou University, China
1989 First Place Award, University-wide competition in physics, Lanzhou University, China.
1999-01 Fellowship Award, American Heart Association.
2002-04 Fellowship Award**,** Univ. of California (University-wide AIDS Research Program).
2004- Research results collected by the International Tables of Crystallography, Volume C, 2006
2006 Travel Award, Gordon Conference (Lipoprotein Metabolism, 2006)
2012 Irvine H. Page Research Award (finalist). American Heart Association

B. Selected Publications

1. Peptide-Introduced Conformational Changes to Human Immunoglobulin by Optimized Negative-Staining Electron Microscopy and Individual-Particle Electron Tomography, Tong, H., L Zhang, A. Kaspar, L. Huang, G. Woodnutt, and **G. Ren**. *Scientific Reports*, (2012)*, in-press*
2. Optimized negative-staining electron microscopy for lipoprotein studies, Zhang, L., H. Tong, M. Garewal and **G. Ren**, *BBA General Subjects,* (2012) in-press, PMID:23032862
3. Structural Features of Cholesteryl Ester Transfer Protein: A Molecular Dynamics Simulation Study, Lei D., X. Zhang, S. Jiang, Z. Cai, M.J. Rames, L. Zhang, **G. Ren**, and S. Zhang. *Protein*, (2012) in-press, PMID: 23042613
4. Optimized negative-staining protocol for lipid-protein interactions investigated by electron microscopy. M. Garewal, L. Zhang and **G. Ren**. *in: Lipid-Protein Interactions: Methods and Protocols Methods in Molecular Biology*, Edited by Jörg Kleinschmidt, Humana Press, (2012) in-press
5. IPET: an Experimental Method to Determine the 3-Dimensional Structure of an Individual Macromolecule, Zhang, T., Y. Peng，H. Tong, M. J. Rames, L. Zhang，**G. Ren**. *Progress in Chemistry*, (2012), in-press
6. Optimized Negative-staining Protocol for Electron Microscopy Study of Lipoprotein Structure, Tong, H., L. Zhang，L.Q. Huang, **G. Ren**, *Progress in Biochemistry and Biophysic*, (2012), in-press
7. Structure basis of transfer between lipoproteins by cholesteryl ester transfer protein. Zhang, L., F. Yan, S. Zhang, D. Lei, M. A. Charles, G. Cavigiolio, M. Oda, R. M. Krauss, K. H. Weisgraber, K.A. Rye, H.J. Pownall, X. Qiu & **G. Ren**. *Nature Chemical Biology*, (2012), 8(4):342-349. PMID: 22344176
8. IPET and FETR: Experimental Approach for Studying Molecular Structure Dynamics by Cryo-Electron Tomography of a Single-Molecule Structure. Zhang, L. and **G. Ren**. *PLoS ONE*, (2012), 7(1):30249. PMID: 22291925
9. High-Resolution Single-Molecule Structure Revealed by Electron Microscopy and Individual Particle Electron Tomography, Zhang, L. and **G. Ren**, *Journal of Biophysics and Biochemistry*, (2012), 2(2):1000e103
10. The Morphology and Structure of Lipoprotein Revealed by Optimized Negative Stain. Zhang, L., J. Song, G. Cavigiolio, B. Ishida, S. Zhang, J. Kane, K.A. Rye, J. Wang, K.H. Weisgraber, H.J. Pownall, M. Oda, **G. Ren**. *J. Lipids Research*, (2011), 52(1):175-84. PMID: 20978167
11. Membrane-directed molecular assembly of the neuronal SNARE complex. Cho, W.J., J.S. Lee, L. Zhang, **G. Ren,** L. Shin, C.W. Manke, and B.P. Jena, *Journal of Cellular and Molecular Medicine*, (2011), 15(1):31-37. PMID: 20716122
12. Model of Human Low Density Lipoprotein and Bound Receptor Based on Cryo-EM. **Ren, G.**, G. Rudenko, S.J. Ludtke, J. Deisenhofer, W. Chiu, H.J. Pownall, *Proc. Natl. Acad. Sci. USA.* (2010), 107(3):1059–1064. PMID: 20080547
13. An Optimized Negative-staining Protocol of Electron Microscopy for apoE4.POPC Lipoprotein. Zhang, L., J. Song, Y. Newhouse, S. Zhang, K.H. Weisgraber, and **G. Ren**, *J. Lipids Research*, (2010), 51(5):1228-36. PMID: 19965615
14. Assessment of the Validity of the Double Super Helix Model for Reconstituted High Density Lipoproteins - a combined computational- experimental approach, Jones, M.K., L. Zhang, A. Catte, L. Li, M. Oda, **G. Ren**, and J.P. Segrest, *Journal of Biological Chemistry*, (2010), 24;285(52):41161-71. PMID: 20974855
15. Individual Particle Electron Tomography: a Novel Tool for Examining the Structure of the Synthetic Targeted Drug Delivery Vehicles. J. Song, L. Zhang and **G. Ren**. *Pharmaceutical Manufacturing and Packing Sourcer*. (2010) winter, 26-30.
16. Apolipoprotein AI tertiary structures determine stability and phospholipid‐binding activity of discoidal high‐density lipoprotein particles of different sizes. Chen B., X. Ren , T. Neville, J. L. Mills, W. G., Jerome, D. W. Hoyt, F. D. Sonnichsen, **G. Ren,** and J. Wang, *Protein Science* (2009), 18: 921-935. PMID: 19384992
17. Structure of membrane-associated neuronal SNARE complex: Implication in neurotransmitter release. Cho, W-J., Shin, L.., **Ren, G.**, Jena, B. P. J. Cell Mol. Med. (cover) (2009)13(10): 4161-4165. PMID: 19737333

18. Nanoscale three-dimensional contour map of protein assembly within the astrocyte porosome complex. W. J. Cho, **G. Ren** , J.-S. Lee, K. Jeftinija, S. Jeftinija, B. P. Jena. *Cell Biol Int.*, (2009) 33: 224-229. PMID: 19084606
19. The structure of apolipoprotein A-I in spherical high density lipoprotein of different size. Gangani, R. A., Silva, D., Huang, R., Morris, J., Fang, J., Gracheva, E.O., **Ren, G**., Kontush, A., Jerome, W.G., Rye, K., and Davidson, W.S. *Proc. Natl. Acad. Sci. USA*. (2008). 105, 12176-12181. PMID: 18719128
20. Nanodisks derived from amphotericin B lipid complex. Tufteland, M., **Ren, G.** and Ryan, R., *J. of Pharmaceutical Sciences*, (2008) 97(10):4425-32. PMID: 18271034
21. Amphotericin B induced interdigitation of apolipoprotein stabilized nanodisk bilayers. Nguyen T., Weers, P., Wang, Z., **Ren, G.**, Sulchek, T., Hoeprich, P. and Ryan, R., *Biochim. Biophys. Acta.* (2008) 1778(1):303-12. PMID: 17980702
22. The Interplay between Size, Morphology, Stability, and Functionality of High-Density Lipoprotein Subclasses. Cavigiolio, G., Shao, B., Geier, E.G., **Ren**, **G.**, Heinecke, J.W. and M.N. Oda., *Biochemistry*, (2008) 22; 47(16):4770-9. PMID: 18366184
23. EM 3D contour maps provide protein assembly at the nanoscale within the neuronal porosome complex. W.J. Cho, **G. Ren** and B.P. Jena. *J. Miroscopy*, (2008) 232(1): 106-111. PMID: 19017207
24. Single particle image reconstruction of a tetramer of HIV integrase bound to DNA. **Ren, G.**, Gao, K., Bushman, F., and Yeager, M., *Journal of Molecular Biology* (2007) 366: 286-294. PMID: 17157316
25. Neuronal fusion pore assembly requires membrane cholesterol. Cho J., A. Jeremic, H. Jin, **G. Ren** and Bhanu P. Jena. Cell Biol Int., (2007) 31: 1301-1308. PMID: 17703958
26. Electron Diffraction. Colliex, C., J. M. Cowley, S. L. Dudarev, M. Fink, J. Gjonnes, R. Hilderbrandt, A. Howie, D. F. Lynch, L. M. Peng, **Ren, G.**, A. W. Ross, V. H. Smith Jr, J. C. H. Spence, J. W. Steeds, J. Wang, M. J. Whelan and B. B. Zvyagin, *International Tables For Crystallography. Volume C: Mathematical, physical and chemical tables, Edited by E. Prince, Fourth Edition, Published by Kluwer Academic Publishers* (2006) Chapter 4.3, pp259-429.
27. Model of the toxic complex of anthrax: Responsive conformational changes in both the lethal factors and the protective antigen heptamer. Tama, F., **G. Ren**, C. Brooks, AK. Mitra, *Protein Science* (Cover). (2006) 15: 2190-2200. PMID: 16943448
28. Supine Orientation of a Murine MHC Class I Molecule on the Membrane Bilayer. Mitra, AK, Cellia, H, **Ren, G**, Luz, J, Wilson, I and Teyton, L., *Current Biology* (2004) 14:718-724. PMID: 15084288
29. Large-scale structural changes accompany binding of lethal factor to anthrax protective antigen: a cryo-electron microscopic study. **Ren, G**., Quispe, J, Leppla, S., Mitra, AK., *Structure* (2004) 12: 2059-66. PMID: 15530370
30. Conversion of a Mechanosensitive Channel Protein from a Membrane-embedded to a water-soluble Form by Covalent Modification with Amphiphiles. Backer CFW, P. Strop, RB. Bass, KC. Hansen, K. Locher, **G. Ren**, M. Yeager, DC. Rees, G. Kochendoerfer, *J. Mol. Biolo.*, (2004) 12: 2059-66. PMID: 15465059
31. Structure and mechanism of water channels. Sui, HX, **Ren, G.**, *Progress in Chemistry*, (2004) 16:145-152.
32. Cryo-electron microscopy of biological macromolecules. Li HL, Shi D, **Ren G**., Sui HX, Chen DH, and Wang DN. *In: Recent Progress in Transmission Electron Microscopy*. Edited by HQ Ye and YM Wang. Science Press, China, (2003) 114-148.
33. The architecture of a water-selective pore in the lipid bilayer visualized by electron crystallography in vitreous ice. Mitra AK, **Ren G.**, Reddy VS, Cheng A, Froger A., *Novartis Found Symp.* (2002) 245:33-46. PMID: 12027013
34. Visualization of a water-selective pore by electron crystallography in vitreous ice. **Ren, G.**, Reddy, V. S., Cheng, A., Melnyk, P., and Mitra, A. K. *Proc. Natl. Acad. Sci. USA*. (2001), 98: 1398-1403. PMID: 11171962
35. Three-dimensional fold of the human AQP1 water channel determined at 4A resolution by electron crystallography of 2-dimensional crystals embedded in ice. **Ren, G.,** Cheng, A., Reddy, V., Melnyk, P., and Mitra, A. K. *J. Mol. Biolo.* (2000), 301: 369-387. PMID: 10926515
36. Polymorphism in the packing of Aquaporin-1 tetramers in 2-D crystals. **Ren, G.**, Cheng, A., Melnyk, P., and Mitra, A. K.. *J. Struct. Biol.* (2000). 130: 45-53. PMID: 10806090

37. Three-dimensional fold of human AQP1 water channel determined by electron cryo-crystallography of 2-dimensional crystals embedded in ice. Mitra, A.K., **Ren, G.,** Cheng, A., Reddy, V., Melnyk, P. *In: Molecular Biology and Physiology of Water and Solute Transport*. Hohmann, S., Nielsen, S. (Eds.). Kluwer Academic / Plenum Publishers, Boston, (2000), 35-39.
38. Three-dimensional reconstruction from electron micrographs of tilted 2-dimensional crystal: Structure of a human water channel. Mitra, A. K., **Ren, G**, Cheng, A., Reddy, V. S., Melnyk, P*., In: Image Reconstruction From Incomplete Data.* Fiddy, M.A., Millane, R.P. (Eds.). SPIE Press, Bellingham, WA, (2000), 4123:224-230.
39. Accurate Measurements of Crystal Structure Factors Using a FEG Electron Microscope Using Digital Micrographs, **Ren G.** , J. M. Zuo and L.-M. Peng, *Micron*, (1997) 28: 459-467.
40. Accurate Determination of the Spherical Aberration Coefficient of a FEG Electron Microscope using Digital Electron Micrographs, **Ren G.**, X.F. Duan and L.-M. Peng, *Progress in Natural Science*, (1997), 40: 27-36. [PDF file]
41. The Analytic Doyle-Turner Representation of High Energy Electron Absorptive Structure Factors, **Ren G.**, L.-M. Peng, *Acta Physica Sinica*, (1996), 45:1344-1349.
42. Robust Parameterization of Elastic and Absorptive Electron Atomic Scattering Factors, Peng L. -M, **G. Ren**, S.L. Dudarev and M.J. Whelan, *Acta Cryst.* (1996), A52: 257-276.
43. Debye-Waller Factors and Absorptive Scattering Factors of Elemental Crystals, Peng L.-M., **G. Ren**, S.L. Dudarev and M.J. Whelan, *Acta Cryst*. (1996), A52: 456-470.
44. Sampling Theorem and Digital Electron Microscaopy, Peng L.-M. , **G. Ren** and X.F. Duan, *J. Chinese Electron Microscopy Society*, (1996), 15: 117-124.
45. Epitaxial Dependence of the Melting Behavior of In Nanoparticles Embedded in Al Matrices, Sheng H.W., **G. Ren**, L.-M. Peng, Z.Q. Hu and K. Lu, *J. Mater. Research*, (1996),12: 119-123. [PDF file]
46. Superheating and Melting Point Depression of Pb Nanoparticles Embedded in Al Matrices, Sheng H.W., **G. Ren**, L.-M. Peng, Z.Q. Hu and K. Lu, *Phil. Mag. Lett.*, (1996), 73:179-186. [PDF file]
47. High Resolution Electron Microscopy Analysis of Structural Defectd in a (2/1 5/3)-Type Approximant of a Decagonal Quasicrystal of an Al-Pd-Mn Alloy. Yu D.P., **G. Ren** and Z. Zhang, *Metallurgical and Materials Transactions*, (1996), 27A: 2911-2915.
48. Influence of the Interfacial Structure on the Melting Behavior of In and Pb Nanoparticles Embedded in Al Matrices, Sheng H.W, K. Lu, Z.Q. Hu ,**G. Ren** and L.-M. Peng, *Chinese Journal of Materials Research*, (1996), 10: 30-32.