CURRICULUM VITAE

KEVIN D. RIDGE

Associate Professor
University of Texas Health Science Center
Medical School
Center for Membrane Biology
Department of Biochemistry and Molecular Biology
6431 Fannin Street, MSB 6.210
Houston, TX 77030
Telephone: (713) 500-5908
Fax: (713) 500-0545
E-mail: Kevin.D.Ridge@uth.tmc.edu

RESEARCH INTERESTS

The research in my laboratory is primarily focused on the dynamic aspects of integral membrane protein structure. Particular emphasis is given to members of the superfamily of G-protein coupled receptors (GPCRs) sharing the seven-transmembrane-helix structural motif. Specifically, biochemical and biophysical approaches are being employed to study the mechanism(s) of folding, assembly, and function for the visual photoreceptor rhodopsin and the HIV-1 coreceptor CCR5. A clear understanding of how rhodopsin and CCR5 adopt their tertiary structures should provide key insights into the molecular details of signal transduction as well as the consequences associated with many naturally occurring mutations that lead to receptor dysfunction. Structural approaches (NMR and X-ray crystallography) are also being employed in order to understand the molecular mechanisms underlying GPCR ligand binding and signaling.

A second research area is focused on the development and application methods for the high-level eukaryotic cell expression of integral membrane proteins. The main emphasis of these studies is to devise generally applicable approaches for monitoring the production of properly folded functionally intact membrane proteins that exhibit uniform post-translational processing.

EDUCATION AND TRAINING

1979-1983	BS, Biology Grove City College Grove City, PA 16127
1984-1989	Ph.D., Biochemistry Protein Research Laboratory Department of Biochemistry University of Pittsburgh School of Medicine Pittsburgh, PA 15261 Advisors: Klaus Hofmann and Frances M. Finn

PROFESSIONAL EXPERIENCE

3/04 – present	Associate Professor (Tenured appointment) University of Texas Health Science Center-Houston Medical School Center for Membrane Biology & Department of Biochemistry and Molecular Biology Houston, TX 77030
11/99 – 3/04	Adjunct Associate Professor (Tenured appointment) University of Maryland Biotechnology Institute Center for Advanced Research in Biotechnology (CARB) Rockville, MD 20850 Program in Molecular and Cell Biology University of Maryland College Park, MD 20742
	Research Chemist (Career appointment; permanent) National Institute of Standards and Technology Chemical Sciences and Technology Laboratory Biotechnology Division Structural Biology Group Gaithersburg, MD 20899
12/93 – 11/99	Adjunct Assistant Professor (Tenure-track appointment) University of Maryland Biotechnology Institute Center for Advanced Research in Biotechnology (CARB) Rockville, MD 20850 Program in Molecular and Cell Biology University of Maryland College Park, MD 20742
12/97 – 11/99	Research Chemist (Career conditional appointment) National Institute of Standards and Technology Chemical Sciences and Technology Laboratory Biotechnology Division Structural Biology Group Gaithersburg, MD 20899
6/99 – 9/99	Acting Supervisory Research Chemist (Group Leader) National Institute of Standards and Technology Chemical Sciences and Technology Laboratory Biotechnology Division Structural Biology Group Gaithersburg, MD 20899

12/93 - 12/97	Research Biologist (Term appointment) National Institute of Standards and Technology Chemical Sciences and Technology Laboratory Biotechnology Division Structural Biology Group Gaithersburg, MD 20899
11/89 - 11/93	Postdoctoral Fellow Massachusetts Institute of Technology Departments of Biology and Chemistry Cambridge, MA 02139 Advisor: H. Gobind Khorana

PUBLICATIONS

A. Articles

1. Hofmann, K., Romovacek, H., Titus, G., Ridge, K., Raffensperger, J. A., and Finn, F. M. (1987) The Rat Liver Insulin Receptor. *Biochemistry* **26**, 7384-7390.
2. Ridge, K. D., Hofmann, K., and Finn, F. M. (1988) ATP Sensitizes the Insulin Receptor to Insulin. *Proc. Natl. Acad. Sci. USA* **85**, 9489-9493.
3. Finn, F. M., Ridge, K. D., and Hofmann, K. (1990) Labile Disulfide Bonds in Human Placental Insulin Receptor. *Proc. Natl. Acad. Sci. USA* **87**, 419-423.
4. Bhattacharya, S., Ridge, K. D., Knox, B. E., and Khorana, H. G. (1992) Light-stable Rhodopsin I. A Rhodopsin Analog Reconstituted with a Non-isomerizable 11-*cis* Retinal Derivative. *J. Biol. Chem.* **267**, 6763-6769.
5. Ridge, K. D., Bhattacharya, S., Nakayama, T. A., and Khorana, H. G. (1992) Light-stable Rhodopsin II. An Opsin Mutant (Trp-265 $\rightarrow$ Phe) and a Retinal Analog with a Non-isomerizable 11-*cis* Configuration Form a Photostable Chromophore. *J. Biol. Chem*. **267**, 6770-6775.
6. Karnik, S. S., Ridge, K. D., Bhattacharya, S., and Khorana, H. G. (1993) Palmitoylation of Bovine Opsin and Its Cysteine Mutants in COS cells. *Proc. Natl. Acad. Sci. USA* **90**, 40-44.
7. Kaushal, S., Ridge, K. D., and Khorana, H. G. (1994) Structure and Function in Rhodopsin: The Role of Asparagine-linked Glycosylation. *Proc. Natl. Acad. Sci. USA* **91**, 4024-4028.
8. Ridge, K. D., Lu, Z., Liu, X., and Khorana, H. G. (1995) Structure and Function in Rhodopsin: Separation and Characterization of the Correctly Folded and Misfolded Opsins Produced on Expression of an Opsin Mutant Gene Containing Only the Native Intradiscal Cysteine Codons. *Biochemistry* **34**, 3261-3267.
9. Ridge, K. D., Zhang, C., Khorana, H. G. (1995) Mapping of the Amino Acids in the Cytoplasmic Loop Connecting Helices C and D in Rhodopsin. Chemical Reactivity in the Dark State Following Single Cysteine Replacements. *Biochemistry* **34**, 8804-8811.
10. Farahbakhsh, Z. T., Ridge, K. D., Khorana, H. G., and Hubbell, W. L. (1995) Mapping Light-Dependent Changes in the Cytoplasmic Loop Connecting Helices C and D in Rhodopsin: A Site-Directed Spin Labeling Study. *Biochemistry* **34**, 8812-8819.
11. Ridge, K. D., Lee, S. S. J., and Yao, L. (1995) *In vivo* Assembly of Rhodopsin from Expressed Polypeptide Fragments. *Proc. Natl. Acad. Sci. USA* **92**, 3204-3208.

12. Ridge, K. D., Lee, S. S. J., and Abdulaev, N. G. (1996) Examining Rhodopsin Folding and Assembly Through Expression of Polypeptide Fragments. *J. Biol. Chem*.**271**, 7860-7867.
13. Abdulaev, N. G., Popp, M. P., Smith, W. C., and Ridge, K. D. (1997) Functional Expression of Bovine Opsin in the Methylotrophic Yeast *Pichia pastoris*. *Protein Express. Purif.* **10**, 61-69.
14. Abdulaev, N. G., Karaschuk, G. N., Ladner, J. E., Kakuev, D. L., Yakhyaev, A. V., Tordova, M., Gaidarov, I. O., Popov, V. I., Fujiwara, J. H., Chinchilla, D., Eisenstein, E., Gilliland, G. L., and Ridge, K. D. (1998) Nucleoside Diphosphate Kinase from Bovine Retina: Purification, Subcellular Localization, Molecular Cloning, and Three-dimensional Structure. *Biochemistry* **37**, 13958-13967.
15. Abdulaev, N. G. and Ridge, K. D. (1998) Light-induced Exposure of the Cytoplasmic End of Transmembrane Helix Seven in Rhodopsin. *Proc. Natl. Acad. Sci. USA,* **95**, 12854-12859.
16. Ladner, J. E., Abdulaev, N. G., Tordova, M., Kakuev, D. L., Ridge, K. D., and Gilliland, G. L. (1999) The Three-dimensional Structures of Two Isoforms of Nucleoside Diphosphate Kinase from Bovine Retina. *Acta Crystallogr*. *D***55**, 1127-1135.
17. Ridge, K. D., Ngo, T., Lee, S. S. J., and Abdulaev, N. G. (1999) Folding and Assembly in Rhodopsin: Effect of Mutations in the Sixth Transmembrane Helix on the Conformation of the Third Cytoplasmic Loop. *J. Biol. Chem.* **274**, 21437-21442.
18. Abdulaev, N. G., Ngo, T, Lu, Z., and Ridge, K. D. (2000) Functionally Discrete Mimics of Light-activated Rhodopsin Identified Through Expression of Soluble Cytoplasmic Domains. *J. Biol. Chem.* **275**, 39354-39363.
19. Rao, N. M., Silin, V., Woodward, J., Ridge, K. D., and Plant, A. (2002) Cell Membrane Hybrid Bilayers Containing the G-protein Coupled Receptor CCR5, *Anal. Biochem*. **307**, 117-130.
20. Abdulaev, N. G., Strassmaier, T. T., Ngo, T., Chen, R., Luecke, H., Oprian, D. D., and Ridge, K. D. (2002) Grafting Segments from the Extracellular Surface of CCR5 onto a Bacteriorhodopsin Transmembrane Scaffold Confers HIV-1 Coreceptor Activity. *Structure* **10**, 515-525.
21. Ridge, K. D. (2002) Algal Rhodopsins: Phototaxis Receptors Found at Last. *Curr. Biol.* **12**, R588-R590.
22. Brabazon, D. M., Abdulaev, N. G., Marino, J. P., and Ridge, K. D. (2003) Evidence for Structural Changes in Carboxyl-terminal Peptides of Transducin α-subunit upon Binding a Soluble Mimic of Light-activated Rhodopsin. *Biochemistry* **42**, 302-311.
23. Ridge, K. D., Abdulaev, N. G., Sousa, M., and Palczewski, K. (2003) Phototransduction: Crystal Clear. *Trends Biochem. Sci.* **28**, 479-487.
24. Abdulaev, N. G., Zhang, C., Dinh, A., Ngo, T., Bryan, P. N., Brabazon, D. M., Marino, J. P. and Ridge, K. D. (2005) Bacterial Expression and One-step Purification of an Isotope-labeled Heterotrimeric G-protein α-subunit. *J. Biomol. NMR* **32**, 31-40.
25. Abdulaev, N. G., Ngo, T., Zhang, C., Dinh, A., Brabazon, D. M., Ridge, K. D. and Marino, J. P. (2005) Heterotrimeric G-protein α-subunit Adopts a 'Pre-activated' Conformation when Associated with βγ-subunits. *J. Biol. Chem.* **280**, 38071-38080.
26. Ridge, K. D., Abdulaev, N. G., Zhang, C., Ngo, T., Brabazon, D. M. and Marino, J. P. (2006) Conformational Changes Associated with Receptor Stimulated Guanine Nucleotide Exchange in a Heterotrimeric G-protein α-subunit: NMR analysis of GTPγS-bound States. *J. Biol. Chem.* **281**, 7635-7648.

27. Silin, V. I., Karlik, E., Ridge, K. D. and Vanderah, D. J. (2006) Development of Surface-based Assays for Trans-membrane Proteins: Selective Immobilization of Functional CCR5, a G-protein Coupled Receptor. *Anal. Biochem.* **349**, 247-253.
28. Ridge, K. D., Marino, J. P., Ngo, T., Ramon, E., Brabazon, D. M., and Abdulaev, N. G. (2006) NMR Analysis of Rhodopsin-Transducin Interactions. *Vision Res.* **46**, 4482-4492.
29. Abdulaev, N. G., Ngo, T., Ramon, E., Brabazon, D. M., Marino, J. P., and Ridge, K. D. (2006) The Receptor-bound "Empty Pocket" State of the Heterotrimeric G-protein α-subunit is Conformationally Dynamic. *Biochemistry* **45**, 12986-12997.

B. Book Chapters

1. Abdulaev, N. G. and Ridge, K. D. (2000) Heterologous Expression of Bovine Opsin in *Pichia pastoris*, in *Vertebrate Phototransduction and the Visual Cycle, Methods in Enzymology*, (K. Palczewski, Ed.), Vol. 315, pp. 3-11.
2. Ridge, K. D. and Abdulaev, N. G. (2000) Folding and Assembly of Rhodopsin from Expressed Fragments, in *Vertebrate Phototransduction and the Visual Cycle, Methods in Enzymology*, (K. Palczewski, Ed.), Vol. 315, pp. 59-70.
3. Abdulaev, N. G., Kakuev, D. L., and Ridge, K. D. (2000) Bovine Retinal Nucleoside Diphosphate Kinase: Biochemistry and Molecular Cloning, in *Vertebrate Phototransduction and the Visual Cycle, Methods in Enzymology*, (K. Palczewski, Ed.), Vol. 316, pp. 87-100.
4. Abdulaev, N. G. and Ridge, K. D. (2005) Structural and Functional Aspects of the Mammalian Rod Cell Photoreceptor Rhodopsin, in *Handbook of Photosensory Receptors*, (W. R. Briggs and J. L. Spudich, Eds.), pp. 77-92.

INVITED TALKS AND PRESENTATIONS

1. "Formation of a Light-stable and Functional Rhodopsin," Otsuka America Pharmaceuticals, Inc., Rockville, MD, April 11, 1994.
2. "Achieving a Folded and Functional Rhodopsin," Center of Marine Biotechnology, University of Maryland Biotechnology Institute, Baltimore, MD, April 13, 1994.
3. "*In vivo* Assembly of Rhodopsin-like Complexes from Independently Expressed Protein Fragments," Max-Planck-Institute for Biophysics, Frankfurt, Germany, June 21, 1994.
4. "*In vivo* Assembly of Rhodopsin-like Complexes from Independently Expressed Protein Fragments," VIth International Conference on Retinal Proteins, Leiden, The Netherlands, June 23, 1994.
5. "*In vivo* Assembly of Rhodopsin from Expressed Polypeptide Fragments," National Institute on Alcohol and Alcoholism, National Institutes of Health, Rockville, MD, October 11, 1994.
6. "*In vivo* Assembly of Rhodopsin from Expressed Polypeptide Fragments," Department of Chemistry, University of Maryland, College Park, MD, March 14, 1995.
7. "Examining Rhodopsin Folding and Assembly Through Expression of Polypeptide Fragments," Department of Biology, Massachusetts Institute of Technology, Cambridge, MA, July 12, 1995.
8. "Examining Rhodopsin Folding and Assembly Through Expression of Polypeptide Fragments," Molecular and Cell Biology Program, University of Maryland, College Park, MD, February 28, 1996.

9. "Examining Rhodopsin Folding and Assembly Through Expression of Polypeptide Fragments," COMB/NSWC Workshop (Biotechnology-Opportunities for Partnering), Center of Marine Biotechnology, University of Maryland Biotechnology Institute, Baltimore, MD, April 22, 1996.
10. "Folding and Assembly in Visual Rhodopsin," Department of Physiology and Biophysics, Mount Sinai School of Medicine, New York, NY, November 9, 1996.
11. "Nature and Specificity of the Interactions Accompanying Amino-and Carboxyl-Terminal Fragment Association in Bovine Rhodopsin," FASEB Biology and Chemistry of Vision Research Conference, Keystone, CO, July 23, 1997.
12. "Nucleoside Diphosphate Kinase from Bovine Retina," 2nd International Congress of the Genetics, Biochemistry, and Physiology of AWD/NM23/NDP Kinase, National Institutes of Health, Bethesda, MD, October 16, 1998.
13. "Examining Rhodopsin Folding and Assembly through Expression of Polypeptide Fragments," International Network of Protein Engineering Centers Annual Meeting, CARB, Rockville, MD, April 5, 1998.
14. "Examining Rhodopsin Folding and Assembly through Expression of Polypeptide Fragments," 8th International Conference on Retinal Proteins, Awaji Island, Japan, June 4, 1998.
15. "Mapping Protein Binding Sites on Rhodopsin through Expression of Soluble Interacting Domains and NMR Spectroscopy", American Society for Photobiology Meeting, Washington, DC, July 13, 1999.
16. "Mapping Protein Binding Sites on Seven–Helical Integral Membrane Receptors through Expression of Soluble Interacting Domains and NMR Spectroscopy", Genetics Institute, Inc., Cambridge, MA, July 26, 1999.
17. "Effective Mimicry of Rhodopsin Signaling Functions by an Engineered Cytoplasmic Domain", Gordon Research Conference on Photosensory Systems and Signal Transduction, Barga, Italy, May 2, 2000.
18. "Effective Mimicry of Rhodopsin Signaling Functions by Engineered Cytoplasmic Domains", Department of Biochemistry and Molecular Biophysics, Columbia University, New York, NY, May 26, 2000.
19. "Effective Mimicry of Rhodopsin Signaling Functions by Engineered Cytoplasmic Domains", International Symposium on Nucleic Acids and Signal Transduction, Brandeis University, Waltham, MA, July 28, 2000.
20. "G-protein Coupled Receptor Bacteriorhodopsin Chimeras: Grafting the Amino-terminal and Extracellular Loop Segments of CCR5 onto the Transmembrane Helices of Bacteriorhodopsin", 9th International Conference on Retinal Proteins, Szeged, Hungary, September 19, 2000.
21. "G-protein Coupled Receptor/Bacteriorhodopsin Chimeras: Grafting Segments from the Extracellular Surface of CCR5 onto the Transmembrane Helices of Bacteriorhodopsin Confers HIV-1 Coreceptor Activity", Department of Biology, Massachusetts Institute of Technology, Cambridge, MA, July 11, 2001.
22. "Interactions Between "High Affinity" G protein α-subunit Carboxyl-terminal Peptides and Soluble Cytoplasmic Surface Polypeptides of Rhodopsin", 34th IUPS Meeting on Phototransduction, Dunk Island, Australia, August 23, 2001.
23. "Analysis of G-protein Coupled Receptor Function One Piece at a Time", Department of Biochemistry, Uniformed Services University of the Health Sciences, Bethesda, MD, November 6, 2001.

24. "Analysis of G-protein Coupled Receptor Function One Piece at a Time", Department of Biological Sciences, University of Maryland Baltimore County, Catonsville, MD, May 2, 2002.
25. "Analysis of G-protein Coupled Receptor Function One Piece at a Time", Department of Pharmacology, Johns Hopkins University School of Medicine, Baltimore, MD, May 9, 2002.
26. "Mapping Interactions Between G-protein α-subunit Carboxyl-terminal Peptides and a Soluble Mimic of Activated Rhodopsin", Gordon Research Conference on Photosensory Systems and Signal Transduction, Barga, Italy, May 20, 2002.
27. "Approaches for Screening G-protein Coupled Receptor Functions", Vertex Pharmaceuticals, Cambridge, MA, July 18, 2002.
28. "Mapping Interactions between Carboxyl-terminal Peptides of the α-subunit of Transducin and a Functional Mimic of Light-activated Rhodopsin", 10th International Conference on Retinal Proteins, Seattle, WA, August 24, 2002.
29. "Designing and Characterizing Functional Mimics of GPCR's for Structural Analysis", IBC 7th Annual GPCR Conference, San Diego, CA, October 14, 2002.
30. "Anaylsis of G-protein Coupled Receptor Function: One Piece at a Time" Department of Chemistry, University of Washington, Seattle, WA, December 16, 2002.
31. "Analysis of G-protein Coupled Receptor Function: One Piece at a Time" Center for Membrane Biology, University of Texas, Houston, TX, February 20, 2003.
32. "Analysis of G-protein Coupled Receptor Function: One Piece at a Time", Agensys, Inc., Santa Monica, CA, April 16, 2003.
33. "Analysis of G-protein Coupled Receptor Function: One Piece at a Time", Department of Biochemistry and Molecular Biology, University of California, Irvine, CA, April 18, 2003.
34. "Analysis of G-protein Coupled Receptor Function: One Piece at a Time", Department of Biochemistry and Molecular Biology, Oregon Health and Science University, Portland, OR, May 20, 2003.
35. "Analysis of G-protein Coupled Receptor Function: One Piece at a Time", Membrane Protein Interest Group, NIDDK, NIH, Bethesda, MD, June 4, 2003.
36. "Structural Analysis of G-Protein Coupled Receptor Mediated Signal Transduction", Department of Biology, Massachusetts Institute of Technology, Cambridge, MA, October 11, 2003.
37. "Structural Analysis of G-Protein Coupled Receptor Mediated Signal Transduction", American Society for Photobiology Meeting, Seattle, WA, July 11, 2004.
38. "Structural Analysis of G-Protein Coupled Receptor Mediated Signal Transduction", Department of Ophthalmology, University of Washington School of Medicine, July 12, 2004.
39. "Structural Analysis of G-protein Coupled Receptor Mediated Signal Transduction", UTHSC-Houston Medical School Research Retreat, Houston, TX, March 5, 2005.
40. "Structural Analysis of Rhodopsin/Transducin Interactions", American Society for Biochemistry and Molecular Biology Meeting, San Diego, CA, April 5, 2005.
41. "Biological Membrane Structure and Function I", Department of Chemical Engineering, Molecular and Industrial Biotechnology Group, Technical University of Catalonia, Terrassa, Catalonia, Spain, May 23, 2005.
42. "Visual Phototransduction: A Model System for Probing Structural Aspects of G-protein Coupled Receptor Mediated Signaling", Department of Chemical Engineering, Molecular and

Industrial Biotechnology Group, Technical University of Catalonia, Terrassa, Catalonia, Spain, May 24, 2005.

43. "Biological Membrane Structure and Function II", Department of Chemical Engineering, Molecular and Industrial Biotechnology Group, Technical University of Catalonia, Terrassa, Catalonia, Spain, May 24, 2005.
44. "Overview of Cellular Signaling Systems", Department of Chemical Engineering, Molecular and Industrial Biotechnology Group, Technical University of Catalonia, Terrassa, Catalonia, Spain, May 25, 2005.
45. "Functional and Structural Aspects of Signaling via G-protein Coupled Receptors", Department of Chemical Engineering, Molecular and Industrial Biotechnology Group, Technical University of Catalonia, Terrassa, Catalonia, Spain, May 26, 2005.
46. "Functional and Structural Aspects of Signaling via Receptor Tyrosine Kinases", Department of Chemical Engineering, Molecular and Industrial Biotechnology Group, Technical University of Catalonia, Terrassa, Catalonia, Spain, May 27, 2005.
47. "Functional and Structural Aspects of Channels, Pumps, and Transporters", Department of Chemical Engineering, Molecular and Industrial Biotechnology Group, Technical University of Catalonia, Terrassa, Catalonia, Spain, May 30, 2005.
48. "Structural Determinants for HIV-1 Recognition: Expression and Functional Characterization of CCR5", Department of Chemical Engineering, Molecular and Industrial Biotechnology Group, Technical University of Catalonia, Terrassa, Catalonia, Spain, May 31, 2005.
49. "Structural Analysis of Rhodopsin/Transducin Interactions", FASEB Biology and Chemistry of Vision Meeting, Tuscon, AZ, June 20, 2005.
50. "NMR Analysis of GPCR/G-protein Interactions", Baylor Postdoctoral Association, Baylor College of Medicine, Houston, TX, August 2, 2005.
51. "NMR Analysis of GPCR/G-protein Interactions", Young Guns Seminar Series, UTHSC-Houston Medical School, Houston, TX, October 25, 2005.
52. "Conformational Changes in the R*-bound Transducin α-subunit Accompanying Guanine Nucleotide Release and Uptake", 10^{th} Annual Vision Research Conference, Fort Lauderdale, FL, April 28, 2006.
53. "Conformational Changes in the α-subunit of Transducin Accompanying Rhodopsin-catalyzed Guanine Nucleotide Exchange", Gordon Research Conference on Photosensory Systems and Signal Transduction, Barga, Italy, April 30, 2006.
54. "NMR Analysis of Activated GPCR/G-protein Interactions", 62^{nd} Southwest Regional Meeting of the American Chemical Society, Houston, TX, October 21, 2006.
55. "Conformational Changes in the R*-bound G-protein α-subunit Accompanying Guanine Nucleotide Release and Uptake", 11^{th} Annual GPCR Conference, Las Vegas, NV, October 30, 2006.

HONORS

National Research Service Award, National Eye Institute, NIH (6/90 – 5/93)
Awards from the Karl Kirchgessner Foundation, Excellence in Vision Research (7/98 and 7/00)

PROFESSIONAL SERVICE

7/94 – present	Regular reviewer for *Biochemistry*, *Biophysical Journal*, and *European Journal of Biochemistry*
11/98 – 3/05	Grant Reviewer for the Wellcome Trust
10/00 – 10/02	NIH VISC Study Section (temporary member)
9/00 – 7/04	NIH SSS-2 Study Section (temporary member)
7/01 – 9/06	Editorial Board of the *Journal of Biological Chemistry*
5/02 – 4/03	Grant Reviewer for Human Frontier Science Program
5/06 – present	NIH BPNS Study Section (temporary member)

PROFESSIONAL MEMBERSHIPS

12/95 – 3/05	American Association for the Advancement of Science
3/01 – present	American Society for Biochemistry and Molecular Biology
3/01 – present	Federation of American Societies for Experimental Biology
12/02 – 12/05	American Society for Photobiology

GRADUATE EDUCATION AND TEACHING

- Conference Leader (Block II) in the "Medical School Biochemistry" course (BSCI 1001 13) offered by the Department of Biochemistry and Molecular Biology, UTHSC-Houston, Medical School (8/05 – present).

- Team lecturer in the "Topics in Biochemistry and Molecular Biology" course (GS030024) offered by the Program in Biochemistry and Molecular Biology, UTHSC-Houston, Medical School (1/06 – present).

-Advisory Committee member for Mr. Brian Phillips, Ms. Xi Mo, Ms. Toni Greene, Ms. Jennifer Kerr, Mr. Jordan Bell, Mr. Yang Zhou, Ms. Jennifer Gonzalez, and Ms. Kimberly Mankiewicz, and Exam Committee for Ms. Jennifer Kerr, GSBS graduate students at UTHSC-Houston, Medical School, Houston, TX (present).

-Team lecturer in the "Protein Structure and Function" course (MOCB640) offered by the Program in Molecular and Cell Biology at the University of Maryland, College Park, MD (4/96 – 5/02). Presented 4-6 lectures (1.5 hour each) focused on structural aspects of membrane protein structure and signaling.

-Advisory Committee member for Mr. Walter Schlapkohl, a graduate student in the Program in Molecular and Cell Biology at the University of Maryland, College Park, MD (6/99 – 6/05).

-Thesis advisor for Mr. Ruiwu Chen, a graduate student in the Program in Molecular and Cell Biology at the University of Maryland, College Park, MD (5/98 – 9/99).

COMMITTEE ASSIGNMENTS AND OTHER ACTIVITIES

- CMB/BMB Faculty Search Committee (9/05 - 3/06)
- Admissions Committee, Graduate Program in Biochemistry and Molecular Biology, UTHSC-Houston, Medical School (7/05 – present)
- Faculty Senate, UTHSC-Houston, Medical School (9/05 – 8/06)
- Gulf Coast Consortium for Membrane Biology Steering Committee, UTHSC-Houston, Medical School (6/04 – present)
- NIST/CARB Safety Officer (9/95 – 3/04)
- CARB Director Search Committee (3/01 – 11/02)
- CARB/Life Technologies Faculty Search Committee (12/99 – 6/00)
- MOCB Seminar Program Committee (8/99 – 6/01)
- NIST Biomolecular Materials Research Chemist Search Committee (8/98 – 11/98)
- CARB 1B Space Allocation Committee (2/97 – 1/99)
- CARB Bioinformatics Faculty Search Committee (12/97 - 4/98)
- CARB Biochemistry Faculty Search Committee (12/95 - 4/96)
- Supervisor for a Montgomery County Science Fair Project entitled “Alcohol Effects on Visual Cell Membranes”; Ms. Rajvi Mehta, Quince Orchard High School (10/97 - 3/98)
- CARB Seminar Program Organizer (9/94 - 6/95)

RESEARCH PROJECTS ONGOING OR COMPLETED DURING THE LAST 5 YEARS:

“Structural Analysis of the Rhodopsin-Transducin Complex”
Principal Investigator: Kevin D. Ridge
Agency: NIH, National Eye Institute
Type: R01 (EY016493); Period: 06/19/06 - 04/30/09
The objective of this research project is to develop and apply high-resolution NMR methods for structural analysis of the rhodopsin-transducin complex. Specifically, conformational changes in the isotope-labeled transducin α-subunit accompanying transducin $\beta\gamma$-subunit and rhodopsin interactions will be tracked using multi-dimensional NMR approaches.

“Isotope-labeling of G-protein Coupled Receptors for Structural Analysis by NMR”
Principal Investigator: Kevin D. Ridge
Agency: The Welch Foundation (AU-1613)
Period: 06/01/05 – 05/31/08
The objective of this research project is to develop and apply new approaches for the isotope labeling of mammalian cell expressed G-protein coupled receptors, with a particular focus on rhodopsin, for subsequent analysis by high-resolution NMR methods.

“Core Grant for Vision Research”
Principal Investigator: Stephen C. Massey; Role: Participant
Agency: NIH, National Eye Institute
Type: P30 (EY010608); Period: 03/01/04 – 02/28/09
This grant supports Core facilities for NEI-supported investigators in vision and ophthalmology at the UTHSC-Houston Medical School.

"Structural Studies of G-protein Coupled Receptors"
Principal Investigator: Kevin D. Ridge
Agency: NIH, National Eye Institute
Type: R01 (EY013286); Period: 02/01/01-05/31/06
The objective of this research project is to develop and apply alternative methods for the expression, purification, and structure determination of the G-protein coupled receptors rhodopsin and CCR5. Specifically, structural information for intact and fragmented rhodopsin and CCR5 will be obtained using novel biochemical and structural approaches.

"Structural Studies of Visual Rhodopsin"
Principal Investigator: Kevin D. Ridge
Agency: Karl Kirchgessner Foundation
Period: 1st award, 07/01/98-06/30/00; 2nd award, 07/01/00-06/30/05
The objective of this research project was to develop and apply new approaches to study the structure and function of rhodopsin.

"Folding and Assembly in Visual Rhodopsin"
Principal Investigator: Kevin D. Ridge
Agency: NIH, National Eye Institute
Type: R29 (EY11112); Period: 06/01/96 – 05/31/02
The objective of this research project was to investigate the mechanisms of rhodopsin folding, assembly, and signaling by identifying specific polypeptide segments that fold independently and assemble to form a functional photoreceptor pigment (or mimic of the pigment). The results suggest that each of the three regions of rhodopsin (intradiscal, membrane-embedded, and cytoplasmic) can be regarded as structurally and functionally discrete entities. These findings have been largely confirmed by the X-ray crystal structure of dark rhodopsin.