Abboud J. Ghalayini, Ph.D.
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OBJECTIVE

A responsible position in research leading a group in drug development or advancement of new technology.

BACKGROUND SUMMARY

- Eighteen years of experience in biochemistry and cell biology applied to ophthalmic research. Extensive experience in retinal cell biology and metabolism.
- Effectively coordinating research, teaching and graduate student supervision
- Serving as a resource within the department for investigating signal transduction.
- Seeking, developing and implementing new technology and methodology for investigating signaling pathways.

SELECTED ACCOMPLISHMENTS

- Established the presence of several novel light-driven enzymes in the retina.
- Assay development for several lipid metabolizing enzymes resulting in several publications.
- Established in situ methodologies for detecting protein modification in vivo, resulting in several publications.
- Developed new methodologies for studying protein-protein interaction in the retina.
- Established several collaborative research efforts within and outside the department resulting in the development of new projects and publications.
- Recruited and trained 4 graduate students, 2 post-doctoral fellows and 6 research associates.
- Awarded 3 grants from private foundations and one from the National Institute of Health.

PROFESSIONAL EXPERIENCE

Medical University of The Americas, Nevis, West Indies **2004-present**
Associate Professor of Biochemistry,

STS-BIOTECH.COM **2002-2004**
Senior Consultant, Signal Transduction

Dean McGee Eye Institute, Departments of Ophthalmology and Cell Biology, University of Oklahoma Health Sciences Center **1995-2002**
Assistant Professor of Ophthalmology and Cell Biology:
Established a research program investigating the role of in vivo tyrosine phosphorylation in photoreceptor metabolism. Developed methodologies for studying several signaling enzymes in the retina including phospholipase C, phosphatidylinositol 3-kinase, Src and Shp2. These efforts resulted in ten publications. Recruited and trained several graduate students, postdoctoral fellows and research associates. Taught a course in molecular neuroscience. Competed successfully for several grants from federal and private sources.

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Cullen Eye Institute, Baylor College of Medicine, Houston, Texas. **1993-1995**
Research Assistant Professor: Retinal cell biology, supervision and training of postdoctoral fellows, research associates and graduate

Cullen Eye Institute, Baylor College of Medicine, Houston, Texas. **1990-1993**
Research Instructor: Retinal cell biology, supervision and training of research associates and graduate students.

Cullen Eye Institute, Baylor College of Medicine, Houston, Texas. **1988-1990**
Research Associate :

Cullen Eye Institute, Baylor College of Medicine, Houston, Texas. **1983-1988**
Post-doctoral fellow: Training in Dr. R. E. Anderson's laboratory in photoreceptor metabolism, lipid biochemistry and enzymology.

University of Houston, Houston, Texas. **1977-1982**
Graduate student: Training in Dr. Joseph Eichberg's laboratory in enzymology, lipid metabolism subcellular fractionation, membrane proteins characterization and purification.

EDUCATION

Ph.D. Biochemical and Biophysical Sciences, University of Houston **1982**

M.S. Biochemical and Biophysical Sciences, University of Houston **1979**

B.S. Biology-Chemistry, American University of Beirut **1976**

SPECIAL SKILLS

• Experience in signal transduction, enzymology, protein purification, lipid metabolism, protein-protein interaction, cytoskeleton, antibody-antigen interaction, in vitro and in vivo assay development. Analytical skills: electrophoresis, immunoblotting, immunocytochemistry, immunoprecipitation, subcellular fractionation, affinity chromatography, subcellular fractionation. Supervisory and hands-on experience.

• Significant experience in retinal cell biology and biochemistry, G-protein coupled receptors, phospholipid signaling and tyrosine phosphorylation signaling pathways.

• Excellent communication skills: manuscript preparation and grant proposal writing.

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MEMBERSHIPS

American Society for Biochemistry and Molecular Biology
American Association for the Advancement of Science
Association for Research in Vision and Ophthalmology
International Society for Eye Research
International Society for Neurochemistry

JOURNAL REVIEW

Journal of Neurochemistry
Experimental Eye Research
Current Eye Research
Investigative Ophthalmology and Visual Science

GRANTS

Principal Investigator:

National Eye Institute: 1R01EY11504-04: Role of Tyrosine Phosphorylation in Mammalian Retina (12/ 1/98-7/30/02, $118,265/year, direct cost).

Presbyterian Health Foundation: Role of Tyrosine Phosphorylation in Mammalian Retina (1996-1997) $43,850.

University of Oklahoma Provost Fund: Role of Tyrosine Phosphorylation in Mammalian Retina (1995-1996) $25,000.

Knights Templar Eye Foundation, Inc: Role of Tyrosine Phosphorylation in Mammalian Retina: Investigation of the Mode of Action of Fibroblast Growth Factor. (1994 - 1995). $20,000.

Co-investigator:

National Eye Institute: 5R01EY00871-26 to Robert E. Anderson: Second Messengers In The Retina (12/1/96- 11/30/01 $230,340/year).

INVITED LECTURES

11/94 Phospholipase C isozymes in mammalian retina: International Society for Eye Research meeting, New Delhi, India.

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10/96 Light-mediated tyrosine phosphorylation in mammalian retina. Dupont-Merck Experimental station, Wilmington, Delaware.

11/96 Novel light-mediated signaling pathways in mammalian retina. Department of Pathology Seminar Series, University of Oklahoma Health Sciences Center.

7/97 Phospholipase C($_1$ in Bovine Rod Outer Segments: Immunolocalization and Light-dependent Binding to Membranes. Joint meeting of the American society for Neurochemistry and International Society for Neurochemistry, Boston, MA.

4/98 In Vivo Light-Mediated Tyrosine Phosphorylation in Mammalian Retina: a Novel Signaling Pathway in Photoreceptor Cells. Department of Biology and Biochemistry, University of Houston, Houston, Texas.

PUBLICATIONS:

1. **Ghalayini, A.J.,** Desai, N.**,** Smith, K. R., Holbrook, R. M., Elliott, M. H and H. Kawakatsu (2002) Light-dependent association of *Src* with photoreceptor rod outer segments (ROS) membrane proteins *in vivo*. ***J. Biol. Chem***. **277**, 1469-1476.
2. Elliott M. H. Fliesler, S. J. and **Ghalayini A. J.** (2003) Cholesterol-dependent association of Caveolin-1 with Transducin Alpha subunit in photoreceptor rod outer segments: Disruption by cyclodextrin ***Biochemistry*** **42,** 7892-7903.
3. Bell, M.W., Desai, N., Guo, X.X., and **A. J. Ghalayini** (2000) Tyrosine phosphorylation of the " subunit of transducin and its association with *Src* in rod outer segments. ***J. Neurochem. 75***, 2006-2019.
4. Huang, Z. **Ghalayini, A.J.,** Guo, X.X.**,** Alvarez, K. and R. E Anderson(2000). Light-Mediated Activation of Diacylglycerol Kinase in Rat and Bovine Rod Outer Segments. ***J. Neurochem***. **75,** 355-362.
5. Bell, M.W., Alvarez, K. and **A. J. Ghalayini** (1999) Association of the Protein Tyrosine Phosphatase Shp-2 with Transducin-" and a 97 Kda Tyrosine Phosphorylated Protein in Photoreceptor Rod Outer Segments. ***J. Neurochem.73,*** *2331-2340.*
6. Rapp and **A. J. Ghalayini** (1999) Influence of UVA light stress on photoreceptor cell metabolism: Decreased rates of rhodopsin regeneration and opsin synthesis. ***Exp. Eye Res***. **68,** 757-764.
7. **Ghalayini, A. J.,** Guo, X.X., Koutz C.A, and R. E. Anderson (1998) Light stimulates tyrosine phosphorylation of rat rod outer segments *in vivo*. ***Exp. Eye Res.*** **66**, 817-821.
8. **Ghalayini, A. J.,** Weber, N. R., Rundle, D. R, C.A. Koutz,. Guo,X.X., Lambert, D. and R. E. Anderson (1998) Phospholipase C($_1$ in bovine rod outer segments: Immunolocalization and light-dependent binding to membranes. ***J. Neurochem.*****70**, 171-178.
9. Guo , X.X., **Ghalayini, A.J.**, Chen, H., ., and Anderson, R.E. (1997). Phosphatidylinositol 3-kinase in bovine rod outer segments ***Invest. Ophthalmol. Vis. Sci.*** **38,** 1873-1882.
10. Anderson, R.E., Alvarez, R.A., Guo, X.X., Nordquist, R.E., Baehr, W. and **Ghalayini, A.J.**(1996). Genes encoding enzymes involved in phosphoinositide metabolism are candidate genes for inherited retinal degenerations in humans. In **Retinal Degeneration and Regeneration**, ed. S. Kato, N. N. Osborne, and M.Tamai. Kugler Publications (Amsterdam). pp. 81-88.
11. Day, N.S., **Ghalayini A.J.** and R.E. Anderson (1995). Membrane-associated inositol hexakisphosphate binding proteins in bovine rod outer segments. ***Currrent Eye Research*** **14,** 851-855.

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12. Ghalayini, A.J.., and R.E. Anderson (1995). Light adaptation of bovine retinas *in situ* stimulates phosphatidylinositol synthesis in rod outer segments *in vitro*. ***Currrent Eye Research 14*:** 1025-1029.

13. Alvarez, R.A., **A.J. Ghalayini**, P.Xu, A Hardcastle, S. Bhattacharya, P.N. Rao, M.J. Pettenati, D.W. Bowden, R.E. Anderson, and W. Baehr (1995). cDNA sequence of the human retinal phosphoinositide-specific phospholipase C $4 and chromosomal localization of its gene. ***Gemonics* 29,** 53-61.

14. Ghalayini, A.J., C.A. Koutz, W.C. Wetsel, Y.A. Hannun, and R.E. Anderson, (1994). Immunolocalization of PKC. in rat photoreceptor inner segments. ***Current Eye Research***. **13**:145-150.

15. Ghalayini, A. J. and J. Eichberg (1993). Purification of brain phosphatidylinositol synthetase. **Methods in Neurosciences**. edited by John N. Fain, vol 18, pp 85-92.

16. Ghalayini, A.J. and R.E. Anderson (1992). Activation of bovine rod outer segment phospholipase C by arrestin. ***J. Biol. Chem.* 267**, 17977-17982.

17. Ghalayini, A.J., A.P. Tarver, W.M. Mackin, Cynthia A. Koutz, and Robert E. Anderson (1991). Identification and immunolocalization of phospholipase C in bovine rod outer segments. ***J. Neurochem.* 57**,1405-1412.

18. Choe, H.-G., **A.J. Ghalayini**, and R.E. Anderson (1990). Phosphoinositide metabolism in frog rod outer segments. ***Exp. Eye Res.* 51**,167-176.

19. Ghalayini, A.J. and R.E. Anderson (1987). Activation of bovine rod outer segment phospholipase C by ATP and GTP. ***Neurosci. Res. Commun***. **1**:119-127.

20. Ghalayini, A.J. and R.E. Anderson (1986). Light activation of phospholipase C in frog rod outer segments. **In Pineal and Retinal Relationships,** edited by P.J. O'Brien and D.C. Klein, Academic Press, Inc. (Orlando, Florida), pp.431-435.

21. Ghalayini, A. and J. Eichberg (1985). Purification of phosphatidylinositol synthetase from rat brain by CDP-diacylglycerol affinity chromatography and properties of the purified enzyme. ***J. Neurochem.* 44**,175-182.

22. Brown, J.E., L.J. Rubin, **A.J. Ghalayini,** A.P. Tarver, R.F. Irvine, M.J. Berridge, and R.E. Anderson (1984) A biochemical and electrophysiological examination of myo-inositol polyphosphate as a putative messenger for excitation in Limulus ventral photoreceptor cells. ***Nature*** (London) **311**,160-163.

23. Ghalayini, A. J. and R.E. Anderson (1984) Phosphatidylinositol 4,5-bisphosphate: Light-mediated breakdown in the vertebrate retina. ***Biochem. Biophys. Res. Comm.* 124**,503-506.

24. Eichberg, J., R. Bostwick, and **A. Ghalayini** (1983) Solubilization, purification and properties of membrane-bound enzymes which biosynthesize phosphoinositides. In Neural Membranes, edited by G.Y. Sun, N. Bazan, J.Y. Wu, G. Porcellati, and A.Y. Sun. Humana Press, Clifton, N.J., pp. 191-213.