

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.

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NAME Stephen H. Tsang		POSITION TITLE Assistant Professor	
eRA COMMONS USER NAME TSANGS			
EDUCATION/TRAINING (<i>Begin with baccalaureate or other initial professional education, such as nursing, and</i>			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
The Johns Hopkins University, Baltimore, MD	A.B.	1989	Biology
Columbia University, New York, NY	M. Phil.	1993	Mammalian Genetics
Columbia University, New York, NY	Ph.D.	1996	Mouse Molecular Genetics
Columbia University, New York, NY	M.D.	1998	Medicine
UCLA, Los Angeles, CA		2003	Ophthalmology and Visual Sciences

A. Positions and Honors**Positions and Employment**

1986 – 1987	Research Assistant, Laboratory of Sandra R. Wolman, Cytogenetics, New York University
1986 – 1988	President, Student Affiliate of the American Chemical Society, The Johns Hopkins Chapter
1986 – 1989	Research Assistant, Laboratory of Lou-Sing Kan, Biophysics, The Johns Hopkins University
1986 – 1989	Research Assistant, Laboratories of Clair A. Francomano and Victor A. McKusick, Linkage Analysis, The Johns Hopkins University
1988 – Present	Member, American Society of Human Genetics (ASHG)
1988 – Present	Council member, Association of Chinese Geneticists in America (ACGA)
1989 – Present	Society of Chinese Bioscientists in America (SCBA)
1995 – Present	Association for Research in Vision and Ophthalmology (ARVO)
1996 – 1999	Electrophysiology Fellow, Laboratories of Peter Gouras and Stephen P. Goff, Columbia University
1997 – Present	Scientific Director, American Chinese Medical Association
1998 – 1999	Transitional Resident, New York Hospital at Queens, Weil Medical College, Cornell University
1999 – 2003	Housestaff, Jules Stein Eye Institute, University of California, Los Angeles
1999 – 2003	Enzymology Fellow, Laboratory of Debora B. Farber, University of California, Los Angeles
2000 – Present	Ad Hoc Reviewer for Investigative Ophthalmology and Visual Sciences, Journal of Medical Genetics, and Molecular Vision
2001 – Present	Fight for Sight/Grant-In-Aid Review Panel Member
2005	The Harvey Society
2006	Columbia Ophthalmology Basic Science Course Director
2003 – Present	Tenure-track Assistant Professor, Columbia University Medical Center

Medical License

2000	Practice of Medicine & Surgery in New York, License # 214245-1
2001	Practice of Medicine & Surgery in California, License #A74836 (inactive)
2005	Diplomate of the American Board of Ophthalmology

Honors

1988 – 1989	Alpha Epsilon Delta, National Premedical Honor Society, Maryland Alpha (Historian 1988 – 1989)
1988 – 1989	Dean's List, The Johns Hopkins University
1989	Graduate with Departmental Honors

1989	Recipient of Student Activities Award, The Johns Hopkins University
1989-1997	NIH-National Institute of General Medical Sciences Medical Scientist Training Program (MSTP) Fellowship: PHS Grant # T32 GM 073667-14 & Columbia University Dean's fellowship
1995	Certificate of Award, SCBA, Tristate Chapter
1995	ARVO/National Eye Institute Travel Fellowship Grant for the 1995 AVRO meeting
1996	New York Human Genetics Club (Hosted by Lucio Luzzatto, M.D.)
1996	Dean's Award for Excellence in Research, Graduate School of Arts & Sciences, Columbia University
1996	ACGA Student Award, presented at the ASHG Meeting
1997	Dr. Alfred Steiner Award for Best Medical Student Research, College of Physicians and Surgeons, Columbia University
1997	Best Overall Presentation, Eastern Student Research Forum sponsored by American Medical Association and the University of Miami
1997	Travel Grant, European Students' Conference at the Charité in Berlin Moderator of the Session on Retina/RPE Gene Knockouts and Transgenic Mouse Models, ARVO Annual Meeting
1998	Edith McKane Award in Ophthalmology, College of Physicians and Surgeons, Columbia University
1998	John Lattimer Award in Urology, College of Physicians and Surgeons, Columbia University
1999	Moderator of the Session on Modification of Gene Expression, ARVO Annual Meeting
2000	Jules Stein Eye Institute Research Award
2000	RPB Association of University Professors in Ophthalmology Resident Award
2001	Co-chairman, Genetics Session at the third International Ophthalmology Symposium, Chinese University of Hong Kong
2003	RPB Association of University Professors in Ophthalmology Resident Award
2003	Nesburn Resident Award
2003	Co-Moderator, ASHG 53 rd Annual Meeting Symposium on Special Senses
2004	Dennis W. Jahnigen Career Award, American Geriatrics Society
2005	Becker-AUPO-RPB Award
2006	Moderator, ASHG 53 rd Annual Meeting Symposium on "Pathfinding"
2006	ARVO/Alcon Early Career Clinician Scientist Award

B. Selected peer-reviewed publications (in chronological order)

1. **Tsang S.H.** and Kan L.S. (1990) 300MHz NMR Studies of the Differentiation of Human Diploid Keratinocytes. *Cell Biophysics* 16:127-138.
2. **Tsang S.H.**, Gouras P., Yamashita CK., Fisher J., Farber D.B., and Goff S.P. (1996) Retinal Degeneration in Mice Lacking the β subunit of cGMP phosphodiesterase. *Science* 272: 1026-1029.
3. **Tsang, S. H.**, and Gouras, P. (1996). Molecular Physiology and Pathology of the Retina. In *Duane's Clinical Ophthalmology*. W. Tasman and E. A. Jaeger, eds. (Philadelphia: J.B. Lippincott). Chapter 2.
4. **Tsang, S. H.**, and Gouras, P. (2004). Photoreceptors and photoreceptor dysfunctions. In *Encyclopedia of Neuroscience*. G. Adelman and B. Smith, eds. (Amsterdam: Elsevier Science).
5. **Tsang, S. H.**, Chen, J., Kjeldbye, H., Li, W., Simon, M. I., Gouras, P., and Goff, S. P. (1997). Retarding Photoreceptor Degeneration in *Pde6g^{tm1}/Pde6g^{tm1}* Mice by an Apoptosis Suppressor Gene. *Invest. Ophthal. Vis. Sci.* 38:943-950.
6. Ortega, S., Ittmann, M., **Tsang, S. H.**, Ehrlich, M., and Basilio, C. (1998). Neuronal defects and delayed wound healing in mice lacking fibroblast growth factor 2. *Proc Natl Acad Sci U S A.* 95, 5672-7.
7. **Tsang, S. H.**, Burns, M. E., Calvert, P. D., Gouras, P., Baylor, D. A., Goff, S. P., and Arshavsky, V. Y. (1998). Role of the Target Enzyme in Deactivation of Photoreceptor G Protein in Vivo. *Science.* 282, 117-21.
8. Lai, C.C., Gouras, P., Doi, K., Lu, F., Kjeldbye, H., Goff, S.P. Pawliuk, R., Leboulch, P., **Tsang, SH.** (1999) Tracking RPE Transplants labeled by Retroviral Gene Transfer with Green Fluorescent Protein. *Invest Ophthal Vis Sci* 40:2141-2146.
9. Salchow, D.J., Gouras, P., Doi, K., Goff, S.P., Schwinger, E, **Tsang, S.H.** (1999). A Point Mutation (W70A) in the Rod PDE Gene Desensitizing and Delaying Murine Rod Photoreceptors. *Invest Ophthal Vis Sci* 40: 3262-3267.
10. **Tsang, S.H.**, Yamashita, C.K., Doi, K., Salchow, D.J., Bouvier, N., Mendelsohn, M., Gouras, P., Farber, D.B. and Goff, S.P. (2001) *In vivo* studies of the β subunit of retinal cGMP-phosphodiesterase with a substitution of tyrosine-84. *Biochem. J.* 353:467-474.
11. **Tsang, S.H.**, Yamashita, C.K., Lee, W-H., Lin, C.-S., Goff, S., Gouras, P. and Farber, D.B. (2002) The positive role of the carboxyl-terminus of the β subunit of retinal cGMP-phosphodiesterase in maintaining phosphodiesterase activity in vivo. *Vision Res.*, 42:439-445.

Principal Investigator/Program Director (Last, First, Middle): Tsang, Stephen, H.

12. Doi, K., Hargitai, J., Kong, J., **Tsang, S.H.**, Wheatley, M., Chang, S., Goff, S. and Gouras, P. (2002). Lentiviral transduction of green fluorescent protein in retinal epithelium: evidence of rejection. *Vision Res.*, 42:551-558.2.
13. Gouras, P., Kong, J., and **Tsang, S. H.** (2002). Retinal Degeneration and RPE Transplantation in Rpe65(-/-) Mice, *Invest Ophthalmol Vis Sci* 43, 3307-11.
14. Farber, D. B., and **Tsang, S. H.** (2003). Stationary night blindness or progressive retinal degeneration in mice carrying different alleles of Pde6 gamma, *Front Biosci* 8, S666-75.
15. Tsang, S. H., Woodruff, M. L., Chen, C. K., Yamashita, C. Y., Cilluffo, M. C., Rao, A. L., Farber, D. B., and Fain, G. L. (2006). GAP-independent termination of photoreceptor light response by excess gamma subunit of the cGMP-phosphodiesterase. *J Neurosci* 26, 4472-4480.

C. Research Support

Ongoing Research Support

NIH EY000408 Tsang (PI) 9/30/00 – 8/31/06

Tamoxifen-Induced Knock-Out of a Retinal Gene

This project consists of developing an inducible gene targeting system in the retina.

Foundation Fighting Blindness Career Development Award T-CD/PC-0902-0230;

Co-PIs. Stephen H. Tsang and Debora B. Farber, 1999-2006;

This project consists of dissecting the positive role of PDE6gamma in augmenting the catalytic activity of PDEcore.

Burroughs-Wellcome 1002507; P.I., Stephen H. Tsang

"Unraveling Genetic Pathways Leading to Cell Death in Mice Lacking the gamma subunit of the cGMP Phosphodiesterase (PDE6 γ)" 10/1/03-9/30/06

This project consists of microarray and serial analysis of gene expression (SAGE) of retina lacking PDE6gamma

American Geriatrics Society Tsang (PI) 7/01/04 – 6/30/06

New Animal Model for Age-Related Macular Degeneration