

Principal Investigator/Program Director Lerner, Leonid E.
 (Last, First, Middle):

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 Lerner, Leonid E.		POSITION TITLE Assistant Professor	
eRA COMMONS USER NAME: lerner2			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
1. Moscow Medical & Dental School, Russia	M.D.	1983-89	Medicine
2. California Pacific Med. Ctr., San Francisco,	Post-doc	1991-92	Electrophysiology
3. University of California, San Francisco, CA	Post-doc	1992-94	Cell Biology
4. University of California, San Francisco, CA	Post-doc	1995-96	Cell Biology
5. Molecular Biology Institute, UCLA, CA	Ph.D.	1996-2002	Molecular Biology
6. Jules Stein Eye Institute, UCLA, CA		1999-2002	EyeSTAR

A. Positions, Professional Societies and Honors

Positions, Professional Societies and Employment

2006-present Assistant Professor, Departments of Ophthalmology and Biological Chemistry, University of California, Irvine

2005-present Referee, Molecular and Cellular Biology

2005-present Referee, Retina

2004-present Referee, American Journal of Ophthalmology

2004-2006 Instructor, Department of Ophthalmology, Scheie Eye Institute, University of Pennsylvania, Philadelphia, PA

2002-2004 Retinal Diseases and Surgery Fellow, Cole Eye Institute, Cleveland Clinic Foundation, OH

2001-present Member, American Academy of Ophthalmology

1999-2002 Housestaff, Jules Stein Eye Institute, University of California, Los Angeles

1996-present Referee, Experimental Eye Research

1994-present Member, Association for Research in Vision and Ophthalmology

1994-1995 Intern, Department of Internal Medicine, Los Angeles County - University of Southern California Medical Center, University of Southern California School of Medicine

Medical License

2006-present Practice of Medicine and Surgery in California, License #A54458

2005-present Diplomat of the American Board of Ophthalmology

2004-2006 Practice of Medicine and Surgery in Pennsylvania, License #MD425069 (expired)

2002-2004 Practice of Medicine and Surgery in Ohio, License #35.081776 (inactive)

Honors and Peer Recognition

- 1996 Specialty Training and Advanced Research (STAR) award, UCLA School of Medicine, CA
- 1997 Best Research Paper by Ophthalmology Resident, Southern California Society of Ophthalmology
- 2001 Resident Research Award, Jules Stein Eye Institute, UCLA School of Medicine, CA
- 2003 Organizer and Moderator, Regulation of Gene Expression, Special Interest Group, Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL
- 2003 Faculty, Gene Therapy of Age-Related Macular Degeneration, 4th Annual Retina Summit, Cole Eye Institute, Cleveland Clinic Foundation, Cleveland, OH
- 2003 Faculty, Diabetes Control and Diabetic Retinopathy, Update on Diabetic Retinopathy: Current Knowledge, New Developments and Case Presentations, Cole Eye Institute, Cleveland Clinic Foundation, Cleveland, OH
- 2005 Moderator, Gene Regulation and Transcription, Paper Session, Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL
- 2005 Organizer and Moderator, Regulation of Gene Expression in the Eye, Special Interest Group, Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL
- 2006 Co-moderator, Retinopathy of Prematurity (ROP), Basic Science Course, Scheie Eye Institute, University of Pennsylvania, Philadelphia, PA
- 2006 Moderator, University of California, Irvine Colloquium: Cystoid Macular Edema
- 2007 Preceptor, Patient-Doctor II Clinic Course, University of California, Irvine School of Medicine, Irvine, CA

B. Selected Peer-Reviewed Publications and Book Chapters (in chronological order)

1. Stamper RL, Lerner LE. Psychophysical Techniques in Glaucoma. In *The Glaucomas*. R Ritch, BM Shields and T Krupin, eds. (St. Louis: Mosby). Vol. 1, Chapter 31, 1995.
Wrote the paper.
2. Di Polo A, Lerner LE, Farber DB. Transcriptional Activation of Human Rod cGMP-Phosphodiesterase β -Subunit Gene is Mediated by an Upstream AP-1 Element. Nucleic Acids Res., Vol. 25(19), 3863-7, 1997.
Designed and carried out experiments on protein-DNA interactions, analyzed data and wrote part of the paper relevant to the experimental part.
3. Lerner LE, Polansky JR, Howes EL, Stern R. Hyaluronan in the Human Trabecular Meshwork. Invest. Ophthalmol. Vis. Sci., Vol. 38(6), 1222-1229, 1997.
Designed project, purified HA-binding protein, performed immunohistochemistry and wrote the paper.
4. Lerner LE, Schwartz DM, Hwang DG, Howes EL, Stern R. Hyaluronan and CD44 in the Human Cornea and Limbal Conjunctiva. Exp. Eye Res., Vol. 67(4), 481-484, 1998.
Designed project, performed immunohistochemistry and wrote the paper.
5. Farber DB, Lerner LE, Viczian AS. Transient Transfection of Human Retinoblastoma Cells: Application to the Analysis of the Regulatory Regions of Photoreceptor-Specific Genes. In

Methods In Molecular Medicine: Vision Research Protocols. PE Rakoczy, ed. (Totowa, NJ: Humana Press, Inc.). Vol. 47, 31-34, 2000.

Wrote part of the paper.

6. Lerner LE, Farber DB. Transcriptional Regulation of the cGMP-Phosphodiesterase β -Subunit Gene. In "Vertebrate Phototransduction and the Visual Cycle", Methods In Enzymology, pp.617-635, 2000.
Wrote the paper.
7. Farber DB, Lerner LE, Gribanova YE, Verardo MR, Piriev NI. The cGMP-Phosphodiesterase β -Subunit Gene: Transcriptional and Post-Transcriptional Regulation. In *New Insights Into Retinal Degenerative Diseases*. RE Anderson, MM LaVail and JG Hollyfield, eds. (Kluwer Academic/Plenum Publishers). 255-267, 2001.
Wrote part of the paper.
8. Lerner LE, Gribanova YE, Ji M, Knox BE, Farber DB. Nrl and Sp Nuclear Proteins Mediate Transcription of Rod-Specific cGMP-Phosphodiesterase β -subunit: Involvement of Multiple Response Elements. J. Biol. Chem., Vol. 276(37), 34999-35007, 2001.
Designed research, cloned GFP-based genetic markers and luciferase-based reporter vectors, generated transgenic Xenopus using REMI, analyzed data and wrote the paper.
9. Lerner LE, Gribanova YE, Knox BE, Farber DB. The rod cGMP-phosphodiesterase β -subunit promoter is a specific target for Sp4 and is not activated by other Sp proteins or Crx. J. Biol. Chem., Vol. 277(29), 25877-83, 2002.
Designed research, cloned genetic constructs, performed transient transfections, analyzed data and wrote the paper.
10. Lerner LE, Lewis H. Ophthalmologic Disorders. In *Clinical Preventive Medicine*. RS Lang and DD Hensrud, eds. (American Medical Association Press). Chapter 61, 711-723, 2004.
Wrote the paper.
11. Lerner LE, Peng G-H, Gribanova YE, Chen S and Farber DB. Sp4 is Expressed in Retinal Neurons, Activates Transcription of Photoreceptor-Specific Genes and Synergizes with Crx. J. Biol. Chem., Vol. 280(21), 20642-50, 2005.
Designed research, cloned genetic constructs, performed molecular biology assays, analyzed data and wrote the paper.
12. Lerner LE, Piriev NI, Farber DB. Transcriptional and Post-Transcriptional Regulation of the Rod cGMP-Phosphodiesterase β -Subunit Gene: Recent Advances and Current Concepts. In *New Insights Into Retinal Degenerative Diseases*. RE Anderson, MM LaVail and JG Hollyfield, eds. (Kluwer Academic/Plenum Publishers). 2005.
Wrote the paper.
13. Gold B, Merriam JE,Lerner LE, et al. Variation in the Factor B (BF) and Complement Component 2 (C2) Genes in the MHC Class III Locus is Associated with Age-related Macular Degeneration, Nat. Genet., Vol. 38(4):458-62, 2006.
Analyzed data.

14. Lerner LE, Piri N, Farber DB. Transcriptional and post-transcriptional regulation of the rod cGMP-phosphodiesterase β -subunit gene, *Adv. Exp. Med. Biol.*, Vol. 572, 217-29, 2006.

Wrote the paper.

15. Ufret-Vincenty EL, Lerner LE, Kaiser PK. Non-Exudative Age-Related Macular Degeneration. In *Retinal Imaging*. D Huang et al., eds. (St. Louis: Mosby). 2006.

Provided retinal images and wrote part of the paper.

16. Lerner LE, Lewis H. Limited Macular Translocation with Chorioretinal Outfolding. In *Vitreoretinal Surgical Techniques*. GA Peyman, SA Meffert and MD Conway, eds. (Taylor and Francis CRC Press). 2nd Edition, 2006.

Wrote the paper.

C. Research Support

Ongoing Research Support

UCI School of Medicine & UCI Eye Institute Set-Up Funds 2006-2009

Completed Research Support

1. K12 EY015398 Dr. Maureen Maguire (PI), Scheie Eye Institute, U. Penn 2004-2005
NIH/NEI

Title: "Identification of Control Mechanisms for the Retina-Enriched Sp4 Gene"
The goal of this project was to investigate molecular regulation of the *Sp4* gene.
Role: Mentored Awardee Mentor: Dr. Eric A. Pierce

2. K08 EY00367 Lerner (PI) 1997-2000
NIH/NEI

Title: "Transcriptional Regulation of the β -subunit of cGMP-PDE"
The goal of this project was to study transcriptional mechanisms that control expression of the rod-specific phosphodiesterase β -subunit gene.
Mentor: Dr. Debora B. Farber

3. R01 EY02651 Dr. Debora B. Farber. (PI), Jules Stein Eye Institute, UCLA 1999-2004
NIH/NEI

Title: "Phosphodiesterases in Retinal Metabolism and Disease"
Role: Co-Primary Investigator

4. Jules Stein Alumni Association Grant Lerner (PI) 1998-1999
Jules Stein Eye Institute, UCLA School of Medicine

Title: "Non-invasive Approach to Gene Therapy of Retinitis Pigmentosa"
The goal of this project was to study iontophoresis as non-invasive means of intraocular delivery of nucleic acids.

Principal Investigator: Dr. Maureen Maguire **Role On Project:** Mentored Awardee

Agency: NIH/NEI **Period:** 2004-2005

Major Goals: The goal of this project was to investigate molecular regulation of the *Sp4* gene.

2. **Title:** "Transcriptional Regulation of the β -subunit of cGMP-PDE"

Principal Investigator: Leonid E. Lerner

Agency: NIH/NEI **Period:** 1997-2000

Major Goals: The goal of this project was to study transcriptional mechanisms that control expression of the rod-specific phosphodiesterase β -subunit gene.

Mentor: Dr. Debora B. Farber

3. **Title:** "Phosphodiesterases in Retinal Metabolism and Disease"

Principal Investigator: Dr. Debora B. Farber **Role on Project:** Co-Investigator

Agency: NIH/NEI **Period:** 1999-2004

Major Goals: Major goals: Investigation of protein subunits of phosphodiesterase enzymes expressed in retinal photoreceptors, and their role in normal retinal metabolism and diseases such as hereditary retinal degenerations.

4. **Title:** "Non-invasive Approach to Gene Therapy of Retinitis Pigmentosa"

Principal Investigator: Leonid Lerner

Agency: Jules Stein Alumni Association Grant **Period:** 1998-1999

Jules Stein Eye Institute, UCLA School of Medicine

Major Goals: The goal of this project was to study iontophoresis as non-invasive means of intraocular delivery of nucleic acids.