UNIVERSITY OF PENNSYLVANIA-SCHOOL OF MEDICINE

Curriculum Vitae

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Office Address: Retina Service and Computer Vision Laboratory
Scheie Eye Institute
Department of Ophthalmology
University of Pennsylvania
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Education:

1981-85	BSE,	Princeton University (Mechanical Engineering)
1985-87	MSE,	University of Pennsylvania (Bioengineering)
1985-91	PhD,	University of Pennsylvania (Biophysics)
1988-92	MD,	University of Pennsylvania (Medicine)

Postgraduate Training and Fellowship Appointments:

1992-93	Transitional Intern, Albert Einstein Medical Center, Philadelphia
1993-96	Resident in Ophthalmology, Massachusetts Eye & Ear Infirmary, Harvard Medical School
1996-7	Clinical Fellowship, Retinal Diseases and Vitreoretinal Surgery, Scheie Eye Institute, University of Pennsylvania

Faculty Appointments:

1993-96	Instructor in Ophthalmology, Harvard Medical School
1996-97	Instructor in Ophthalmology, University of Pennsylvania
1996-	Visiting Scientist, GRASP Laboratory, Computer and Information Science, University of Pennsylvania
1997-	Assistant Professor in Ophthalmology, University of Pennsylvania
1997-	Director, Computer Vision Laboratory, Scheie Eye Institute
1998-	Vision Research Center, University of Pennsylvania
1998-	Bioengineering Graduate Group, University of Pennsylvania

1999- Center fof Health Informatics at Penn (CHIP)

Specialty Certification:

1997 American Board of Ophthalmology

Licensure: Pennsylvania

Awards, Honors and Memberships in Honorary Societies:

1985 Elected to Sigma Xi, national scientific honor society
1985 Commended Student, National Science Foundation
1988 Travel Fellow, American Society for Photobiology
1991 William Jeffers Prize for Excellence in Biomedical Research
1995 Winner, Resident Research Award, American Society for Laser Medicine and Surgery
1995 Winner, Resident Paper Competition, American Society for Cataract and Refractive Surgery
1996 Otsuka Ophthalmology Travel Fellowship
1996 Heed Ophthalmic Fellowship
1996 Ronald G. Michels Vitreoretinal Surgery Fellowship
1997 Who's Who in Science and Engineering
1999 Mentor, Medical Student Research Competition Winner, American College of Physicians
1999 Teacher of the Year, Golden Apple Award, Scheie Eye Institute, University of Pennsylvania School of Medicine
2000 Ruth Salta Investigator Award for AMD Research, AHAF

Membership in Professional and Scientific Societies:

Fellow, American Academy of Ophthalmology
Pennsylvania Academy of Ophthalmology
Association for Research in Vision and Ophthalmology
American Society for Laser Medicine and Surgery
SPIE-The International Society for Optical Engineering
Biomedical Optics Society
IEEE Computer Society
Research to Prevent Blindness
American Medical Informatics Association
DICOM Working Group 9, Ophthalmic Standards

Editorial and Reviewer Positions:

Ad hoc reviewer: Applied Optics, Lasers in Surgery & Medicine, Retina, Archives of Ophthalmology, Journal of Clinical Rheumatology,

American Journal of Ophthalmology, British Journal of Ophthalmology, Ophthalmology, Ophthalmic Surgery and Lasers, Investigative Ophthalmology and Visual Sciences, New England Journal of Medicine, Journal Cataract and Refractive Surgery
Program Committee, Ophthalmic Technologies, Biomedical Optics, Photonics West/SPIE, 1998-present
Review Committee, American Health Assistance Foundation, Macular Degeneration Research Grant
Scientific Reviewer: The Wellcome Trust
Ad hoc reviewer: National Institutes of Health
Webmaster, AMD Patient Information Site, University of Pennsylvania
Commercial Relationships Committee, Association for Research in Vision and Ophthalmology

Principal Investigator of Grants:

Career Development Award, Research to Prevent Blindness, 1997-2001, $160,000 (total)
Registration and Analysis of Fundus Images, National Institutes of Health, K08-EY00374, 1997-2002, $506,637 (total)
Client-server image analysis tools for clinical trials, American Health Assistance Foundation, 1999-2001, $50,000
Reading Center, Complications of AMD Prevention Trial, 1999-04, NIH U10 EY12211
Co-PI, Vision Research Center, NIH, 1997-
Video injection hardware for image guided diagnosis and treatment of macular diseases, Lions Sight Conservation and Eye Research Foundation, 1999-2000, $13,858
Computer-aided diagnosis and treatment of macular degeneration, National Imagery and Mapping Agency, National Information Display Laboratory

Past Support

1986-87 Cellular and Molecular Biology Training Fellowship, National Institutes of Health
1988-92 Medical Scientist Trainee, National Institutes of Health

Academic Committes at the University of Pennsylvania:

Faculty Interview Panel, University of Pennsylvania School of Medicine, 1997-
Resident Selection Committee, Scheie Eye Institute, 1997-
Mentor, Combined Degree (MD/PhD) Program, 1998-

Major Teaching and Clinical Responsibilities at the University of Pennsylvania:

1. Retina Clinic, VA Medical Center, one afternoon/week.
2. Resident General Ophthalmology Clinic, one afternoon per month.
3. Retina Clinic, Scheie Eye Institute, one afternoon/week.
4. ID 200, medical student lecture, one-two hours per week.
5. Neuroanatomy 100, laboratory instructor for eye dissection, yearly
6. Organizer, Biweekly Retina Research Conference
7. Ophthalmology 300, Indirect Ophthalmoscopy, one hour/wk.
8. Supervisor/mentor, medical student/resident research projects.
9. Coordinator, Retina Journal Club

Lectures by Invitation:

Temperature measurements during erbium phacoablation. American Society for Cataract and Refractive Surgery, Award Presentation, San Diego, CA, April, 1995.

New treatments for age-related macular degeneration. Vision Research and Eye Care Today. International Association of Lions Clubs, July 1997

The future of slitlamp biomicroscopy: An augmented reality environment. Association of University Professors of Ophthalmology Research Forum, New Orleans, LA, 1997.

Spatio-temporal image processing of fundus fluorescein angiography for clinical trials. Annual Meeting of the Ronald G. Michels Fellowship Foundation, October, 1997.

Image segmentation for fundus feature quantification in age-related macular degeneration, GRASP Laboratory Seminar Series, Computer and Information Science Department, University of Pennsylvania, December 1997

Photodynamic therapy for neovascular AMD: An update. At Age-Related Macular Degeneration: New Approaches and Reasons for Optimism, University of Pennsylvania, January 1998

Computer-assisted fundus feature quantitation in AMD. Wilmer Reading Center, Johns Hopkins University School of Medicine, February, 1998

Eye fundus image segmentation for clinical trials in age-related macular degeneration, Medical Image Processing Group, Department of Radiology, University of Pennsylvania, March 1998.

Augmented reality fundus biomicroscopy, GRASP Laboratory Seminar Series, Computer and Information Science Department, University of Pennsylvania, March, 1998.

Applications of computer vision for study and treatment of age-related macular degeneration: Progress and challenges, Sarnoff Research Center, Princeton, NJ, April, 1998.

Basic Medical Retina, Joint Commission of Allied Health Personnel in Ophthalmology, New Orleans, November, 1998.

Multimodal retinal image registration for image guided laser therapy, Medical Image Processing Group, Department of Radiology, University of Pennsylvania, March 1999.

Computer-assisted fundus feature quantitation for clinical trials in AMD, Wisconsin Fundus Photograph Reading Center, July, 1999.

An image analysis, database, WWW platform for support of ophthalmic clinical trials, Center for Health Informatics at Penn (CHIP), September, 1999.

Basic Medical Retina, Joint Commission of Allied Health Personnel in Ophthalmology, Orlando, November, 1999.

Visiting Professor, Department of Ophthalmology, University of Wisconsin, July, 1999.

Computer vision applications for study and treatment of macular diseases, RPI-Rensselaer Polytechnic Institute, February, 2000.

Computer modelling of transpupillary therapy for CNV in AMD, ARVO SIG on Transpupillary thermotherapy, May, 2000.

Clinical assessment of age-related macular degeneration, 6th Mediterranean Ophthalmological Society Congress and Michaelson Symposium, Jerusalem, May 2000.

Research Publications:

Berger JW. Laser diagnostics of turbulent fluid flow, Junior thesis, Princeton University, 1984.

Berger JW. Design and construction of a smart, flexible interface to the Optacon (a reading aid for the blind), B.S.E. thesis, Princeton University, 1985.

Berger JW, Vanderkooi JM. Brownian dynamics simulations of intramolecular energy transfer. Biophysical Chemistry 1988; 30: 257-269.

Berger JW, Vanderkooi JM. Characterization of lens alpha-crystallin tryptophan microenvironments by room-temperature phosphorescence spectroscopy. Biochemistry 1989; 28:5501-5508.

Berger JW, Vanderkooi JM, Tallmadge DH, Borkman, RF. Phosphorescence measurements of calf gamma-II, -III, and -IV crystallins at 77 and 293 K. Exp

Eye Res 1989; 48:627-639.

Berger JW, Vanderkooi JM. The anaerobic photolysis of lens alpha-crystallin: Evidence for triplet-state mediated photodamage. Photochem Photobiol 1990; 52: 855-860.

Vanderkooi JM, Berger JW. Review: Excited triplet states used to study biological macromolecules at room temperature. Biochim Biophys Acta 1990; 976: 1-27.

Berger JW. Photochemistry and photophysics of eye lens crystallins as studied by phosphorescence spectroscopy at room temperature, PhD thesis, University of Pennsylvania, 1991.

Berger JW. When the P's are not ERRLA: A practical front-line approach to pupil abnormalities, Emergency Eye Care Insight, Vol. 1, 1994.

Berger JW. Laser energy and dye fluorescence transmission through blood in vitro. Letter. Am J Ophthalmol 1995; 120:404-405.

Berger JW, Kim SH, LaMarche KJ, D'Amico DJ, Talamo JH. Er:YAG laser drilling of lens tissue: Predicting the ablation rate with a simple model. Proc SPIE 1995; 2393 (Biomedical Optics: Ophthalmic Technologies V): 148-159

Berger JW, D'Amico DJ. Biophysical considerations for optimizing energy delivery during Er:YAG laser vitreoretinal surgery, Proc SPIE (Biomedical Optics) 1996; 2673: 146-156.

Berger JW, Bochow TW, Talamo JH, D'Amico DJ. Measurement and modelling of thermal transients during Er:YAG laser irradiation of vitreous. Lasers Surg Med 1996; 19: 388-396.

Berger JW, Talamo JH, Kim SH, LaMarche KJ, D'Amico DJ, Snyder RW, Marcellino G. Temperature measurements during phacoemulsification and Er:YAG laser phacoablation in model systems, J Cat Refr Surg 1996; 22:372-378.

Berger JW, Rubin PAD, Jakobiec FA. Pediatric orbital pseudotumor: Case report and review of the literature. Int Ophthalmol Clin 1996; 36:161-177.

Berger JW, Leventon M, Hata N, Wells WM III, Kikinis R. Design considerations for a computer-vision-enabled ophthalmic augmented reality environment, Lecture Notes in Computer Science, Springer-Verlag 1997; 1205: 399-408.

Berger JW. Thermal modelling of micropulsed diode laser retinal photocoagulation, Lasers Surg Med 1997: 20; 411-417.

Berger JW, D'Amico DJ. Modelling of Erbium:YAG laser mediated explosive photovaporization: Implications for vitreoretinal surgery, Ophthalmic Surgery and Lasers 1997; 28: 133-139.

Berger JW. Erbium YAG laser-mediated ablation: The myth of one micron penetration, Arch Ophthalmol, 1998; 116: 830-831.

Berger JW. Quantitative, spatio-temporal image analysis of fundus features in age-related macular degeneration, Proc SPIE 1998: 3246:48-53.

Berger JW, Brucker AJ. The magnitude of the bubble buoyant pressure: Implications for macular hole surgery, Retina 1998:18: 84-86.

Shin DS, Kaiser RS, Berger JW. Fundus image change analysis: Geometric and radiometric normalization, Proc SPIE (Ophthalmic Technologies) 1999; 3591: 129-136.

Berger JW, Shin DS. Computer-vision-enabled augmented reality fundus biomicoscopy, Ophthalmology 1999; 106:1935-1941.

Shin DS, Javornik NB, Berger JW. Computer-assisted, interactive fundus image processing for macular drusen quantitation, Ophthalmology 1999; 106:1119-1125.

Berger JW, Shin DS. Computer-vision enabled ophthalmic augmented reality: A PC-based prototype, Augmented Reality, 1999; 19-30.

Hariprasad R, Shin DS, Berger JW. An intelligent, interactive augmented reality platform for ophthalmic teaching, telecollaboration, and telemedicine, Studies in Health Technology and Informatics (Medicine Meets Virtual Reality) 1999; 62: 124-129.

Berger JW. Quantitative, image sequence analysis of fundus fluorescein angiography, Ophthalmic Surgery & Lasers 1999; 30:72-73.

Berger JW, Shin DS. Image-guided macular laser therapy: Design considerations and progress towards implementation, Proc SPIE (Ophthalmic Technologies) 1999; 3591:241-247.

Jacob S, Berger JW. Frontend and backend considerations for deployment of eye fundus image processing tools for clinical trials, Proc Joint Conf Inf Sci, 2000; 5(2):350-353

Madjarov B, Berger JW. Automated, real-time extraction of fundus images from slitlamp fundus biomicroscope video image sequences, Br J Ophthalmol 2000; 84:645-647.

Berger JW. Wavelength considerations for prophylaxis trials in age-related macular degeneration, Ophthalmology, 2000;107:1019-1021.

Berger JW, Madjarov B. Image-guided diagnosis and treatment of retinal diseases: Progress and challenges, Proc Isr Symp Comp Surg, Med Robotics Med Imaging, May 2000.

Soliz P, Nemeth SC, Swift M, Edwards A, Meuer S, Berger JW. Improving the visualization of drusen in age-related macular degeneration through maximum entropy digitization and stereo viewing, Proc SPIE (Medical Imaging), in press.

Lee MS, Shin DS, Berger JW. Grading, image analysis and stereopsis of digitally compressed images, Retina 2000; 20:275-281.

Berger JW, Yoken J. Computer-assisted quantitation of choroidal neovascularization for clinical trials, Inv Ophthalmol Vis Sci 2000; 41:2286-2295.

Berger JW, Patel T, Shin DS, Piltz JR, Stone RA. Computerized stereochronoscopy and alternation flicker for optic nerve head contour change detection, Ophthalmology 2000; 107:1316-1320.

Kaiser RK, Berger JW, Shin DS, Maguire MG, CNVPT Study Group. Quantitation of laser burn intensity and the risk for the development of choroidal neovascularization in the CNVPT fellow eye study. Arch Ophthalmol, submitted.

Berger JW. Computer modeling of transpupillary thermotherapy for choroidal neovascularization, Lasers Surg Med, submitted.

Jacob S, Barakat M, Berger JW. Design and deployment of a computer-assisted fundus image Reading Center, J Am Medical Informatics Assoc, submitted.

Asmuth J, Madjarov B, Sajda P, Berger JW. Mosaicking and enhancement of slitlamp biomicroscopic fundus images, Am J Ophthalmol submitted.

Madjarov B, Berger JW. Video injection for ophthalmic augmented reality, submitted.

Abstracts (selected):

Berger JW, Vanderkooi JM. Rotational diffusion of the tobacco mosaic virus as studied by anisotropy of the native phosphorescence emission. Photochem Photobiol 1988; 47:10S.

Berger JW, Laties A, Cranstoun S, Collazo E. Automated biometry of the anterior segment using Zeiss Scheimpflug slitlamp photography. Inv Ophthalmol Vis Sci Supp, ARVO abstracts. 1988; 29:188.

Vanderkooi JM, Papp S, Wright WW, Berger JW, Englander SW Phosphorescence at

room temperature as a tool to study protein structure and dynamics. Proc 3rd Cong Eur Soc Photobiol, 1989.

Berger JW, Vanderkooi JM. Structure and stability of lens alpha-crystallin: Tryptophan phosphorescence measurements at room temperature. Inv Ophthalmol Vis Sci Supp, ARVO abstracts. 1989; 30:266.

Berger JW, Vanderkooi JM. Self-consistent evidence for sulfur-induced intersystem crossing in lens gamma crystallins. Proc 3rd Cong Eur Soc Photobiol, 1989.

Vanderkooi JM, Berger JW, Wright WW, Englander SW. Relaxation processes of excited triplet states in proteins. 23rd Middle Atlantic Meeting, American Chemical Society, 1989.

Berger JW. Relevance of tryptophan triplet states to in situ lens photochemistry. Inv Ophthamol Vis Sci, ARVO abstracts. 1994; 35:2137.

Bochow TW, Kim RY, Berger, JW, D'Amico DJ. Photovitrectomy--a novel approach for vitreous removal. Inv Ophthalmol Vis Sci, ARVO abstracts 1995; 36: S384

Berger JW. Micropulsed diode laser retinal photocoagulation: Thermal considerations. Inv Ophthalmol Vis Sci. ARVO abstracts, 1996; 37:S780.

Graham K, Berger JW, Kunzweiler T, Patalano VJ. Cost of care and severity of conditions in patients presenting to a large, urban ophthalmic emergency department. Inv Ophthalmol Vis Sci. ARVO abstracts, 1996.

Brucker AJ, Berger JW. Cystoid macular edema after posterior and anterior segment surgery. Fifth Int Cong Biettti Found, 1997.

Brucker AJ, Berger JW, Guilfoyle M, Yuhan KR. Long-term follow-up of non-proliferative diabetic retinopathy. Annual Meeting American Academy of Ophthalmology, 1997.

Berger JW. Augmented reality fundus biomicroscopy: Design considerations and prototype construction. Inv Ophthalmol Vis Sci. ARVO abstracts 1997; 38:S344.

Brucker AJ, Berger JW. Surgical management of post-traumatic proliferative vitreoretinopathy. 4th Int Cong Pan Arab Counc Ophthalmol, 1997.

Brucker AJ, Berger JW. Management of subretinal gas. 4th Int Cong Pan Arab Counc Ophthalmol, 1997.

Kim RY, Bochow TW, Berger JW, D'Amico DJ. Ab externo subconjuctival sclerostomy in rabbits with an erbium:YAG laser and a side-firing probe:Acute

clinical and histologic observations. Inv Ophthalmol Vis Sci, ARVO Abstracts, 1997; 38:S167.

Berger JW. Spatio-temporal image processing of fluorescein angiography for fundus feature quantitation in AMD. Inv Ophthalmol Vis Sci. ARVO abstracts 1998; 39: S590.

Shin DS, Berger JW. Robust segmentation of macular drusen for clinical studies in AMD. Inv Ophthalmol Vis Sci. ARVO abstracts, 1998; 39:S590.

Berger JW. Computer vision enabled augmented reality fundus biomicroscopy, Am Acad Ophthalmol, 1998.

Shin DS, Berger JW. Computer-assisted drusen segmentation for clinical trials: Method and validation, Am Acad Ophthalmol, 1998.

Patel TR, Shin DS, Stone RA, Berger JW. Optic nerve sterochronoscopy: A digital approach. IOVS. ARVO Abstracts, 1999.

Shin DS, Berger JW. An augmented reality platform for retinal telemedicine. Inv Ophthalmol Vis Sci. ARVO abstracts 1999; 40:S119.

Lee MS, Berger JW. Quantitative image analysis and stereopsis of compressed images. Inv Ophthalmol Vis Sci. ARVO abstracts 1999; 40: S120.

Berger JW, Shin DS. Registration of photographic and slitlamp biomicroscopic fundus images for augmented reality. Inv Ophthalmol Vis Sci. ARVO abstracts, 1999; 40:S121.

Kaiser RS, Berger JW, Shin DS, Maguire MG, CNVPT Study Group. Laser burn intensity and the risk for choroidal neovascularization in the CNVPT Fellow Eye Study. Inv Ophthalmol Vis Sci. ARVO abstracts 1999; 40: S377.

Berger JW, Jacob S, Shin DS, Javornik NB, Alexander JA. Design and deployment of a computerized fundus image reading center, Am Acad Ophthalmol, 1999.

Berger JW, Sharma MC, Shin DS, et al. Comparison of manual and computer-assisted drusen quantitation in a clinical trial, Am Acad Ophthalmol, 1999.

Soliz P, Nemeth SC, Swift M, Meuer A, Edwards A, Berger JW, Klein R. Stereo cues, resolution, and contrast in a computer-based grading system for age-related macular degeneration. Inv Ophthalmol Vis Sci. ARVO abstracts, 2000; 41:S831

Lee MS, Shin DS, Berger JW. Protocol gradings of original and digitized color fundus photographs for clinical trials in AMD. Inv Ophthalmol Vis Sci. ARVO abstracts, 2000; 41:S 832

Yoken J, Berger JW. Computer-assisted quantitation of choroidal neovascularization for clinical trials. Inv Ophthalmol Vis Sci. ARVO abstracts, 2000; 41:S 840

Berger JW, Asmuth J, Madjarov B, Sadja P. Mosaicking and enhancement of slitlamp biomicroscopic fundus images Inv Ophthalmol Vis Sci. ARVO abstracts, 2000; 41:S 854

Madjarov BD, Berger JW. Segmentation of fundus imagery from slit lamp fundus biomicroscope video image sequences. Inv Ophthalmol Vis Sci. ARVO abstracts, 2000; 41:S 855

Jacob S, Barakat MR, Berger JW. Internet and intranet deployment of fundus image processing tools for the support of clinical trials. Inv Ophthalmol Vis Sci. ARVO abstracts, 2000; 41:S 856

Sharma A, Lee MS, Berger JW. Signal and noise in digital and digitized fluorescein angiograms. Inv Ophthalmol Vis Sci. ARVO abstracts, 2000; 41:S 879

Whittock ER, Elsner KS, Javornik NB, Ho AC, Berger JW, CNVPT Study Group. Color photography versus fluorescein angiography for discernment of low intensity laser burns. Inv Ophthalmol Vis Sci. ARVO abstracts, 2000; 41:S 928

Berger JW. Multimodal fundus image registration for image guided macular laser therapy, 6th Mediterranean Ophtlamological Society and Michaelson Symposium, Jerusalem, May 2000.

Editorials, Reviews, Chapters:

Laties A, Berger JW, Keates, E, Cranstoun, S, Schueller A. Evaluation of Scheimpflug cataract photography, in *Recent Developments in the Pharmacological Treatment of Cataract*, Kugler Publications, Milan, 1987.

Vanderkooi JM, Papp S, Berger JW, Wright WW, Englander, SW. Correlation between protein structure and room-temperature phosphorescence of tryptophans, in *Light in Biology and Medicine*, Vol. 2 (R.H. Douglas, J. Moan, and G. Ronto, eds.), 1989.

Brucker AJ, Berger JW. Post-surgical cystoid macular degeneration, *Anterior and Posterior Segment Surgery: Mutual Problems and Common Interests*, Stirpe M, ed., Ophthalmic Communications Society Press, New York, 1998.

Berger JW, Maguire MG, Fine SL. The Macular Photocoagulation Study, in Conway MD, ed. *Clinical Trials in Ophthalmology: A Summary and Practical Guide*, Williams and Wilkins, 1998.

Berger JW, Brucker AJ. Post-traumatic proliferative vitreoretinopathy, in Alfaro DV, Liggett P, eds. *Vitreoretinal Surgery of the Injured Eye*, Lippincott-Raven, Philadelphia, 241-256, 1998.

Berger JW. Ophthalmic laser-tissue interactions, in Albert DM, Jakobiec FA. *Principles and Practice of Ophthalmology*, 2nd ed., Saunders, 1999.

Berger JW. Macular laser-tissue interactions: Implications for treatment and prophylaxis, in Berger JW, Fine SL, Maguire MG, eds. *Age-related Macular Degeneration*, Mosby, 1999.

Berger JW, Fine SL. Laser treatment for choroidal neovascularization, in Berger JW, Fine SL, Maguire MG, eds. Age-related Macular Degeneration, Mosby, 1999.

Shin DS, Berger JW. Digital fundus imaging and image analysis, in Berger JW, Fine SL, Maguire MG, eds. *Age-related Macular Degeneration*, Mosby, 1999.

Duncan J, Berger JW. Nutrition and age-related maculopathy, Current Concepts in Ophthalmology, 2000; 8:58-62.

Fine SL, Berger JW, Maguire MG, Ho AC. Age-related macular degeneration. New Engl J Med, 2000: 342;483-492.

Yoken J, Duncan J, Berger JW, Fine SL. Laser photocoagulation for choroidal neovascularization, in Advances in Age-related Macular Degeneration, J Lim, ed., Marcel Dekker, Inc., in press.

Berger JW. *Retina, Vitreous, Macula.* Review. Ophth Surg Lasers, in press.

Books:

Berger JW, Fine SL, Maguire MG, eds. Age-related Macular Degeneration, Mosby, 1999.

Patents:

A computer-vision-enabled ophthalmic augmented reality environment (US Patent #5,912,720)

Mosaicking and enhancement of video-slitlamp biomicroscopic images for ophthalmic diagnosis and documentation, pending.

A method for judging changes in images of the eye or its component parts, pending.

Mosaicking and enhancement of direct ophthalmoscope images for ophthalmic diagnosis and documentation, pending.