

## CURRICULUM VITAE

### ALEXANDER V. LJUBIMOV, PH.D., D.SC.

#### BUSINESS ADDRESS

Cedars-Sinai Medical Center  
Regenerative Medicine Institute  
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#### BORN

October 27, 1952, Moscow, Russia

#### MARITAL STATUS

Married

#### CITIZENSHIP

U.S. citizen

#### WEB SITES

<http://cedars-sinai.edu/Research/Research-Labs/Ljubimov-Lab/index.aspx>

<http://bio.csmc.edu/view/15098/Alexander-Ljubimov.aspx>

[http://people.healthsciences.ucla.edu/institution/personnel?personnel\\_id=74962](http://people.healthsciences.ucla.edu/institution/personnel?personnel_id=74962)

**H-INDEX: 38** <http://scholar.google.com/citations?user=R8CkWbkAAAAJ&hl=en>

#### EDUCATION

- 1969-1974 Moscow State University, School of Biology. Master degree in Biochemistry with honors (*summa cum laude*). Valedictorian.
- 1974-1977 Post-graduate studies at the Cancer Research Center, Academy of Medical Sciences, Moscow, Russia.
- 1979 Ph.D. in experimental oncology from the Cancer Research Center, Moscow, Russia. Thesis: "Study of surface adhesive properties of normal and transformed fibroblasts in culture".

#### PROFESSIONAL EXPERIENCE

Postdoctoral Research Training Fellow, Dr. R. Montesano's laboratory, International Agency for Research on Cancer, Lyon, France; 2/82 to 4/83.

D.Sc. degree in experimental oncology from the Cancer Research Center, Moscow, Russia; 05/91. Thesis: "Alterations of the extracellular matrix organization during in vitro transformation and tumor growth".

## POSITIONS HELD

- 2013-Present Director, Regenerative Medicine Institute Eye Program, Cedars-Sinai Medical Center, Los Angeles, CA.
- 2013-Present Professor of Neurosurgery, Cedars-Sinai Medical Center, Los Angeles, CA.
- 2013-Present Collaborative Member, Samuel Oschin Comprehensive Cancer Center, Cedars-Sinai Medical Center, Los Angeles, CA.
- 2010-Present Member, Regenerative Medicine Institute, Cedars-Sinai Medical Center, Los Angeles, CA.
- 2009-Present Professor of Biomedical Sciences, Cedars-Sinai Medical Center, Los Angeles, CA.
- 2009-2013 Professor of Surgery, Cedars-Sinai Medical Center, Los Angeles, CA.
- 2003-Present Adjunct Professor of Medicine Step V, David Geffen School of Medicine at University of California Los Angeles, Los Angeles, CA.
- 2002-2013 Director, Ophthalmology Research Laboratories & Diabetic Eye Disease Laboratory, Cedars-Sinai Medical Center, Los Angeles, CA.
- 2002-Present Research Scientist IV, Ophthalmology Research Laboratories, Cedars-Sinai Medical Center, Los Angeles, CA.
- 1999-2002 Associate Director, Molecular Eye Research Laboratory, Ophthalmology Research Laboratories, Cedars-Sinai Medical Center, Los Angeles, CA.
- 1998-2002 Research Scientist III, Ophthalmology Research Laboratories, Cedars-Sinai Medical Center, Los Angeles, CA.
- 1993-1998 Research Scientist II, Ophthalmology Research Laboratories, Cedars-Sinai Medical Center, Los Angeles, CA.
- 1992-1993 Postdoctoral Fellow, La Jolla Cancer Research Foundation, La Jolla, CA.
- 1991-1992 Visiting Scientist, La Jolla Cancer Research Foundation, La Jolla, CA.
- 1988-1991 Leading Researcher, Institute of Carcinogenesis, Cancer Research Center, Moscow, Russia.
- 1979-1988 Junior Researcher, Cancer Research Center, Moscow, Russia.
- 1985 Consultant, International Agency for Research on Cancer, Lyon, France.
- 1977-1979 Research Associate, Cancer Research Center, Moscow, Russia.
- 1974-1977 Ph.D. Student, Cancer Research Center, Moscow, Russia.

## EDITORIAL SERVICES

- Advisory Board Member, *Progress in Retinal and Eye Research*, 2016-;
- Editorial Board Member, *Investigative Ophthalmology and Visual Science*, 2004-2007; 2013-
- Editorial Board Member, *Molecular Vision*, 2012-;
- Editorial Board Member, *PLoS One*, 2012-;

Editorial Board Member, *Conference Papers in Science*, 2012-;  
Editorial Board Member, *ISRN Ophthalmology*, 2011-2012;  
Editorial Board Member, *Experimental Biology and Medicine*, 2009-;  
Editorial Board Member, *Vascular Cell* (formerly, *Journal of Angiogenesis*), 2009-;  
Editorial Board Member, *Diabetes*, 2008-2011;  
Editorial Advisory Board Member, *Open Ophthalmology Journal*, 2007-;  
Editorial Board Member, *Brain Research Bulletin*, 2006-;  
Executive Editor, *Experimental Eye Research*, 2004-;  
Managing Editor, *Frontiers in Bioscience*, 2000-;  
Editorial Board Member, *Invasion and Metastasis*, 1987-1995.

## PROFESSIONAL ACTIVITIES

Professional Associations Association for Research in Vision and Ophthalmology, Member from 1993;  
American Diabetes Association, Professional Section, Member from 1995;  
Association of International Union Against Cancer (UICC) Fellows, Life Member;  
International Society for Eye Research, Full Member from 1998;  
American Society for Matrix Biology, Member from 2000.  
Society of Experimental Biology and Medicine, Member from 2009.

Consulting Activities Consultant to the International Agency for Research on Cancer, Lyon, France, 1985;  
Consultant to Upstate Inc., (currently, Millipore Corp.) from 1993.

Committee Service Scientific Council Member, Institute of Carcinogenesis, Cancer Research Center, Moscow, Russia, 1990-1992  
Resource Allocation Committee Member, Cedars-Sinai Medical Center, 2001  
Department IRB and IACUC reviewer, Cedars-Sinai Medical Center, 2005-present  
Scientific Integrity Committee Member, Cedars-Sinai Medical Center, 2007-2008  
Clinical and Translational Science Institute Scientific Advisory Committee, Cedars-Sinai Medical Center 2008-present  
National Disease Research Interchange Feasibility Review Committee Member, 2008-present  
Chair, Membership Committee, International Society for Eye Research, 2008-2012  
ARVO Publications Committee Member, 2010-2013  
Interdepartmental Translational Research Committee Member, Cedars-Sinai Medical Center, 2011-

PhD student qualifying exam committee, Cedars-Sinai Medical Center, 2011-present  
Graduate Student Admissions Committee Member, Cedars-Sinai Medical Center, 2013-present  
Grant Review Committee Member, Pennsylvania Lions Sight Conservation & Eye Research Foundation, 2015-present

Community Service

NIDDK ZDK1 GRB-9 01 R Study Section Member, NIH, 2002  
Irish Medical Council, Grant Review Panel, 2002  
American Diabetes Association, Research Grant Review Committee, 2003-2006  
Dutch Diabetes Research Foundation, Grant Review Panel, 2005, 2007  
NEI ZRG1 CB-G (90) Study Section Member, NIH, 2005-2007  
NIDDK ZDK1 GRB4 01 & 02 Study Section Member, NIH, 2006  
Fight For Sight Eye Research Foundation (UK), Grant Review Panel, 2006, 2009 (twice), 2015  
Wellcome Trust (UK), Grant Review Panel, 2006  
NEI ZRG1 BDCN-F (02) M Study Section Member, NIH, 2007  
Guide Dogs for the Blind Association (UK), Grant Review Panel, 2007  
March of Dimes Foundation, Grant Review Panel, 2007  
NEI BDPE Study Section Member, NIH, 2008, 2010, 2011  
JDRF Study Section Member, 2008, 2010  
NEI AED Study Section Member, NIH, 2008, 2011  
Engineering and Physical Sciences Review Council (UK) grant reviewer, 2009  
NEI ZRG1 ETTN-E (12) B Study Section Member, NIH, 2009  
NEI ZRG1 BDCN-F (02) M Study Section Member, NIH, 2009  
NEI ZRG1 SBIB-D (03) M Study Section Member, NIH, 2009  
NEI ZRG1 BDCN-T (58) R Study Section Member, NIH, 2009  
NEI ZRG1 BST-Z (90) R Study Section Member, NIH, 2010, 2011  
NEI ZRG1 CB-G(02) Study Section Member, NIH, 2011  
RAID Study Section Member, NIH, 2011  
University of Michigan Diabetes Pilot Grant reviewer, 2011, 2015  
DOD Vision Study Section member, 2012  
NEI ZRG1 BDCN-H (02) S Study Section Member, NIH, 2012  
NEI DPVS Study Section Member, NIH, 2012, 2013  
VA RRD8 1 and RRD3 1 Study Section Member, 2012-2013  
Diabetes UK project grant reviewer, 2013  
UCLA KL2 grant reviewer, 2014, 2015  
Medical Research Council (UK) grant reviewer, 2015  
NEI DPVS Study Section Standing Member, 2013-2017  
Telethon (Italy) grant reviewer, 2015  
Research Foundation Flanders (Belgium) grant reviewer, 2015  
Velux foundation (Switzerland) grant reviewer, 2015

Ad-hoc Reviewer

Acta Ophthalmologica  
ACS Nano

American Journal of Pathology  
American Journal of Physiology  
Anatomical Record  
Archives of Ophthalmology  
Biochemistry  
Biochimica et Biophysica Acta  
Biochimie  
Blood  
Brain Research  
Brain Research Bulletin  
British Journal of Ophthalmology  
British Journal of Pharmacology  
Cancer Research  
Cell Motility and the Cytoskeleton  
Cellular and Molecular Neurobiology  
Circulation Research  
Clinical and Experimental Ophthalmology  
Clinical and Experimental Optometry  
Clinical Ophthalmology  
Collegium Antropologicum  
Cornea  
Current Cancer Drug Targets  
Current Eye Research  
Current Medicinal Chemistry  
Cutaneous and Ocular Toxicology  
Cytokine  
Diabetes  
Drug Delivery and Translational Research  
Drug Discovery Today  
European Journal of Pharmaceutical Sciences  
Experimental Biology and Medicine  
Experimental Cell Research  
Experimental Eye Research  
Expert Opinion on Biological Therapy  
Expert Opinion on Drug Delivery  
Expert Opinion on Orphan Drugs  
Expert Review of Clinical Immunology  
Expert Review of Ophthalmology  
Eye  
FASEB Journal  
FEBS Letters  
Free Radical Biology and Medicine  
Gene Therapy  
Genome Biology  
Histochemical Journal  
International Journal of Cancer  
International Journal of Biochemistry and Cell Biology  
Invasion and Metastasis  
Investigative Ophthalmology and Visual Science

ISRN Ophthalmology  
Journal of Clinical Investigation  
Journal of Diabetes and Its Complications  
Journal of Functional Biomaterials  
Journal of Histochemistry and Cytochemistry  
Journal of Gene Medicine  
Journal of Molecular Histology  
Journal of Neuroscience Research  
Journal of Ocular Pharmacology and Therapeutics  
Journal of Pharmacology and Experimental Therapeutics  
Journal of Pharmacy and Pharmacology  
Microscopy Research and Technique  
Molecular Biology of the Cell  
Molecular Cancer  
Molecular and Cellular Biochemistry  
Molecular Neurobiology  
Molecular Therapy  
Molecular Vision  
Nanomedicine  
Neurobiology of Aging  
Neuroscience Letters  
Open Ophthalmology Journal  
Ophthalmic Research  
Ophthalmology  
PLoS One  
Proceedings of the National Academy of Sciences of the USA  
Progress in Retinal and Eye Research  
Science Translational Medicine  
Scientific Reports  
Stem Cells  
Tissue Barriers  
Tissue Engineering

93 papers reviewed in 2013, 123 papers reviewed in 2014, 123 papers reviewed in 2015.

## HONORS AND AWARDS

Research Training Fellowship, International Agency for Research on Cancer, Lyon, France; from February 1982 to April 1983.

American Cancer Society-Eleanor Roosevelt International UICC Fellowship, La Jolla Cancer Research Foundation, La Jolla, CA; from February 1991 to February 1992.

American Society of Cell Biology Travel Fellowship, December 1991.

Session Moderator, Annual meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, 1995; 2009; 2010.

Young Investigator Award, Cedars-Sinai Medical Center, October 1998.

Session co-Chair, International conference "Environmental Carcinogenesis", Moscow, Russia, October 2002.

Marquis Who's Who in America, from 2004.

Madison Who's Who, from 2005.

Session Organizer and Moderator, XVIIIth International Congress of Eye Research, Beijing, China, September 2008.

The Global Directory of Who's Who, from 2009.

Session Organizer and Moderator, XIXth International Congress of Eye Research, Montreal, Canada, July 2010.

Silver Fellow of ARVO, 2010.

Moderator, Gordon Conference on Biology and Pathobiology of the Cornea, 2010

Marquis Who's Who in Science and Engineering, from 2010.

Marquis Who's Who in the World, from 2010.

Marquis Who's Who in Medicine and Healthcare, from 2011.

Gold Fellow of ARVO, 2014.

Overseas Fellow, The Royal Society of Medicine, 2014.

Session Organizer and Moderator, XXIst Biennial Meeting of the International Society for Eye Research, San Francisco, CA, July 2014.

Visiting Professor, Harvard University, 2015.

## RESEARCH GRANTS

NIH 2R01 EY13431 "Mechanisms of Epithelial Alterations in Diabetic Cornea", \$385,000.00/year direct, 4/11-3/17, **principal investigator**;

NIH 1R01 EY023429 "Transplantable Limbal Cells from Induced Pluripotent Stem Cells" \$250,000.00/year direct, 6/13-5/16, **principal investigator**;

NIH 1R01 EY025377 "The Role of MicroRNAs in Normal and Diseased Corneal Epithelial Homeostasis", \$250,000.00/year direct, 8/15-7/20, **co-principal investigator**;

NIH 1R01 CA206220 "Nanoconjugate Delivery of Proliferation and Checkpoint Inhibitors to

Treat Glial Tumors”, \$331,000/year direct, 5/16-4/21, **co-principal investigator**;

CIRM LSP1-08235 “IND-enabling Study of Subretinal Delivery of Human Neural Progenitor Cells for the Treatment of Retinitis Pigmentosa” \$2,500,000/year direct, 8/15-8/17, **co-principal investigator**;

NIH 1R01 CA206220 “Nanoconjugate Delivery of Proliferation and Checkpoint Inhibitors to Treat Glial Tumors”, \$383,240/year direct; 4/16-3/21; the grant received a fundable 3% percentile; **co-principal investigator**;

NIH T32 DK00770 “Training Program in Endocrinology and Diabetes”, 8/99-6/17, **mentor**;

NIH 1R21 EY022771 “The Role and Mechanisms of microRNAs in Diabetic Cornea”, \$135,000.00/year direct, 8/12-7/14, **co-principal investigator**;

Department of Surgery and Regenerative Medicine Institute, Cedars-Sinai Medical Center grant “Diabetic retinopathy studies”, \$110,000.00/year, 9/10-6/11, **principal investigator**;

OneSight Foundation Research Grant “New model for diabetic circulating stem cell involvement in pathological retinal neovascularization”, \$35,000.00/year, 10/10-9/11, **principal investigator**;

NIH 2R01 EY13431 “Mechanisms of Epithelial Alterations in Diabetic Cornea”, \$390,000.00/year, 8/05-7/10, **principal investigator**;

Department of Surgery, Cedars-Sinai Medical Center, and Eye Defects Research Foundation grant “Hematopoietic stem cells in retinal neovascularization”, \$50,000.00/year, 6/09-6/10, **principal investigator**;

OneSight Foundation Research Grant “Suppression of circulating stem cell migration to sites of pathological retinal neovascularization by a combination of antiangiogenic agents”, \$20,000.00/year, 3/09-2/10, **principal investigator**;

Winnick Family Foundation GCRC Clinical Research Scholar Award “Mechanisms of Epithelial Alterations in Diabetic Cornea”, \$50,000.00/year, 1/07-12/09, **principal investigator**;

NIH 1R01 EY13431 “Mechanisms of Epithelial Alterations in Diabetic Cornea”, \$306,000.00/year, 8/01-7/05, **principal investigator**;

Department of Surgery, Cedars-Sinai Medical Center seed grant “Diabetic Eye Disease”, \$100,000.00/year, 6/02-5/05, **principal investigator**;

Skirball Foundation Program in Molecular Ophthalmology “Equipment grant”, \$80,000.00/year, 6/02-5/03, **principal investigator**;

NIH 1R01 EY12605 “Growth Factor-Induced Tenascin-C in Diabetic Retinopathy”, \$329,410.00/year, 08/98-07/01, **principal investigator**;

NIH 2R01 EY10836 “Extracellular Matrix Abnormalities in Corneal Edema”, \$248,041.00, 8/95-5/02, **co-principal investigator**;

Iris and B. Gerald Cantor Foundation Program “Diabetic Retinopathy”, \$125,000.00, 8/94-1/01, **co-principal investigator**;

Braille Transcribers Guild grant “Tenascin Splice Variants in Eye Disease”, \$50,000.00, 5/96-4/98 (grant through the Discovery Fund for Eye Research), **principal investigator**;



Skirball Foundation Program in Molecular Ophthalmology grant “Tenascin Expression in Bullous Keratopathy Corneas”, \$10,000.00, 12/95-12/96, **principal investigator**;

Skirball Foundation Program in Molecular Ophthalmology grant “Mechanisms of Diabetic Retinopathy”, \$12,000.00, 12/94-12/95, **principal investigator**.

## RESEARCH PROJECTS AND INTERESTS

1. NIH-funded project on diabetic corneal epithelial stem cells. The goal of the project is to develop effective ways of normalizing diabetic corneas using a human corneal organ culture system. We have described several markers altered in these corneas, which we could normalize using original adenoviral-mediated gene therapy. Because many diabetic corneal alterations occur in the epithelium, our hypothesis is that limbal stem cells are also altered in diabetic corneas. We have preliminary data on a decreased expression of specific limbal stem cell markers in diabetic corneas. We now plan to genetically engineer stem cells and attempt to normalize diabetic corneas using this approach. Diabetic stem cells, both control and those undergone gene therapy and culture propagation, will be transplanted to diabetic corneas in order to restore normal expression of markers and corneal wound healing, which is compromised in diabetes. Targeting limbal stem cells by gene therapy could provide a novel way of restoring normal functions to diabetic corneas.
2. NIH-funded project on induced pluripotent stem cells (iPSC) to produce limbal epithelial cells. It is built on the idea that differentiating tissue cells from iPSC will be facilitated if these iPSC are generated from the same tissue, due to epigenetic memory. Another idea is that limbal or limbal-like microenvironment (denuded corneas or human amniotic membrane, respectively) could also facilitate iPSC differentiation process to limbal cells. Preliminary data confirm the validity of our approach showing (1) expression of limbal stem cell markers in iPSC grown on denuded corneas or human amniotic membrane, and (2) increased expression of such markers in limbal-derived iPSC as compared to skin fibroblast-derived iPSC. Ongoing experiments aim at optimizing differentiation protocol to make the resultant cells transplantable, using corneal organ culture as a test system.
3. NIH-funded project on the role of miRNA in diabetic corneas. The goal of the project is to identify miRNA with altered expression in diabetic corneas and use them or their inhibitors to normalize abnormally slow wound healing in these corneas. Preliminary data using miRNA arrays and functional tests have shown that several miRNAs increased in diabetic corneas inhibit wound healing of corneal epithelial cells in culture. Blocking these miRNAs with specific antagomirs could accelerate wound healing and aid in developing new gene therapy approaches to treat corneal diabetes.
4. Project on protein kinase CK2. The goal of the project is to develop effective targeted inhibitors of protein kinase CK2 that will block retinal and brain cancer neovascularization. To this end, we are working on engineering a new nanopolymer drug delivery system with antisense oligonucleotides to CK2. We are using the laser burn model of wet macular degeneration and xenogeneic brain cancer model in nude mice. We have already shown that such a nanopolymer accumulates at sites of subretinal neovascularization upon systemic administration. In brain cancer, the nanopolymer drug with antisense to CK2 significantly increased tumor-bearing animal survival (collaboration with the Department of Neurosurgery). Because of active targeting, this drug delivery system could be useful for

specific blocking of CK2 in ocular neovascularization and brain cancer.

5. Project on cancer nanoimmunology. This project has been submitted to the NIH/NCI for funding as part of the South California CCNE (Project 1). It deals with inhibition of brain tumor growth using actively targeted novel nanobiopolymers that also bear antibodies to T lymphocyte markers CTLA-4 or PD-1. These antibodies should lift the block imposed on killer T cells by Treg cells and allow the killer lymphocytes to attack tumor cells. Therefore, the nanopolymer would fight tumors by direct growth inhibition and simultaneous immune system attack.

## **FELLOWSHIPS**

Research Training Fellowship from the International Agency for Research on Cancer, Lyon, France, "Action of Tumor Promoters on Normal and Transformed Epithelial Cells", \$23,000.00, 2/82-4/83, principal investigator;

American Cancer Society-Eleanor Roosevelt International UICC Fellowship, "Integrin Receptors for Basement Membrane Components", \$28,800.00, La Jolla Cancer Research Foundation, La Jolla, CA, 2/91-2/92, principal investigator.

American Society of Cell Biology Travel Fellowship, \$1,500, December 1991.

## **TEACHING**

Teaching course on cancer cell biology for medical graduate students, Russian Cancer Research Center, 1984-1990;

Participation in teaching seminars at Jules Stein Eye Institute, UCLA, 1996-present;

Participation in teaching seminars at Cedars-Sinai Medical Center Research Institute, 1995-present.

Director, Educational seminar, Division of Ophthalmology Research, Cedars-Sinai Medical Center, 2000-2002.

Director, Educational seminar, Department of Surgery, Cedars-Sinai Medical Center, 2002-2004.

Mentor, Ph.D. Program, Cedars-Sinai Medical Center, 2007-present.

UCLA School of Medicine course lecturer "MED 199 Directed Research in Medicine", 2008-present

Lecturer, Ph.D., program, Cedars-Sinai Medical Center, 2009, 2014.

Qualifying exam committee, Ph.D. program (T. Eigler), Cedars-Sinai Medical Center, 2009.

Review of grant proposal by J. Kielczewski, Ph.D., University of Florida, 2010.

Thesis committee, M. Mastali, Ph.D. student, Cedars-Sinai Medical Center, 2010-2014.

Qualifying exam committee, Ph.D. program (O. Dumitrascu), Cedars-Sinai Medical Center, 2010.

Qualifying exam committee, Ph.D. program (J. Beach), Cedars-Sinai Medical Center, 2011.

Qualifying exam committee, Ph.D. program (C. Seehus), Cedars-Sinai Medical Center,

2012.

Qualifying exam committee, Ph.D. program (S. Pollan), Cedars-Sinai Medical Center, 2012.

Graduate Student Admissions Committee Member, 2013-2014.

Chair, thesis committee, M. Jones, Ph.D. student, Cedars-Sinai Medical Center, 2014-

## SUPERVISION

Mentoring of Ms. M. Anfimova, graduate biology student at Moscow State University, 1975-1976. Topic: "Surface proteins of normal and transformed cells in culture";

Mentoring of Mr. S. Troyanovsky, graduate biology student at Moscow State University, 1977-1978. Topic: "Cell surface adhesive components of normal and transformed cells";

Mentoring of Ms. N. Denisenko, Ph.D. student at USSR Cancer Research Center, 1988-1989. Topic: "Extracellular matrix assembly in cultures of epithelial cells";

Mentoring of H. Khin, M.D., resident at UCLA - M.L. King Hospital, 1996. Topic: "Extracellular matrix abnormalities in corneal edema" (NIH funded);

Mentoring of Ms. S. Lewin, medical student at Stanford University, 1996. Topic: "Basement membrane gene expression in diabetic retinopathy" (privately funded);

Mentoring of Ms. M. Saghizadeh, M.S., Cedars-Sinai Medical Center, 1995-2007. Topic: "Extracellular matrix abnormalities in corneal edema" (NIH funded);

Mentoring of K. Spirin, Ph.D., Cedars-Sinai Medical Center, 1996-1998. Topic: "Gene expression in diabetic retinopathy" (NIH and privately funded);

Mentoring of Ms. R. Stolitenko, M.S., student fellow, Cedars-Sinai Medical Center, 1998-1999. Topic: "Growth factor-induced tenascin-C in diabetic retinopathy" (NIH funded);

Mentoring of Ms. N. Zorapapel, B.S., Cedars-Sinai Medical Center, 1998-2002. Topic: "Growth factor-induced tenascin-C in diabetic retinopathy" (NIH funded);

Mentoring of R. Castellon, Ph.D., Cedars-Sinai Medical Center, 1999-2002. Topic: "Growth factor-induced tenascin-C in diabetic retinopathy" (NIH funded);

Mentoring of A. Kabosova, M.D., Cedars-Sinai Medical Center, 2001-2002. Topic: "Mechanisms of epithelial alterations in diabetic cornea" (NIH funded);

Mentoring of A. Kramerov, M.D., Ph.D., Cedars-Sinai Medical Center, 2002-present. Topic: "Mechanisms of epithelial alterations in diabetic cornea" (NIH funded);

Mentoring of K. Nielsen, M.S., Ph. D. student, Aarhus, Denmark, 2003. Topic: "RNA isolation from normal and keratoconus corneas";

Mentoring of Ms. L. Regev, University of Judaism student, 2005-2006. Topic: "Ocular diabetes" (NIH funded);

Mentoring of Mr. A. Pirouzmanesh, UCLA student, 2006-2007. Topic: "Ocular diabetes" (NIH funded);

Mentoring of M. Saghizadeh, Ph.D., Cedars-Sinai Medical Center, 2007-present. Topic: "Mechanisms of epithelial alterations in diabetic cornea" (NIH funded);

Mentoring of Y. Yaghoobzadeh, UCLA M.S., Cedars-Sinai Medical Center, 2008-2009.

Topic: “Mechanisms of epithelial alterations in diabetic cornea” (NIH funded);

Mentoring of Mr. S. Soleymani, California State Northridge University senior student, 2009-present. Topic: “Stem cell alterations in diabetic cornea” (NIH funded);

Mentoring of Ms. A. Harounian, Santa Monica College student, 2009-present. Topic: “Stem cell alterations in diabetic cornea” (NIH funded);

Mentoring of Mr. B. Bhakta, UCLA student, 2010. Topic: “Stem cell alterations in diabetic cornea” (NIH funded);

Mentoring of Ms. I. Epifantseva, Ph.D. student, Cedars-Sinai Medical Center, 2011. Topic: “Stem cell alterations in diabetic cornea” (NIH funded);

Mentoring of Mr. D. Hemmati, UCLA student, 2012. Topic: “Stem cell alterations in diabetic cornea” (NIH funded);

Mentoring of Mr. C. Dib, UCLA student, 2013. Topic: “Corneal stem cells and induced pluripotent stem cells” (NIH and RMI funded);

Mentoring of T. Spektor, Ph.D., Cedars-Sinai Medical Center, 2013-2015. Topic: “Corneal stem cells and induced pluripotent stem cells” (NIH funded).

Mentoring of Ms. G. Wei, UCLA student, 2014-2016. Topic: “Stem cell alterations in diabetic cornea” (NIH funded);

Mentoring of R. Kulkarni, M.D., UCLA, 2015, on K grant submission.

Mentoring of J. Breunig, Ph.D., Cedars-Sinai, 2014-2015, on grant submissions.

Mentoring of V. Mattis, Ph.D., Cedars-Sinai, 2014-2015, on grant submissions.

Mentoring of V. Arumugaswami, Ph.D., Cedars-Sinai, 2014-2015, on grant submissions.

Mentoring of H. Goodridge, Ph.D., Cedars-Sinai, 2015, on grant submission.

Mentoring of A. Akhtar, Ph.D. student, Cedars-Sinai, 2015, on grant submission.

Mentoring of Mr. M. Tondar, M.S., Cedars-Sinai, 2015-. Topic: “Corneal stem cells and induced pluripotent stem cells” (NIH and RMI funded);

## LECTURES AND PRESENTATIONS

1. "Plasma membrane isolation from cultured cells", Cancer Research Center, Moscow, Russia, 11/76.
2. "Alterations of cell surface morphology and glycoproteins during disruption of cell-substrate adhesion", Institute of Experimental Morphology, Tbilissi, Georgia, 10/78.
3. "Organization and functions of extracellular matrix", Workshop on developmental biology, Zvenigorod, Russia, 1/81.
4. "Extracellular matrix assembly", International Agency for Research on Cancer, Lyon, France, 2/82.
5. "Fibronectin structures in normal and transformed cells", Max Planck Institute for Biophysical Chemistry, Gettingen, Germany, 6/82.
6. "Assembly of fibronectin in cell culture", Max Planck Institute for Biochemistry, Martinsried, Germany, 6/82.
7. "Cytoskeleton participation in the assembly of extracellular fibronectin. A hypothesis", Institute of Cell Biology, University of Essen Medical School, Essen, Germany, 6/82.
8. "Interactions of phorbol esters with liver epithelial cells", Cancer Research Center, Moscow, Russia, 5/83.
9. "Biological properties of cancer cells in vitro", lecture for graduate medical students, Cancer Research Center, Moscow, Russia, 2/84.
10. "Behavior of cancer cells", lecture for graduate medical students, Cancer Research Center, Moscow, Russia, 3/85.
11. "Changes of extracellular matrix and cytoskeleton in cancer cells", International Agency for Research on Cancer, Lyon, France, 12/85.
12. "Extracellular matrix and cancer", National Cancer Institute, New Deli, India, 4/86.
13. "Diagnostic evaluation of monoclonal antibodies to extracellular matrix", Tata Memorial Hospital, Bombay, India, 5/86.
14. "Characterization of monoclonal antibodies to basement membrane proteins", Cancer Research Center, Moscow, Russia, 10/86.
15. "Monoclonal antibodies in cancer diagnosis", lecture for graduate medical students, Cancer Research Center, Moscow, Russia, 11/86.
16. "Antibodies to keratins and matrix proteins in cancer diagnosis", lecture for graduate medical students, Cancer Research Center, Moscow, Russia, 5/87.
17. "Production and characterization of monoclonal antibodies to basement membrane components", National Institute for Cancer Research, Genoa, Italy, 9/87.
18. "Antibody diagnostics in human cancers", National Institute for Cancer Research, Genoa, Italy, 9/87.
19. "Advantages of monoclonal antibody diagnostics in solid cancers", Sapporo University School of Medicine, Sapporo, Japan, 11/87.
20. "Differential diagnosis of benign and malignant lesions with monoclonal antibodies",

- National Cancer Institute, Tokyo, Japan, 11/87.
21. "Basement membrane alterations and diagnosis of solid human cancers", Workshop on cancer etiology, Pushchino, Russia, 2/88.
  22. "Immunohistological diagnosis of breast and colon tumors", lecture for graduate medical students, Cancer Research Center, Moscow, Russia, 4/88.
  23. "Isolation and characterization of extracellular matrix", Cancer Research Center, Moscow, Russia, 10/88.
  24. "Assembly of extracellular matrix in epithelial cell cultures", Institute of Experimental Pathology, Prague, Czechoslovakia, 5/89.
  25. "Monoclonal antibodies in the diagnosis of breast and colon cancer", Institute of Clinical and Experimental Oncology, Brno, Czechoslovakia, 5/89.
  26. "Role of fibronectin and laminin substrates in the matrix assembly by epithelial cells", King's College, London, U.K., 9/89.
  27. "Normal and transformed cells in culture", lecture for graduate medical students, Cancer Research Center, Moscow, Russia, 10/89.
  28. "Abnormalities of cultured cancer cells", lecture for graduate medical students, Cancer Research Center, Moscow, Russia, 4/90.
  29. "Antibodies to matrix proteins and keratins in cancer diagnosis on tissue sections", La Jolla Cancer Research Foundation, La Jolla, CA, 2/91.
  30. "Assembly of extracellular matrix by epithelial cells", La Jolla Cancer Research Foundation, La Jolla, CA, 3/91.
  31. "Differential diagnosis of benign and malignant lesions of breast and colon using monoclonal antibodies", University of Alabama at Birmingham, Birmingham, AL, 1/92.
  32. "Overview of apoptosis", La Jolla Cancer Research Foundation, La Jolla, CA, 6/92.
  33. "Extracellular matrix and intermediate filaments in cancer diagnosis", Washington University School of Medicine, St. Louis, MO, 9/92.
  34. "Basement membrane components and keratins in the diagnosis of breast and colon cancer", National Institute of Aging, NIH, Baltimore, MD, 10/92.
  35. "Monoclonal antibodies in cancer diagnostics", Cedars-Sinai Medical Center, Los Angeles, CA 10/92.
  36. "Monoclonal antibodies in the histological diagnosis of solid human tumors", Cedars-Sinai Medical Center, Los Angeles, CA, 1/93.
  37. "Basement membranes of human corneas: heterogeneity and change in disease", Cancer Research Center, Moscow, Russia, 8/95.
  38. "Ocular basement membrane alterations in diabetic retinopathy", Cedars-Sinai Medical Center, Los Angeles, CA, 10/95.
  39. "Retinal basement membranes in diabetic retinopathy", Jules Stein Eye Institute, UCLA School of Medicine, Los Angeles, CA, 1/96.
  40. "Tenascin-C and corneal diseases", Cancer Research Center, Moscow, Russia, 8/97.

41. "Tenascin in the nervous system", Cedars-Sinai Medical Center, Los Angeles, CA, 2/98.
42. "Diabetic retinopathy and corneal extracellular matrix", Cancer Research Center, Moscow, Russia, 8/98.
43. "Tenascin-C in normal and diseased human eye", Department of Medical Genetics, Cedars-Sinai Medical Center, Los Angeles, CA, 1/99.
44. "Tenascin and its receptors in eye diseases", La Jolla Institute of Experimental Medicine, La Jolla, CA, 1/99.
45. "Matrix metalloproteinases in diabetic corneas: A mechanism of basement membrane alteration", Cedars-Sinai Medical Center, Los Angeles, CA, 4/00.
46. "Stromelysin expression in human diabetic corneas: a possible mechanism of basement membrane and integrin alterations". Gordon Conference "Basement membranes", New London, CT, 6/00.
47. "Mechanisms of epithelial abnormalities in diabetic corneas", Cancer Research Center, Moscow, Russia, 8/00.
48. "Matrix metalloproteinases in diabetic corneas may trigger basement membrane alteration", Jules Stein Eye Institute, UCLA School of Medicine, Los Angeles, CA, 6/01.
49. "Angiogenesis in vitro and implications for neovascularization therapy", Neurosurgical Institute, Cedars-Sinai Medical Center, Los Angeles, CA, 4/02.
50. "Novel aspects of angiogenesis – lessons from in vitro assays", University of California Irvine Research Symposium, Irvine, CA, 5/02.
51. "Novel aspects of angiogenesis", Cedars-Sinai Medical Center, Los Angeles, CA, 8/02.
52. "New aspects of angiogenesis: From in vitro assays to clinical interventions". Cedars-Sinai Medical Center, Los Angeles, CA, 9/02.
53. "Laminin influence on glioma invasion", Russian Cancer Research Center, Moscow, Russia, 10/02.
54. "Molecular changes in human diabetic corneas", Cedars-Sinai Medical Center, Los Angeles, CA, 11/02.
55. "Advances in retinal and corneal diabetic disease", Kresge Eye Institute and Wayne State University, Detroit, MI, 10/03.
56. "Protein kinase CK2 and angiogenesis", Cedars-Sinai Medical Center, Los Angeles, CA, 11/03.
57. "Protein kinase CK2 and retinal angiogenesis", University of Padua, Italy, 3/04.
58. "Gene array analysis of normal and diabetic human corneas", Cedars-Sinai Medical Center, Los Angeles, CA, 7/04.
59. "Alterations of Gene Expression in Diabetic Corneas", Cedars-Sinai Medical Center, Los Angeles, CA, 11/04.
60. "Protein kinase CK2 in angiogenesis", Surgery Grand Rounds, Cedars-Sinai Medical Center, Los Angeles, CA, 2/05.
61. "Protein kinase CK2 in normal, diabetic and neovascularized retinas", Russian Cancer

- Research Center, Moscow, Russia, 8/05.
62. "Protein kinase CK2 and ocular angiogenesis", University of Oklahoma, Oklahoma City, OK, 12/05.
  63. "Biopolymers as anti-cancer drug delivery systems", Russian Cancer Research Center, Moscow, Russia, 4/06.
  64. "Molecular alterations in human diabetic cornea", Cedars-Sinai Medical Center, Los Angeles, CA, 1/07.
  65. "Protein kinase CK2 in angiogenesis", Cedars-Sinai Medical Center, Los Angeles, CA, 2/07.
  66. "Corneal basement membrane maturation from infant to adult", Pediatric Keratoplasty Association ARVO luncheon, Fort Lauderdale, FL, 4/08.
  67. "Bowman's layer in fibrotic and ectatic corneal disorders", ARVO Special Interest Group meeting "Corneal Bowman's Layer: Vestigial or Protective structure?", Fort Lauderdale, FL, 4/08.
  68. "Gene therapy for diabetic cornea", Russian Cancer Research Center Moscow, Russia, 7/08.
  69. "The diabetic cornea: from markers to therapy", University of Florida, 1/09.
  70. "The diabetic cornea", Cedars-Sinai Medical Center, Los Angeles, CA, 2/09.
  71. "Gene therapy for diabetic corneal disease", Cedars-Sinai Medical Center, Los Angeles, CA, 2/09.
  72. "Gene therapy for corneal diabetes", Department of Surgery faculty meeting, Cedars-Sinai Medical Center, Los Angeles, CA, 6/09.
  73. "Gene therapy in ophthalmology", Russian Cancer Research Center, Moscow, Russia, 7/09.
  74. "Cell adhesion, integrins, and cancer". Lecture for Ph.D. students, Cedars-Sinai Medical Center, Los Angeles, CA, 11/09.
  75. "Gene therapy for diabetic keratopathy", Jules Stein Eye Institute, UCLA, 12/09.
  76. "Corneal wound healing in normal and diseased states", course "Fundamentals in Vision Research", Marine Biological Laboratory, Woods Hole, MA, 8/10.
  77. "Nanopolymers for cancer treatment", Russian Cancer Research Center, Moscow, Russia, 10/10.
  78. "The diabetic cornea: from gene therapy to stem cells", Jules Stein Eye Institute, UCLA, Los Angeles, CA, 2/11.
  79. "Gene therapy for diabetic corneal stem cells", Department of Surgery Seminar, Cedars-Sinai Medical Center, Los Angeles, CA, 7/11.
  80. "Gene therapy as a tool to normalize diabetic corneal stem cells", University College London (UCL) Institute of Ophthalmology, London, U.K., 8/11.
  81. "Corneal diabetes: gene therapy and stem cells", Cedars-Sinai Medical Center, Los Angeles, CA, 10/11.



82. "Protein kinase CK2 as a novel target for ocular antiangiogenic therapy", Vision Discovery Institute Distinguished Seminar Series, Georgia Health Sciences University, Augusta, GA, 12/11.
83. "Protein kinase CK2 as a promising target for ocular antiangiogenesis", Jules Stein Eye Institute, UCLA, Los Angeles, CA, 2/12.
84. "Corneal wound healing and stem cells in normal and diseased states", course "Fundamentals in Vision Research", Marine Biological Laboratory, Woods Hole, MA, 8/12.
85. "Corneal stem cells and diabetes", Jules Stein Eye Institute, UCLA, Los Angeles, CA, 1/13.
86. "Translational studies of the diabetic cornea: gene therapy and stem cells", Cedars-Sinai Medical Center, Los Angeles, CA, 2/13.
87. "Nanopolymers in cancer treatment and diagnostics", Russian Cancer Research Center, Moscow, Russia, 3/13.
88. "Gene and cell therapy for diabetic cornea and stem cell deficiency", Brasel Basic Science Conference, Harbor-UCLA Medical Center, 11/13.
89. "Protein kinase CK2 in retinal and tumor angiogenesis", University of Indiana, Indianapolis, IN, 5/14.
90. "Protein kinase CK2 and angiogenesis", University of Michigan, East Lansing, MI, 5/14.
91. "Corneal wound healing and stem cells in normal and diseased states", course "Fundamentals in Vision Research", Marine Biological Laboratory, Woods Hole, MA, 8/14.
92. "Gene and cell therapies for diabetic corneal disease and stem cell deficiency", Cedars-Sinai Medical Center, Los Angeles, CA, 9/14.
93. "Clinical applicability of corneal transplants and use of corneal stem cells", Cedars-Sinai Medical Center, Los Angeles, CA, 3/15.
94. "Protein kinase CK2 in ocular and tumor angiogenesis", Endocrinology Grand Rounds, Boston University, Boston, MA, 3/15.
95. "Gene and stem cell therapies for diabetic keratopathy and limbal stem cell deficiency". Harvard University and Mass Eye & Ear Visiting Professor Series, Boston, MA 9/15.
96. "Corneal diabetes: gene therapy meets stem cells", Cedars-Sinai Medical Center, Los Angeles, CA, 9/15.
97. "Gene and cell therapy approaches for diabetic eye disease", University of Southern California Department of Ophthalmology Grand Rounds, Los Angeles, CA, 10/15.
98. "Gene therapy for diabetic corneal stem cells", Cedars-Sinai Medical Center, Los Angeles, CA, 10/15.
99. "Gene and cell therapy approaches for the treatment of diabetic keratopathy", Colorado University Denver Vision Sciences Seminar Series, Denver, CO, 1/16.
100. "New therapeutic approaches for diabetic corneal disease", University of Pittsburgh,

Pittsburgh, PA, 2/16.

## PUBLICATIONS

### PEER-REVIEWED PAPERS

1. Vasiliev JM, Gelfand IM, Domnina LV, Zacharova OS, **Ljubimov AV**. (1975) Contact inhibition of phagocytosis in epithelial sheets: alterations of cell surface properties induced by cell-cell contacts. *Proc Natl Acad Sci USA*, 75:719-722.
2. Vasiliev YuM, Gelfand IM, Domnina LV, Zakharova OS, **Liubimov AV**. (1975) The influence of intercellular contacts in epithelial sheets on the cell surface ability to adhesion and phagocytosis of particles. *Tsitologiya*, 17:1400-1405.
3. **Liubimov AV**, Bannikov GA. (1978) The influence of chemicals altering cell-substrate adhesion on the glycoprotein pattern of normal fibroblasts in culture. *Tsitologiya*, 20:1052-1059.
4. **Liubimov AV**. (1978) The influence of agents impairing cell-substrate adhesion on protein and glycoprotein pattern of transformed mouse fibroblasts in culture. *Tsitologiya*, 20:1179-1185.
5. **Liubimov AV**. (1978) Changes in the surface morphology of normal and transformed mouse fibroblasts following disruption of cell-substrate adhesion. *B Eksp Biol Med*, 86:589-591.
6. **Liubimov AV**, Troyanovskii SM. (1980) Surface glycoproteins of fibroblasts sensitive to substances disturbing cell-substrate adhesion: changes during malignant transformation. *Eksp Onkol*, 2:9-13.
7. **Lyubimov AV**, Vasiliev JM. (1982) Distribution of fibronectin-containing structures on the surface of lamelloplasm and endoplasm of fibroblasts; hypothesis of receptor-mediated assembly of fibronectin structures. *Cell Biol Int Repts*, 6:105-112.
8. **Liubimov AV**. (1983) Procollagenous nature of transformation-sensitive surface glycoproteins of fibroblasts. *Eksp Onkol*, 5:18-22.
9. Vasiliev YuM, **Liubimov AV**. (1983) Distribution of fibronectin on the surface of single fibroblasts. A possible mechanism of the fibronectin structures assembling. *Tsitologiya*, 25:283-289.
10. **Liubimov AV**. (1984) Distribution of surface fibronectin in sparse and dense cultures of normal and transformed mouse fibroblasts. *B Eksp Biol Med*, 97:74-76.
11. **Liubimov AV**, Moizhess TG. (1984) Fibronectin in cultured cells of mouse foreign body-induced sarcomas. *B Eksp Biol Med*, 98:339-341.
12. **Ljubimov AV**, Martel N, Yamasaki H. (1985) Response of cultured rat liver epithelial cell lines to tumour-promoting phorbol esters. *Exp Cell Res*, 156:311-326.
13. Troyanovsky SM, Bannikov GA, Bershadsky AD, Gelfand VI, Ievleva ES, Karavanova ID, **Liubimov AV**, Mechetner EB, Neyfakh AA, Rosinova EN, Svitkina TM, Tint IS, Etkin

- AF. (1985) Production and characterization of monoclonal antibodies to intermediate filament proteins. *Immunologiya*, 6:71-74.
14. **Ljubimov AV**, Afanasjeva AV, Litvinova LV, Senin VM. (1986) Basement membrane components produced by a mouse ascites teratocarcinoma TB 24. Analysis with monoclonal and polyclonal antibodies. *Exp Cell Res*, 165:530-540.
  15. **Ljubimov AV**, Krutovskikh VA. (1987) Distribution of laminin and collagen type IV in rat colon tumors induced by 1,2-dimethylhydrazine. *Invasion Metastasis*, 7:61-72.
  16. **Liubimov AV**. (1987) Antibodies to the components of the basement membrane in the immuno-diagnostics of invasive tumors. *Biotechnologiya*, 3:709-716.
  17. Domnina LV, **Liubimov AV**. (1988) Isolation and characterization of the extracellular matrix from cultured cells. *Tsitologiya*, 30:299-304.
  18. Peklo MM, **Liubimov AV**, Printseva OYu. (1988) Heterogeneity of basement membranes revealed in human tissues by monoclonal antibodies to laminin and entactin. *B Eksp Biol Med*, 105:731-734.
  19. Domnina LV, **Liubimov AV**, Vasiliev YuM. (1988) Formation of processes and dynamics of flattening of the cultured cells on fibroblast extracellular matrix. *Ontogenez*, 19:270-275.
  20. Horiguchi Y, Couchman JR, **Ljubimov AV**, Yamasaki H, Fine JD. (1989) Distribution, ultrastructural localization, and ontogeny of the core protein of a heparan sulfate proteoglycan in human skin and other basement membranes. *J Histochem Cytochem*, 37:961-970.
  21. Couchman JR, **Ljubimov AV**. (1989) Mammalian tissue distribution of a large heparan sulfate proteoglycan detected by monoclonal antibodies. *Matrix*, 9:311-321.
  22. Horiguchi Y, Fine JD, **Ljubimov AV**, Yamasaki H, Couchman JR. (1989) Entactin: ultrastructural localization of an ubiquitous basement membrane glycoprotein in mouse skin. *Arch Dermatol Res*, 281:427-432.
  23. Komissarova EV., Bershsky AD, **Liubimov AV**, Kissel'ov FL. (1989) Change in the organization of the actin cytoskeleton and extracellular fibronectin in the REF(LT) cell line after a series of successive transfections of the Ha-ras oncogene. *Dokl Acad Nauk SSSR*, 306:985-987.
  24. Aleksandrova AYu, Vasiliev YuM, Domnina LV, **Liubimov AV**, Svitkina TM. (1990) The immunomorphologic study of the extracellular matrix formation in cultures of epithelial cells. *Tsitologiya*, 32:633-640.
  25. Guelstein VI, Chypysheva TA, Ermilova VD, **Liubimov AV**. (1990) Monoclonal antibodies to proteins of intermediate filaments and basement membranes in differential diagnosis of some types of human mammary gland tumors. *Arkh Patol*, 52:12-18.

26. Kozlova EN, **Ljubimov AV**, Aleksandrova MA. (1990) Distribution of fibronectin, laminin and neurofilaments in adult rat brains upon transplantation of embryonal nerve tissue. *Dokl Acad Nauk SSSR*, 313:1241-1245.
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28. Guelstein VI, Tchypysheva TA, Ermilova VD, **Ljubimov AV**. (1992) Keratin 17 expression in human malignant breast tumors. *Herald Cancer Res Center AMS Russia*, 4:15-23.
29. Guelstein VI, Tchypysheva TA, Ermilova VD, **Ljubimov AV**. (1993) Myoepithelial and basement membrane antigens in benign and malignant human breast tumors. *Int J Cancer*, 53:269-277.
30. **Ljubimov AV**, Burgeson RE, Butkowski RJ, Michael AF, Sun T-T, Kenney MC. (1995) Human corneal basement membrane heterogeneity: topographical differences in the expression of type IV collagen and laminin isoforms. *Lab Invest*, 72:461-473.
31. Couchman JR, **Ljubimov AV**, Sthanam M, Horchar T, Hassell JR. (1995) Antibody mapping and tissue localization of globular and cysteine-rich regions of perlecan domain III. *J Histochem Cytochem*, 43:955-963.
32. Ugarova TP, **Ljubimov AV**, Deng L, Plow EF. (1996) Proteolysis regulates exposure of the IIIICS-1 adhesive sequence in plasma fibronectin. *Biochemistry*, 35:10913-10921.
33. **Ljubimov AV**, Burgeson RE, Butkowski RJ, Couchman JR, Wu R-R, Ninomiya Y, Sado Y, Maguen E, Nesburn AB, Kenney MC. (1996) Extracellular matrix alterations in human corneas with bullous keratopathy. *Invest Ophthalmol Vis Sci*, 37:997-1007.
34. Myint E, Brown DJ, **Ljubimov AV**, Kyaw M, Kenney MC. (1996) Cleavage of human corneal type VI collagen  $\alpha$ 3 chain by matrix metalloproteinase-2. *Cornea*, 15:490-496.
35. **Ljubimov AV**, Burgeson RE, Butkowski RJ, Couchman JR, Zardi L, Ninomiya Y, Sado Y, Huang Z, Nesburn AB, Kenney MC. (1996) Basement membrane abnormalities in human eyes with diabetic retinopathy. *J Histochem Cytochem*, 44:1469-1479.
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*Invest Ophthalmol Vis Sci*, 45:4583-4591.

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74. Allen SJ, Mott KR, **Ljubimov AV**, Ghiasi H. (2010) Exacerbation of corneal scarring in HSV-1 gK-immunized mice correlates with elevation of CD8+CD25+ T cells in corneas of ocularly infected mice. *Virology*, 399:11-22.
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  126. **Ljubimov AV**. (2014) Stem cell therapy for diabetic retinopathy. *Program and Abstracts of the 11th ISOPT Clinical - The International Symposium on Ocular Pharmacology and Therapeutics*, Reykjavik, Iceland, p. 57.
  127. Saghizadeh M, Winkler M, Dib C, Brown J, Tang J, Spurka L, Funari V, **Ljubimov A**. (2014) Micro RNAs expressed in normal and diabetic human corneas. *Program and Abstract book. XXI Biennial Meeting of the International Society for Eye Research*, San Francisco, CA, pp. 125-126.
  128. **Ljubimov A**, Kramerov A, Winkler M, Spektor T, Saghizadeh M. (2014) Gene and cell therapy approaches for corneal epithelial disorders. *Program and Abstract book. XXI Biennial Meeting of the International Society for Eye Research*, San Francisco, CA, p. 126.
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*Symposium on Ocular Pharmacology and Therapeutics*, Berlin, Germany, p. 56.

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133. Kramerov AA, Gangalum P, Ding H, Ljubimova JY, **Ljubimov AV.** (2016) Novel nanoconjugates for gene therapy normalization of cultured human diabetic limbal epithelial cells. *Invest Ophthalmol Vis Sci*, 56:E-Abstract 2306.
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## PRESENTATIONS AT CONFERENCES

- 1977 Soviet-Italian Symposium "Tissue Proteolytic Enzymes in Norm and Pathology", Moscow, USSR.
- 1980 Vth USSR Conference "Physiology and Pathology of Connective Tissue", Novosibirsk, USSR.
- 1982 1st European Congress of Cell Biology, Paris, France.
- 1983 Symposium "Role of Cocarcinogens and Promoters in Human and Experimental Carcinogenesis", Budapest, Hungary.
- 1986 IVth USSR Congress of Oncologists, Leningrad, USSR.
- 1988 Annual Meeting of the American Society of Investigative Dermatology, Washington, DC.
- 1988 VIIIth International Congress of Histochemistry and Cytochemistry, Washington, DC.
- 1990 Soviet-Italian Symposium on Cytoskeleton, Milan, Italy.
- 1990 XVIIIth Meeting of the International Society of Oncodevelopmental Biology and Medicine, Moscow, USSR, **invited speaker**.
- 1990 7<sup>th</sup> International Conference "Human Tumor Markers", Kiev, USSR, **speaker**.
- 1990 Annual Meeting of the American Society of Cell Biology, San Diego, CA.
- 1991 Annual Meeting of the American Society of Cell Biology, Boston, MA.
- 1994 Annual Meeting of the Association for Research in Vision and Ophthalmology, Sarasota, FL.
- 1995 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, **session moderator and speaker**.
- 1995 Annual Meeting and Scientific Sessions of the American Diabetes Association, Atlanta, GA, **speaker**.
- 1995 Ocular Cell and Molecular Biology Symposium II, San Diego, CA.
- 1995 Gordon Research Conference "Fibronectin, Integrins and Related Macromolecules", Oxnard, CA.
- 1995 XVth Congress of the International Society on Thrombosis and Haemostasis, Jerusalem, Israel.
- 1995 Annual Meeting of the Castroviejo Corneal Society, Atlanta, GA.

- 1996 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL.
- 1997 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL.
- 1997 Annual Meeting of the Castroviejo Corneal Society, San Francisco, CA.
- 1997 Annual Meeting of the American Academy of Ophthalmology, San Francisco, CA.
- 1998 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, **speaker.**
- 1998 XIIIth International Congress of Eye Research, Paris, France, **invited speaker.**
- 1999 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, **speaker.**
- 2000 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL.
- 2000 Gordon Research Conference "Basement Membranes", New London, CT, **speaker.**
- 2000 XIVth International Congress of Eye Research, Santa Fe, NM, **invited speaker.**
- 2000 Annual Meeting of the Castroviejo Corneal Society, Dallas, TX.
- 2001 UCLA Jules Stein Eye Institute Annual Research Alumni Day and post-ARVO seminar, **speaker.**
- 2001 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL.
- 2002 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL.
- 2002 Annual Meeting of the American Association for Cancer Research, San Francisco, CA.
- 2002 Gordon Research Conference "Basement Membranes", Plymouth, NH.
- 2002 XVth International Congress of Eye Research, Geneva, Switzerland.
- 2002 International Conference "Environmental Carcinogenesis", Moscow, Russia, **Session co-chairman and invited speaker.**
- 2002 7<sup>th</sup> World Congress on Advances in Oncology and 5<sup>th</sup> International Symposium on Molecular Medicine, Crete, Greece.
- 2003 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL.

- 2003 Annual Meeting of the American Association for Cancer Research, Washington, DC.
- 2003 American Association for Cancer Research Special Conference "New Directions in Angiogenesis Research", Chicago, IL.
- 2003 VIIth Michaelson Symposium "Ocular Circulation and Neovascularization", Paris, France, **speaker.**
- 2003 International Conference "Biology and Pathology of the Cell", Moscow, Russia, **invited speaker.**
- 2004 5<sup>th</sup> International Symposium on Ocular Pharmacology and Therapeutics, Monte Carlo, Monaco.
- 2004 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, **speaker.**
- 2004 Symposium on Retinal and Choroidal Neovascularization, Nashville, TN, **invited speaker.**
- 2005 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, **speaker.**
- 2005 Vth World Cornea Congress, Washington, DC.
- 2006 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL.
- 2006 Interlaboratory seminar of the Institute of Carcinogenesis, Russian Cancer Research Center, Moscow, Russia, **invited speaker.**
- 2006 XVIIth International Congress of Eye Research, Buenos Aires, Argentina, **invited speaker.**
- 2007 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL.
- 2007 Asia-ARVO Meeting, Singapore, **invited speaker.**
- 2007 5th International Conference on Protein Kinase CK2, Padua, Italy, **invited speaker.**
- 2008 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL.
- 2008 XVIIIth International Congress of Eye Research, Beijing, China, **session chair and speaker.**
- 2009 12<sup>th</sup> Vision Research Symposium, University of Florida, Gainesville, FL, **invited speaker.**

- 2009 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, **session moderator and speaker.**
- 2010 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, **session moderator and speaker.**
- 2010 XIX International Congress of Eye Research, Montreal, Canada, **session organizer and chair.**
- 2010 Gordon Conference on Biology & Pathobiology of the Cornea, Ventura, CA, **session moderator.**
- 2010 ARVO 2010 Summer Eye Research Conference “Diabetic Retinopathy: Approaches to a Global Epidemic”, **invited speaker.**
- 2011 Asia-ARVO Meeting, Singapore, **invited speaker.**
- 2011 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, **session moderator.**
- 2012 Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL.
- 2013 Annual Meeting of the Association for Research in Vision and Ophthalmology, Seattle, WA, **session moderator.**
- 2013 Annual Meeting of the United States & Canadian Academy of Pathology, Baltimore, MD
- 2013 Asia-ARVO Meeting, New Delhi, India, **invited speaker.**
- 2014 Annual Meeting of the Association for Research in Vision and Ophthalmology, Orlando, FL, **session moderator.**
- 2014 ISOPT Clinical - The International Symposium on Ocular Pharmacology and Therapeutics, Reykjavik, Iceland, **invited speaker.**
- 2014 XXI International Congress of Eye Research, San Francisco, CA, **session organizer and chair.**
- 2015 Annual Meeting of the Association for Research in Vision and Ophthalmology, Denver, CO, **session moderator.**
- 2015 ISOPT Clinical - The International Symposium on Ocular Pharmacology and Therapeutics, Berlin, Germany, **invited speaker.**
- 2015 ARVO 2010 Summer Eye Research Conference “Diabetic Retinopathy: Approaches to a Global Epidemic”, **invited speaker.**
- 2016 Annual Meeting of the Association for Research in Vision and Ophthalmology, Seattle, WA, **session organizer, moderator, and speaker.**

**CURRICULUM VITAE**

**May 10, 2016**

**ALEXANDER V. LJUBIMOV, PH.D., D.SC.**

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2016 XXII International Congress of Eye Research, San Francisco, CA, **session organizer, chair, and invited speaker.**

2016 Annual Meeting and Scientific Sessions of the American Diabetes Association, New Orleans, LA, **invited speaker.**

## PATENTS

1. Strain of hybrid cultured animal cells of *Rattus norvegicus* used for obtaining monoclonal antibodies to a glycoprotein of basement membranes, laminin. **USSR patent No. 1454851 from October 1, 1988.** Co-authors: Troyanovsky SM, Litvinova LV, Senin VM, Afanasjeva AV.
2. Strain of hybrid cultured animal cells of *Rattus norvegicus* used for obtaining monoclonal antibodies to a glycoprotein of basement membranes, entactin. **USSR patent No. 1458385 from October 15, 1988.** Co-authors: Litvinova LV, Senin VM, Afanasjeva AV.
3. Antisense inhibition of laminin-8 expression to inhibit human gliomas. **U.S. patent 7,547,511 from June 16, 2009.** Co-authors: Ljubimova JY, Black KL.
4. Antisense inhibition of laminin-8 expression to inhibit human gliomas. **Japanese patent 456683 from August 13, 2010.** Co-authors: Ljubimova JY, Black KL.

**COMPANIES THAT MANUFACTURE MONOCLONAL ANTIBODIES DEVELOPED BY DR. ALEXANDER V. LJUBIMOV**

1. Santa Cruz Biotechnology, California, USA.
2. Millipore, California, USA.
3. LabVision, California, USA.
4. United States Biological, Massachusetts, USA.
5. Exalpa Biologicals, Massachusetts, USA.
6. Accurate Chemicals, New York, USA.
7. Biomeda, California, USA.
8. Novus Biologicals, Colorado, USA.
9. Lifespan Biosciences, Washington, USA.
10. Novocastra, U.K.
11. Biogenesis, U.K.
12. Abcam, U.K.
13. Mubio Products, The Netherlands.
14. Acris Antibodies GmbH, Germany.
15. BioTrend, Germany.