

CURRICULUM VITAE

PERSONAL DETAILS

Name **Dr. Mike O. Karl, MD**
Date & Place of Birth **09-26-1976, Kassel, Germany**
Address **Förstereistrasse 54**
01099 Dresden, Germany
Email **mail@mikeology.de**
Nationality **German**
Marital status: **married**



CAREER

- 2009 **Group Leader**
Retinal Development & Regeneration, Center for Regenerative Therapies Dresden (CRTD), DFG Research Center and Cluster of Excellence, Germany
- 2005 **Senior Research Fellow**
Structural & Functional Analysis of Retinal Development & Retinal Repair. (DFG Postdoc Fellowship, German Science Foundation) Prof. T.A. Reh PhD, Dept. Biological Structure, University of Washington, Seattle, USA
- 2004 **Senior Research Fellow**
Electrophysiological Characterization of RPE Cells of Mouse Models of Retinal Disease. Prof. O. Strauss PhD, Dept. Experimental Ophthalmology, UKE-Hamburg, Germany
- 2002 **Junior Research Fellow**
Purinergics in Aqueous Humour Outflow Physiology of the Eye. (Herbert-Funke Foundation Fellowship) Prof. M.M. Civan, MD, Dept. of Physiology, Univ. of Pennsylvania, USA
- 1999 **Doctoral Thesis**
Retinal Pigment Epithelium Phagocytosis. (1999-2002, 2004, summa cum laude)
Prof. K. Engelmann MD, UKE-Hamburg, (2 year Werner-Otto Foundation Fellowship)
- 1996 **Medical School** – 2004 Approbation, Univ. Hamburg, Germany
Graduation – Herderschulgymnasium, Kassel, Germany
- 1994 **Exchange Student** – Clark High School, Whiting, Indiana, USA

AWARDS

- 2009 **Innovative Ophthalmology Research Award ARVO-AFER /Merck** – www.arvofoundation.org
- 2009 **Poster Award** – Society of Developmental Biology, NW-Regional, Best Postdoc Poster
- 2006 **Kaj Ulrik Linderström-Lang – Thesis Award** – Freundes- & Förderkreis UKE e.V., Germany
- 2003 **Poster Award** – EVER (Eur. Assc. for Vision & Eye Research), Physiology Section, Alicante

GRANTS

- 2009 **Joseph M. and Eula C. Lawrence Travel Scholarships** – Retina Research Foundation (AFER)
- 2008 **Travel Grants** – for Conferences, Pro Retina e.V.; Glaxo Smith Kline Foundation
- 2006 **Postdoctoral Fellowship** – German Research Foundation (DFG), 2 years, KA2794/1-1, Title: Replacement of ganglion cells through regeneration - structural and functional analysis of cell integration.
Travel Grants – for Conferences, Pro Retina e.V.; Glaxo Smith Kline Foundation
- 2005 **Career Grant** – Boehringer Ingelheim Fondation
Career Grant – Gertrud Kusen Foundation
Travel Grants – for Conference, Pro Retina e.V.; Glaxo Smith Kline Foundation
- 2002 **Research Fellowship** – Herbert-Funke Foundation, 1 Year, Univ. Pennsylvania, USA
Travel Grant – for Conference, Pro Retina e.V.
- 1999 **Doctoral Thesis Fellowship** – Werner Otto Foundation, 2 years, Committee: Prof. T. Jentsch (ZMNH), Prof. W. Ostertag (Heinrich-Pette Institute), Prof. C. Wagener (UKE)

PUBLICATIONS

- Lamba D.A., **Karl M.O.**, Reh T.A. Strategies for retinal repair: cell replacement and regeneration. (2009) Prog Brain Res. 175: 23-31
- Karl M.O.**, Hayes S, Nelson B.R., Tan K., Buckingham B. and Reh T.A.(2008) Stimulation of neural regeneration in the mouse. Proc Natl Acad Sci U S A. 105(49):19508-13.
- Lamba D., Hayes S, **Karl M.O.** and Reh T.A. (2008) BAF60c is a component of the neural progenitor specific BAFcomplex in developing retina. Dev Dyn. 237(10):3016-23
- Lamba D., **Karl M.O.** and Reh T.A. (2008) Neuronal Regeneration and Replacement: A view from the Eye. Cell Stem Cell 2: 538-549.
- Lamba D., **Karl M.O.** and T. Reh (2006). Efficient generation of retinal progenitor cells from human embryonic stem cells. Proc Natl Acad Sci U S A. 22;103(34):12769-74.
- McLaughlin, **Karl M.O.**, C.W., Zellhuber-Macmillan S., Wang Z., Do C.W., Leung C.T., Li A., Stone R.A., Macknight A.D.C. and Civan M.M. (2008) Electron Electron Probe X-ray Microanalysis of Outflow Pathway for Human Aqueous Humor. Am J Physiol Cell Physiol. 295(5):C1083-91.
- Karl, M.O.**, W. Kroeger, S. Wimmers, V. Milenkovic, M. Valtink, K. Engelmann and O. Strauss. Endogenous Gas6 and Ca²⁺-Channel Activation Modulate Phagocytosis by RPE. Cell Signal 20 (2008) 1159-1168.
- Lopes V.S., Ramalho J.S., Owen D.M., **Karl M.O.**, Strauss O., Futter C.E., Seabra M.C. (2007). The Ternary Rab27a Myrip-Myosin VIIa Complex Regulates Melanosome Motility in the Retinal Pigment Epithelium. Traffic. 8(5):486-99.
- Wimmers, S., **Karl M.O.** and Strauss O. (2006). Ion channels in the Retinal Pigment Epithelium. (Review). Prog Retin Eye Res. 2007 May;26(3):263-301.
- Karl M.O.**, M. Valtink, J. Bednarz and K. Engelmann (2006). Cell Culture-Media Alter RPE Phagocytic Function. Graefes Arch Clin Exp Ophthalmol. 2006 Dec 20; Jul;245(7):981-91
- Karl M.O.**, K. Peterson-Yantorno and M.M. Civan (2006). Cell-Specific Differential Modulation of Human Trabecular Meshwork Cells by Selective Adenosine Receptor Agonists. Exp Eye Res. 2006 Oct 27
- Karl M.O.**, Zur Phagozytose durch Retinale Pigmentepithelzellen [online], Hamburg, Univ., Diss., 2006, URN: urn:nbn:de:gbv:18-30140 URL: <http://www.sub.uni-hamburg.de/opus/volltexte/2006/3014/>
- Marmorstein, L., J. Wu, P. McLaughlin, J. Yocom, **M.O. Karl**, R. Neussert, J. Stanton, R.Gregg, O. Strauss, N. Peachey and A. Marmorstein (2006). The light peak of the electroretinogram is dependent on voltage-gated calcium channels and antagonized by bestrophin (BEST-1) J Gen Physiol. 127(5):577-89.
- Wollmann, G., Lenzer S., Berger, W., Rosenthal R., **Karl, M.O.** & Strauss, O. (2006). Voltage-dependent ion channels in the mouse RPE: Comparison with Norrie disease mice. Vision Res. Mar;46(5):688-98.
- Karl, M.O.**, J. C. Fleischhauer, W. D. Stamer, K. Peterson-Yantorno, C. H. Mitchell, R. A. Stone and M. M. Civan (2005). Differential P1-Purinergic Modulation of Human Schlemm's Canal Inner-Wall Cells. Am J Physiol Cell Physiol 288:784-794.
- Fleischhauer, J. C., C. H. Mitchell, W. D. Stamer, **M.O. Karl**, K. Peterson-Yantorno and M. M. Civan (2003). Common Action of Adenosine Receptor Agonists in Modulating Human Trabecular Meshwork Cell Transport. J. Membrane Biol. 193: 121-136.

BOOK CHAPTER

- Eye, retina, and visual system of the mouse. 2008. Chalupa L.M., Williams R.W. Cambridge, Mass.; MIT Press; ISBN: 9780262033817; Chapter 24: Lamba D., Nelson B.R., **Karl M.O.** and T. Reh. Specification, Histogenesis, and Photoreceptor Development in the Mouse Retina.

PROFESSIONAL ACTIVITIES

Manuscript Review

Experimental Eye Research (since 2003), IOVS (since 2007), PlosOne (since 2007), Biochimi (since 2009)

Committees

Amgen Scholar Program Evaluation (2008)

Member of ARVO Conference Committee – Members in Training 2005–2008

Student Representative – Committee Appellate Procedure for Professorship, Univ. Hamburg, 2000–2004

Student Representative – Committee for Doctorate (Doctoral, PhD), Univ. Hamburg, 2000–2002

TRAINING, COURSES & SYMPOSIA

- 2008 **Course: Optical Control of Neural Excitability** – Society for Neuroscience, DC, USA.
Workshop: Future Faculty Fellows– Howard Hughes Medical Institute, UW, USA
- 2007 **Course: Systems Biology**– Institute for System Biology (1 week) Seattle, WA, USA
Symposium: Adult Neurogenesis – CRTD, Max Planck Inst., Abcam, Dresden, Germany
- 2005 **Colloquium: Pro Retina Germany Research** – Retinal Degeneration, Potsdam, Germany
- 2004 **Symposium: Glaucoma** – honouring Prof. E. Lütjen-Drecoll, Erlangen, Germany
Course: Ocular Oncology – ARVO, Ft. Lauderdale, Florida, USA
- 2003 **Symposium: Biology of Chloride** – Society of General Physiology, Woods Hole, USA
Course: Mouse Visual System – 8th Annual Vision Research Conference, Ft.L., FL, USA
Course: Conditional Gene Targeting – ARVO, Ft.L., FL, USA
Training: Microperfusion of Kidney Tubules In-vitro – Dr. L.M. Satlin MD, Mt.Sinai Hospital, NY, USA (1 week)
- 2002 **Workshop: Practical Ion Channel Kinetics Workshop**, Drs. F. Qin, A. Auerbach & F. Sachs, Dept. of Physiology and Biophysics, SUNY, Buffalo, USA
Course: Proteomics – ARVO, Ft. L., FL, USA
- 2001 **Symposium: Retinal Degeneration** – Host: Prof. M. Wiederholt, UKBF, Berlin, Germany
Course: Stem Cells: Biology, Characterization & Therapeutic Potential – ARVO, USA
Animal Models of Retinal Degeneration – 5th Annual Vision Research Conference, FL, USA
- 1999 **Symposium: Biotechnology** – Cell Technology, Tissue Engineering to Drug Design, TU-Hamburg

CLINICAL TRAINING

- 2004 **Clinical Rotation** (à 4 months) –Internal Medicine: Dept. Oncology and Dept. Nephrology (Univ. Hamburg), General Surgery (Eilbek Hospital, Hamburg, Germany), Experimental Ophthalmology (Univ. Hamburg) and Clinical Ophthalmology (Univ. Zurich, Switzerland)
- 2001 **Clinical Training** – Dept. Neurology (8 weeks); Dept. Internal Medicine, Cardiology, Pulmology and Endocrinology, Director: Prof. H. Greten, (12 weeks); UKE-Univ. Hamburg
Clinical Training – Ophthalmologist Practice, Hamburg (6 weeks)
- 1998 **Student Surgical Assistant** – ENDO-Clinic, Hamburg, Germany
- 1997 **Clinical Training** – Internal Medicine, General Hospital Lanzarote, Spain (8 weeks)
- 1996 **Clinical Training** – 4 Weeks each: Hospital Altona Hamburg (Vascular Surgery), Red Cross Hospital Kassel (Trauma Surgery), City Hospital Kassel (General Surgery)

MEMBERSHIPS

Society for Neuroscience (SfN), German Physiological Society (DPG), Society of General Physiologists (SGP), Society for Developmental Biology (SDB), Association for Research in Vision & Ophthalmology (ARVO)

INVITED LECTURES

- 2009 Neural Regeneration at Eye Level. DFG RU1075 Retreat. Univ. of Regensburg, Germany.
- 2009 Identification of Neuronal Precursor Cells in the Retina. Pro Retina-Meeting.: Therapy in Focus - Cell based therapy, Potsdam, Germany.
- 2009 Neural regeneration - within sight. Postdoctoral Symposium, Department of Biological Structure, University of Washington, Seattle, USA.
- 2008 5th Annual Christopher Reeve “HOT TOPICS” IN STEM CELL BIOLOGY Satellite Symposium, Annual Meeting of the Society for Neuroscience, Washington, DC, USA.
- 2008 Retinal regeneration from animals to man. The Glaucoma Foundation, 15th Think Tank: Current Status of translational Nanomedicine and Tissue Bioengineering in the Eye. New York, USA.
- 2007 Müller Glia Cell Proliferation after Neurotoxic Injury in the Murine Retina. CRTD Dresden, Germany
- 2006 Kaj Ulrik Linderström-Lang Award. RPE Phagocytosis. UKE, University of Hamburg, Germany
- 2005 Murine RPE Cell Techniques: Epithelial Sheets, Polarized Singles and Cell Culture in the study of Best disease. Host: Prof. M. Seabra, Dept. Cell & Mol. Biol., Imperial College London, UK
- 2004 Purinergic Modulation of Human Schlemm’s Canal and Trabecular Meshwork Cells. 102nd annual meeting DOG - German Ophthalmological Society, Berlin, Germany
- 2003 Enzymatic Isolation of Human Inner-Wall Schlemm’s Canal Cells – Electrophysiological Comparisons to Trabecular Meshwork. DFG-SFB 539-Seminar, Host: Prof.E.Tamm, Univ. Erlangen, Germany

- 2003 Human Schlemm's Canal Cells: Cell Isolation and Electrophysiological Comparison to Human Trabecular Meshwork Cells. Host: Prof. L.E. Pillunat, Univ. Eye Clinic Dresden, Germany
- 2003 A1 Adenosine Receptors of Human Schlemm's Canal Cells as a Potential Target of Cross-talk between Inflow and Outflow of Aqueous Humour. EVER Meeting, Alicante, Spain
- 2001 Influence of Cell Culture Conditions on Phagocytosis of Photoreceptor Outer Segments by Cultivated Human Retinal Pigment Epithelium. 99th Annual Meeting DOG, Berlin, Germany

ABSTRACTS

- Karl M.O.**, Hayes S, Nelson B., Tan K., Buckingham B., Reh T. (2009) Amacrine but not Bipolar Cells Regenerate in the Adult Murine Retina after NMDA Neurotoxic Damage. ARVO IOVS. 50: 3062.
- Karl M.O.**, Hayes S, Nelson B.R., Buckingham B. and Reh T.A. (2008) Müller Glia Cell derived Neural Regeneration in the Murine Retina. Program No. 703.3. Society for Neuroscience. Washington, DC.
- Karl M.O.**, Hayes S, Nelson B.R., Reh T.A. (2008) Müller Glia Cell Proliferation after Neurotoxic Injury in the Murine Retina. ARVO IOVS. 49: E-Abstract 3550.
- Karl M.O.**, Jacobson B.E., Reh T.A. (2007). Neurotransmitter-mediated Calcium Signaling in Retinal Progenitors and Progeny. SDB Northwest Developmental Biology
- J. S. Ramalho, V. S. Lopes, D. M. Owen, **M.O. Karl**, O. Strauss, C. Futter, and M. C. Seabra. (2007) The Ternary Rab27a:Myrip:MyovIIa Complex Regulates Melanosome Tethering to the Actin Network. ARVO IOVS. 48: E-Abstract 2534.
- Karl M.O.**, Peterson-Yantorno K., Civan M.M. (2006). Purinergic Modulation of Human Trabecular Meshwork Cells. ARVO IOVS. 47: E-Abstract 2914.
- Strauss O., Neussert R., **Karl M.O.**, Marmorstein A.D., Wimmers S., Richard G. (2006). ATP-Induced Ca²⁺ Increases in Freshly Isolated Mouse RPE Cells. ARVO IOVS. 47: E-Abstract 5540.
- Civan M.M., McLaughlin C.W., Zellhuber-Macmillan S., **Karl M.O.**, Wang Z., Macknight A.D.C. (2006). Electron Probe X-Ray Microanalyses of Cells in Schlemm's Canal, Juxtacanalicular Tissue and Trabecular Meshwork of Intact Human Tissue. ARVO IOVS. 2006 47: E-Abstract 408.
- Karl, M.O.**, Wimmers, S., Anders K., Marmorstein A.D. & Strauss O. (2005). Voltage-Dependent Currents in Freshly Isolated Cells of the Mouse Retinal Pigment Epithelium. ARVO IOVS. 46: E-Abstract 3041.
- Strauss, O., **Karl M.O.**, Wimmers S. (2005) Different Outwardly Rectifying Potassium Currents in the Mouse Retinal Pigment Epithelium. ARVO IOVS. 46: E-Abstract 3042.
- Karl, M.O.**, K. Peterson-Yantorno, R. A. Stone & M. M. Civan (2004). Purinergic Modulation of Human Schlemm's Canal and Trabecular Meshwork Cells. Ophthalmologie 04 (Suppl. 1)
- Karl, M.O.**, K. Peterson-Yantorno, R. A. Stone & M. M. Civan (2004). A1 and A2a Adenosine Receptors Agonist Act Oppositely on Human Schlemm's Canal Cells. 83rd Annual Meeting DPG. Abstract p. S118. P21-4, Pflügers Arch. Vol 447. Suppl. 1.
- Karl, M.O.**, J. C. Fleischhauer, W. D. Stamer, K. Peterson-Yantorno, C. H. Mitchell, R. A. Stone & M. M. Civan (2004). Schlemm's Canal Cells and Trabecular Meshwork Cells as Potential Targets in IOP Modulation. ARVO IOVS. 45. E-Abstract 416.
- Karl, M.O.**, J. Fleischhauer, W.D. Stamer, K. Peterson-Yantorno, C.H. Mitchell, R. A. Stone & M.M. Civan (2003). Cells Acutely Harvested from Inner-Wall Cells and Explant-Derived Cells from Inner- and Outer-Wall of Schlemm's Canal Display Functional Adenosine Receptors. ARVO IOVS. 44(5): 3462.
- Karl, M. O.**, R.A. Stone & M. M. Civan (2003). A1 Adenosine Receptors of Human Schlemm's Canal Cells as a Potential Target of Cross-Talk between Inflow and Outflow of Aqueous Humour. EVER Meeting. 301
- Doubilei, V., J. Bednarz, M. Valtink, V. Zubaty, **M. O. Karl**, K. Engelmann & H. J. Schaefer (2002). Serum-Free Cultivation of Adult Human Retinal Pigment Epithelial (RPE) Cells for Transplantation ARVO IOVS. 43: E-Abstract 3450.
- Karl, M.O.**, K. Engelmann & O. Strauss (2002). Involvement of Ca²⁺-Channels and Src Tyrosine Kinases in the Regulation of Photoreceptor Outer Segment (ROS) Phagocytosis By Retinal Pigment Epithelial (RPE) Cells. ARVO IOVS. 43(12): 4578.
- Valtink, M., **Karl M.O.**, Bednarz J. & Engelmann K. (2002). Short-Term Influence of Culture Media and Supplements on Phagocytosis of Photoreceptor Outer Segments by Cultured Human Retinal Pigment Epithelium. ARVO IOVS. 43(12): 716.
- Karl, M.O.**, M. Valtink, J. Bednarz & K. Engelmann (2001). Influence of Cell Culture Conditions on Phagocytosis of Photoreceptor Outer Segments by SV40-Transfected Retinal Pigment Epithelium. Ophthalmologie 98 (Suppl. 1): S85.