

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed for Form Page 2.
Follow the sample format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME		POSITION TITLE	
Charles E. Riva		Prof. Em. University Lausanne, CH	
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Federal Institute of Technology, Zürich	Master	1959-1964	Physics
Federal Institute of Technology, Zürich	Dr Sc.	1964-1968	Physics

PROFESSIONAL POSITIONS:

1968-1971	Research Associate, Eye Research <i>Institute of Retina Foundation, Boston.</i>
1971-1973	Assistant Scientist, Eye Research <i>Institute of Retina Foundation, Boston, MA</i>
1973-1979	Associate Scientist, Eye Research <i>Institute of Retina Foundation, Boston, MA</i>
1975-1979	Assistant Professor of Ophthalmology (Biophysics) <i>Harvard Medical School, Boston, MA</i>
1979-1987	Associate Professor of Biochemistry and Biophysics, <i>University of Pennsylvania, Philadelphia, PA</i>
1987-1995	Irene Heinz Given Professor, Chair of Biophysics, <i>University of Pennsylvania, Philadelphia PA</i>
1995-2003	Full Professor <i>Université de Lausanne</i>
1995-2003	Director, Institut de Recherche en Ophtalmologie, <i>Sion, Switzerland</i>
2003-Date	Prof. Emeritus, <i>University of Lausanne, Switzerland</i>
2004-2009	Prof. a contratto, <i>University of Bologna, Italy</i>

HONORS AND OTHER PROFESSIONAL ACTIVITIES:**Awards and Honors:**

1988	Alcon Research Institute Scientific Merit Award
1997	Alfred-Vogt Award of the Swiss Society of Ophthalmology
1999	Doctorat honoris causa, University of Montreal
2009	President of European Association for Vision and Eye Research (EVER)

Editorial Services:

1995-1998	Member Editorial Board, Investigative Ophthalmology and Vision Research
1997-	Chief of Editorial Board, Online-Journal of Ophthalmology (Intern Internet Journal)
2006-2008	Associate Editor Acta Ophthalmologica

Patents:

1. USA 4,142,796
March 6, 1979
Blood flow measurement
2. USA 4,402,501
September 6, 1983
Fundus camera-based retinal laser Doppler velocimeters
3. USA 4,425,924
January 17, 1984
Blood velocity measurement in retinal capillaries utilizing the blue field entoptic phenomenon
4. USA 4,476,878
October 16, 1984
Blood velocity measurement in retinal capillaries utilizing the blue field entoptic phenomenon
5. USA 08/690,477
January 26, 1999
Confocal bidirectional laser Doppler velocimetry

SELECTION FROM MORE THAN 160 PEERED-REVIEWED PUBLICATIONS SINCE 1969

LISTING FROM YEAR 2000 TO TODAY:

Longo A., Geiser M.H. and Riva C.E.: Subfoveal choroidal blood flow in response to light/dark exposure. Invest. Ophthalmol. Vis. Sci. 41:00, 2000.

Geiser M., Riva C.E., Dorner G.T., Diermann U., Luksch A., Schmetterer L.: Response of choroidal blood flow in the foveal region to hyperoxia and hyperoxia-hypercapnia. Current Eye Research, 21:669-676, 2000.

Chamot S.R., Movaffaghy A.M., Petrig B.L. and Riva C.E.: Iris blood flow response to acute decreases in ocular perfusion pressure: A laser Doppler flowmetry study in humans. Exp. Eye Res. 70:107-112, 2000.

Longo A., Geiser M., Riva C.E.: subfoveal choroidal blood flow in response to light-dark exposure. Invest. Ophthalmol. Vis. Sci., 41:00, 2000

Riva C.E., Falsini B., Logean E.: Flicker-evoked responses of human optic nerve head blood flow: luminance versus chromatic modulation. Invest. Ophthalmol. Vis. Sci., 42:3. 2001.

Logean E., Falsini B., Riva C.E. : Effet du papillotement chromatique sur la circulation du nerf optique. Klin. Monatsbl. Augenheilkd., 218 : 345-347, 2001.

Riva C.E., Petrig B.L., Falsini B., Logean E. : Neuro-vascular coupling at the optic nerve head studied by laser Doppler flowmetry. OSA Trends in Opt. and Photonics, 2001.

Riva C.E., Falsini B., Logean E.: Flicker-evoked responses of human optic nerve head blood flow: luminance versus chromatic modulation. Invest. Ophthalmol. Vis. Sci. 2001, ;42(3) : 756-762, 2001.

Logean E., Falsini B., Riva C.E. : Effect of chromatic flicker on the optic nerve circulation. Klin. Monatsbl. Augenheilk, 218 :345-447, 2001.

Polak K., Schmetterer L., Riva C.E. : Influence of flicker frequency on flicker induced changes of retinal vessel diamters. Investigative Ophthalmology & Visual Science, 43 (8), 2721-2726, 2002.

Buerk D.G., Riva C.E.: Adenosine enhances functional activation of blood flow in cat optic nerve head during photic stimulation independently from nitric oxide. Microvascular Research 2432, 1-11, 2002.

Falsini B, Riva C.E., Logean E.: Flicker-evoked changes in human optic nerve blood flow: relationship with retinal neural activity. Investigative Ophthalmology & Visual Science, 43 (7), 2309-2316, 2002.

Polak K., Schmetterer L., Riva C.E. : Influence of flicker frequency on flicker induced changes of retinal vessel diamters. Invest Ophthalmol Vis Sci, 43 (8), 2721-2726, 2002.

- Movaffaghy A., Lochhead J., Riva C.E., Harding S.P., Petrig B.L., Moleneux M.E., Taylor T. E.: Feasibility of LDF measurements of optic nerve head blood flow in children with cerebral malaria. *Microvascular Research* 64. 247-253, 2002.
- Buerk D.G., Riva C.E.: Adenosine enhances functional activation of blood flow in cat optic nerve head during photic stimulation independently from nitric oxide. *Microvascular Research* 2432, 1-11, 2002.
- Chamot S.R., Petrig B.L., Pournaras C.J., Riva C.E.: Effect of isovolumic hemodilution on oxygen delivery to the optic nerve head. *Klinische Monatsblätter für Augenheilkunde*, 219, 292-295, 2002.
- Crittin M., Schmidt H., Riva C.E.: Hemoglobin oxygen saturation (SO₂) in the human ocular fundus measured by reflectance oximetry: preliminary data in retinal veins. *Klinische Monatsblätter für Augenheilkunde*, 219, 289-291, 2002.
- Movaffaghy A., Chamot S.R., Dosso A., Pournaras C.J., Sommerhalder J.R., Riva C.E.: Effect of isometric exercise on choroidal blood flow in type I diabetic patients. *Klinische Monatsblätter für Augenheilkunde*, 219, 299-301, 2002.
- Falsini B., Riva C.E., Logean E.: Relationship of blood flow changes of the human optic nerve with neural retinal activity: a new approach to the study of neuro-ophthalmic disorders. *Klinische Monatsblätter für Augenheilkunde*, 219, 296-298, 2002.
- Logean E., Schmetterer L., Riva C.E.: Velocity profile of red blood cells in human retinal vessels by confocal scanning laser Doppler velocimetry. *Laser Physics*, 13 (1), 45-51, 2003.
- Buerk DG, Atochin DN, Riva CE. Investigating the role of nitric oxide in regulating blood flow and oxygen delivery from in vivo electrochemical measurements in eye and brain. *Adv Exp Med Biol*. 530:359-70, 2003.
- Dorner GT, Garhofer G, Huemer KH, Riva CE, Wolzt M, Schmetterer L. Hyperglycemia affects flicker-induced vasodilation in the retina of healthy subjects. *Vision Res* 43:1495-500, 2003.
- Dorner GT, Garhofer G, Kiss B, Polska E, Polak K, Riva CE, Schmetterer L. Nitric oxide regulates retinal vascular tone in humans. *Am J Physiol Heart Circ Physiol*. 285:H631-6, 2003.
- Lovasik JV, Kergoat H, Riva CE, Petrig BL, Geiser M. Choroidal blood flow during exercise-induced changes in the ocular perfusion pressure. *Invest Ophthalmol Vis Sci*. 44:2126-2132, 2003.
- Lochhead J, Movaffaghy A, Falsini B, Winstanley PA, Mberu EK, Riva CE, Molyneux ME, Taylor TE, Harding SP. The effect of quinine on the electroretinograms of children with pediatric cerebral malaria. *J Infect Dis*. 187:1342-1345, 2003.
- Chamot SR, Cranstoun SD, Petrig BL, Pournaras CJ, Riva CE. Blood pO₂ and blood flow at the optic disc. *J Biomed Opt*. 8:63-9, 2003.
- Riva CE, Salgarello T, Logean E, Colotto A, Galan EM, Falsini B. Flicker-evoked response measured at the optic disc rim is reduced in ocular hypertension and early glaucoma. *Invest Ophthalmol Vis Sci*. 45:3662-8, 2004.
- Pournaras CJ, Riva CE, Bresson-Dumont H, De Gottrau P, Bechettoille A. Regulation of optic nerve head blood flow in normal tension glaucoma patients. *Eur J Ophthalmol*. 4:226-35, 2004.
- Crittin M, Riva CE. Functional imaging of the human papilla and peripapillary region based on flicker-induced reflectance changes. *Neurosci Lett*. 360:141-14, 2004.
- Riva CE, Logean E, Falsini B. Temporal dynamics and magnitude of the blood flow response at the optic disk in normal subjects during functional retinal flicker-stimulation. *Neurosci Lett*. 356:75-8, 2004
- Longo A, Geiser MH, Riva CE. Posture changes and subfoveal choroidal blood flow. *Invest Ophthalmol Vis Sci*. 45:546-51, 2004.
- Riva CE, Logean E, Falsini B. Visually evoked hemodynamical response and assessment of neurovascular coupling in the optic nerve and retina. *Prog Retin Eye Res*. 24:183-215, 2005.
- Crittin M. and Riva, C.E.: Optic nerve and retinal reflectance changes in response to physiological stimuli. *Optics Lasers Eng*. 43:583-589, 2005
- Logean, E., Geiser, M.H., and Riva, C.E.: Laser Doppler instrument to investigate retinal neural activity-induced changes

in optic nerve head blood flow. *Optics Lasers Eng.* 43:591-602, 2005

Pournaras, C.J., Logean, E, Riva, C.E., Petrig, B.L., Chamot, S, Coscas, G, Soubrane, G. Regulation of Subfoveal Choroidal Blood Flow in Age-Related Macular Degeneration. *Invest Ophthalmol Vis Sci.* 46:956-966, 2005..

Stepinac T.K., Chamot S.R., Rungger-Brandle E., Ferrez P., Munoz J.L., van den Bergh H., Riva C.E., Pournaras C.J., Wagnieres G.A. Light-induced retinal vascular damage by Pd-porphyrin luminescent oxygen probes *Invest Ophthalmol Vis Sci.* 2005 Mar;46(3):956-66.

Riva C.E. Subfoveal choroidal blood flow by LDF: measurement and application to the physiology and pathology of the choroidal circulation. *Bull Soc Belge Ophthalmol.* 302:185-194,2006.

Pournaras CJ, Rungger-Brandle E, Riva CE, Hardarson SH, Stefansson E. Regulation of retinal blood flow in health and disease. *Prog Retin Eye Res.* 27:284-330,2008

Riva C.E., Geiser M, Petrig B.L. Ocular blood flow assessment using continuous laser Doppler flowmetry. *Acta Ophthalmol.* 2009 Oct 23. [Epub ahead of print].

Peretto L, Riva C.E., Rovati L. Salvatori, Giorgia, Tinarelli R. Analysis of the effect of flicker on the blood-flow variation in the human eye. *IEEE Trans Instrum Meas.* 58:2916-2922, 2009.

Sugiyama T, Araie M, Riva CE, Schmetterer L, Orgul S. Use of laser speckle flowgraphy in ocular blood flow research. *Acta Ophthalmol.* 2009, Sept 2.

Fadda A, Di Renzo A, Parisi V, Stifano G, Balestrazzi E, Riva CE, Falsini B. Lack of habituation in the light adapted flicker electroretinogram of normal subjects: a comparison with pattern electroretinogram. *Clin Neurophysiol.* 120:1828-1834, 2009.

Book Chapters:

Riva C.E. and Feke G.T.: Laser Doppler Velocimetry in the Measurement of Retinal Blood Flow (Chapter 13) in Goldman, L. (Ed.) *Current Laser Technology in Medicine and Surgery*, (Springer, New York), pp. 135-161, 1981.

Riva C.E., Petrig B.L. and Grunwald J.E.: Retinal blood flow. In *Laser-Doppler Blood Flowmetry*, A.P. Shepherd and P.Å. Öberg, eds., Volume 107 of *Developments in Cardiovascular Medicine*, (Kluwer Academic Publishers, Boston), Chapter 19, pp. 349-383, 1989.

Riva C.E. and Petrig B.L.: Retinal blood flow: Laser Doppler velocimetry and blue field simulation technique. In *Noninvasive Diagnostic Techniques in Ophthalmology*, B.R. Masters, eds., (Springer Verlag, New York), pp. 390-409, 1990.

Riva C.E., Harino S., Shonat R.D. and Petrig B.L.: Circulation of the optic nerve head: An investigation with laser Doppler flowmetry. In: *Drance, S.M., Van Buskirk E.M. and Neufeld A.H., eds. Pharmacology of Glaucoma.* Baltimore (Williams & Wilkins), pp. 253-264, 1992.

Riva C.E., Harino S., Shonat R.D. and Petrig B.L. : Flicker stimulation. In *International Symposium on Glaucoma, Ocular Blood Flow and Drug Treatment*; S.M. Drance, eds., Chapter 6, (Williams & Wilkins, Baltimore), pp. 49-62, 1992.

Riva C.E., Petrig B.L. and Grunwald J.E.: Laser Doppler velocimetry in the study of retinal blood flow. In *Laser Doppler*, G. Belcaro, A. Bollinger, A.N. Nicolaides and U. Hoffmann, eds., (Med-Orion Publishing Co, London), Chapter 18, pp. 213-222, 1994.

Grunwald J.E. and Riva C.E.: Retinal blood flow in diabetes. In *Laser Doppler*, Belcaro et al. eds., (Med-Orion Publishing Co, London) , Chapter 19, pp. 223-247, 1994.

Riva C.E., Petrig B.L.: The regulation of retinal and optic nerve blood flow: effect of diffuse luminance flicker determined by the laser Doppler and the blue field simulation techniques. In *Les Séminaires ophtalmologiques d'Ipsen, Tome 6, Vision et adaptation*, Y. Christen, M. Doly, M.T. Droy-Lefaix, eds., (Elsevier Paris), pp. 61-71, 1995.

Riva C.E., Petrig B.L.: Choroidal blood flow by laser Doppler flowmetry. In *Optical Engineering*, Brian Thompson, eds., Vol. 34 pp. 746-752, 1995.

Principal Investigator/Program Director (Last, first, middle): Riva, Charles E.

Riva C.E., Mendel M.J. and Petrig B.L.: Flicker-induced optic nerve blood flow change. In *Ocular Blood Flow. Glaucoma-Meeting 1995*, Kaiser H.J., Flammer J., Hendrickson P., eds., (Karger Basel), pp. 128-137, 1996.

Petrig B.L. and Riva C.E.: Optic nerve head laser Doppler flowmetry: Principles and computer analysis. In *Ocular Blood Flow. Glaucoma-Meeting 1995*, Kaiser H.J., Flammer J., Hendrickson P., eds., (Karger Basel), pp. 120-127, 1996.

Riva C.E. and Petrig B.L.: Laser Doppler flowmetry in the optic nerve head. In *Vascular Risk Factors and Neuroprotection in Glaucoma - Update 1996*, S.M. Drance eds., (Kugler Publ. bv, Amsterdam/New York), pp. 43-55, 1997.

Riva C.E.: Nitric oxide and endothelin in optic nerve head blood flow regulation. In *No Endothelin in the Pathogenesis of Glaucoma*. I.O. Haefliger and J. Flammer, eds. (Lippincott-Raven Publ., Philadelphia), pp. 44-58, 1998.

Riva C.E.: Oxygenation in the ocular fundus by phosphorescence quenching. In *No Endothelin in the Pathogenesis of Glaucoma*. I.O. Haefliger and J. Flammer, eds. (Lippincott-Raven Publ., Philadelphia), pp. 146-157, 1998.

Buerk D.G., Atochin D.N. and Riva C.E.: Simultaneous tissue PO₂, nitric oxide and laser Doppler blood flow measurements during neuronal activation of optic nerve. In *Oxygen Transport Tissue XX*, A.Hudetz and D.Briley eds., Plenum Press, NY, Publ., 159-164, 1998.

Riva C.E.: Flussometria laser Doppler della testa del nervo ottico / Laser Doppler flowmetry of the optic nerve head. In *I Sistemi Vascolari del Nervo Ottico e dell'Area Perioptica / The vascular system of the optic nerve and perioptic area*. C. Bisantis and G. Carella, eds (I.N.C. Innovation-News-Communication), Chapter 9, pp. 191-202, 1998

Riva C.E.: Flussometria laser Doppler della testa del nervo ottico. In *The vascular systems of the optic nerve and perioptic area*, submitted, 1998.

Riva C.E., Falsini F., Geiser M.H. and Petrig B.L.: Optic nerve head blood flow response to flicker. *Ocular blood flow in Glaucoma*, 191-196, 1999

Petrig B.L. and Riva C.E.: Laser Doppler flowmetry in the optic nerve head. *Ocular blood flow in Glaucoma*, 171-182, 1999.

Riva C.E., Petrig B.L.: Laser Doppler technique in ophthalmology: principles and applications. In: *Lasers in Ophthalmology*, eds Fankhauser F, and Kwasniewska, S. Kugler Publications, The Hague, The Netherlands, pp 51-59, 2003.

Riva CE, Schmetterer L. Microcirculation of the Ocular Fundus. In: Tuma RF, Duran WN, Ley K (eds), *Handbook of Physiology: Microcirculation*. Amsterdam, The Netherlands: Academic Press; 2008:735-765.

Riva, CE, Falsini B. Functional laser Doppler flowmetry of the optic nerve. Physiological aspects and clinical applications. In: *Progress in Brain Research*, vol 173, C Nucci et al. (Eds), pp 149-163, 2008.

Riva C.E., Alm A., Pournaras C.J. Ocular Circulation. In *11TH ed. of ADLER's Physiology of the EYE*. Chapter 10, Elsevier, In press