

Maria Fronius, Prof. Dr. med. Dr. med. habil.

CV

Medical training

Ludwig Maximilian University Munich, Germany
Technical University Munich, Germany
Glasgow University, Scotland

Doctorate (Dr. med.)

Thesis title: „Visual acuity and binocularity in the peripheral visual field of strabismic and anisometropic amblyopes“ (supervisor Prof. Wolf Singer), Max-Planck-Institute for Psychiatry Munich, Dept. of Neurophysiology

Habilitation, *venia legendi*, Prof. (apl). for „Experimental Ophthalmology – Psychophysics“

Faculty of Medicine, Goethe University, Frankfurt/Main, Germany

Thesis: „Amblyopia and its treatment as a model for functional plasticity of the visual system“

Employment

- **Research** at the **Max-Planck-Institute for Brain Research** in Frankfurt/Main, Dept. of Neurophysiology (Prof. W. Singer), Psychophysics Group (Prof. R. Sireteanu), from 1984 to 1999, supported by:
 - research grant of the Max Planck Society
 - research grant of the German Research Foundation (DFG) to R. Sireteanu
 - research grant of the German Research Foundation (DFG) to M. Fronius
- Foundation and head of **Child Vision Research Unit Frankfurt, Goethe University, Dept. of Ophthalmology Frankfurt/Main**, since 2000

Awards

2005: Research Award of the German Ophthalmological Society (DOG)
2005: Poster award, Congresso Nazionale AIOrAO, Catania, Italy, with Licia Cirina
2008: Research Award of the Bielschowsky Society for Research in Strabismus
2009: Research Award of the German Ophthalmological Society (DOG)
2015: “Best poster” award, Child Vision Research Society (CVRS) conference

Additional qualifications

- **Supervisor** of doctoral theses (Dr. med. and Dr. rer. med.) – of which 3 received Dissertation Award of the Bielschowsky Society for Strabismus Research
- Member of the **Editorial Board** of the journal *Strabismus*
- **Reviewer** for several scientific journals, e.g.:
Vision Research, Strabismus, Klinische Monatsblätter für Augenheilkunde, Graefe's Archive for Clinical and Experimental Ophthalmology, Ophthalmologe, Acta Ophthalmologica, Investigative Ophthalmology & Visual Science, Neural Plasticity, Journal of Vision
- Affiliated staff member of Anglia Ruskin University, Cambridge, UK 2019/2020

- Invited **reviewer** for **PhD theses** Erasmus MC Rotterdam, NL
- Invited **reviewer** for **professorship** Anglia Ruskin University, Cambridge, UK

Financial support (present and past)

- EU (Horizon 2020)
- German Ministry for Research (BMBF)
- German Ophthalmological Society (DOG)
- Augenstern-e.V.
- Bielschowsky Society for Strabismus Research
- Willy Robert Pitzer Foundation
- „Verein der Freunde und Förderer der Universität Frankfurt“ (Association of Friends and Supporters of the University of Frankfurt)
- Albert von Metzler Foundation
- Edith von Heyden Foundation
- German Research Foundation (DFG)

Research interests

amblyopia; digital assessment methods and treatment for amblyopia; infant and child vision; visual development; visual psychophysics; plasticity of the visual system from childhood to adulthood; perceptual learning; behavioral and clinical neuroscience.

Selected publications

Kadhun A, Tan ETC, Levi DM, Colpa L, **Fronius M**, Simonsz HJ, Loudon SE.

An inventory of barriers to successful dichoptic treatment for amblyopia in young children. Graefe's Arch Clin Exp Ophthalmol. 2021. [Epub 31. Mai]. doi.org/10.1007/s00417-021-05193-1

Fronius M.

Neue digitale Therapie- und Diagnostikmethoden für Amblyopie. Der Augenspiegel. 2020. 03:42-44

Kuhli-Hattenbach C, **Fronius M**, Kohnen T.

[Timing of congenital cataract surgery: Amblyopia versus aphakic glaucoma]. Ophthalmologie. 2020. 117(3):190-198. doi:10.1007/s00347-020-01053-1

Tittes J, Baldwin AS, Hess RF, Cirina L, Wenner Y, Kuhli-Hattenbach C, Ackermann H, Kohnen T, **Fronius M**.

Assessment of stereovision with digital testing in adults and children with normal and impaired binocularity. Vision Res. 2019. 164: 69–82. doi: 10.1016/j.visres.2019.07.006

Fronius M.

[Occlusion treatment for amblyopia. Age dependence and dose-response relationship]. Review, Ophthalmologie. 2016. 113: 296-303. doi: 10.1007/s00347-016-0235-7 German

Priamikov A, **Fronius M**, Shi B, Triesch J.

OpenEyeSim - a biomechanical model for simulation of closed-loop visual perception. Journal of Vision 2016. 16(15):25, 1–13. doi: 10.1167/16.15.25

Kehrein S, Kohnen T, **Fronius M**.

Dynamics of interocular suppression in amblyopic children during electronically monitored occlusion therapy: first insight. Strabismus 2016. 24(2):51-62. doi: 10.3109/09273972.2016.1170047

- Fronius M**, Cirina L Ackermann H, Kohnen T, Diehl CM.
Efficiency of electronically monitored amblyopia treatment between 5 and 16 years of age: New insight into declining susceptibility of the visual system.
Vision Res. 2014. 103: 11-19. doi: 10.1016/j.visres.2014.07.018
- Roefs AM, Tjiam AM, Looman CW, Simonsz-Toth B, **Fronius M**, Felius J, Simonsz HJ, Loudon SE.
Comfort of wear and material properties of eye patches for amblyopia treatment and the influence on compliance.
Strabismus. 2012 Mar;20(1):3-10. doi: 10.3109/09273972.2012.655837
- Kracht J, Bachert I, Diehl CM, Kämmerling S, Lüchtenberg M, Zubcov A, Simonsz H, **Fronius M**.
[Electronically recorded occlusion treatment in amblyopes older than 7 years: acuity gain after more than 4 months of treatment?].
Klin Monbl Augenheilkd. 2010 Oct;227(10):774-81. doi: 10.1055/s-0029-1245752.
German
- Loudon SE, Passchier J, Chaker L, de Vos S, **Fronius M**, Harrad RA, Looman CW, Simonsz B, Simonsz HJ.
Psychological causes of non-compliance with electronically monitored occlusion therapy for amblyopia.
Br J Ophthalmol. 2009 Nov;93(11):1499-503. doi: 10.1136/bjo.2008.149815.
- Fronius M**, Bachert I, Lüchtenberg M.
Electronic monitoring of occlusion treatment for amblyopia in patients aged 7 to 16 years.
Graefes Arch Clin Exp Ophthalmol. 2009 Oct;247(10):1401-8. doi: 10.1007/s00417-009-1090-x.
- Pieh C, **Fronius M**, Chopovska Y, Pepler L, Klein M, Lüchtenberg M, Lagrèze WA, Felius J.
["Fragebogen zum Kindlichen Sehvermögen (FKS)". Assessment of quality of life with the German version of the Children's Visual Function Questionnaire].
Ophthalmologe. 2009 May;106(5):420-6. doi: 10.1007/s00347-008-1778-z. German
- Fronius M**, Bachert I.
[Spontaneous improvement of visual acuity in adult amblyopia after functional loss in the non-amblyopic eye?].
Klin Monbl Augenheilkd. 2009 Aug;226(8):634-9. doi: 10.1055/s-0028-1109374. German.
- Loudon SE, **Fronius M**, Looman CW, Awan M, Simonsz B, van der Maas PJ, Simonsz HJ.
Predictors and a remedy for noncompliance with amblyopia therapy in children measured with the occlusion dose monitor.
Invest Ophthalmol Vis Sci. 2006 Oct;47(10):4393-400.
- Fronius M**, Cirina L, Kuhli C, Cordey A, Ohrloff C.
Training the adult amblyopic eye with "perceptual learning" after vision loss in the non-amblyopic eye.
Strabismus. 2006 Jun;14(2):75-9.
- Fronius M**, Chopovska Y, Nolden J, Loudon SE, Lüchtenberg M, Zubcov A, Pepler L.
Occlusion treatment for amblyopia: assessing the performance of the electronic occlusion dose monitor.
Strabismus. 2006 Jun;14(2):65-70.

Fronius M.

[Adaptation of visual distortions in children with strabismic amblyopia following strabismus surgery and occlusion therapy].
Klin Monbl Augenheilkd. 2006 Jan;223(1):52-8. German

Michal M, Lüchtenberg M, Overbeck G, **Fronius M.**

[Visual distortions and depersonalization-de-realization syndrome].
Klin Monbl Augenheilkd. 2006 Apr;223(4):279-84. German.

Chopovska Y, Loudon SE, Cirina L, Zubcov A, Simonsz HJ, Lüchtenberg M, **Fronius M.**

Electronic recording of occlusion treatment for amblyopia: potential of the new technology.
Graefes Arch Clin Exp Ophthalmol. 2005 Jun;243(6):539-44.

Fronius M, Cirina L, Cordey A, Ohrloff C.

Visual improvement during psychophysical training in an adult amblyopic eye following visual loss in the contralateral eye.
Graefes Arch Clin Exp Ophthalmol. 2005 Mar;243(3):278-80.

Fronius M, Sireteanu R, Zubcov A.

Deficits of spatial localization in children with strabismic amblyopia.
Graefes Arch Clin Exp Ophthalmol. 2004 Oct;242(10):827-39.

Sireteanu R, **Fronius M**, Constantinescu DH.

The development of visual acuity in the peripheral visual field of human infants: binocular and monocular measurements.
Vision Res. 1994 Jun;34(12):1659-71.

Fronius M, Sireteanu R.

Pointing errors in strabismics: complex patterns of distorted visuomotor coordination.
Vision Res. 1994 Mar;34(5):689-707.

Sireteanu R, Singer W, **Fronius M**, Greuel JM, Best J, Fiorentini A, Bisti S, Schiavi C, Campos E.

Eye alignment and cortical binocularity in strabismic kittens: a comparison between tenotomy and recession.
Vis Neurosci. 1993 May-Jun;10(3):541-9.

Fronius M, Sireteanu R.

[Localization disorders in squint amblyopia: horizontal line bisection and relative vertical localization].
Klin Monbl Augenheilkd. 1992 Jul;201(1):22-9. German.

Sireteanu R, **Fronius M**, Katz B.

A perspective on psychophysical testing in children.
Eye (Lond). 1990;4 (Pt 6):794-801.

Sireteanu R, **Fronius M.**

Human amblyopia: structure of the visual field.
Exp Brain Res. 1990;79(3):603-14.

Fronius M, Sireteanu R.

Monocular geometry is selectively distorted in the central visual field of strabismic amblyopes.
Invest Ophthalmol Vis Sci. 1989 Sep;30(9):2034-44.

Sireteanu R, **Fronius M.**

Different patterns of retinal correspondence in the central and peripheral visual field of strabismics.

Invest Ophthalmol Vis Sci. 1989 Sep;30(9):2023-33.

Sireteanu R, **Fronius M**, Singer W.

Binocular interaction in the peripheral visual field of humans with strabismic and anisometropic amblyopia.

Vision Res. 1981;21(7):1065-74.

Sireteanu R, **Fronius M.**

Naso-temporal asymmetries in human amblyopia consequence of long-term interocular suppression.

Vision Res. 1981;21(7):1055-63.