

Curriculum Vitae

Hana Uhlirova

PERSONAL DATA

Marital status: married
Birth surname: Janeckova
Date of birth: October 15 1982
Place of birth: Brno, Czech Republic
Nationality: Czech

UNIVERSITY EDUCATION

- 2006 - 2010 PhD studies in the laboratory of Optical Microscopy, Institute of Physical Engineering, Brno University of Technology (BUT), Technicka 2, Brno, Czech Republic.
Specialization: optics, microscopy and holography of living cells.
- 2004 - 2006 Master studies (MSc) in the field of Optics and Precise Mechanics (graduated with honor) Faculty of Mechanical Engineering (FME), Brno University of Technology, Technicka 2, Brno, Czech Republic.
Specialization: optics, microscopy, interference and holographic microscopy of biological specimens.
Dean's prize awarded for the educational attainments, research activities and Diploma thesis.
- 2001 - 2004 Master studies at the Faculty of Mechanical Engineering, Brno University of Technology, Technicka 2, Brno, Czech Republic.

JOB OVERVIEW

- since 11/2015 Junior researcher, CEITEC BUT, Czech Republic; Faculty of Mechanical Engineering, BUT, Czech Republic
- 07/2011 – 11/2015 Postdoctoral fellow in Neurovascular Imaging Laboratory, Department of Radiology, UCSD, California, USA.

- 01/2010 - 02/2011 Research Assistant at the Institute of Physical Engineering (IPE), Faculty of Mechanical Engineering, Czech Republic.
- 01/2009 - 01/2010 Assistant at the Institute of Physical Engineering, Faculty of Mechanical Engineering, Czech Republic.
- 01/2008 - 12/2008 Technician at the Institute of Physical Engineering, Faculty of Mechanical Engineering, Czech Republic.

PUBLICATIONS

- Yaseen MA, Sutin J, Wu W, Fu B, **Uhlirova H**, Devor A, Boas DA, Sakadzic S. *Fluorescence lifetime microscopy of NADH distinguishes alterations in cerebral metabolism in vivo*. Biomed Opt Express. Apr 3; 8(5):2368-2385 (2017).
- **Hana Uhlirova**, Peifang Tian, Kivilcim Kilic, Martin Thunemann, Vishnu B. Sridhar, Hauke Bartsch, Anders M. Dale, Anna Devor, Payam A. Saisan. *Neurovascular Network Explorer 2.0: a database of 2-photon single-vessel diameter measurements from mouse SI cortex in response to optogenetic stimulation*. Frontiers in Neuroinformatics Feb 1; 11:4 (2017).
- **Uhlirova H**, Kilic K, Tian P, Sakadzic S, Gagnon L, Thunemann M, Desjardins M, Saisan PA, Nizar K, Yaseen MA, Hagler DJ Jr, Vandenberghe M, Djurovic S, Andreassen OA, Silva GA, Masliah E, Kleinfeld D, Vinogradov S, Buxton RB, Einevoll GT, Boas DA, Dale AM, Devor A. *The roadmap for estimation of cell-type-specific neuronal activity from non-invasive measurements*. Philos Trans R Soc Lond B Biol Sci. 2016 Oct 5; 371(1705).
- **H. Uhlirova** , K. Kilic , P. Tian , M. Thunemann , M. Desjardins , P. Saisan , S. Sakadzic , T. Ness, C. Mateo, Q. Cheng, K. Weldy, F. Razoux, M. Vanderberghe, J. Cremonesi, K. Nizar, V. Sridhar, T. Steed, M. Abashin, S. Fainman , E.r Masliah, S. Djurovic, O. Andreassen, G. Silva, D. Boas, D. Kleinfeld, R. Buxton, G. T. Einevoll, A. Dale. *Cell type specificity of neurovascular coupling in cerebral cortex*. Elife. 2016 May 31; 5.
- K. Nizar, **H. Uhlirova**, P. Tian, P. A. Saisan, Q. Cheng, L. Reznichenko, K. L. Weldy, T. C. Steed, V. B. Sridhar, C. L. MacDonald, J. Cui, S. L. Gratiy, S. Sakadzic, D. A. Boas, T. I. Beka, G. T. Einevoll, J. Chen, E. Masliah, A. M. Dale, G. A. Silva, A. Devor. *In vivo stimulus-induced vasodilation occurs without IP3 receptor activation and may precede astrocytic calcium increase*. J Neurosci 33, pp. 8411-22 (2013), ISSN: 0270-6474.
- **H. Janeckova**, P. Vesely, R. Chmelik. *Proving tumour cells by acute nutritional/energy deprivation as a survival threat: a task for microscopy*. Anticancer Research 29, pp. 2339-2346 (2009), ISSN: 0250-7005.
- P. Kolman, **H. Janeckova**, R. Chmelik. *Digital holographic microscopy at the IPE, BUT*. Fine mechanics and optics (Czech) 7-8, 206-208 (2009), ISSN: 0447-6441.

- **H. Janeckova**, P. Kolman, P. Vesely, R. Chmelik. *Digital holographic microscope with low spatial and temporal coherence of illumination*. In: Optical and digital image processing, Proc of SPIE, 7000, c. 700002E, pp. 1 - 8, 2008 (ISSN: 0277-786X, ISBN: 9780819471987).

BOOKS

Tools for high resolution in vivo imaging of cellular and molecular mechanisms in cortical spreading depression and spreading depolarization. Kivilcim Kilic, **Hana Uhlířova**, Peifang Tian, Mohammad Abbas Yaseen, Jonghwan Lee, Sergei A. Vinogradov, David A. Boas, Sava Sakadzic, Anna Devor.

In: Neurobiological Basis of Migraine. Wiley-Blackwell; 1 edition (August 7, 2017)

CONFERENCES

- 11/2013 Society for Neuroscience, San Diego, CA, USA.
Author of the poster presentation: Regulation of cellular metabolism by variation in O₂ availability: 2-photon imaging of NADH in cerebral cortex in vivo.
- 11/2012 Society for Neuroscience, San Diego, CA, USA.
Author of the poster presentation: In vivo profiling of astrocytic calcium excitability and downstream vascular effects: Fluorescence intensity and lifetime measurements.
- 12/2010 Unravelling Cancer Cell Invasion and Metastasis, Torino, Italy.
Author of the poster presentation: Evaluation of cytoskeletal dynamics by measurements of dry mass dynamics with digital holographic microscopy.
- 04/2010 Digital holography and three-dimensional imaging, Biomedical optics, Miami, Florida, USA.
Co-author of the oral presentation: Wide-range coherence holographic microscope.
- 09/2009 Cytokinematics 2009, Hradec Kralove, Czech Republic.
Oral presentation: Dry mass dynamics evaluated in starving tumour cells by DHM.
- 10/2008 The 8th international conference of anticancer research, Kos, Greece.
Oral presentation: Application of a transmission low-coherence digital holographic micro-scope in cancer cell biology.
- 04/2008 Optical and digital image processing, Strasbourg, France.
Poster presentation: Digital holographic microscope with low spatial and temporal coherence of illumination.
- 09/2006 Czech-Polish-Slovak optical conference, Liberec, Czech Republic.
Co-author of the oral presentation: In vitro dynamic observations in a low-coherence holographic microscope.

09/2006 Cytokinematics, Hradec Kralove, Czech Republic.
Oral presentation: Low-coherence holographic microscopic imaging: characteristics and time lapse recording.

INTERNSHIPS

- 2006 - 2009 5 week internships in the laboratory of Molecular Genetics, AS Czech Republic (MUDr. Pavel Vesely, CSc., pvy@img.cas.cz).
- holographic imaging of live cells, cell biology and cultivation of cells
Institute of Molecular Genetics, AS Czech Republic
Fleming square 2, Prague 6, 166 37, Czech Republic
- 05 - 07/2005 Internship in the laboratory of Light Microscopy (Ing. Daniel Zicha, PhD, daniel.zicha@cancer.org.uk).
- interference imaging of cells with a Mirau objective, confocal imaging
Cancer Research UK, Lincoln's Inn Fields, London WC2A 3PX, UK
- 02 - 04/2005 Internship in the laboratory of Hard Tissue Research (Centre for Oral Growth and Development) (Prof. Alan Boyde, a.boyde@qmul.ac.uk).
- image processing, 3D (SEM) and stereoscopic imaging
Barts and the London School of Medicine and Dentistry, Queen Mary, University of London, London E1 2AD, UK

TEACHING ACTIVITIES

- 12/2013 Dynamic imaging in neuroscience (IBRO), 2 week-international college: lecture and experimental demonstrations
- 2010 – 2012 Supervision of Diploma and Bachelor theses (Aneta Jebackova, Lukas Hladik, Jan Bartonicek)
- 2009 - 2010 lecture Basics of fluorescence microscopy
- 2006 - 2010 Tutorials in Mechanics, Electricity and Magnetism, Optics, Thermodynamics, Vibration and Waves

PARTICIPATION IN RESEARCH PROJECTS

- 2009 - 2015 Neuronal, glial and BOLD fMRI Signals: From BOLD to 2-photon microscopy (R01 NS057198-01, PI: Anna Devor, PhD)
Role: Postdoctoral Investigator
- 2011 - 2015 Spatiotemporal Brain Imaging: Microscopic and Systems Level (R01EB000790-06, PI: Anders Dale, PhD)
Role: Postdoctoral Investigator

- 2008 - 2010 The utilization of digital holographic microscope for research of live cell dynamics and completion of the development of a novel multifunction microscope (PI: Radim Chmelik, PhD).
Role: PhD Investigator
- 2008 - 2010 Function hybrid nanosystems of semiconductors and metals with organic materials (FUNS), research project within the program “Nanotechnology for society” (PI: Bohuslav Rezek, PhD).
Role: PhD Investigator
- 2007 Microscopy of time variable biologic objects, project of the Faculty of Mechanical Engineering (PI: Hana Uhlířová-Janecková) – project evaluated winner in the application category.
- 2006 Image reconstruction of threedimensional objects by the means of holographic confocal microscopy (PI: Radim Chmelik, PhD).
Role: PhD Investigator

PROFESIONAL MEMBERSHIPS

- 2012 – 2013 Member, Society for Neuroscience
- 2012 Member, Biophysical Society
- 2010 Member, Optical Society of America
- 2008 Member, International Society for Optics and Photonics