

Ass. Prof. Vítězslav Bryja, PhD. (* 3.7.1977), Czech

ResearcherID: H-1925-2014, ORCID ID: 0000-0002-9136-5085

<http://www.sci.muni.cz/ofiz/en/research/wnt-signaling/>

EDUCATION:

1995-2000 – M.Sc. in Molecular Biology and Genetics; Faculty of Sciences, Masaryk University, Brno, Czech Republic

2000-2004 - PhD. in Neurosciences; 1st Faculty of Medicine, Charles University, Prague, Czech Republic

PROFESSIONAL EXPERIENCE:

7/2000 – 2/2002 – junior research scientist, Institute of Animal Physiology and Genetics, Academy of Sciences of the Czech Republic, Liběchov, Czech Republic

7/2000 – 6/2004 – research scientist, Center of Cell Therapy and Tissue Replacement, Charles University, Prague

3/2002 – 6/2004 – research scientist, Institute of Experimental Medicine, Academy of Sciences of the Czech Republic, Prague, Czech Republic

7/2004 – 6/2007 - postdoctoral fellow, Laboratory of Molecular Neurobiology, Department of Molecular Biochemistry and Biophysics, Karolinska Institute, Stockholm, Sweden (supervisor: Prof. Ernest Arenas)

from 1/2007 – research scientist, Laboratory of Cytokinetics, Institute of Biophysics, Academy of Sciences of the Czech Republic, Brno, Czech Republic

3/2007-11/2015 – research scientist, Department of Experimental Biology, Faculty of Science, Masaryk University, Brno, Czech Republic

from 12/2014 – Associate Professor, Department of Experimental Biology, Faculty of Science, Masaryk University, Brno, Czech Republic

RESEARCH INTEREST AND RELEVANCE FOR THE PROJECT:

My major research interest is to understand how Wnt signal is transduced *in vitro* and *in vivo*, and how individual components of the Wnt pathway contribute to pathogenesis of human diseases.

V.Bryja (Citation Report (WoS)).

PUBLICATION SUMMARY (AUGUST 2017):

Number of papers (PubMed): 89 (35 as first author)

Times cited (WoS): 2839

Times cited without self-citations (WoS): 2637

h-index (WoS): 33

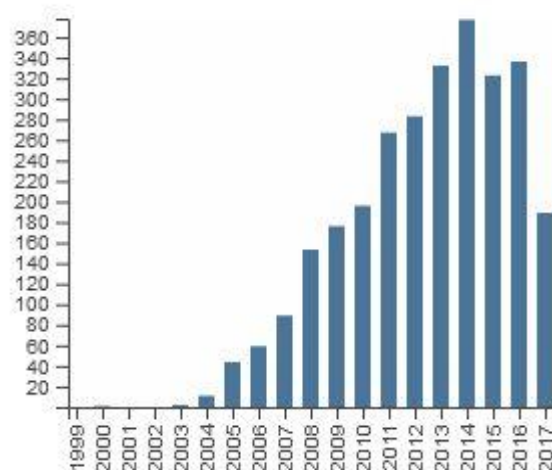
Cummulative IF: 488.544

SELECTED ORIGINAL PAPERS:

¹ – first co-authors

* - corresponding author

1. **Bryja V**, Bonilla S, Arenas E* (2006): Derivation of mouse embryonic stem cells. *Nature Protocols* 1: 2082-2087. IF: 9.988; times cited: 73
2. **Bryja V**¹, Schulte G¹, Rawal N, Grahn A, Arenas E* (2007): Wnt-5a induces Dishevelled phosphorylation and dopaminergic differentiation via a CK1-dependent mechanism. *J. Cell Sci.* 120: 586-595. IF: 6.247; times cited: 87
3. **Bryja V**, Gradl D, Schambony A, Arenas E*, Schulte G* (2007): β -arrestin is a necessary component of Wnt/ β -catenin signaling in vitro and in vivo. *Proc. Natl. Acad. Sci. USA* 104: 6690-6695. IF: 9.380; times cited: 92
4. Andäng M, Hjerling-Leffler J, Moliner A, Lundgren TK, Castelo-Branco G, Nanou E, Pozas E, **Bryja V**, Halliez S, Nishimaru H, Wilbertz J, Arenas E, Koltzenburg M, Charnay M, El Manira A, Ibañez CF,



- Ernfors P* (2008): Histone H2AX-dependent GABA_A receptor regulation of embryonic stem cell proliferation. *Nature* 451: 460-464. IF: 31.434; times cited: 153
5. Cajánek L, Ribeiro D, Liste I, Parish CL, **Bryja V***, Arenas E* (2009): Wnt/beta-catenin signaling blockade promotes neuronal induction and dopaminergic differentiation in embryonic stem cells. *Stem Cells*. 27:2917-2927. IF:7.747, times cited: 48
 6. K. Tanneberger, A.S. Pfister, K. Brauburger, J. Schneikert, M.V. Hadjihannas, V. Kriz, G. Schulte, **V. Bryja** and J. Behrens* (2011): Amer1/WTX couples Wnt-induced formation of PtdIns(4,5)P2 to LRP6 phosphorylation. *EMBO J*. 30: 1433-1443. IF: 9.205, times cited: 42
 7. I. Červenka, J. Wolf, J. Mašek, P. Krejci, W. R. Wilcox, A. Kozubík, G. Schulte, J. Silvio Gutkind*, and **V. Bryja*** (2011): Mitogen activated-protein kinases promote WNT/β-catenin signaling via phosphorylation of LRP6. *Mol. Cell. Biol.* 31(1):179-89. IF: 5.527; times cited: 46
 8. Chaki M, Airik R, Ghosh AK, Giles RH, Chen R, Slaats GG, Wang H, Hurd TW, Zhou W, Cluckey A, Gee HY, Ramaswami G, Hong CJ, Hamilton BA, Cervenka I, Ganji RS, **Bryja V**, Arts HH, van Reeuwijk J, Oud MM, Letteboer SJ, Roepman R, Husson H, Ibraghimov-Beskrovnaya O, Yasunaga T, Walz G, Eley L, Sayer JA, Schermer B, Liebau MC, Benzing T, Le Corre S, Drummond I, Janssen S, Allen SJ, Natarajan S, O'Toole JF, Attanasio M, Saunier S, Antignac C, Koenekoop RK, Ren H, Lopez I, Nayir A, Stoetzel C, Dollfus H, Massoudi R, Gleeson JG, Andreoli SP, Doherty DG, Lindstrad A, Golzio C, Katsanis N, Pape L, Abboud EB, Al-Rajhi AA, Lewis RA, Omran H, Lee EY, Wang S, Sekiguchi JM, Saunders R, Johnson CA, Garner E, Vanselow K, Andersen JS, Shlomei J, Nurnberg G, Nurnberg P, Levy S, Smogorzewska A, Otto EA, Hildebrandt F.* (2012): Exome Capture Reveals ZNF423 and CEP164 Mutations, Linking Renal Ciliopathies to DNA Damage Response Signaling. *Cell*. 150(3): 533-48. IF: 31.957; times cited: 141
 9. M. Kaucká, K. Plevová, Š. Pavlová, J. Verner, J. Procházková, P. Janovská, P. Krejčí, J. Kotašková, P. Ovesná, B. Tichý, Y. Brychtová, M. Doubek, A. Kozubík, J. Mayer, Š. Pospíšilová and **V. Bryja*** (2013): The planar cell polarity pathway drives pathogenesis of chronic lymphocytic leukemia by the regulation of B-lymphocyte migration. *Cancer Res*. 73(5):1491-1501. IF: 9.282; times cited: 34
 10. A. Soldano, Z. Okray, P. Janovská, K. Tmejová, E. Reynaud, A. Claeys, J. Yan, B. De Strooper, J.-M. Dura, **V. Bryja**, B. A. Hassan* (2013): The Amyloid Precursor Proteins are conserved modulators of the Wnt/PCP pathway required for robustness of axonal outgrowth. *PLoS Biol*. 11(5):e1001562. IF: 12.690; times cited: 22
 11. R. de Groot; R. Sri Ganji; O. Bernatik; B. Lloyd-Lewis; K. Seipel; K. Šedová; Z. Zdráhal; V.M. Dhople; T. Dale; H. Korswagen*, **V. Bryja***. (2014) Huwe1-mediated ubiquitylation of Dvl defines a novel negative feedback loop in the Wnt signaling pathway. *Sci. Signal*. 7(317): ra26 IF: 7.648; times cited: 20
 12. P. Janovská¹, L. Poppová¹, K. Plevová, H. Plešingerová, M. Běhal, M. Kaucká, P. Ovesná, Y. Brychtová, M. Doubek, S. Baskar, A. Kozubík, Š. Pospíšilová, Š. Pavlová and **V. Bryja***: Autocrine signaling by Wnt-5a deregulates chemotaxis of leukemic cells and predicts clinical outcome in chronic lymphocytic leukemia. *Clin Cancer Res*. 2016 Jan 15;22(2):459-69. IF: 8.722; times cited: 6
 13. Linke F, Harenberg M, Nietert MM, Zaunig S, von Bonin F, Arlt A, Szczepanowski M, Weich HA, Lutz S, Dullin C, Janovská P, Krafčíková M, Trantírek L, Ovesná P, Klapper W, Beissbarth T, Alves F, **Bryja V**, Trümper L, Wilting J, Kube D*. Microenvironmental interactions between endothelial and lymphoma cells: a role for the canonical WNT pathway in Hodgkin lymphoma. *Leukemia*. 2017 Feb;31(2):361-372. IF 12.104
 14. I. Cervenka, J. Valnohova, O. Bernatik, J. Harnoš, M. Radsetoulal, K. Sedova, K. Hanakova, D. Potesil, M. Sedlackova, A. Salasova, Z. Steinhart, S. Angers, G. Schulte, A. Hampl, Z. Zdrahal, **V. Bryja***. Dishevelled is a NEK2 substrate controlling dynamics of centrosomal linker proteins. *Proc Natl Acad Sci USA*. 2016 Aug 16;113(33):9304-9. IF 9.423 times cited: 7

REVIEW:

Schulte G, **Bryja V** (2007): The Frizzled family of unconventional GPCRs. *Trends Pharmacol. Sci.* 28: 518-525. IF: 9.610; times cited: 110

Bryja V, Červenka I, Čajánek L (2017): The connections of Wnt pathway components with cell cycle and centrosome: side effects or a hidden logic? *Crit Rev Biochem Mol Biol.* 2017 Jul 25:1-24. IF 6.639 [Epub ahead of print]

BOOK CHAPTER:

Vítězslav Bryja and Ondřej Bernatík: Chapter 15. Dishevelled at the Crossroads of Pathways. In: *Wnt signaling in Development and Disease: Molecular Mechanisms and Biological Functions* (eds. Steffan Hoppler & Randal T. Moon). Wiley Publishers. 2014.

PATENT FAMILIES:**Casein kinase 1 inhibitors for the treatment of b-cell chronic lymphocytic leukemia**

PCT: WO2014023271 (A1) 2014-02-13

National Patents: CZ20120538 (A3) 2014-02-19, CA2876908 (C) 2016-11-08

European Patent: EP2882437 (B1) 2016-12-14

Applications: US2015209354 (A1) 2015-07-30

Method of determination of diagnosis and prognosis in patients with b-cell chronic lymphocytic leukemia and oligonucleotides for use in this method

PCT: WO2011015162 (A2) 2011-02-10

National Patents: CZ303555 (B6) 2012-12-05, US9057106 (B2) 2015-06-16

Application: EP2462243 (A2) 2012-06-13

MAJOR INTERNATIONAL GRANTS:

EMBO Installation Grant: Functional analysis of Dishevelledome (2008-2012), principal investigator.

The Swedish Foundation for International Cooperation in Research and Higher Education (STINT): Frizzled signaling – protein-protein interactions and intracellular scaffolding as a means of signal transduction (2008-2012), main foreign partner.

Ministry of Education, Youth and Sports of the Czech Republic (OPVK2.3): Cooperation between Masaryk University and Karolinska Institutet, Stockholm in the field of biomedicine. (CZ.1.07/2.3.00/20.0180) (2012-2015), coordinator.

European Commission, Marie Curie International Training Network: WntsApp - WNT-mediated signal relay in stem cells and oncogenesis – from basic biology to applications (2013-2016), principal investigator at MU

INVITED LECTURES:

Conferences: Conference of Johann Gregor Mendel Society of Genetics, Bratislava (2008); Wnt2010, Karolinska Institute, Stockholm (2010); EMBO Young Investigator Programme Meetings (2008-2012; 7 talks); Understanding Cancer Stem Cells, La Coruna, Spain (2011); Neuronus, IBRO Forum, Krakow (2012)

International Seminars: Cedars Sinai Medical Center (Los Angeles, 2007); Max Planck Institute of Molecular Genetics (Berlin, 2008); German WNT Forschungsgruppe (Karlsruhe, 2010); University of Göttingen (Göttingen, 2012), Institut Curie (Paris, 2013), Centre for Cancer Research (Marseille, 2013)

PRIZES AND AWARDS:

EMBO Installation Grant (European Molecular Biology Organization 2007)

Anniversary Award of the Johann Gregor Mendel Society of Genetics (Brno 2008)

Prize for the Outstanding Results in Science and Innovations for 2012 (Minister of Education, Youth and Sports of the Czech Republic)

Prize of the President of the Czech Science Foundation (Czech Science Foundation, 2014)

Neuron Impuls in Biology (Neuron Funds for Support of Science, 2016)

AD HOC REFEREE FOR:

Journals: Cell Research, Nature Communications, Blood, Leukemia, Oncogene, Stem Cells, Journal of Cell Science, Scientific Reports, PLoS One, Pharmacological Reviews, Lab on a Chip, BMC Biochemistry, Acta

Physiologica, Cellular and Molecular Neurobiology, Haematologica, Oncotarget, BBA Molecular Cell Research, Journal of Neurochemistry *and others*.

Grant agencies: Czech Science Foundation, Biotechnology and Biological Sciences Research Council UK (BBSRC), Research Foundation Flanders (FWO), Israel Research Foundation, Institut National du Cancer (France), National Health and Medical Research Council (Australia) *and others*.

CONFERENCES & MEETINGS

Wnt Meeting 2010 in Stockholm (<http://wnt2010.ki.se/index.php>) with Drs. Schambony, and Schulte as the main organizers.

EMBO Conference: Wnt Meeting 2016 in Brno (<http://wnt2016.muni.cz/>) with Drs. Maurice, Kong, Kořínek and Schulte as the main organizers

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCS

Current PhD students (Masaryk University): Simona Hankeová, Pavlína Janovská, Jakub Harnoš, Tomasz Witold Radaszkiewicz, Zankruti Dave, Marek Kravec, Petra Paclíková, Anna Kotrbová, Karol Kaiser (co-supervisor with Carlos Villaeasusa), Kateřina Straková (co-supervisor with Gunnar Schulte)

Former PhD students: Ondřej Bernatík (*a postdoc with Lukas Cajanek, Masaryk University, Brno*), Ranjani Sri Ganji (*Proteomic Facility Ceitec, Brno, after a postdoc with Gad Frankel, Imperial College London, UK*), Marketa Kaucka (*a postdoc with Igor Adameyko at Medical University Vienna & Karolinska Institutet, Stockholm*), Igor Červenka (*a postdoc with Jorge Ruas at Karolinska Institutet, Stockholm*), Emma Andersson (*co-supervisor; independent groupleader at Karolinska Institutet, after a postdoc with Urban Lendahl, Karolinska Institutet, Stockholm*), Lukas Cajanek (*co-supervisor, independent groupleader at Masaryk University after a postdoc with Erich Nigg, Biocentrum, University of Basel, Switzerland*)

OTHER RELEVANT RESPONSIBILITIES

Masaryk University – Mendel Lectures (Selection Committee)

Masaryk University – MU Life Sciences Seminar (Organizing Committee, founding member)

Office of Government of the Czech Republic – Pillar II Evaluation Panel “Biology” (panel member)

INTERNATIONAL CONTACTS AND RECOGNITION:

My group collaborates with the several world-leading laboratories in the Wnt signaling. Specifically, Dr. Bryja collaborates with *Prof. Ernest Arenas* (Karolinska Institutet, Stockholm; 20 papers together), *Dr. Terry Yamaguchi* (National Cancer Institute, NIH, Frederick; two collaborative papers), *Prof. Kang-Yell Choi* (Yonsei University, Seoul, Korea; two collaborative papers), *Prof. Jürgen Behrens* (University of Erlangen, Erlangen, Germany; two joint papers), *Dr. Trevor Dale* (Cardiff University, UK, submitted manuscript), *Dr. Rik Korswagen* (Hubrecht Institute, Utrecht, 1 joint paper), *Dr. Alexandra Schambony* (University of Erlangen, Germany; joint grant, 6 collaborative papers), *Dr. Sigmar Stricker* (Max Planck Institute for Molecular Genetics, Berlin, 1 joint paper), *Dr. J. Silvio Gutkind* (National Institutes Of Health/NIDCR, Bethesda, USA, two joint papers), *Gustavo Miranda-Carboni* (University of Tennessee, Memphis) and *Dr. Mariann Bienz* (LMB MRC, Cambridge). Further Bryja lab is a member of the WntsApp ITN network focusing on the novel approaches in the analysis of Wnt signaling with *Madelon Maurice* (Utrecht), *Bon-Kyoung Koo* (Cambridge), *Gunnar Schulte* (Stockholm) and others (<http://wntsapp.eu/>).

Outside of the Wnt field, we collaborate with several world leading labs, which work on the similar topics - *Dr. Friedhelm Hildebrandt* (Harvard Medical School, USA, 1 joint paper, on role of DVL in ciliopathies), *Dr. Bassem Hassan* (VIB, Leuven, Belgium, 1 joint paper, on the role of APP in Wnt pathway), and *Dr. Carsten Janke* (Institute Curie, Paris, France, role of novel PTMs in Wnt pathway).

ABILITY TO LEAD TEAMS AND COORDINATE NETWORKS:

V. Bryja has demonstrated the experience in the project management as demonstrated by the coordination of the Czech part of the networking grant from the Swedish Foundation for International Cooperation in Research and Higher Education (STINT, 2008-2011) or by the successful coordination of the PhD-focused grant “Intracellular signaling in development and disease (2009-2012)”, which brought together and provided a platform for almost 20 PhD students from three Czech universities (Prague, Brno, České Budějovice). From July 2012, Dr. Bryja coordinated a joint PhD programme between Masaryk University and Karolinska Institutet (Stockholm) as part of the KI-MU project sponsored by the EU Cohesion Funds and Czech Ministry of Education, Youth and Sports.