

CURRICULUM VITAE

Filip Husník

CONTACT INFORMATION

EMBO postdoctoral research fellow, laboratory of Patrick Keeling
University of British Columbia, Faculty of Science, Department of Botany
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EDUCATION

2012-2017 (01/10/12-24/03/17)

Ph.D., Molecular and Cell Biology and Genetics ('with highest honor')
Department of Molecular Biology and Genetics, Faculty of Science, **University of South Bohemia** & Institute of Parasitology, **Czech Academy of Sciences**, Czech Republic. Thesis: *Genomic and Cellular Integration in the Tripartite Nested Mealybug Symbiosis*. Supervisor: John McCutcheon (University of Montana).
University guarantor: Miroslav Oborník.

2012 (31/05/12)

RNDr., Parasitology
Faculty of Science, **University of South Bohemia**, Czech Republic

2010-2012 (01/10/10-31/05/12)

M.S., Parasitology ('with highest honor')
Department of Parasitology, Faculty of Science, **University of South Bohemia**, Czech Republic. Thesis: *Evolutionary origins of intracellular symbionts in arthropods*. Supervisors: Tomáš Chrudimský, Václav Hypša.

2007-2010 (01/10/07-04/06/10)

B.S., Biology
Department of Parasitology, Faculty of Science, **University of South Bohemia**, Czech Republic. Thesis: *Molecular phylogeny of intracellular symbiotic Gammaproteobacteria in insects*. Supervisors: Tomáš Chrudimský, Václav Hypša.

PROFESSIONAL EXPERIENCE

Employment:

2017-2019 (01/04/17-01/04/19)

EMBO postdoctoral research fellow, University of British Columbia, Faculty of Science, Department of Botany, **laboratory of Patrick Keeling**

2012-2017 (01/07/12-31/03/17)

Graduate student, Institute of Parasitology, **Biology Centre of the Czech Academy of Sciences**

2011-2015 (01/02/11-31/08/15)

Research worker, Faculty of Science, University of South Bohemia

Research stays:

2016 (03/07-14/07)

Visiting Student
Anna Michalik lab, **Jagiellonian University**, Krakow, Poland

2015 (06/10-31/10)

Visiting Student

Laura Ross lab, **University of Edinburgh**, Edinburgh, UK
2014-2015 (18/08-25/05)
Fulbright Visiting Student Researcher
John McCutcheon lab, **University of Montana**, Missoula, USA
2012-2013 (31/10-04/02)
Erasmus Visiting Student Researcher
Alistair Darby lab, **University of Liverpool**, Liverpool, UK
2011 (03/06-17/08)
Visiting Student
John McCutcheon lab, **University of Montana**, Missoula, USA

PEER-REVIEWED PUBLICATIONS

Husnik F & McCutcheon JP: Functional horizontal gene transfer from bacteria to eukaryotes. *Nature Reviews Microbiology* 2018, 16 (2): 67.

Husnik F: Host-symbiont-pathogen interactions in blood-feeding parasites: nutrition, immune cross-talk and gene exchange. *Parasitology* 2018, doi: 10.1017/S0031182018000574.

Gile GH, James ER, Tai V, Harper JT, Merrell TL, Boscaro V, **Husník F**, Scheffrahn RH, Keeling PJ: New species of Spirotrichonympha from Reticulitermes and the relationships among genera in Spirotrichonympha (Parabasalia). *Journal of Eukaryotic Microbiology* 2018, 65(2): 159-169.

Říhová J, Nováková E, **Husník F**, Hypša V: *Legionella* becoming a mutualist: adaptive processes shaping the genome of symbiont in the louse *Polyplax serrata*. *Genome Biology and Evolution* 2017, 9 (11): 2946-2957.

Šochová E, **Husník F**, Nováková E, Halajian A, Hypša V: Arsenophonus and Sodalis replacements shape evolution of symbiosis in louse flies. *PeerJ* 2017, 5: e4099.

Husnik F, McCutcheon JP: Repeated replacement of an intrabacterial symbiont in the tripartite nested mealybug symbiosis. *Proceedings of the National Academy of Sciences of the United States of America* 2016, 113(3): E5416-5424.

Nováková E, Hypša V, Nguyen P, **Husník F**, Darby AC: Genome sequence of *Candidatus Arsenophonus lipopteni*, the exclusive symbiont of a blood sucking fly *Lipoptena cervi* (Diptera: Hippoboscidae). *Standards in Genomic Sciences* 2016, 11: 72.

Kyselková M, Chrudimský T, **Husník F**, Chroňáková A, Heuer H, Smalla K, Elhottová D: Characterization of tet (Y)-carrying LowGC plasmids exogenously captured from cow manure at a conventional dairy farm. *FEMS Microbiology Ecology* 2016, 92(6): fiw075.

Nováková E, **Husnik F**, Šochová E, Hypša V: *Arsenophonus* and *Sodalis* symbionts in louse flies: an analogy to the *Wigglesworthia* and *Sodalis* system in tsetse flies. *Applied and Environmental Microbiology* 2015, 81 (18): 6189-6199.

Duncan RP, **Husnik F**, Van Leuven JT, Gilbert DG, Dávalos LM, McCutcheon JP, Wilson ACC: Dynamic recruitment of amino acid transporters to the insect/symbiont interface. *Molecular Ecology* 2014, 23(6): 1608-1623.

Husnik F, Nikoh N, Koga R, Ross L, Duncan RP, Fujie M, Tanaka M, Satoh N, Bachtrog D, Wilson ACC, von Dohlen CD, Fukatsu T, McCutcheon JP: Horizontal

Gene Transfer from Diverse Bacteria to an Insect Genome Enables a Tripartite Nested Mealybug Symbiosis. *Cell* 2013, 153(7): 1567-1578.

Chrudimský T, **Husník F**, Nováková E, Hypša V: *Candidatus* *Sodalis melophagi* sp. nov.: phylogenetically independent comparative model to the tsetse fly symbiont *Sodalis glossinidius*. *PLoS ONE* 2012, 7(7): e40354.

Husník F, Chrudimský T, Hypša V: Multiple origins of endosymbiosis within the Enterobacteriaceae (γ -Proteobacteria): convergence of complex phylogenetic approaches. *BMC Biology* 2011, 9:87.

DISPATCHES, COMMENTARIES, AND PREPRINTS

Lukes J. & **Husník F**: Microsporidia: A single horizontal gene transfer drives a great leap forward. *Current Biology* 2018, 28(12), R712-R715.

Deeg CM, Zimmer MM, George E, **Husník F**, Keeling PJ, Suttle CA: Chromulinavorax destructans, a pathogenic TM6 bacterium with an unusual replication strategy targeting protist mitochondrion. *bioRxiv* 2018, doi: <https://doi.org/10.1101/379388>.

PRESENTATIONS AT CONFERENCES

2018

International Society of Protistologists meeting, Vancouver, Canada (29/07-02/08). Talk presentation.

CIFAR, Integrated Microbial Biodiversity program meeting, Banff, Canada (11-15/06). Poster presentation.

2016

XIV International Symposium on Scale Insect Studies, Catania, Italy (13-16/06). Talk presentation.

2015

8th International Symbiosis Society Congress. Lisbon, Portugal (12-18/07). Talk presentation.

2014

Symbioses becoming permanent: The origins and evolutionary trajectories of organelles. Irvine, CA, USA (15-17/10). Poster presentation.

8th International Wolbachia Conference. Innsbruck, Igls, Austria (06-11/06). Talk presentation.

2013

12th International Colloquium on Endocytobiology and Symbiosis. Dalhousie University, Halifax, Nova Scotia, Canada (18-22/08). Talk presentation.

2012

7th International Symbiosis Society Congress. Krakow, Poland (22-28/07). Poster presentation.

7th International Wolbachia Conference and Final Meeting of the EU COST Action FA0701 "Arthropod Symbiosis: from fundamental studies to pest and disease management". La Vieille Perrotine, Ile d'Oléron, France (07-14/06). Poster presentation.

OTHER LECTURES

2015 Charles University, Faculty of Science, Prague, Czech Republic (10/11)
University of Edinburgh, Institute of Evolutionary Biology, Edinburgh, UK (15/10)

2014 University of Ostrava, Faculty of Science, Ostrava, Czech Republic (18/02)

2013 Charles University, Faculty of Science, Prague, Czech Republic (28/11)

HONORS, AWARDS, AND FUNDING

2017-2019 **EMBO long-term postdoctoral fellowship** (laboratory of Patrick Keeling, University of British Columbia, Vancouver, Canada)

2017 Dean's award for excellent research results presented in PhD thesis.

2015 30 Under 30, Forbes Czech Republic

2014-2015 **Fulbright visiting student fellowship** (laboratory of John McCutcheon, University of Montana, Missoula, USA)

2014-2015 Grant Agency of the University of South Bohemia (001/2014/P, PI: Filip Husník)
Evolution of intrabacterial symbiosis in mealybugs: from mosaic pathways to mosaic organisms.

2012-2013 **Erasmus visiting student fellowship** (laboratory of Alistair Darby, University of Liverpool, Liverpool, UK)

2012 Dean's award for excellent research results presented in master thesis.

2009 Student Grant Agency of the University of South Bohemia (Molecular phylogeny of symbiotic Gammaproteobacteria in insects)

ATTENDED WORKSHOPS

Porecamp Vancouver (a training bootcamp based around Oxford Nanopore Technology), University of British Columbia, Vancouver, Canada (07-11/05/2018).

Host-microbe symbioses – old friends and foes. Instituto Gulbenkian de Ciencia, Oeiras, Lisbon, Portugal (19-31/07/2015).

Workshop on Genomics, Český Krumlov, Czech Republic (08-21/01/2012).

SKILLS

Laboratory methods: more than ten years of experience with molecular biology methods (incl. single cell genomics and transcriptomics), microscopy methods (light, fluorescence/confocal, and TEM), and insect cell culture and symbiotic bacteria cultivation.

Bioinformatics and programming: good knowledge of Unix/Bash and phylogenomics, genomics and transcriptomics programs, basic experience in Python, Processing/Java, R, Perl, and C+ +.

Languages: English (full professional proficiency), French (limited working proficiency), Czech (native).

TEACHING AND STUDENTS

2016 Teaching assistant at the Workshop on Population and Speciation Genomics [<http://evomics.org/>], Cesky Krumlov, Czech Republic

Courses taught (all at the University of South Bohemia):

2014

Introduction to Genomics (selected lectures and exercises on Unix, databases and mapping, genomics, and transcriptomics)

2013

Biology of Parasites (selected lectures on phylogeny and evolution of parasites)

2012, 2013

Molecular Phylogenetics (selected lectures and exercises on probabilistic methods)

Mentoring students:

Lara Marie Lampe [2018], NSERC USRA student (University of British Columbia): Termite symbioses.

Emma George [2017-now], Botany PhD student (University of British Columbia): Diplonemid symbioses.

Mitch Syberg-Olsen [2017-2018], Microbiology B.S. student (University of British Columbia): Ciliate symbioses and programming a pseudogene finding pipeline.

Kamila Machová [2014-2016], Bioinformatics cross-border B.S. student (University of South Bohemia/Johannes Kepler University of Linz): RNA biology of symbiotic bacteria in insects.

Eva Šochová [2012-2016], Biology B.S. and Parasitology M.S. student (University of South Bohemia): Symbiotic bacteria in bloodsucking insects.

AD HOC REVIEWER FOR

Molecular Biology and Evolution, the ISME Journal, eLife, PNAS, Evolution, Genome Biology and Evolution, Nature Microbiology, Applied and Environmental Microbiology, the FEBS Journal, PeerJ, PloS One, Journal of Invertebrate Pathology, Physiological Entomology, Scientific Reports, Open Biology

REFERENCES

PhD advisor

John McCutcheon

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Division of Biological Sciences
University of Montana
32 Campus Drive, HS104
Missoula, MT, 59812
USA

PhD committee chair

Miroslav Obornik

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Biology Centre of the Czech Academy of Sciences
Branisovska 31
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Czech Republic

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