# RNDr. JOHANA ROTTEROVÁ, Ph.D.

Affiliate at Graduate School of Oceanography University of Rhode Island
215 South Ferry Rd, Narragansett, RI 02882, USA
jo.rotterova@gmail.com
+420 777 542 145
0000-0001-7393-7273 R-8779-2017 57193358189 @JohanaProtists www.beinartlab.com/team

## Education

2020 **Doctor of Philosophy** (Zoology), Charles University, Faculty of Science, Prague, Czech Republic. Dissertation title: Anaerobic ciliates as a model group for studying the biodiversity and symbioses in anoxic environments. Advisor: Prof. RNDr. Ivan Čepička, Ph.D.

2015 **Rerum naturalium doctor** & **Master of Science** (Protistology), Charles University, Faculty of Science, Prague, Czech Republic. Thesis: Morphological and molecular diversity of the free-living representatives of the family Metopidae and the discovery of a new lineage of anaerobic ciliates. Advisor: Prof. RNDr. Ivan Čepička, Ph.D.

2013 **Bachelor of Science** (Molecular Biology and Biochemistry of Organisms), Charles University, Faculty of Science, Prague, Czech Republic. Thesis: The use of DNA barcoding method in protists. Advisor: Prof. RNDr. Ivan Čepička, Ph.D.

## Research Appointments

2020–2023 **Postdoctoral researcher** in the team of Dr Roxanne Beinart, Graduate School of Oceanography University of Rhode Island, RI, USA

2019–2020 **Scientific researcher** at Department of Zoology, Faculty of Science, Charles University, Czech Republic

2014–2017 **Scientific researcher** at Department of Zoology, Faculty of Science, Charles University, Czech Republic

## Research Funding Experience

2020–2022 **Member of the research team (unofficial co-PI)** in Gordon and Betty Moore Foundation's Symbiosis in Aquatic Systems Initiative funding project nr. 9342, titled New Tools for Advancing Model Systems in Aquatic Symbiosis

2019–2020 **Principal Investigator** (PI) in Charles University Grant Agency funding project nr. 116119, titled Phylogeny and diversity of anaerobic ciliates of the class Odontostomatea (SAL, Ciliophora) and characterization of their methanogenic symbionts

2019–2021 **Member of the research team** in Czech Science Foundation (GACR) project nr. 19-19297S titled Free-living anaerobic ciliates as a model group for studying the biodiversity and symbioses in anoxic environments

2018–2020 **Member of the research team** in Czech Science Foundation (GACR) project nr. 18-18699S, titled Non-standard genetic codes in protists and their evolution

2015–2018 **Principal Investigator** (PI) in Charles University Grant Agency funding project nr. 389915, titled Diversity and Evolution of Anaerobic Ciliates, an ecologically important but poorly known group of protists

## Selected Academic Awards and Scholarships

2022 CAREERS (*Cyberteam to Advance Research and Education in Eastern Regional Schools*) Scholarship, NSF project 2018873

2021 Vakovlk Award for significant PhD publication record, Department of Zoology, Faculty of Science, Charles University

2021 Bolzano Award for outstanding Dissertation work, Charles University

2020 Hlávkova Foundation Award for Best PhD Students, Czech Republic

2018 Best Doctoral Poster Award at Department of Zoology, Faculty of Science, Charles University

2018 ISEP Travel Award, FEMS (Federation of European Microbiology Societies)

2015 STARS – Scholarship for Talented PhD Students, Faculty of Science, Charles University

2016 Hlávkova Foundation Endowment for WHOI internship, MA, USA

2016 Charles University Mobility Fund scholarship for WHOI internship, MA, USA

2014 Best conference poster at 44$^{th}$ Jírovec Protozoological Days, Krásná, Czech Republic

2014 Hlávkova Foundation Travel Award for international conference Protist, Banff, Canada

## Peer-reviewed Publications in Impacted Scientific Journals, Available Protocols & Scopus Metrics

13. Li, R., Zhuang, W., Feng, X., Al-Farraj, S. A., Schrecengost, A.*, **Rotterová, J.**, Beinart, R. A., Hu, X, 2023. Molecular phylogeny and taxonomy of three anaerobic plagiopyleans (Alveolata, Ciliophora), retrieved from two geographically distant localities in Asia and North America. Zoological Journal of the Linnean Society, In press. (IF 3.286)

12. Méndez-Sánchez, D.*, Pomahač, O.,* **Rotterová, J.**, Bourland, W.A. and Čepička, I., 2023. Morphology and phylogenetic position of three anaerobic ciliates from the classes Odontostomatea and Muranotrichea (Ciliophora). Journal of Eukaryotic Microbiology, p.e12965. (IF 3.170)

11. Méndez-Sánchez, D.*, Pomahač, O.*, **Rotterová, J.,** Bourland, W., Čepička, I., 2022. Diversity and phylogenetic position of *Bothrostoma* Stokes, 1887 (Ciliophora: Metopida), a poorly studied ciliate genus, with description of four new species. Protist 173: p. 125887. (IF 2.700)

10. **Rotterová, J.**, Edgcomb, V.P., Čepička, I., Beinart, R., 2022. Anaerobic ciliates as a model group for studying symbioses in oxygen-depleted environments. Journal of Eukaryotic Microbiology, p.e12912. (IF 3.170) *Selected for cover*

9. **Rotterová, J.**, Salomaki, E., Pánek, T., Bourland, W., Žihala, D., Táborský, P., Edgcomb, V. P., Beinart, R. A., Kolísko, M., Čepička, I., 2020. Genomics of new ciliate lineages provides insight into the evolution of obligate anaerobiosis. Current Biology 30: 1–14. (IF 9.193)

8. Bourland, W., **Rotterová, J.,** Čepička, I., 2020. Description of three new genera of Metopidae (Metopida, Ciliophora): *Pileometopus* gen. nov., *Castula* gen. nov., and *Longitaenia* gen. nov., with notes on the phylogeny and cryptic diversity of metopid ciliates. Protist 171: p.125740. (IF 3.000)

7. Bourland, W., **Rotterová, J.**, Čepička, I., 2018. Morphologic and molecular characterization of *Brachonella pulchra* (Kahl, 1927) comb. nov. (Armophorea, Ciliophora) with comments on cyst structure and formation. International Journal of Systematic Evolutionary Microbiolology 68:3052–3065. (IF 2.166)

6. **Rotterová, J.,** Bourland, W., Čepička, I., 2018. Tropidoatractidae fam. nov., a deep branching lineage of Metopida (Armophorea, Ciliophora) found in diverse habitats and possessing prokaryotic symbionts. Protist 169: 362–405. (IF 3.000)

5. Beinart, R.A., **Rotterová, J**., Čepička, I., Gast, R.J., Edgcomb, V.P., 2018. The genome of an endosymbiotic methanogen is very similar to those of its free-living relatives. Environmental Microbiology 20: 2538–2551. (IF 5.147) *Selected for cover*

4. Bourland, W., **Rotterová, J.**, Luo, X., Čepička, I., 2018. The little-known freshwater metopid ciliate, *Idiometopus turbo* (Dragesco and Dragesco-Kernéis, 1986) nov. gen., nov. comb., originally discovered in Africa, found on the Micronesian island of Guam. Protist 169: 494–506. (IF 3.000)

3. Warren, A., Patterson, D. J., Dunthorn, M., Clamp, **Rotterová, J.**, et al., 2017. Beyond the "Code": A guide to the description and documentation of biodiversity in ciliated protists (Alveolata, Ciliophora). Journal of Eukaryotic Microbiology 64: 539–554. (IF 3.170)**

2. Bourland, W.A., **Rotterová, J.**, Čepička, I., 2017. Redescription and molecular phylogeny of *Metopus es* Lauterborn, 1916 and *Brachonella contorta* Jankowski, 1964, based on broad geographic sampling. European Journal of Protistology 59: 133–154. (IF 2.626)

1. Bourland, W.A., **Rotterová, J.**, Čepička, I., 2017. Morphologic and molecular characterization of seven species of the remarkably diverse metopid genus *Urostomides* (Armophorea, Ciliophora). European Journal of Protistology 61: 194–232. (IF 2.626)

For **laboratory protocols** developed together with international collaborators, see *protocols.io/researchers/johana-rotterova/publications.*

Currently (*April 2023*) author or co-author of 13 publications with 139 citations, 66 co-authors; h-index 8.

**Graduate and undergraduate students I have mentored.*

***Listed as one of the most downloaded articles of JEM in 2017, generating immediate impact and raising visibility of the journal.*

## Publications In Review or Final Preparation

*Drafts available upon request*

Feng, X., Méndez-Sánchez, D.*, Zhuang, W., Li, R., Pomahač, O.*, Čepička, I., **Rotterová, J.**, Hu, X., 2023. Morphology, morphogenesis, and molecular characterization of *Castula specialis* sp. nov. (Ciliophora, Armophorea, Metopida). European Journal of Protistology, Accepted with minor revision.

**Rotterová, J.**, Salomaki, E., Pánek, T., Táborský, P., Kotyk, M., Kolísko, M., Čepička, I., 2023. Single cell transcriptomics of the APM clade of anaerobic ciliates resolves the position phylogeny of Armophorida (Armophorea) and reveals stop UAR codon reassignment in a member of Tropidoatractidae *Palmarella salina* (Metopida, Armophorea). In manuscript.

**Rotterová, J.**, Breusing, C., Čepička, I., Beinart, R. A., 2023. Population single-cell genomics provides insight into the intraspecific variability in large scale survey of symbiotic *Methanocorpusculum* hosted by marine ciliate *Metopus* sp. In manuscript.

Schrecengost, A.*, **Rotterová, J.**, Poláková, K.*, Beinart, R. A., 2023. Rumen methanogen hosted by two unrelated lineages of anaerobic ciliates (Armophorea, Plagiopylea). In manuscript.

Méndez-Sánchez, D.*, Schrecengost, A.*, **Rotterová, J.**, Poláková, K.*, Čepička, I., 2023. Molecular insights into the large-scale host specificity of methanogenic symbionts of metopid anaerobic ciliates (Armophorea). In manuscript.

Poláková, K.*, **Rotterová, J.**, Beinart, R. A., Edgcomb, V.P., Čepička, I., 2023. Anaerobic scuticociliates: A cosmopolitan lineage of anaerobic ciliates hosting diverse prokaryotic symbionts. In manuscript.

## Presentations at Selected International Conferences

**Rotterová, J.**, Breusing, C., Čepička, I., Beinart, R.A., March 2023. Intraspecific variation in a syntrophic symbiosis between marine anaerobic ciliates and intracellular methanogens. EMBO EMBL Symposium: The cellular mechanics of symbiosis. EMBL Heidelberg, Germany

Méndez-Sánchez, D.*, **Rotterová, J.**, Schrecengost, A.*, Poláková, K.*, Beinart, R.A., Čepička, I., 2022. Anoxic relationships: Anaerobic ciliates and methanogenic archaea. 51st Jírovec Protozoological days, Svratka, Czech Republic

Méndez-Sánchez, D.*, **Rotterová, J.**, Pomahač, O.*, Bourland, W., Čepička, I., 2021. Morphological and molecular diversity of *Bothrostoma*, a neglected genus of Metopida (Ciliophora). 50th Jírovec Protozoological days, Nove Hrady, Czech Republic

**Rotterová, J.**, Méndez-Sánchez, D.*, Schrecengost, A.*, Edgcomb, V.P., Beinart, R.A., Čepička, I., 2020. Interactions between anaerobic ciliates and their prokaryotic symbionts. Cell Bio 2020 Virtual – Online ASCB EMBO Meeting

**Rotterová, J.**, Salomaki, E., Pánek, T., Bourland, W.A., Edgcomb, V.P., Táborský, P., Žihala, D., Beinart, R.A., Kolísko, P., Čepička, I., 2019. Where oxygen is not popular–phylogenomic analysis of anaerobic ciliates (Ciliophora). VIII. ECOP (European Congress of Protistology)–ISOP (International Society of Protistologists) Joint Meeting, Rome, Italy

**Rotterová, J.**, Beinart, R.A., Edgcomb, V.P., Bourland, W.A., Táborský, P., Kolísko, P., Čepička, I., 2018. Phylogenomic analysis of SAL super-group (Ciliophora), including novel marine lineages of anaerobic ciliates, which host prokaryotic symbionts. ISEP (International Society of Evolutionary Protistology), Paphos, Cyprus.

**Rotterová, J.**, Beinart, R.A., Edgcomb, V.P., Bourland, W.A., Táborský, P., Kolísko, P., Čepička, I., 2018. First phylogenomic analysis of free-living anaerobic ciliates within SAL super-group. 48th Jírovec Protozoological Days, Beskydy, Czech Republic.

Beinart, R.A., **Rotterová, J.**, Sylva, S., Seewald, J.S., Čepička, I., Gast, R.G., Edgcomb, V.P., 2017. Metabolic functioning of a ciliate-methanogen symbiosis from anoxic habitats, 6th International Symposium on Chemosynthesis-Based Ecosystems, WHOI, USA.

**Rotterová J.**, Beinart, R., Edgcomb, V., Bourland W., Čepička I., 2017. Novel marine lineages of anaerobic ciliates hosting prokaryotic symbionts, XV. ICOP (International Congress of Protistologists), Prague, Czech Republic.

**Rotterová J.**, Bourland W., Čepička I., 2017. Morphologic and molecular characterization of an ecologically diverse basal lineage of Armophorea, Ciliophora, XV. ICOP, Prague, Czech Republic

Bourland W., Luo X., **Rotterová J.**, Čepička I., 2017. The little-known freshwater armophorean ciliate, *Metopus turbo* Dragesco and Dragesco-Kernéis, 1986, originally found in Africa, discovered on Guam island, XV. ICOP, Prague, Czech Republic

**Rotterová J.**, Beinart, R., Edgcomb, V., Bourland W., Čepička I., 2017. Prokaryotic symbionts of Armophorea and novel marine lineages of anaerobic ciliates, 47 th Jírovec Protozoological Days, Nové Hrady, Czech Republic

**Rotterová J.**, Nováková L., Čepička I., 2015. Mapping the diversity of Metopida and revealing new marine anaerobic ciliates hosting prokaryotic symbionts, VII. ECOP 2015, Seville, Spain.

**Rotterová J.**, Čepička I., 2014. Mapping the diversity of Metopida, anaerobic ciliates hosting prokaryotic symbionts. 44th Jírovec Protozoological days, Krásná, Czech Republic

**Rotterová J.**, Nováková L., Čepička I., 2014. Mapping the diversity of metopids and revealing new marine anaerobic ciliates, ISOP ISEP, Protist 2014, Banff, Canada

**Rotterová J.**, Nováková L., Čepička I., 2014. Mapping the diversity of metopids and revealing new marine anaerobic ciliates, IRCN - BC ciliates workshop, Egham London, United Kingdom

**Rotterová J.**, Nováková L., Čepička I., 2013. Mapping the diversity of metopids and revealing new marine anaerobic ciliates hosting prokaryotic symbionts, 45th Jírovec, Protozoological Days, Dubovice, Czech Republic

## Invited Seminars

2023, April **Syntrophic symbiosis between archaea and microbial eukaryotes**. Archaea Power Hour (APH) Americas Spring 2023 – Online Seminar Series

2021 **Symbioses between marine anaerobic ciliates and archaeal methanogens**. ISEP Online Seminar Series

2020 **Anaerobic ciliates as a model group for studying the biodiversity and symbioses in anoxic environments**. Bio at Noon Seminar Series, GSO URI, RI, USA

2020 **Genomics of new ciliate lineages provides insight into the evolution of obligate anaerobiosis**. Vakovlk Awards, Charles University, Czech Republic (remote)

2019 **Conservation of slow loris in North Sumatra, Indonesia,** Zoological Journal Club, Veterinary and Pharmaceutical University, Brno, Czech Republic

2019 **Conservation of slow loris in North Sumatra (Indonesia)**, Seminar in Zoology, Department of Botany and Zoology, Faculty of Science, Masaryk University, Brno, Czech Republic

## Teaching Experience

2022 **Guest Lecturer**, University of Rhode Island, Biology 308 course The Invisible Living Ocean

2015–2019 **Assistant Lecturer**, Charles University, Practical Course in Protistology

2019 **Guest Lecturer,** Charles University, Protistology Course

2019 **Guest Lecturer**, Veterinary and Pharmaceutical University (Czech Republic), Graduate Course Conservation of endangered species, nature, and land

2016 **Guest Lecturer** in Summer Program with Dr Virginia Edgcomb (WHOI, USA), K9 School, Falmouth, MA, USA

## Mentoring Experience *(9 undergraduate, graduate, and doctoral students)*

2021 **Mentor** of undergraduate student Aidan Boving in NSF funded RI C-AIM/EPSCoR SURF Program, Summer Project titled Morphologic plasticity and growth curves of anaerobic ciliates hosting prokaryotic symbionts, Graduate School of Oceanography, University of Rhode Island, RI, USA

2020–2023 **Mentor** of graduate and doctoral student Anna Schrecengost, MSc. at Graduate School of Oceanography, University of Rhode Island; supervised by Dr. Roxanne Beinart

2021–2023 **Mentor** of undergraduate students Oliver Carey and Abigail Goodman at Graduate School of Oceanography, University of Rhode Island; supervised by Dr. Roxanne Beinart

2020 **Mentor** of a doctoral student Nicola Kriefall at Boston University, via Virtual Lab Meeting Training Program, The Research Coordinated Network for Evolution in Changing Seas; supervised by Dr Sarah Davies

2018–2020 **Mentor** of Doctoral student MSc. Méndez Sánchez at Zoology Department, Faculty of Science, Charles University; Thesis: Diversity of anaerobic ciliates from the SAL supergroup and their symbionts; supervised by prof. RNDr. Ivan Čepička, Ph.D.

2015–2018 **Consultant and mentor** of undergraduate students Katerina Poláková and Aneta Simackova at Zoology Department, Faculty of Science, Charles University; supervised by prof. RNDr. Ivan Čepička

2019 – 2020 **Mentor** of Master's student MSc. BSc. Ondřej Pomahač at Zoology Department, Faculty of Science, Charles University; Thesis: Diversity and phylogeny of metopid ciliates of the IAC group; supervised by prof. RNDr. Ivan Čepička, Ph.D.

2017 – 2020 **Mentor** of Master's student BSc. Kateřina Poláková, Thesis: Prokaryotic symbionts of free-living anaerobic protists (supervised by prof. RNDr. Ivan Čepička, Ph.D.), Zoology Department, Faculty of Science, Charles University

2015 – 2017 **Consultant and mentor** of Bachelor's student Kateřina Poláková, Thesis: Diversity of scuticociliates and their symbionts of student (supervised by prof. RNDr. Ivan Čepička, Ph.D.), Charles University, Czech Republic

## Memberships in Scientific Organizations

American Society for Cell Biology (**ASCB**) | Czech Slovak Society of Microbiology (**CSSM**) | Czech Society of Parasitology (**CSP**), Protozoological Section | International Society of Protistologists (**ISOP**) | International Society for Evolutionary Protistology (**ISEP**) | Research Coordinated Network (**RCN**) for Evolution in Changing Seas | Society for Women in Marine Science (**SWMS**)

## Scientific cruises

2022 SP2213 The metabolic innovations of benthic protists in response to anoxia, Chief Scientist Joan Bernhard (WHOI, MA, USA), sampling at Santa Barbara Basin, CA, USA; **R/V Robert Gordon Sproul** (Scripps Institution of Oceanography, University of San Diego, CA, USA)

## Professional service and Volunteer Activities

2022 **Member** of Orientation Team committee, Graduate School of Oceanography, University of Rhode Island

2020 **Volunteering panelist** at 2020 symposium of SWMS **Society for Women in Marine Science**

2020 **Co-organizer** of international virtual scientific conference Online Poster Session on Protists, August 2020

2019–2023 **Manuscript reviewer** for Molecular Phylogenetics and Evolution, Journal of Eukaryotic Microbiology, Molecular Ecology, Microbial Ecology, Microbiological Research, Marine Life Science & Technology, Environmental Microbiology, European Journal of Protistology, Diseases of Aquatic Organisms

2019 **Committee member** for prize competition Velemlok Awards, Faculty of Science, Charles University

2018–2019 **Main organizer and head** coordinator of international scientific conference 49$^{th}$ Jírovec Protozoological Days, April 2019

2016–2019 **Chairman and co-founder** of non-governmental organization The Kukang Rescue Program r.s., focused on conservation, rehabilitation, and reintroduction of Greater slow loris (*Nycticebus coucang*) in Northern Sumatra, Indonesia

2014–2019 **Volunteer** and **PR manager** in non-governmental project The Kukang Rescue Program

2016 **Volunteer** in Environment and habitat evaluation of potential release sites in the province of North Sumatra (Indonesia) in order of reintroduction of rehabilitated individuals of the Greater slow loris, The Kukang Rescue Program

2015 **Volunteer** in Mapping and population evaluation of the Greater slow loris in the province of North Sumatra, The Kukang Rescue Program

2017 **Opponent committee member** at Parasitology Department, Faculty of Science, Charles University; Bachelor's Thesis Defense

## Public Outreach Activities

2022, 2021 **Contributor** at GSO Science Saturday, University of Rhode Island, public science outreach events at Bay Campus; introducing public to the microbial eukaryotes and symbioses occurring in New England costal sediments, protist microscopy demonstration

2020 **Public Media Outreach**: **Czech National Television** Interview – *Life without Oxygen*, Studio 6 | **Daily Newspaper** Print Lidove Noviny – *Adaptations to life without oxygen. Czech Scientists Bring New Perspective*. | **Popular Science Magazine** Forum Interview – *Johana Rotterova investigates ciliates and protects slow lorises* | **Popular Science Magazine** ScienceMag.cz – *Adaptations to life without oxygen – with the symbionts' help.*

2020, 2019 **Coordinator** of Protist Demonstration, Faculty of Science, Charles University; student engagement events allowing students to get acquainted with microscopy and protists

2016–2019 **Contributor** at public events raising awareness and educational events on the conservation of Indonesian wildlife and nature (Zoo Hodonin, Zoo Liberec, Zoo Jihlava, Zoo Ostrava, Zoo Brno, Primary schools in Prague), The Kukang Rescue Program, Czech Republic

## Accessibility, Justice, Equity, Diversity, and Inclusion Engagement

2021–2022 Member of ***URGE (Unlearning Racism in Geoscience)*** group pod, Graduate School of Oceanography, University of Rhode Island, focused creating and implementing policies to help scientists unlearn racism and improve

accessibility, justice, equity, and inclusion; particular emphasis on consequences of colonialism on lands of Algonquian nations

2021 Participation in ***Safe Zone Workshop*** at University of Rhode Island, focused on building a visible support network of LGBTQ allies and improving the campus climate for LGBTQ people

## Additional Technical Training and Scientific Visits

2022 **Python for Biologists Workshop**, Aquatic Symbiosis Genomics Project, The Wellcome Sanger Institute (remote)

2020 **MINOTA: Maine INBRE Non-model Organism Transcriptome Analysis Workshop**, MDI Biological Laboratory, ME, USA (remote)

2019 **EMBO Workshop – Comparative genomics of eukaryotic microbes**: Genomes in flux, and flux between genomes, Sant Feliu, Catalonia, Spain

2019 **Scientific Visit** in the laboratory of Dr. Roxanne Beinart, Graduate School of Oceanography, University of Rhode Island, RI, USA (Aug – Sept) focused on the establishment of a coastal New England microbial culture collection

2019 **Evomics Workshop on Phylogenomics**, Český Krumlov, Czech Republic

2018 **OstraPy Bioinformatics Workshop** focused on coding in Python language, Ostrava, Czech Republic

2016 **Scientific Internship** in the laboratory of Dr. Virginia Edgcomb, Department of Geology & Geophysics, Woods Hole Oceanographic Institution, MA, USA (Jun – Sept) focused on fluorescence microscopy methods in microbial symbioses

2016 **Microbial Diversity Course** (MDC) | **Molecular Evolution Workshop** (MEW) | **Strategies and Techniques for Analyzing Microbial Population Structures** (STAMPS), Marine Biological Laboratory (MBL), Woods Hole, MA, USA, visiting attendance as an internship student of Woods Hole Oceanographic Institution (WHOI)

2019 **Scientific Visit** of Dr William Bourland (Boise University, Idaho) focused on morphological methods of staining in taxonomy of ciliates, Faculty of Science, Charles University

## Technical Skills

**Molecular** methods of isolation, amplification, purification, cloning, and sequencing of eukaryotic and prokaryotic DNA/RNA.

**Laboratory methods of cultivation** of anaerobic protists and prokaryotes

**Microscopy** methods: Light and fluorescence microscopy (CARD Fluorescence in situ hybridization methods; microphotography, methods of fixing and cell staining, such as protargol-staining or silver-carbonate; image analyses); Electron microscopy (scanning EM to study the morphology of fixed cells, transmission EM to assess an ultrastructure of fixed cells, image analysis)

**Bioinformatics** methods (user level - tools for biological methods of sequence analyses; genomics and transcriptomics methods for phylogenomics, population structure analyses, and in silico predictions of metabolic pathways)

## Language Skills

***Czech*** – native speaker (C1 – C2 level) | ***English*** – near-native speaker (C1 – C2 level) | ***German, Spanish, Italian, Slovak*** – semi-fluent speaker (B1 – B2 level) | ***French, Indonesian*** – beginner (A1 – A2 level)