Eva Přáda (Brichtová)

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EDUCATION

2019 – 2023: **University of Cambridge, UK**
PhD in Biological Chemistry, Yusuf Hamied Department of Chemistry

2018 – 2019: **University of Cambridge, UK**
MPhil in Chemistry, Department of Chemistry

2015 – 2018: **University of Chemistry and Technology, Prague, Czech Republic**
Bc in Chemistry, Faculty of Chemical Engineering
Final state examination result: A – excellent, graduated "with honours"

RESEARCH EXPERIENCE

2023 – present: **TU Wien, Vienna, Austria**
Project Assistant/Post-Doctoral Researcher

Inclusion Body Processing, Analytics, Spectroscopy, Protein refolding, Data analysis

2019 – 2023: **Yusuf Hamied Department of Chemistry, University of Cambridge, UK**
PhD student

Using a range of biophysical, chromatographic, and imaging techniques, I studied the physical stability and the effect of manufacturing and formulation processes on aggregation of both lipidated and non-lipidated therapeutic peptides (glucagon-like peptide 1 analogues) used for type 2 diabetes treatment. I investigated (lipo)peptide self-assembly, aggregation mechanisms & kinetics and morphology of resulting aggregates. In the aggregation mechanism of therapeutic peptides, I identified degradation and off-pathway aggregation products. I applied the Energy Landscape Theory, a computational approach, to investigate the conformational behaviour of aggregation-prone peptides.

Project was done in collaboration with AstraZeneca, Cambridge. Outcomes presented at 3 conferences.
Thesis: Self-assembly and aggregation of glucagon-like peptide 1 and its analogues;
https://doi.org/10.17863/CAM.98055

2018 – 2019: **Department of Chemistry, University of Cambridge, UK**
MPhil student

I investigated pathways and intermediates in aggregation of therapeutic glucagon-like peptide 1. I employed a range of biophysical techniques and fluorescence kinetic assays to identify peptide oligomers which are off-pathway to the main amyloid formation process.

Thesis: Studies on the physical stability of a C-terminally amidated variant of GLP-1;
https://doi.org/10.17863/CAM.43927

2014 – 2018: **Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences, Prague, Czech Republic**
Research Assistant, Biomolecular Spectroscopy group

02/07/2024

I performed synthesis and subsequent purification and characterization of non-natural amino acids (3-nitrotyrosine) and short peptides. I used multiple spectroscopic techniques including chiroptical spectroscopy and lanthanide luminescent probes to monitor non-covalent peptide interactions.
I carried out DFT spectra calculations to support the experimental observations.
Results presented at 6 international conferences and published in 3 peer-reviewed publications including 1 first-author publication.

2015: **Summer School of Protein Engineering, Loschmidt Laboratories, Masaryk University, Brno, Czech Republic**

Lectures and practicals in Bioinformatics, Microfluidics, Genetic engineering, Protein stability

2012 – 2014: **Institute of Physiology of the CAS, Prague, Czech Republic**
Student Internship

Animal models of schizophrenia, administering dizocilpine, behavioural experiments with rats
Results published in a first-author (shared authorship) peer-reviewed publication.

PUBLICATIONS

- Keith, A. D.*, **Přáda Brichtová, E.***, Barber, J. G., Wales, D. J., Jackson, S. E., & Röder, K. Energy Landscapes and Structural Ensembles of Glucagon-like Peptide-1 Monomers. *The Journal of Physical Chemistry B*. **2024**. (*Authors contributed equally.)
- Igwe, C. L., Gisperg, F., Kierein, M., **Přáda Brichtová, E**., Spadiut, O., & Müller, D. F., Mechanistic soft-sensor design for protein refolding processes based on intrinsic fluorescence measurements. *Computers & Chemical Engineering.* **2024**, 187, 108734.
- Igwe, C. L., Müller, D. F., Gisperg, F., Pauk, J. N., Kierein, M., Elshazly, M., ... & **Přáda Brichtová, E.**, Online monitoring of protein refolding in inclusion body processing using intrinsic fluorescence. *Analytical and Bioanalytical Chemistry*. **2024**, *416*(12), 3019-3032.
- Klausser, R.; Kopp, J.; **Přáda Brichtová, E.**; Gisperg, F.; Elshazly, M.; & Spadiut, O. State-of-the-art and novel approaches to mild solubilization of inclusion bodies*. Frontiers in Bioengineering and Biotechnology.* **2023**, 11:1249196.
- **Přáda Brichtová, E.**; Krupová, M.; Bouř, P.; Lindo, V.; Gomes dos Santos, A.; Jackson, S., Glucagon-like peptide 1 aggregates into stable low molecular weight oligomers “off-pathway to fibrillation”. *Biophysical Journal.* **2023**, 122,12, 2475-2488.
- Dinku, W.; Isaksson, J.; Rylandsholm, F. G.; Bouř, P., **Brichtová, E.**; Choi, S. U.; ... & Dekebo, A., Anti-proliferative activity of a novel tricyclic triterpenoid acid from *Commiphora africana* resin against four human cancer cell lines. *Applied Biological Chemistry*. **2020,** 63(1), 1-11.
- **Brichtová, E.**; Hudecová, J.; Vršková, N.; Šebestík, J.; Bouř, P.; Wu, T., Binding of Lanthanide Complexes to Histidine-Containing Peptides Inspected by Raman Optical Activity Spectroscopy. *Chemistry–A European Journal*. **2018**, *24*, 8664-8669.
- Niederhafner, P.; Šafarík, M.; **Brichtová, E.**; Šebestík, J., Rapid acidolysis of benzyl group as a suitable approach for syntheses of peptides naturally produced by oxidative stress and containing 3-nitrotyrosine. *Amino Acids.* **2016**, *48* (4), 1087-1098.
- Lobellová, V**.*; Brichtová, E.***; Petrásek, T.; Valeš, K.; Stuchlík, A., Higher doses of (+)MK 801 (dizocilpine) induced mortality and procedural but not cognitive deficits in delayed testing in the active place avoidance with reversal on the carousel. *Physiological Research*. **2015**, 64 (2), 269-275. (*Authors contributed equally.)

GRANTS, AWARDS AND SCHOLARSHIPS

2024: Scientific & Technological Cooperaton Austria-Serbia (€7,000); OeAD-GmbH Austria´s Agency for Education and Internationalisaton, Project leader, Project: From peels to peroxidase: obtaining commercial enzyme preparation from agro-industrial waste

2022: Accepted to competitive Novo Nordisk "Biophysics and Formulation – Scientist of Tomorrow 2022 symposium"

2019 – 2022: Peterhouse PhD Studentship, full PhD studentship (covering fees + maintenance) for 3 years (+ additional 3 months due to Covid), Peterhouse, University of Cambridge Studentship awarded based on an outstanding academic record and a research proposal.

2018: Bakala Foundation MPhil Scholarship (£12,000)

2018: Krsek Foundation MPhil Scholarship (£3,807)

2018: Recognition of achievements, UCT Prague, Graduated "with honours"

2017: Study results-based award, UCT Prague, excellent mark average in the 1st and 2nd year

2015: Extraordinary scholarship, UCT Prague, successful participation in the Chemistry Olympiad

TEACHING

2024: Lectures: Modeling, Simulation and Control of Bioprocesses
Modeling and Methods in Bioprocess Development

2023 – present: Project co-supervisor of PhD, master and bachelor students, TU Wien, Austria
Project: Production and processing of inclusion bodies produced in *E. coli*

2021 – 2022: Project supervisor of a master's student, University of Cambridge, UK
Project: Stability studies of lipidated glucagon-like peptide 1 analogues

2020: Synthetic chemistry laboratory demonstrator, practicals for 2nd year undergraduates, University of Cambridge, UK

2019: Chemistry supervisor, 1st year undergraduates, University of Cambridge, UK
Courses: Shapes and structures of molecules, Reactions and mechanisms in organic chemistry, Energetics and equilibria, Kinetics of chemical reactions, Chemistry of the elements

2019 – 2020: Chemistry laboratory demonstrator, 1st year undergraduates, organic and inorganic practicals, University of Cambridge, UK

LANGUAGES

English: fluent/full proficiency; **Czech** : native proficiency; **German:** limited working proficiency; **Spanish**: elementary

02/07/2024