

# Curriculum Vitae

## Personal Details

**Name:** Bettina Rávai

**Date of birth:** 08/12/1997

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## Current Positions

**2026 - present** Research Associate, Servier Research Institute of Medicinal Chemistry

**2022 - 2026** PhD student, Budapest University of Technology and Economics (BME), Faculty of Chemical Technology and Biotechnology, Department of Organic Chemistry and Technology, Innovative Pharmaceutical and Chirotechnological Research Group

**2024 -- 2026** Research chemist, CycloLab Cyclodextrin Research and Development Ltd., Budapest

## Previous Positions

**2025** Visiting PhD student, INSERM, Dijon, France

**2024** Visiting PhD student, Anyo Labs, Gothenburg, Sweden

**2018 - 2022** Student researcher, Budapest University of Technology and Economics (BME), Faculty of Chemical Technology and Biotechnology, Department of Organic Chemistry and Technology, Innovative Pharmaceutical and Chirotechnological Research Group

**2021** Summer internship at CycloLab Cyclodextrin Research and Development Ltd.

**2019** Summer internship at EGIS Pharmaceutical PLC

## Education

**2020 - 2022** MSc in Engineer in Pharmaceutical Industry

Qualification: excellent

Faculty of Chemical Technology and Biotechnology

Budapest University of Technology and Economics

**2016 - 2020** BSc in Chemical Engineering, Specialization of Industrial Pharmaceutics

Qualification: excellent

Faculty of Chemical Technology and Biotechnology

Budapest University of Technology and Economics

**2012 - 2016** István Bibó Secondary Grammar School, mathematics  
Kiskunhalas

## **Research Experience**

- Investigation of the multicomponent synthesis of different N-, O-heterocycles (isoindolinone phosphonates/phosphine oxides, benzo[de]isoquinolinone phosphonates/phosphine oxides, spirooxindole dihydropyridines, 3,3-disubstituted oxindoles and spiroxanthenes) by green technologies (MW-assisted reactions, multicomponent reactions, green solvents, solvent-free reactions).
- Cyclodextrin based organic processes [the synthetic approaches of substituted  $\alpha$ ,  $\beta$  and  $\gamma$ -cyclodextrins and cyclodextrin-based impurities such as general substitutions, oxidations or click reactions; investigation of inclusion complexations and conjugation of organic small molecules (such as capsaicin and its derivatives, spiroheterocycles) with cyclodextrins].
- Investigation of flow chemical synthesis of small molecules (paracetamol and capsaicinoids such as nonivamide).
- In silico drug design of small molecules targeting TRADD-TRAF2 protein complex (experience: use of software packages such as Schrödinger Maestro and Anyo Labs' i-TripleD; experience in protein and ligand preparation, ligand docking, molecular dynamics simulations).
- Analytical measurements and their evaluations: nuclear magnetic resonance (NMR) spectroscopy, high-performance liquid chromatography (HPLC), mass spectrometry (MS), gas chromatography (GC), Fourier transform infrared spectroscopy (FTIR), column (flash) chromatography.
- Experiences in in vitro methodologies for cytotoxicity testing on human cancer cell lines, including cell culture maintenance, viability assays and IC<sub>50</sub> calculations, therefore demonstrating a biotech skill set in pharmacological screening and biomedical research.

## **Fellowships and Grants**

- Tamás Patonay Award, Hungarian Academy of Sciences Working Committee on Heterocyclic and Elemental Organic Chemistry and the Hungarian Chemical Society, 12th December 2025.
- Cooperative Doctoral Program Doctoral Student Scholarship, NKFIH, February 2024 -- January 2026.
- OTDK Pro Progressio Special Award, Pro Progressio Foundation, December 2023.
- Pro Scientia Gold Medal, OTDT, November 2023.

- Rector's certificate of recognition, BME, (Dr. Tibor Czigány), November 2023.
- Doctoral Excellence Scholarship Program, NKFIH, September 2023 - January 2024.
- 3rd place Award of 36th National Students' Scientific Conference, Chemistry and Chemical Industry Section, Organic chemistry III. department, SZTE-TTK, April 2023.
- Scholarship for Young Talents of the Nation (NTP-NFTÖ-22-B-0143) by Ministry of Human Capacities, July 2022 - June 2023.
- Best Poster Award, Chemist's Conference by Hungarian Chemical Society, Eger, June 2022.
- 1st place Award of Students' Scientific Research Conference, Award of EGIS Pharmaceutical PLC, Budapest University of Technology and Economics, November 2021.
- 1st place Award of 35th National Students' Scientific Research Conference, Chemistry and Chemical Industry Section, Organic chemistry III. department, ELTE-TTK, May 2021.
- Award of Students' Scientific Research Conference, Pannon University, Veszprém, May 2021.
- 1st place Award of Students' Scientific Research Conference, Eger, May 2020.
- 3rd place Award of Students' Scientific Research Conference, Budapest University of Technology and Economics, November 2019.
- New National Excellence Program of the Ministry for Innovation and Technology (2019-2021).
- National Higher Education Scholarship by Ministry of Human Capacities (2019-2021).
- Excellent Student Award of the Faculty of Chemical Technology and Biotechnology, 2020.
- Scholarship of the Faculty of Chemical Technology and Biotechnology, 2018-2021.
- 7th Award at VI. Grofcsik András Competition, Budapest University of Technology and Economics, 2019.

### **Most Important Publications Over the Last Five Years**

1. Rávai, B.; Kese, I.; Szakály, P. S.; Herr, D.; Iványi, R.; Bálint, E.; Szócs, L. Mono-(6-sulfinic acid)-Sugammadex: A newly identified cyclodextrin-based oxidative impurity in industrial production, *Carbohydr. Polym.*, 2025, 362, 123659. DOI: <https://doi.org/10.1016/j.carbpol.2025.123659>. IF: 12.5, D1, IC: o (60%) (MTA's highlighted publication in November 2025).
2. Rávai, B.; Ujj, D. V.; Orosz, J. M.; Revenco, E.; Béni, Sz.; Tajti, Á.; Bálint, E. Pilot-scale continuous flow synthesis of capsaicinoids and their formulation with cyclodextrins, *ACS Omega*, 2026. DOI: <https://doi.org/10.1021/acsomega.5c10910>. IF: 4.3, Q1, IC: o (55%).

- Rávai, B.; Németh, Á. S.; Kelemen, Zs.; Bálint, E. Microwave-assisted multicomponent synthesis of spirooxindole dihydropyridine bisphosphonates, *Eur. J. Org. Chem.*, 2025, e202400873. DOI: <https://doi.org/10.1002/ejoc.202400873>. IF: 2.7, Q2, IC: 2 (60%).
- Rávai, B.; Popovics-Tóth, N.; Komka, K.; Csontos, I.; Szokol, B.; Órfi, Z.; Órfi, L.; Bálint, E. Phosphoryl- or phosphinoyl-functionalized benzo[de]isoquinolinones: Synthesis, experimental design, mechanism and biological activity, *React. Chem. Eng.*, 2024, 9, 583. DOI: <https://doi.org/10.1039/D3RE00489A>. IF: 3.10, Q2, IC: 0 (100%).
- Orosz, J. M.; Rávai, B.; Mátravölgyi, B.; Bálint, E. Flow synthesis of capsaicin and capsaicinoid analogues, *ACS Sustainable Chem. Eng.*, 2024, 12, 7913. DOI: <https://doi.org/10.1021/acssuschemeng.4c01839>. IF: 7.3, D1, IC: 5 (10%) (MTA's highlighted publication in June 2024).

### Further Significant Publications

- Steinsits, D.; Rávai, B.; Kelemen, Zs.; Hackler, Jr. L.; Vernyik, V.; Puskás, G. L.; Bálint, E. 3,3-Bis(hydroxyaryl)oxindoles and spirooxindoles bearing a xanthene moiety: Synthesis, mechanism, and biological activity, *J. Org. Chem.*, 2025, 90, 6454. DOI: <https://doi.org/10.1021/acs.joc.5c00270>. IF: 3.6, Q2, IC: 2.
- Popovics-Tóth, N.; Rávai, B.; Tajti, Á.; Varga, B.; Bagi, P.; Perdih, F.; Szabó, P. T.; Hackler, L.; Puskás, G. L.; Bálint, E. Three-component synthesis, utilization and biological activity of phosphinoyl-functionalized isoindolinones, *Org. Biomol. Chem.*, 2021, 19, 8754. DOI: <https://doi.org/10.1039/D1OB01610E>. IF: 3.89, Q1, IC: 9.
- Tajti, Á.; Tóth, N.; Rávai, B.; Csontos, I.; Szabó, P.; Bálint, E. Study on the microwave-assisted batch and continuous flow synthesis of N-alkyl-isoindolin-1-one-3-phosphonates by a special Kabachnik-Fields condensation, *Molecules*, 2020, 25, 3307. DOI: <https://doi.org/10.3390/molecules25143307>. IF: 4.411, Q1, IC: 15.
- Rávai, B.; Orosz, J. M.; Péterfi, O.; Galata, D. L.; Bálint, E. Flow chemical laboratory practice for undergraduate students: Synthesis of paracetamol, *J. Flow Chem.*, 2023, 14, 409. DOI: <https://doi.org/10.1007/s41981-023-00303-y>. IF: 2.0, Q2, IC: 2.
- Árvai, Cs.; Rávai, B.; Bálint, E.; Mika, L. T. Evaluating Greenness of Solvents. *Encyclopedia of Green Chemistry*; Török, B. Ed.; Elsevier, 2025, 3, 1-16. DOI: <https://doi.org/10.1016/B978-0-443-15742-4.00051-X>. IC: 0.