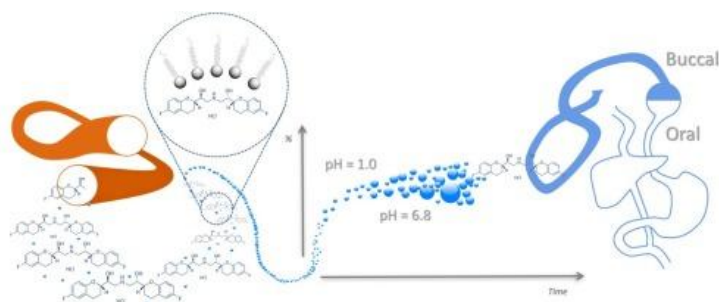




Student research group on early phase drug development

2025-2026



Acronym: EPhD2

Permanent members:

Emese Sipos, PhD, professor (Head of the group)

Emőke Rédei, PhD, associate professor

Zoltán - István Szabó, PhD, associate professor

PhD students:

Csatári Tamás

Kinda Andrea

Tőkés Erzsébet

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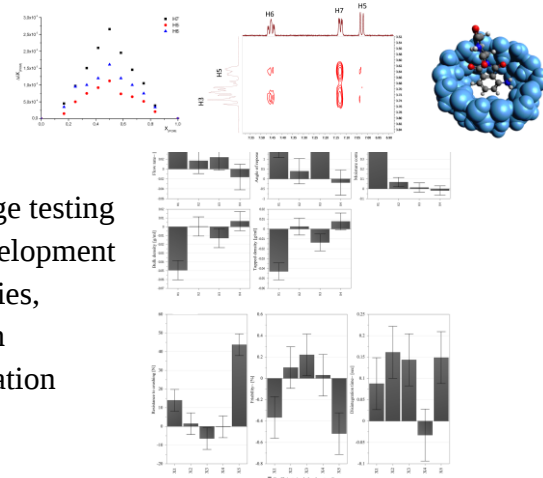


Students currently involved:

Fülöp Klaudia
Mihály Blanka Vivien
Veress Károly – Tamás
Kiss Balázs

Research topics

- Improving bioavailability of poorly soluble drugs
- Nanofibers and cyclodextrin complexes
- Characterization of cyclodextrin complexation, including chiral separation method development
- Formulation and compatibility studies, stability and storage testing
- Quality by design in analytical and in pharmaceutical development
- *In vitro* dissolution testing – comparative dissolution studies, discriminative dissolution method development/validation
- Analytical method evaluation/development/transfer/validation



Research infrastructure (relevant items): computer-guided electrospinning unit; centrifugal spinning unit; HPLC-UV, CE-UV, UV/VIS spectrophotometers; Erweka dissolution testers; DSC; FT-IR; viscosimeter; conductivity meter

Relevant *in extenso* ISI articles on research items (as main authors: first author, corresponding author and last author; *students):

Laczkó-Zöld E, **Kis Cs***, Nagy-György E*, Domokos E, Ferencz E, **Szabó ZI**: Fast determination of Furocoumarins in Food Supplements Containing Heracleum sphondylium L. Using Capillary Electrophoresis, *Foods* 2025, 14: 2348. FI 5.1

Dobó M, Dombi G, Köteles I, Fiser B, **Kis Cs***, **Szabó ZI**, Tóth G: Simultaneous Determination of Enantiomeric Purity and Organic Impurities of Dexketoprofen Using Reversed-Phase Liquid Chromatography—Enhancing Enantioselectivity through Hysteretic Behavior and Temperature-Dependent Enantiomer Elution Order Reversal on Polysaccharide Chiral Stationary Phases, *Int J Mol Sci* 2024, 25: 2697. FI 4.9





Szabó ZI, Benkő BM*, Bartalis-Fábián Á*, Iványi R, Varga E, Szőcs L, Tóth G: Chiral separation of apremilast by capillary electrophoresis using succinyl- β -cyclodextrin—reversal of enantiomer elution order by cationic capillary coating, *Molecules* 2023, 28: 3310. FI 4.2

Enikő Bitay, Attila Gergely, **István Bálint***, Kolos Molnár, Ibolya Fülöp, Erzsébet Fogarasi, **Zoltán-István Szabó**: Preparation and characterization of lapatinib-loaded PVP nanofiber amorphous solid dispersion by electrospinning, *Express Polymer Letters*, 2021, 15: 1041-1051. FI 4.161

Émőke Rédei, Izabella Ráduly*, Zoltán-István Szabó, Adriana Ciurba, Nicoleta Todoran, Paula Antonoaea, Robert-Alexandru Vlad, **Orsolya Péterfi***, **Emese Sipos**: Preparation and characterization of atorvastatin-loaded polyvinylpyrrolidone-based electrospun microfibrous mats, *Studia UBB Chemia*, 2021, 66: 287-297. FI 0.447

Gergő Tóth, Erzsébet Fogarasi, **Ágnes Bartalis-Fábián***, Mohammadhassan Foroughbakhshfasaei, Imre Boldizsár, András Darcsi, Szilvia Lohner, Gerhard K.E.Scriba, **Zoltán-István Szabó**: Liquid chromatographic method for the simultaneous determination of achiral and chiral impurities of dapoxetine in approved and counterfeit products, *J Chrom A*, 2020, 1626: 461388. FI 4.049

Emese Sipos, Tamás Csatári*, Adrienn Kazsoki, Attila Gergely, Enikő Bitay, **Zoltán-István Szabó**, Romána Zelkó: Preparation and Characterization of Fenofibrate-Loaded PVP Electrospun Microfibrous Sheets, *Pharmaceutics*, 2020, 12: 612. FI 4.421

Elek Ferenc*, Béla Kovács, Ferenc Boda, Foroughbakhshfasaei M, Éva Katalin Kelemen, Gergő Tóth, **Zoltán-István Szabó**: Simultaneous determination of chiral and achiral impurities of ivabradine on a cellulose tris (3-chloro-4-methylphenylcarbamate) chiral column using polar organic mode, *J Pharm Biomed Anal*, 2020, 177: 112851. FI 2.983

Emese Sipos, Nóra Kósa*, Adrienn Kazsoki, **Zoltán-István Szabó**, Romána Zelkó: Formulation and characterization of aceclofenac-loaded nanofiber based orally dissolving webs, *Pharmaceutics* 2020, 11: 417 FI 4.421

Zoltán-István Szabó, Réka Gál*, Zsolt Gáll, Szende Vancea, **Emőke Rédei**, Ibolya Fülöp, **Emese Sipos**, Gabriella Donáth-Nagy, Béla Noszál, Gergő Tóth: Cyclodextrin complexation improves aqueous solubility of the antiepileptic drug, rufinamide: solution and solid state characterization of compound-cyclodextrin binary systems. *J Incl Phenom Macrocycl Chem*, 88: 43-52. FI 1.095





Participation at scientific meetings:

Scientific Sessions of Hungarian Students (*Tudományos Diákköri Konferencia – TDK*) – prized presentations

Fodor Eszter*, Comparative phytochemical analysis of a *Centaurium* species from the wild flora of the Ciuc Basin with commercially available herbal medicinal product *Centaurii herba*, 2025 - special prize, *Pharmacy Session*

Antal Adél*, Production and potential applications of hydroxypropyl-beta-cyclodextrin nanofibers in wound healing, 2025 – second prize, *Pharmacy Session*

Máté István*, Determination of enantiomeric purity of ozanimod using capillary electrophoresis, 2025

Kis Csenge*, Determination of furocoumarins by capillary electrophoresis, 2024 – second prize

Nagy Szilárd*, Chiral separation of ozanimod by capillary electrophoresis, 2023 – special prize, *Pharmacy Session*

Molnár Tas*, Chiral separation of mirabegron using capillary electrophoresis, 2023 – third prize, *Pharmacy Session*

Benkő Beáta Mária*, Chiral separation of apremilast by capillary electrophoresis. challenges and opportunities, 2020 – first prize, *Pharmacy Session*

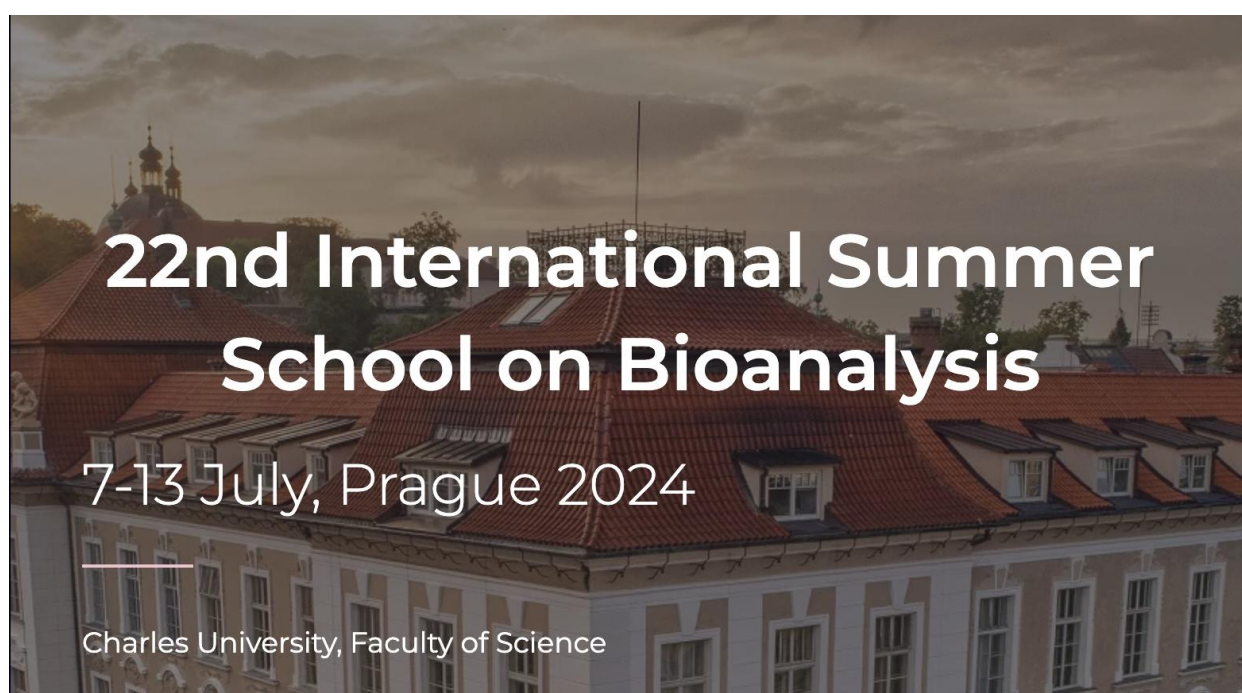




International conference presentations

Regina Bokor*, **Szabó Zoltán-István**, Donáth-Nagy Gabriella: Are internet-acquired antibiotics safe? Capillary electrophoretic and liquid chromatographic analysis of amoxicillin capsules, 23rd International Symposium and Summer School on Bioanalysis July 2025, Zagreb, Croatia.

Kis Csenge*, Donáth-Nagy Gabriella, Laczkó Zöld Eszter, Nagy-György Erzsébet, Domokos Erzsébet, Ferencz Elek, **Szabó Zoltán-István**: Fast determination of furocoumarins using capillary electrophoresis, 23rd International Symposium and Summer School on Bioanalysis July 2025, Zagreb, Croatia.



Molnár Tas-Szilveszter*, **Nagy Szilárd***, **Szabó Zoltán – István**: Chiral separation of mirabegron by capillary electrophoresis, 22nd International Symposium and Summer School on Bioanalysis July 2024, Prague, Czech Republic.

Nagy Szilárd*, **Molnár Tas-Szilveszter***, **Szabó Zoltán – István**: Chiral separation of ozanimod by capillary electrophoresis, 22nd International Symposium and Summer School on Bioanalysis July 2024, Prague, Czech Republic.

Zoltán-István Szabó, **Botond Fazakas***, Eleonora Mircia, **Emese Sipos**: Aceklofenák tartalmú mikroszálás szövedék előállítás és vizsgálata, Conferința de Tehnologie și Industrie Farmaceutică, 26-28 Septembrie 2019, Siófok, Ungaria.





Elek Ferenc*, Béla Kovács, Francisc Boda, Foroughbakhshfasaei M, Éva Katalin Kelemen, Gergő Tóth, **Zoltán-István Szabó**: Simultaneous determination of chiral and achiral impurities of ivabradine on a cellulose tris (3-chloro-4-methylphenylcarbamate) chiral column using polar organic mode, 19th International Symposium and Summer School on Bioanalysis, 8-13 July 2019 – Șuior, Cluj, Romania.

