13th Balaton Symposium

on High-Performance Separation Methods

September 4–6, 2023, Hotel Azúr****, Siófok, Hungary

Final Program

Hungarian Society for Separation Sciences

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- **Faster throughput** – identify over 8,000 proteins with and 8-minute injection-to-injection cycle
- **Deeper coverage** – unlock near whole-proteome depth of coverage with the identification of 12,000 proteins in 1 hour from a single-shot experiment
- **Higher sensitivity** – increase throughput and depth of coverage with higher sensitivity by identifying over 5,000 proteins from 130 pg of HeLa at a rate of 80 samples per day
- **Accurate and precise quantitation** – achieve accurate and precise quantitation with a large dynamic range for label-free Quantitation (LFQ) using Data Independent Acquisition (DIA) and achieve faster throughput and deeper coverage with multiple quantitation using Tandem Mass Tags (TMT)

These ground-breaking capabilities empower you to comprehend the dynamic, temporal and spatial complexity of biology.

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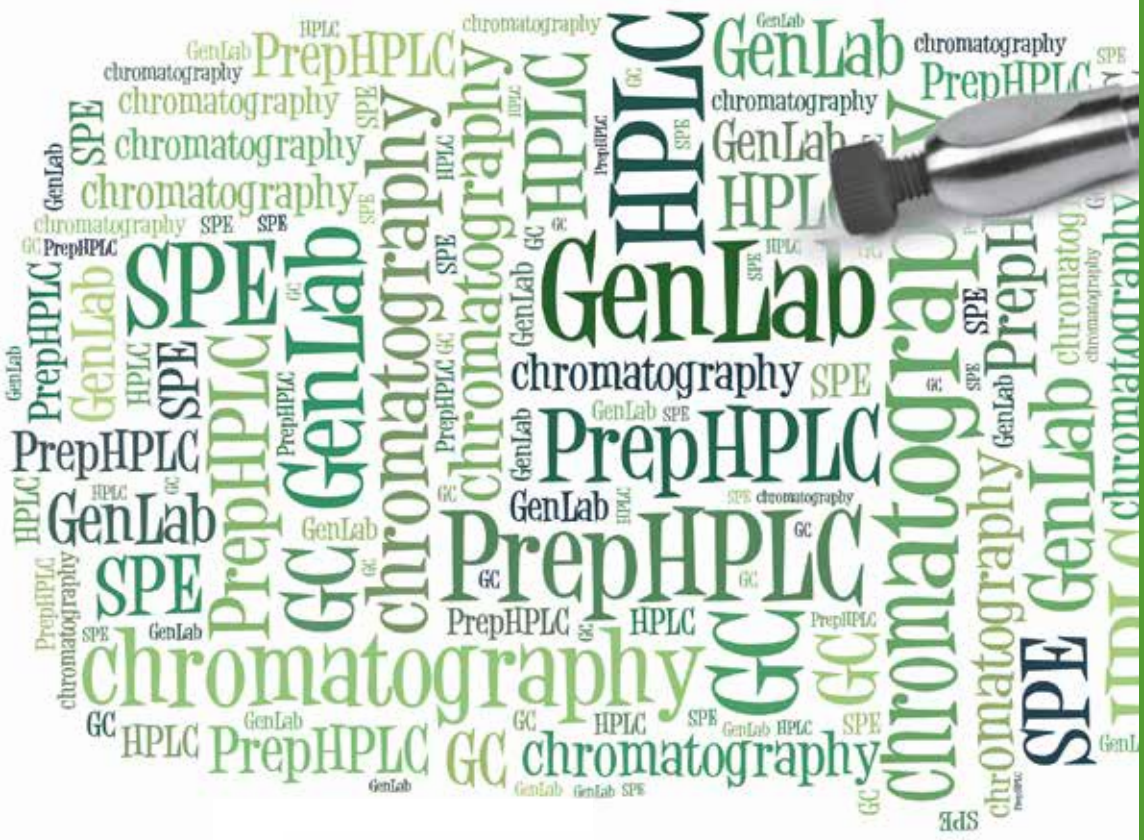

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13th Balaton Symposium
on High-Performance Separation Methods

Final Program

September 4–6, 2023
Hotel Azúr**, Siófok, Hungary**

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Dear Participants of the 13th Balaton Symposium,

On behalf of the Organizing Committee, it gives me a great pleasure to welcome you at the *13th Balaton Symposium on High-Performance Separation Methods.*

The Hungarian Society for Separation Sciences (HSSS) is happy to continue the well-established series of Balaton Symposia. It is extraordinary that biannually the Balaton Symposium brings together separation scientists and friends from all over the world.

The aim of the 13th Balaton Symposium is to bring together experts, users, and scientists of high-performance separation methods to discuss the latest issues, current requirements, and technological challenges we face in the present and future.

The Balaton Symposium traditionally provides a forum to celebrate outstanding separation scientists. The Halász Medal Award, the Csaba Horváth Memorial Award, and the Ervin sz. Kováts Award for Young Scientists are to be presented Tuesday morning.

The scientific program of the 13th Balaton Symposium clearly demonstrates the breadth of separation science; it includes 35 oral lectures from diverse areas. Important scientific results and advances are discussed in the poster sessions with 45 poster presentations. The exhibition includes 12 vendors displaying the latest commercial advances of separation techniques.

Many people need to be thanked for making this Symposium possible. I particularly thank our sponsors and exhibitors for providing generous financial support. Special thanks go to all of the people who submitted excellent abstracts from many areas of separation science.

I wish all participants of the 13th Balaton Symposium an intellectually stimulating and rewarding meeting as well as an enjoyable time in Siófok.

Attila Felinger
Symposium Chairman

Symposium Chairman

Attila Felinger, *Pécs*

Local Organizing Committee

László Abrankó, *Budapest*

Mónika Babják, *Budapest*

László Drahos, *Budapest*

Attila Felinger, *Pécs*

Attila Gáspár, *Debrecen*

Krisztián Horváth, *Veszprém*

István Ilisz, *Szeged*

Orsolya Kóréh, *Budapest*

Ágnes Móricz, *Budapest*

Organizers of the Symposium

Hungarian Society for Separation Sciences

and the

Working Committee on Separation Sciences
of the
Hungarian Academy of Sciences

Honored with the Halász Medal Award:

† **Csaba Horváth** (1997) *Yale University, New Haven, CT, USA*
Heinz Engelhardt (1997) *Saarland University, Saarbrücken, Germany*
Antoine Siouffi (1998) *Université Paul Cézanne, Marseille, France*
† **Georges Guiochon** (1999) *University of Tennessee, Knoxville, TN, USA*
† **Ernst Bayer** (2001) *University of Tübingen, Tübingen, Germany*
Barry L. Karger (2002) *Northeastern University, Boston, MA, USA*
Günther Bonn (2003) *Leopold-Franzens University, Innsbruck, Austria*
† **Ervin Sz. Kováts** (2004) *École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*
† **Uwe D. Neue** (2005) *Waters Corporation, Milford, MA, USA*
Wolfgang Lindner (2007) *University of Vienna, Vienna, Austria*
† **László Szepesy** (2009) *Budapest University of Technology and Economics, Budapest, Hungary*
Gyula Vigh (2011) *Texas A&M University, College Station, TX, USA*
Nobuo Tanaka (2013) *Kyoto Institute of Technology, Kyoto, Japan*
Janusz Pawliszyn (2015) *University of Waterloo, Waterloo, Canada*
† **Ernő Tyihák** (2017, posthumous) *MTA ATK Plant Protection Institute, Budapest, Hungary*
Gert Desmet (2019) *Vrije Universiteit Brussel, Brussels, Belgium*
Philip Marriott (2021) *Monash University, Melbourne, Australia*

Honored with the Csaba Horváth Memorial Award:

John Frenz (2004), *Alnylam, Cambridge, MA, USA*
Imre Molnár (2005) *Molnár-Institute, Berlin, Germany*
† **Szabolcs Nyiredy** (2007, posthumous) *Research Institute for Medical Plants, Budakalász, Hungary*
Danilo Corradini (2009) *Institute of Chemical Methodologies of the Italian Research Council, Rome, Italy*
Peter W. Carr (2010) *University of Minnesota, Minneapolis, MN, USA*
Günther Bonn (2011) *Leopold-Franzens University, Innsbruck, Austria*
Fred Regnier (2012) *Purdue University, West Lafayette, IN, USA*
Pat Sandra (2013) *Ghent University, Ghent, Belgium*
† **Joseph J. Kirkland** (2014) *Advanced Materials Technology, Wilmington, DE, USA*
Peter Schoenmakers (2015) *University of Amsterdam, Amsterdam, The Netherlands*
James Jorgenson (2016) *University of North Carolina, Chapel Hill, NC, USA*
Bezhan Chankvetadze (2017) *Tbilisi State University, Tbilisi, Georgia*
Milton Lee (2018) *Brigham Young University, Provo, UT, USA*
Jean-Luc Veuthey (2019) *University of Geneva, Geneva, Switzerland*
Graham Cooks (2020) *Purdue University, West Lafayette, IN, USA*
Gertrud Morlock (2021) *Justus Liebig University, Giessen, Germany*

Honored with the Ervin sz. Kováts Award for Young Scientists:

Yada Nolvachai (2017) *Monash University, Melbourne, Australia*
Vincent Desfontaine (2019) *University of Geneva, Geneva, Switzerland*
Simona Felletti (2021) *University of Ferrara, Ferrara, Italy*

Venue

Hotel Azúr
8600 Siófok, Erkel Ferenc u. 2/C.
Tel.: +36 84 501 400

General Information

Website

https://2023.balatonsymposium.hu/

Opening hours of the registration

In the lobby of Hotel Azúr

Monday, September 4, 2023	08:00-18:00
Tuesday, September 5, 2023	08:00-18:00
Wednesday, September 6, 2023	08:30-13:00

Badges

All participants and accompanying persons will receive a personal badge upon registration. You are kindly requested to wear your name badge when attending the meetings or social events.

Official language

Official language of the Symposium is English. No translation is available.

Key to lectures & posters

L	Lecture presentation
ML	Manufacturers' lecture
P	Poster
MP	Manufacturers' poster

Exhibition

In accordance with the conventions of the symposium, parallel to the scientific sessions a professional exhibition is to be organized in the lobby of Hotel Azúr. Please have a look at the exhibition floor plan of the booklet. The exhibition will be open during the whole scientific program.

Cultural and social program

Monday, September 4, 2023 19:00-20:00

Concert of Melodika Projects

Three musicians, many instruments and different musical genres in fusion. What does Bach have to do with jazz, opera with reggae or Bartók with flamenco? You'll find out from Melodika Projects' interactive show.

The members of the trio:
Gábor Antal - piano/melodika
Katalin Csernus - guitar /ukulele
Bálint Pödör - percussion instruments

Monday, September 4, 2023 20:00-23:00

Gala Dinner in the Olive Garden Restaurant of Hotel Azúr. Music will be provided by Madarak Music Band.

Tuesday, September 5, 2023 20:00-23:00

Grill party in the garden of Hotel Azúr. Music will be provided by the Just B'Coz Entertainment.

Separate invitation cards will be provided during the registration.

Liability and insurance

The organizers cannot accept liability for any personal accidents, loss of belongings or damage to private property of participants and accompanying persons that may occur during the Symposium.

Scientific Information

Oral presentations **(L-01 – L-33, ML-1 – ML-2)**

The length of oral presentations is either 30 or 20 minutes. The organizers suggest leaving 5 minutes for questions and discussion. The organizers kindly ask a strict adherence to the agreed time, as the session chairs will be asked to rigorously maintain the time schedule. During the presentation the lecturer will have a laptop (Windows PC) and a microphone at their disposal. The presentation may be prepared in any available presentation format (MS, OpenOffice, LibreOffice, pdf, etc.). Please bring your presentation on a USB key. Transferring individual presentations to the laptops will take place before the start of the symposium each day and during coffee or lunch breaks 30 min prior to your session at the latest.

Poster Presentations

Poster session I: P-01 – P-20 and MP-1– MP-5
Monday, September 4, 2023, 16:50 – 18:30 Room Marbella - Ibiza

Poster session II: P-21 – P-40 and MP-1– MP-5
Tuesday, September 5, 2023, 17:10 – 19:00 Room Marbella - Ibiza

The useful area of the poster board is 90 cm at width and 125 cm at height. The recommended size for your poster is about the standing A0 standard (cca. 84 x 119 cm). Pins will be provided to fix the posters. Posters will be identified by poster numbers, which are printed in the final program. Poster presenters are kindly requested to hang up their poster on Monday morning and remove their posters on Wednesday noon.

Authors of posters should stand at their posters and be available to discuss their research during the Poster Sessions on Monday or Tuesday according to the schedule in the final program.

Poster competition

A poster Award Committee will evaluate the poster presentations and valuable awards will be conferred at the Poster Award Ceremony preceding the Closing Remarks.

Accommodation

Hotel rooms are booked under the name of the participants. Symposium participants may occupy the rooms from 14:00 on the day of arrival and should arrange the check out until 10:00. The hotel ensures a luggage room. The guarded parking lot of the hotel is available for our participants free of charge. Guests are kindly requested to settle their extra room bills (such as phone calls, drinks and minibar) prior to departure. The room prices include buffet breakfast, the usage of wellness facilities (pools, jacuzzi, sauna park and steam bath), VAT and city tax.

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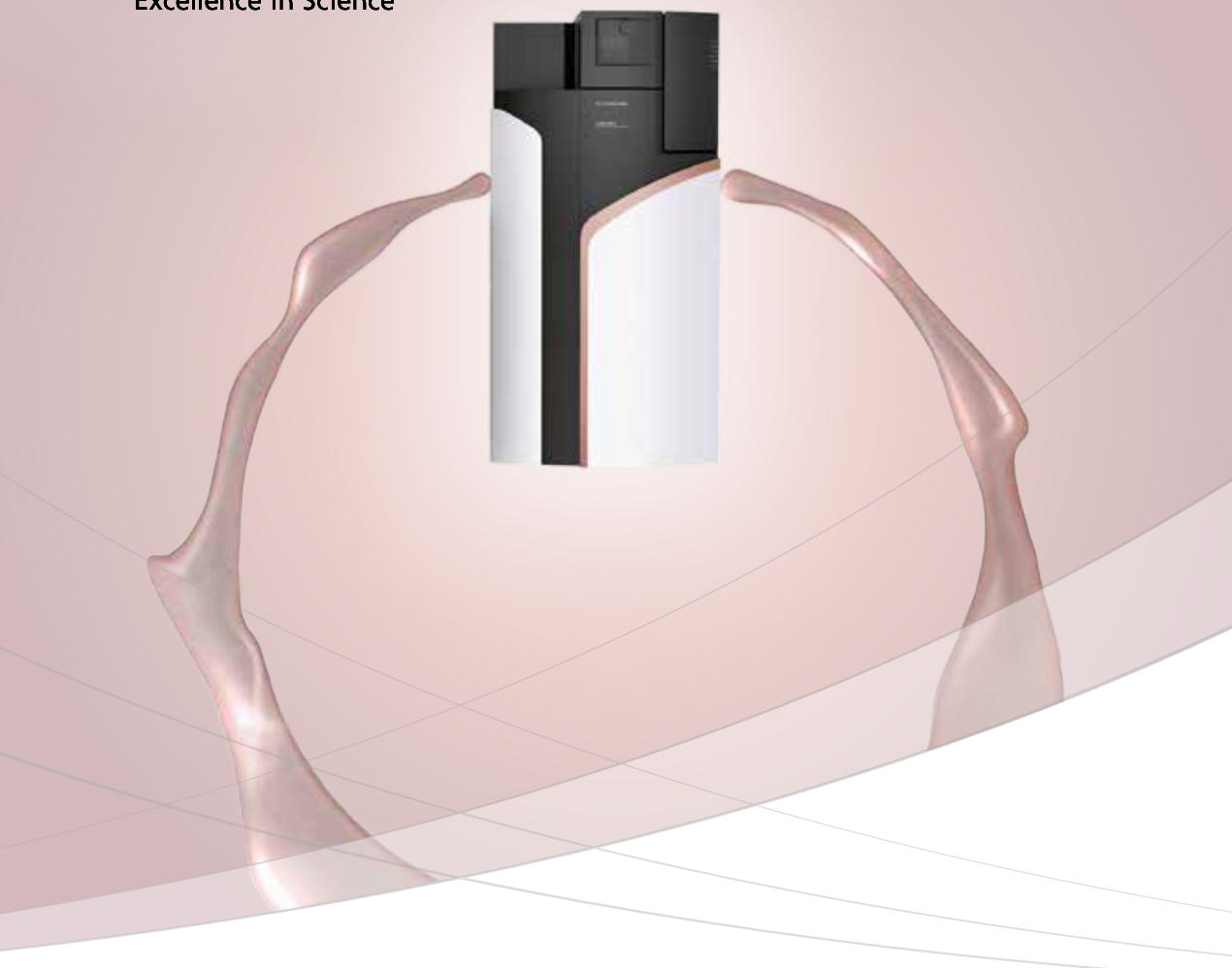

Új erőre kap a munkája

Az új LCMS-9050 Q-TOF tömegspektrométer integrálja a világ leggyorsabb és legérzékenyebb kvadrupolos technológiáját TOF-architektúrával. Megkönnyítheti munkáját, és megbízhatóbb adatokat szolgáltat köszönhetően a stabil tömegpontosságnak, az ultra-stabil polaritásváltásnak, a legnagyobb sebességű az MS/MS -nek, a rugalmas bővítési lehetőségeknek, sokoldalúságnak. Fedezze fel az új LCMS-9050 összes előnyét – melyet az LCMS-9030-as készülékhez upgrade-ként is elérhető.

Egyértelmű eredmények:
a vegyületek azonosítása és szerkezetkutatás terén.

Egyszerűbb műszerkezelés:
több idő az eredmények értékelésére.

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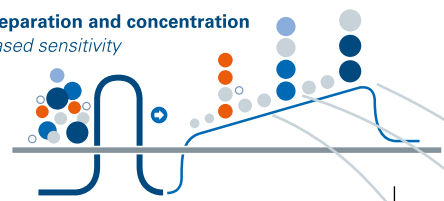
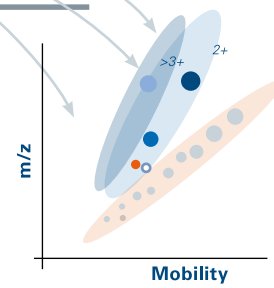
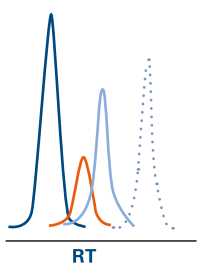
1 **TIMS separation and concentration**
- *Increased sensitivity*

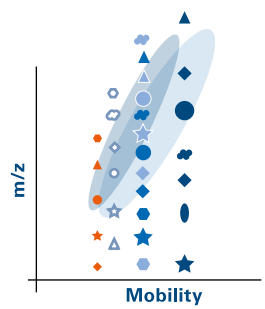


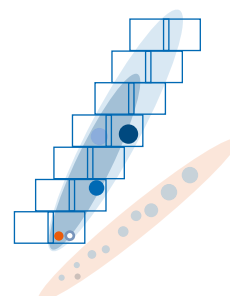
2 ***Separation by rt, m/z and mobility***
Increased selectivity reveal sample complexity signal clean-up



3 ***Increased CCS-coded analytes***
- *ID Confidence*
- *Increased Quant accuracy*
- *MOMA ID & Quant*







6 ***Accuracy - Selectivity - Sensitivity Robustness - Confidence - Speed***

5 **MS:MS based, CCS-enabled**
- *Quantitation accuracy*
- *Ultimate selectivity*
- *Confident results*

4 ***Two-dimensional dia-PASEF windows***
- *Improved ion usage: more sensitivity*
- *Shortened cycle time: high throughput*
- *1+ removal: spectral quality*

Chemical noise *Ion 1 (high CCS)* *Ion 2 (intermediate CCS)* *Ion 3 (intermediate CCS)*
Isobaric Ion 4 (MOMA) *Isobaric Ion 5 (MOMA)*

Data-independent acquisition dia-PASEF is both more sensitive and selective than traditional DIA approaches as it applies the PASEF principle to combine the advantages of DIA with the inherent ion efficiency of PASEF. Over the entire liquid chromatography-mass spectrometry (LC-TIMS-MS)/MS dia-PASEF run, a perfect data cuboid is created containing m/z, ion mobility (CCS), retention time and intensity. TIMS separation increases selectivity, excludes singly charged precursors from fragmentation and cleans up the sample by concentrating signals from noise. Making use of the correlation of molecular weight and CCS coded information from the dual-TIMS funnel, dia-PASEF enables highly confident identification.

13th Balaton Symposium
on High-Performance Separation Methods

Scientific Program

September 4–6, 2023
Hotel Azúr**, Siófok, Hungary**

Scientific Program

September 4, Monday

9:00-	**Registration**
	Session I. **Chair: Alberto Cavazzini**
10:00-10:15	**Opening Ceremony**
10:15-10:45	**L-01 | Innovative chromatographic strategies to improve the characterization of oligonucleotides** **Davy Guillarme**, Honorine Lardeux, Valentina d'Atri *University of Geneva, Geneva, Italy*
10:45-11:15	**L-02 | Addressing materials and resolution challenges in the 3D printing of chromatography columns** Simone Dimartino *Institute for Bioengineering, The School of Engineering, The University of Edinburgh, Edinburg, United Kingdom*
11:15-11:45	**L-03 | 4D hyphenated techniques reveal hazardous effects in food and cosmetics using the 2LabsToGo System** **Gertrud Morlock,** Wolfgang Schwack, Maria Ochoa Romero, Kevin Jacob *Chair of Food Science, Justus Liebig University Giessen, Giessen, Germany*
11:45-12:15	**L-04 | Developing an assay to determine impact of environmental conditions on the breeding of endangered species** **Tony Edge**, Matt James, Colin Pipe, Kelly-Anne Harrison *Avantor, Theale, United Kingdom*
12:15-12:35	**L-05 | Boosting chromatographic performance and productivity by thermal gradient-gas chromatography** **Erwin Rosenberg**[1], Bernhard Klampfl[1], Sebastian Wöhrer[1], Jürgen Kahr[2] [1] *Vienna University of Technology, Institute of Chemical Technologies and Analytics, Vienna, Austria* [2] *Austrian Institute of Technology GmbH, Battery Technologies, Center for Low-Emission Transport, Vienna, Austria*
12:35-14:00	**Lunch & Exhibition**

September 4, Monday

Session II.
Chair: Davy Guillarme

14:00-14:30 **L-06** | **Fundamental investigation of the extra column band broadening in nano-LC capillary tubing with different geometries**

Ali Moussa, Sander Deridder, Gert Desmet, **Ken Broeckhoven**

Vrije Universiteit Brussel, Brussel, Belgium

14:30-14:50 **L-07** | **Estimation and characterization of overloaded band profiles in ion-exchange separations**

Krisztián Horváth

Research Group of Analytical Chemistry, University of Pannonia, Veszprém, Hungary

14:50-15:10 **L-08** | **New approach for the depletion of Δ^9-THC from CBD rich samples by simulated moving bed**

Greta Compagnin, Simona Felletti, Chiara De Luca, Martina Catani, Alberto Cavazzini

Department of Chemical, Pharmaceutical and Agricultural Sciences, University of Ferrara, Ferrara, Italy

15:10-15:30 **L-09** | **Separation of remdesivir diastereomers by centrifugal partition chromatography**

Gergő Dargó[1,2], Dóra Rutterschmid[1], Zsolt Kovács[1], László Óvári[1], Dóra Ujj[3], Erzsébet Varga[3], Gábor Benkovics[3], Bianka Várnai[4], Szabolcs Béni[4], Simon Vlad Luca[5], Mirjana Minceva[5], **Árpád Könczöl**[1]

[1] *RotaChrom Technologies LLC, Kecskemét, Hungary*

[2] *Servier Research Institute of Medicinal Chemistry, Budapest, Hungary*

[3] *CycloLab Cyclodextrin Research and Development Laboratory Ltd., Budapest, Hungary*

[4] *Department of Pharmacognosy, Semmelweis University, Budapest, Hungary*

[5] *Biothermodynamics, TUM School of Life Sciences, Technical University of Munich, Munich, Germany*

15:30-15:50 **L-10** | **Influence of lignin-derived natural organic compounds on the separation of organic contaminants onto zeolites from water matrices**

Chenet Tatiana[1], Sarti Elena[2], Stevanin Claudia[1], Costa Valentina[1], Cescon Mirco[2], Martucci Annalisa[3], Pasti Luisa[1]

[1] *Department of Environmental and Prevention Sciences – University of Ferrara, Ferrara, Italy*

[2] *Department of Chemical, Pharmaceutical and Agricultural Sciences – University of Ferrara, Ferrara, Italy*

[3] *Department of Physics and Earth Sciences, University of Ferrara, Ferrara, Italy*

September 4, Monday

15:50-16:10	**L-11 | To desalt or not to desalt: The significance of sample clean-up prior to CZE peptide mapping studies** **Cynthia Nagy**, Melinda Andrási, Attila Gáspár *Dept. of Inorganic and Analytical Chemistry, University of Debrecen, Debrecen, Hungary*
16:10-16:20	**ML-1 | Actual developments in HPLC modeling** Imre Molnár *Molnár-Institute for Applied Chromatography, Berlin, Germany*
16:20-16:50	**Coffee Break & Exhibition**
16:50-18:30	**Poster session I.** **P-01 – P-20 and MP-1 – MP-5**
19:00-20:00	**Cultural program**
20:00-23:00	**Gala Dinner**

September 5, Tuesday

09:00-09:15 **Presentation of the Halász Medal Award**
Presentation of the Csaba Horváth Memorial Award
Presentation of the Ervin sz. Kováts Award for Young Scientists

Session III.
Chair: Attila Felinger

9:15-9:45 **L–12 | The role of radiochromatography in the pharmacokinetic and drug metabolism research**

Imre Klebovich
Department of Pharmaceutics, Faculty of Pharmaceutical Sciences, Semmelweis University, Budapest, Hungary

9:45-10:15 **L-13 | Role of serendipity in research and development: Vacuum jacketed column – mass spectrometry technology**

Fabrice Gritti, Jason Hill, Sornanathan Meyyappan, Rob Plumb, Paul Rainville
Waters Corporation, Milford, USA

10:15-10:45 **L-14 | Development of sample preparation and HPLC-MS methods for analyzing tissue-derived glycosaminoglycans**

Gábor Tóth[1,2]Simon Sugár[1,3], Kata Dorina Fügedi[1,4], Pál Domonkos[1,3], Mirjam Balbisi[1,3], László Drahos[1], Károly Vékey[1], Viola Horváth[4], Lilla Turiák[1,3]
[1] *MS Proteomics Research Group, Research Centre for Natural Sciences, Budapest, Hungary*
[2] *BMC Department of Chemistry, Uppsala University, Uppsala, Sweden*
[3] *Doctoral School of Pharmaceutical Sciences, Semmelweis University, Budapest, Hungary*
[4] *Department of Inorganic and Analytical Chemistry, Budapest University of Technology and Economics, Budapest, Hungary*

10:45-11:15 **Coffee Break & Exhibition**

September 5, Tuesday

	Session IV. Chair: Simone Dimartino
11:15-11:45	**L-15 | A journey into zwitterionic teicoplanin-based superficially porous particles** **Simona Felletti**[1], Martina Catani[1], Chiara De Luca[1], Greta Compagnin[1], Desiree Bozza[1], Giulia Mazzoccanti[2], Francesco Gasparrini[2], Alberto Cavazzini[1] *[1] Department of Chemical, Pharmaceutical and Agricultural Sciences, University of Ferrara, Ferrara, Italy* *[2] Department of Drug Chemistry and Technology, "Sapienza" Università di Roma, Roma, Italy*
11:45-12:05	**L-16 | Thermal effects in (U)HPLC** **Sander Deridder**, Ali Moussa, Ken Broeckhoven, Gert Desmet *Vrije Universiteit Brussel, Brussel, Belgium*
12:05-12:25	**L-17 | Let's make chromatography more green** Mikołaj Dembek, Oktawia Kalisz, Katarzyna Krzemińska, Sylwia Studzińska, **Szymon Bocian** *Faculty of Chemistry, Nicolaus Copernicus University, Toruń, Poland*
12:25-12:45	**L-18 | Replacement of acetonitrile with dimethyl carbonate as organic modifier in liquid chromatography** **Martina Catani**[1], Desiree Bozza[1], Chiara De Luca[1], Simona Felletti[1], Matteo Spedicato[1], Marco Macis[2], Antonio Ricci[2], Alberto Cavazzini[1] *[1] Department of Chemical, Pharmaceutical and Agricultural Sciences, University of Ferrara, Ferrara, Italy* *[2] Fresenius Kabi iPSUM, Villadose, Rovigo, Italy*
12:45-13:05	**L-19 | Tuning selectivity in reversed-phase chromatography applied for the separation of regioisomers of sugammadex related impurities** **Erzsébet Varga**[1], Dominika Mária Herr[1], Péter Soma Szakály[1], Arnold Zöldhegyi[2] *[1] CycloLab Cyclodextrin Research and Development Laboratory Ltd., Budapest, Hungary* *[2] Molnár-Institute for applied chromatography, Berlin, Germany*
13:05-14:30	**Lunch & Exhibition**

September 5, Tuesday

Session V.
Chair: Fabrice Gritti

14:30-15:00 **L-20 | Challenges in chromatographic analyses of phytonutrients in food and plant samples**

Irena Vovk[1], Vesna Glavnik[1], Maja Bensa[2], Breda Simonovska[1], Etil Guzelmeric[3], Nisa Beril Sen[3], Ágnes M. Móricz[4]

[1] *Laboratory for Food Chemistry, National Institute of Chemistry, Ljubljana, Slovenia*

[2] *Faculty of Health Sciences, University of Ljubljana, Ljubljana, Slovenia*

[3] *Department of Pharmacognosy, Faculty of Pharmacy, Yeditepe University, Istanbul, Türkiye*

[4] *Plant Protection Institute, Centre for Agricultural Research, ELKH, Budapest, Hungary*

15:00-15:20 **L-21 | HPTLC hyphenations as a key for preparative bioassay-guided isolation**

Ágnes M. Móricz, Márton Baglyas, Dániel Krüzselyi, Péter G. Ott

Plant Protection Institute, Centre for Agricultural Research, ELKH, Budapest, Hungary

15:20-15:40 **L-22| Application of high-performance separation techniques to the isolation of natural and semi-synthetic antitrypanosomal ecdysteroids**

Márton B. Háznagy[1], Máté Vágvölgyi[1], Sandhya R. Krishnan[2], Jürg Gertsch[2], Attila Hunyadi[1]

[1] *Institute of Pharmacognosy, Faculty of Pharmacy, University of Szeged, Szeged, Hungary*

[2] *Institute of Biochemistry and Molecular Medicine, Faculty of Medicine, University of Bern, Bern, Switzerland*

15:40-16:00 **L-23 | Boosting the purification performance of a challenging peptide separation by moving from reversed-phase to a mixed-mode stationary phase**

Chiara De Luca[1], Giulio Lievore[1,2], Simona Felletti[1], Martina Catani[1], Desiree Bozza[1], Marco Macis[3], Antonio Ricci[3], Walter Cabri[3,4], Alberto Cavazzini[1]

[1] *Department of Chemical, Pharmaceutical and Agricultural Sciences, University of Ferrara, Ferrara, Italy*

[2] *YMC ChromaCon, Zürich, Switzerland*

[3] *Fresenius Kabi iPSUM, Villadose, Italy*

[4] *Department of Chemistry "Giacomo Ciamician", University of Bologna, Bologna, Italy*

September 5, Tuesday

16:00-16:20	L-24	**Greening downstream processing of biopharmaceuticals through multicolumn continuous preparative liquid chromatography and eco-friendly solvents** **Desiree Bozza**, Chiara De Luca, Chiara Nosengo, Simona Felletti, Alberto Cavazzini and Martina Catani *Department of Chemical, Pharmaceutical and Agricultural Sciences, University of Ferrara, Ferrara, Italy*
16:20-16:40	L-25	**Novel application of LC-MS/MS and LC-DAD for the analysis of stimulants in dietary supplements** **Margita Utczás**, Zoltán Pálinkás *Hungarian University of Sports Science, Center for Sports Nutrition Science, Budapest, Hungary*
16:40-17:10		**Coffee Break & Exhibition**
17:10-19:00		**Poster session II.** **P-21 – P-40 and MP-1 – MP-5**
20:00-23:00		**Grill Party**

September 6, Wednesday

Session VI.
Chair: Tony Edge

8:30-9:00 **L-26** | **Pipelines and systems for threshold avoiding quantification of LC-MS/MS data (PASTAQ)**

Alejandro Sánchez Brotons[1], Jonatan O. Eriksson[2], Marcel Kwiatkowski[1,3], Justina C. Wolters[4], Ido P. Kema[5], Andrei Barcaru[1], Folkert Kuipers[4,5], Stephan J.L. Bakker[6], Rainer Bischoff[1], Frank Suits[7], **Peter Horvatovich**[1]

[1] *Department of Analytical Biochemistry, University of Groningen, Groningen, The Netherlands*
[2] *Department of Biomedical Engineering, Lund University, Lund, Sweden*
[3] *Functional Proteo-Metabolomics, Department of Biochemistry, University of Innsbruck, Innsbruck, Austria*
[4] *Department of Pediatrics, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands*
[5] *Department of Laboratory Medicine, University Medical Center Groningen, Groningen, The Netherlands*
[6] *Department of Internal Medicine, University Medical Center Groningen, Groningen, The Netherlands*
[7] *IBM Research, Melbourne, Australia*

9:00-9:20 **L-27** | **Intact protein analysis by CZE-MS**

Attila Gáspár, Melinda Andrási, Narmin Hamidli, Ruben Szabó, Gayatri Vishwakarma, Cynthia Nagy

Department of Inorganic and Analytical Chemistry, University of Debrecen, Debrecen, Hungary

9:20-9:40 **L-28** | **Assessment of nutritional value of food protein using digestion simulation**

Judit Tormási, Mária Berki, Éva Lengyel-Kónya, Rita Tömösközi-Farkas, **László Abrankó**

MATE-Hungarian University of Agriculture and Life Science, Institute of Food Science & Technology, Department Food Chemistry & Analysis, Budapest, Hungary

9:40-10:00 **L-29** | **Identification of a chimera mass spectrum of isobaric "lipid A" species**

Ágnes Dörnyei[1], Viktor Sándor[2], Dóra Hidegkúti-Németh[2], Anikó Kilár[2]

[1] *Department of Analytical and Environmental Chemistry, Faculty of Science, University of Pécs, Pécs, Hungary*
[2] *Institute of Bioanalysis, Medical School, University of Pécs, Pécs, Hungary*

September 6, Wednesday

10:00-10:20	**L-30**	**Blood *N*-glycomic signatures of fibrosis in non-alcoholic fatty liver disease indicate low levels of global α2,3-sialylation** **Tamas Pongracz**[1], Bart Verwer[2], Maaike Biewenga[2], Simone Nicolardi[1], Marco Bladergroen[1], Wenjun Wang[1], Onno Holleboom[3], Anne Linde Mak[3], Bart van Hoek[2], Noortje de Haan[1,4], Manfred Wuhrer[1], Maarten Tushuizen[2] *[1] Center for Proteomics and Metabolomics, Leiden University Medical Center, Leiden, The Netherlands* *[2] Department of Gastroenterology and Hepatology, Leiden University Medical Center, Leiden, The Netherlands* *[3] Department of Internal Medicine, Amsterdam University Medical Center, Amsterdam, The Netherlands* *[4] Copenhagen Center for Glycomics, University of Copenhagen, Copenhagen, Denmark*
10:20-10:45	**ML-2**	**Introduction to the new Thermo Scientific Orbitrap Astral mass spectrometer** Luka Milivojević *Thermo Fisher Scientific, Breda, The Netherlands*
10:45-11:15	**Coffee Break & Exhibition**	

September 6, Wednesday

	Session VII. Chair: Krisztián Horváth
11:15-11:45	**L-31 | Understanding the fundamentals of chiral separations to design innovative applications** **Alberto Cavazzini**, Martina Catani, Simona Felletti, Chiara De Luca *Department of Chemical, Pharmaceutical and Agricultural Sciences, University of Ferrara, Ferrara, Italy*
11:45-12:15	**L-32 | Carrier ampholyte-based isoelectric focusing in capillaries and gels with ion transport into the electrode vessels is not a steady-state process, it is transient bidirectional isotachophoresis** **Gyula Vigh**[1], Bohuslav Gas[2] *[1] A&M University, College Station, Texas, USA* *[2] Charles University, Prague, Czech Republic*
12:15-12:45	**L-33 | LC method development - In computers we trust?** **Peter Schoenmakers**, Gerben van Henten, Rick van den Hurk, Tijmen Bos and Bob Pirok *Van 't Hoff Institute for Molecular Science (HIMS), University of Amsterdam, and Centre for Analytical Sciences Amsterdam, Amsterdam, The Netherlands*
12:45-12:50	**Poster Award Ceremony**
12:50-13:00	**Closing Remarks**
13:00-	**Lunch**

13th Balaton Symposium
on High-Performance Separation Methods

List of posters

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Hotel Azúr**, Siófok, Hungary**

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P-01 **Exploitation of the enantioselectivity space of coated amylose tris (3,5-dimethylphenyl-carbamate) in mixtures of 2-propanol and acetonitrile**

Simon Horváth[1], Hong Ha Nguyen Thuy[1], Zsuzsanna Eke[2], **Gábor Németh**[1]

[1] Egis Pharmaceuticals PLC, Budapest, Hungary

[2] Joint Research and Training Laboratory on Separation Science, Eötvös Loránd University, Budapest, Hungary

P-02 **Characterization of the retention mechanism on polar embedded reversed phase columns**

Ivett Bacskay[1,2], Mikołaj Dembek[3], Alessandro Buratti[4], Martina Catani[4], Attila Felinger[1,2,5], Bogusław Buszewski[3], Szymon Bocian[3]

[1] ELKH–PTE Molecular Interactions in Separation Science Research Group, Pécs, Hungary

[2] Department of Analytical and Environmental Chemistry and Szentágothai Research Center, University of Pécs, Pécs, Hungary

[3] Chair of Environmental Chemistry and Bioanalytics, Faculty of Chemistry, Nicolaus Copernicus University, Toruń, Poland

[4] Department of Chemical, Pharmaceutical and Agricultural Sciences, University of Ferrara, Ferrara, Italy

[5] Institute of Bioanalysis, Medical School, University of Pécs, Pécs, Hungary

P-03 **Optimization of surface-sampling capillary electrophoresis - mass spectrometry for single cell metabolomics**

Gábor Tóth, Ingela Lanekoff

BMC Department of Chemistry, Uppsala University, Uppsala, Sweden

P-04 **An investigation of atropisomerism of Amenamevir and its intermediates by dynamic HPLC**

Ferenc Matyuska[1], Csaba Marton[1], József Schindler[1], Péter Trinka[2], Imre Kovács[1], Géza Schneider[1]

[1] CF Pharma Ltd., Hungary, Budapest, Hungary

[2] Soneas Chemicals Ltd., Budapest, Hungary

P-05 **Challenges in effect-directed analyses of bioactives in invasive alien plant species**

Irena Vovk[1], Vesna Glavnik[1], Péter G. Ott[2], Ágnes M. Móricz[2]

[1] Laboratory for Food Chemistry, National Institute of Chemistry, Ljubljana, Slovenia

[2] Plant Protection Institute, Centre for Agricultural Research, ELKH, Budapest, Hungary

P-06 **Antimicrobial potential of two diterpenes isolated from rough goldenrod (*Solidago rugosa* Mill.) against plant pathogens**

Márton Baglyas[1,2], Péter G. Ott[1], Ildikó Schwarczinger[1], Judit Kolozsváriné Nagy[1], András Darcsi[3], József Bakonyi[1], Ágnes M. Móricz[1]

[1] Plant Protection Institute, Centre for Agricultural Research, ELKH, Budapest, Hungary

[2] Doctoral School of Pharmaceutical Sciences, Semmelweis University, Budapest, Hungary

[3] Pharmaceutical Chemistry and Technology Department, National Institute of Pharmacy and Nutrition, Budapest, Hungary

P-07 **Development and validation of an LC-MS/MS method for the quantification of 2,3-epoxypropyl isopropyl ether in rat plasma**

Aliz Széles
Doctoral School of Pharmaceutical Sciences, Semmelweis University, Budapest, Hungary
Research Centre for Natural Sciences, Budapest, Hungary
Toxi-Coop Ltd., Budapest, Hungary

P-08 **Characterization of oligosaccharides in breast milk collected from a mother with Sjögren's Syndrome by HPLC-MS/MS**

Emília Fekete, Andrea Nagy-Nedves, Szabolcs Béni, **Orsolya Csernák**
Department of Pharmacognosy, Semmelweis University, Budapest, Hungary

P-09 **Cyclodextrin complexation study of Kratom Alkaloids**

András Dohárszky[1], Zoltán Fülöp[2], Erzsébet Varga[2], Szabolcs Béni[1], **Ida Fejős**[1]
[1] Department of Pharmacognosy, Semmelweis University, Budapest, Hungary
[2] CycloLab Cyclodextrin R&D Ltd., Budapest, Hungary

P-10 **Matrix effects in cation exchange chromatography**

Boglárka Páll[1], Róbert Kormány[1], Krisztián Horváth[2]
[1] Drug Substance Analytical Development Division, Egis Pharmaceuticals PLC, Budapest, Hungary
[2] Research Group of Analytical Chemistry, University of Pannonia, Veszprém, Hungary

P-11 **Simplicity-driven method for the separation and quantification of basic molecules with HILIC HPLC-MS/MS**

József Simon[1,2], Márton Kovács[3], Pál T. Szabó[1]
[1] MS Metabolomics Research Laboratory, Centre for Structural Science, Budapest, Hungary
[2] Research Group of Analytical Chemistry, University of Pannonia, Veszprém, Hungary
[3] Budapest University of Technology and Economics, Budapest, Hungary

P-12 **On the trail of photocatalytic degradation of fungicides**

Ákos Bendegúz Székely[1], Orsolya Zsirka-Fónagy[1], Ottó Horváth[1], Diána Lukács[2], Krisztián Horváth[2], **Evelin Tóth-Farsang**[2], Erzsébet Szabó-Bárdos[1]
[1] University of Pannonia, Center of Natural Sciences, Research Group of Environmental and Inorganic Photochemistry, Veszprém, Hungary
[2] University of Pannonia, Center of Natural Sciences, Research Group of Analytical Chemistry, Veszprém, Hungary

P-13 **Microfluidic-based protein quantification in plant-based drinks derived from nuts**

Fruzsina Balogh-Hartmann, **Csilla Páger**, Anita Bufa, Ibolya Madarászné Horváth, Tamás Marosvölgyi, Lilla Makszin
Institute of Bioanalysis, Medical School, Szentágothai Research Center, University of Pécs, Pécs, Hungary

P-14 **Microfluidic analysis for determination of the protein content in legume-based plant drinks**

Fruzsina Balogh-Hartmann, Csilla Páger, Anita Bufa, Ibolya Madarászné Horváth, Tamás Marosvölgyi, **Lilla Makszin**

Institute of Bioanalysis, Medical School, Szentágothai Research Center, University of Pécs, Pécs, Hungary

P-15 **Targeted UPLC-MS/MS method for the simultaneous determination of stilbenes derivatives in plant extract**

Zahraa Ali[1], Csilla Zsuzsanna Dávid[2], Andrea Vasas[2], Tímea Körmöczi[1], István Ilisz[1], Róbert Berkecz[1]

[1] *Intitute of Pharmaceutical Analysis, University of Szeged, Szeged, Hungary*

[2] *Department of Pharmacognosy, University of Szeged, Szeged, Hungary*

P-16 **HPLC study of the enantioselective separation of β-methyl-substituted amino acids applying ion exchanger-based chiral stationary phases**

Gábor Németi[1], Dániel Ozsvár[1], Róbert Berkecz[1], Péter Antal[1], Wolfgang Lindner[2], István Ilisz[1]

[1] *Institute of Pharmaceutical Analysis, University of Szeged, Szeged, Hungary*

[2] *Department of Analytical Chemistry, University of Vienna, Vienna, Austria*

P-17 **Analysis of snake venoms with CZE-MS**

Gayatri Vishwakarma[1], M. Andrasi[1], P. Hajdu[2], Attila Gáspár[1]

[1] *Department of Inorganic and Analytical Chemistry University of Debrecen, Debrecen, Hungary*

[2] *Division of Dental Biochemistry, University of Debrecen, Debrecen, Hungary*

P-18 **The analysis of monoclonal antibodies with electrospray ionization mass spectrometry and subsequent spectral processing**

Ruben Szabó, Attila Gáspár

Department of Inorganic and Analytical Chemistry, University of Debrecen, Debrecen, Hungary

P-19 **Ion-exchange chromatographic retention – ionic and molecular properties of analytes**

Diána Lukács[1], Evelin Tóth-Farsang[1], József Simon[1,2], Krisztián Horváth[1]

[1] *Center for Natural Sciences, Analytical Chemistry Research Group University of Pannonia, Veszprém, Hungary*

[2] *MS Metabolomics Research Laboratory, Research Centre for Natural Sciences, Budapest, Hungary*

P-20 **Chromatographic efficiency of pressure-induced gradient separations**

Diána Lukács[1], József Simon[2], **Evelin Tóth-Farsang**[1], Krisztián Horváth[1]

[1] *University of Pannonia, Center of Natural Sciences, Research Group of Analytical Chemistry, Veszprém, Hungary*

[2] *MS Metabolomics Research Laboratory, Centre for Structural Science, Budapest, Hungary*

P-21 **Impact of water use as additive on elution some polar compounds in supercritical fluid chromatography**

Yahia Mohammed Kazmouz[1], Attila Felinger[1,2,3]

[1] *Department of Analytical and Environmental Chemistry and Szentágothai Research Center, Pécs, Hungary*

[2] *MTA-PTE Molecular Interactions in Separation Science Research Group, Pécs, Hungary*

[3] *Institute of Bioanalysis, Medical School, University of Pécs, Pécs, Hungary*

P-22 **Scouting the application limits of different hold-up time markers in supercritical fluid chromatography**

Csanád Rédei[1,2], Alessandro Buratti[3], Martina Catani[3], Attila Felinger[1,2,4]

[1] *Department of Analytical and Environmental Chemistry, University of Pécs, Pécs, Hungary*

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[3] *Department of Chemical, Pharmaceutical and Agricultural Sciences, University of Ferrara, Ferrara, Italy*

[4] *Institute of Bioanalysis, University of Pécs, Pécs, Hungary*

P-23 **The uncertainty of the van 't Hoff plots in chiral chromatography**

Dénes Szerencsés[1], Annamária Sepsey[1], Attila Felinger[1,2,3]

[1] *Department of Analytical and Environmental Chemistry and Szentágothai Research Center, University of Pécs, Pécs, Hungary*

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[3] *Institute of Bioanalysis, University of Pécs, Pécs, Hungary*

P-24 **The impact of frits and column end structure on efficiency in liquid chromatography**

Dóra Zelenyánszki[1,2], Attila Felinger[1,2,3]

[1] *PTE-TTK Department of Analytical and Environmental Chemistry, Pécs, Hungary*

[2] *MTA - PTE Molecular Interactions in Separation Science Research Group, Pécs, Hungary*

[3] *PTE-ÁOK Bioanalytical Institute, Pécs, Hungary*

P-25 **HPLC-MS/MS method validation for determination of DINCH plasticizer metabolites in urine**

Róbert Góra, Helena Jurdáková, Renáta Górová

Department of Analytical Chemistry, Faculty of Natural Sciences, Comenius University in Bratislava, Bratislava, Slovak Republic

P-26 **Meconium pretreatment optimization for determination of DINCH plasticizer metabolites by HPLC-MS/MS**

Renáta Górová, Lucia Vráblová, Helena Jurdáková

Department of Analytical Chemistry, Faculty of Natural Sciences, Comenius University in Bratislava, Bratislava, Slovak Republic

P-27 **Tandem mass spectrometry method for the diagnosis of inborn errors of creatine metabolism and transport**

Helena Jurdáková[1], Tereza Večereková[1], Anna Šalingová[2], Renáta Górová[1]

[1] *Comenius University, Faculty of Natural Sciences, Department of Analytical Chemistry, Bratislava, Slovak Republic*

[2] *National Institute of Children's Diseases, Centre for Inherited Metabolic Disorders, Bratislava, Slovak Republic*

P-28 **Determination of aflatoxin B_1 degradation with ozone-enriched medium by GC-MS technique**

Szabolcs B. Tóth

Eszterházy Károly Catholic University, Department of Chemistry, Eger, Hungary

P-29 **Structure and influence of antioxidant metal-chelating peptides**

Gizella Csire[1], François Dupire[4], Laetitia Canabady-Rochelle[2], Loïc Stefan[3] and Katalin Selmeczi[4]

[1] *Eszterházy Károly Catholic University, Eger, Hungary*

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[3] *Université de Lorraine, CNRS, LCPM, Nancy, France*

[4] *Université de Lorraine, CNRS, L2CM, Nancy, France*

P-30 **Monitoring rat brain slice nimodipine level using a new targeted UHPLC-MS/MS method**

Róbert Berkecz[1], Rita Frank[2,3], Zahraa Ali[1], Tímea Körmöczi[1], István Ilisz[1], Ferenc Domoki[4], Eszter Farkas[2,3]

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[4] *Department of Physiology, University of Szeged School of Medicine, Szeged, Hungary*

P-31 **Planar multiplex assays differentiate effect responses providing true information**

Gertrud Morlock

Chair of Food Science, Justus Liebig University Giessen, Giessen, Germany

P-32 **Proteomic and glycosaminoglycan characterization of ALK rearranged lung adenocarcinoma tissues**

Mirjam Balbisi[1,2], Simon Sugár[1,2], Gitta Schlosser[3], Beáta Szeitz[4], János Fillinger[5], Judit Moldvay[5], László Drahos[1], Marcell A. Szász[4], Gábor Tóth[1], Lilla Turiák[1,2]

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[5] *National Korányi Institute of Pulmonology, Budapest, Hungary*

P-33 **Phosphoproteomic analysis of lung- and prostate adenocarcinomas**

Fanni Bugyi[1,2], Simon Sugár[1,3], Gábor Tóth[1], Tibor Szarvas[4,5], Henning Reis[6,7], Tamás Tornóczky[8], László Nyitray[9], Ilona Kovalszky[10], Ágnes Révész[1], László Drahos[1], Lilla Turiák[1]

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[9] *Department of Biochemistry, Eötvös Loránd University, Budapest, Hungary*
[10] *Department of Pathology and Experimental Cancer Research, Semmelweis University, Budapest, Hungary*

P-34 **Analysis of chondroitin sulfate and heparan sulfate glycosaminoglycans in different lung cancer tissues**

Domonkos Pál[1,2], Gábor Tóth[3], Simon Sugár[1,2], Kata Dorina Fügedi[1], Dániel Szabó[1], Ilona Kovalszky[4], Gitta Schlosser[5], Tamás Tornóczky[6], László Drahos[1], Lilla Turiák[1]

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[5] *MTA-ELTE Lendület Ion Mobility Mass Spectrometry Research Group, Eötvös Loránd University, Budapest, Hungary*
[6] *Department of Pathology, University of Pécs, Pécs, Hungary*

P-35 **Physiological changes of HeLa cells exherted by transferrin-anion complexes**

Dóra Hidegkuti-Németh[1], Marianna Pap[2,3], Tímea Fekete[4], Erika Gáspárné Bak[4], Ferenc Kilár[4]

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[2] *University of Pécs, Medical School, Department of Medical Biology and Central Electron Microscopic Laboratory, Pécs, Hungary*
[3] *University of Pécs, Szentágothai Research Centre, Signal Transduction Laboratory, Pécs, Hungary*
[4] *University of Pécs, Medical School, Institute of Bioanalysis, Pécs, Hungary*

P-36 **Determination of endocannabinoids from human serum with LC-MS/MS method for the comparison of peripheral and spinal anesthesia**

Nándor Lambert[1], Attila Felinger[1], Desiree Bozza[2]

[1] *University of Pécs, Pécs, Hungary*
[2] *University of Ferrara, Ferrara, Italy*

P-37 **Separation of bacterial lipooligosaccharides by non-aqueous CE-MS/MS**

Viktor Sándor[1], Dóra Hidegkúti-Németh[1], Anikó Kilár[1], Ágnes Dörnyei[2]

[1] *Institute of Bioanalysis, Medical School, University of Pécs, Pécs, Hungary*

[2] *Department of Analytical and Environmental Chemistry, Faculty of Science, University of Pécs, Pécs, Hungary*

P-38 **Monitoring tryptophan metabolites in mouse plasma**

Tímea Körmöczi[1], Evelin Fehér[2], Nóra Gödör[2], Tamás Farkas[2], István Ilisz[1], Ferenc Domoki[3], Róbert Berkecz[1]

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[2] *Department of Physiology, Anatomy and Neuroscience, University of Szeged, Szeged, Hungary*

[3] *Department of Physiology, University of Szeged, Szeged, Hungary*

P-39 **Characterization of substances from slate bolete (*Leccinum duriusculum*) suitable for plant protection**

Dániel Krüzselyi, Péter G. Ott, Ágnes M. Móricz

Plant Protection Institute, Centre for Agricultural Research, ELKH, Budapest, Hungary

P-40 **The effect of Closantel on lipopolysaccharide biosynthesis in *Shigella sonnei***

Laura Nagy, Ferenc Kilár

Institute of Bioanalysis, Medical School, University of Pécs, Hungary

List of manufacturers' posters

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Soma Gábor Szabó

Kromat Ltd., Székesfehérvár, Hungary

MP-2 **Efficient and sensitive peptide mapping approach by μPAC columns with ultralow sample loading**

Yuan Lin[1], Xuefei Sun[1], Jeff Op de Beeck[2], Shanhua Lin[1]

[1] *Thermo Fisher Scientific, Sunnyvale, CA, USA*

[2] *Thermo Fisher Scientific, Ghent, Belgium*

MP-3 **Single-shot LC-MS workflow for comprehensive proteome identification on an orbitrap astral mass spectrometer**

Santosh Renuse[1], Tabiwang N. Arrey[2], Anna Pashkova[2], Maowei Dou[3], Jeff Op De Beeck[4], Ryan Bomgarden[3], Bernard Delanghe[2], Xinyan Wu[5], Eugen Damoc[2], Sally Webb[1]

[1] *ThermoFisher Scientific, San Jose, CA, USA*

[2] *Thermo Fisher Scientific GmbH, Bremen, Germany*

[3] *Thermo Fisher Scientific, Rockford, IL, USA*

[4] *Thermo Fisher Scientific, Ghent, Belgium*

[5] *Mayo Clinic, Rochester, MN, USA*

MP-4 **Improved profiling of sialylated n-linked glycans by HPAE-PAD**

Sachin Patil, Jeffrey Rohrer

Thermo Fisher Scientific, Sunnyvale, CA, USA

MP-5 **How do isotope fingerprinting support the detection of the origin of medicines and food adulteration?**

Csaba Kirchkeszner, Péter Jakab, Tímea Lipták-Magyar, Orsolya Koréh, Márton Novák, Sándor Száraz

Unicam Hungary Ltd., Budapest, Hungary

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„Analitikai és élettudományi műszerek szakértő támogatással”

PerkinElmer

ANALITIKA:

- Ultraibolya-látható és közeli infravörös spektrométerek (UV/VIS/NIR)
- Fourier transzformációs infravörös, közeli és távoli infravörös spektrométerek (FT-IR/NIR/FIR) és mikroszkópok, automatikus FT-IR gázelemző rendszerek
- Fluoreszcens spektrométerek
- Gázkromatográfia (GC) és Gázkromatográfia-tömegspektrometria (GC/MS)
- Gázkromatográfiás mintaelőkészítés, gőztéranalízis (headspace, HS) és termikus deszorpció (ATD)
- Folyadékkromatográfia (HPLC, UHPLC)
- Atomabszorpciós spektrométerek (AAS)
- Induktív csatolású plazma optikai emissziós spektrométerek (ICP-OES)
- Induktív csatolású plazma tömegspektrométerek (ICP-MS)
- Higanyanalizátorok
- Termikus analizátorok (DMA, DSC, STA, TGA, TMA)
- Mikrohullámú roncsolók

ÉLELMISZER- ÉS TAKARMÁNYANALITIKA:

- Asztali és folyamatba integrálható monokromátoros és diódasoros NIR spektrométerek
- Reológiai műszerek (esésszámmérők, sikérmosó, textúra vizsgáló, lézeres térfogatmérő készülék, rotációs viszkoziméterek, vízabszorpciót meghatározó farinográf típusú készülék)
- Boranalizátor

Rewity

- NGS reagensek
- Mikrofluidikai készülékek
- Robotizált munkaállomások és folyadékkezelő robotok
- Digitális patológia készülékek
- High Content Screening készülékek
- Sejtes és szöveti képalkotó készülékek
- Kisállat in vivo képalkotó készülékek (microCT és biolumi/fluo)
- Plate reader készülékek
- Radiometria detektor készülékek (béta, alfa, gamma)
- AlphaScreen/AlphaLisa, Delfia/Lance módszerek
- Nukleinsav izoláló készülékek
- Automata sejtszámláló készülékek
- Citometriai képalkotó készülékek

SCIEX

- Folyadékkromatográfia (HPLC, UHPLC, Microflow LC, NanoLC)
- Hármas kvadrupól tömegspektrométerek (QqQ-MS/MS)
- Hibrid hármas kvadrupól – lineáris ioncsapda tömegspektrométerek (QTRAP-MS)
- Hibrid kvadrupól – repülési idő tömegspektrométerek (QTOF-MS)

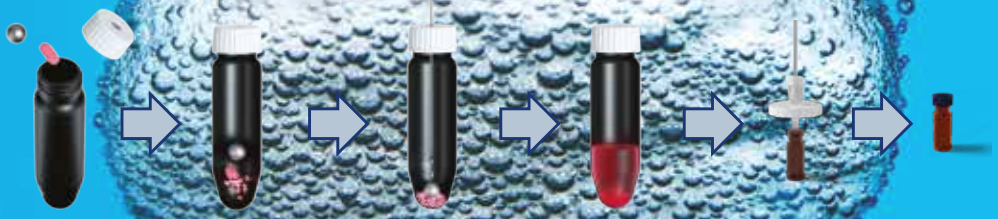
BICO Life Sciences: Cellink, Cytena

- 3D bioprinterek: extrúziós, digitális fény- és lézer alapú bionyomtató készülékek
- Egysejt-diszpenzerek, élősejt-analizátorok, bioreaktorok
- Biotináták, hidrogélek, bionyomtatás fogyóeszközök és alapanyagok, sejtek és médiumok

PEAK

- Nitrogén, hidrogén és zéró levegő generátorok

Sample preparation workstation



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[1] Kochling et al. / J. Pharm. Biomed. Anal. 125 (2016) 130–139
[2] Schmidt, Molnár / J. Pharm. Biomed. Anal. 78–79 (2013) 65–74

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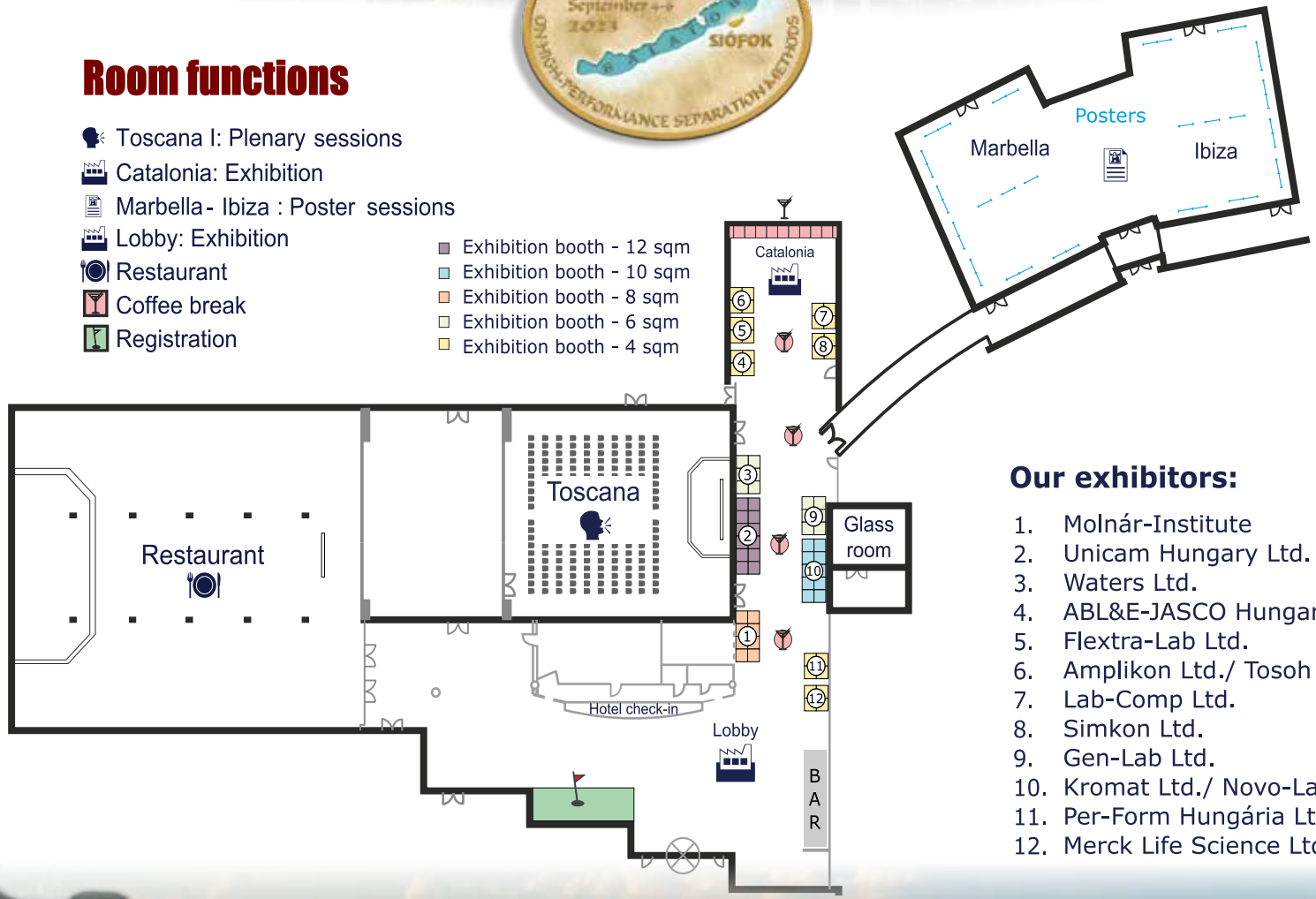
- Toscana I: Plenary sessions
- Catalonia: Exhibition
- Marbella - Ibiza : Poster sessions
- Lobby: Exhibition
- Restaurant
- Coffee break
- Registration

- Exhibition booth - 12 sqm
- Exhibition booth - 10 sqm
- Exhibition booth - 8 sqm
- Exhibition booth - 6 sqm
- Exhibition booth - 4 sqm



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