

MSS2024

Program

June 3-7, 2024
Portorož, Slovenia
+virtual



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Monday

June 3, 2024

8:00 AM – 8:45 AM Registration
at the registration desk in the Portus
Congress Center (Hotel Slovenia)

8:45 AM – 9:00 AM **Opening remarks by the Chair of the Scientific Committee, Djuro Josić**

Session Chairs: Ziad El Rassi (Oklahoma State University, USA) and Djuro Josić (University of Pula)

9:00 AM – 9:35 AM Enabling CIMmultus DEAE columns at scale for plasmid DNA capture (Justina Martinkienė, AstraZeneca)

9:35 AM – 10:00 AM High-quality, phase-appropriate plasmid manufacturing to accelerate advanced therapies (John Bowen, CBM)

10:00 AM – 10:25 AM High throughput manufacturing of personalized plasmid DNA cancer vaccines (Kathrin Seyrl, Biomay)



10:25 AM – 10:55 AM COFFEE BREAK

Session Chairs: Zoltán Kis (University of Sheffield, UK) and Rok Sekirnik (Sartorius BIA Separations)

10:55 AM – 11:20 AM Sartorius in-line lysis system: Pioneering success in plasmid DNA isolation (Matevž Korenč, Sartorius BIA Separations)

11:20 AM – 11:45 AM Debottlenecking vaccine manufacturing; effective supply of quality pDNA (Salomé de Sa Magalhaes, UCL)

11:45 AM – 12:10 PM Biotechnological platform to obtain a minicircle DNA vaccine targeting cervical cancer (Ângela Sousa, CICS-UBI) – online



12:10 PM – 1:10 PM LUNCH IN THE CONGRESS CENTER (provided)

Session Chairs: Sara Sousa Rosa (UCL) and Sebastijan Peljhan (Sartorius BIA Separations)

1:10 PM – 1:45 PM Optimization of scalable lentiviral plasmid production for GMP manufacturing (Robert Rodick, VxBiosciences)

1:45 PM – 2:10 PM Novel, synthetic DNA templates for the production of mRNA (Carmen Mañas Torres, 4basebio)

2:10 PM – 2:35 PM Purification of linearized template plasmid DNA decreases double-stranded RNA formation during IVT reaction (Diego Casabona Agudo, Certest Biotec)

2:35 PM – 3:00 PM End-to-end solutions for IVT mRNA therapeutic development (Daniel Meng, VectorBuilder)



3:00 PM – 3:30 PM COFFEE BREAK

Session Chairs: Salomé de Sa Magalhaes (UCL) and Urh Černigoj (Sartorius BIA Separations)

3:30 PM – 3:55 PM Towards an efficient purification process for saRNA: exciting challenges and progress (Justine Jakpou, Ziphys Vaccines)

3:55 PM – 4:20 PM The many struggles and success of the establishing a pDNA manufacturing platform (Ahmet Hilmi Tekin, BioNTech)

4:20 PM – 4:45 PM mRNA vaccines: a perspective on process optimisation (Sara Sousa Rosa, UCL)

4:45 PM – 5:00 PM YRC: Development of immobilized enzyme reactors on monolith backbone for rapid plasmid DNA linearization (Maša Strašek, Sartorius BIA Separations)

5:00 PM – 5:15 PM YRC: Quality by design for mRNA platform purification based on continuous oligo-dT chromatography (Jixin Qu, University of Sheffield) – online



5:30 PM – 7:00 PM EXPERTS' BANQUET

Networking for all attendees in the Congress Center Portus
Snacks and refreshments are provided

Tuesday

June 4, 2024

8:30 AM – 9:00 AM Registration
at the registration desk in the Portus
Congress Center (Hotel Slovenia)

Session Chairs: Dan Peer (NeoVac) and Urh Černigoj (Sartorius BIA Separations)

9:00 AM – 9:35 AM Chromatography in mRNA production: from analytics to purification (Rok Sekirnik, Sartorius BIA Separations)

9:35 AM – 10:00 AM Bioproduction of messenger RNA: key benefits and challenges (Chantal Pichon, INSERM)

10:00 AM – 10:25 AM Optimization of mRNA production and purification: characterization and controlling of post-transcriptional polyadenylation and its effect on mRNA quality in vitro (Pooja Tiwari, Arnav Biotech) – online



10:25 AM – 10:55 AM COFFEE BREAK

Session Chairs: Sara Sousa Rosa (UCL) and Salomé de Sa Magalhaes (UCL)

10:55 AM – 11:20 AM Innovating and digitalising mRNA vaccine and therapeutics production processes (Zoltán Kis, University of Sheffield)

11:20 AM – 11:45 AM Manufacturing of mRNA for pre-clinical and clinical studies (Tjaša Legen, BioNTech)

11:45 AM – 12:10 PM Engineering a robust and scalable mRNA manufacturing process (Bill Grier, Omega Therapeutics)



12:10 PM – 1:10 PM LUNCH IN THE CONGRESS CENTER (provided)

Session Chairs: Andrew Knudten (Advanced Medicine Partners) and Rok Sekirnik (Sartorius BIA Separations)

1:10 PM – 1:45 PM Next generation lipid nanoparticles for RNA vaccines and therapeutics (Dan Peer, NeoVac)

1:45 PM – 2:10 PM LipidBrick®: An innovative cationic lipid library for efficient and tunable mRNA-LNPs (Guillaume Freund, Polyplus)

2:10 PM – 2:35 PM Engineered EVs for mRNA cargo loading and delivery (Antje Zickler, Karolinska Institutet)

2:35 PM – 3:00 PM Thermodynamic analysis of chromatography media and mRNA properties in oligo dT affinity chromatography (Connor Smith, Orbital Therapeutics)



3:00 PM – 3:30 PM COFFEE BREAK

Session Chairs: Zoltán Kis (University of Sheffield) and Sebastijan Peljhan (Sartorius BIA Separations)

3:30 PM – 3:55 PM All-scale continuous mRNA-LNP manufacturing (Flora Binder, Dillico)

3:55 PM – 4:10 PM YRC: Monolithic columns enable streamlined downstream processing and analytics of lipid nanoparticles (Tristan Kovačič, Sartorius BIA Separations)

4:10 PM – 4:30 PM YRC: Optimization of in vitro transcription reaction with design of experiments (Tjaša Marušič, COBIK & Jimmy Boman, Sartorius)



4:30 PM – FREE AFTERNOON AT THE BEACH

Networking and organised games for all attendees

Wednesday

June 5, 2024

8:00 AM – 8:45 AM Registration
at the registration desk in the Portus
Congress Center (Hotel Slovenia)

Session Chairs: Yow-Pin Lim (*ProThera Biologics*) and Ziad El Rassi (*Oklahoma State University*)

9:00 AM – 9:35 AM

From first concepts to production and broad application of CIM monoliths for separation of macromolecules and nanoparticles and for continuous enzymatic conversion (Djuro Josić, University of Pula)

9:35 AM – 10:00 AM

Tailoring surface of chromatographic monoliths to achieve higher separation performance for large biomolecules (Urh Černigoj, Sartorius BIA Separations)

10:00 AM – 10:25 AM

Addressing materials and resolution challenges in the 3D printing of chromatography columns (Simone Dimartino, The University of Edinburgh) – online



10:25 AM – 10:55 AM COFFEE BREAK

Session Chairs: Manuela Bartolini (*University of Bologna*) and Urh Černigoj (*Sartorius BIA Separations*)

10:55 AM – 11:20 AM

Efficient and sustainable platform for preparation of a high-quality immunoglobulin G as an urgent treatment option during emerging virus outbreaks (Beata Halassy, University of Zagreb)

11:20 AM – 11:45 AM

Selective capture and separation of blood plasma derived therapeutic proteins on a new monolithic media CIMmultus PrimaT (Yow-Pin Lim, ProThera Biologics)

11:45 AM – 12:10 PM

Purification and glycosylation analysis of plasma proteins using 96-well monolithic plates (Irena Trbojević Akmačić, Genos)



12:10 PM – 1:10 PM LUNCH IN THE CONGRESS CENTER (provided)

Session Chairs: Andrew Knudten (*Advanced Medicine Partners, USA*) and Maja Leskovec (*Sartorius BIA Separations*)

1:10 PM – 1:45 PM

Immobilized enzyme reactors as a cost-effective solution to enhance (bio) assay throughput (Manuela Bartolini, University of Bologna)

1:45 PM – 2:10 PM

Novel monolithic capillary columns for multimodal (reversed-phase, hydrophilic interactions, chiral and achiral) capillary electrochromatography (Ziad El Rassi, Oklahoma State University)

2:10 PM – 2:35 PM

Enabling new therapeutic modalities and platforms (Aslan (Mehdi) Dehghani, Sartorius)

2:35 PM – 2:50 PM

YRC: Poly(A) tail length determination with UV detection using ion pair reversed-phase liquid chromatography (Sergeja Lebar, Sartorius BIA Separations)

2:50 PM – 3:05 PM

Selective hydrophobic interaction chromatography for high purity of supercoiled DNA plasmids (Ajda Sedlar, Sartorius BIA Separations)

3:05 PM – 3:20 PM

YRC: HPLC for at-line reaction monitoring and purification improves yield and purity of tRNA (Polona Megušar, Sartorius BIA Separations)



3:20 PM – 3:50 PM COFFEE BREAK

3:50 PM – 5:30 PM

Poster session grading (in the Congress Center Portus)



7:30 PM – 9:30 PM GALA DINNER

Dinner at TreeTop Restaurant in Portorož (provided by the organiser)*

*prior registration is required

Wednesday

Hands-on Demonstrations

The demonstrations will be running in parallel with the lectures. Join the team of experts in *Roald Amundsen & Robert Scott* congress hall

Have you registered for Wednesday's hands-on demonstrations?

ANALYTICS FOR PROCESS DEVELOPMENT:

A team of experts from Sartorius BIA Separations will demonstrate the PATfix® analytical system that was developed to facilitate multiple stages of process development.

DESIGN OF EXPERIMENTS SOFTWARE:

You will learn how to combine Design of Experiments, MODDE® and PATfix® with templates to automate the workflow and quickly increase the value, sustainability and speed to market.

AUTOMATED IN-LINE LYSIS:

Sartorius BIA Separations expert will introduce you to a fully automated in-line lysis system.

- 9:00 AM - 10:00 AM** Analytics for process development: Nucleic acids platform (pDNA and mRNA) (Blaž Bakalar and Nejc Pavlin, Sartorius BIA Separations)
- 10:00 AM - 11:00 AM** Automated in-line lysis (Matevž Korenč, Sartorius BIA Separations)
- 11:00 AM - 12:00 PM** Analytics for process development: 2D analytical solutions (LNP, AAV) (Andreja Gramc Livk and Blaž Goričar, Sartorius BIA Separations)
-  **12:00 PM - 1:00 PM LUNCH IN THE CONGRESS CENTER** (provided)
- 1:00 PM - 2:00 PM** Automated in-line lysis (Matevž Korenč, Sartorius BIA Separations)
- 2:00 PM - 3:00 PM** Analytics for process development: New AAV toolbox (UC, AAV platform) (Blaž Bakalar, Sebastijan Peljhan and Blaž Goričar, Sartorius BIA Separations)
- 3:00 PM - 4:00 PM** Automated in-line lysis (Matevž Korenč, Sartorius BIA Separations)

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Thursday

June 6, 2024

8:30 AM – 9:00 AM Registration
at the registration desk in the Portus
Congress Center (Hotel Slovenia)

Session Chairs: Thomas Muster (*BlueSky Immunotherapies*) and Maja Leskovec (*Sartorius BIA Separations*)

9:00 AM – 9:35 AM

Where does the cell and gene field need to go to thrive? Critical considerations as you move your programs forward (Andrew Knudten, *Advanced Medicine Partners*)

9:35 AM – 10:00 AM

Key parameters to improve your AAV production (Marine Guise, *Polyplus*) – online

10:00 AM – 10:25 AM

New approaches for viral vector genome integrity evaluation (David Dobnik, *NIB*)



10:25 AM – 10:55 AM COFFEE BREAK

Session Chairs: Bernd Giebel (*Essen University Hospital*) and Andrew Knudten (*Advanced Medicine Partners*)

10:55 AM – 11:20 AM

Development of capture and polishing chromatography steps using Sartorius CIM monolithic chromatography technology for a novel AAV serotype (Christopher Nieder, *CBM*) – online

11:20 AM – 11:45 AM

You don't need affinity to purify rAAV part 2 & beyond empty | full separation (J. Michael Hatfield, *Advanced Medicine Partners*)

11:45 AM – 12:10 PM

Advancing AAV empty/full capsids separation with ExoReady™ platform: harnessing the power of monolithic columns (Tiago Albano, *Exhotera*) – online



12:10 PM – 1:10 PM LUNCH IN THE CONGRESS CENTER (provided)

Session Chairs: Manfred Reiter (*Nuvonis*) and Sebastijan Peljhan (*Sartorius BIA Separations*)

1:10 PM – 1:45 PM

GET+VVIRAL: a purification toolbox for the gene-editing tools and viral vectors (Stefano Menegatti, *North Carolina State University*) – online

1:45 PM – 2:10 PM

Two streams, a single process: optimizing AAV production for improved purification performance (Ivana Petrović Koshmak, *Sartorius BIA Separations*)

2:10 PM – 2:35 PM

Limitations of various analytical techniques in characterizing recombinant adeno-associated virus empty capsids (Kazuhiro Oka, *Baylor College of Medicine*) – online

2:35 PM – 3:00 PM

Clinical potential of MSC-EVs and translational challenges (Bernd Giebel, *Essen University*)



3:00 PM – 3:30 PM COFFEE BREAK

Session Chairs: Beata Halassy (*University of Zagreb*) and J. Michael Hatfield (*Advanced Medicine Partners*)

3:30 PM – 3:55 PM

Leveraging new CIMmultus QA HR for successful AAV polishing – optimization and scale up (Maja Leskovec, *Sartorius BIA Separations*)

3:55 PM – 4:20 PM

Monoliths to bridge the gap between purity and yield in viral vectors downstream processing (Hana Jug, *Sartorius BIA Separations*)

4:20 PM – 4:45 PM

Navigating successful characterization of AAV vectors: key steps to success (Alicja Fiedorowicz, *Dark Horse Consulting Europe*) – online



5:30 PM – 7:00 PM EXPERTS' BANQUET

Networking for all attendees in the Congress Center Portus
Snacks and refreshments are provided

Friday

June 7, 2024

8:30 AM – 9:00 AM Registration
at the registration desk in the Portus
Congress Center (Hotel Slovenia)

Session Chairs: Thomas Muster (*BlueSky Immunotherapies*) and Urh Černigoj (*Sartorius BIA Separations*)

9:00 AM – 9:35 AM Orthogonal chromatography analytics to allow for faster process development and better in-process control (Aleš Štrancar, Sartorius BIA Separations)

9:35 AM – 10:00 AM Gene therapy for retinal disorders – achievements and remaining challenges (Stylianos Michalakis, LMU Hospital)

10:00 AM – 10:25 AM Key points of process development and characterization of AAV gene therapy products (Ella Chan, Skyline)



10:25 AM – 10:55 AM COFFEE BREAK

Session Chairs: Manfred Reiter (*Nuvonis*) and Maja Leskovec (*Sartorius BIA Separations*)

10:55 AM – 11:20 AM Vesicles and vehicles; EVs on the road to clinics (Jens Gruber, Curexsys)

11:20 AM – 11:45 AM Separation and functional characterization of stem cell-derived exosomes from scalable manufacturing processes (Klaus Graumann, Phoenestra)

11:45 AM – 12:10 PM Mechanistic modeling for the purification of a replicant-competent enveloped virus on a monolithic ion-exchange chromatography (Adrian Schimek, ViraTherapeutics)



12:10 PM – 1:10 PM LUNCH IN THE CONGRESS CENTER (provided)

Session Chairs: Beata Halassy (*University of Zagreb*) and Rok Sekirnik (*Sartorius BIA Separations*)

1:10 PM – 1:45 PM The CCX cell line, a novel avian substrate for efficient virus production and seamless (CIM based) virus purification (Manfred Reiter, Nuvonis)

1:45 PM – 2:10 PM delNS: Harnessing interferon induction and antigen expression for enhanced immunotherapy against cancer (Thomas Muster, BlueSky Immunotherapies)

2:10 PM – 2:35 PM Efficient purification of lymphocytic choriomeningitis virus using monolithic chromatography (Binod Prasad, Abalos Therapeutics)

2:35 PM – 3:00 PM Process development for an oncolytic rhabdovirus (Michaela Smolle, ViraTherapeutics)



3:00 PM – 3:30 PM COFFEE BREAK

Session Chairs: Manuela Bartolini (*University of Bologna*) and Djuro Josić (*University of Pula*)

3:30 PM – 3:45 PM YRC: High-throughput sequencing approaches for in-depth analysis of AAV-based gene therapies (Mojca Janc, NIB)

3:45 PM – 4:00 PM YRC: Production and purification of Staphylococcus epidermidis phage COP-80B for preclinical evaluation of its safety and efficacy for the treatment of orthopedic-related chronic infections (Vida Štilec, COBIK)

4:00 PM – 4:30 PM CLOSING REMARKS & WRAP-UP

VIRTUAL PLATFORM

Experience the hybrid nature of MSS2024! Access the Confiva Virtual Platform to engage in Q&A sessions via chat, network with online attendees, download the posters, rate the lectures & posters.

You will have the option to revisit and rewatch the lectures for up to 30 days after the event.

WORKSHOP PACKAGE

All workshops are held in Ajdovščina.

The bus to Ajdovščina departs at 7:30 AM. Meeting point is in front of Hotel Slovenia.

Please arrive at least 10 minutes before the scheduled departure.

Lunch is provided by the organiser.

CONGRESS CENTER



Main Stage
Cristoforo Colombo & Amerigo Vespucci

Poster Sessions
James Cook & Foyer

Hands-on Demonstrations
Roald Amundsen & Robert Scott