

TDP SYMPOSIUM August 2025

26–28 August **University of Hamburg**

3RD INTERNATIONAL
TOP-DOWN PROTEOMICS
SYMPOSIUM



3RD INTERNATIONAL TOP-DOWN PROTEOMICS SYMPOSIUM



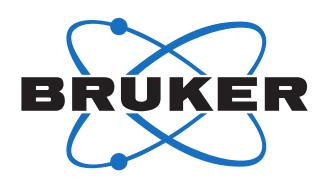
We are delighted to welcome you to this year's symposium at the University of Hamburg. Over the coming days, you will have the opportunity to engage with leading experts, exchange ideas, and explore new perspectives in our field. We wish you an inspiring, productive, and enjoyable time with us in Hamburg.



Acknowledgement of Sponsors

We extend our heartfelt thanks to our sponsors for their generous support, which has made this event possible. Their commitment helps us bring together outstanding speakers, foster scientific exchange, and create a memorable experience for all participants.

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HAMBURG – 2025

TABLE OF CONTENTS



Top Speakers	5
Program Overview	6
Agilent Lunch Seminar	17
Bruker Lunch Seminar	18
Bruker Factory Tour	18
Conference Dinner	19
About Hamburg	20
Conference committee	27



We are proud to present an exceptional line-up of distinguished experts and thought leaders from around the world. Each of our keynote and featured speakers brings unique insights, groundbreaking research, and inspiring perspectives to this year's symposium.



Julia Chamot-Rooke Institut Pasteur, France



Ying GeUniversity of Wisconsin-Madison, USA



Michal Sharon
Weizmann Institute of
Science, Israel



Ljiljana Paša-Tolić Pacific Northwest National Laboratory (PNNL), USA



Albert Heck Utrecht University, Netherlands



Joseph A. Loo University of California, USA



Ole Nørregaard Jensen University of Southern Denmark, Denmark



Jeffrey Agar Northeastern University, Bouvé College of Health Sciences, USA



Paul DanisConsortium for Top-Down Proteomics,
USA



Kyowon Jeong Universität Tübingen, Germany



Juan Antonio Vizcaino EMBL-EBI, PRIDE, Great Britain



Nobuaki Takemori Ehime University, School of Medicine, Japan



Manfred Wuhrer Leiden University, Netherlands



Lloyd SmithUniversity of Wisconsin-Madison,
USA



Neil Kelleher Northwestern University, USA



Charlotte Uetrecht
CSSB Centre for Structural Systems
Biology, Germany



Guinevere Lageveen-Kammeijer University of Groningen, Netherlands



Dimitris Papanastasiou Fasmatech, Greece



Yury O. Tsybin Spectroswiss, Switzerland



Mowei Zhou Zhejiang University, China

PROGRAM OVERVIEW



16

Mon, Aug 25	
Short Course 1: Top-Down Proteomics	6
Tue, Aug 26	
Short Course 1: Top-Down Proteomics	7
Check-in	7
ECR Meeting (Hybrid)	7
Welcome Session, New Frontiers in Life Sciences - Entering the Proteoform Era	7
Round Table Discussion	8
Welcome Reception	9
Wed, Aug 27	
New Tools for Proteoform Analysis	9
Coffee Break	9
Lightning Talks	9
Lunch Seminar (Agilent Technologies)	11
Poster Session 1	11
Native MS & Protein Complexes	11
Coffee Break	11
Databases & Bioinformatics	12
Break	12
Minimum Information Describing A Proteoform (MIDAP) Proteoform Atlas Compendium System (PACS)	12
Conference Dinner	12
Thu, Aug 28	
Sample Preparation & Separation Technologies	13
Coffee Break	13
New approaches for proteoform analysis	13
Lunch Seminar (Bruker Daltonics)	14
Poster Session 2	14
Biomedical Applications	14
Coffee Break	15
Biopharmaceutical & Therapeutic Proteins	15
Poster Awards and Farewell	15
Fri, Aug 29	
Bruker Factory Tour	16



Short Course 2: Dissecting the impact of deconvolution on top-down identification



9:00 AM



5:00 PM



8:30 AM

Short Course 1: Top-Down Proteomics

Session | Location: Lecture Hall F, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

8:30 - 9:15 AM Biotherapeutics - Analysis of therapeutic proteins (Yuri Tsybin)

9:15-10:00 AM Bioinformatics - spectral deconvolution (Kyowon Jeong)

10:00 - 10:30 AM Coffee Break

10:30 - 11:15 AM

Bioinformatics of TD/MD MS: use of FLASHApp (Kyowon Jeong, Tom Müller)

11:15 AM - 12:00 PM

Adapting de novo sequence inference to top-down proteomics (David Tabb)

12:00 PM

12:00 PM

Check-in

Session | Location: Audimax

1:00 PM

6:00 PM

ECR Meeting (Hybrid)

Session | Location: Lecture Hall F, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

Description

On-site moderators: Mowei Zhou, Kyowon Jeong, Philipp Kaulich, Boris Krichl

Program:

- 1. Trivia games
- 2. Introduction to the ECR committee
- 3. Interlaboratory initiatives of the current ECR (Quantitative, high-throughput TDP: Kellye, Data analysis for Native TDP: Corrine, Ion Mobility TDP: Fabio)
- 4. Online resource for TDP TopDownVerse https://topdownverse.netlify.app/ : Bryon
- 5. Online presentation series introducing upper-level graduate students: Kellye

2:30 PM

3:15 PM

Welcome Session

Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

3:30 PM 3:30 PM

New Frontiers in Life Sciences - Entering the Proteoform Era

Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

3:30 - 3:55 PM

New Frontiers in Proteomics - Proteoforms, Proteoform Families, and the Human Proteoform Project

Speaker

Lloyd Smith

3:55 - 4:20 PM

Digitizing Proteoform Biology with Single Molecule & Single Cell Mass Spectrometry





Speaker Neil Kelleher 4:20-4:45 PM Revealing Functional Proteoforms by Native Top-Down Proteomics Speaker Joseph Loo 4:45 - 5:10 PM Touching upon the millions of hidden treasures in the plasma proteome Speaker Albert Heck 5:10 PM 5:10 PM **Round Table Discussion** Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg Why do we need a 'Mars-shot project' for proteoform research? Moderators: Guinevere Lageveen-Kammeijer, Manfred Wuhrer Rohan Thakur - Bruker Jake Melby - AstraZeneca Max Kraner - NovoNordisk Alexander Makarov - Thermo Andreas Huhmer - Nautilus Michal Sharon (Weizmann Institute of Science) Neil Kelleher (Northwestern University) 6:10 PM 6:15 PM **Welcome Reception** Session | Location: Audimax 6:30 - 6:45 PM Nautilus: Flash Talk 9:00 PM



8:30 AM

New Tools for Proteoform Analysis

Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

8:30 - 8:50 AM

Advances in hardware design and function of the new timsOmni MS platform

Speaker

Dimitris Papanastasiou

8:50 - 9:10 AM

Top-down sequencing of intact, modified proteins by timsTOF technology with new multi-modal fragmentation capabilities

Speaker

Ole Nørregaard Jensen

9:10 - 9:30 AM

Sensitive Top-down Analysis using Spray-capillary-based CE-MS approaches

Speaker

Si Wu

9:30 - 9:45 AM

Combining advanced fragmentation techniques and spectral simplification for deep proteoform interrogation

Speaker

Luca Fornelli

9:45 - 10:00 AM

Mass-Invariant Log-Transformed Mass Spectra Enable De Novo Sequencing and Internal Calibration of Intact Proteins

Speaker

10:00 AM

Lissa C. Anderson

10:00 AM

Coffee Break

10:30 AM

Break | Location: Audimax

10:30 AM

Lightning Talks

Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

10:35 - 10:40 AM

Properties, Origin, and Reproducibility of Truncated Proteoforms Across Top-Down Proteomic Studies

Speaker

Philipp T. Kaulich

10:40 - 10:45 AM

Novel bridged hybrid monolithic columns combined with mass spectrometry for top-down proteomic analysis



Speaker

Yu Liang

10:45 - 10:50 AM

Spatial Phosphoproteomic Profiling of Murine Heart Reveals Region-Specific Functions via TiO₂ Enrichment Optimized for Laser-Capture Microdissected Samples

Speaker

Dan Zhao

10:50 - 10:55 AM

FLASHApp: Interactive Data Analysis and Visualization for Top-Down Proteomics

Speaker

Tom David Müller

10:55 - 11:00 AM

Metabolomics and proteomics reveal the inhibitory effect of Lactobacillus crispatus on cervical cancer

Speaker

Lingyan Zhong

11:00 - 11:05 AM

SEC-complex-down approaches with functional O2-affinity assay: Correlation between the higher order structure of bird hemoglobin homologues and their function.

Speaker

Léa Letissier

11:05 - 11:10 AM

Multi-dimensional High-Throughput Molecular Glue Screening via Gas Phase Affinity Selection Native Mass Spectrometry and Cryo-EM Analysis

Speaker

Amanda Lee

11:10-11:15 AM Legionella effector AnkX puts the brakes on IMPDH2 filaments

Speaker

Marietta Sandkamp-Kaspers

11:15 - 11:20 AM

Top-Down Mass Spectrometry of a Clinical Antibody Light Chain Using the Omnitrap-Orbitrap-Booster Platform

Speaker

Marie Yammine

11:20 - 11:25 AM

X-ray spectroscopy meets native mass spectrometry: probing gas-phase protein complexes

Speaker

Jocky Chun Kui Kung

11:25 - 11:30 AM

A prototype TIMS-FT-ICR MS instrument capable of deep characterisation of complex samples and biomolecules



Speaker

Christopher Wootton

11:30 - 11:35 AM

Pin-pointing phosphorylation-dependent Pin1 binding to a cytoskeletal protein altered in Alzheimer's Disease using structural mass spectrometry

Speaker

Nikolas Brooks

11:35 - 11:40 AM

Enhancing Drug-Payload Localization in Antibody-Drug Conjugates with a Middle-Down Approach Utilizing Proton Transfer Charge Reduction on an Orbitrap Ascend **BioPharma Tribrid Mass Spectrometer**

Speaker

Rachel Grady

11:40 - 11:45 AM

Digital Membrane Chromatography — A New Way to Rapid Antibody Purification for Top-Down MS

Speaker

Kilian Müller

12:00 PM

12:00 PM

1:00 PM

1:00 PM

1:45 PM

1:45 PM

Lunch Seminar (Agilent Technologies)

Break | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

Poster Session 1

Poster Session | Location: Audimax

Native MS & Protein Complexes

Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

1:45 - 2:05 PM

Uncovering the unique properties of circulating proteasomes: A mass spectrometry perspective

Speaker

Michal Sharon

2:05 - 2:25 PM Flying viruses - mass spectrometry meets X-rays

Speaker

Charlotte Uetrecht

2:25 - 2:40 PM

Filling the Structural Knowledge Gap in Protein Design via Native Mass Spectrometry

Speaker

Mowei Zhou

2:40 PM 2:40 PM

3:10 PM

Coffee Break

Break | Location: Audimax



3:10 PM

Databases & Bioinformatics

Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

3-10 - 3-30 PM

Replacing "OR" Logic and Mass Accuracy with "AND/OR" Logic and Mass Resolving Power, as the Basis for Peak Assignment in Top-Down Mass Spectrometry Data.

Speaker

Jeffrey Agar

3:30 - 3:50 PM

Advancing Top- and Middle-Down Antibody Analysis Using Simulated FTMS Datasets

Speaker

Yury Tsybin

3:50 - 4:05 PM

Computational methods in top-down proteomics to address challenges in proteoform analysis

Speaker

Kyowon Jeong

4:05 - 4:20 PM

TDAuditor assesses deconvolution quality for the Blood Proteoform Atlas

Speaker

David Tabb

4:20 - 4:40 PM

The Implementation of Open Science Practices Can Enable A Faster Development Of Top-Down Proteomics

Speaker

Break

Juan Antonio Vizcaino

4:40 PM

4:40 PM

4:50 PM Break

4:50 PM

М

Minimum Information Describing A Proteoform (MIDAP) Proteoform Atlas Compendium System (PACS)

Session | Location: Lecture Hall A, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

6:00 PM

7:00 PM

11:00 PM

Conference Dinner

Break | Location: Museum Ship Rickmer Rickmers, Bei den St. Pauli-Landungsbrücken 1a 20459 Hamburg



8:30 AM

Sample Preparation & Separation Technologies

Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

Enabling High-Throughput Proteoform Analysis via Gel-Based Sample Pre-Fractionation with PEPPI-SP3

Nobuaki Takemori

8:50 - 9:05 AM

Characterization of proteoforms of intact proteins by CE-MS and LC-CE-MS

Christian Neusüß

9:05 - 9:20 AM

Impact of sample preparation methods on proteoform identification by top-down proteomics

Speaker

Andreas Tholey

9:20 - 9:35 AM

Proteoforms in Tissues - Approaching Their Native Composition with Nano- and Pico-Second Infrared Laser Systems

Hartmut Schlüter

9:35 - 9:50 AM Comparison of RP-LC with CE for histone analysis

Speaker

Ansgar Poetsch

9:50 AM 9:50 AM

10:20 AM

Coffee Break

Break | Location: Audimax

10:20 AM

New approaches for proteoform analysis

Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

10:20 - 10:40 AM Advances in Orbitrap mass spectrometry for top-down analysis

Speaker

Alexander Makarov

10:40 - 11:00 AM Exploring Spatial Top-Down Proteomics

Speaker

Ljiljana Paša-Tolić

11:00 - 11:15 AM

Exploring the effects of isotope depletion on proteins by native mass spectrometry and cryogenic electron microscopy





Speaker

Anjusha Mathew

11:15 - 11:30 AM

Discovering the 'negative' side of the proteomic landscape with top-down mass spectrometry

Speaker

Cynthia Nagy

11:30 - 11:45 AM

Glycoproteomics Based on Deep Learning and Data Independent Acquisition

Speaker

Liang Qiao

11:45 AM - 12:00 PM

High resolving power meets proton transfer charge reduction: unlocking new depths in intact protein characterization

Speaker

Rafael D. Melani

12:00 PM

12:00 PM

Lunch Seminar (Bruker Daltonics)

Break | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

1:00 PM

1:45 PM

1:00 PM

Poster Session 2

Poster Session | Location: Audimax

1:45 PM

Biomedical Applications

Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

1:45 - 2:05 PM

Top-Down Proteomics of the Heart: Decoding Cardiac Proteoforms for Precision Medicine

Speaker

Ying Ge

2:05 - 2:25 PM

Dissecting the Proteoform Landscape of Prostate-Specific Antigen: Intact, Bottom-Up, and Glycomic Perspectives

Speaker

Guinevere Lageveen-Kammeijer

2:25 - 2:40 PM

Spatial Phosphoproteomic Profiling Reveals Regional Functional Heterogeneity in the Murine Heart

Speaker

Ling Lin

2:40 - 2:55 PM

Spatially Resolved Proteoform Mapping in Alzheimer's Disease Brain Tissues

Speaker

Yue Sun



2:55 - 3:10 PM

Top-down Proteomics Deciphers Cardiac Proteoform Landscape in Phospholamban R14del Cardiomyopathy for Precision Medicine

Speaker

Holden Rogers

3:10-3:25 PM MALDI MS-Based Rapid Antimicrobial Susceptibility Prediction

Speaker

Jia Yi

3:25 PM

3:25 PM

3:55 PM

Coffee Break

Break | Location: Audimax

3:55 PM

Biopharmaceutical & Therapeutic Proteins

Session | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg

3:55 - 4:15 PM

Deciphering Biotherapeutic Biotransformations with Top-Down Mass Spectrometry

Julia Chamot-Rooke

4:15 - 4:35 PM

Functional and structural characterization of antibodies by native-mode affinity separation-, middle-up, and top-down mass spectrometry

Manfred Wuhrer

4:35 - 4:50 PM

AiDA Accelerates Top-Down and Middle-Down MS Data Analysis Across Multiple **Antibody Variants**

Speaker

Francois Griaud

4:50 - 5:05 PM

Enhanced usage of top-down data for de novo sequencing of antibodies

Speaker

Kira Vyatkina

5:05 - 5:20 PM

Mass spectrometric ITEM-FOUR analysis reveals coding single nucleotide polymorphisms in human cardiac troponin T that evade detection by sandwich ELISAs which use monoclonal antibodies M7 and M11.7 from the Elecsys Troponin T® assay

Speaker

Michael Glocker

5:20 PM

5:20 PM

5:50 PM

Poster Awards and Farewell

Break | Location: Lecture Hall D, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg



8:45 AM **Bruker Factory Tour** Session 4:45 PM 9:00 AM Short Course 2: Dissecting the impact of deconvolution on top-down identification Session | Location: Lecture Hall F, VMP 6 / Philturm, Von-Melle-Park 6 20146 Hamburg 9:00 - 10:30 AM Assessing the degree of variation among deconvolution engines (David Tabb, Tom Müller, Kyowon Jeong) 10:30-11:00 AM Coffee Break 11:00 AM - 1:00 PM Detecting deconvolution impact on identifications (David Tabb, Tom Müller, **Kyowon Jeong)** 1:00 - 2:00 PM Lunch 2:00 PM



Breaking The Bonds: Agilent ExD cell and ExD Viewer for comprehensive top-down protein characterization



Join Agilent for our lunch seminar at 3rd Top-Down Proteomics Symposium

Wed, Aug 27, 12:00 - 1:00 pm CEST

Location: University of Hamburg, Von-Melle-Park 6, Lecture Hall D

The whole is more than the sum of its parts - a truth that top-down analysis consistently reinforces.

In this lunch seminar we will cover key applications of the Agilent ExD cell as well as a live demonstration of the Agilent ExDViewer software for the analysis and visualization of top-down fragmentation spectra. A variety of examples will be presented - from the comprehensive characterization of multiple GLP-1 analogs, differentiation of isobaric Leu/Ile residues in ubiquitin, and phospho-site detection in the Bcl-xL protein, to the characterization of mAb subunits initiated by microdroplet reactions - where the exceptionally high efficiency of the ExD cell was invaluable for generating impactful analytical results.

The seminar will conclude with a live demonstration of ExDViewer, highlighting the importance of isotopic fidelity in highly charged fragments, as well as other capabilities of ExDViewer.

Register here!



BRUKER LUNCH SEMINAR & BRUKER FACTORY TOUR



Join the Bruker Lunch Seminar at the 3rd International Top-Down Proteomics Symposium – Hamburg

Thu, Aug 28, 12:00 - 1:00 pm CEST

Location: University of Hamburg, Von-Melle-Park 6, Lecture Hall D

Discover the latest advancements in **Top-Down Proteomics** during our exclusive **Bruker Lunch Seminar** at the University of Hamburg, Von-Melle-Park 5, Lecture Hall A in Hamburg, Germany. This session will feature groundbreaking research and showcase the capabilities of the new **timsOmni™ technology**, delivering a deep leap forward in **proteoform sequencing** and **advanced structural elucidation**, alongside the trusted performance of **Bruker's MRMS platform**.

Speakers



Top-down Antibody analysis using the Bruker timsOmni™ instrument

Albert Heck, Ph.D., Distinguished Faculty Professor of Chemistry and Pharmaceutical Sciences, Utrecht University and Scientific Director, Netherlands Proteomics Center, Utrecht, Netherlands



A Hybrid Proteomics Approach Captures the Extent and Dynamics of Phosphorylation of AMP-activated kinase Complex

Boris Krichel, Ph.D., Postdoctoral Fellow, Centre for Structural Systems Biology CSSB, Hamburg, Germany

Visit the Bruker Daltonics Factory in Bremen

We are excited to invite you to a special behind-the-scenes tour of the Bruker Daltonics headquarters, where innovation in mass spectrometry and proteomics comes to life.

What to expect:

A guided tour of our state-of-the-art mass spectrometer production

- Insights into the development of cutting-edge technologies like timsOmni™ and MRMS
- A relaxed networking lunch with fellow symposium attendees

Event Details:

- Date: Friday, August 29, 2025, 8:45 am CEST
- Departure: Morning bus transfer from Von-Melle-Park 4, 20146 Hamburg, Germany
- Return: Early afternoon transfer back to Hamburg
- · Lunch: Light refreshments and lunch included

The tour is free of charge! Seats are limited and available on a first-come, first-served basis.

Register now to secure your place on this exclusive tour!

Please note that due to potential traffic disruptions, delays in the bus transfer may occur, and fixed arrival times cannot be guaranteed—please take this into account when planning your onward travel.

Register here!





Conference Dinner aboard the Rickmer Rickmers: An unforgettable maritime evening on Hamburg's most famous museum ship

Wed, Aug 27, 7:00 - 11:00 pm CEST

Location: Museum Ship Rickmer Rickmers, Bei den St. Pauli Landungsbrücken, Ponton 1a, 20459 Hamburg

Step aboard the legendary three-masted barque Rickmer Rickmers – a historic vessel built in 1896 and now an iconic museum ship moored at Hamburg's Landungsbrücken. Enjoy a unique blend of maritime history, harbour views, and fine cuisine in an extraordinary setting.





Getting There

On Foot from the Conference Venue:

• approx. 40-minute walk

By Public Transport:

 U3 subway line to Landungsbrücken (exit toward the Elbe). The Rickmer Rickmers is located directly at Ponton 1a.

Parking:

 Public parking garages nearby, e.g., "Parkhaus Hafentor" (approx. 5 min walk).



Did you know?

The Rickmer Rickmers sailed under three different national flags – German, Portuguese, and British – before returning to Hamburg as a museum in 1983.



Hamburg, Germany's second-largest city, is a bustling port city known for its maritime history, modern architecture, and diverse cultural scene. Here are a few things to explore while you're in Hamburg.



Elbphilharmonie

A modern architectural marvel, the Elbphilharmonie combines striking design with world-class acoustics and offers panoramic views over Hamburg and the Elbe River.



Jungfernstieg / Binnenalster

Hamburg boasts a variety of shopping areas, such as Mönckebergstraße and the Jungfernstieg by the scenic Binnenalster, and offers a lively culinary scene featuring everything from fresh seafood to international specialties.



Miniatur Wunderland

Home to the world's largest model railway, this extraordinary exhibition enchants visitors of all ages with its meticulously crafted miniature worlds, from bustling cities to breathtaking natural landscapes, all brought to life with remarkable detail and creativity.



Planten un Blomen

This lush urban park in the heart of Hamburg invites visitors to relax among vibrant gardens, themed landscapes, and tranquil green spaces. A highlight is the magical water light concerts, where fountains dance in sync with music and colorful lights, creating an unforgettable evening experience held **daily** starting at **10:00 PM**.



We thank the Scientific and Organizing Committees for their expertise and dedication in shaping the programme and ensuring the success of this symposium.

Scientific committee



Hartmut Schlüter Medical Center Hamburg-Eppendorf, Germany



Charlotte UetrechtCSSB Centre for Structural Systems
Biology, Germany



Neil Kelleher Northwestern University, USA



Andreas Tholey Kiel University, Germany



Lloyd SmithUniversity of Wisconsin-Madison,
USA



Ying GeUniversity of Wisconsin-Madison, USA



Paul DanisConsortium for Top-Down Proteomics,
USA



Joseph A. Loo University of California, USA

Organizing committee



Maria Riedner University of Hamburg, Germany



Bente SiebelsMedical Center Hamburg-Eppendorf,
Germany



Jennifer MenzelUniversity of Hamburg, Germany

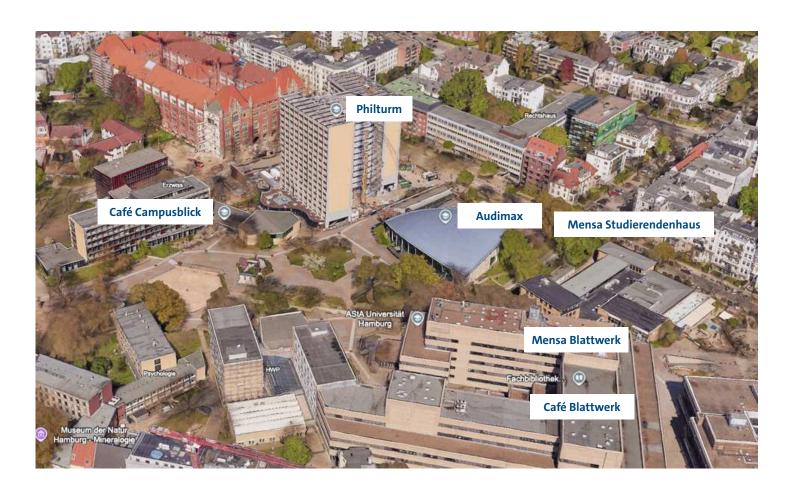


Ali Biabani Medical Center Hamburg-Eppendorf, Germany

CAMPUS MAP – UNIVERSITY OF HAMBURG



The map below provides a general overview of the University of Hamburg campus, showing the main buildings (53 & 51) used during the symposium. Use it to get a sense of the campus layout before exploring.





An eXtreme leap in deep proteoform sequencing and advanced structural elucidation

Experience unmatched MS and MSn sensitivity

- □ **timsOmni**. Redefining protein analysis with trapped eXd for top-down MS, delivering unparalleled insights into structure and function.
- □ **Deep sequencing:** Achieve unmatched MS and MSn sensitivity with advanced ion enrichment and multimodal fragmentation, revealing the uncharted proteoform landscape.
- eXtreme versatility: Tackle the toughest challenges using Omnitrap® technology combined with full access to PASEF® modes for comprehensive bottom-up measurements.
- □ Comprehensive characterization: Precise modulation of electron energy and reaction times for superior coverage of labile modifications.

For Research Use Only. Not for use in clinical diagnostic procedures.



For more information please visit www.bruker.com/timsomni