

Unraveling the universe of microproteins -
from discovery to physiology and application

MICROPROTEINS2023

Topics

Microprotein identification
Microprotein evolution
Peptide production and modifications
Synthetic biology, microprotein structure and design
Cell-cell-communication and peptide crosstalk
Peptide therapeutics



NOVC
nordisk
fonden



KONVENTUM

**31 MAY -
02 JUNE
Helsingør
Denmark**

Konventum conference center
konventum.dk

Keynotes

Baldomero Olivera, Utah, USA
Ami Bhatt, Stanford, USA

Invited speakers

Alan Saghatelian, SALK, USA
Anne-Ruxandra Carvunis, Univ. Pittsburgh, USA
Dek Woolfson, Bristol, UK
John Prensner, MIT, USA
Jon Mudge, EBI, UK
Jean Philippe Combier, CNRS, France

Julie Aspden, Leeds, UK
Petra van Damme, Ghent, Belgium
Polly Hsu, MSU, USA
Renaud Vincentelli, CNRS Marseille, France
Sarah Slavoff, Yale, USA
Sebastian van Heesch, Princess Maxima Centre, NL
Vera van Noort, KU Leuven, Belgium

Abstract
Submission
January 31, 2023

Organizers

Stephan Wenkel, Univ. Copenhagen (Plant MicroProteins)
Anja Fuglsang, Univ. Copenhagen (Plant Peptides)
Amelie Stein, Univ. Copenhagen (Computational Biology)
Lars Ellgaard, Univ. Copenhagen (Protein Biology)
Joseph Rogers, Univ. Copenhagen (Drug design & pharmacology)
Helena Safavi, Univ. Copenhagen/Utah (Venom toxins)
Mar Albà, IMIM Foundation, Barcelona, Spain (Evolution)

Microproteins 2023

Venue, program, invited speakers, posters, and
participants.

Conference venue

Konventum Conference Center

Erling Jensens Vej 1

DK - 3000, Helsingør

Phone: +45 49 28 09 00

<https://www.konventum.dk/>

Check in: May 31 from 14:00

Check out: June 2 before 9:00

All talks are in the “Damgårdsalen” auditorium

The **Bar** closes at 24:00 and all common areas should be left at 04:00, at the latest.

Program

May 31

- 11:00-12:00** **Registration**
- 12:00-13:00** **Lunch**
- 13:00-13:15** **Welcome** (Stephan Wenkel)
- 13:15-14:30** **Session 1.1** (Chair: Stephan Wenkel)
Sebastian van Heesch (20')
Ashleigh Edwards (13')
Mauro Siragusa (13')
Fabiola Valdivia-Francia (13')
- 14:30-15:00** **Coffee break**
- 15:00-15:45** **Session 1.2** (Chair: Lars Ellgaard)
Antonin Morillon (13')
José Carlos Montañes (13')
Claire Patiou (13')
- 15:45-16:15** **Poster flash talks** (Chair: Lars Ellgaard)
Posters #1-13
- 16:15-18:00** **Poster Session 1**(Posters #1-20)
- 18:00-19:30** **Dinner**
- 20:00-20:45** **Keynote Speaker: Ami Bhatt**

June 1, morning

- 7:00-8:30** **Breakfast**
- 8:30-10:00** **Session 2.1** (Chair: Mar Alba)
Anne-Ruxandra Cavurnis (20')
Walden Bjørn-Yoshimoto (13')
Alan Saghatelian (20')
Victor Luria (13')
John Prensner (20')
- 10:00-10:30** **Coffee break**
- 10:30-12:00** **Session 2.2** (Chair: Anja Fuglsang)
Jean Philippe Combier (20')
Nicolai Tidemand Johansen (13')
Ariel Bazzini (13')
Julie Aspden (20')
Celeste Hackney (13')
Jana Schulz (13')

June 1, afternoon

- 12:00-13:00 Lunch**
- 13:00-14:30 Session 2.3** (Chair: Helena Safavi-Hemami)
Petra van Damme (20')
Jennifer Zanet (13')
Puri Fortes (13')
Polly Hsu (20')
Gerben Menschaert (13')
Thomas Martínez (13')
- 14:30-15:00 Coffee break**
- 15:00-16:10 Session 2.4** (Chair: Amelie Stein)
Nikolaos Vakirlis (13')
María Abad (13')
Luis Pedro Coelho (13')
Dörte Schlesinger (13')
Lena Ho (13')
- 16:10-16:40 Poster flash talks** (Chair: Amelie Stein)
Posters #21-33
- 16:40-18:00 Poster Session 2** (Posters #21-42)
- 18:00-19:30 Dinner**
- 20:00-20:45 Keynote Speaker: Baldomero Olivera**

June 2

- 7:00-8:30 Breakfast**
- 8:30-10:00 Session 3.1** (Chair: Joe Rogers)
Renaud Vincentelli (20')
Janina Dahmen (13')
NN (20')
Sourav Datta (13')
Jon Mudge (20')
- 10:00-10:30 Coffee break**
- 10:30-11:50 Session 3.2** (Chair: NN)
Vera van Noort (20')
Christine Brun (13')
Joanna Krupka (13')
Ashish Sharma (13')
Dek Woolfson (20')
- 11:50-12:00 Wrap up** (Chair: NN)
- 12:00-13:00 Lunch**
- 13:00 Departure**

Invited speakers

Alan Saghatelian

Title: *Discovery of Bioactive Microproteins.*

Baldomero M. Olivera

Title: *Venom Peptides from Fish-hunting Cone Snails: General Insights into the Biology of Natural Products.*

Dek Woolfson

Title: *Designing new peptide assemblies for fun and for in-cell applications.*

Jean-Philippe Combier

Title: *Complementary peptides represent a credible alternative to agrochemicals by activating translation of targeted proteins.*

John Prensner.

Title: *The functional landscape of non-canonical open reading frames in cancer.*

Jonathan M. Mudge

Title: *The annotation of microproteins in GENCODE.*

Julie L. Aspden

Title: *Translation and functional characterisation of novel ORFs from 'long non-coding' RNAs during neuronal differentiation.*

Petra Van Damme

Title: *Riboproteogenomics to uncover small protein landscapes.*

Polly Hsu

Title: *Prevalent Unannotated ORFs Revealed by Improved Super-Resolution Ribosome Profiling.*

Renaud Vincentelli

Title: *Combining High-Throughput protein purification and quantitative interactomics to generate the genome wide scale affinity mapping of the human PDZome.*

Sebastiaan van Heesch

Title: *VERY small human microproteins – Is there a reasonable lower size cut-off?*

Posters

Session 1 (**bold**: flash talks)

1. **Marion Martinez, Barcelona**
Title: *Mining the secreted microproteome for novel regulators of PDAC communication*
2. **Pablo J. Fernandez-Marcos, Madrid**
Title: *The microproteome of short-term fasting as a guideline for the design of strategies against aging*
3. **Louise Petri, Copenhagen**
Title: *Role of microProteins in stem cell maintenance and leaf formation in Arabidopsis thaliana*
4. **Alessandro Gori, Milano**
Title: *Reinventing bradykinin function: selective binding to highly curved lipid membranes for extracellular vesicles isolation and analysis*
5. **Maurizio Junior Chiurazzi, Copenhagen**
Title: *Controlling flowering of Medicago sativa (alfalfa) by engineering dominant microProteins*
6. CANCELLED
7. **Yiqian Duan, Shanghai**
Title: *With small ORFs come great datasets: the global microbial small ORFs catalog (GMSC)*
8. **Oza bin Zaheed Maheswaran, Cork**
Title: *Analysis of Translation of Long Non-coding RNAs*
9. **Lorenzo Lafranchi, Stockholm**
Title: *Identification of stress-related microproteins*
10. **Frederik Tidemand, Copenhagen**
Title: *Largescale production of modified plant peptide hormones: Using E. coli to incorporate non-canonical amino acids*
11. **Ylenia Vittozzi, Copenhagen**
Title: *Modulation of tomato growth and development by microprotein-engineering*
12. **Marta Espinosa Camarena, Barcelona**
Title: *Long non-coding RNAs and novel transcripts as the principal source of potential novel neoantigens in hepatocellular carcinoma*
13. **Patrick Theunissen, Pamplona**
Title: *Microproteins translated from long non-coding RNAs contain epitopes with high immunogenicity and strong potential to be used as vaccines*
14. CANCELLED

15. Iñaki Merino Valverde, Barcelona
Title: *MASALA microprotein: a novel regulator of cellular plasticity encoded by a lncRNA*
16. Emanuela Greco, Barcelona
Title: *MIDORI is a novel microprotein that blocks the EMT programme and inhibits breast cancer metastasis*
17. Jip van Dinter, Utrecht
Title: *Microproteins as putative therapeutic Targets in Fusion-Positive childhood Rhabdomyosarcoma*
18. Luuk Broeils, Utrecht
Title: *Evolution and implications of de novo genes in humans*
19. Ho Yan Yeung, Salt Lake City
Title: *Highly stable somatostatin receptor 2-selective peptides from fish-hunting cone snails suppress glucagon secretion in rodents*
20. Amalie Scheel Tost, Copenhagen
Title: *Unravelling the roles and functions of PSY peptides*

Session 2 (**bold:** flash talks)

- 21. Leron Kok, Utrecht**
Title: *Predicting tumor-specific neoantigens for the identification of novel immunotherapeutic targets*
- 22. Damon Hofman, Utrecht**
Title: *Identifying microprotein-derived tumor-specific neoantigens in pediatric cancers*
23. Lars Eicholt, Münster
Title: *Structure prediction and analysis of de novo emerged proteins in Drosophila*
- 24. Federica Pennisi, Verona**
Title: *The role of tomato B-box MicroProteins in reproductive development*
- 25. Eilidh Ward, Leeds**
Title: *Micro-peptide Discovery: A Comparison of Multiple Ribo-Seq Datasets in Neuronal Differentiation and Development*
- 26. Ebbe Engholm, Copenhagen**
Title: *Development of novel insulins based on the Conus geographus G1 insulin*
- 27. Iris Bea Ramiro, Copenhagen**
Title: *Somatostatin analog design: Insights from fish-hunting cone snails*
- 28. Kevin Heizler, Regensburg**
Title: *A microprotein involved in the regulation of mitochondrial functions*
- 29. Fabian Hink, Copenhagen**
Title: *Peptides with novel helix-inducing N-cap motif disrupt the Mcl-1–BH3 interaction*

- 30. Sven Larsen-Ledet, Copenhagen**
Title: *Microproteins to the rescue [of unstable proteins]*
- 31. Ana Pinheiro Lopes, Utrecht**
Title: *The human leukocyte antigen (HLA) locus lncRNA HCP5 is translated and modulates immune cell function*
- 32. Andreas Kosteletos, Leeds**
Title: *Investigating the functional role of translated open reading frames in long non-coding RNAs during neuronal differentiation*
- 33. Mark Nasef Ragheb, Stanford**
Title: *Mining the human gut microbial microproteome for modulators of inflammation*
34. Jing Zhao, Copenhagen
Title: *Discovery of de novo molecular glues*
35. Yong Zhang, Copenhagen
Title: *Phage encoded micro-proteins in hijacking host bacterial cell*
36. Erik Abner, Tartu
Title: *Uncovering pathogenic micropeptides from the human genome*
37. Aleksandra Panfilova, Copenhagen
Title: *Predicting the effect of point mutations on protein interactions*
38. Joshua Torres, Copenhagen
Title: *Posttranslational modification (PTM) enzymes in contoxin biosynthesis*
39. Anna Spinner, Stockholm
Title: *Identification of microproteins controlling pluripotency and differentiation*
40. Bar Edri, Beer Sheva
Title: *The role of the micro-protein TP73-AS1 in Glioblastoma*
41. Chris Papadopoulos, Barcelona
Title: *The Ribosome Profiling landscape of yeast reveals a high diversity in pervasive translation*
42. Thomas Lund Koch, Salt Lake City
Title: *Recruitment strategies of signaling peptides to doppelganger toxins in cone snails*
- 43. Lena Ho, Singapore**
Title: *A crispr screen targeting the microproteome uncovers CRISTA – a microprotein that controls mitochondrial translation via one-carbon metabolism*

List of participants

Name	City	Email
Alan Saghatelian	La Jolla	asaghatelian@salk.edu
Aleksandra Panfilova	Copenhagen	ap@bio.ku.dk
Alessandro Gori	Milano	alessandro.gori@cnr.it
Amalie Scheel Tost	Copenhagen	cast@plen.ku.dk
Ami Bhatt	Palo Alto	asbhatt@stanford.edu
Amilie Stein	Copenhagen	amelie.stein@bio.ku.dk
Ana Pinheiro Lopes	Utrecht	A.P.PinheiroLopes-4@prinsesmaximacentrum.nl
Andrea Borgonovo	Copenhagen	xwb211@sund.ku.dk
Andreas Kosteletos	Leeds	akosteletos55@gmail.com
Anja Thoe Fuglsang	Copenhagen	atf@plen.ku.dk
Anna Spinner	Stockholm	anna.spinner@scilifelab.se
Anne van Humbeek	Umeå	anne_vanhumbeek@hotmail.com
Anne-Ruxandra Carvunis	Pittsburgh	carvunis@gmail.com
Antonin Morillon	Paris	antonin.morillon@curie.fr
Ariel Bazzini	Kansas City	arb@stowers.org
Ashish Sharma	Lucknow	sharmaashish23march@gmail.com
Ashleigh Edwards	Copenhagen	ake@plen.ku.dk
Baldomero Olivera	Salt Lake City	olivera@biology.utah.edu
Bar Edri	Beer Sheva	edriba@post.bgu.ac.il
Casper ter Waarbeek	Umeå	casperterwaarbeek@gmail.com
Celeste Hackney	Copenhagen	celeste.hackney@bio.ku.dk
Chris Papadopoulos	Barcelona	cpapadopoulos@imim.es
Christian Adam Olsen	Copenhagen	cao@sund.ku.dk
Christian Bech-Bartling	Copenhagen	christian.bartling@sund.ku.dk
Christine Brun	Marseille	christine-g.brun@inserm.fr
Claire Patiou	Lille	fleming@em.uni-frankfurt.de
Damon Hofman	Utrecht	d.a.hofman-3@prinsesmaximacentrum.nl
Dan Andersson	Uppsala	Dan.Andersson@imbim.uu.se
Dek Woolfson	Bristol	D.N.Woolfson@bristol.ac.uk
Dörte Schlesinger	Stockholm	dorte.schlesinger@scilifelab.se
Ebbe Engholm	Copenhagen	ebbe.engholm@sund.ku.dk
Eilidh Ward	Leeds	bs18e3w@leeds.ac.uk
Emanuela Greco	Barcelona	emanuela.greco1505@gmail.com
Erik Abner	Tartu	erik.abner86@gmail.com
Fabian Hink	Copenhagen	cpapadopoulos@imim.es
Fabiola Valdivia-Francia	Zürich	fabiola.valdiviafrancia@uzh.ch
Federica Pennisi	Verona	federica.pennisi@univr.it
Frederik Tidemand	Copenhagen	ft@plen.ku.dk
Gerbe Menschaert	Gent	gerben.menschaert@ugent.be
Helena Safavi-Hemami	Salt Lake City	safavihelenas@sund.ku.dk
Ho Yan Yeung	Salt Lake City	ho.yan.yeung@biochem.utah.edu
Iñaki Merino Valverde	Barcelona	inmerval@gmail.com
Ingrid Fleming	Frankfurt	fleming@em.uni-frankfurt.de
Iris Bea Ramiro	Copenhagen	iris.ramiro@sund.ku.dk
Jana Schulz	Berlin	janafelicitas.schulz@mdc-berlin.de
Janina Dahmen	Copenhagen	dahmen@sund.ku.dk
Jean Philippe Combier	Toulouse	combier@lrsv.ups-tlse.fr
Jennifer Zanet	Toulouse	jennifer.zanet@univ-tlse3.fr

Name	City	Email
Jing Zhao	Copenhagen	jing.zhao@sund.ku.dk
Jinhua Lin	Copenhagen	jinhua@plen.ku.dk
Jip van Dinter	Utrecht	j.t.vandinter-3@prinsesmaximacentrum.nl
Joanna Krupka	Cambridge	jak75@cam.ac.uk
John Prensner	Boston	prensner@broadinstitute.org
Jon Mudge	Hinxton	jmudge@ebi.ac.uk
José Carlos Domínguez	Barcelona	jmontanes@imim.es
Joseph Rogers	Copenhagen	joseph.rogers@sund.ku.dk
Joshua Torres	Copenhagen	joshua.torres@sund.ku.dk
Julie Aspden	Leeds	J.Aspden@leeds.ac.uk
Kellie Dean	Cork	k.dean@ucc.ie
Kevin Heizler	Regensburg	kevin.heizler@ur.de
Knud Jørgen Jensen	Copenhagen	kjj@chem.ku.dk
Lars Eicholt	Münster	lars.eicholt@wwu.de
Lars Ellgaard	Copenhagen	lellgaard@bio.ku.dk
Lena Ho	Singapore	lena@ho-lab.org
Leron Kok	Utrecht	leron.kok@hotmail.com
Lorenzo Lafranchi	Stockholm	lorenzo.lafranchi@ki.se
Louise Petri	Copenhagen	petri@plen.ku.dk
Luis Pedro Coelho	Shanghai	luis@luispedro.org
Luuk Broeils	Utrecht	l.a.broeils-3@prinsesmaximacentrum.nl
María Abad	Barcelona	mabad@vhio.net
Maria de Mar Alba Soler	Barcelona	mar.alba@upf.edu
Marion Martinez	Barcelona	mmartinez@vhio.net
Mark Nasef Ragheb	Palo Alto	mragheb@stanford.edu
Marta Espinosa Camarena	Barcelona	espinosacamarenamarta@gmail.com
Maurizio Junior Chiurazzi	Copenhagen	maurizio@plen.ku.dk
Mauro Siragusa	Frankfurt	Siragusa@vrc.uni-frankfurt.de
Nicolai Tidemand Johansen	Copenhagen	nicolai.johansen@plen.ku.dk
Nikolaos Vakirlis	Athens	vakirlis@fleming.gr
Oza bin Zaheed Maheswaran	Cork	118226079@umail.ucc.ie
Pablo J. Fernandez-Marcos	Madrid	pablojose.fernandez@imdea.org
Patrick Theunissen	Pamplona	ptheunissen@unav.es
Petra van Damme	Gent	Petra.VanDamme@UGent.be
Polly Hsu	Lansing	pollyhsu@msu.edu
Puri Fortes	Pamplona	pfortes@unav.es
Renaud Vincentelli	Marseille	renaud.vincentelli@univ-amu.fr
Sebastiaan van Heesch	Utrecht	S.vanHeesch@prinsesmaximacentrum.nl
Sourav Datta	Bhopal	sdatta@iiserb.ac.in
Stephan Wenkel	Umeå	stephan.wenkel@umu.se
Sven Larsen-Ledet	Copenhagen	sven.larsenledet@bio.ku.dk
Saad Khilji	Copenhagen	saad.khilji@bio.ku.dk
Thomas Lund Koch	Salt Lake City	Thomas.koch@biochem.utah.edu
Thomas Martinez	Irvine	t.martinez@uci.edu
Vera van Noort	Leuven	vera.vannoort@kuleuven.be
Victor Luria	New Haven	Victor.Luria@yale.edu
Walden Bjørn-Yoshimoto	Copenhagen	walden@sund.ku.dk
Yiqian Duan	Shanghai	yqduan20@fudan.edu.cn
Ylenia Vittozzi	Copenhagen	ylenia@plen.ku.dk
Yong Zhang	Copenhagen	yong.zhang@bio.ku.dk