

PROGRAMME

2 – 5 September 2018
DECHEMA e.V. · Frankfurt am Main · Germany

3rd European Conference on Natural Products

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IN COOPERATION WITH

VBU Association of German
Biotechnology Companies

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KEYNOTE LECTURES

Monday, 3 September 2018

- 9:40 **Structures and Functions of Nonribosomal Peptide Synthetases, Macromolecular Antibiotic Factories**
Martin Schmeing, McGill University, Montreal/CND
- 16:15 **Strategies and Methods for Chemical Synthesis Inspired by Complex Natural Products**
Richmond Sarpong, University of Berkeley, CA/USA

Tuesday, 4 September 2018

- 9:00 **Uncovering the “Dark Matter” of the Chemistry of Life**
Frank C. Schroeder, Cornell University, Ithaca, NY/USA
- 16:35 **Engineered Biosynthesis of Medicinal Natural Products**
Ikuro Abe, The University of Tokyo/J

Wednesday, 5 September 2018

- 11:35 **Peptidomimetic Antibiotics: Inspired by Nature, and a Return to Nature**
John Robinson, University of Zurich/CH

Programme as of 15 August 2018.

Subject to alterations. Submission titles and authors information as provided by the authors.

Sunday, 2 September 2018

- 16:30 Check in / Registration
 17:30 Welcome Reception (until 19:00)

Monday, 3 September 2018

- 09:30 **OPENING**
 H. Bode, Goethe University Frankfurt/D

Structural Biology

Chair: H. Bode, Goethe University Frankfurt/D

- 09:40 **KEYNOTE LECTURE**
Structures and Functions of Nonribosomal Peptide Synthetases, Macromolecular Antibiotic Factories
 M. Schmeing, McGill University, Montreal/CDN
- 10:25 **Communication Breakdown: Dissecting the COM Interfaces between the Subunits of Nonribosomal Peptide Synthetases**
 C. Fage¹; S. Kosol¹; C. Öster¹; M. Jenner¹; J. Lewandowski¹; M. Marahiel²; ¹ University of Warwick, Coventry/UK; ² Philipps-Universität Marburg/D
- 10:50 **Structure-based redesign of docking domain interactions modulates the product spectrum of a rhabdopeptide-synthesizing NRPS**
 C. Hacker, Goethe University Frankfurt/D
- 11:15 **Coffee Break**
- 11:45 **Structural biology of modular polyketide biosynthesis**
 K. Weissman, Lorraine University, Vandoeuvre-Les-Nancy/F
- 12:10 **SHORT LECTURE**
The Non-Ribosomal Synthetase Ebony Encodes a Novel Type of Condensation Domain
 T. Izoré, J. Tailhades, M.J. Cryle, Monash University, Clayton/AUS
- 12:20 **SHORT LECTURE**
Promiscuity of the transferase of mouse type I fatty acid synthase (FAS) and implications for polyketide synthase (PKS) engineering
 A. Rittner, K.S. Paithankar, M. Grininger, Goethe University Frankfurt/D
- 12:30 **SHORT LECTURE**
Structural elucidation of CreD, a nitrosuccinate lyase involved in cremeomycin biosynthesis
 Y. Katsuyama¹, Y. Sato², Y. Sugai¹, Y. Higashiyama¹, M. Senda³, T. Senda³, Y. Ohnishi¹;
¹ The University of Tokyo/J; ²Tohoku University/J; ³KEK, Tsukuba/J
- 12:40 **Lunch & Posters**

PROGRAMME

Monday, 3 September 2018

Organic Syntheses

Chair: A. Kirschning, Leibniz University Hannover/D

- 14:00 **Biomimetic and Total Synthesis of Archazolid F and Novel Structural Analogs**
S. Scheeff¹; S. Rivière²; D. Menche¹; ¹ University of Bonn/D
- 14:25 **Evaluation of the Tetrapeptide GE81112A as an Antibacterial Lead**
G. Jürjens¹; S. Schuler¹; R. Wende¹; S. Petit²; F. Jeannot²; C. Couturier²; E. Bacque²; M. Kurz³; C. Pöverlein³; M. Mourez²; A. Marker³; F. Nguyen⁴; D. Wilson⁴; P. Hammann³; A. Bauer³; ¹ Sanofi-Fraunhofer Natural Products Center of Excellence / Fraunhofer IME, Gießen/D; ² Sanofi R&D, Marcy l'Etoile/F; ³ Sanofi-Aventis Deutschland GmbH, Frankfurt am Main/D; ⁴ Ludwig-Maximilians-Universität München/D
- 14:50 **Organocatalyzed hydrazination as key to hemiasterlin**
T. Lindel¹; J. Lang¹; N. Kanitz¹; ¹ TU Braunschweig/D

15:15 Coffee Break

Organic Syntheses

Chair: A. Kirschning, Leibniz University Hannover/D

- 15:45 **SHORT LECTURE**
Total Synthesis of Lagunamide A via highly stereoselective Matteson Homologation
J. Gorges, U. Kazmeier, Saarland University, Saarbrücken/D
- 15:55 **SHORT LECTURE**
Amidsyntheses as Chemobiosynthetic Tools for Challenging Macrolactamizations
C. Bartens, J. Hermans, A. Kirschning, Leibniz University Hannover/D
- 16:05 **SHORT LECTURE**
Studies Toward the Total Synthesis of the Marine Tetraterpenoid (-)-Gukulenin A
U. Bednarzick, D. Tymann, M. Hiersemann, TU Dortmund/D
- 16:15 **KEYNOTE LECTURE**
Strategies and Methods for Chemical Synthesis Inspired by Complex Natural Products
R. Sarpong, University of California, Berkeley, CA/USA
- 17:00 **POSTER DISCUSSION**
- 19:00 End of 1st Conference Day

Tuesday, 4 September 2018

Biosyntheses and Synthetic Biology

Chair: E. Dittmann, University of Potsdam/D

09:00

KEYNOTE LECTURE**Uncovering the “Dark Matter” of the Chemistry of Life**

F. Schroeder, Cornell University, Ithaca, NY/USA

09:45

Understanding the biosynthesis of the glycopeptide antibiotics

M. Cryle, Monash University, Victoria/AUS

10:10

Dissecting the biosynthetic machinery in bacterial polyunsaturated fatty acid synthasesS. Hayashi¹; M. Naka¹; Y. Satoh¹; Y. Ogasawara¹; T. Dairi¹; ¹ Hokkaido University, Sapporo, Hokkaido/J

10:35

Coffee Break

Biosyntheses and Synthetic Biology

Chair: D. Ober, University of Kiel/D

11:05

Dissection and rational engineering of the biosynthetic pathway to enacyloxin, a promising anti-Gram-negative antibioticJ. Masschelein¹; P. Sydor¹; C. Hobson¹; S. Kosol¹; A. Gallo¹; T. Valentini²; X. Jian¹; C. Jones³; E. Mahenthalingam³; S. Tsai²; J. Lewandowski¹; G. Challis¹; ¹ University of Warwick, Coventry/UK; ² University of California, Irvine, Irvine/USA; ³ Cardiff University, Cardiff/UK

11:30

Highjacking rRNA operons for antibiotic gene cluster expression - production of prodigiosin in *P. putida*A. Loeschcke¹; A. Domröse¹; R. Weihmann¹; J. Hage-Hülsmann¹; S. Thies¹; A. Grünberger²; A. Klein¹; J. Pietruszka¹; K. Jaeger¹; T. Drepper¹; ¹ Heinrich Heine University, Düsseldorf, Jülich/D; ² University of Bielefeld, Bielefeld/D

11:55

The Discovery of a Novel Signaling Molecule Containing the Unusual Diazonium Diolate Functional GroupS. Sieber¹; C. Jenul¹; C. Daepfen¹; A. Mathew¹; M. Lardi¹; G. Pessi¹; D. Hoepfner²; M. Neuburger³; A. Linden¹; K. Gademann¹; L. Eberl¹; ¹ University of Zürich/CH; ² Novartis Institutes for BioMedical Research, Basel/CH; ³ University of Basel/CH

12:20

Lunch & Posters

PROGRAMME

Tuesday, 4 September 2018

Biosyntheses and Synthetic Biology

Chair: D. Ober, University of Kiel/D

- 14:00 **Fungal biosynthesis of cyclic peptides with unique chemical properties**
T. Schafhauser¹; L. Jahn²; A. Kulik¹; N. Kirchner¹; H. Groß¹; J. Ludwig-Müller²; K. van Pée²; W. Wohlleben¹; ¹ University of Tübingen/D; ² Technical University of Dresden/D
- 14:25 **Twinning and mosaicity in ergothioneine biosynthesis**
F. Seebeck, University of Basel/CH
- 14:50 **Investigation of class iv lanthipeptide systems**
J. Hegemann¹; R. Shi²; M. Gross²; W. van der Donk¹; ¹ University of Illinois at Urbana-Champaign, Urbana, IL/USA; ² Washington University, St. Louis, MI/USA
- 15:15 **Coffee Break**

Biosyntheses and Synthetic Biology

Chair: R. Müller, Helmholtz-Institute for Pharmaceutical Research Saarland (HIPS), Saarbrücken/D

- 15:45 **In vitro reconstitution of RiPPs biosynthesis coupled by in vitro translation and post-translation modifications**
H. Onaka, Graduate School of Agricultural and Life Sciences, The University of Tokyo, Bunkyo/J
- 16:10 **Study on a dual functional cytochrome P₄₅₀ in the biosynthesis of macrolide antibiotic FD-891**
F. Kudo¹; A. Miyanaga¹; R. Takayanagi¹; T. Furuya¹; A. Motegi¹; T. Eguchi¹; ¹ Tokyo Institute of Technology, Tokyo/J
- 16:35 **KEYNOTE LECTURE**
Engineered Biosynthesis of Medicinal Natural Products
I. Abe, The University of Tokyo/J
- 17:20 **End of 2nd Conference Day**
- 19:00 **CONFERENCE DINNER**
- 23:00 **Restaurant Dauth-Schneider, Frankfurt-Sachsenhausen**

Wednesday, 5 September 2018

Biosyntheses / Targets and MoA

Chair: H. Brötz-Oesterhelt, University of Tuebingen/D

- 09:00 **Transcriptional gene cluster “refactoring” as key to secondary metabolites overproduction**
 L. Horbal¹; F. Marques²; A. Luzhetskyy¹; ¹ University of Saarland, Pharmaceutical Biotechnology, Saarbrücken/D; ² Helmholtz Institute for Pharmaceutical Research, Saarbrücken/D
- 09:25 **The Natural Product Mensacarcin induces Mitochondrial Toxicity Selectively in Melanoma Cells**
 B. Pnitzko, E.N. Kaweesa, S. Loesgen, Oregon State University, Corvallis, OR/USA
- 09:50 **SHORT LECTURE**
First discovery of fungal polyene macrolide by genome mining and heterologous expression of a cryptic HR-PKS cluster
 Y. Morishita¹; H. Zhang²; D. Hagiwara³; T. Asai¹; ¹The University of Tokyo/J; ²RIKEN Center for Life Science Technologies, Yokohama/J; ³ University of Tsukuba/J
- 10:00 **SHORT LECTURE**
Discovery and biosynthesis of the persiamycins, unusual polyglycosylated thiopeptides active against MDR tuberculosis
 Y. Dashti¹; M. Belousoff²; D. Zabala-Alvarez¹; C. Fage¹; A. Gallo¹; J. Lewandowski¹; F. Mohammadipanah³; A. Vocat⁴; J. Overmann⁵; S. Cole⁴; G. Challis⁶; ¹ University of Warwick, Coventry/UK; ² Monash University, Melbourne/AUS; ³ University of Tehran/IR; ⁴ Ecole Polytechnique Fédérale de Lausanne/CH; ⁵ Leibniz-Institute DSMZ, Braunschweig/D; ⁶ University of Warwick, Coventry/UK and Monash University, Melbourne/AUS
- 10:10 **SHORT LECTURE**
Filling the gaps in the biosynthetic pathway of the protein biosynthesis inhibitor kirromycin
 H. Lunde Robertsen¹; E. Musiol-Kroll²; S. Lee³; W. Wohlleben⁴; G. Williams⁵; S. Grond⁴; T. Weber⁶; ¹ Technical University of Denmark, Kgs. Lyngby/DK; ² Technical University of Denmark, Kgs. Lyngby/DK and University of Tübingen/D; ³ Technical University of Denmark, Kgs. Lyngb/DK and KAIST/KOR; ⁴ University of Tübingen/D; ⁵ North Carolina State University, Raleigh, NC/USA; ⁶ Technical University of Denmark, Kgs. Lyngby/D
- 10:20 **Target identification of compounds isolated from a fraction library of fungal broths**
 T. Nogawa¹; Y. Futamura¹; M. Muroi¹; N. Kato¹; H. Osada¹; ¹RIKEN, Wako-shi/J
- 10:45 **Coffee Break**

PROGRAMME

Wednesday, 5 September 2018

Biosyntheses / Targets and MoA

Chair: H. Brötz-Oesterhelt, University of Tuebingen/D

- 11:15 **SHORT LECTURE**
FR900359-the ultimate Gq inhibitor designed by nature
 M. Crüsemann¹; R. Reher²; I. Schamari²; C. Hermes²; E. Kostenis²; G. König²; ¹ Universität Bonn/D; ² University of Bonn, Institute of Pharmaceutical Biology, Bonn/D
- 11:25 **SHORT LECTURE**
Induction of nectriapyrone biosynthesis in the rice blast fungus *Pyricularia oryzae*
 T. Motoyama¹; T. Nogawa¹; H. Osada¹, ¹ RIKEN, Wako/J

Chemical Communication / Methods

Chair: J. Piel, ETH Zurich/CH

- 11:35 **KEYNOTE LECTURE**
Peptidomimetic Antibiotics: Inspired by Nature, and a return to Nature
 J. Robinson, University of Zurich/CH
- 12:20 **Plugging in Microfluidics/FACS technologies in industrial discovery processes to exploit invertebrate microbiomes for new Gram negative antibiotics**
 J. Glaeser¹; M. Spohn¹; M. Oberpaul¹; M. Marner¹; B. Leis¹; A. Vilcinskas¹; P. Hammann²; ¹ Fraunhofer IME-BR, Gießen/D; ² Sanofi-Aventis Deutschland GmbH, Frankfurt/D
- 12:45 **SHORT LECTURE**
New Approach for the determination of the relative configuration of natural products – the advanced floating chirality distance geometry approach
 M. Köck¹, S. Immel², M. Reggelin²; ¹ Alfred-Wegener-Institut für Polar- und Meeresforschung in der Helmholtz-Gemeinschaft, Bremerhaven/D and Helmholtz-Institut für Pharmazeutische Forschung Saarland (HIPS), Saarbrücken/D; ² Clemens-Schöpf-Institut für Organische Chemie und Biochemie, TU Darmstadt/D
- 12:55 **SHORT LECTURE**
Genome-wide chromatin mapping of *Aspergillus nidulans* reveals BasR, a novel regulator of bacteria-triggered fungal natural product biosynthesis
 J. Fischer¹; S. Müller²; A. Gacek-Matthews³; N. Jäger⁴; T. Netzker¹; K. Scherlach¹; M. Stroe¹; M. García-Altres¹; F. Pezzini¹; M. Krespach¹; E. Shelest¹; V. Schroeckh¹; V. Valiante¹; T. Heinzel⁴; C. Hertweck¹; J. Strauss³; A. Brakhage¹; ¹ Leibniz Institute for Natural Product Research and Infection Biology - Hans Knöll Institute (HKI), Jena/D; ² University of Cambridge/UK; ³ BOKU-University of Natural Resources and Life Sciences, Tulln/A; ⁴ Friedrich Schiller University Jena/D
- 13:05 **SHORT LECTURE**
Plant pathogenic anaerobic bacteria use aromatic polyketides to access aerobic territory
 G. Shabuer¹; K. Ishida¹; S. Pidot²; M. Roth¹; H. Dahse¹; C. Hertweck¹; ¹ Leibniz Institute for Natural Product Research and Infection Biology (HKI), Jena/D; ² University of Melbourne at the Peter Doherty Institute for Infection and Immunity, Melbourne/AUS

- 13:15 **Lunch & Posters**

Wednesday, 5 September 2018

Chemical Communication / Methods

Chair: J. Dickschat, University of Bonn/D

- 14:15 **A computational framework for rapid exploration and prioritization of biosynthetic diversity from large-scale genomic data**
J. Navarro-Muñoz¹; N. Selem-Mojica²; M. Mullooney³; S. Kautsar¹; H. Tryon³; E. Parkinson⁴; E. De Los Santos⁵; M. Yeong¹; P. Cruz-Morales²; S. Abubucker⁶; A. Roeters¹; W. Lokhorst¹; A. Fernandez-Guerra⁷; L. Cappelini³; R. Thomson³; W. Metcalf⁴; N. Kelleher³; F. Barona-Gomez²; M. Medema¹; ¹ Wageningen University & Research, Wageningen/NL; ² Langebio, Guanajato/MEX; ³ Northwestern University, Evanston, IL/USA; ⁴ University of Illinois at Urbana-Champaign, Urbana-Champaign, IL/USA; ⁵ University of Warwick/UK; ⁶ Novartis Institutes of Biomedical Research, Cambridge, MA/USA; ⁷ Max Planck Institute for Marine Microbiology, Bremen/D
- 14:40 **SHORT LECTURE**
Metabolic engineering: A powerful tool for improving glycopeptide production
E. Stegmann¹; V. Goldfinger¹; M. Spohn¹; W. Wohlleben¹; ¹ University of Tuebingen/D
- 14:50 **Gel Free Targeted Cloning of Large Biosynthetic Gene Clusters**
D. Mead, D. Johnson, J. MacDonald, P. Brumm, R. Stankey, Varigen Biosciences, Madison, WI/USA
- 15:15 **Direct Pathway Cloning (DiPaC) to Unlock Natural Product Biosynthetic Potential**
P. D'Agostino¹; C. Greunke¹; E. Duell¹; A. Glöckle¹; K. Lamm¹; T. Gulder¹; ¹ Technische Universität München, Garching/D
- 15:40 **CLOSING**
- 15:50 **End of conference**