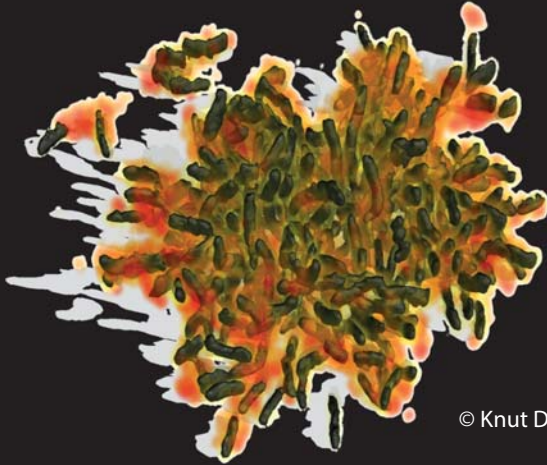


How microorganisms view their world

September 23 - 25, 2018
Marburg, Germany



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Organizers:

Anke Becker, Marburg
Erhard Bremer, Marburg
Thorsten Mascher, Dresden

Special sessions on celebrating 25 years of
ECF sigma factors: from discovery to
SynBio applications

Information

For registration please visit www.sfb987.de

Accommodation:

www.marburg-tourismus.de/SFB987-ERA

Deadline for registration

and abstract: June 15th, 2018

Venue:

Erwin-Piscator-Haus, Biegenstraße 15,
35037 Marburg, Germany

Registration fee: 270 €

Contact: microbiocongress@uni-marburg.de

Registration fee including
dinner and drinks: 300 €





Venue (Erwin Piscator-Haus)

Public transportation (recommended):

Step out of the main train station, cross the road to get to the bus stop. Take bus line 1 - 5 and 7 and exit at stop “Rudolphsplatz”, which is near the venue.

By car:

Coming from the north, exit the freeway at “Bahnhofstraße” and turn right at the first traffic light. Coming from the south, exit the freeway also at “Bahnhofstraße” and turn right at the next three traffic lights.

Follow the course of the road and always stay right, the street will separate into two lanes and join again at the Elisabeth church. Drive straight ahead until you are in a street called “Pilgrimstein”, where you will find a (charged) parking deck at your right (red arrow on the map).

Address of the nearest parking garage for navigation devices:

Pilgrimstein 17, 35037 Marburg

Click our homepage for directions to the venue where the social evening on September 25th will take place



Microorganisms are omnipresent in the biosphere and provide the greatest diversity of life on Earth. They successfully colonize almost every possible habitat. A key factor for the ecological success of microorganisms is their enormous biochemical, physiological, genetic and cellular adaptation potential that allows them to respond to countless challenging environmental conditions and cellular cues. For most microorganisms, there is only one certainty: change! As a consequence, microorganisms have developed specialized mechanisms that enable both individual cells and cellular communities to recognize and to respond to environmental changes with high sensitivity and specificity. Within the framework of the SFB 987, research teams at the Philipps-University and the Max Planck Institute for terrestrial Microbiology jointly focus on “Microbial Diversity in Environmental Signal Response”. The SFB 987 research consortium aims at significantly advancing the current knowledge about the ability of microorganisms to react to environmental and cellular cues with situation- conforming adaptive responses.



ERASynBio is a transnational initiative to promote the robust development of Synthetic Biology (SynBio) and to structure and coordinate national efforts and funding programs. Under this umbrella, the ECF_{express} consortium – which includes research groups from Germany, the UK and the US – aims at developing a SynBio design framework based on ExtraCytoplasmic Function σfactors (ECFs) to implement highly orthogonal regulatory switches and circuits. ECFs, which are typically non-essential and stress-inducible, were discovered 25 years ago and represent the most minimalistic and diverse group of the σ^{70} protein family that also includes the essential primary (or housekeeping) σfactors. ECFs represent ideal building blocks for SynBio applications, because they are modular, inherently orthogonal, universal, and scalable. By combining theoretical and experimental approaches, the ECF_{express} consortium aims at implementing novel ECF-based switches and circuits in four phylo- genetically diverse microorganisms to benchmark their orthogonality and to explore the ECF-based circuit design space.

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Sunday, September 23rd, 2018

16:50 – 16:55 Erhard Bremer, SFB 987, Philipps-Universität Marburg
Welcome from the SFB 987 consortium

16:55 – 17:00 Thorsten Mascher, ERA-SynBio, TU Dresden
Welcome from the ERA-SynBio consortium „ECFexpress“

Session 1 **Microorganisms in their world**

17:00 – 18:00 Chair: Erhard Bremer, Marburg
Pascale Cossart, Institute Pasteur, Paris
Listeria monocytogenes: towards a complete picture of its
physiology and its virulence

18:00 – 19:00 Chair: Timothy J. Donohue, Wisconsin
Carol A. Gross, University of California, San Francisco
An idiosyncratic view of ECF sigmas: past, present and future

19:00 – 20:00 Chair: Knut Drescher, Marburg
Bonnie L. Bassler, Princeton University, New Jersey
Bacterial quorum sensing and its control

20:00 – 22:00 **Get together**

Monday, September 24th, 2018

Session 2 - Metabolic Networks and their regulators

Chair: Hannes Link, Marburg

08:30 – 09:00

Markus Ralser, University of Cambridge, Cambridge

From its evolutionary origins to the modern metabolic network

09:00 – 09:30

Dirk Bumann, Biozentrum Basel

Salmonella single-cell physiology in infected host tissues

09:30 – 10:00

Uwe Sauer, ETH Zurich

Viewing the outside from changes within

10:00 – 10:30

Julia Vorholt, ETH Zurich

Turning over the metabolome:
linking identity, frequency and timing

10:30 – 11:00 Coffee break

Session 4 - Microorganisms in an oxidative world

Chair: Roland Lill, Marburg

15:30 – 16:00

Ruma Banerjee, University of Michigan, Ann Arbor

Sulfide signaling at the host-microbiome interface

16:00 – 16:30

Chris Grant, University of Manchester, Manchester

Posttranscriptional regulation of gene expression
during adaptation to oxidative stress conditions

16:30 – 17:00

**Johannes Herrmann, TU Kaiserslautern,
Kaiserslautern**

Mitochondria – Deep in their heart still bacteria?

17:00 – 17:15 Short talk SFB

17:15 – 17:30 Short talk SFB

17:30 – 19:30 Poster Session

Session 3 - Paradigms of ECF-dependent regulation

Chair: Thorsten Mascher, Dresden

11:00 – 11:30

Mark Buttner, John Innes Centre, Norwich

The SigR-directed oxidative stress response in
Streptomyces

11:30 – 12:00

John D. Helmann, Cornell University, Ithaca

The *Bacillus subtilis* SigM regulon and peptidoglycan
homeostasis

12:00 – 12:30

Craig D. Ellermeier, University of Iowa, Iowa

The anti-sigma factor RsiV is a receptor for lysozyme

12:30 – 12:45 Short talk ERA

12:45 – 13:00 Short talk ERA

13:00 – 15:30 Lunch & Poster

Tuesday, September 25th, 2018

Session 5 - A structural view on ECF sigma factors

Chair: Carol A. Gross

08:30 – 09:00

Elizabeth Campbell, Rockefeller University, New York
Structural insights on ECF sigma factors

09:00 – 09:30

Richard H. Ebright, Waksman University, New Jersey
Structural basis of primary sigma factor- and ECF sigma factor-dependent transcription initiation

09:30 – 10:00

Sean Crosson, University of Chicago, Chicago
EcfG regulatory networks in alphaproteobacteria

10:00 – 10:15 Short talk ERA

10:15 – 10:30 Short talk ERA

10:30 – 11:00 Coffee break

Session 7 - From comparative genomics to applications of ECF sigma factors

Chair: Julia Vorholt, Zürich

14:30 – 15:00

Thorsten Mascher, TU Dresden, Dresden
The road less traveled by: from ECF classification to novel mechanisms of ECF-dependent signal transduction

15:00 – 15:30

Georg Fritz, Philipps-Universität Marburg, Marburg
Comprehensive re-classification and computational analysis of the ECF sigma factor family

15:30 – 16:00

Anke Becker, Philipps-Universität Marburg, Marburg
Building a toolbox of orthogonal ECF sigma factor-based regulatory switches in the alpha-proteobacterium *Sinorhizobium meliloti*

16:00 – 16:15 Short talk ERA

16:15 – 16:30 Short talk ERA

16:30 – 17:00 Coffee break

Session 6 - Information processing systems in bacteria

Chair: Lotte Søgaard-Andersen, Marburg

11:00 – 11:30

Eduardo A. Groisman, Yale University, New Haven
Bacterial responses to magnesium limitation

11:30 – 12:00

Susanne Gebhard, University of Bath, Bath
Flux sensing by transporter/kinase pairs – need-based activation of antibiotic resistance

12:00 – 12:30

Anne Galinier, CNRS, Marseille
Exploring the relationship between a protein YvcK and nutrient utilization, cell wall and morphogenesis in *Bacillus subtilis*

12:30 – 12:45 Short talk SFB

12:45 – 13:00 Short talk SFB

Session 8 - Microorganisms in their world

Chair: Anke Becker, Marburg

17:00 – 17:45

Wolfgang R. Hess, Albert-Ludwigs-Universität, Freiburg
Small RNAs reaching far: acclimation to low iron and high light in Cyanobacteria

Chair: Mark Buttner, Norwich

17:45 – 18:30

Timothy J. Donohue, University of Wisconsin, Wisconsin
A 25 year journey from an early ECF to light stress and to fuels and chemicals

Chair: Gerhard Braus, Göttingen

18:30 – 19:15

Regine Kahmann, Max Planck Institute Marburg
Ustilago maydis: from the field to the lab – and back to the field!

19:15 – 19:20

Erhard Bremer, Philipps-Universität Marburg, Marburg
Closing remarks

20:00 Conference Dinner