

## Nucleotide Second Messenger Signaling in Bacteria

### SPP 1879 International Symposium 2018

#### Sunday (September 30<sup>th</sup>)

17:00 - 19:00 Registration / Poster set-up  
19:00 Dinner  
20:30 Get together (Einstein lounge)

#### Monday Morning (October 1<sup>st</sup> 9:00 – 12:00)

8:30 – 9:00 Set up of posters for poster session I  
9:00 – 9:10 Regine Hengge: Welcome and Introduction

#### Session 1. A classic revisited – (p)ppGpp

Discussion Leader: Franz Narberhaus (Universität Bochum)

09:10 – 09:40 Jade Wang (University of Wisconsin - Madison):  
(p)ppGpp inhibition and oligomeric regulation of the purine salvage enzyme HPRT  
09:40 – 10:10 Dipankar Chatterji (Indian Institute of Science - Bangalore):  
Unusual activity of the second (p)ppGpp synthetase from *Mycobacterium smegmatis*:  
differential substrate utilization  
10:10 – 10:25 Kürsad Turgay (Universität Hannover):  
The interplay of heat shock and stringent response in *Bacillus subtilis*  
10:30 – 11:00 Coffee Break (Poster hall)  
11:00 – 11:15 Rebecca Corrigan (University of Sheffield):  
Unraveling the functions of (p)ppGpp-binding GTPases in *Staphylococcus aureus*  
11:15 – 11:30 Régis Hallez (University of Namur):  
Molecular mechanism regulating (p)ppGpp hydrolysis in response to nutrient starvation in  
*Caulobacter crescentus*  
11:30 – 11:45 Victoriya Shyp (Biozentrum - Universität Basel):  
An interplay of two global second messengers regulates growth and behaviour of  
*Caulobacter crescentus*  
12:00 – 13:30 Lunch

#### Monday Afternoon (October 1<sup>st</sup> 13:30 – 18:30)

13:30 – 15:00 Poster Session I

#### Keynote talk

Discussion Leader: Jade Wang (University of Wisconsin - Madison)

15:30 – 16:15 Mike Cashel (NICHD - NIH):  
(p)ppGpp regulatory circuits in *Escherichia coli* appear to extend beyond stable RNA to  
include DNA synthesis initiation  
16:15 – 16:30 Coffee Break (Poster hall)

#### Session 2. C-di-GMP-binding effectors and their targets

Discussion Leader: Susanne Häussler (Helmholtz Centre for Infection Research - Braunschweig)

16:30 – 17:00 Michael Galperin (NCBI - NIH):  
Evolution of c-di-GMP binding proteins and mechanisms  
17:00 – 17:30 Holger Sondermann (Cornell University):  
Friending and unfriending: controlling reversible attachment in bacterial social networks

- 17:30 – 17:45 Juan Sanjuan (CSIC - Granada):  
Characterisation of the c-di-GMP binding domain in glycosyltransferase BgsA, responsible for the synthesis of a mixed-linkage  $\beta$ -glucan in *Sinorhizobium meliloti*
- 17:45 – 18:15 Lotte Søgaard-Andersen (Max Planck Institute - Marburg):  
Identification of an essential ribbon-helix-helix proteins, a novel c-di-GMP effector in *Myxococcus xanthus*
- 18:15 – 18:30 Tom Landgraf (Goethe-Universität Frankfurt):  
NMR screening of RNA secondary structure and binding of c-di-GMP to the Cd1 riboswitch
- 19:00 Dinner / **Set up of posters for poster session II**
- 20:30 Get together (Einstein lounge)

## Tuesday morning (October 2<sup>nd</sup> 9:00 – 12:00)

### Session 3. Local c-di-GMP signaling

Discussion Leader: Lotte Søgaard-Andersen (Max Planck Institute - Marburg)

- 09:00 – 09:30 Regine Hengge (Humboldt Universität zu Berlin):  
High specificity local c-di-GMP signaling by multiple diguanylate cyclases and phosphodiesterase in *Escherichia coli*
- 09:30 – 10:00 Karin Sauer (Binghamton University):  
SicA-dependent c-di-GMP signaling in *Pseudomonas aeruginosa* drug tolerance
- 10:00 – 10:15 Kai Thormann (Universität Gießen):  
Polar localization of PdeB, a key phosphodiesterase in regulating motility of *Shewanella putrefaciens* in response to environmental cues
- 10.30 – 11.00 Coffee Break (Poster hall)

### Session 4. Sensory input into c-di-GMP signaling

- 11:00 – 11:30 Lars Dietrich (Columbia University):  
c-di-GMP-dependent regulation links metabolic status to multicellular organization during *Pseudomonas aeruginosa* biofilm growth
- 11:30 – 11:45 Serena Rinaldo (Sapienza University Rome):  
Sensing L-arginine in *Pseudomonas aeruginosa*: a novel link between c-di-GMP and central metabolism?
- 11:45 – 12:00 Nicole Frankenberg-Dinkel (Technische Universität Kaiserslautern):  
The role of the c-di-GMP-specific phosphodiesterase NbdA in biofilm dispersal of *Pseudomonas aeruginosa*
- 12:00 – 13:00 Lunch

## Tuesday Afternoon (October 2<sup>nd</sup> 13:00 – 17:30)

- 13:00 – 14:30 Poster Session II

### Session 4. Physiology of c-di-GMP signaling

Discussion Leader: Jörg Stülke (Universität Göttingen)

- 14:30 – 15:00 Jake Malone (John Innes Centre - Norwich):  
C-di-GMP control of mRNA translation via ribosomal modification
- 15:00 – 15:30 Andrew Lovering (University of Birmingham) & Liz Sockett (University of Nottingham):  
GGDEF-mediated control of the predatory lifecycle of *Bdellovibrio bacteriovorus*
- 15:30 – 16:00 Coffee Break (Poster hall)
- 16:00 – 16:30 Fitnat Yildiz (University of California - Santa Cruz):  
Toggling the switch: c-di-GMP regulates extension/retraction dynamics of *Vibrio cholera* MSHA pili
- 16:30 – 17:00 Chris Waters (Michigan State University):  
Cyclic di-nucleotide signaling in *Vibrio cholerae*

- 17:00 – 17:30 Anke Becker (Philipps-Universität Marburg):  
Second messenger signaling network governing lifestyle switching of the plant-symbiotic  $\alpha$ -proteobacterium *Sinorhizobium meliloti*
- 17:45 Bus to *English Theatre Berlin* | *International Performing Arts Center*  
(ETB, Berlin-Kreuzberg)
- 18:15 Reception at ETB
- 19:00 "Informed Consent" by Deborah Zoe Laufer at ETB  
A production by the *Science&Theatre* project, directed by Günther Grosser
- 21:00 Free evening – enjoy the lively restaurant scene on and around Bergmannstraße in Berlin-Kreuzberg

### Wednesday morning (October 3<sup>rd</sup> 9:00 – 13:00)

#### Session 5. C-di-AMP signaling

Discussion Leader: Fabian Commichau (Universität Göttingen)

- 09:00 – 09:30 Angelika Gründling (Imperial College London):  
How and when *Staphylococcus aureus* can survive without c-di-AMP
- 09:30 – 09:45 Adnan Syed (Harvard University):  
A drop in c-di-AMP is necessary and sufficient for *Staphylococcus aureus* eDNA release during biofilm formation
- 09:45 – 10:15 Jörg Stülke (Universität Göttingen):  
C-di-AMP controls multiple aspects of potassium and glutamate homeostasis in *Bacillus subtilis*
- 10:15 – 10:30 Natalia Tschowri (Humboldt-Universität zu Berlin):  
A novel phosphodiesterase hydrolyses c-di-AMP involved in development and osmotic stress resistance in *Streptomyces*
- 10:30 – 10:45 Sonja-Verena Albers (Universität Freiburg):  
First description of a second messenger in Archaea: role of c-di-AMP in *Haloferax volcanii*
- 10:45 – 11:15 Coffee Break and Poster Prize Announcement

#### Session 6. Novel nucleotide second messengers and host interactions

Discussion Leader: Angelika Gründling (Imperial College London)

- 11:15 – 11:45 Ming Hammond (University of Utah – Salt Lake City):  
The role of Hypr GGDEF enzymes in cyclic AMP-GMP signaling in *Geobacter metallireducens*
- 11:45 – 12:15 Joshua Woodward (University of Washington - Seattle):  
Cytosolic RECONnaissance: c-di-AMP at the interface of host-pathogen interactions
- 12:15 – 12:45 Philip Kranzusch (Harvard Medical School):  
Discovery of cGAS/DncV-like enzymes and new nucleotide second messenger signals
- 12:45 – 13:00 Forward-looking discussion / concluding remarks (R. Hengge)
- 13:00 Departure