

# International Symposium on c-di-GMP Signaling in Bacteria

Harnack-Haus, Berlin-Dahlem, Germany

March 22-25, 2015

Organizers:

Regine Hengge & Christine Kanow-Scheel  
Humboldt-Universität zu Berlin, Germany

Scientific Committee:

Angelika Gründling (Imperial College London, UK), Regine Hengge (Humboldt-Universität zu Berlin, Germany), Urs Jenal (Biocentre Basel, Switzerland);  
Robert Ryan (University of Dundee, UK); Fitnat Yildiz (UC Santa Cruz, USA)

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## Conference location

Harnack-Haus - Tagungsstätte der Max-Planck-Gesellschaft

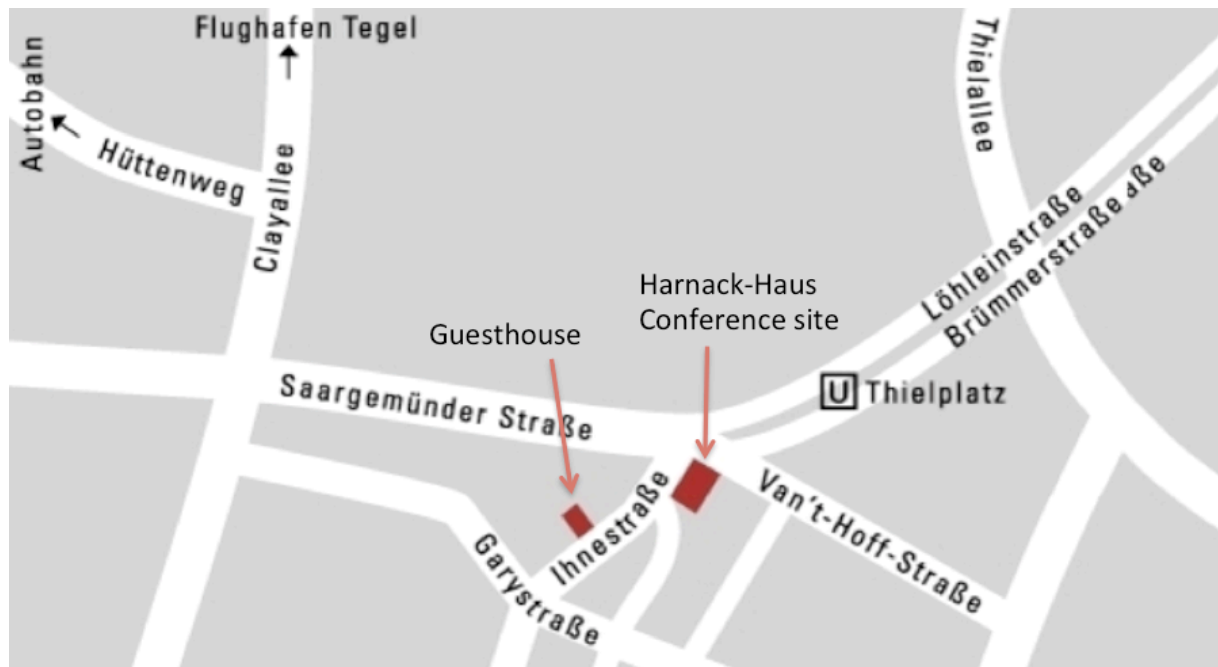
Ihnestr. 16-20, 14195 Berlin, Germany

Subway: U3, Thielplatz

Tel. +49 30 8413 3800,

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<http://www.harnackhaus-berlin.mpg.de>

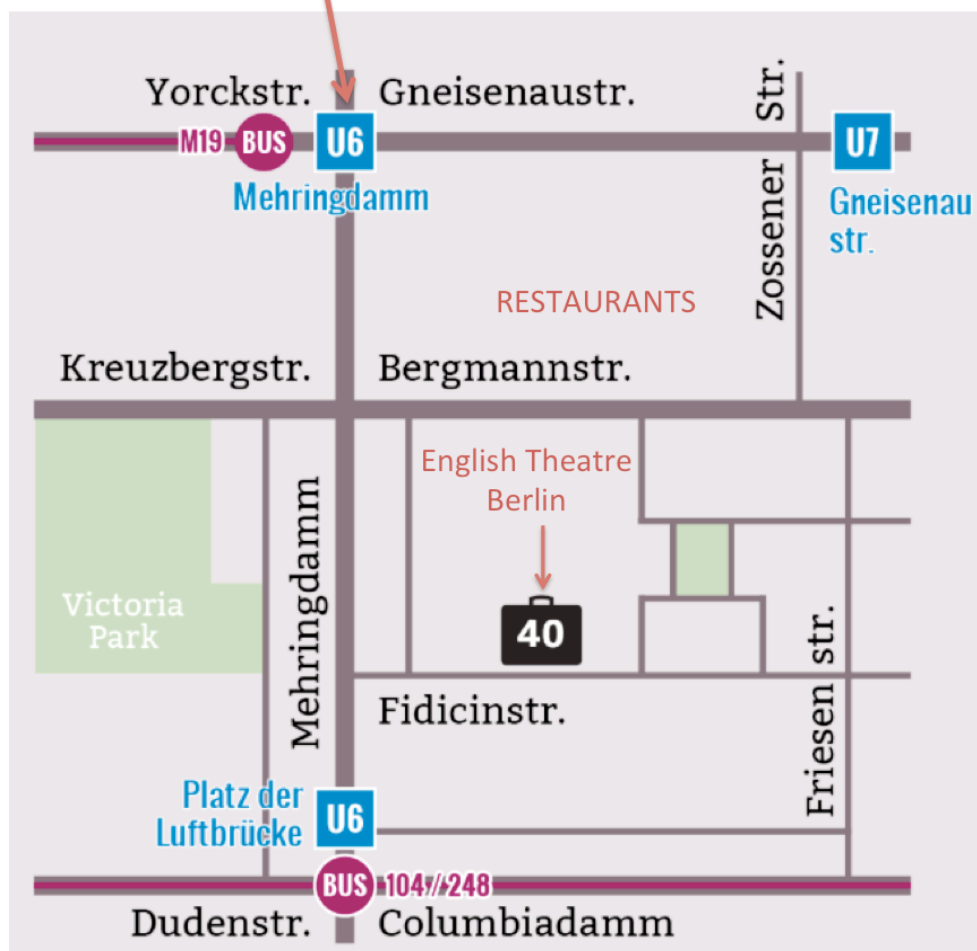


## Location of the Tuesday night event

English Theatre Berlin - F40  
Fidicinstr. 40, 10965 Berlin, Germany  
Tel. +49 30 693 5692  
<http://www.etberlin.de>

To get back to Dahlem after the show, take U7 from 'Mehringdamm' subway station (direction 'Rathaus Spandau'), at 'Fehrbelliner Platz' change to U3 (direction 'Krumme Lanke') and get off at 'Thielplatz'

Take Subway at Mehringdamm  
to get back to Dahlem-Dorf



# Scientific Programme

# International Symposium on c-di-GMP Signaling

## Scientific Programme

### Sunday (March 22<sup>nd</sup>)

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

### Monday Morning (March 23<sup>rd</sup> 9:00 – 12:30)

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

#### Session 1. Novel effectors in c-di-GMP signaling - c-di-GMP-binding proteins and riboswitches

Discussion Leader: Fitnat Yildiz (UC Santa Cruz)

09:10 – 09:40 Holger Sondermann (Cornell University):  
Insights into conserved molecular mechanisms controlling bacterial  
adhesion  
09:40 – 10:10 Vincent Lee (University of Maryland):  
Discovering c-di-GMP binding proteins and their inhibitors  
10:10 – 10:30 Michael Galperin (NCBI, NIH):  
Diversity of c-di-GMP-binding proteins and mechanisms  
10.30 – 11.00 Coffee Break (Poster hall)  
11:00 – 11:30 Zhao-Xun Liang (Nanyang University Singapore): Unraveling the function  
of c-di-GMP binding PilZ proteins in *Pseudomonas aeruginosa*  
11:30 – 12:00 Caroline Harwood (University of Washington Seattle):  
FleQ responds to c-di-GMP to regulate biofilm and flagella gene expression  
by two different mechanisms  
12:00 – 12:15 Olga Soutourina (Institut Pasteur):  
c-di-GMP-responsive riboswitches in the human pathogen *Clostridium*  
*difficile*  
12.30 – 14:00 Lunch

### Monday Afternoon (March 23<sup>rd</sup> 14:00 – 19:00)

14:00 – 15:30 Poster Session I

#### Session 2. c-di-GMP-controlled cellular processes

Discussion Leader: Angelika Gründling (Imperial College)

15:30 – 16:00 Fitnat Yildiz (UC Santa Cruz):  
C-di-GMP Regulates Motile to Sessile Transition by Modulating MshA Pili  
Biogenesis and Near-Surface Motility Behavior in *Vibrio cholerae*

- 16:00 – 16:30 Robert Ryan (University of Dundee):  
Novel cyclic di-GMP effectors of the YajQ family control bacterial virulence
- 16:30 – 17:00 Samuel Miller (University of Washington Seattle):  
Using an in-vivo biosensor to define signals and pathways that regulate c-di-GMP signaling
- 17:00 – 17:30 Coffee Break (Poster hall)
- 17:30 – 18:00 Liz Sockett (University of Nottingham):  
GGDEF, HD-GYP and EAL proteins cause specific effects on prey-interaction, cell replication and motility in predatory *Bdellovibrio* bacteria
- 18:00 – 18:15 Andrew Lovering (University of Birmingham):  
Structure of *Bdellovibrio bacteriovorus* cNMP-EAL hybrid protein Bd1971
- 18:15 – 18:45 Susanne Häußler (Helmholtz Centre for Infection Research Braunschweig):  
Mutations in a clinical *Pseudomonas aeruginosa* small colony variant affect membrane composition to adopt surface-associated behaviors
- 19:00 Dinner / Set up of posters for poster session II
- 20:30 Get together (Einstein lounge)

## Tuesday morning (March 24<sup>th</sup> 9:00 – 12:30)

### Session 3a. C-di-GMP signaling in the control of biofilm matrix production and supracellular biofilm architecture

Discussion Leader: Urs Jenal (Biocentre Basel)

- 09:00 – 09:30 Regine Hengge (Humboldt Universität zu Berlin):  
c-di-GMP signaling in the control of matrix production and architecture of *E. coli* macrocolony biofilms
- 09:30 – 10:00 George O'Toole (Dartmouth University):  
To Build a Biofilm: Does a Bacterium *Know* it is on a Surface?
- 10:00 – 10:30 Ute Römling (Karolinska Institute):  
Regulation of biofilm formation, motility and virulence by cyclic di-GMP dependent and independent mechanisms in *Salmonella enterica* serovar Typhimurium
- 10.30 – 11.00 Coffee Break (Poster hall)

### Session 3b. Sensory input into c-di-GMP signaling

- 11:00 – 11:30 Mark Gomelsky (University of Wyoming):  
c-di-GMP in a whole new light
- 11:30 – 11:45 Veronika Angerer (Universität Freiburg):  
Light-dependent production of c-di-GMP regulating cyanobacterial phototaxis
- 11:45 – 12:00 Nicole Frankenberg-Dinkel (Technische Universität Kaiserslautern):  
NO-induced biofilm dispersion in *Pseudomonas aeruginosa* is mediated by a MHYT domain-coupled phosphodiesterase
- 12:00 – 13:15 Lunch

## Tuesday Afternoon (March 24<sup>th</sup> 14:00 – 18:00)

13:15 – 14:30 Poster Session II

### Session 4. c-di-GMP signaling in cell polarity and development

Discussion Leader: Robert Ryan (University of Dundee)

- 14:30 – 15:00 Urs Jenal (Biocentre Basel):  
The role of cyclic di-GMP in *Caulobacter* cell cycle progression and cell fate determination
- 15:00 – 15:15 Benoit-Joseph Laventie (Biocentre Basel):  
FimA, a novel c-di-GMP effector in *Pseudomonas aeruginosa* dynamically localizes to the new cell pole to mediate pilus function
- 15:15 – 15:45 Lotte SØgaard-Andersen (Max-Planck-Institute Marburg):  
Distinct c-di-GMP metabolizing enzymes regulate type IV pili-dependent motility and fruiting body formation in *Myxococcus xanthus*
- 15:45 – 16:15 Coffee Break (Poster hall)
- 16:15 – 16:45 Natalia Tschowri (Humboldt Universität zu Berlin):  
The role of c-di-GMP in *Streptomyces* development
- 16:45 – 17:15 Pauline Schaap (University of Dundee):  
Cyclic-di-GMP regulation of cell differentiation in the eukaryote *Dictyostelium discoideum*
- 17:45 Bus to English Theatre Berlin (ETB, Berlin-Kreuzberg)
- 18:15 Reception at ETB
- 19:00 "Isaac's Eye" by Lucas Hnath 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 (March 25<sup>th</sup> 9:00 – 13:00)

### Session 5a. "Classical" bacterial second messengers revisited - cAMP & ppGpp

Discussion Leader: Regine Hengge (Humboldt Universität zu Berlin)

- 09:00 – 09:30 Victor de Lorenzo (CNB-CSIC, Madrid):  
*E. coli* and the elephant no more: the CRP-cAMP system of *Pseudomonas putida*
- 09:30 – 10:00 Kenn Gerdes (University of Copenhagen):  
Stochastic control of bacterial persistence by ppGpp and toxin-antitoxins: Surprisingly, Toxin Activation, Not Growth Inhibition, is Essential for Persister Cell Formation
- 10:00 – 10:30 Jade Wang (University of Wisconsin Madison):  
Molecular Mechanism and Evolution of Guanylate Kinase Regulation by (p)ppGpp
- 10.30 – 11.00 Coffee Break and Poster Prize Award Ceremony



**Session 5a. "Newcomers" in bacterial second messenger signaling - c-di-AMP, cGMP-AMP, cGMP**

- 11:00 – 11:15 Ming Hammond (UC Berkeley):  
Illuminating cyclic-dinucleotide signaling: discoveries driven by riboswitch-based fluorescent biosensors
- 11:15 – 11:45 Angelika Gründling (Imperial College):  
c-di-AMP signaling in *Staphylococcus aureus*
- 11:45 – 12:15 Jörg Stülke (Universität Göttingen):  
DarA - a new c-di-AMP-binding signal transduction protein in *Bacillus subtilis*
- 12:15 – 12:30 Volkhard Kaefer (Medizinische Hochschule Hannover):  
Identification and quantification of low-molecular weight bacterial signaling molecules by mass spectrometry
- 12:30 – 12:45 Forward-looking discussion / concluding remarks (R. Hengge)
- 13:00 Departure

# **Abstracts of Scientific Talks**