

PROGRAMME

# HDID V

How dead is dead?

5th conference on exploring the edge of bacterial life

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September 6-8, 2017

Universitätszahnklinik, Sensengasse 2a, 1090 Vienna

## Supporting Institutions



**ÖGHMP**

Österreichische Gesellschaft  
für Hygiene, Mikrobiologie und  
Präventivmedizin

Österreichische Gesellschaft für Hygiene, Mikrobiologie und Präventivmedizin



Interuniversity  
Cooperation Center  
Water & Health

Interuniversitäres Kooperationszentrum für Wasser und Gesundheit (ICC Water & Health)



Vereinigung für Allgemeine und Angewandte Mikrobiologie (VAAM)



Universitätszahnklinik Wien



Medizinische Universität Graz, Institut für Hygiene, Mikrobiologie und Umweltmedizin



Medizinische Universität Wien, Institute for Hygiene and Applied Immunology

## Sponsors



## Welcome Note

It is our pleasure to invite you to the 5th biennial “How Dead is Dead?” conference, to be hosted at the Medical University of Vienna. This international conference series points to the difficulties of defining and proving the borders of bacterial life and death, and the consequences of these problems as regards its relevance for human and animal health but also for the functioning of technical and natural ecosystems.

Important questions arising are:

- How can the status of viable but non-culturable (VBNC) cells, persisters, sleepers, etc. be described?
- Are bacteria that cannot grow (anymore) on standard media dead and non-hazardous?
- How can they be detected?
- Which cellular mechanisms allow them to cope with a variety of stress conditions?
- Which relevance do they have for health, technological processes and ecosystems?

In the last years this conference series has contributed to a larger awareness of these issues in a variety of research and applied fields like microbiology, medicine, veterinary medicine, ecology, food science, etc.

In this tradition the 5th biennial “How Dead is Dead?” conference shall:

1. draw attention to this so far neglected aspects of bacterial life,
2. offer the possibility of discussions on latest research results within the international scientific community and
3. stimulate an intensive exchange of ideas with industrial partners, who offer innovative technical approaches for the detection of bacterial viability.

We are looking forward to welcoming you in Vienna!

Alexander Kirschner, Clemens Kittinger & Gernot Zarfel (Organizing Committee)  
Andrea Grisold, Regina Sommer & Birgit Willinger (ÖGHMP)

*dwarf cells*

*moribund cells*

**viable but not culturable [VBNC]**

**viviform** *non-viable but resuscitable*  
*cryptic growth*

**active microbes**

*vegetative dormancy*

*re-productive viability*

**nonculturability**

**vital**

**direct viable count [DVC]**  
*nonplateable*

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[vbnc.ols-bio.de](http://vbnc.ols-bio.de)

## Important Information

### Date

September 6–8, 2017

### Venue

Universitätszahnklinik Wien  
(University Clinic of Dentistry, Vienna)  
Sensengasse 2a  
1090 Vienna

### Arrival

Tram lines 37/38/40/41/42 from Schottentor - Station: Schwarzspanierstraße  
Tram lines 40/41/42 from Währinger Straße Volksoper - Station: Sensengasse  
Tram lines 37/38 from Döbling - Station: Sensengasse

By car: Chargeable BOE parking garage at Sensengasse 3  
Please note that the entire 9th District is a short-stay parking zone.

### Accommodation

Book through Vienna Hotels & Info  
by phone: +43 1 24555 or <http://www.wien.info/en/hotels>  
Or feel free to search for another accommodation via Booking.com or another search engine.

### Congress Language

Please note that the official congress language is English. No simultaneous translation will be provided.

### Conference dinner

The conference dinner will be held at typical Viennese ‚Heuriger‘ with authentic Austrian Food in a relaxed atmosphere.

All congress information will be updated on a regular basis on the congress website:  
<http://oeghmp.at/events/hdid2017>

## Important Information

### Registration Information

Please register through the online registration process available at <http://registration.maw.co.at/hdid17>

### Registration Fees (in EURO)

Regular fee	€ 180.-
ÖGHMP/VAAM members	€ 150.-
Students	€ 100.-

### Opening hours – Registration

Wednesday, September 6	15:00 – 20:30
Thursday, September 7	8:00 – 18:30
Friday, September 8	8:00 – 18:00

### Conference Secretariat & Registration

ÖGHMP - Österreichische Gesellschaft für Hygiene,  
Mikrobiologie und Präventivmedizin c/o MAW  
Freyung 6/3, A-1010 Vienna, Austria  
Contact: Nina Strasser  
Phone: +43/1/536 63-101, Fax: +43/1/536 63 63  
E-Mail: [oeghmp@media.co.at](mailto:oeghmp@media.co.at)

### Exhibition / Advertisement and Sponsorship

MAW – Medizinische Ausstellungs- und Werbegesellschaft  
Freyung 6/3/3, A-1010 Vienna, Austria  
Contact: Ms. Kerstin Hamata & Ms. Maria Hamata  
Phone: +43/1/536 63-39 or 38, Fax: +43/1/535 60 16  
E-Mail: [maw@media.co.at](mailto:maw@media.co.at)

The conference is hosted under the auspices of the ÖGHMP



**ÖGHMP**  
Österreichische Gesellschaft  
für Hygiene, Mikrobiologie und  
Präventivmedizin

## Important Information

### Call for Abstracts

Participants are invited to submit abstracts **online** via our website:  
<http://oeghmp.at/events/hdid2017/>

Submission of an abstract constitutes a commitment by the author to present at the congress, if accepted. Please indicate your preferred session. Abstracts must meet the following requirements:

Language:	English
Structure:	Title, Authors (first and surnames; underline the presenting author) Department, Institution, City, State, Country
Length:	Text with a minimum of 200 and a maximum of 300 words
Sessions:	Water & Biofilms, Resuscitation, Ecology and Survival, Improvements in culture-independent detection, Regulation of sleep and death, Clinical Consequences of sleeping pathogens

**ABSTRACT SUBMISSION DEADLINE: Monday, May 29, 2017**

### Main congress topics

(among others..)

Viable but non culturable

Resuscitation

Persists

Apoptosis

Toxin/Antitoxin

Bacterial Ecology and Survival

# Programme Overview

06.09.2017   Wednesday		07.09.2017   Thursday		08.09.2017   Friday	
Time	activity	Time	activity	Time	activity
18.00 – 18.15	Opening	08.30 – 09.00	Opening lecture 1	08.30 – 10.40	Session 4
18.15 – 19.00	Welcome lecture	09.00 – 9.30	Opening lecture 2	10.40 – 11.10	Coffee break
19.00	Welcome snacks and drinks	09.30 – 10.30	Session 1	11.10 – 13.00	Session 5
		10.30 – 11.00	Coffee Break	13.00 – 14.00	Lunch break
		11.00 – 12.50	Session 2	14.00 – 16.00	Session 6
		12.50 – 13.50	Lunch Break	16.00 – 16.30	Coffee break
		13.50 – 15.50	Poster Session	16.30 – 17.00	Closing & Poster Prize
		15.50 – 16.10	Coffee Break		
		16.10 – 18.00	Session 3		
		19.00	Conference Dinner		



## Wednesday, 6 September 2017

18.00 – 18.15 OPENING

18.15 – 19.00 Welcome Lecture

**Wolf-Dietrich Hardt**

Life on the hold: a recipe for disaster

19.00 – 20.00 Welcome reception

Thursday, 7 September 2017

## Opening lecture

08.30 – 09.00 **Hans-Curt Flemming**

What have we learned since the first HDID conference?

09.00 – 09.30 **Rita R. Colwell**

Identical or Different: Viable but Non Culturable, Persister, Strategic, and/or Dormant?

## Session 1: “Water & Biofilms”

09.30 – 09.50 **Inés Arana**

Effect of temperature, starvation and predation in the survival of *Vibrio harveyi* populations

09.50 – 10.10 **Ioanna Chatzigiannidou**

Bacterial necrotrophic growth on dead-biomass in drinking water

10.10 – 10.30 **Beatriz Casasola-Rodríguez**

Detection of VBNC *Vibrio cholerae* by rt-qPCR after transcriptome analysis using RNA-seq

10.30 – 11.00 **Coffee break**

## Session 2: “Resuscitation”

11.00 – 11.30 **Jim Oliver**

Resuscitation from the VBNC State

11.30 – 11.50 **Tiffany C. Williams**

Resuscitation of viable but non-culturable (VBNC) *Vibrio vulnificus* results in dramatic changes in gene expression

11.50 – 12.10 **Adam Stovicek**

The effect of hydration and connectivity on the soil food chain

12.10 – 12.30 **Cláudia Vilhena**

Importance of the pyruvate sensing network BtsSR/YpdAB for the resuscitation of *Escherichia coli* from the viable but nonculturable state

### Thursday, 7 September 2017

12.30 – 12.50 **Capucine Baubin**

Desert petrichor: volatiles organic compounds emission from desert soil and their relation to microbial communities resuscitated by rain

12.50 – 13.50 **Lunch Break**

13.50 – 15.50 **POSTER SESSION**

15.50 – 16.10 **Coffee break**

### Session 3: “Ecology and Survival”

16.10 – 16.40 **Holger Daims**

Sleep, stress, and the Black Queen: Microbial hidden activities and cooperation

16.40 – 17.00 **Elisa Gayán**

RpoS-independent evolution reveals the importance of attenuated cAMP/CRP regulation in high hydrostatic pressure resistance acquisition in *E. coli*

17.00 – 17.20 **Caitlin Proctor**

Low nucleic acid-content bacteria: viable, unique microorganisms

17.20 – 17.40 **Christian Robben**

The viable but non-culturable state in food processing environments

17.40 – 18.00 **Nathalie Wéry**

VBNC state and ‘regrowth’ during waste treatment: factors playing a role in loss of culturability of pathogenic bacteria seeded in digestates from agricultural biogas plants

19.00 – 24.00 **Conference Dinner**

Friday, 8 September 2017

### Session 4: "Improvements in culture-independent detection"

- 08.30 – 09.00 **Hammes Frederik**  
Why are cultivation-independent viability assessment methods advancing so slowly?
- 09.00 – 09.20 **Andreas Nocker**  
Viability PCR and assessment of UV disinfection efficiency: Amplicon size matters
- 09.20 – 09.40 **Michael D. Besmer**  
From Cradle to Grave: On-line and Real-time Tracking of Short-term Microbial Dynamics
- 09.40 – 10.00 **Claudio Aguilar**  
Rapid detection of Legionella by IMS and flow cytometry
- 10.00 – 10.20 **Barbora Gaálová**  
Determination of E. coli growth/survival adhered to clay mineral particles
- 10.20 – 10.40 **Marija Zunabovic**  
Microbial community fingerprinting of water resources by flow cytometry
- 10.40 – 11.10 **Coffee break**

### Session 5: "Regulation of sleep and death"

- 11.10 – 11.40 **Alexander Sturm**  
Fitness and Survival in M. tuberculosis Dormancy
- 11.40 – 12.00 **Aertsen Abram**  
Deterministic heterogeneity drives differential heat inactivation within clonal bacterial populations
- 12.00 – 12.20 **Salvador Almagro-Moreno**  
Proteolysis of virulence regulator ToxR mediates entry of Vibrio cholerae into a viable but nonculturable state

### Friday, 8 September 2017

- 12.20 – 12.40 **Tatsuki Miyamoto**  
Characterization of a chromosomal toxin-antitoxin module conserved in *Nitrosomonas europaea*
- 12.40 – 13.00 **Anna Madry**  
The role of stress-related *saoABC* operon in intracellular survival and persister formation in *Staphylococcus aureus*
- 13.00 – 14.00 **Lunch Break**

### Session 6: “Clinical Consequences of sleeping pathogens”

- 14.00 – 14.30 **Annette Moter**  
How Dead Is Dead? in Biofilm associated infections: Diagnostics, complications and consequences
- 14.30 – 15.00 **Sebastian Zaat**  
How Dead Is Dead? and How Is Dead Dead? using novel antimicrobial peptides
- 15.00 – 15.20 **Daniela Toplitsch**  
Determination of reversion frequency of clinical Thymidine dependent Small-Colony Variants of *Staphylococcus aureus*
- 15.20 – 15.40 **Barbara Schrammel**  
Viability of *Legionella* during short and long time starvation
- 15.40 – 16.00 **Silvia Cervero-Aragó**  
Infectivity potential of VBNC *Legionellae* strains on amoebae and human macrophages produced under starvation conditions
- 16.00 – 16.30 **Coffee break**
- 16.30 – 17.00 **Closing & Poster Prizes**

## **National Organizing Committee**

Andrea Grisold (Medical University Graz, Austria)

Alexander Kirschner (Medical University Vienna, ICC Water & Health, Austria)

Clemens Kittinger (Medical University Graz, Austria)

Regina Sommer (Medical University Vienna, ICC Water & Health, Austria)

Birgit Willinger (Medical University Vienna, Austria)

Gernot Zarfel (Medical University Graz, Austria)

## **Scientific Committee / Invited Speakers**

Bernd Bendinger (DVGW-TUHH at Hamburg, University of Technology, Germany)

Rita Colwell (University of Maryland, United States)

Holger Daims (University of Vienna, Austria)

Hans-Curt Flemming (University of Duisburg-Essen, Germany)

Frederik Hammes (Eawag, Switzerland)

Wolf-Dietrich Hardt (ETH Zürich, Switzerland)

Annette Møter (German Heart Center Berlin, Germany)

Andreas Nocker (IWW Water Centre, Germany)

Jim Oliver (University of North Carolina at Charlotte, United States)

Ulrich Szewzyk (Technical University Berlin, Germany)

Alexander Sturm (Massachusetts General Hospital, United States)

Sebastian Zaat (Academic Medical Center, Amsterdam)

# CellStream

## Rapid Sample Preparation



### ● Application

- Purification of target cells from any matrix
- Delivery of ready-to-use samples for flow cytometry, PCR & cultivation
- Viability assessment and VBNC cell detection in combination with flow cytometry

### ● Speed

- Immunomagnetic separation in 35 min
- Preparation of up to 4 samples in parallel

### ● Easy handling

- Automated and robust process
- Low maintenance through disposable cartridges