

HRWM NEWS

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International
Water Association

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www.iwa-microbiology.org



WaterMicro 2013
September 15 - 20, 2013
Florianópolis, Brazil
WWW.HRWM2013.ORG

IWA World Water Congress, Busan

Synopsis of sessions of microbiology interest

The 2012 IWA World Water Congress and Exhibition was held September 16-21 in Busan, Korea. Health-related microbiology and the environment were key themes throughout the conference. In particular, the use of molecular tools, advanced methods and new designs to monitor both water treatment processes and the water environment were presented.

One of the keynotes at the conference Dr. Staffan Kjelleberg presented an elegant view of the use of metagenomics, proteomics and functional genomics to understand the who, what and how of microbiology in water and water treatment. Dr. Kjelleberg is the Director of Singapore Centre on Environmental Life Sciences Engineering at Nanyang Technological University in Singapore and Co-director of the Centre for Marine Bio-Innovation at the University of New South Wales, Australia. His presentation entitled "Towards controlling integrated bioprocesses: Engineering microbial communities from within" provided a look at how biofilms function, how microbial systems communicate via quorum sensing and described the complexity of microbial communities in the built water system. This understanding of how microbial communities work provides methods and knowledge that can be applied to the microbial ecology of waterborne pathogens. Read more on Dr. Kjelleberg's work on page 6.

In addition several presentations on key methods were given by the Bio-Cluster group within IWA on a program entitled "Frontiers in the Identification and Quantification of Microorganisms" describing the use of qPCR now being accepted as a monitoring tool.

With the many different topics, sessions and workshops, this IWA World Water Congress was a good opportunity for cross-disciplinary interaction. It was clear that the work area of our HRWM group is connected with many other activities in IWA, from water reuse to climate change and from (the microbial safety of) water and energy to Water Safety Plans. Without the possibility of being complete, the following are a couple of HRWM related developments that were presented. Although IWA is focusing on water supply and sanitation, it was clear that water for agriculture is responsible for the vast majority (globally 70%) of water use and health risks associated with irrigation using wastewater or surface water and thus an area of growing concern. It was discussed that developments in nanomaterials are providing new possibilities for disinfection of water. Additionally, development of molecular methods for detection/typing of cyanotoxins (a fully integrated micro-device for the in-situ detection of cyanobacteria and cyanotoxin-producing strains in freshwater samples),...

Continued on page 2

Important Dates

November 1, 2012

WaterMicro 2013 Abstract
Submissions and Registration Open

January 15, 2013

Deadline for 2013 Willie Grabow
Award Nominations

March 1, 2013

Notification of 2013 Willie Grabow
Award Recipient

April 1, 2013

Deadline for WaterMicro 2013 Oral
and Poster Presentation Abstracts

Deadline for WaterMicro 2013
Bursary Applications

Deadline for Nominations for Vice
Chair and Secretary

Deadline for Applications to host
WaterMicro 2015

June 3, 2013

Notification of Acceptance for
WaterMicro 2013 Oral and Poster
Presenters

Notification of WaterMicro 2013
Bursary Award Recipients

July 1, 2013

Deadline for Water Micro 2013
Early Registration Discount

IWA World Water Congress (cont.)

... (human) enterovirus in wastewater with qPCR, somatic phages, enterohemorrhagic *E. coli* (Single-step 11-gene m-PCR), and the general microbial population in water were presented. The SODIS method of solar water disinfection is providing an effective and cheap disinfection method.

Quantitative microbial risk assessment (QMRA) was the topic of several presentations. The discussion of the 10⁻⁴ risk was presented as codified in law in the Netherlands as well as the use of QMRA techniques in Water Safety Plans. When discussing the topic of “What is safe?,” microbial pathogens continue to be the prominent issue.

A business meeting was held with HRWM members where we discussed the preparations for the WaterMicro2013 Symposium to be held in Brazil including the program, fee, sponsors, interaction with local organizing committee, venue, poster sessions, the WHO/IWA workshop and the possibility to support students/researchers from low-income countries financially to attend the Symposium. The first announcement of WaterMicro2013 was presented as a Powerpoint and flyer available in the Specialist Group stand at the IWA World Water Congress. Further information regarding the WaterMicro 2013 Symposium can be found on page 7. Additional business meeting discussion topics included the Journal of Water and Health, the call for Willie Grabow Award nominations and the nominations for new members of the HRWM board and Willie Grabow Award Committee. See below and page 3 for further information on these topics.

Young Investigator Award

The IWA-HRWM Willie Grabow Young Investigator Award was established in honor of Professor Willie Grabow, a brilliant environmental virologist whom has dedicated part of his professional life to implementing the IWA and specialist group concept, and giving technical and scientific support to developing countries in the environmental microbiology field and continues to inspire emerging scientists. The award, generously sponsored by IDEXX Laboratories, Inc. is presented biennially in conjunction with the HRWM Symposium.

The Young Investigator Award is made for the purpose of assisting and encouraging young scientists, who are doing outstanding research in the field of health-related water microbiology, specifically in developing countries. The award consists of a stipend for travel, lodging and registration costs for the HRWM Symposium the year of the award. Nominations are to be submitted to the Award Committee for review and decision. Current committee members are Ms. Bettina Genthe (S. Africa), Dr. Andreas Farnleitner (Austria) and Dr. Alexandria B. Boehm (USA).

To nominate a young investigator for the award please visit www.watermicro2013.org to download an application form due January 15, 2013. Please email nomination packets and questions to Bettina Genthe at bgenthe@csir.co.za or hrwm@msu.edu.

Current Candidate Statements

HRWM Vice Chair Candidate

Gary A. Toranzos-Soria, PhD

Gary A. Toranzos-Soria, a native of Cochabamba, Bolivia earned his Ph.D. at the University of Arizona in 1985 in Environmental Virology. After a post-doctoral position at the University of Florida, he relocated to the University of Puerto Rico, Rio Piedras Campus where continues to conduct research in environmental microbiology. He is a Fellow of the American Association for the Advancement in Science and the American Academy of Microbiology. Toranzos Soria has served the Health-Related Water Microbiology as a member and board member for over 20 and 10 years respectively.



HRWM Secretary Candidate



Rosina Girones, PhD

Rosina Girones is full professor at the University of Barcelona, has been a researcher at the Laboratory of Infectious Diseases, NIH, USA, and since 1989 is professor of Microbiology at the University of Barcelona being the responsible of the Laboratory of Viruses contaminants of Water and Food. Rosina Girones has published more of 80 scientific

articles and has been involved in research in the area of Environmental Virology for about 30 years, developing molecular methods for the detection and study of human and animal adenoviruses, enteroviruses, noroviruses, hepatitis E and A viruses, human and animal polyomaviruses and the development of new potential indicators and MST tools. Dr. Girones has been coordinator of national and international research projects and has studied viral contamination in shellfish, drinking, bathing and ground waters, and prions as environmental contaminants continuing at the present with the study of the impact of climate change on the fate, transport and risk management of viral pathogens in water. The laboratory of Rosina Girones has also established collaborations with water companies, regulatory agencies and nongovernmental organizations in order to apply current developments related with water safety to the improvements of microbiological water quality controls, regulations and water treatments in high and in low income countries.

Elections and Nominations

Elections for the positions of Secretary and Vice Chair will take place in 2013. The secretary will serve HRWM for 4 years. The Vice Chair will serve HRWM for 6 years in total; 2 years as Vice Chair, followed by 2 years as Chair, and 2 years as Past Chair.

Online voting will begin prior to the 2013 WaterMicro Symposium and in person voting will take place at the HRWM Business Meeting held at the Symposium.

Please see biographies of current candidates to the left. **Note that nominations will remain open through April 1, 2013.** To nominate yourself or someone else for the HRWM Secretary or Vice Chair positions please send an email to the attention of Dr. Joan B. Rose at rosejo@msu.edu no later than April 1, 2013.

Call to host WaterMicro 2015

Are you interested in hosting the 2015 HRWM Symposium? If so, please email your interest to the HRWM board at hrwm@msu.edu. You will then be sent details on submitting a full proposal and budget outline. The deadline for proposals is April 1, 2013.

HRWM Facebook

Are you a Facebook member? Now you can connect to HRWM on Facebook for news, events and discussions. Search Facebook for "Health-Related Water Microbiology" and "like" our page.

Meet the New Board Members

Several new HRWM members have already been identified and accepted nominations to join the HRWM Board next year during the WaterMicro 2013 Symposium. Please see their biographies below.

If you are interested in joining the HRWM Board or would like to help nominate someone please contact Dr. Joan B. Rose at rosejo@msu.edu.



Christobel Ferguson, GAICD, PhD, MSc, BAppSc

Christobel is the Manager of the Water Sciences Group within GHD. She manages a team of scientists and engineers that provide technical advice on water resource management and aquatic ecology to clients in the water, environment and mining industries. She has more than 20 years experience managing environmental research projects and has presented and published widely on water related microbiology, and in particular modeling pathogen fate and transport in water catchments.

Christobel was a board member of the Australian Water Association from 2005 to 2009 and is currently a Co-Convenor of the AWA Catchment Management Specialist Network. Christobel previously held Adjunct positions at the University of NSW and the Australian National University. Christobel is a reviewer for a number of Water and Environmental Journals and has served on many expert panels for Water Utilities within Australia and for international water research agencies including The Water Research Foundation and the Water Environment Research Foundation. She is a graduate member of the Australian Institute of Company Directors and a member of the International Water Association.



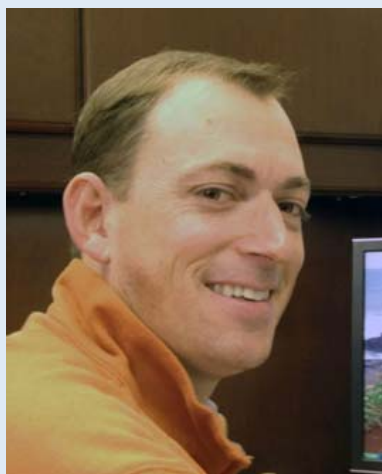
Andrea Rechenburg, PhD

Andrea serves as the Executive Manager for the WHO Collaborating Centre for Health Promoting Water Management and Risk Communication at the Institute for Hygiene and Public Health, University of Bonn, Germany where she is responsible for the research and supervision of international research projects (Cameroon, Vietnam) in the field of environmental microbiology in particular water, sanitation and health. Prior to taking her current position in 2009, Andrea served as a researcher and manager for the Water Microbiology Lab at the Institute for Hygiene and Public Health, Bonn, Germany.

Andrea's research interests include environmental microbiology associated with water, sanitation and hygiene, the microbiological impact of point sources and diffuse pollution on water quality, and the hygienic-microbiological aspects of centralised and decentralised sanitation systems, including water reuse. Andrea has

served as a consultant to the World Health Organization on several projects and as an editor of the WHO CC's Water&Risk Newsletter. Additional professional activities include: Reviewer for Water Science and Technology, Water Supply, International Journal for Water and Health and Anaerobe; Member of the Working Group Hygiene of the German Association for Water, Wastewater and Waste (DWA); Member German WASH network; Member WHO Task Force on Surveillance and Task Force on Target Setting and Reporting under the Protocol on Water and Health and; Member International Water Association (IWA) Specialist Group on Health-Related Water Microbiology).

Meet the New Board Members (cont.)



Orin Shanks, PhD

Dr. Orin C. Shanks is a Research Geneticist at the United States Environmental Protection Agency in the Office of Research and Development, Microbial Contaminants Control Branch. His primary role is to supervise a molecular research laboratory specializing in the application of DNA-based molecular technologies for environmental microbiology. Projects focus on the development, validation, and implementation of molecular methods. Other research activities utilize next generation sequencing and computational biology to elucidate the influence of animal host age, diet, and biogeography on the shedding of fecal indicator bacteria. Dr. Shanks is a U.S. patent holder for several DNA-based technologies and is currently working with the U.S. EPA Office of Water to develop official standardized operating protocols for human-associated fecal source identification technologies. He is an active member of the International Water Association and the American Society

for Microbiology and enjoys collaborating with scientists worldwide. Dr. Shanks received his undergraduate and Master's degrees from the University of Wyoming and his Ph.D. from Oregon State University.

Recommended Reading

WaterMicro 2011 Catchment Microbial Modeling Workshop

The June 2012 issue of *Water 21* (published by IWA) features an article by Graham McBride entitled "Action Needed on Knowledge Gaps in Catchment Microbial Modeling." The article highlights key discussion from the Catchment Microbial Modeling Workshop held prior to the WaterMicro 2011 Symposium in Rotorua, New Zealand. The workshop stressed the need for faster progression in the area of catchment microbial modeling and as a result of the workshop *The Rotorua Declaration* was established. The declaration recognizes that "... catchment microbial modeling is needed in many countries to better inform integrated catchment management and to protect water quality and human health." The declaration also proposes increased research efforts and communication between all stakeholders. The full declaration and presentations from the Workshop can be viewed and downloaded at www.iwa-microbiology.org. The full article in *Water21* can be found on page 57 of the June 2012 issue.

Additional Readings

Animal Waste, Water Quality and Human Health

Editors: A. Dufour and J. Bartram. Publication Date: 15 Oct 2012. ISBN: 9781780401232

Site Specific Risk Assessment Tools for Land Applied Biosolids: WERF Report SRSK3R08

Author: Patrick L Gurian. Publication Date: 30 Jun 2012. ISBN: 9781843392590

Sustainable Water Ecosystems Management in Europe: Bridging the Knowledge of Citizens, Scientists and Policy Makers

Editor: Carlo Sessa. Publication Date: 01 Aug 2012. ISBN: 9781780401140

Detection of Pathogens in Water Using Micro and Nano-Technology

Editors: G. Zuccheri and N. Asproulis. Publication Date: 15 Aug 2012. ISBN: 9781780401089

"Holy springs and holy water: underestimated sources of illness?"

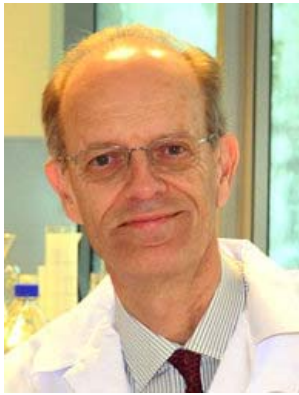
A. Kirschner, et al. *Journal of Water and Health*. 2012; 10(3):349-357

"Assessment of sources of human pathogens and fecal contamination in a Florida freshwater lake"

C. Staley, et al. *Water Research*. 2012 Nov 1; 46(17):5799-812

Engineering Microbial Communities from Within

Synopsis of Dr. Staffan Kjelleberg's presentation at the 2012 IWA World Water Congress



Dr. Staffan Kjelleberg, Director, Singapore Centre on Environmental Life Sciences Engineering and Co-director, Centre for Marine Bio-Innovation at the University of New South Wales. Photo courtesy of Singapore Centre on Environmental Life Sciences Engineering.

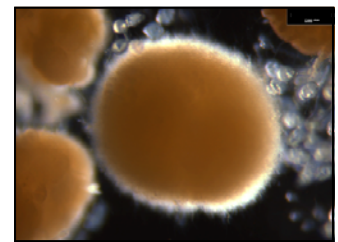
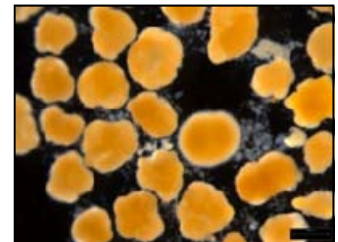
Dr. Kjelleberg is the Director of Singapore Centre on Environmental Life Sciences Engineering at Nanyang Technological University in Singapore and Co-director of the Centre for Marine Bio-Innovation at the University of New South Wales, Australia. His keynote presentation at IWA's 2012 World Water Congress entitled "Towards controlling integrated bioprocesses: Engineering microbial communities from within" provided a look at how biofilms function, how microbial systems communicate via quorum sensing and described the complexity of microbial communities in the built water system.

Microbial life sciences and, consequently environmental and bioprocess engineering have been revolutionized by parallel advents of a much enhanced understanding of microbial communities as sophisticated complex consortia and next generation sequencing technology, enabling high resolution genomic analysis of such microbial assemblages.

Using these next generation sequencing platforms we can achieve sequencing of microbial communities at ultra-deep saturation level. Preliminary studies reveal they are composed of thousands of species. In small samples such as the flocs in activated sludge, very few or none of the species align with known genomes in databases, and hence are not

similar to organisms previously encountered. We also find that most of the abundant members cannot be classified even at a very general or high taxonomic level. Nevertheless, we can determine the specific functions being carried out in complex communities by describing all genes that are expressed. This is achieved by sequencing the pool of transcripts made from all actively expressed genes and assigning these to the organisms that bear them, even if we do not have prior knowledge of the organisms themselves. For the first time all members of complex microbial communities in any system can be determined, whether the community is an engineered bioprocess, aerobic granulation process or surface waterway.

This is the time when modern genomics, systems biology and manipulative experimentation, based on reactor or systems ecology approaches, can be applied on highly diverse microbial communities such as those involved in used water treatment, bioremediation, bioprocesses and management of all stages of the urban water distribution system.



Images of activated sludge flocs from a used water treatment plant: granular sludge (top) and a mature sludge granule (bottom). Images courtesy of Singapore Centre on Environmental Life Sciences Engineering.

Call for Authors

Collaborators wanted to update Global Sanitation and Disease Health Aspects of Excreta and Wastewater Management: A new edition of Feachem, Bradley, Garelick and Mara

Dr. Joan B. Rose and Dr. Blanca Elena Jiménez Cisneros are looking for authors who are interested in writing chapters for a new edition of Feachem's book Global Sanitation and Disease Health Aspects of Excreta and Wastewater Management (<http://documents.worldbank.org/curated/en/1983/01/439534/sanitation-disease-health-aspects-excreta-wastewater-management>). This will be an interactive book with a three year time frame to highlight the newest global information on pathogens and indicators in water. The hope is to culminate the effort in a major international conference.

Please email Dr. Joan B. Rose (rosejo@msu.edu) if you are interested by December 1, 2012. Include in your email name, email address, affiliation and potential chapter of interest.



WaterMicro 2013

Florianópolis, Brazil

Venue: Majestic Palace Hotel

Dates: September 15-20, 2013

Topics: Water pollution and diseases; Microbial source tracking; Catchment protection; Water reuse and health concerns; Biofilm studies; Water and sanitation in developing countries; Global changes and water quality; Recreational water and health; Epidemiology of waterborne diseases; Microbial risk assessment; Microbial quality of shellfish growing areas.

Abstract Submission: Please visit www.hrwm2013.org to submit oral and poster presentation abstracts online. Submissions will be open from November 1, 2012 through April 1, 2013.

Bursary Awards: Bursary awards are given to students and scientists going to school and/or working in developing countries/regions. Please visit www.hrwm2013.org to download an application form due April 1, 2013.

Registration: Please visit www.hrwm2013.org to register securely online. Registration opens November 1, 2012 and early bird rates apply through July 1, 2013.

Entertainment: Florianópolis is the island of one thousand charms, featuring gorgeous beaches, islands, lagoons, dunes, historic buildings, and nature sports – a true entertainment park at open sky. Sea food is part of the local gastronomical culture, from the most exotic options to the refinement of the best international cuisines.

Organizers: CETESB, University of São Paulo, FIOCRUZ, Federal University of Santa Catarina, and AIDIS



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