



Health Related Water Microbiology Specialist Group Newsletter

Volume 20 – December 2019

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Message from our chair

The IWA SG HRWM was of great importance to me since I was a PhD student. Apart from the high-ranking specialist knowledge, it was above all the enthusiasm, the collegiality and the cooperation of esteemed, experienced and young water professionals within the group that impressed and shaped me. So it is a great pleasure for me to work as chair with the management committee to serve the group and give something back.

I would like to thank our current past chair Hiro Katayama for his excellent work during the last two years. Further thanks are due to our secretary, Daisuke Sano, who is carrying out his work with great dedication and to all members of the management committee.

After a successful 20th Symposium in Vienna with a pleasingly high proportion of young colleagues



Become an IWA member

Not yet a member and interested in joining IWA and specifically HRWM ? Then click on the link below and see how you can become a member of this family.

<http://www.iwa-network.org/membership.php>

(about 30%) we are planning further activities of our group:

At the SG Leaders Forum on 1 December 2019 in Colombo, Sri Lanka, Joy Kwanraee Sirikanchana represented the HRWM SG and gave an introduction about our group at the IWA Development Congress.

For the 9th Singapore International Water Week, which will be held from 5 to 9 July 2020, our group is represented by Daisuke Sano and myself serving as members of the Programme Committee.

At the Regional IWA Diffuse Pollution Conference, which is scheduled for 14-17 September 2020 in Vienna, our group is represented by Andreas Farnleitner and myself, co-organizing the scientific program.

Several contributions and proposals are submitted for the IWA World Water Congress which will take place from 18 to 23 October 2020 in Copenhagen, Denmark.

Our next open HRWM group meeting will be held at the IWA World Water Congress in Copenhagen, Denmark next year.

I am convinced that our HRWM group, with now more than 1400 members, will further successfully develop our research field with

special focus on the advancement of our young scientists.

Your ideas and proposals are always welcome!

Regina Sommer



Hiro Katayama is handing over the HRWM SG chair to Regina Sommer and receives with thanks the special designed HRWM SG chair water carafe (Photo Credit HRWM-Vienna/Zsolt Marton)



Members of the HRWM SG management committee present at the 20th symposium in Vienna, Austria, showing the highly positive spirit of our group (Photo Credit HRWM-Vienna/Zsolt Marton)

20th International Symposium on Health Related Water Microbiology (International Water Association - IWA)

September 15 - 20, Vienna, Austria

- Report by Regina Sommer und Andreas Farnleitner (Conference chairs)

The 20th symposium of the IWA Specialist Group Health-Related Water Microbiology, organized by ICC Water & Health and the Austrian Society for Hygiene, Microbiology and Preventive Medicine in Vienna (Campus University of Vienna), was a great success.



The delegates of the IWA HRWM Symposium (Photo Credit HRWM-Vienna/Zsolt Marton)

More than 400 colleagues from 45 countries actively participated in the high-quality scientific program, which consisted of 73 lectures, 260 posters and five workshops, two of them in cooperation with the WHO.

(1): QMRA_catch approach, (2) A Demonstration of Pathogen Flow and Mapping Tools for Sanitation Decisions: Knowledge to Practice with the Global Water Pathogens Project, (3) WHO Workshop: Are Coliphages and Other Bacteriophages Ready to be used as Virus Indicators in World Health Organization Guidelines? (4) WHO Workshop: Antimicrobial Resistance and (5) Clarity in Quantitative Microbial Risk Assessment QMRA.

Details on the workshops can be found at the conference website www.hrwm.eu



The participants of workshop QMRA_catch approach at the TU Wien (Photo Credit HRWM-Vienna/Zsolt Marton)

The high number of young participants at the symposium was particularly pleasing, namely 130 Young Water Professionals (YWP) aged up to 35, who were offered a special registration fee. This was possible due to the support of the City of Vienna – Vienna Water.

Highlights included an excellent opening lecture by Prof. Erika Jensen-Jarolim (ONE HEALTH: understanding allergy or immune tolerance in humans and animals) and a prominently cast panel discussion on the UN Sustainable Development Goal 6 (Water and Sanitation), organized by the YWPs Austria.



Panel discussion on UN SDG Goal 6 “Clean Water and Sanitation” (Photo Credit HRWM-Vienna/Zsolt Marton)

Another highlight was the presentation of the Global Water Pathogens Project (GWPP) by Joan Rose und Andreas Farnleitner “The Past, Current and Future of the Global Water Pathogens Project (GWPP)”.

A welcome reception at the University Brewery, an enjoyable evening at a Heurigen in Neustift, an YWP Pub-Quiz evening and a festive conference dinner at the Vienna City Hall rounded off the successful event.



Conference dinner at the Vienna City Hall (Photo Credit HRWM-Vienna/Zsolt Marton)

For participants still not having collected enough information three technical tours were organized for Friday and Saturday: (a) Vienna flood protection, (b) Vienna Waste Water Treatment Plant, (c) Vienna drinking water resources from the alpine karstic area.



Participants at the excursion to the Drinking Water Resources of the City of Vienna in the Alps (Photo Credit HRWM-Vienna/ICC)

We are happy about the numerous positive feedback we received about our event. The program and the abstract book can be viewed on the congress website: www.hrwm.eu

The pictures can be viewed using the link: <https://zsoltmarton./HRWM-Symposium 2019 Vienna> Password: HRWM.

We are looking forward to see you all 2021.



The ICC Water & health Team satisfied with the successful symposium (Photo Credit HRWM-Vienna/Zsolt Marton)

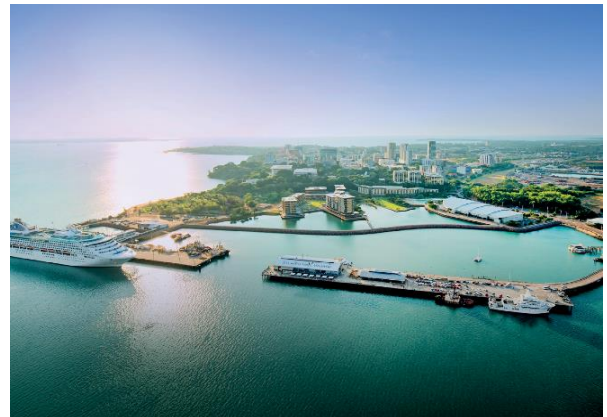
Host of WaterMicro 2021 - Land down under came out tops!

At our recent HRWM symposium, Darwin, Australia won the bid to host HRWM 2021.



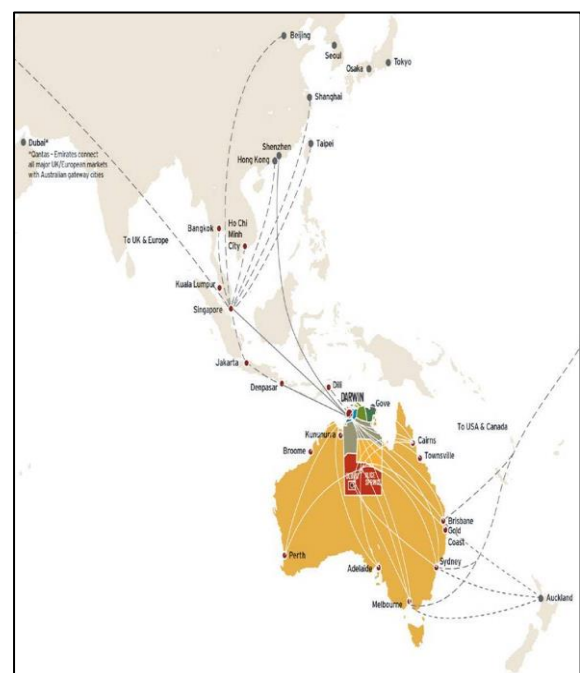
Australian colleagues celebrating that Darwin has been chosen for next venue. (Photo Credit HRWM-Vienna/Zsolt Marton)

This is what the winners had to say:



“Come and join us in September 2021 in tropical North of Australia, gateway to South East Asia and the Pacific. The Symposium will be held at the Convention Centre at Darwin’s Waterfront Precinct and the social events will allow delegates to experience the warm climate. The ‘young’ vibrant city provides an excellent platform to support and nurture the next generations of specialists to continue driving health related water microbiology forwards and delegates are encouraged to stay longer and enjoy the surrounding natural environment.”

Amy Dysart, Water Corporation, Australia



*Award and special
prize winners at
recent HRWM
Symposium in
Vienna, Austria*

**Winners of Best Poster Award HRWM
Vienna 2019**

These are the winners of the best poster award (in alphabetic order). For the abstracts see abstract book (www.hrwm.eu).

Mohan Amarasiri, Chihiro Konuma and Daisuke Sano

Department of Civil and Environmental Engineering, Graduate School of Engineering, Tohoku University, Aoba 6-6-06, Aramaki, Aoba-ku, Sendai, Miyagi 980-8579, Japan. Department of Frontier Science for Advanced Environment, Graduate School of Environmental Studies, Tohoku University, Aoba 6-6-06, Aramaki, Aoba-ku, Sendai, Miyagi 980-8579, Japan

Title: Extracellular antibiotic resistance gene decay by free chlorine treatment (POP 62)

"It was a great pleasure to receive an IWA-HRWM best poster presentation award for our study entitled "Extracellular antibiotic resistance gene decay by free chlorine treatment". In this study, we evaluated the functionality reduction of antibiotic resistance genes exposed to free chlorine. We found a correlation between the CT value and the number of observed transformants that can be used in developing disinfection protocols".

- *Mohan [Amarasiri](#)*



Monhan Amarasiri with Gary Toranzos and Ricardo Santo, chairs of Poster award committee (Photo credit: HRWM-Vienna/Zsolt Marton)

Samuel Dorevitch and Abhilasha Shrestha

University of Illinois at Chicago School of Public Health, USA

Title: Solar-powered point-of-use drinking water treatment in rural Kenya (Poster 112)

"The work we've been doing with microplasma-generated ozone in rural Kenya shows real promise, given that it runs on solar power. It's very gratifying to have received the "Best Poster" award at the 20th Annual IWA Health Related Water Microbiology conference in Vienna. My team and I hope that others evaluate this new method of water disinfection in their labs and in communities where safe water is not readily and reliably available."

- *Sam Dorevitch*



Abhilasha Shrestha with the chairs of the Poster award committee (Photo credit: HRWM-Vienna/Zsolt Marton)

Heather M. Murphy, Shannon McGinnis, Ryan Blunt, Alexander Cagle, Jingwei Wu, Susan Spencer, Aaron Firnstahl, Joel Stokdyk, Mark Borchardt

Water, Health and Applied Microbiology Lab (WHAM Lab), Department of Epidemiology and Biostatistics, College of Public Health, Temple University, Philadelphia, Pennsylvania, USA, Department of Epidemiology and Biostatistics, College of Public Health, Temple University, Philadelphia, Pennsylvania, USA, USDA Agricultural Research Service, Marshfield, Wisconsin, USA, USGS Upper Midwest Water Science Center, Marshfield, Wisconsin, USA

Title: Are septic systems the source of human fecal contamination in private wells in rural Pennsylvania? (POP 28)

The research she presented was a study of the temporal variability of microbial water quality in private wells in rural Pennsylvania. The key findings of the research were as follows: 1. Microbiological water quality data and dye tracer studies showed that human fecal contamination is present in private wells and that household septic systems are the source of this contamination. 2. The presence of human Bacteroides (HF183) in the well water was significantly associated with cumulative rainfall 8-14 days prior.

- Heather Murphy



Heather Murphy with the chairs of the Poster award committee (Photo credit: HRWM-Vienna/Zsolt Marton)

Margot Olive, Charlie Gan, Anna Carratalà and Tamar Kohn

Swiss Federal Institute of Technology, Switzerland

Title: Microorganisms from surface waters contribute to the inactivation of human echovirus 11: toward biocontrol of viral pathogens? (Poster 33)



Tamar Kohn receives the award on behalf of Margot Olive (Photo credit: HRWM-Vienna/Zsolt Marton)

"It is an honor to receive this price and thank you for the excellent HRWM symposium in Vienna. The research presented in this poster was entitled:

Microorganisms from surface waters contribute to the inactivation of human echovirus 11: toward biocontrol of viral pathogens?

In this work, we showed that indigenous protists present in lakes and oceans are important biological contributors to the removal of human echovirus 11. Our results pave the way for further research to better understand how protists control human viral pathogens in aquatic ecosystems and how biological removal could be exploited as a water treatment solution to enhance microbial safety."

- Margot Olive

Winners of Scholarships for authors of best abstracts from developing countries (HRWM Vienna 2019)

Iseoluwa Moses Akinwumi

Adewale Olalemi and Akinwumi Iseoluwa

Department of Microbiology, Federal University of Technology, Akure, Ondo State, Nigeria

Title: Detection of Rotavirus and Risk Assessment of faecal Contamination using bacterial and viral Indicators in a Surface Water in Nigeria

Unfortunately, Iseoluwa Moses Akinwumi was not able to participate in the symposium in person. He received the award certificate via a colleague.

Lucas A.T. Garcia

Lucas A.T. Garcia, Laurita Boff, Celia R M Barardi, Markus Nagl

Universidade Federal de Santa Catarina, Florianopolis, Brazil; Medical University of Innsbruck, Innsbruck, Austria

Title: Inactivation of adenovirus in water by natural and synthetic compounds

Smita Menon

Smita Menon and Zarine Bhatena

Bhavan's College, Mumbai, India

Title: Phage based Approach for Waste Water Treatment

Huynh Thi Thao Nguyen

Nguyen Thi Thao Huynh, Hong Quan Nguyen, Assela Pathirana

IHE Delft Institute for Water Education, Delft, The Netherlands; Center of Water Management and

Climate Change (WACC), Viet Nam National University, Ho Chi Minh City, Vietnam

Title: Health risk assessment (QMRA and DALYs) related to enteric pathogens in urban flood water A case study from an urban flood event in Vietnamese Mekong area - Ninh Kieu district, Can Tho city



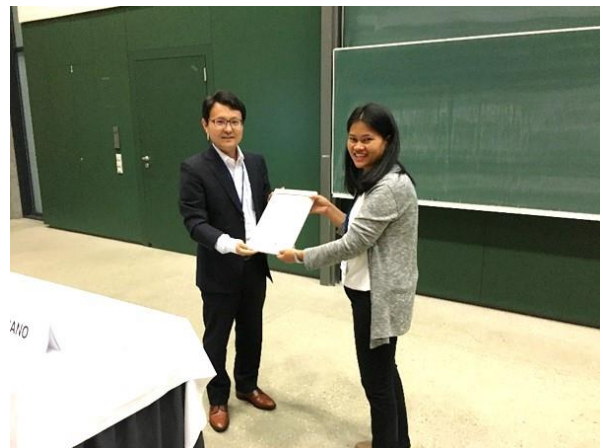
Smita Menon, **Huynh Thi Thao Nguyen** and Lucas Garcia (Photo credit: HRWM-Vienna/Zsolt Marton)

Sarmila Tandukar

Sarmila Tandukar, Jeevan B. Sherchand, Bikash Malla, Rajani Ghaju Shrestha, Ocean Thakali, Eiji Haramoto

University of Yamanashi; Tribhuvan University; Osaka University

Title: Enteric virus contamination in hospital wastewater of the Kathmandu Valley, Nepal



Daisuke Sano hand over the award to Sarmila Tandukar (Photo credit: HRWM-Vienna/Zsolt Marton)

Awardees of Scholarships for best abstracts of YWP

These are the winners of the best abstract of YWP (in alphabetic order). For the abstracts see abstract book (www.hrwm.eu).

Katherine E. Fish

Katherine E. Fish, Joby Boxall

The University of Sheffield, UK

Title: Is more, better? Disinfection residuals impact biofilms and water quality in drinking water distribution systems

Winning the YWP scholarship award is one of the highlights of my year. The esteem of the award has given me confidence in the standard of my research and my communication skills. Practically, the grant provided with the scholarship was hugely beneficial in supporting my attendance at WaterMicro2019, which was a fantastic learning opportunity and a valuable chance to expand my network with many interesting discussions with colleagues.

- Katherine Fish, University of Sheffield

Masateru Nishiyama

Masateru Nishiyama, Shinta Dhewi Afriani, Abdurrahman Muhammad Fikri Rasdi, Toru Watanabe

Faculty of Agriculture, Yamagata University, Japan; Faculty of Agricultural Technology, Gadjadara University, Japan; Faculty of Agriculture, Gadjadara University, Japan

Title: Antimicrobial Resistance and Virulence of Enterococcus faecalis and Enterococcus faecium isolated from Wastewater Treatment Process

Thank you very much for granting the Scholarship for Best Abstracts of IWA YWP at the 20th IWA International Symposium on Health-Related

Water Microbiology. I would like to thank committee members of the conference who were involved in the selection.

My research was to monitor Enterococcus faecalis and E. faecium which are most frequently associated with a range of enterococcal diseases in clinical settings at a municipal wastewater treatment plant in Japan from January to June 2018. In the monitoring, we focused on the changes of antimicrobial resistance and virulence of the target species in the standard activated sludge process. The 581 enterococcal isolates were examined for determination of MICs of twelve antibiotics used for medical treatment of enterococcal diseases, identifying only one isolate (0.17%) of E. faecium resistant to Vancomycin (i.e. VRE), and we showed that the prevalence of VRE in wastewater was lower than other countries. On the other hand, the resistant rates of the isolates to ciprofloxacin and erythromycin were quite high with no significant changes in the treatment process. The same pool of Enterococcus isolates was further examined for detection of virulence genes (gelE, asa1, esp, cylA and hyl) using molecular analysis and ca.30% of the isolates possessed any of these genes. In addition, almost of the isolates, from which at least one virulence gene was detected, showed resistant to one or more antibiotics. This result indicates that clinically important strains of enterococci, which are both virulent and resistant to antibiotics exist in municipal wastewater treatment plants and are important in terms of disinfecting process at such plants. In future, we will evaluate the risk of spreading the antimicrobial resistant bacteria in the environment and obtain information to control the generation and distribution of antimicrobial resistant bacteria.

- Masateru NISHIYAMA, Yamagata University, Japan

Amelie Ott

Amelie Ott, G O'Donnell, NH Tran, MR Haniffah, J-Q Su, K Y-H Gin, M Goodson, Y-G Zhu, DW Graham

Newcastle University, School of Engineering, UK; NUS Environmental Research Institute, National University of Singapore, Singapore; Universiti Teknologi Malaysia, Malaysia; Key Lab of Urban Environment and Health, Institute of Urban Environment, Chinese Academy of Science, China; Department of Civil and Environmental Engineering, Faculty of Engineering, National University of Singapore, Singapore; Newcastle University Malaysia, Malaysia

Title: Source Tracking of antimicrobial Resistance in emerging Countries.

"I would like to thank the organisers of the 20th International Symposium on Health Related Water Microbiology for awarding me with the 2019 Scholarship for best abstract of IWA Young Water Professionals. The award allowed me to attend the HRWM symposium in Vienna (15-20 September 2019) and present my PhD research on "Source tracking of antimicrobial resistance (AMR) in emerging countries". For my PhD, I monitored AMR pollution in a Southeast Asian river catchment and then applied the data to adapt existing river quality models to predict AMR spread and ultimately identify optimal interventions. Working together with partners in Malaysia, Singapore and China, this research targets UN Sustainable Development Goals 3 and 6 (Good Health and Well-Being; Clean Water and Sanitation). The HRWM symposium with its holistic approach of covering all aspects of health related water microbiology was highly relevant to my multi-disciplinary research. It represented a rare opportunity for me to discuss my work with lab-based and field focused scientists, hydrological modellers and regulators. I particularly enjoyed the HRWM-WHO workshop on AMR. "

- Amelie Ott, Newcastle University



Masateru Nishiyama, Amelie Ott and Katherien Fish (Photo credit: HRWM-Vienna/Zsolt Marton)

Huw Taylor Prize Winner

In 2017 the Huw Taylor Award was established by the HRWM SG Management Committee for an Exceptional Scientific Contribution to provide Water or Sanitation Solutions in Emergency and Developing Settings in honor of Prof. Huw Taylor. An award committee was nominated.



The trophies of the Huw Taylor Prize (Photo credit: HRWM-Vienna/Zsolt Marton)

Huw Taylor Prize 2017

Professor Huw Taylor was elected as the first winner of the prize in recognition of his exceptional contribution to the field of Health-

Related Water Microbiology and to the HRWM Specialist Group. The award ceremony took place at the 20th Symposium of the SG HRWM in Vienna, Austria where a colleague and friend of the late Huw (University of Brighton, Brighton, UK), James Ebdon received the award on his behalf.

Huw Taylor Prize 2019

Laura Braun of Imperial College in London, UK, was the winner of the 2019 Huw Taylor Award.

This is what Laura had to say:

“It is an absolute honour to have received the Huw Taylor prize, not just because it’s named after Huw but also because it recognizes work being done on water in developing countries. My research is about the water-based disease schistosomiasis which affects 200 million people worldwide. It is considered a Neglected Tropical Disease as it has received much less funding and research compared to other diseases such as Malaria. To receive an award for this research really means a lot - not just to me but also to the schistosomiasis community”.

- **Laura Broun, Imperial College London**



Laura Brown receives the Huw Taylor Prize 2019 from Gertjan Medema, Award committee (Photo credit: HRWM-Vienna/Zsolt Marton)

IWA-HRWM Willie Grabow Young Investigator Award Winner



Dr. Isaac Dennis Amoah received his PhD in Health Sciences from the Durban University of Technology (South Africa) in 2018 and has been working as a post-doctoral

research fellow within the Institute for Water and Wastewater Technology of the Durban University of Technology. His research focuses on health-related water microbiology with specific research topics in parasitology, antibiotic resistance, wastewater reuse, microbial health risks assessment and recently microplastics in the aquatic environment. Dr. Amoah has published over 18 papers and 3 technical reports in the last five years and presented at several conferences and as an invited reviewer for over 10 scientific journals.

“At the 2017 Health-related Water Microbiology conference in North Carolina, I got to know about this award and I was encouraged by the work and contribution made by the 2017 recipient. I therefore got back to work, with a strong conviction to contribute in the area of health related water microbiology especially within Africa, where most of my research is focused. Therefore, the Willie Grabow Award is the highlight of my career so far and the biggest so far for me. The day I received the email confirming that I was going to be this year’s recipient was my happiest. I was therefore sad when I could not get my visa approved to join colleagues in Vienna for this year’s conference. I

am however, hopeful that I will be in Australia for the next conference.

I am grateful to have joined the select group of recipients of this award. To be honoured with such a prestigious award by the specialist group shows a belief in my work and potential to develop, I am therefore looking forward to living up to the expectations and continue to make contributions in the field. Beyond the impact it has on my life, it serves as an encouragement to others with similar backgrounds to mine to work hard and be dedicated in their respective fields”.

HRWM Management Committee (MC)

An open call for nominations to the management team of the HRWM SG was sent out earlier this year. Susan Petterson, John Scott Meschke and Maronel Steyn were re-elected for another term as part of the management committee.

During the open meeting Professor Rosina Girones was elected as Vice-Chair of the SG.



“I want to thank the members of the HRWM specialist group attending the WATERMICRO2 019 in Vienna for their support and the confidence

shown voting for my candidature. It is an honor to serve as Vice-Chair of the HRWM SG and it will be a pleasure to work with the management board and the members of the group for advancing in all important HRWM challenges.

I will work to contribute to the safety and sustainability of the water cycle in all regions of the world and the intensification of multidisciplinary in research and technical teams. As SG we should be also close to the

society and we have an important role in the dissemination of science facilitating the direct participation of the citizens in the search for the solutions needed to face water and climate crisis”.



Dr. Eiji Haramoto (Japan) was elected to serve on the HRWM Management committee. He is an Associate Professor at the Interdisciplinary Centre for River Basin Environment (ICRE), University of

Yamanashi, Japan. Dr. Haramoto received his Ph.D. degree from the University of Tokyo, Japan, in March 2007, under supervision of Dr. Hiroyuki Katayama. Between April 2007 and August 2008, he worked at Department of Water Supply Engineering, National Institute of Public Health, Japan, as a research fellow of Japan Society for the Promotion of Science (JSPS). Dr. Haramoto was employed at University of Yamanashi in 2008 as an Assistant and promoted to an Associate Professor in January 2015. His research interests include the development of concentration/detection methods for waterborne pathogens, the spatial and temporal prevalence of waterborne pathogens and their indicators in aquatic environments, the reduction of waterborne pathogens during water/wastewater treatment processes, and Microbial Source Tracking (MST) using host-specific microbial genetic markers. Dr. Haramoto is an Editorial Board Member of Applied and Environmental Microbiology (AEM) and Water (MDPI). He has published ~100 peer-reviewed papers in high impact journals. He supervised students from Nepal, by participating in an international collaborative study, the Science and Technology Research Partnership for Sustainable Development (SATREPS) program of Japan International Cooperation Agency (JICA) and Japan Science and Technology Agency (JST).

GWPP Book Launch and Water-K2P

On September 19, 2019 Global Water Pathogen Project (GWPP) editors, authors and special guests gathered to celebrate and recognize project accomplishments during a special event at the 20th IWA's Health Related Water Microbiology Conference in Vienna. At this event, Dr. Joan Rose launched a new edition of a classic textbook on wastewater microbiology and treatment. The new edition of R.G. Feachem's "Sanitation and Disease: Health Aspects of Excreta and Wastewater Management," comprises information from over [276 contributors](#), including approximately 160 authors and editors.

The GWPP provides a comprehensive updated reference material on waterborne pathogens and risks from excreta and sewage. With support from IT and data-sharing expert AgroKnow, the book is now being disseminated as an open-access online resource (www.waterpathogens.org).

The GWPP is now being translated into IT tools to help improve data accessibility, and knowledge translation around pathogens in excreta and sewage. Specifically, we are developing apps and visualization tools that can help to improve evidence-based decision making and to better inform safe sanitation and water safety planning by stakeholders at different levels. This project is known as the Water Knowledge to Practice Project (Water-K2P), and it is funded by the Bill and Melinda Gates Foundation. The Water-K2P team includes lead PIs Dr. Joan Rose (Michigan State University), Dr. Heather Murphy (Temple University), Dr. Matthew Verbyla (San Diego State University) and Dr. Nynke Hofstra (Wageningen University).

During the 2019 HRWM conference members of the Water-K2P team had the opportunity to share their progress with HRWM conference participants. The team hosted a 3-hour workshop to demonstrate the new Pathogen Flow and Mapping Tools. Some of the key feedback from this meeting included:

- Participants mostly agreed that both tools had the potential to support safe sanitation decision making (gave the tools a score of 4/5)
- Participants reported that they thought the tools were easy to use and liked that they relied on available datasets such as the Joint Monitoring Program (JMP) data (UNICEF-WHO) and the GWPP database
- Participants provided valuable feedback such as making the models more transparent to the users so that they can see the assumptions, data and equations that go into them as well as validating the models.

The next steps for the tools include working with partners in Uganda, such as the Ministry of Water and Environment, the National Water and Sewerage Corporation and the Kampala Capital City Authority, to apply the tools to current decisions related to safe sanitation planning. The team is also looking to collaborate with others who are interested in trying the tools on their on-going projects or interested in providing data. Interested people can reach out to Innocent Tumwebaze, the Country Director for the K2P project in Uganda at kamara.innocent@gmail.com.

These new IT tools will be available for open access use at www.waterpathogens.org in July 2020.



Members of the Water-K2P Team presenting their work at the HRWM Symposium in Vienna. (Photo Credit HRWM-Vienna/Zsolt Marton)



Contributors, supporters and authors are honored in a ceremony at the conference dinner. (Photo Credit HRWM-Vienna/Zsolt Marton)