June 2015 Volume 1 Issue 4

GLOBAL WATER PATHOGEN PROJECT

THE GOAL OF THE GLOBAL WATER PATHOGEN PROJECT...

is to update the original book Sanitation and Disease Health Aspects of Excreta and Wastewater Management with an online, open access integration platform for scientific knowledge on pathogens in water.

IN THIS ISSUE

Virus Team

Authors have begun uploading their content to the website, via the book authoring tool. Summaries of are being released to the website weekly, and are available for viewing by the public.

Protists Team

The team is preparing for their meeting June 28 - 29, 2015 in Paris, France. UNESCO will host the team meeting, where the team is tasked with finalizing chapter outlines, agreeing on content, and establishing submission deadlines.

Bacterial Pathogen Team

The Bacterial Pathogen team had their first conference call June 10, 2015. The agenda included chapter outlines, author guidelines, and submission deadlines.

Helminths Team

Invitations are being sent to authors to join the team. Thus far, four primary authors and one secondary author have confirmed their participation.

Indicator and Microbial Source Tracking Markers Meeting at KWR Watercycle Research Institute in Utrecht, Netherlands

The Indicator and Microbial Source Tracking Markers Team (I-MST) met at the KWR Watercycle Research Institute in Utrecht, Netherlands. Members of the team traveled from Australia, Austria, China, Colombia, The Netherlands, New Zealand, South Africa, Spain, Tunisia, United Kingdom, and the United States for their two-day meeting. The team finalized their respective section outlines, participated in training on using the online book authoring tool, and established a team deadline for content submission. The host for the meeting, Gertjan Medema, graciously provided daily transportation and a tour of the state-of-the-art water research facility located in Nieuwegein, a municipality in Utrecht.

After the conclusion of the I-MST Meeting, KWR held a half-day workshop titled "The value of microbial source tracking for water safety management," where three members of the GWPP (Anicet Blanch, Andreas Farnleitner, Joan Rose) and a researcher from KWR Watercycle Research Institute (Leo Heijnen) gave presentations regarding microbial source tracking related to water safety planning and water management.

Indicator and Microbial Source Tracking Markers Team Meeting
April 12 - 15, 2015 Utrecht, Netherlands

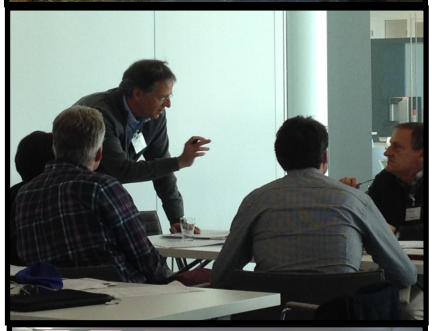
The team meeting began Sunday, April 12, where the members convened for a dinner at the NH Centre Utrecht Hotel. Early the following day, the meeting commenced with a welcome from host, Gertjan Medema, and Global Water Pathogen Project (GWPP) Principal Lead, Joan Rose. Following an overview presentation about the GWPP, Joan Rose and the Indicator and Microbial Source Tracking Markers editors Anicet Blanch and Andreas Farnleitner presented the goals for the meeting:

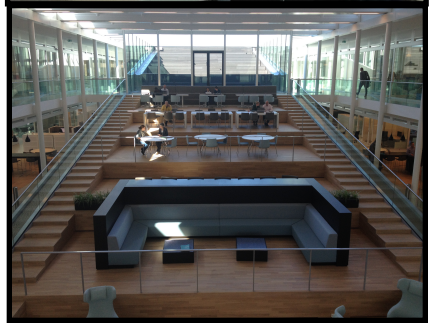
1) Team will have a timeline with a deadline for the next steps
2) Team will know how to upload information in to the online hub
3) Team will finalize outline for content of unit, and
4) Team will develop ideas and make commitment for delivering interim chapter content.

Upon agreement of the meeting goals, the group delved in to discussions regarding the chapter outlines, basic philosophy, status quo of the chapters, and identification of cross links between chapters.

The third day of the meeting was dedicated to building content on the website, where the team obtained hands on experience with reference use, content, and document saving tools. After the presentation from AgroKnow, members of the team were also able to give immediate feedback for suggestions on how to improve the website for user ease. At the conclusion of the meeting, the editors Anicet Blanch and Andreas Farnleitner were able to address deadlines and move forward with consensus on the next steps of the project.

For the fourth day, an editorial board meeting was included in the agenda. Along with editorial board members Anicet Blanch, Andreas Farnleitner, Ron Fayer, Amy Pruden, Jen Miller, MaryLynn Yates, Lucy Roberson, Gertjan Medema, Rosina Girones, Scott Meschke, Chuck Haas, Susan Petterson, Joan Rose, and Kyana Young, UNESCO (Bruno Nguyen), Emory University (Thomas Clasen), the World Health Organization sanitation guidelines team (Sophia Boisson, Kate Medlicott, Thomas Clasen), and AgroKnow (Panagis Katsivelis) were also present. The overview of the WHO Sanitation Guidelines, a WHO workshop at the Health Related Water Microbiology Conference in Lisbon, Portugal, and synthesis with the GWPP and Sanitation Guidelines were discussed. The meeting resulted in a stronger collaboration between Susan Petterson (GWPP Liaison), Sophia Boisson, Kate Medlicott, and Thomas Clasen to create more direct communication between the three separate entities.





GWP NETWORK RESEARCHERS FROM THE VIRUS, INDICATOR AND MICROBIAL SOURCE TRACKING MARKERS (I-MST), AND PROTISTS TEAM

Marcelle Figueira Marques da Silva, PhD
Postdoctoral Research Associate
Department of Microbiology
University of Barcelona
Barcelona, Spain
(VIRUS TEAM)

Dr. da Silva's early work focused on sequencing of the rotavirus G1P[8] genotype from clinical samples collected across Brazil between 1986 – 2013; this study was based on the Brazilian government's massive anti-rotavirus vaccination system in 2006. The goal of the study was to compare viruses before and after the introduction of vaccination. After she discovered that the virus did not change significantly at the genomic level, she then included research methods, such as immunoassays and genetic factors, to further explore any genomic changes in the virus. Currently her research involves a comparative study of samples from Spain and Brazil, whose populations were both subjected to immunization of RotaTeq® and Rotarix® respectively. The goal is to assess the occurrence of rotavirus in the environment and to determine the virus behavior after massive vaccination.

Dr. da Silva was introduced and invited to the GWPP by her colleague, Dr Marize Miagostovich, with whom she worked with at Instituto Oswaldo Cruz. "It is great to exchange experiences and knowledge…and to come together to find solutions to resolve water issues…we can not do science alone." Globalization of science is helpful, especially when taking in to account the limited allocation of funds for research.

With global collaborations, different entities can work together to learn and share new techniques that researchers can return back to their respective institutions and work to improve the global water situation. For Dr. da Silva "…It is worrying, even in 2015, to have deaths and illnesses associated with poor drinking water quality."

Simone M Cacciò, PhD
Senior Scientist
European Union Reference Laboratory for Parasites
Instituto Superiore di Sanità
Rome, Italy
(PROTISTS TEAM)

Dr Cacciò used his long-standing fascination with biology and science to propel him into a life and career in science. With encouragement from a friend and a high school instructor, his interests were nurtured and allowed him to create a pathway to pursue his doctoral studies, post-doctoral research, and his current position as a senior researcher in microbiology, molecular biology, and parasitology.

Regarding his involvement in global collaborations, Dr Cacciò has engaged in several projects to resolve various water quality issues. "Water is essential for the survival of this planet, but we are underestimating its importance and not using this precious resource properly. Control of pathogens through production of safe water has been a major advancement of modern society, and we are no longer ready to live with waterborne outbreaks of disease. Obviously, the scenario is dramatically different in developing parts of the world, and access to safe water is one of the essential improvement that must be on the agenda"

"**G**lobal problems need global answers." Many important questions are of global concern (spread and emergence of infectious diseases, climate change and environmental issues, sustainability of food and energy production) and cannot be addressed without a multi-faceted resolve and a strong multi-tiered investment in resolving water issues.

Pradip Gyawil
Research Intern
The Commonwealth Scientific and Industrial Research Organisation
Brisbane Area, Australia
(I-MST TEAM)

Pradip Gyawali is currently a PhD student at the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Pradip was particularly intrigued by the common occurrence of helminths in his home country of Nepal. With the WHO and USAID taking note of the occurrence, and efforts to immunize the population against the outbreaks, helminths continued to occur within his community. With an urgency to understand this persistent outbreak, and a goal to remediate the issue, Pradip began to explore opportunities to explore rapid detection methods for presence of helminths. Challenges, due to genotype of helminths, has prevented him from fully identifying the cause of the problem or the occurrence of the pathogen. Recent development of a rapid technique related to presence of an ova, and subsequent direct proportion to genotypes, has allowed Pradip to continually expand his knowledge of helminths.

As a member of both the Indicator and Microbial Source Tracking Team and the Helminths Team, Pradip is looking to continue to collaborate with other researchers to optimize the interaction with different teams, universities, researchers, and countries who may have the same or similar research goals. Pradip is slated to earn his PhD in the Spring of 2016.

Maggy NB Momba, PhD
Research Professor
Department of Environmental, Water, and Environmental Sciences
Tshwane University of Technology
Pretoria, South Africa
(I-MST TEAM)

Dr. Momba was originally interested in water quality, when as a child she discovered "worms" in her family's home drinking water. Through formal education at the university, she learned that the "worms" were actually biofilm breakage in the water distribution system. Still ever curious, she then began a journey into water quality and the effects of water treatment. Since 1989, Dr. Momba has served as a Professor at the University of Fort Hare and at Tshwane University of Technology, South Africa. She is the current advisor to 22 students (7 PhD and 15 Masters), where she is dedicated to transferring her water knowledge to her students.

While Dr. Momba is optimistic about the investment and the interest in water treatment, often times non-locals, with the same level of interest and motivation to help resolve the issues as the local community, may be out of touch with the capability of low energy treatment applications. The high level technology treatment processes that are often found throughout the developed regions of the world are not applicable to environments in various regions in Africa. Scientists need to "make technology adaptable to the environment."

Dr. Momba has very high expectations for the GWP network to engage with the global community. "We must understand that we are a global community, with experts all over the world, Africa included, and be willing to reach out to authors in regions of the world where the book might be especially useful in a practical context."

30% of fresh water is in the ground.

It takes more water to manufacture a new car (39,090 gallons) than to fill an above ground swimming pool.

Source: www.epa.gov

For additional information, contact:

Kyana Young, PhD
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NSF GRANT: The Role of Aerosolization from Wastewater Systems in the Fate of and Exposure to Ebola Virus

Photo Credit: Logan Wallace

The 2014 Ebola virus outbreak in Guinea, Sierra Leone, and Liberia, brought attention to the elusive transport of the deadly virus. One researcher in particular was intrigued about "non typical" routes of transmission, and subsequent exposure to the virus. Dr. Linsey Marr (Principal Investigator), Professor at Virginia Tech, in the Department of Civil and Environmental Engineering, was motivated to explore the exposure pathways after reading about the Ebola virus infecting nurses at the Texas Health Presbyterian Hospital, in Dallas, Texas. Utilizing her background in air quality, nanomaterials, and disease transmission, Dr. Marr is interested in the specifics of Ebola virus transfer knowing that "we can not rule out forms of transfer that do not include fomite transmission."

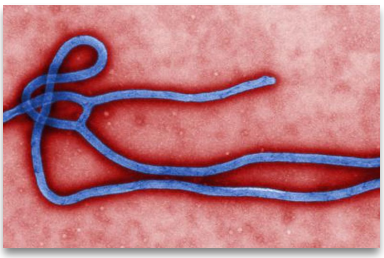

Photo Credit: www.cdc.gov

In 2015, Dr Marr and her lab received a 1-year National Science Foundation Grant for Rapid Response Research (RAPID) to investigate "The Role of Aerosolization from Wastewater Systems in the Fate of and Exposure to Ebola Virus." Her team, including GWPP Executive Editor Amy Pruden (Co-Principal Investigator), a post-doctoral researcher, and a PhD candidate, will use the grant to explore alternative routes of virus transmission, such as aerosolization from toilets and wastewater systems.

In direct connection with the GWPP, one of the missions of the project is to support "global exposure assessments, risk assessments, and enable evaluation of sanitation technologies for achieving health- based targets." The network and the user community may use the knowledge generated from this study, for the online knowledge hub and transfer the knowledge in to working, active resolutions to water issues.

Upcoming Conferences

Regional Forum on Climate Change
July 1 - 3, 2015
Pathumthani, Thailand
http://www.rfcc2015.ait.asia/

10th IWA international Conference on Water Reclamation and Reuse
July 5 - 9, 2015
Harbin, China
http://www.iwareuse2015.org/

3rd Annual International Forum on Water
July 13 - 16, 2015
Athens, Greece
www.atiner.gr/water.htm

10th International Symposium on Water Supply Technology
July 20 - 22, 2015
Kobe, Japan
https://sv123.wadax.ne.jp/~convention-j-net/water2015/

2015 international Conference on Water Resource and Environment
July 25 - 27, 2015
Beijing, China
www.wreconf.org

World Water Week
August 22 - 28, 2015
Stockholm, Sweden
www.worldwaterweek.org

IWA Specialist Conference on Natural Organic Matter in Water
September 7 - 10, 2015
Malmö, Sweden
http://www.malmokongressbyra.se/NOM6

18th International Symposium on Health Related Water Microbiology
September 13 - 19, 2015
Lisbon, Portugal
watermirco2015.org

World Congress on Anaerobic Digestion
November 15 - 19, 2015
Viña del Mar, Chile
http://www.ad14chile.com/information/