Microbial Modelling and Risk Analysis PDG

Members Present: Yuhuan Chen, Marcel Zwietering, Alejandro Amezquita, Michael Batz, Robert Buchanan, Sarah Cahill, Paw Dalgaard, Michelle Danyluk, Noemie Desriac, Darrell Donahue, Rhonda Fraser, Francisco Garces Vega, Leon Gorris, Miao Guo, Keith Ito, Kamin Khaksar, Yasuyoshi Komoto, Shigenobu Koseki, Barbara Kowalcyk, Kunihiro Kubota, Marciane Magnani, Deon Mahoney, Jeanne-Marie Membre, Cian O'Mahony, Clare Narrod, Thomas Oscar, Hao Pang, Gregory Paoli, Abani Pradhan, Tanya Roberts, Sofia Santillana Farakos, Jenny Scott, Dennis Seman, Daniele Sohier, Cindy Stewart, Zeynal Topalcengiz, Erdal Tuncan, Jane Van Doren, Yangyang Wang, Richard Whiting and May Yeow.

Board/Staff Members Present: Mickey Parish.

New Members Present: Florence Dufour, Margaret Rush, Mark Kazmierczak, Dane Jensen, Mohammed Hakeem, Rachel Binet, Peter Dragasakis, Donna Womack, Chee Zheng, Erdogan Ceylan, Kris Young, Dan Belina, Thomas Bell, Lisa Lucore, Ian Hildebrandt, Ellen Turner, Phillip Gurman, Pharrunrat Tanaviyutpakdee, Pingping Zhou, Aidong Liu, Rafiqul Islam, Wei Hsiang Chang, Qing Wang, David Horowitz, Anna Aceituno, Jaqpinder Brar, Abhinav Mishra, Fabrice Peladan, Emma Hartnett, Vladimir Glukhman, Sanjay Gummalla, Helen Akinruli, Lihan Huang, Tong-Jen Fu and Yohan Yoon.

Visitors/Guests Present: Cheng Liu, Jim Arbogast, Isaac Rukundo, Ingrid Huntley, Hiromi Kubota, Moez Sanaa and Jairo Romero.

Total number of participants: ~100

Meeting Called to Order: 9:00 a.m., Saturday July 25, 2015.

Minutes Recording Secretary: Marcel Zwietering (with help from Yuhuan Chen).

Greetings/Comments from Executive Board:
Mickey Parish indicated that this PDG had more than twice the number of people present since the past when Mickey was chairing. Also the whole IAFP community is doing well. Last year we had around 3,900 members, now more than 4,200, with growth especially strong in international members (>120%), but also U.S. members. Last year 2,879 meeting participants, now more than 3,100 registered and 3,200 expected at the end of the meeting. There is a little lower number of exhibitors. There are three lunch-time meetings. New secretary (from the academic world) nominations are due in October. Nominations for awards due in February.

Old Business:
Minutes. Minutes from the 2014 meeting were tabled for comments or edits. There were no edits. Motion to adopt the minutes by Leon Gorris, seconded by Alejandro Amézquita. Minutes adopted.

Webinars. Yuhuan gave a brief overview of the 7 webinars held in the last four years (see list in Appendix I). Yuhuan thanked the speakers of the last one (Leon Gorris and Elissavet Gkogka) on ALOPs (The application of the Appropriate Level of Protection (ALOP) and Food Safety Objective (FSO) Risk-based Metrics in Food Safety Management). It was mentioned that webinars are a good way to show benefit of being a member. They are available to IAFP members at: https://www.foodprotection.org/events/webinars/.

Also an overview of the proposals accepted for this conference was given, >60% of our proposals were accepted.

New Business:
Guest speaker: Dr. David Gombas of United Fresh gave a very well structured informative presentation on "Fresh Produce Industry Perspective on Risk Assessment." Fast facts about fresh produce – a billion servings in the U.S. daily, over 300 commodities, most grown outdoors, impact of field contamination on public health unknown. Produce industry interested in knowing about QRA, but communication of what QRA mean is critical to make connection. Shared definition from industry guidance "An initial risk assessment shall be performed and documented that takes into consideration the historical testing results of the water source, the characteristics of the crop, the stage of the crop, and the method of application… shall address potential physical, chemical, and biological hazards and hazard control procedures for the water distribution system." Suggested potential case study to evaluate risk of current practices and how changes in practices may affect level of risk, by using "widgets" as an example of any fresh produce commodity, and looking at the risk of pathogens from in-field water application.

Questions posed and discussion:
Should we focus on *Salmonella* then instead of generic *E. coli*?
- Generic *E. coli* is not (always) a good indicator for pathogens, but there is not an easy better indicator.

Should risk assessment be done one by one organism?
- First determine the most important, do it for that one.

Lack of data: has industry not loads of data?
- There are mainly loads of zeros. So data may not be fully informative for QRA input.

We need to make decisions despite the lack and uncertainty in the data.
- View shared by members present.

Updates from the ICPMF Committee
Marcel Zwietering (as being the chair of the International Committee on Predictive Microbiology of Food) gave an update. The next conference ICPMF9 will be in Rio de Janeiro September 8–12, 2015. Since 2015 ICPMF became a subcommittee of the ICFMH (The International Committee on Food Microbiology and Hygiene of the IUMS). Also good relationships and cooperation with the IAFP are continued. Yuhuan indicated that information sharing with ICPMF committee resulted in a 2-page list of predictive modeling and risk assessment tools (presented at ICPMF8 and others); the list was included as a handout in the FDA-iRISK workshop Friday (workshop supported by MMRA PDG).

Update from SRA MRA specialty group (Abani Pradham University of Maryland)
Abani presented the Society for Risk Analysis vision statement and indicated that the Microbial Risk Analysis Specialty Group (http://sra.org/specialty-group) focuses on public health risks associated with a variety of biological hazards including: human pathogens transmitted through routes such as food, water, air, and other sources and noted that these hazards generally share many common features, such as the ability to grow, survive and die; to disperse both actively and passively; to interact with other biological populations in the ecosystem; and to evolve and adapt. The MRA SP has different activities including: sponsor/organize symposia at SRA annual meeting; organize webinars; encourage students–Specialty Group student merit award competition, and facilitate communications and networking (e.g., LinkedIn subgroup). It's clear that the SRA MRA SP and the MMRA PDG have shared interest areas and similar activities and moving forward closer interactions would likely benefit both groups. The SRA MRA SG had a webinar on "The Complexity Balance – Optimal Risk Assessment Design" in 2013 and is

planning a webinar on "Using Big Data in Microbial Risk Analysis" for summer 2015 and will share more details with the MMRA PDG in the near future. Abani also mentioned the MRA officers and website *http://mrasg.org/*. The SRA 2015 Annual Meeting will be in Arlington, Virginia.

Update from RA software/data exchange workgroup
Cian O'Mahony gave an update on behalf of the workgroup; Matthias Filter from BfR (The Federal Institute for Risk Assessment of Germany) is the lead for the workgroup. Cian indicated that a main objective is to standardize and exchange models and data: Like in system biology (SBML) develop PMF-ML: predictive modeling markup language. The workgroup met during the IAFP European Food Safety Symposium to facilitate discussions among participants; they also develop a document to describe standardization in data and model format.
Cian encouraged others who are interested in the initiative to join the workgroup and encourage MMRA PDG members to visit the PMF-ML website developed for information about the initiative and updates: Predictive Modelling in Food Markup Language (PMF-ML). A few months ago the workgroup released a first Software Developer Guide at the OpenML for Predictive Modelling in Food portal https://sourceforge.net/projects/microbialmodelingexchange/. There was a question about whether the workgroup might include a case study on data exchange format between different software tools and Cian would bring the idea to the group for consideration.

MMRA PDG member survey
Marcel provided an overview of the responses of the member survey. Sixteen members responded. Most would like to see about 2 webinars per year. Many ideas for webinar topics and other activities were provided. Thanks to the student member Qing Wang for setting up the survey. A summary of the survey results (PPT slides) including ideas proposed will be sent to MMRA members.

Symposia/Workshops/Roundtables – Ideas for 2016 – Proposal due October 6, 2015 (ideas were distributed before the 07/24 meeting)
- Global burden of disease project results, how the results are used/to be used, and the lessons learned
- Relevance of product testing in food safety management – recent perspectives from Europe and from FSMA context
- Modeling cross-contamination
- Modeling low moisture foods
- Workshop on challenge tests and connection to predictive modeling and MRA
- *Salmonella* whole genome sequencing – potential connection to predictive modeling and MRA
- Multicriteria decision analysis/foodborne illness attribution related topic
- Interactive session – what undermine confidence in using predictive models and QMRA. What can be done to improve confidence among decision makers in industry, government and others. Connecting probabilistic variability (and uncertainty) in QMRA on the one side and management need for "discrete" decisions on the other side, for a better understanding of how to manage food safety risks in a variable world.

Daniel Sohier: workshop technical guidance for challenge tests.
Challenge test to determine if the organism will grow, survive, inactivate, during the shelf life. ISO technical guidance for challenge tests (Technical aspects and interpretations). (U.S., Australia and eight European countries), now a workshop on how to use these guidelines, e.g., a calculation tool, etc. Comments: Can a standard for all foods and processes be developed:

not be too restrictive. There have been IAFP workshops on the same topic before, would there be enough interest for a new one. Daniel indicated that they have reached out to David Tharp to discuss the issue.

Barbara Kowalcyk: a symposium on risk-benefit assessment, risk assessment related to soil, biological solid and how to overcome hurdles to data sharing.
Leon Gorris: whole genome sequencing: how being used in QRA.
Cian O'Mahony: relevance of microbiome in QRA.
Rachel Binet: enrichment ecology (also in relation to microbiome).
Tanja Roberts and Barbara: how can we improve data sharing between public and private sectors.
What to decide if you detect a positive.
- there is a symposium at this conference
Alejandro: Foodborne antimicrobial resistance (AMR)
- Sarah: QRA: wait a bit by early next year WHO/FAO AMR are investigating how the risk analysis document are used. Study expects to complete in 2 years which could be a good time to propose a symposium on the AMR topic.
Bob Buchanan: Role of decision sciences in risk management: link with law, international PDG.
- Greg Paoli: benefits of inspection activities (government and certifications organisms) what is the benefit of an inspector. Tanya Roberts: this also accounts for the restaurant rating scheme. How does that result in health protection.
- This decision science topic could be included in a session on:
  - Biological sources and impact of variability on QMRA (strains behavior, dose response, etc.)
  - Technical sources and impact of variability on QMRA (fridge T, storage time)
  - Technical treatment of variability in QMRA
  - Confidence in models and QMRA for decision making
  - How to make discrete decisions despite the huge variability in QMRA

Mike Batz: A lot of DALY and foodborne illness evaluation work published lately: Potentially a roundtable and linked to the global foodborne disease proposal.

Ideas for webinars topics 2014-2015:
- Global burden of disease project results, how the results are used/to be used, and the lessons learned
- Low-water activity foods

IAFP 2015 – Yuhuan provided a brief review of a list of selected Symposia and Technical Sessions of note.

Other meetings
- ICPMF9: Sept 8–12, 2015, Rio, Brazil http://www.icpmf9.com/
- SRA 2015: December 6–10, Arlington, Virginia http://www.sra.org/events/sra-2015-annual-meeting
- Food Micro 2016: July 19 – 22, Dublin, Ireland http://www.foodmicro2016.com/

Other Business: None.

Recommendations to the Executive Board:
1. Webinars are a great way of promoting food safety to students, the developing world, small and medium enterprises and other interested parties, and also a good marketing tool for IAFP. Currently the recordings are only available for members and the webinars itself freely available if it has as audience PDG members only. The MMRA PDG recommends that recordings of MMRA-PDG webinars be made freely available again (as was in the past) for both IAFP members and non-members. The PDG also recommends that webinars sponsored by the MMRA PDG be freely available to members of other IAFP PDGs.

Next Meeting Date: July 31 – August 3, 2016, America's Center, St. Louis, Missouri.

Meeting Adjourned: 11:02 a.m.

Chairperson: Yuhuan Chen.