

**2017 Meeting
International Scientific Association
for Probiotics and Prebiotics**

Meeting Report

**June 27-29th, 2017
Chicago, IL, USA**

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Executive Summary



ISAPP Plenary Sessions – Gleacher Center, Chicago 2017

Dr. Chris Cifelli of the National Dairy Council hosted the 15th annual ISAPP meeting in Chicago. The meeting participants comprised 121 professionals (44 industry scientists and 77 invited experts and board members) from 17 countries (Argentina, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Japan, Netherlands, New Zealand, Spain, Sweden, UK, and the United States). The meeting featured the newest probiotic, prebiotic, and microbiome science presented in various formats including plenary lectures, an industry-led learning forum, breakout discussion groups with group summaries, a Students & Fellows Association parallel program, and the rapid fire Late Breaking News Talk. Based on the success of the 2016 meeting, the plenary lectures included two presentations by industry members targeting their sponsored research. In addition, new this year, five industry members were invited to present their research during the poster session on Tuesday evening. Slides and abstracts for the meeting can be found on the ISAPP website under the “Annual Meetings” tab, available to meeting participants only.



Left: Chicago, IL Right: ISAPP President Karen Scott and local host Chris Cifelli

Welcome Message from the ISAPP President – Dr. Karen Scott

June 26 2017, Chicago, USA

Dear ISAPP participant,



Welcome to Chicago and to ISAPP 2017. This year our ISAPP meeting combines our tried, trusted, and indeed essential, meeting components with some new additions. The successful Learning Forum, with topics suggested by the IAC, starts off the meeting on the first day, this year focusing on the extremely important, but difficult to standardise topic of Biomarkers. We progress to a few talks focusing on moving probiotic and prebiotic uses forward before the ever popular Late Breaking News session. The day is rounded off with the poster session, showcasing research from the Students & Fellows Association as well as some offered posters from the IAC. The plenary session on Wednesday includes talks from eminent invited scientists from around the world, and some showcase talks from the student and fellows. Then, we are all kept busy in the afternoon with the six discussion group sessions. I am sure we will all be ready to unwind and network during the end-of-day bowling session.

There are a few more research talks on Thursday morning before the essential discussion group feedback session during which we hear conclusions from the other workshops we wish we could have attended.

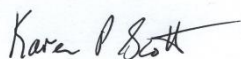
The number of global meetings focusing on “The microbiome and...” or “Probiotics and the...” and even on “Prebiotics and...” increases every year. Despite this, the ISAPP meeting continues to be a sought-after event in the field. Members of the board are constantly asked about the meeting, and ‘how do you get to go to it?’ from industry and academic scientists from all over the world. ISAPP is unique in that attendance is limited to two participants per industry partner, and attendance by non-industry scientists is by invitation only. Rarely are these coveted invitations refused, resulting in outstanding quality of plenary speakers and workshop participants. Increased participation by the Students & Fellows Association ensures that the next generation of scientific leaders are prepared to take up the mantle in the future.

We are at both an exciting and a challenging time in the science of probiotics, prebiotics, and the multitude of other “...biotics” terms which are increasingly encountered. Thus it is ever-more important that the benefits of all these new products are backed by sound scientific evidence of health benefits, rather than being driven by commercial production pressure. This is of course the “raison d’etre” of ISAPP. ISAPP’s scientific independence has a key role in keeping the debate focused on the best science. Ultimately, this will influence regulators, and reward the industries who do the very best research and offer reliable advice to practitioners and consumers alike.

We appreciate the support of everyone at this meeting, the scientists who give their time and efforts freely and the industry whose support makes it all possible. I want to especially acknowledge the ISAPP Board (see below), all leaders in their fields who give considerable time and effort to keep ISAPP on track. Each year, a new Industry Advisory Committee representative is elected. We want to thank Margriet Schoterman for her service and welcome Sylvie Binda for this coming year. ISAPP greatly depends on the dedication of our Executive Science Officer, Mary Ellen Sanders, and we appreciate her continual efforts in keeping ISAPP moving forward. A special extra thanks to our local host, Chris Cifelli, who has meticulously organised this meeting, and chosen our venue and social events with extreme care and thought for maximum enjoyment.

Once again, welcome to ISAPP 2017 and enjoy the meeting,

Regards,



Karen Scott, President ISAPP

Acknowledgments

This meeting would not be possible without the support of our Industry Advisory Committee companies, acknowledged in the registration packet.

2017 ISAPP Board of Directors: Karen Scott, PhD, President, UK; Seppo Salminen PhD, Finland, Vice President; Colin Hill, PhD, Past- President, Ireland; Dan Merenstein MD, Secretary, USA; Robert Hutkins PhD, Treasurer, USA; Members at Large: Gregor Reid PhD, Canada; Eamonn Quigley MD, USA; Glenn Gibson PhD, UK; Michael Cabana, MD, USA; Sarah Lebeer PhD, Belgium; Mary Ellen Sanders PhD, USA, Executive Science Officer.

Discussion Groups (Summaries Submitted by Group Chairs)

Group 1: Off the library shelf and into doctors' hands. How do we better implement well-established benefits of probiotics?

Chairs: Dan Merenstein and Chris Cifelli

There are several high level evidence-based recommendations for medical uses of probiotics. A Centers for Disease Control and Prevention (CDC) survey in 2012 found that 96% of hospital



formularies had at least one probiotic on formulary. Unfortunately, many of the products being used in hospitals have limited to no evidence base. Additionally, a 2015 death caused by a contaminated probiotic resulted in many hospital formularies removing probiotics altogether – not because of safety concerns but because of a Food and Drug Administration letter warning that probiotics only be used under an IND. Currently, probiotics are not being used in an evidence-based manner. Based on these facts, we formed a group to look at:

1. Once an accepted evidence base exists, how can we facilitate change in probiotic use?
2. What have you seen work in your field?
3. What role can ISAPP play to facilitate evidence-based probiotic use?

An eclectic group of journalists, public relations experts, presidents of national medical organizations, the CEO of Shedd Aquarium, a CDC representative, physicians and industry experts participated in our discussion. What was reinforced by multiple individuals is that it takes time to enact change and that probiotics are still at an early phase of usage. Also, group members repeatedly emphasized the importance of trust and how trusted sources like ISAPP, physician groups, respected industry representatives can and should work together to help bring about evidence-based usage. Finally, the group agreed that trusted sources, such as ISAPP, need to be actively involved in the probiotic dialogue with consumers and health professionals. Engagement with appropriate stakeholders will help with updating guidelines on appropriate use, drive credible science, and address issues and concerns. One concern is that limited scientific evidence exists for certain probiotics in the market or in formularies.

Another is that although evidence is often pooled from many different probiotic strains/products, in the end a specific product and dosing regimen must be identified.

It is unlikely that a formal paper will be written up from this group, but many ideas were generated and the leaders of the group will work to implement as many as feasible.

- Help direct national scientific and medical organizations to work on updating guidelines to include the most recent evidence on probiotic benefits.
- Write articles for lay magazines such as Parents or Fit Pregnancy and Baby to educate consumers on the benefits of probiotics.
- Work with journalists to provide more evidence-based information for articles and newscasts (i.e., have ISAPP be the go-to for news media).
- Continue to present new information and hold discussions with government organizations such as the CDC and FDA in the United States and similar organizations worldwide. The Chairs are U.S. based but others should feel free to take the lead with non U.S. regulatory authorities.
- Continue to build ISAPP's social media engagement, including through the ISAPP website. Importantly, the website should link to other industry and academic websites and vice versa to help facilitate information sharing.
- Continue to develop short videos and discuss the possibility of developing CMEs.
- Write scientific reviews for clinicians in medical journals

Group 2: Synbiotics – what are the advantages?

Chair: Bob Hutkins and Glenn Gibson

Although the synbiotic concept was first described more than 20 years ago, recent consensus reviews on definitions and scope of probiotics (2014) and prebiotics (2017) motivated ISAPP to convene this



panel. Three general topics were discussed, including (1) types and definitions of synbiotics; (2) rational formulation of synbiotics; and (3) a review of clinical literature on synbiotics in health and disease. The merits of both complementary and synergistic were reviewed. The latter necessitates that the prebiotic is a selective substrate for the probiotic and therefore the two act together. A complementary symbiotic can have pro- and prebiotic activities independent of one another. We also considered the clinical and experimental challenges necessary to demonstrate function. Novel in vivo and in vitro approaches for formulating synbiotics were described, and research on matrix effects on stability and activity were reviewed. Finally, evidence of clinical efficacy of synbiotics was assessed, and although some products were effective, few studies included prebiotic- or probiotic-only treatments, which we conclude are required to fully evaluate efficacy. Collectively, the panel was unable to reach a consensus on the definition question and suggested further discussion on this specific issue.

Group 3: Unraveling probiotic mechanisms of action: where are we now?

Chair: Sarah Lebeer

The key question addressed in this discussion group was: Can we identify probiotic factors, i.e. molecule(s) of probiotic micro-organisms that directly can cause a



specific health effect.” Further we explored: How? When? Must we? Why is it so difficult? There are different possibilities to look at probiotic mechanisms of action, which is summarized in the figure below as ‘PREDICT’ versus ‘EXPLAIN’ modus. Since the people participating in this discussion group had mainly a microbiology background, we focused on the identification of molecules of probiotic bacteria that underlie specific mechanisms of action, in such a way that they PREDICT specific health benefits.

Several examples of probiotic molecules that could be directly linked to certain health benefits of specific probiotic strains were presented:

- *L. plantarum* WCFS1: SrtP is specifically induced in the gut and attenuates inflammation (Peter Bron)
- *Bifidobacterium breve* UCC2003: TadE pili promote adhesion, immunomodulation and epithelial proliferation (Mary O’Connel Motherway)
- *L. acidophilus* NCFM: S-layer protein SlpA attenuates inflammation (Todd Klaenhammer)
- *L. salivarius* UCC118: specific bacteriocon kills *Listeria* pathogens (Colin Hill)

Several of these molecules are not merely strain-specific, but also occur in other strains and species. The Tad pili even seem to be genus-specific for *Bifidobacterium*. The identification of these molecules has allowed researchers (and industrial providers) to conceptually explain certain modes of action and also stimulate further research on the exploration of the isolated molecules as pharmaceutical compounds. However, two presentations also highlighted that for many industrially-relevant strains such as *Lactobacillus reuteri* DSM 17938 (active against

infant colic) and *Lactobacillus casei* Shirota, the active molecules are not known. It was thus also discussed and acknowledged that, since probiotic bacteria are live microbes applied to confer health benefits, it is important to always consider the action of these isolated molecules in the context of whole microbial cells. We must embrace this complexity and not overemphasize the importance of reductionist approaches to pinpoint active molecules. For example, Maria Marco highlighted animal models where novel insights are made have limited translational capacity to humans. Colin Hill remarked that this is not unique to probiotic research as many pathogenic factors are mainly identified through in vitro and animal models of pathogens. He also proposed that we might need some postulates similar to Koch's postulates for pathogens to link probiotic bacteria to health benefits, and perhaps also to link probiotic molecules to health benefits. Jan-Peter Van Pijkeren also presented some interesting novel genetic tools that can help us to further speed up the genetic dissection of novel probiotic strains. To conclude, we all agreed that scientists must continue to identify probiotic molecules of action. Just because it is difficult, does not mean we should not try further and harder – with more rigor (better trials, better controls, more biomarkers etc.).

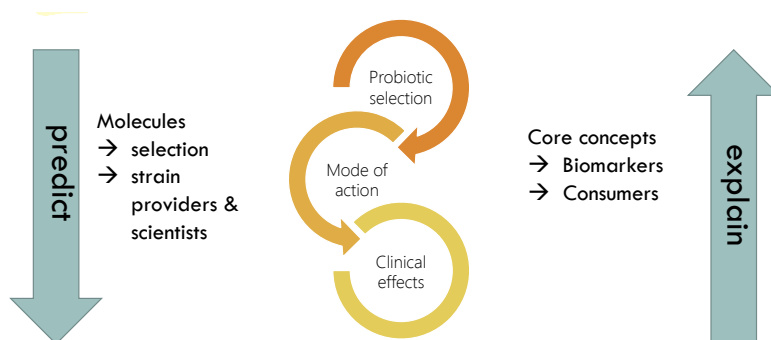


Figure 1 – There are different ways to look at probiotic mechanisms of action. Here, we focused on the microbial molecules that allow prediction of specific properties (left side).

Group 4: Identifying biomarkers linking the composition and function of the gut microbiome to health status – how close are we?

Chairs: Karen Scott and Seppo

Salminen

Identifying valid biomarkers that are indicators of gut and other human microbial function and how that relates to human health would be of great benefit to



society. However, given the considerable inter-individual variation in microbial composition this is not an easy task, and this group sought to consider the most likely prospects. The discussion was focused through three key lenses: currently available biomarkers related to the gut, but possibly effective elsewhere in the body; recent developments for new biomarkers; and how biomarkers could be validated.

Microbial dysbiosis may be a possible biomarker for some disease states, and certainly reduced diversity in the adult gut microbiota correlates with the incidence of specific diseases. Although causality has not been established, there is opportunity to modify the diet of such individuals and monitor the effects on disease development. This is not a 'one-size-fits-all' answer, as there are many additional factors [age, diet, geography, genetics (including gender), local changes in the ecosystem (pH, redox potential)] all of which affect the underlying gut microbial composition.

Despite the complexity of the gut microbial ecosystem, and the inter-individual variation, certain single bacterial strains have been shown to be enriched, or absent, in certain diseases. Eliminating, or replenishing, these bacteria using targeted tools is an option in personalized nutrition.

Host genetics is known to affect microbial composition, pathogen tolerance, and even responses to dietary interventions. The LCT (lactase) locus is linked to the bifidobacterial population (in western society) and responders/non-responders in some dietary

interventions depend on the starting number of bifidobacteria – is there a link? The composition of human milk oligosaccharides, which can be influenced by maternal FUT-2 status, affects the developing microbiota, and HMOs also act as decoy receptors for pathogenic bacteria like *E. coli* and potentially others.

Currently accepted biomarkers for gut health are related to gut function (flatulence, faecal bulking, breath hydrogen to indicate lactose tolerance), while other measurable markers including postprandial glyceimic responses and LDL-cholesterol levels may also rely on the activity of gut microbes. More information on individual microbial compositions paired with knowledge on microbial functions will improve our understanding of why individuals stratify into responders and non-responders in studies, and ultimately improve options in personalized nutrition. This knowledge needs to be linked with robust, valid biomarkers, which are accepted by regulatory bodies.

Group 5: Diet-based disruptions of the microbiome: are they important and could probiotics and prebiotics modulate?

Chairs: Eamonn Quigley and

Jens Walter

In examining the effect of diet disruptions on the microbiome in a variety of age groups and health



circumstances, there exist a variety of complicating factors. For example, the study methodology, geography, environmental exposures, antibiotic presence, different inclusion criteria, study timing, diet, and other unknowns (such as fungi, archaea, and viruses) could all impact the results of these studies. Accounting for these differences when possible, the 2017 ISAPP discussion group first examined three basic questions focusing on the role of fiber: 1) Can fiber affect our microbiome? 2) Can fiber intake affect how a prebiotic impacts our microbiome? 3) Can our microbiome affect how fiber impacts our health?

To further examine diet-microbiota- probiotic interactions the group heard presentations focused on diet and the infant microbiota, information from animal models, alcohol's interactions with the microbiome, the impact on the microbiome of low FODMAP and other diets, and the impact of probiotics and its interactions with diets. The group concluded that mode of feeding in infancy influences microbiota development and milk oligosaccharides play important roles in this process. In addition, it is important to recognize that not all fiber is the same, and that the individual's baseline microbiome will likely determine the response to fiber and FODMAPs. Animal models may be especially valuable in examining microbiome-host interactions in relation to immune function and gut-brain interactions. Other questions that need to be addressed include how best to design studies to address both the short-term versus long-term effects of all diets, and to define if the duration of a given diet is an important factor. Also, alcohol's effect on the microbiota appears to lead to gut barrier dysfunction and inflammation, and may, thereby, play a role in alcohol-related diseases. Overall, the group concluded that probiotics may impact the microbiome, but the effects may be subtle compared to the overall effect of diet on the microbiota.

Group 6: New paradigms for translating probiotic and microbiome science into health-promoting products: where will the science take industry in the next ten years?

Chair: Gregor Reid

The world continues to be faced with massive challenges associated with poverty and malnutrition.

The rapid rise in microbiome and probiotic science has led to estimates of product creation and sales exceeding \$50 billion within five years. However, many people do not have access to affordable products, and regulatory agencies have stifled progress. The objective of this discussion group was to identify mechanisms to confer the benefits of probiotics to a larger portion of the world's population. Four initiatives, Yogurito, Danone Communities and Yoba-for-Life, and Western Heads East are targeting populations that face enormous challenges of malnutrition, infectious disease, poverty and violent conflict. These programs differ in the specific target populations and method of access, but all utilize the local production of fermented foods and involve cooperatives and entrepreneurs, creating a value chain. The human microbiome project has identified novel strains with probiotic potential, many of which are anaerobic species such as *Akkermansia muciniphila*. A new, faster system is being created to test efficacy potential in humans using biomarkers and stratified populations who can benefit the most. The latter include male subjects whose semen quality, prostate health and testosterone production have not previously been a target for probiotic applications. Information dissemination through scientific channels and social media is projected to provide consumers and healthcare providers with rapid access to clinical results, and identify the nearest location of sites making new and affordable probiotic food and supplements. This rapid translation of science to individual well-being will not only expand the beneficiaries of probiotics, but also fuel new social enterprises and economic business models.



Learning Forum

The Learning Forum is a program that addresses topics ISAPP industry members would like to address more in depth than is typically possible in a plenary session, or with a range of experts who can discuss different aspects of a complex topic. The 2017 Learning Forum focused on how to demonstrate beneficial effects of food products in general populations. There is a need for validated biomarkers that can be used in human trials using healthy subjects. The Learning Forum featured talks on defining good biomarkers for health by Suzan Wopereis of TNO and a regulatory perspective on biomarkers for the substantiation of health benefit claims from Seppo Salminen of the University of Turku, Finland. The presentations were followed by a robust discussion led by Margriet Schoterman and Sylvie Binda, IAC representatives on the ISAPP board of directors.

2017 Industry Advisory Committee Member Posters

Poster Number	Name	Poster Title	Affiliation
IAC 1	Sylvie Binda	Measuring viability of bacterial strains using a new semi-dynamic in vitro gastro-intestinal digestion simulator, the GIDS: validation of the model with reference strains in standardized products	Danone Nutricia Research
IAC 2	Drinalda Cela	Examination of the potential anti-inflammatory effect of HOST-LI170: can a compound developed from B-GOS mixture interfere with inflammatory cell activation?	Clasado
IAC 3	Eden Ephraim-Gebreselassie	Fermentable fibers influence markers of aging in senior dogs and cats	Hill's Pet Nutrition
IAC 4	Delphine Saulnier	Screening of a large <i>Lactobacillus</i> strain collection for the development of novel probiotics preventing chronic inflammation	Novozymes
IAC 5	Maria Stolaki	Probiotics and their potentials in allergy	Winclove

Late Breaking News

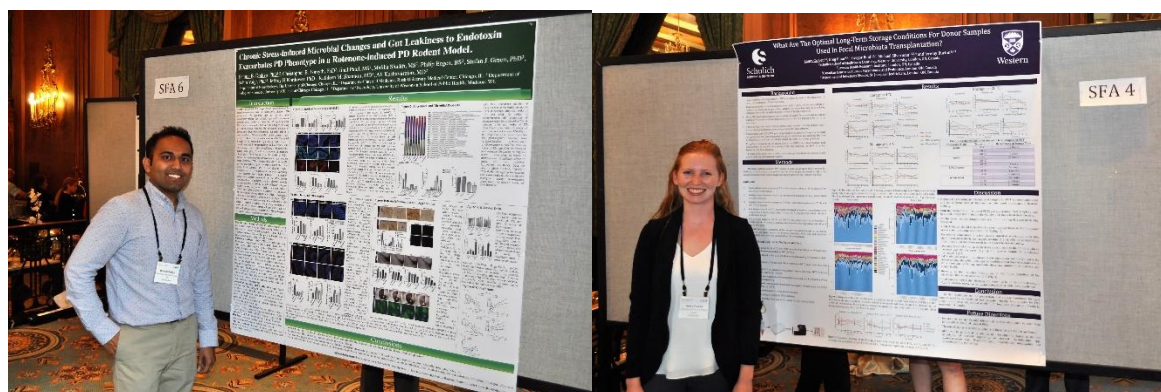
This session offers participants the ability to give 5-minute presentations on late-breaking news in an informal, interact atmosphere. The presentations range from 'hot' off-the-bench news to controversial or important issues on the science, politics, funding, business, or humorous aspects of the field of probiotics or prebiotics.

Dutch initiative on probiotic products	Remco Kort - TNO
American Statistical Association's warning about the misuse of p-values	Daniel Tancredi University of California - Davis
Normative values in digestive health	Arthur Ouwehand - DuPont
The individual patient data meta-analysis on <i>L. reuteri</i> and colic	Michael Cabana University of California - SF
Should we strive or gender INEQUALITY in microbiome research?	Jessica Younes - Winlove
Gut microbiota-brain connection: does oxytocin have a role?	Elena Barengolts University of Illinois
A bifidobacterial-derived Tight adherence (Tad) pilus-associated protein signals colonic epithelial growth	Mary O'Connell Motherway Alimentary Pharmabiotic Centre
Yun probiotherapy	Sarah Leeber University of Antwerp
<i>B. longum</i> for depression in IBS patients	Eamonn Quigley Houston Methodist Hospital
Probiotics in personalized nutrition	Nalin Siriwardhana Church & Dwight Co. Inc.
Defining healthy reference ranges for probiotic taxa in the human gut microbiome	Daniel Almonacid - uBiome
Yoba-for-life: Probiotics for everyone	Wilbert Sysbema Yoba for Life Foundation
Does probiotic consumption reduce antibiotic utilization for common acute infections? An ISAPP-sponsored systematic review	Mary Ellen Sanders ISAPP

Students & Fellows Association



The SFA's goal is to create an interactive network of graduate students and postdoctoral fellows across the globe working on probiotics, prebiotics, or related fields. They succeeded in this mission in Chicago this year by assembling a group of 28 professionals from Canada, Finland, India, Luxembourg, the Netherlands, New Zealand, Ireland, the UK, and the United States. Students and fellows each shared the focus of their research in rapid, 3-minute talks. In addition, the students and fellows presented their research with 26 posters during the main ISAPP meeting. This year networking and opportunities for knowledge exchange with the main meeting participants was enhanced, and students were invited to participate in the main ISAPP plenaries. Poster abstracts and the conference summary is available at <http://www.isapp-sfa.com>



Students & Fellows Association Poster Winners 2017

2017 Students & Fellows Association Posters

Poster Number	Name	Poster Title	Affiliation
SFA 1	Maxence Bourin	<i>Lactobacillus salivarius</i> EPS dynamic and impact on strains immuno-modulation activity	University College Cork, Cork, IE
SFA 2	Sineaid Collins	Investigating the in vitro fermentation characteristics of novel prebiotic blends using a continuous gut model system	University of Reading, Reading, UK
SFA 3	Stephanie Collins	Prebiotic lactulose stimulates commensal vaginal lactobacilli and acidic pH to improve vaginal composition	The University of Western Ontario, London, CA
SFA 4	Laura Craven	What are the optimal long-term storage conditions for donor samples used in fecal microbiota transplantation?	The University of Western Ontario, London, CA
SFA 5	Brendan Daisley	Lactobacilli modulate pharmacokinetics of the commonly used organophosphate insecticide, chlorpyrifos	The University of Western Ontario, London, CA
SFA 6	Hemraj Dodiya	Chronic stress-induced microbial changes and gut leakiness to endotoxin exacerbates PD phenotype in a rotenone-induced PD rodent model.	Rush University Medical Centre, Chicago, US
SFA 7	Carlos Gómez Gallego	Faecal microbiota comparisons between obese and normal weight dogs	University of Turku, Turku, FI
SFA 8	Kacy Greenhalgh	A study of the molecular mechanisms underlying the response of human colorectal adenocarcinoma enterocytes to prebiotics and probiotics	University of Luxembourg, Luxembourg City, LU
SFA 9	Ruth Harvie	Long-term IBS symptom control with reintroduction of selected FODMAPs	University of Otago, Dunedin, NZ
SFA 10	Lesley Hoyles	Integrated systems biology to study non-alcoholic fatty liver disease in obese women	Imperial College London, London, UK
SFA 11	Athanasios Koutsos	Effects of apples intake rich in proanthocyanidins on gut microbiota composition and polyphenol metabolomic	University of Reading, Reading, UK

		activity in healthy mildly hypercholesterolemic subjects	
SFA 12	Angelika Kristek	Digested oat bran but not the isolated bioactives increase on gut microbiota growth during 24h in vitro fermentation	University of Reading, Reading, UK
SFA 13	Elke Lievens	Vaginal <i>Lactobacillus</i> species as potential biomarkers for vaginal health: how do they strengthen the vaginal barrier and protect against HSV2?	University of Leuven, Leuven, BE
SFA 14	Paul Cherry	In-vitro fermentation of brown seaweed polysaccharides	Nutrition Innovation Centre for Food and Health (NICHE), Ulster University, UK
SFA 15	Alexandra Ntemiri	Glycomacropeptide sustains microbiota diversity and promotes specific taxa in an artificial colon model of elderly gut microbiota	University College Cork, Cork, IE
SFA 16	Kaitlyn Oliphant	Allochthonous species integration into dysbiotic gut microbial ecosystems: Utilizing the continuous culture (chemostat) model of the human distal gut as a predictor	University of Guelph, Guelph, CA
SFA 17	Megan Rossi	Faecal volatile organic compounds predict response to both probiotics and low FODMAP diet in irritable bowel syndrome: a randomised controlled trial	King's College London, London, UK
SFA 18	Irina Spacova	Fluorescent probiotic <i>L. rhamnosus</i> GG and GR-1 strains for interaction studies with pathogens and host cells	University of Antwerp, Antwerp, BE
SFA 19	TBD	TBD	TBD
SFA 20	Mark Trinder	Neonicotinoid insecticide (imidacloprid) impairment of insect tolerance to bacterial infection and heat stress is mitigated by lactobacilli	University of British Columbia, Vancouver, CA
SFA 21	Charlotte van der Veer	Comparative phenotypic analysis of <i>Lactobacillus crispatus</i> strains from clinical samples with or without bacterial vaginosis	Public Health Service, GGD, Amsterdam, NL
SFA 22	Justin Carlson	In Vitro Fermentation Kinetics of Emerging	The University of Minnesota,

		Prebiotic Dietary Fibers	Department of Food Science and Nutrition
SFA 23	Bridgette Wilson	B-galacto-oligosaccharide supplementation in conjunction with the low FODMAP diet improves symptoms in irritable bowel syndrome independent of bifidogenesis	King's College London, London, UK
SFA 24	Sandi Yen	Culturing the preterm gut microbiome in order to distinguish NEC and non-NEC infants	University of Guelph, Guelph, CA
SFA 25	Dieter Vandenheuvell	Functional study of EPS glycosyltransferases in novel <i>Lactobacillus</i> isolates	University of Antwerp, BE
SFA 26	Conall Strain	Assessment of potential prebiotics yeast beta-glucan and oat fibre to promote diversity of obese and diabetic gut microbiota in vitro	Teagasc/Ulster University, Ireland

IAC and Students & Fellows Association Poster Session, Chicago IL



Students & Fellows Association

Monday, June 26

15:00-evening	Hotel check-in
17:00-19:00 <i>Hotel Lobby</i>	REGISTRATION Pickup name badges and booklets at the hotel lobby
19:00-21:00	MEET AND GREET Come to a casual gathering to meet the other SFA members attending the conference.

Tuesday, June 27 - at Intercontinental Hotel Chicago Magnificent Mile

Morning <i>Renaissance Ballroom</i>	POSTER SETUP SFA members set up posters during the day for evening poster presentations
09:00-10:30 <i>Streeterville</i>	WELCOME AND 3-MINUTE THESIS STYLE INTRODUCTION SFA members present their work. You have 3 minutes and one slide!
10:30-11:00 <i>Avenue Foyer</i>	BREAK Coffee/tea
11:00-12:00 <i>Streeterville</i>	CAREER PANEL From start-ups to clinic to industry and academia; we welcome a panel to discuss career trajectories, life experiences, and answer questions from SFA members. <ul style="list-style-type: none"> • Dr. Daniel Almonacid, uBiome • Dr. Johan van Hylckama Vlieg, Chr. Hansen • Dr. Mark Brown, Cleveland Clinic • Maria Cunningham, Health World Limited
12:00-13:30	LUNCH Sandwiches/wraps
13:30-14:00 <i>Av. Ballroom</i>	ISAPP UPDATE: Prebiotic Consensus Panel; Prof. Glenn Gibson.

9:30-10:00 <i>Rm. 100</i>	PLENARY SESSION 3 Dan Merenstein "Evidence for clinical interventions: how do probiotics measure up?"
10:00-10:30 <i>Rm 100 Foyer</i>	BREAK
10:30-10:45 <i>Rm. 100</i>	SFA TALK 1 Kacy Greenhalgh "A study of the molecular mechanisms underlying the response of human colorectal adenocarcinoma enterocytes to prebiotics and probiotics."
10:45-11:00 <i>Rm. 100</i>	SFA TALK 2 Megan Rossi "Faecal volatile organic compounds predict response to both probiotics and low FODMAP diet in irritable bowel syndrome: a randomised controlled trial."
11:00-11:30 <i>Rm. 100</i>	PLENARY SESSION 4 Mark Brown "Metaorganism TMAO pathway: links to obesity, insulin resistance, and microbial production of hormones that act on the host."
11:30-12:00 <i>Rm. 100</i>	PLENARY SESSION 5 Emma Allen-Vercoe "Microbial therapeutics to influence a healthy microbial ecosystem."
12:00-13:00	LUNCH Bagged lunch
13:00-17:00 <i>Rm 406</i>	KNOWLEDGE EXCHANGE 13:00 - Jean Macklaim "Microbiome studies - dos and don'ts" 13:30 - Stephanie Collins "Metabolomics for probiotics and prebiotics research" 14:00 - Coffee break 14:15 - Conal Strain "In vitro models: the gut simulator" 14:45 - Brendan Daisley and Mark Trinder "In vivo models: Drosophila melanogaster as a high-throughput model for microbiome research" 15:15 - Science Quiz 16:00 - Laura Craven "Novel uses of fecal microbiota transplants" 16:30 - Bridgette Wilson and Ruth Harvie "Low FODMAP diet: a debate on dietary intervention studies"
17:00-17:30 <i>Rm 406</i>	SFA AGM Annual general meeting for all SFA members
19:00-22:00 <i>Pinstripes</i>	ISAPP AND SFA DINNER AND FUN Bowling, bocci, fireworks over Chicago and dinner

Program

14:00-14:30 <i>Av. Ballroom</i>	PLENARY SESSION 1 Jan L. Brozek "Making clinical recommendations: how WAO evaluated probiotic evidence and came to a recommendation for reducing risk of allergic disease in infants."
14:30-14:45 <i>Av. Ballroom</i>	Hot Topic: Greg Leyer "How ISAPP is helping FDA move probiotics forward?"
14:45-15:00 <i>Av. Ballroom</i>	Hot Topic: William Van Bonn "The Shedd Aquarium microbiome project-assessing pre and probiotics for individuals and exhibits."
15:00-15:15 <i>Av. Ballroom</i>	SFA INTRODUCTION
15:15-15:45 <i>Avenue Foyer</i>	BREAK Refreshments
15:45-16:45 <i>Seville Ballroom</i>	LATE-BREAKING NEWS Chair: Gregor Reid, University of Western Ontario
16:45-19:30 <i>Renaissance Ballroom</i>	POSTER SESSION AND WELCOME RECEPTION WITH REFRESHMENTS SFA members will present posters for judging
19:30-	SFA SOCIAL AND DINNER At personal cost.

Thursday, June 29 - at Gleacher Center

08:30-08:45 <i>Rm. 100</i>	IAC RESEARCH PRESENTATION Kirstie Canene-Adams (Tate & Lyle) "The role of prebiotic fibers on gut microbiome and calcium absorption."
08:45-09:00 <i>Rm. 100</i>	IAC RESEARCH PRESENTATION Deshanie Rai (Bayer) "Measuring survival and functionality of probiotics using dynamic gastrointestinal modeling."
09:00-09:30 <i>Rm. 100</i>	PLENARY SESSION 6 Jens Walter "Stable Bifidobacterium colonization and personalized therapy"
09:30-10:00 <i>Rm. 100</i>	PLENARY SESSION 7 Ardythe Morrow "Human milk oligosaccharide influence on early microbial succession."
10:00-10:30 <i>Rm 650</i>	BREAK Coffee/tea
10:30-12:15 <i>Rm 100</i>	ISAPP AND SFA BREAKOUT GROUP WRAP-UP
13:00-13:30	SFA WRAP-UP AND ACKNOWLEDGMENTS
13:30-14:00	SFA EXECUTIVE MEETING

Wednesday, June 28 - at Gleacher Center

08:15-08:30 <i>Rm. 100</i>	INTRODUCTION AND WELCOME Karen Scott, ISAPP President and Chris Cifelli, Local Host, 2017 ISAPP Meeting
08:30-9:00 <i>Rm. 100</i>	KEYNOTE LECTURE Todd Klaenhammer "Lights in the tract"
9:00-9:30 <i>Rm. 100</i>	PLENARY SESSION 2 Ted Dinan "Impact of probiotics and prebiotics on brain function: update on human evidence."

Appendix A: 2017 ISAPP Meeting Program

[Intercontinental Chicago Magnificent Mile](#), 505 N. Michigan Ave
[Gleacher Center](#), 450 North Cityfront Plaza Drive
[Pinstripes](#), 435 E. Illinois St
 Chicago, June 27-29, 2017

Monday, June 26, 2017
5:30-7:00 PM. Board meeting
Tuesday, June 27, 2017
8:00 AM – 10:00 AM; 3:00 PM – 7:00 PM. Registration
9:00 – noon. SFA program
Noon -1:30 PM. SFA Lunch
9:00 AM – 10:30 AM. Industry Representatives + Board of Directors meeting
10:30 AM – 11:00 AM. Coffee/tea break
11:00 – 12:30 PM. Learning Forum. How to define useful biomarkers for health? Criteria for developing next-generation biomarkers for health. Suzan Wopereis, TNO, The Netherlands Biomarkers for substantiation of health benefit claims: a regulatory perspective. Seppo Salminen, University of Turku, Finland. Discussion
12:30 – 1:30 PM. Lunch (for Board, industry members, and invited experts)
1:30 – 2:00 PM. ISAPP Update: Prebiotic Consensus Panel. Glenn Gibson, University of Reading, UK 2:00 – 2:30 PM. Making clinical recommendations: how WAO evaluated probiotic evidence and came to a recommendation for reducing risk of allergic disease in infants. Jan L. Brozek, McMaster University, Canada 2:30 – 2:45 PM. How ISAPP is helping FDA move probiotics forward. Greg Leyer, UAS Laboratories, Madison, WI, USA 2:45 – 3:00 PM. The Shedd Aquarium Microbiome Project- Assessing pre and probiotics for individuals and exhibits. William Van Bonn, DVM, Vice President for Animal Health, John G. Shedd Aquarium 3:00 – 3:15 PM, Students & Fellows Association Introduction. Mariya Petrova, SFA President

3:15 – 3:45 PM. Refreshments
3:45 - 4:45 PM. Late Breaking News
4:45 – 7:30 PM. Posters and Reception
Wednesday, June 28, 2017
8:15 AM. Introductions and Welcome. Karen Scott, ISAPP President and Chris Cifelli, Local Host, 2017 ISAPP Meeting
8:30 AM – 9:00 AM. Keynote lecture. Lights in the tract. Todd Klaenhammer, North Carolina State University, USA
9:00 AM - 9:30 AM. Impact of probiotics and prebiotics on brain function: update on human evidence. Ted Dinan, University College Cork, Ireland
9:30 AM – 10:00 AM Evidence for clinical interventions: how do probiotics measure up? Dan Merenstein, Georgetown University Medical Center, USA
10:00-10:30 AM. Coffee/tea break
10:30-10:45 AM. SFA feature talk: A study of the molecular mechanisms underlying the response of human colorectal adenocarcinoma enterocytes to prebiotics and probiotics. Kacy Greenhalgh, University of Luxembourg.
10:45 – 11:00 AM. SFA feature talk: Faecal volatile organic compounds predict response to both probiotics and low FODMAP diet in irritable bowel syndrome: a randomised controlled trial. Megan Rossi, King’s College, London.
11:00 AM – 11:30 AM. Metaorganism TMAO pathway: links to obesity, insulin resistance, and microbial production of hormones that act on the host. Mark Brown, Cleveland Clinic Lerner Research Institute, USA
11:30 AM – noon AM. Microbial therapeutics to influence a healthy microbial ecosystem. Emma Allen-Vercoe, University of Guelph, Canada
Noon. Working lunch. Pick up box lunch outside Room 100.
Noon-6:00. Discussion groups
1. How do we fully leverage the well-established and documented benefits of probiotics and prebiotics for the benefit of patients and the public? Dan Merenstein and Chris Cifelli
2. Synbiotics –what are the advantages? Glenn Gibson and Bob Hutkins
3. Probiotic molecular mechanisms of action: where are we today? Sarah Lebeer
4. Identifying biomarkers linking the composition and function of the microbiome to health status. Karen Scott

5. Diet-based disruptions of the microbiome: are they important and could probiotics and prebiotics modulate? Eamonn Quigley and Jens Walter
6. New paradigms for translating probiotic and microbiome science into health-promoting products. Gregor Reid
2:00-4:00. Coffee
Noon – 5:00 PM. SFA program
7:00 – 10:00 PM. Bowling, bocci, fireworks over Chicago and dinner.
Thursday, June 29, 2017
8:30 – 8:45 AM IAC research presentation 1. The role of prebiotic fibers on gut microbiome and calcium absorption. Kirstie Canene-Adams, Tate & Lyle
8:45 – 9:00 AM IAC research presentation 2. Prebiotics and milk oligosaccharides affect colonic metabolome and stressor-induced immunomodulation in mice. Maciej Chichlowski, Mead Johnson Nutrition.
9:00 AM – 9:30 AM. Stable <i>Bifidobacterium</i> colonization and personalized therapy. Jens Walter, University of Alberta, Canada
9:30 – 10:00 AM. Human milk oligosaccharide influence on early microbial succession. Ardythe Morrow, Cincinnati Children's Hospital Medical Center, USA
10:00 - 10:30 AM. Coffee/tea break
10:30 – 12:15. Summaries and conclusions of all 6 discussion groups and SFA meeting. (15 min each)
12:30-2:00. Board of Directors meeting

Appendix B: Acknowledgements

Thank you for your support!



Appendix C: 2017 ISAPP Meeting Participant List

Last	First	Affiliation
Abeln	Edwin	TNO
Allen-Vercoe	Emma	University of Guelph
Almonacid	Daniel	uBiome
Alvarez	Susana	Reference Centre for Lactobacilli (CERELA-CONICET)
Ansell	Juliet	Zespri
Barengolts	Elena	University of Illinois
Barlow	Janine	Probiotics International Ltd
Ben Amor	Kaouther	Danone-Nutricia Research
Benoit	Valerie	General Mills
Binda	Sylvie	Danone nutricia research centre Daniel carasso
Birkett	Anne	Kellogg
Blekhman	Ran	University of Minnesota
Boileau	Tom	Pepsico
Bourdet-Sicard	Raphaëlle	Danone Africa
Bron	Peter	NIZO
Brown	Mark	Cleveland Clinic
Brozek	Jan	McMaster University
Cabana	Michael	University of California, San Francisco
Canene-Adams	Kirstie	Tate & Lyle
Carriere	Serge	BioK+ International
Cash	Howard	Ganeden, Inc.
Cela	Drinalda	Clasado
Chichlowski	Maciej	Mead Johnson Nutrition
Chow	JoMay	Abbott Laboratories
Cifelli	Chris	National Dairy Council
Collado	Maria Carmen	IATA-CSIC
Contractor	Nikky	Metagenics
Costabile	Adele	University of Roehampton
Coughlin	Bridget	Shed Aquarium
Cunningham	Maria	Metagenics
Daniels	Stephen	NutraIngredients-USA
de Montigny	Danielle	BioK+ International
Dinan	Ted	University College Cork
Freitas	Miguel	The Dannon Company
Frese	Steve	Evolve Biosystems
Gebreselassie	Eden Ephraim	Hill's Pet Nutrition
Ghassemi	Annahita	Church & Dwight Co., Inc.
Gibson	Glenn	University of Reading
Goehring	Karen	Abbott Laboratories
Grattepanche	Franck	General Mills
Grimaldi	Roberta	Clasado Inc
Haldeman	Margaret	DSM
Harmsen	Hermie	University of Groningen
Hayashi	David	Mondelez International
Hecht	Gail	Loyola University Stritch School of Medicine
Hill	Colin	APC Microbiome Institute
Hutkins	Bob	University of Nebraska
Ikonte	Chioma	Pharmavite
Janusz	Michael	Procter & Gamble
Johnson	Brant	Novozymes
Kashyap	Purna	Mayo Clinic

Kaukovirta-Norja	Anu	Valio Ltd
Keshavarzian	Ali	Rush University Medical Center
Klaenhammer	Todd	North Carolina State University
Kort	Remco	TNO
Kullen	Martin	DuPont Nutrition & Health
Kumar	Himanshu	Danone Nutricia Research
Lebeer	Sarah	University of Antwerp
Lee	Carlton	Johns Hopkins University
Lewis	Zachery	Clorox/Renew Life
Leyer	Greg	UAS Laboratories
Mackle	Tami	pfizer consumer healthcare
Manurung	Sarmauli	Mead Johnson Nutrition
Marco	Maria	University of California, Davis
Martoni	Christopher	UAS Laboratories
Merenstein	Dan	Georgetown University
Merrifield	Claire	Imperial College London
Messer	Christi	P&G
Mody	Seema	DSM
Morrison	Mark	University of Queensland
Morrow	Ardythe	Cincinnati Children's Hospital
Ndife	Louis	Pharmavite
Nomoto	Koji	Tokyo University of Agriculture
O'Connell Motherway	Mary	Alimentary Pharmabiotic Centre
Obis	David	Danone Nutricia Research
Ortiz	Rodrigo	uBiome
Ouwehand	Arthur	DuPont Nutrition & Health
Pot	Bruno	Yakult
Quigley	Eamonn	Houston Methodist Hospital
Reid	Gregor	Lawson Health Research Institute
Replogle	Rebecca	Pepsico
Roos	Stefan	BioGaia AB
Ross	Paul	University College Cork/APC Microbiome Institute
Roux	Xavier	Biocodex
Saljo	Jonas Fajerson	BioGaia AB
Salminen	Seppo	University of Turku
Salonen	Ann	University of Helsinki
Sanders	Mary Ellen	ISAPP
Saulnier	Delphine	Novozymes
Saville	Sandra	Prenexus Health
Saville	Bradley	Prenexus Health
Schoterman	Margriet	FrieslandCampina Innovation
Scott	Karen	Rowett Institute of Nutrition and Health, U of Aberdeen
Shibata	Hideyuki	Yakult Honsha
Shulman	Ron	Texas Childrens Hospital
Siriwardhana	Nalin	Church & Dwight Co., Inc.
Squires	Sally	Powell Tate
Stanton	Catherine	Teagasc
Stern	Lori	Pfizer
Stolaki	Maria	Winclove
Swanson	Kelly	University of Illinois
Sybesma	Wilbert	Yoba for Life Foundation
Tancredi	Dan	University of California - Davis
Theis	Stephan	Beneo
Tompkins	Thomas	Lallemand Health Solutions

Tuure	Tuula	Valio Ltd
Van Bonn	Bill	A. Watson Armour III Center for Animal Health and Welfare, John G. Shedd Aquarium
van Hylckama Vlieg	Johan	Chr. Hansens
Van Pijkeren	Jan-Peter	University of Wisconsin
Vaughan	Elaine	Sensus
Veiga	Patrick	Danone Research
Verstraelen	Hans	University of Ghent
Walter	Jens	University of Alberta
Whelan	Kevin	Kings College, London
Wopereis	Suzan	TNO
Yang	Guoshen	Kellogg
Yi	Sarah	Centers for Disease Control and Prevention
Younes	Jessica	Winlove
Young	Mary K	Edelman Communications
Yui	Shintaro	Yakult Honsha
Zimmer	Paul	Ingredion Inc.
McCallin	Heather	ISAPP