

## **Objectives and Activities of the International Scientific Association for Probiotics and Prebiotics**

Mary Ellen Sanders, Ph.D.  
President, ISAPP  
Consultant, Dairy & Food Culture Technologies  
Centennial CO 80122 USA  
[mes@mesanders.com](mailto:mes@mesanders.com)

### **Introduction**

The concept for the International Scientific Association for Probiotics and Prebiotics (ISAPP, [www.isapp.net](http://www.isapp.net)) originated in May 2000 with the assembly of some professionals at a Fermented Foods and Health Meeting in New York. A group of scientists led by Mary Ellen Sanders and Glenn Gibson met to discuss the formation of a multidisciplinary scientific organization dedicated to specifically addressing the dynamic, fast moving and increasingly popular field of probiotics and prebiotics. Considering that many new such functional foods, dietary supplements and therapeutics have been launched world-wide, attendees felt such an organization was very much needed and timely. No similar organization specifically dedicated to probiotics and prebiotics existed. ISAPP was therefore formally established in August 2002 as a non-profit, tax-exempt 501(c)(3) corporation in California. The mission statement for ISAPP is “to engender and disseminate information on high quality, multidisciplinary, scientific investigation in the fields of probiotics and prebiotics, and to advance the development of scientifically substantiated, health-promoting probiotic and prebiotic products worldwide.” It is very much an independent organization, with no one predominant sponsor.

Currently, ISAPP is an association of academic and industrial scientists involved in research on fundamental and applied aspects of probiotics and prebiotics. All participating scientists have a common interest in generating high quality scientific information for the probiotic and prebiotic fields and providing guidance for collaborative and multidisciplinary research. The organization aspires to raise the scientific credibility of the field by working with relevant experts and conducting meetings on top notch research. Providing an objective, science-based voice also will benefit the end users of these products by helping them to make informed choices. ISAPP brings together scientists from all pertinent disciplines, such as food science, microbiology, immunology, biochemistry, nutrition, molecular biology and medicine. As a scientific society, ISAPP strives to have all activities focused on science, not the promotion of any commercial products. Industry involvement is considered important to this organization, but no industry group or commercial entity dictates the activities or opinions of ISAPP.

### **Structure of ISAPP**

ISAPP is a non-profit, tax-exempt organization. It is governed by a Board of Directors currently comprised of Mary Ellen Sanders (President, USA), Glenn Gibson (Vice President, UK), Gregor Reid (Secretary, Canada), Harsharn Gill (Treasurer, Australia), Bruno Pot (France), Todd Klaenhammer (USA), Francisco Guarner (Spain), Ian Rowland (UK) and Bob Rastall (UK). To simplify operations, ISAPP was initially set up as an organization without members (in the legal sense). Therefore, there is no ‘membership roster’ for the organization, although a list of delegates present at the ISAPP sponsored meetings forms the core of participating scientists. As such, this is an ever expanding list of participants. They are regularly informed of progress through the ISAPP website.

To manage the administrative affairs of ISAPP, we have contracted with the California Dairy Research Foundation, Davis CA. In addition to their philosophical support of the objectives of ISAPP, CDRF provides administrative support through its offices in California.

## Industry involvement

The role of industry representatives in ISAPP is an important one. The Industry Advisory Committee (IAC) was established for the purpose of advising the ISAPP Board of Directors on issues of importance to the science of probiotics and prebiotics. It is recognized that companies conducting business in this field can provide valuable insights into barriers to success and developmental opportunities. As an organization committed to the advancement of the science of probiotics and prebiotics, ISAPP can benefit markedly from such insights and advice. The IAC exists in an advisory capacity only and does not hold any voting power or undue influence over the decisions of the Board of Directors of ISAPP. ISAPP activities are funded largely through IAC membership fees. Each company represented on the IAC is invited to send one or more scientific representatives to ISAPP meetings and special session board meetings.

Companies involved in, or developing their involvement in, the manufacture of probiotics or prebiotics - or products containing them are appropriate for consideration for IAC membership. Additionally, companies involved more peripherally with the industry will be considered. Overriding principles for inclusion for IAC membership are listed below. Companies should have:

- A science-based approach to probiotic and prebiotic product development;
- A commitment to and funding of related research;
- A commitment to responsible product formulation and communications;
- A commitment to the mission of ISAPP and a willingness to work toward that mission in a collaborative manner with the ISAPP Board of Directors and other IAC members;
- Willingness to pay established IAC membership fees and take an active role in the IAC.

This unique relationship with industry is a backbone accomplishment of ISAPP. IAC membership may be limited to assure a working group size conducive to accomplishing established goals.

## Accomplishments

The initial focus of ISAPP was on arranging 'gatherings of minds', which has been accomplished at three different meetings. All meetings were by-invitation only and included small discussion groups (Table 1). The geographical distribution of attendees to these 3 meetings is shown in Figure 1.

The first meeting was held in May 2002 in London, Ontario, Canada and hosted by Gregor Reid. Sixty-three scientists participated. The discussion topics were: Definitions and standards for probiotics and prebiotics; Immune function; Genetics of lactic acid bacteria; Intestinal microflora and dietary modulation; Cancer; Extra-intestinal sites for probiotic application; Second generation prebiotics; and Intestinal disease. Conclusions from discussions at this meeting were published (Reid, et al. 2003).

The second meeting was held August 2003 in Henly-on-Thames, UK and hosted by Glenn Gibson. Seventy scientists from twenty countries convened for general lectures and in seven smaller discussion groups to discuss: Clinical study design/biostatistics; Probiotics and prebiotics: the potential to impact worldwide health; Genotype vs. phenotype; Biotechnology, stability, manufacture, biotechnological presentation of prebiotics and synbiotics; Weight of evidence for a probiotic/prebiotic effect: what is needed?; Pathogen modulation (acute and chronic illness mediated by pathogens) - what is the direct action of pro/prebiotics?; and Probiotics and prebiotics through life - age relationships, use in infants, weaning, elderly. The discussions from two of the groups were summarized for individual publications: "Weight of evidence for a probiotic/prebiotic effect: what is needed?" (Sanders et al. 2005a) and "Probiotics and prebiotics: the potential to impact worldwide health" (Reid, et al. 2005). The discussion from the remaining groups was compiled into one paper (Rastall et al., 2005).

The first meeting of the IAC was convened prior to the start of this meeting. Topics at this IAC meeting included immune biomarkers, gut flora improvement, probiotic dose, D,L-lactate, 'human origin' for probiotic strains, undefined probiotics, live vs. dead probiotics, definition of prebiotics and probiotics with proven effects. ISAPP addressed these issues and comments can be linked through this site [www.isapp.net/IS\\_news.htm](http://www.isapp.net/IS_news.htm).

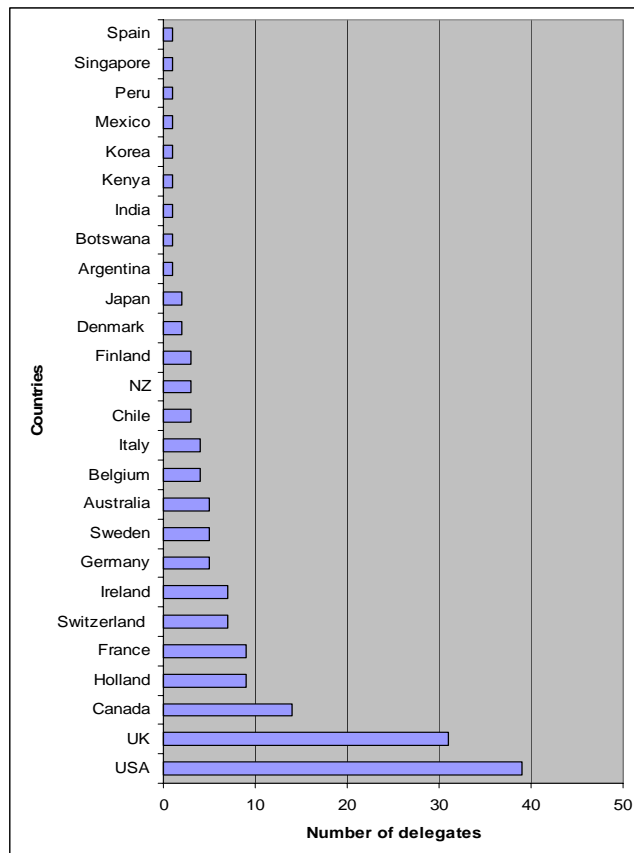


Figure 1. Geographical distribution of attendees to 2002, 2003 and 2004 ISAPP meetings. (Thanks to G. Reid.)

The third meeting was held August 29-31, 2004 in Copper Mountain, Colorado, USA and hosted by Mary Ellen Sanders. Eighty-four scientists from 13 countries participated. Presentations by Joel Weinstock (University of Iowa), Thadeus Stappenbeck (Washington University School of Medicine), Connie Weaver (Purdue University), Ian Rowland (Northern Ireland Centre for Food and Health), Graham Rook (London) and Peter Lee (Stanford University) covered a range of topics from use of helminthes to modulate immune dysregulation to probiotics bioengineered to improve resistance to HIV. Discussion sub-groups were convened for a full day on the topics of Engineered probiotics as therapeutics: formats and challenges; Host commensal interactions - who talks to whom and how; Omics technologies - exploration of the interaction of pro and prebiotics with the host; Hygiene and immune regulation; Biomarkers for healthy people; Prebiotic and probiotic applications to companion animals; Development of a probiotic dossier using science-based criteria and Physiological relevance of prebiotic activity. Seven of the eight discussion groups plan to prepare papers to submit to relevant scientific journals outlining conclusions from their discussions. In addition, the overall conclusions have been collated for publication (Sanders et al. 2005b).

Besides the academic participants, about 25 industry scientists participated in the meeting. Twenty companies committed to science-driven probiotic and prebiotic product development contributed financially and scientifically to the meeting. Most companies are members of the ISAPP IAC.

In addition to conducting our own meetings, ISAPP has provided some sponsorship of speakers or attendees to scientific sessions at meetings sponsored by other organizations. Examples include:

- Sponsorship of a session “Probiotic and Prebiotic Modulation of the Intestinal and Vaginal Microflora: Impact on Pathogens, Host Response and Health” at the Annual Meeting of the American Society for Microbiology in Washington DC in May 2003. Speakers included Mary Ellen Sanders, Glenn Gibson, Rex Gaskins, Willem de Vos and Gregor Reid.

- Sponsorship of travel for James Heimbach to attend “Scientific Colloquium on Microorganisms in Food and Feed: Qualified Presumption of Safety” sponsored by the European Food Safety Authority (Brussels, Belgium, 13-14 December 2004). A report on this meeting is posted [www.isapp.net/IS\\_news.htm](http://www.isapp.net/IS_news.htm).

### **Future goals**

Although our mission is well-defined, the means of achieving that mission are still in development. Some key programs that ISAPP is developing are discussed below.

In recognition that the ISAPP meetings are by-invitation and have been held in limited geographical areas (so far in North America and Western Europe), the ISAPP board has decided to help encourage science-based communication on probiotics and prebiotics through partnerships with other scientific organizations. In doing so, ISAPP anticipates that such symposia will enhance the inclusiveness of the organization, and provide developing or geographically distant countries with exposure to scientists at the leading edge of these fields, where under normal circumstances, they are not able to attend ISAPP meetings or others associated with probiotics and prebiotics. ISAPP is seeking to sponsor symposia at meetings convened by other like-minded scientific societies that are active in parts of the world not served by ISAPP meetings to date. The guidelines for applying for such awards have been developed and are posted at [http://www.isapp.net/IS\\_news.htm](http://www.isapp.net/IS_news.htm).

Another activity that ISAPP has undertaken is an effort to encourage student involvement in the organization by providing competitive travel awards to ISAPP meetings. The guidelines for applying for such awards have been developed and are posted at [http://www.isapp.net/IS\\_news.htm](http://www.isapp.net/IS_news.htm).

ISAPP has launched a program to commission scientific review papers on important issues in the fields of probiotics and prebiotics. Authors are recognized experts in the field and agree to disseminate the paper through publication and/or posting on the ISAPP website. This effort, entitled “Considered Issued in Probiotics and Prebiotics”, began with a review on the safety of D, L. lactate, which was published (Mack, 2004). Other topics under consideration are:

- Antibiotic resistance genes in probiotics
- Mechanisms of probiotic or prebiotic activity
- Active principles in probiotics
- Safety
- Communication of benefits
- Effective dose of probiotics or prebiotics

### **References**

The following are papers that have been published about, or by, ISAPP:

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**Table 1. Discussion topics at ISAPP meetings**

Meeting	Topics
2002 London Ontario Canada	<ol style="list-style-type: none"> <li>1. Cancer</li> <li>2. Immune function</li> <li>3. Intestinal flora and dietary modulation</li> <li>4. Intestinal infection and IBD</li> <li>5. Extra-intestinal sites of infection (urogenital, skin, stomach)</li> <li>6. Genetics/in vitro characterization</li> <li>7. Definitions/Standards/Safety</li> <li>8. 2nd Generation Pro/Prebiotics</li> </ol>
2003 London UK	<ol style="list-style-type: none"> <li>1. Clinical study design/biostatistics</li> <li>2. Probiotics and prebiotics: the potential to impact worldwide health</li> <li>3. Genotype vs. phenotype</li> <li>4. Biotechnology, stability, manufacture, biotechnological presentation of prebiotics and synbiotics</li> <li>5. Weight of evidence for a probiotic/prebiotic effect: what is needed?</li> <li>6. Pathogen modulation - what is the direct action of pro/prebiotics?</li> <li>7. Probiotics and prebiotics through life - age relationships, use in infants, weaning, elderly</li> </ol>
2004 Denver Colorado USA	<ol style="list-style-type: none"> <li>1. Engineered probiotics as therapeutics: formats and challenges</li> <li>2. Host commensal interactions - who talks to whom and how?</li> <li>3. Omics technologies - exploration of the interaction of pro and prebiotics with the host</li> <li>4. Hygiene and immune regulation</li> <li>5. Biomarkers for healthy people</li> <li>6. Prebiotic and probiotic applications to companion animals</li> <li>7. Development of a probiotic dossier using science-based criteria</li> <li>8. Physiological relevance of prebiotic activity</li> </ol>