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Key attributes of global partnerships in food and nutrition to align research agendas and improve public health.

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Abstract

Partnerships among academia, government and industry have emerged in response to global challenges in food and nutrition. At a workshop reviewing international partnerships, we concluded that to build a partnership, partners must establish a common goal, identify barriers and engage all stakeholders to ensure project sustainability. To be effective, partnerships must synchronize methodologies and adopt evidence-based processes, and be led by governmental or non-profit organizations to ensure trust among partners and with the public.

*Keywords:* nutrition, food, partnerships, global, policy
Introduction

Partnerships among research entities, government and non-governmental organizations, as well as industry, have emerged across many jurisdictions in response to global challenges in the food and health sector. However, significant barriers to successful partnerships persist (Kraak and Story 2015). Frameworks and processes that work for some players participating in a partnership may not work for others, and many of these approaches are produced ad hoc. Moreover, perceived conflict of interest of industry-funded research is seen as a common challenge internationally and is therefore a greater barrier to public-private partnerships (PPP) (Hawkes and Buse 2011). On the other hand, given the diminishing of public sector resources, there is also a growing need to cooperate with the private sector in regulatory and research affairs (Martinez et al. 2007). In spite of such barriers, there is no doubt that much can be accomplished with the creation of multi-sector partnerships to tackle transnational problems, to align research agendas or to bring together like-minded groups in various jurisdictions to increase efficiency.

Addressing complex issues of risk often requires equally complex risk management strategies, and thus building an inclusive culture and framework for collaboration is integral to achieving the best outcomes (Kraak 2012). According to Kraak and Story (2015), public-private partnerships in the nutrition and food space should: 1) clarify realistic goals that will benefit the public; 2) maximize compatibilities among partners; 3) address potential conflicts of interest; 4) develop a clear governance structure; 5) establish performance metrics; and 6) engage external stakeholders. However, these essential characteristics are not always easy to achieve, especially when dealing with diverse partners with different priorities. So, in this mini-review, we aimed to identify some key features of existing successful partnerships that could inform on how to
achieve these criteria. To identify these attributes, we coordinated a workshop featuring successful multi-sector partnerships created to improve food and health outcomes and asked each expert to highlight such attributes. This mini-review used those presentations and discussion to make our conclusions. This Food for Health Workshop was led by the Canadian Nutrition Society, in partnership with the Canadian Institutes of Health Research - Institute of Nutrition, Metabolism and Diabetes (CIHR-INMD) and the International Life Sciences Institute (ILSI) North America. Our conclusions (Supplementary Table 1) came from these illustrative examples of effective partnerships which included government, academia, industry and non-profit organizations structured to drive innovation, manage risk, and ensure trust (ILSIGlobal 2016).

The overall objective was to identify key approaches to overcome barriers, to maximize the potential of partnerships.

**Establish a Common Goal and Identify Barriers**

International partnerships have enormous potential by pooling resources to accomplish a common goal and leveraging many experts from a variety of sectors. The potential impact of such a venture is obvious, but there are also numerous barriers to coordinating so many participants from nations with different culture, priorities and political organization; these barriers need to be resolved in order to establish the common goal.

One such example comes from The Joint Programme Initiative: A Healthy Diet for a Healthy Life (JPI-HDHL), comprising of 24 European nations, Canada and New Zealand (ILSIGlobal 2016: Byrne). The JPI model allows countries to conduct international research cooperatively by interlinking the national research policies in a respective area with internationally defined
research policies. Mapping the investments in nutritional and agricultural research initiatives across all the JPI-HDHL countries is a complicated and data-intensive activity, but the efforts result in a much clearer understanding of duplication, complementary projects and knowledge gaps. Aligning these efforts and building trust among stakeholders requires a significant investment, including bringing partners and stakeholders together, often face-to-face, to establish relationships and identify both commonalities and differences.

An example of a current JPI-HDHL project is the Food Biomarkers Alliance (FOODBALL), which uses recent advances in biomarker research to eliminate errors and inaccuracies in data on food consumption and composition (ILSIGlobal 2016: Feskens). FOODBALL is a consortium of 22 members, comprised primarily of university-based researchers, government and non-government organizations from 11 nations. One of FOODBALL’s deliverables is to provide policy-relevant documents to the national authorities of its members on current knowledge of biomarkers for evaluation of nutrition and the health claims of foods (Scalbert et al. 2014). This work requires high levels of coordination among the partners to address challenges, including cross-border funding restrictions, reporting requirements that differ across nations, as well as contract negotiations between members. The success of the JPI model was a result of substantial support and investment in mapping and organizing research capacity and in engaging partners directly to overcome various challenges which was essential to define the common goal.

Engage Stakeholders

Engaging stakeholders not only includes the active partners at the table, but also should include end-users of the product. For example, international collaborations geared towards development
involve different challenges to achieve success. Such collaborations are often more complicated because the partners involved have unequal resources to achieve a common goal. Moreover, the problems to be solved are usually quite complex and large. Development agencies from Western countries have learned that engaging local stakeholders is key to effectively accomplish their goals.

In some areas, the driving force behind PPP is the urgency for basic human needs such as clean water sources or higher nutritional value in foods. Even so, as decades of experience in foreign aid has taught, long-term program sustainability depends on aligning programs with a local population’s needs and services, and in fostering local ownership. This is the model learned by the US Agency for International Development (USAID) in developing partnerships with developing countries to create a strong local foundation in sustainable agriculture, water and health (ILSIGlobal 2016: Schneeman). As an overarching framework for its various programs, USAID places local systems (USAID 2014) at the centre of its sustainability efforts, by seeking local knowledge to understand barriers to systemic change, to identify opportunities and to build capacity.

For example, USAID’s Global Development Alliance (GDA) brings academia and industry together to increase research capacity and develop market-based solutions that are aligned with broader development objectives. One example involves a partnership with the government of Indonesia, Blommer Chocolate and OLAM International (global supply chain manager) to improve yield and incomes for rural cocoa farmers. Through this program, more than 20,000 farmers have received training in cocoa production and gained access to buying stations offering
premium prices for high quality cocoa. Because GDAs are co-designed, co-funded, and co-managed by all partners, so that the risks, responsibilities and rewards of partnership are shared, resulting alliances are sustainable and have greater impact (USAID 2009). Success in this program was ensured by first identifying the local systems and tapping into local expertise, followed by education of local stakeholders, so program successes are sustainable.

The success of partnerships lies in engaging all partners, including end-user stakeholders, to establish the common goal and identify potential barriers. Indeed, for any successful partnership, ensuring all partners meet their specific long-term objectives and accommodate each other’s unique needs are key.

Synchronize Methodologies

Part of the success of partnerships also relies on ensuring all partners agree to a set of common methodologies and outcomes (Kraak and Story 2015, Martinez et al. 2007). This synchronization is particularly important in partnerships that are transnational. For example, in the FOODBALL project, an early barrier to the project goals was the persistent challenges that exist around error and inaccuracies in food intake questionnaires, access to databases and assessment of the data, which are often measured using local protocols that are difficult to synthesize into a global dataset. FOODBALL’s approach to these challenges focused on face-to-face meetings and regular teleconferences to build trust and move critical activities forward. Together this partnership enabled a synthesis of existing data banks held by FOODBALL members, an examination and alignment of food recall questionnaires and the development of standard operating procedures for metabolomics and food analysis.
Another transnational example within USAID’s framework is the Partnerships for Enhanced Engagement in Research (PEER) program. This program supports principal investigators from developing countries who partner with scientists funded by U.S. agencies and the private sector to facilitate knowledge exchange and scientific development of importance to each investigator’s region. This model not only provides resources to local experts to build capacity, but also aligns methodologies across regions, ensuring proven approaches are employed and sustained.

Synchronizing methodologies is also particularly critical in global food safety (Martinez et al. 2007). In 2012, Canada co-founded the Global Food Safety Partnership (GFSP) along with the USA, Denmark and the Netherlands, with support from the World Bank, food manufacturer Mars Inc. and Waters Inc., a supplier of food safety technologies. GFSP recognizes that industry invests heavily in competency development to ensure the supply chain is reliable, and is therefore in the best position to align practices in developing nations with international best practices. GFSP provides a platform to align these efforts to address food safety issues, public health outcomes, and to foster economic development through improved market access and a freer flow of food and agri-food commodities. Developing a common set of methodologies and protocols was necessary for the success of these programs and is especially key in transnational partnerships.

Synchronized methodologies have also been used to create partnerships. In addressing global food security challenges as part of the drive towards sustainability, the United States Department of Agriculture (USDA) has prioritized open data, which presents new opportunities for collaboration and maximizes technology transfer through PPP (ILSIGlobal 2016: Wotecki). The USDA is working to make its agricultural and nutrition data widely available, due to its
important role in long-term sustainable development, improving economic opportunities for producers, contributing to the health of all consumers and providing opportunities to entrepreneurs. The first voluntary, global open data initiative, Global Data for Agriculture and Nutrition (GODAN), was launched in 2012 and includes 292 partners representing national governments, non-governmental and private sector organizations. GODAN encourages collaboration among the existing agriculture and open data activities and places an emphasis on reducing duplication, building on existing knowledge and bringing stakeholders together to solve long-standing global problems. One example of its work is an assessment of open data and shared information as an empowering force for small-scale farmers and emerging economies (Addison et al. 2016). With respect to such open data projects, a key barrier is the need for greater consistency in how data are collected and labelled and this is typically one of the first issues that is addressed by the partners.

Steering large and complex programs involving multiple partners across sectors is a mammoth undertaking that requires clear delineation of goals and responsibilities, open lines of communication and the oversight of project leaders. Key to successful implementation will be developing approaches to make better use of the knowledge that has been accumulated in a non-rivalrous and non-exclusionary manner, and in so doing, align political, corporate and social strategies around global efforts to create sustainable food sources.

*Evidence-based Processes*
In addition to synchronizing methodologies, it is also critical to ensure that all partners agree to use only scientifically valid evidence (Kraak and Story 2015). This agreed upon method of validation is particularly important to ensure trust among partners and with the public.

For example, in Canada, although food processing is dominated by large, multinational operations, small and medium businesses account for a significant share of production, but lack the resources to meaningfully engage in research and development. Agriculture and Agri-Food Canada (AAFC) works with industry and academic researchers to help the food industry understand regulatory processes and requirements and in turn, accelerate the market entry of new food products and/or health claims (ILSI Global 2016: Petitclerc). An example can be found in Health Canada’s 2012 approval (Health Canada 2012) of the claim that barley beta-glucan soluble fibre lowers blood cholesterol (AbuMweis et al. 2010). AAFC initiated and led the process, first by identifying the potential for a barley health claim, and then by coordinating meetings with barley industry representatives, researchers and government departments to initiate the petition process. It assessed existing scientific evidence in support of the claim, and conducted analyses of the beta-glucan content of commercial barley samples and summarized the dose delivered by typical barley foods. The final application was submitted by the Alberta Barley Commission, and is credited with increasing demand for Canadian-grown barley and opening new markets for value-added food products. The key to the success of this project was having a clear, scientifically valid process through which all players understood the requirements to satisfy the claim. Moreover, all partners convened at the meetings with a common goal and contributed to the various stages of the petition with a cohesive plan that in the end, satisfied each partner’s individual values.
Leadership Models for Trust

To ensure a successful trust model in cross-sectoral partnerships, an understanding of the ‘culture’ and motivations of each partner is key, regardless of whether the partner is a nation, an industry or government. As demonstrated by the AAFC example, government can play a key role in fostering industry innovation, while building trust among industry partners and with the public. In addition to building trust to enable industry innovation, such trust is absolutely critical when it comes to food safety. Cross-sectoral partnerships that actively engage industry’s expertise can play an important role in food safety management, as demonstrated by a risk management framework developed for food allergens in Canada (ILSIGlobal 2016: Godefroy).

In the 1990s, several organizations pressured federal regulators to take action on the rising incidence of preventable food anaphylaxis cases by adopting new labelling requirements. Many of the key guidance materials and best practices concerning accurate, transparent product labelling developed at the time were driven by industry, which had also implemented voluntary recalls of certain products to ensure labels clarified the presence of allergens. Food manufacturers recognized that a safe food supply chain depended on the integrity of ingredients and their composition in order to prevent food allergy incidents. Non-profit organizations (primarily Food Allergy Canada) brought together the food industry, consumers and the clinical community to facilitate collaborative risk communications, advocacy, training, and best practices policy development, with no intervention on the part of government. The leadership by a non-profit organization helped build trust among competing partners, and especially with the public. Akin to the health claim process by AAFC, it is important that a clear, evidence-based process
with appropriate controls be in place to ensure that non-profit organizations follow a proven approach.

Reducing public skepticism and building trust within multi-sectoral collaborations among organizations with polarized viewpoints is a major challenge, particularly when industry players are often viewed as being motivated solely by profit. In the agri-food sector (like drug discovery research where pharma’s involvement is maligned, but unlike the technology sector in which participation by corporations is more readily embraced), industry involvement can create negative public sentiment that needs to be addressed through open disclosure and proactive communications. Navigating these partnerships, while maintaining trust among partners and with the public, requires leadership from government or non-profit organizations such as academic societies.

Conclusions
Advancing the discussion around responsible food partnerships is urgently needed because of their increasing importance in advancing basic research, product development and policy. Partnerships involving the food, nutrition and agricultural sectors offer unique opportunities to align research agendas to translate data into effective policy. The immediate opportunity for organizations working in food and nutrition is to seize upon lessons learned from successful case studies of multi-partner collaborations and develop strategies for cross-sectoral engagement that is inclusive of all stakeholders and establishes trust with the public. Partnerships must be built on commitment to a common goal, by identifying potential barriers and solutions, and effectively engaging all stakeholders to ensure project sustainability. In order for the partnerships to be
efficient and effective, they must synchronize methodologies, share data openly and use
evidence-based processes. Moreover, partnerships should be led by government, non-profit
organizations, or academic societies to ensure trust among partners and with the public. It was
concluded that the Canadian Nutrition Society (and other like societies) is well-positioned to
provide such leadership. The Canadian Nutrition Society is itself a trusted cross-sector
organization (including academia, practitioners, industry and government) which can bring
together various partners to use these results to set an agenda for implementing a stakeholder
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Conflicts of Interest


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References


ILSIGlobal. 2016. ILSI NA: Canadian Nutrition Society [online; video].


