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Delivering High-Level Food Industry Skills for Future Food Security through *Advanced Training Partnerships*

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Summary

The UK Biotechnology and Biological Sciences Research Council's *Advanced Training Partnerships* initiative represents a significant investment in the provision of high-level skills for the UK food industry sector to address global food security from farm to fork. This paper summarises the background, aims and scope of the *Advanced Training Partnerships*, their development so far, and offers a view on future directions and evaluation of impact.

Keywords: skills, training, food industry, global food security

The global food security challenge

UK food systems are reliant on global food security, which is relatively new concept in the public consciousness. 'Food security' is a term that was first used in the 1970s when global food shortages and price volatility became a threat to international political stability. However, it was not until 1996 that a definition of 'global food security' emerged following the World Food Summit of 1996 as existing "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1998). Recently in 2007/8, the potential impact of failure to address global food security challenges was brought into sharp focus, when a rapid rise in food prices impacted severely on developing countries, leading to a significant increase in the proportion of their populations suffering food deprivation and in widespread civil unrest (FAO, 2008).

In developed countries, the impacts of factors such as climate change, biofuel production and population growth on food prices, land use and consumer attitudes to food are significant issues. Concern over the quality of dietary intake with respect to nutrient vs. energy intake, the safety of food and food provenance is of higher immediate priority than the sufficiency of food *per se*. Against this backdrop there exists consumer demand for more convenient, hence more processed, and healthy foods as part of the diet, with particular focus on reduction of calorie intake and the levels of salt, sugar and saturated fats.

The need for high-level skills

In the UK, the Foresight project on Global Food and Farming Futures explored the challenges toward achieving global food security by 2050, and its final report made a strong case for immediate action (Foresight, 2011). The report highlighted that food production is under increasing pressure as water and other natural resources become scarcer and competition for the use of land rises, and as the impacts of climate change continue to lead to altered patterns of production and effects on the reliability of supply. It is clear that adapting to these

considerable challenges to ensure the sustainable supply of sufficient, affordable, nutritious and safe food will require a cross-disciplinary approach that runs throughout the food chain. Indeed, in 2010 the Food Research Partnership Skills Sub-Group published a report that identified a shortage of such very high-level skills to support research and innovation in the farming and food industries needed to address food security challenges (Food Research Partnership, 2010). This group brought together key public sector funding bodies with senior representatives of the research community, NGOs and the food industry, and made the recommendation that the development and support of partnerships between industry, skills providers, research and policy makers was a key and necessary step toward addressing this skills shortage.

As a consequence, in 2010, the Biotechnology and Biological Sciences Research Council (BBSRC) launched a call for *Advanced Training Partnerships* (ATPs) to increase the national capacity in the knowledge and skills that underpin food security, to ensure that the UK skills base has the appropriate critical mass and specialist research expertise to meet food security challenges. This call led to funding of four partnerships over a five-year period that are providing postgraduate training to span the food supply chain from farm to fork: *Sustainable and Efficient Food Production*, led by the Institute of Biological, Environmental and Rural Science (IBERS) at Aberystwyth University; *A Strategic Training Hub for the UK Agri-food Industry* (AgriFood ATP), led by the University of Nottingham; *Food Quality and Health: Sustaining the Future* (The Food ATP), led by University of Reading; and *Intensive Livestock Health and Production*, led by Royal Veterinary College. Information about each of the ATPs can be found on the *Advanced Training Partnerships* website: www.atp.ac.uk

Aims, scope and development of partnerships

The ATPs were established with the aim to provide scientific and technical staff working in food production and supply with the opportunity to develop strategically important postgraduate skills, particularly in vulnerable niche areas. To achieve this aim, each of the four partnerships has brought together expertise from leading UK universities, research and training organisations, and companies to develop and deliver flexible and industry-relevant training. This training is being developed to ensure that industry professionals can balance work with study through a modular approach that blends distance learning, short-courses, work-based learning and collaborative research projects. The modular approach to training is being developed to enable access at a variety of levels, from professional development at the single module or short-course level, through to Masters degrees and Professional Doctorates in agricultural and food sciences. At the time of launch, the BBSRC targeted collective participation of around 100 individuals in Professional Doctorates and uptake of several thousand Masters-level modules towards professional development and Masters degrees within the five-year funded period (BBSRC, 2011). To encourage participation, a proportion of the BBSRC funding for each partnership is being used to fund bursaries to reduce the barrier of cost.

Each partnership has a focus on a particular area of the farming and food industry sector. For example, the University of Reading partnership with University of Birmingham, Leatherhead Food Research and Rothamsted Research (the Food ATP) aims to encourage industry-wide ‘without boundaries’ thinking to stimulate innovative and sustainable approaches to the production of quality food that benefits human health. Its sector focus is toward the scientific and technical needs of food retailers, food manufacturers and ingredient manufacturers, whereas other partnerships have a broader focus or are focused closer to the primary

production end of the food chain. Each partnership also has included relevant industry stakeholders as partners in the development and delivery of training. The involvement of industry partners is essential to ensure that the partnerships are delivering training and research opportunities that address appropriate needs and skills gaps. This will be vital towards achieving the key objective for each of the four ATPs, to establish a sustainable business model that ensures longevity beyond the five-year period for which the BBSRC has provided funding.

Measuring impact

An important question is to establish whether the *Advanced Training Partnerships* are having any impact in the food industry in the short, medium and long-term. An obvious strategy is to reach for metrics and to monitor the numbers of individuals and companies engaging with training through each of the four partnerships and on a collective basis. However, while this metrics-based approach is important to establish whether *Advanced Training Partnerships* will be financially sustainable beyond the initial BBSRC-funded period, their true impact will be judged through harder to measure changes in professional practice and the forging of closer links between the academic research base and industry that facilitate effective knowledge transfer and peer networking. This will be challenging to measure over the short term, since the impact of training and the development of skills may not be immediately evident. If the ATPs are successful over the medium to long-term, the access to the knowledge and skills base that they provide will underpin the development of the UK food industry and will be well aligned with and responsive to the needs of industry. Closer integration of industry driven research and development and the novel science arising from the research base should promote innovation by enhancing and accelerating the translation of research into practice.

Future perspectives

The four *Advanced Training Partnerships* have received pump priming from the BBSRC to establish their training programmes over the short-term. The immediate challenge will be to demonstrate viable and sustainable models of delivery that allow the partnerships to continue beyond this. This will require each partnership to engage with a broader range of food industry partners, which can be facilitated through organizations and professional bodies such as the British Nutrition Foundation, Institute of Food Science and Technology, Food and Drink Federation and IGD. It is arguable that longer term evolution of the *Advanced Training Partnerships* will lead to greater integration to create a single platform for the food industry to access postgraduate skills training. Future funding opportunities may also exist to use the *Advanced Training Partnerships* as a model for expansion of training collaboration to Europe and overseas.

The closer relationship that should develop between the research base and industry can be expected to lead to an increased uptake of other knowledge exchange activities for research, such as collaborative research and development projects, Knowledge Transfer Partnerships, CASE (Collaborative Awards in Science and Engineering) studentships, and secondments. ATPs offer the opportunity to make a step change in the provision of training to the industry, to supersede the traditional model of Masters and Doctoral level training for the provision of qualified researchers in the university sector.

Conflict of interest

The author is Director of the Food Advanced Training Partnership.

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