Science Overview

Wayne Powell

In today's era of new paradigms represented by tech-Inological advances, perceived market and social opportunities, shifting public concerns and government expectations we must ensure that we do not lose sight of our primary Institute obligation: the delivery of scientifically relevant, high-quality research. The scientific articles outlined in this report articulate a selection of our achievements and progress. However, we must not be complacent. To be successful in continuing to raise our national and international standards we aspire to have research programmes that are considered, by both our scientific colleagues and our funders, to be amongst the best in the world. Sustaining high levels of excellence requires an emphasis on quality and high levels of investment in staff and facilities to attain a critical mass of resources. Indeed, the gap between world-class organisations and the remainder is widening and those organisations that fail to respond to this challenge run the risk of 'missing the boat' and may never catch up. Our new management and organisational structure is designed to meet this challenge, raise the bar for performance, assume greater risk, be more responsive to emerging opportunities, and provide a better interface with the public and private sectors. Our aspirations have been significantly facilitated by increased support from SEERAD via the "Outer Core" initiative, providing an additional £1.9m funding over the next 3 years, enabling us to invest in new areas of scientific capability to ensure international leadership that provides the maximum benefit to our sponsors and stakeholders. Based on this new investment in science we are in the process of making 15 new appointments. In addition, during the current year SEERAD also provided a capital grant of £2,483,000 for major items of building, plant and equipment.

Our official mandate crops (potatoes, barley, blackcurrants and raspberries) are largely overlooked by the ag-biotech industry, giving us the opportunity and responsibility to reinforce our efforts to establish strategic product orientated research. Private sector led progress in genomics and biotechnology capability for these species is therefore not an option. Our plan is to build genomics and plant breeding capability around relevant germplasm and to ensure that we are uniquely positioned to capture the range of social and market opportunities arising from integrating genome science with plant breeding. Indeed, competency in

plant breeding and the ability to convert traits to products is a major global technology platform that will provide a delivery vehicle for health, diet, food, renewable resources and the bio-industries. In order to realise these opportunities we must ensure that our mandate crops do not lag behind in the application of biotechnology. In addition, we must reconsider the way in which plant breeding is planned, conducted and communicated to ensure that the benefits arising from it are fully recognised, more visible and relevant to the needs of society. Part of our strategic plan will therefore to be to coordinate and expand our plant breeding efforts through a Crop Improvement Centre that will link activities across our three scientific themes and Mylnefield Research Services (MRS). Underpinning research on transgenic crop technologies and production will also be consolidated within the Centre. This new management approach will aid cohesion and ensure that we optimise our research and commercialisation infrastructure to add value to our crop improvement efforts.

Facilitating synergistic interactions between fundamental, strategic and policy-relevant research means that our scientists must be proactive in the management of projects at various stages of their development and evolution. Individual creativity and originality is paramount but we cannot afford to base our future success exclusively on serendipity. Integration of research activities across disciplines is optimised by our organisation into Themes, which also reflects our determination to attain an appropriate balance between discovery science, hypothesis driven research and strategic product orientated research.

During the past 12 months, we have established a formal agreement with the University of Dundee to relocate four senior members of University staff (Dr Andy Flavell, Dr Claire Halpin, Professor Hamlyn Jones and Professor John Raven FRS) and their research teams to the SCRI campus. This exciting development is part of our strategic intent to establish effective partnerships and forms part of a shared vision with the University for the future development of research, education and training in the plant bio-sciences. Already, we are seeing the benefits of this venture through closer interactions, and this enhanced synergy is providing the basis for further productive and mutually beneficial initiatives with the University sector. Preparations for our 2003 Visiting Group exercise, or more formally the Research Organisation Assessment Exercise (ROAE), in May 2003 are underway. This event will coincide with the fiftieth anniversary of James Watson and Francis Crick's identification of the structure of DNA. The 20th century witnessed the phenomenal success of the reductionist approach to biology. A major opportunity for the 21st century will therefore be to integrate the reductionist view of biology with genome-wide approaches and whole organism biology. To realise these opportunities will require focus, and the development of computational support for data acquisition, analysis and model building and validation. Alignment of research effort and appropriate resource allocation is therefore critical. The establishment of a scientific advisory board, and particularly the input of Dr J Antoni Rafalski from DuPont USA has helped us focus and resolve key issues of relevance to our current and planned research programme. We are excited and optimistic about our future and look forward to engaging in constructive dialogue with visiting group members and presenting our aspirations for the future development of the Institute.