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Editorial: Next generation dairying

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Editorial

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The Hannah Dairy Research Foundation ('the Hannah': http://www.hannahresearch.org.uk) is a Scottish Charitable Body that supports and funds research into all aspects of dairying, 'from grass to glass'. As the owner of the Journal of Dairy Research, the Hannah is also strongly committed to disseminating research findings to a global audience of lactation researchers and industries. This November the Hannah held their first International Workshop at the Moredun Research Institute in Edinburgh. One hundred invited delegates from all sectors of dairying research and the dairy industries, and from as far afield as Canada and New Zealand, took part in lively and stimulating debate on the topic of 'Next Generation Dairying ***for Scotland***.' Why Scotland? Firstly, the Hannah is located in Ayrshire, in the West of Scotland, which is also the home of the original red-and-white dairy breed, Ayrshire cattle. Secondly, there is a lactation research presence that is strong (considering the size of the country) but much diminished compared to its heyday, and hence in need of reinvigorating. Thirdly, Scotland has a history of exporting discoveries and ideas to the rest of the world, consider John Logie Baird (television), John Boyd Dunlop (veterinarian and inventor of pneumatic tyres), John Loudon McAdam (roadmaking), James Watt (steam power) and two who have special relevance to the Hannah: Alexander Graham Bell (telephone) and Alexander Fleming (penicillin). Fleming was born close to the Hannah Institute and The Alexander Fleming building which was the Institute's innovation hub was named after him, and the first domestic telephone to be installed in the UK connected the Hannah family in their Oswald House mansion on the Auchincruive Estate (currently part of the Scottish Rural College, SRUC) with their Factor (manager) in his house Mount Hamilton (at one time the Institute's student and visitor accommodation). We digress! 'Next Generation Dairying ***for Scotland***' brought together plenary speakers Geoff Simm (University of Edinburgh), Nigel Scollan (Queens University Belfast) and David Barrett (University of Bristol) who started the Workshop by describing the challenges of achieving global food security, ensuring environmental sustainability (this with a focus on water scarcity) and maintaining the health of dairy animals whilst reducing the use of antimicrobials. Turning to potential next-generation solutions, further plenaries from Richard Dewhurst (SRUC) and Ian Givens (University of Reading) summarized the potential use of cutting-edge technologies in smart dairy production and the enormous nutritional benefits of dairy products to the health of consumers; important news at a time when some still regard dairy as unhealthy. Then it was the turn of the audience led by a panel of industry representatives to debate future funding issues and requirements, first in open forum and then in focused break-out groups considering funding needs; skills, resources and specific research topics. During the course of the Workshop it became apparent that as global demands for animal-derived foods increase, dairy products are an excellent option in terms of land use and consumer nutrition, but if dairying is to be done responsibly then it must be with proper regard for water availability, an area that has received too little research attention in the past. Furthermore, we have the knowledge that would enable the UK to set the best possible example in terms of reduced antimicrobial use, and Scotland are producing some of the best new sensor-based technologies for assisting dairy animal husbandry and ensuring optimum health and wellbeing of our animals. For the consumer, early life consumption of dairy products will help to avoid population-level Vitamin D and iodine deficiencies and ensure optimal skeletal development and, for girls especially, the best chance of avoiding osteoporosis in later life. Proper analysis of all the evidence has shown that obesity and cardiometabolic diseases of middle age are not associated with consumption of dairy products, and by reducing the insulin response specific bioactive factors in dairy products may actually benefit diabetes sufferers. So, where to next? The Workshop provided much food for thought regarding future funding priorities, including the need to get closer to dairy farmers, to the dairy industries (particularly the processing sector) and to consumers. Future research should be more multidisciplinary, and include socioeconomic aspects as well as basic biological and technological sciences. The guest speaker Gary Mitchell, dairy farmer and Vice-Chair of NFU Scotland, emphasized the changing nature of dairy farming and the need to ensure that the next generation of husbandry staff is properly equipped with a range of technological skills. To achieve this, researchers and farmers must become more closely engaged, he said. The prospects for dairying are exciting, and it is fitting that the Workshop should end with a final Plenary talk from Mansel Griffiths, formerly a dairy microbiologist at the Hannah Institute in Ayr and latterly at the University of Guelph and a

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Member of the JDR Editorial Board, on the futuristic topic of the development and commercialization of dairy post-biotics; foods containing metabolic products derived from probiotic microorganisms that have health-promoting biologic activity for the consumer. Also fittingly, this Editorial will end with mention of another great Scottish inventor, albeit rather an unsung hero. In the early 1980s I was involved in pioneering research conducted jointly by the Hannah and the University of Aberdeen (Professor Meg Foster), using the Mk 1 MRI scanner to monitor pregnancy and mammary development in goats (Foster et al. 1983; Fowler et al. 1990a), some of which was published in this Journal (Fowler et al. 1990b, 1991). In 2003 others received a Nobel Prize for MRI imaging, which is a shame because the Aberdeen Mk 1 imager was actually the very first one to produce whole body images, using a technique of spin warp imaging invented by Jim Hutchison, Meg's husband. Jim died last year and this Editorial is dedicated to his memory.

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