

RESEARCH

Developing the next generation of vaccines

A NEW Veterinary Vaccinology Network held its first conference last month, with the aim of building on its mission to 'establish and sustain research partnerships that generate scientific knowledge and discover the tools/technologies to develop next generation vaccines'.

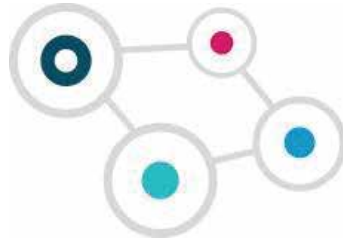
Welcoming delegates to the conference, which was held at the International Convention Centre in Birmingham on February 16 and 17, Bryan Charleston of the Pirbright Institute explained that £300,000 over five years had been awarded by the Biotechnology and Biological Sciences Research Council to fund the network to achieve its aims. It was also hoped that the network would be of help to early career vaccinologists as a place they could come to meet others and help develop their careers.

The network's vision is to 'foster a multidisciplinary community to enhance the development and uptake of novel tools and technologies as well as address the "unmet" needs in protective immunity in the field of veterinary vaccinology'. Among its aims are to help share existing knowledge by coordinating current research activities and the sharing of reagents and resources, and to be a focus for discussion on technology development and provide an immunology toolbox for the target veterinary species. It also aims to bring together experts to analyse gaps in capabilities and identify research priorities, to facilitate new research collaborations and initiate collaborative funding bids, as well as to promote collaboration with colleagues in the human vaccinology research community and establish links with industry.

Prioritising research

In a presentation on vaccines in sustainable livestock development and health, Kenya-based professor Brian Perry discussed how to prioritise vaccine work to make the most impact, but also how to be effective at getting funding. He said that the veterinary profession did not make the most of linking data connections between veterinary and human medicine and suggested that thinking more broadly should help.

He also suggested that, when submitting their funding bids, vaccine developers should look at the United Nations' sustainable development goals if they were working on vaccines potentially for livestock in the developing world. He



VETERINARY VACCINOLOGY NETWORK

believed that vaccines that led to improved animal health could help in achieving three of these goals. These were ending poverty, ensuring healthy lives and promoting gender equality (currently in developing countries women owned 1 per cent of the

land but 10 per cent of livestock).

Jonathan Rushton, from the Royal Veterinary College, looked at the economics of disease control and vaccination. He said there were very limited data on the actual cost of disease

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and the cost of controlling disease, often making it difficult to make a decision. However, if the costs of vaccines were broken up into the fixed development costs, the more variable manufacturing costs and the delivery costs, and the practicalities of each stage were considered, it could make it easier to match a solution to the production systems in use and what the animal owners wanted.

Delivery issues could often be the reason a good vaccine was not being used, as issues around, for example, delivery, maintaining the cold chain and doses per vial could make the costs prohibitive against the benefits provided.

To make the right decision that led to rational and proportionate disease control measures, consideration had to be given to the specific production system that was in place. A good surveillance system (more than passive) needed to be in place to gauge the extent of the problems, and the socioeconomic needs of the community had to be considered too, as did the value of the market and the potential loss to livelihoods. If all these were considered, then an 'intelligent policy decision' could be made.

Giving an example to illustrate his point, Professor Rushton explained that,

in Bolivia, the cattle systems were so extensive that farmers might see some cattle only once a year. So, with a disease like foot-and-mouth disease (FMD), not only would it be difficult to vaccinate the animals, it would also be difficult spot the disease in the first place. Therefore, in this situation it was not profitable to vaccinate as 'we don't have the right tools to pull FMD out of these [extensive] systems', he said.

Research and development

Mike Francis, from MSD Animal Health, gave an overview of the research and development of vaccines and how researchers could collaborate with commercial companies at an early stage to help develop a vaccine. The animal health products market was worth US \$23 billion annually, and vaccines made up 26 per cent of these products, he said.

It was important to consider the market needs and be clear if the product was novel or added value to what was already available. Vaccine developers had to be clear with the product profile (Summary of Product Characteristics) and consider the regulations in the market that was being targeted. Dr Francis explained that there was some attempt to harmonise regulations

through the VICH (International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products), but there was a 'long way to go before having true harmonisation'. It was also important to consider customer convenience and how the product would be used, and to be ready to adapt and respond along the process of developing a vaccine.

Innovation was also important and, he pointed out, many of the innovations in vaccine development had first come through in the development of veterinary vaccines, so there was a culture of innovation already in place.

Other presentations at the meeting included a talk on viral vectors from Sarah Gilbert, of the Jenner Institute; vaccine adjuvants from Quentin Sattentau, of the University of Oxford; fish vaccines from Patrick Smith, of Tethys Aquaculture; and creating a technology pipeline from Rob Beynon, of the University of Liverpool.

■ More information about the Veterinary Vaccinology Network is available at www.vetvacnet.ac.uk/

doi: 10.1136/vr.h1468