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THE NEED FOR NEW VIRUS VACCINES IN HUMAN AND VETERINARY MEDICINE WITH NOVEL APPROACHES TO DESIGN AND VALIDATION

Cosby SL^{1,2}, Power UP¹, Touzelet, O¹, de Oliveira, A¹, Lemon K²
Duffy, C² and McMenamy M²

¹School of Medicine Dentistry and Biomedical Sciences-Queen's University Belfast, UK

²Agri-Food and Biosciences Institute, UK

New vaccines are required in both human and veterinary medicine. Measles virus (MV) is the only human virus within the Morbillivirus genus of the *Paramyxoviridae*. The virus can cause severe neural complications such as measles giant cell pneumonia, acute post measles encephalitis, subacute sclerosing panencephalitis and in immunosuppressed individuals, measles inclusion body encephalitis. The World Health Organization has set goals towards the complete eradication of MV. However, there are potential problems following MV eradication as the closely related veterinary members in the genus share common cell entry receptors raising the risk of zoonotic infection. MV is thought to have evolved from the now eradicated cattle Morbillivirus, Rinderpest and to have entered the human population during cattle domestication. Veterinary Morbilliviruses have recently jumped into new species including non-human primates. This highlights the possibility of zoonosis and the potential consequences of complete withdrawal of MV vaccination (which gives some cross protection to other morbilliviruses) after measles eradication. The MV vaccine is live attenuated and has very low risk of reversion but is still unlikely to be acceptable in a measles free world raising the need for alternative approaches to human protection from veterinary Morbillivirus infection. Other vaccines for diseases such as Respiratory syncytial virus and Nipah virus are also urgently needed. We are carrying out research into recombinant vaccines using virus vector systems which can be used in both humans and animals but do not cause disease themselves and can be delivered mucosally. These vectors can incorporate various foreign genes to protect against viruses or other pathogens.

L.Cosby@qub.ac.uk