# International Conference on Vaccines

## February 20-22, 2017   Baltimore, USA

## A novel virus-like particle universal Influenza A vaccine candidate

**Alex Ramirez**

University College London / iQur - Flutcore, UK

Existing seasonal Influenza A virus (IAV) vaccines target highly mutable parts of the virus that vary between seasons. Vaccine design relies on predicting the predominant circulating influenza strains but when there is a mismatch between vaccine and circulating strains, efficacy is sub-optimal. Furthermore, current approaches provide no protection against newly emerging strains that may cause pandemics. One solution is to design vaccines that target conserved protein domains of influenza, which remain largely unchanged from year to year and are likely to be retained in new emergent variants. We present 2 virus like particles (VLP), built using the Tandem Core TM platform, as a universal group 1 IAV vaccine candidate. Tandem Core is based on the hepatitis B core protein which is known to be a highly immunogenic VLP and has the ability to confer immunogenic properties to proteins inserted into its structure. Immunisation with our VLPs, containing a total of 5 conserved antigens from matrix protein 2 (M2) and hemagglutinin stalk, leads to production of cross-reactive and protective antibodies. The polyclonal serum from immunised mice can bind group 1 and group 2 hemagglutinin types H1, H2, H3, H4, H5, H6, H7, H8, H9, H11, H12, H14, H15 and H16 and a conserved epitope on matrix protein 2 expressed on most strains of IAV. Vaccination with our VLP results in 100% protection from H1N1 heterologous and H3N2 heterosubtypic viral challenge, even at high viral challenge doses in mice. Serum transfer from vaccinated animals is sufficient to confer protection from influenza-associated illness in naïve mice. These data suggest that a tandem core based IAV vaccine might provide broad protection against common and emergent IAV strains causing seasonal and pandemic influenza in man.

## Biography:

Dr. Alex Ramirez is the Head of Immunology at iQur Ltd; a small London based biotech company specialising in vaccine technology and diagnostics. After receiving his PhD from Imperial College London, he completed a postdoctoral research fellowship at UMASS Medical School focusing on influenza vaccines and adjuvants. Previously he worked on the development of *Men B* vaccine (Bexsero) at Novartis AG and as scientific advisor to PXLPPL.com . During his time at iQur he has overseen the development of monoclonal antibodies to Hepatitis C virus and Pan-influenza and is currently involved in the development of their flagship Universal Influenza Vaccine VLP pro

Madridge J Vaccines. 2017
MJV an open access journal

**Vaccines-2017**
**February 20-22, 2017**

Conference Proceedings

Page 45