Academic research support for the development and licensure of a conjugate vaccine against bacterial meningitis

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The meningococcal group A organism is responsible for 90% of the cases of endemic and epidemic meningitis caused by *Neisseria meningitidis* bacteria. Preventive immunisation should avoid a great number of deaths and be less expensive than mass immunisation campaigns performed after epidemics have begun. This is best achieved by vaccination with conjugate vaccines which, unlike polysaccharide vaccines, are immunogenic in the very young, induce immunological memory and are likely to give long-lasting protection. MVP (Meningitis Vaccine Project) is developing an affordable monovalent meningococcal A conjugate vaccine for sub-Saharan Africa. Successful development of a conjugate vaccine requires control of the production process from starting polysaccharide, to the formation of activated intermediates and their conjugation to yield the conjugate vaccine, as well as demonstration of manufacturing consistency. Since conjugate vaccines are manufactured from purified components by a clearly defined chemical process, the strategy for the control of the vaccine relies heavily on determination of the molecular characterization and purity of each vaccine lot and intermediates achieved using bioanalytical techniques not readily available to vaccine manufacturers.

The seminar will describe the development and application of physicochemical techniques, including chromatography and nuclear magnetic resonance spectroscopy, to the characterization and licensure of the MenAfriVac vaccine.

Biography

Following five years of working in research and development of vaccines for Chiron (now Novartis) Vaccines (Italy), Neil Ravenscroft joined the Department of Chemistry at the University of Cape Town (South Africa) in 2000 where he is currently an Associate Professor. He has established a Bioanalytical and Vaccine Research Unit to assist with the development of vaccines through the application of appropriate physicochemical methods of analysis. He is a consultant to the World Health Organization on Recommendations for conjugate vaccines, lectures on WHO Global Training Network courses and advises the Meningitis Vaccine Project (MVP) and PATH's Pneumococcal Vaccine Project (both funded by the Gates Foundation). Locally he and his laboratory are involved in the development of a low cost South African *Haemophilus influenzae* type b conjugate vaccine with The Biovac Institute and have extended this collaboration to work on pneumococcal conjugate vaccines.