

Global Veterinary Microbiology and Veterinary Medicine Summit

October 17-18, 2016 Chicago, USA

Assembly of *Arenavirus*: An ultrastructural perspective

Abdullah Sethar and Benjamin W Neuman
University of Reading, UK

The *Arenaviridae* are a family of viruses whose members are generally associated with rodent transmitted disease in humans which currently comprises 24 viral species. *Arenavirus* infections are relatively common in humans in some areas of the world and can cause severe illnesses including several hemorrhagic fevers. The virus particles vary in diameter from 60 to more than 300 nm. They are spherical and have a reported average diameter of 92 nanometers. All are enveloped in a lipid bilayer and have a bisegmented ambisense RNA genome but relatively little is known about how virions are assembled and how virion structure relates to transmissibility. To investigate the role of each viral structural protein in forming and maintaining the structure of the virion, we have imaged particles of *Arenaviruses* LCMV, PICV and TCRV and compared their shape and structural characteristics to similar sized phospholipid vesicles. A very strong association between particle size and shape was found for all *Arenavirus* particles: Small virions were significantly rounder than vesicles of similar size, while large particles tended to be more elliptical in appearance. The natural variation in surface glycoprotein decoration and ribonucleoprotein incorporation was then measured. From this data it was concluded that there is no strong evidence relating particles size to decoration for arenaviruses as a group but we did detect significant correlations between internal density and virion shape. Overall, we are able to conclude that small virions are round and relatively rigid compared to vesicles of the same size, while large virions are not. By comparing relative density of the membrane-proximal region it was discovered that *Arenavirus* shape is controlled by complexes containing GPC, Z and NP at the surface of the virion and that an unbroken inner shell of NP is essential for maintaining a rigid spherical shape. Furthermore, it was revealed that the inner leaflet of intact *Arenaviruses* has a lower density than the inner leaflet of vesicles consistent with the interpretation that viral proteins are displaying lipid molecules from the inner leaflet of the viral membrane. These data provide a new way of assessing the function of viral protein interactions on virion structure and may be of use in designing antiviral drugs that act at the level of virion structure.

drabdullahsethar@hotmail.com

Evaluation of three techniques used for detection of calves persistently infected with BVDV

Osama Mostafa
Assiut University, Egypt

Thirty five calves were examined for presence of antigen, antibodies and nucleic acid of BVDV using ABC, ELISA and RT-PCR. These calves examined three times two months apart. Seven and four samples were positive with ABC and RT-PCR respectively while no positive result detected with ELISA in first examination. The same result observed in the second examination but the third examination showed increase positive result with ABC to be eight while results with ELISA and RT-PCR remain as it is. Results of this work proved that ABC technique is more sensitive than RT-PCR but both can be used successively in detection of calves persistently infected with BVDV while ELISA cannot be used.

osama196520101@hotmail.com