

## Prof Henk Huismans

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Institutional Research Theme

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### Key Publications

Stassen, L., Huismans, H. & Theron, J. 2012. African horse sickness virus induces apoptosis in cultured mammalian cells. *Virus Res.* 163(1): 385-389.

Stassen, L., Huismans, H. & Theron, J. 2011. Membrane permeabilization of the African horse sickness virus VP5 protein is mediated by two N-terminal amphipathic alpha-helices. *Arch. Virol.* 156(4):

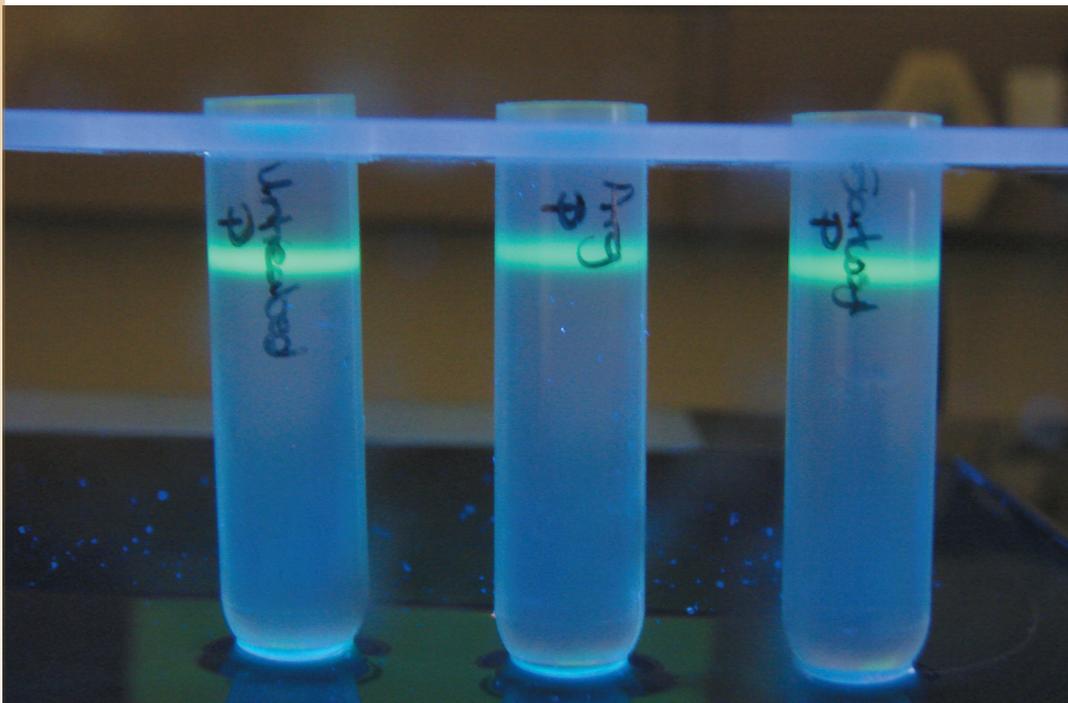
Rutkowska, D.A., Meyer, Q.C., Maree, F., Vosloo, W., Fick, W. & Huismans, H. 2011. The use of soluble African horse sickness viral protein 7 as an antigen delivery and presentation system. *Virus Res.* 156(1-2): 35-48.

Meiring, T.L., Huismans, H., Van Staden, V. 2009. Genome segment reassortment identifies non-structural protein NS3 as a key protein in African horse sickness virus release and alteration of membrane permeability. *Arch. Virol.* 154: 263-71.

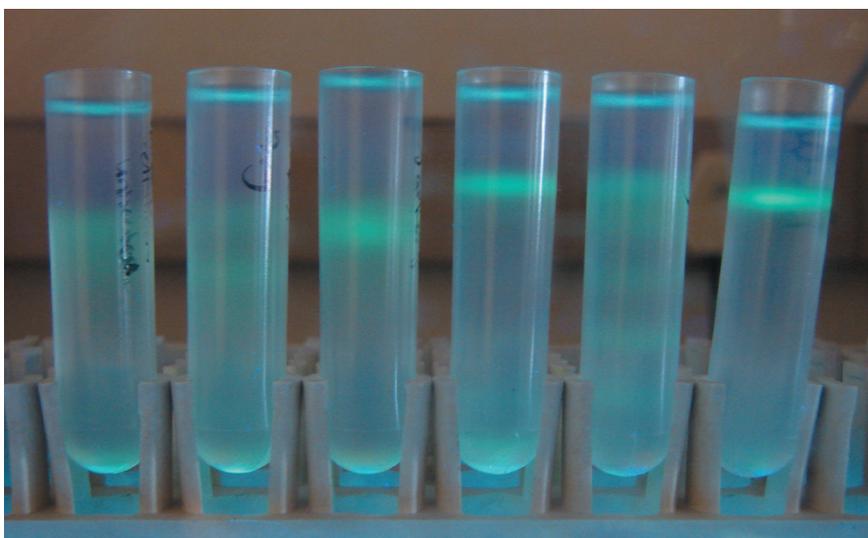
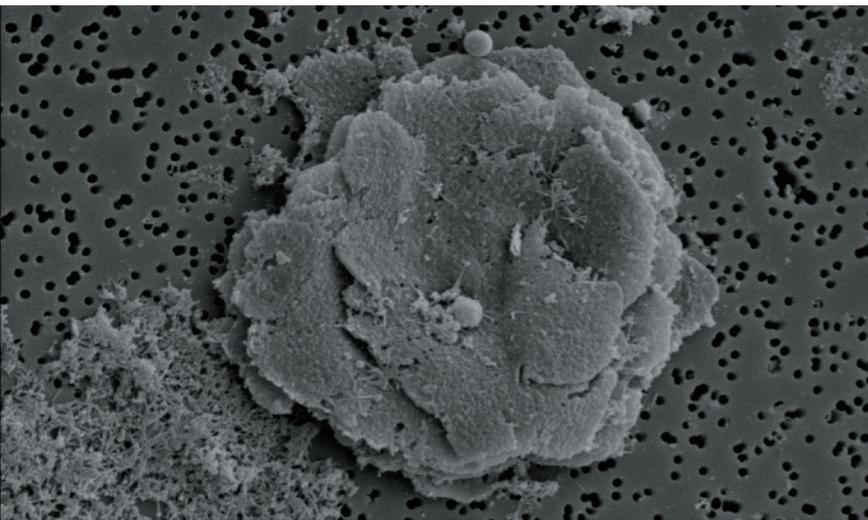
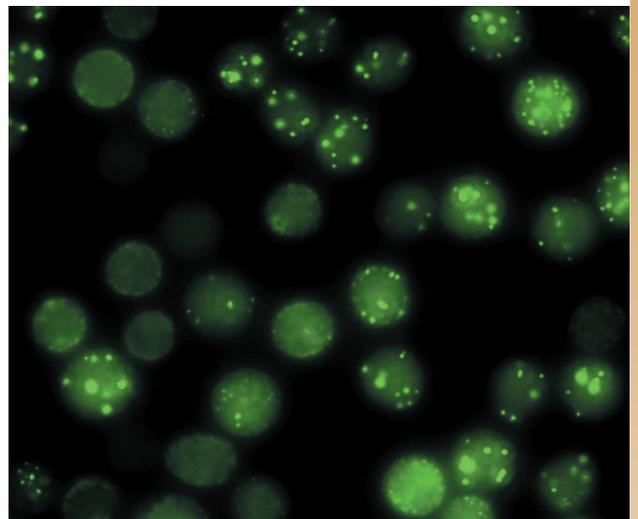
## Molecular biology of African horse sickness virus, and the use of viral proteins in vaccine display and in the assembly of virus particles

Henk Huismans completed his PhD (Chem) in 1970 at the University of Pretoria with a thesis that focused on the molecular biology of the interaction of bluetongue virus (BTV) with its host cell. Research at the Onderstepoort Veterinary Research Institute showed that BTV was the first orbivirus with a segmented double-stranded RNA genome. As a research fellow in the Microbiology Department at Duke University in the USA he – for the first time – identified reovirus proteins with an affinity for either single-stranded or double-stranded RNA. On his return he was appointed Head of

the Biochemistry Section at OVRI and later as Assistant Director. His main research focus during this period lay with identifying the non-structural proteins as well as the neutralisation and group-specific antigens of BTV. He provided the first evidence that a single BTV protein could be used as a vaccine. In the early eighties, he initiated



the first cloning and sequencing of BTV genes. In 1987 he was appointed as Head of the Genetics Department at the University of Pretoria where he initiated the first molecular biology research programme using a variety of recombinant DNA and genetic engineering technologies. The main focus of this research remained on African horse sickness virus, another orbivirus. He is the author of more than 75 highly cited papers and book chapters. He has been the recipient of several research awards including: An A rating from the NRF (1996 to 2007); UP Academic Achievement awards (1989, 1992, 1995, 1998, 2001, 2004); University of Pretoria Chancellors Award for Research (2001) and the Havenga Award from the SA Academy of Science (2005). He has played a major role in a large number of NRF evaluation committees and still serves on the Executive Evaluation Committee of the NRF. He retired as Head of the Department of Genetics at the end of 2009 and is currently a senior research fellow and Director of the Institutional Research Theme: Animal and Zoonotic Diseases.



## Research

Prof Huisman's previous research interests include a strong focus on the cloning, sequencing and expression of double-stranded RNA viral genes by means of baculovirus recombinants. In the last ten years his research focus has been on a BioPad and TIA-funded project directed towards the use of two proteins of AHSV as peptide display systems, with the aim of developing a general purpose vaccine platform for animal vaccines such as foot-and-mouth, West Nile and African horse sickness. A more recent collaborative interest involves RNAi inhibition, cellular transport and cytotoxicity of viral proteins.