Curriculum Vitae- Dr. Trudi (H.G.) O'Neill

PERSONAL PARTICULARS:

Name:	Hester Gertruida (Trudi) O'Neill
Maiden name:	Van Rensburg
Identity no.:	690822 0007 080
Born:	22 August 1969, Aliwal North, South Africa

ACADEMIC QUALIFICATIONS:

DEGREE	YEAR	INSTITUTION	FIELD OF STUDY
PhD	1998-2001	University of Pretoria	Molecular Virology
M.Sc	1992-1994	University of the Free State	Molecular Biology
B.Sc (Hons)	1991	University of the Free State	Biochemistry (Enzymology)
B.Sc	1988-1990	University of the Free State	Biochemistry & Physiology

PhD - Title: Development of recombinant vaccines against foot-and-mouth disease

EMPLOYMENT:

Jan 2012 -	Senior Lecturer, Department of Microbial, Biochemical and Food Biotechnology, University of the Free State
2008 – Dec 2011	Postdoctoral fellow, Biochemistry Division, North-West University
2004 – Dec 2007	Postdoctoral fellow, Division of Medical Biochemistry, University of Cape Town
1996 – Jan 2004	Researcher, Exotic Diseases Division, Onderstepoort Veterinary Institute
1995 – Jul 1996	Contract researcher, Department of Hematology, University of the Free State

RESEARCH:

- **Rotavirus** (NWU & UFS-current research focus): Rotavirus vaccine development using virus-like particle approach; Development of reverse genetics system for rotavirus; Rotavirus evolutionary studies
- **Angiotensin-converting enzyme** (ACE) (UCT): Production of minimally glycosylated ACE in insect cells; Investigation into thermal stability of ACE; Active site investigations
- **Foot-and-mouth disease virus** (OVI & UP): Recombinant FMD vaccines; FMDV reverse genetics; Heterogeneity in protease coding regions

PUBLICATIONS:

1. Jere, K.C., **O'Neill, H.G**., Potgieter, A.C., van Dijk, A.A. (2014) Chimaeric Virus-Like Particles Derived from Consensus Genome Sequences of Human Rotavirus Strains Co-Circulating in Africa. ***PLoS One***, 9(9):e105167.
2. Wentzel, J.F., Yuan, L., Rao, S., Van Dijk, A.A. and **O'Neill, H.G**. (2013) Consensus sequence determination and elucidation of the evolutionary history of a rotavirus Wa variant reveal a close relationship to various Wa variants derived from the original Wa strain. ***Infection, Genetics and Evolution***, 20C, 276-283.
3. **O'Neill, H.G**., Mzilahowa, T., De Deus, N., Njenga, S.M., Mmbaga, E.J. and Kariuki, T.M. (2013) Evaluation of the European Foundation Initiative into African Research in Neglected Tropical Diseases by the African Fellows. ***PLoS Neglected Tropical Diseases***,7, 3, e2019.

4. Mlera, L., **O'Neill, H.G.**, Jere, K.C., van Dijk, A.A. (2013) Whole-genome consensus sequence analysis of a South African rotavirus SA11 sample reveals a mixed infection with two close derivatives of the SA11-H96 strain. ***Archives of Virology***, 158, 1021-1030.
5. Jere, K.C., Mlera, L., **O'Neill, H.G**., Peenze, I. and Van Dijk, A.A. (2012) Whole genome sequence analyses of three African bovine rotaviruses reveal that they emerged through multiple reassortment events between rotaviruses from different mammalian species. ***Veterinary Microbiology***, 159, 245-250.
6. Jere, K.C., Mlera, L., Page, N.A., Van Dijk, A.A. and **O'Neill, H.G**. (2011) Whole genome analysis of multiple rotavirus strains from a single stool specimen using sequence-independent amplification and 454® pyrosequencing reveals evidence of intergenogroup genome recombination. ***Infection, Genetics and Evolution,*** 11, 2072-2082.
7. Jere, K.C., Mlera, L., **O'Neill, H.G**., Potgieter, A.C., Page, N.A., Seheri, M.L. and Van Dijk, A.A. (2011) Whole genome analyses of African G2, G8, G9 and G12 rotavirus strains using sequence-independent genome amplification and 454® pyrosequencing. ***Journal of Medical Virology,*** 83, 2018-2042.
8. F.F. Maree, B. Blignaut, J.J. Esterhuysen, T.A.P. de Beer, J. Theron, **H.G. O'Neill** and E. Rieder (2011) Predicting antigenic sites on the foot-and-mouth disease virus capsid of the South African Territories (SAT) types using virus neutralization data. ***Journal of General Virology,*** 92, 2297-2309.
9. Mlera, L., Jere, KC., Van Dijk, A.A. & **O'Neill, H.G.** (2011) Determination of the whole-genome consensus sequence of the prototype DS-1 rotavirus using sequence-independent genome amplification and 454® pyrosequencing. ***Journal of Virological Methods***, 175, 266-271.
10. Reeve, R., Blignaut, B., Esterhuysen, J.J., Opperman, P., Matthews L., Fry E., De Beer, T.A.P, Theron, J., Rieder, E., Vosloo, W., **O'Neill, H.G**., Haydon, D.T. & Maree, F.F. (2010) Sequence-based prediction for vaccine selection and identification of antigenic variability in foot-and-mouth disease virus***. PLoS Computational Biology***, 6, 12, e1001027.
11. Watermeyer, J.M., Kröger, W.L., **O'Neill, H.G**., Sewell, B.T. & Sturrock, E.D. (2010) Characterisation of domain-selective inhibitor binding in angiotensin-converting enzyme using a novel derivative of lisinopril. ***Biochemical Journal***. 428, 67-74.
12. Kröger, W.L., Douglas, R.G., **O'Neill, H.G**., Dive, V. & Sturrock, E.D. (2009) Investigating the Domain-Specificity of Phospinic Inhibitors RXPA380 and RXP407 in Angiotensin-Converting Enzyme. ***Biochemistry***, 48, 8405-8412.
13. **O'Neill, H.G**., Redelinghuys, P., Schwager, S.L.U. & Sturrock, E.D. (2008) The importance of glycosylation and domain interaction in the thermal stability of angiotensin-converting enzyme. ***Biological Chemistry***, 389, 1153-1161.
14. Watermeyer, J, Kröger, W.L., **O'Neill, H.G**., Sewell, B.T. & Sturrock, E.D. (2008) Probing the basis of domain-dependant inhibition using novel ketone inhibitors of angiotensin-converting enzyme. ***Biochemistry,*** 47, 5942-5950.
15. Storey, P., Theron, J., Maree, F.F. & **O'Neill, H.G.** (2007) A second RGD motif in the 1D protein of a Namibian SAT1 foot-and-mouth disease virus is not essential for attachment to target cells. ***Virus Research***, 124, 184-192.
16. Jackson, A.L., **O'Neill, H**., Maree, F., Blignaut, B., Carrillo, C., Rodriguez, L. & Haydon, D.T. (2007) The mosaic structure of foot-and-mouth disease genomes. ***Journal of General Virology***, 88, 487-492.

17. **Van Rensburg, H.G.,** Henry, T.M. & Mason, P.W. (2004) Studies of genetically defined chimeras of a European type A virus and a South African Territories type 2 virus reveal growth determinants for the foot-and-mouth disease virus. ***Journal of General Virology***, 85, 61-68.
18. **Van Rensburg, H.G**. & Mason P.W. (2002). Construction and evaluation of a recombinant foot-and-mouth disease virus: Implications for inactivated vaccine production. ***Annals of the New York Academy of Sciences***, 969, 1-5.
19. **Van Rensburg, H**., Haydon, D., Joubert, F., Bastos, A., Heath, L. & Nel L. (2002). Genetic heterogeneity in the foot-and-mouth disease virus Leader and 3C proteinases. ***Gene***, 289, 19 – 29.
20. Heath, L.E., **Van Rensburg, H.G**., Vosloo, W. & Nel, L.H. (2001). The 3A non-structural-protein coding region of the southern African SAT type foot-and-mouth disease viruses differs from that of the other serotypes**.** ***Onderstepoort Journal of Veterinary Research***, 68, 253-262.
21. **Van Rensburg, H.G.** & Nel, L.H. (1999). Characterization of the structural-protein-coding region of SAT2 type foot-and-mouth disease virus. ***Virus Genes*** 19 (3), 229 – 233.
22. Phillips, A., Pretorius, G.H.J. & **Van Rensburg, H.G.** (1995). Molecular characterization of a *Galactomyces geotrichum* lipase, another member of the cholinesterase/lipase family. ***Biochimica et Biophysica Acta*** 1252, 305-311.

SELECTED CONFERENCE CONTRIBUTIONS (past 5 years):

(Presenting author underlined)

Sander, W.J., Pohl-Albertyn, C.H., **O'Neill, H.G**. The effect of fatty acid supplementation on rotavirus infectivity. *SASM2016 - 19th Biennial Conference*, Durban, 17-20 January 2016. (poster)

Motanyane, L, De Deus, N, Potgieter A.C., **O'Neill, H.G**. Molecular characterization of Mozambican group A rotavirus field strains. *Virology Africa 2015,* Cape Town, 1-3 December 2015. (poster)

Folorunso, O.S., Makatsa, M.S., Albertyn, J., **O'Neill, H.G**. Genomic integration and expression of the major virion rotavirus protein (VP6) in yeast derived from single and dual expression vectors. *Virology Africa 2015,* Cape Town, 1-3 December 2015. (poster)

Makatsa, M.S., Folorunso, O.S., Albertyn, J., Van Dijk, A.A., **O'Neill, H.G**. Towards the development of non-live rotavirus vaccines: Expression of rotavirus VP6 in various yeasts. *12th dsRNA virus Symposium*, Goa, India, 6-10 October 2015. (poster)

O'Neill, H.G., Motanyane, L, João, E.D., De Deus N. Phylogenetic analysis of VP4 and VP7 coding sequences of Mozambican rotavirus strains. *6th European Rotavirus Biology Meeting*, Dijon, France, 17-20 May 2015. (poster)

O'Neill, H.G., Wentzel, J., Mlera, L., Van Dijk, A.A. Towards the development of a rotavirus reverse genetics system: holding out for the holy grail of dsRNA viruses. *SASBMB Goudini Spa* 2014, 6-9 July 2014. (poster)

O'Neill, H.G., De Deus, N., Kariuki T., Njenga S., Phillips R., Simo G., Mwinzi, P. African Research Network for Neglected Tropical Diseases (ARNTD). *SASBMB Goudini Spa* 2014, 6-9 July 2014. (poster)

Makatsa, M.S., Albertyn, J., **O'Neill, H.G**. Expression of rotavirus VP2 and VP6 structural proteins in yeast. *SASM 2013*, Forever Resorts Warmbaths, Bela-Bela, 24-27 November 2013. (poster)

O'Neill H.G. EFINTD Fellowship Programme – Major Achievements. *Grantees Meeting of the Africa Initiative hosted by Volkswagen Foundation*, Hanover, Germany, 14-15 October 2013. (oral)

O'Neill H.G., Mlera L., Wentzel J., Van Dijk AA. Rotavirus transcripts activate PKR, are senses by RIG-I & MDA5 and induce IFN-1β, IFN-λ1 and CXCL10 in HEK 293H cells. *5th European Rotavirus Biology Meeting*, Valencia, Spain, 6-9 October 2013. (oral)

Wentzel, J.F., Yuan L., Rao S., Van Dijk A.A., **O'Neill HG**. Consensus sequence determination and elucidation of the evolutionary history of a rotavirus Wa variant derived from the original Wa isolate. *5th European Rotavirus Biology Meeting*, Valencia, Spain, 6-9 October 2013. (poster)

Wentzel, JF, **O'Neill HG,** Van Dijk AA. Suppressing the interferon response elicited by rotavirus transcripts using plasmid derived rotavirus non-structural proteins NSP1, NSP2 and NSP5/6. *5th European Rotavirus Biology Meeting*, Valencia, Spain, 6-9 October 2013. (poster)

Mlera, L., **O'Neill, H.G**., Van Dijk, A.A. Whole genome analysis of a field bovine rotavirus following adaptation to cell culture. *5th European Rotavirus Biology Meeting*, Valencia, Spain, 6-9 October 2013. (poster)

Jere KC, **O'Neill HG**, Potgieter AC, Van Dijk AA. Generation of chimaeric rotavirus-like particles from consensus sequences of Africa rotavirus strains directly from stool samples. *11th International Symposium on Double-stranded RNA viruses*, San Juan, Puerto Rico, 27 November – 1 December 2012. (Poster)

Jere KC, Mlera L, **O'Neill HG**, Peenze I and Van Dijk AA. Whole genome sequence analyses of three African bovine rotaviruses reveal that they emerged through multiple reassortment events between rotaviruses from different mammalian species. *11th International Symposium on Double-stranded RNA viruses*, San Juan, Puerto Rico, 27 November – 1 December 2012. (Poster)

Mlera L, **O'Neill HG**, Jere KC, Van Dijk AA. 454® Pyrosequencing and molecular phylogenetics reveal dual infection with close derivatives of rotavirus SA11-H96. *11th International Symposium on Double-stranded RNA viruses*, San Juan, Puerto Rico, 27 November – 1 December 2012. (Poster)

Mlera L, Van Dijk AA, **O'Neill HG**. Rotavirus transcripts strongly induce IFN-1β, IFN-λ1 and CXCL10 mRNA in HEK 293H cells. *11th International Symposium on Double-stranded RNA viruses*, San Juan, Puerto Rico, 27 November – 1 December 2012. (Poster)

LA Naudé, J Albertyn, AA van Dijk, **HG O'Neill**. Cloning of the open reading frames encoding structural proteins, VP2 and VP6, of a South African G9P[6] rotavirus strain in a wide-range yeast expression vector. *7th African Rotavirus Symposium*, Cape Town, South Africa, 8 November 2012. (Poster)

J.F. Wentzel, A.A. van Dijk & **H.G. O'Neill**. Determination of the rotavirus Wa consensus sequence by sequence-independent cDNA synthesis and amplification combined with 454 pyrosequencing. *Virology Africa* 2011, Cape Town, South Africa, 29 November - 2 December 2011. (Poster)

L. Mlera, **H.G. O'Neill** & A. A. van Dijk. Consensus genome sequence of SA11 rotavirus determined with sequence-independent genome amplification and 454® pyrosequencing. *Virology Africa* 2011, Cape Town, South Africa, 29 November - 2 December 2011. (Poster)

H.G. O'Neill, M.J. van der Westhuizen, K.C. Jere, A.C. Potgieter & A.A. van Dijk. Production of rotavirus-like particles in insect cells using the codon optimized consensus sequence of a South African G9P[6] strain. *4th European Rotavirus Biology Meeting*, Reggio Calabria, Italy, 2-5 October 2011. (oral)

FELLOWSHIPS:

2009-2012	Senior Fellowship in Neglected Tropical Diseases funded by European Foundation Initiative for NTDs
2008-2011	North-West University Fellowship
2006-2007	Free-standing Postdoctoral Fellowship, National Research Foundation (SA)
2004-2005	Postdoctoral Fellowship, Faculty of Health Sciences, University of Cape Town

2000 IAEA Fellowship for scientific visit to Vienna BioCenter, University of Vienna, Austria
2000 FEMS Young Scientist Grant to attend EUROPIC2000 meeting in Italy
1999 IAEA Fellowship for scientific visit to Plum Island Animal Research Center, USA

TEACHING:

Lecturing: Lecturing 3rd year Biochemistry (Molecular Biology); Lecturing BSc(Hons) Biochemistry – Advanced Molecular Biology (UFS, 2014-
Modules in BSc(Hons) techniques course (UFS, 2012-14)
Lecturing 3rd year Biochemistry (Proteomics) (UFS, 2012-13)

Temporary Lecturer in BSc(Hons) – Biochemistry, North-West University (2011)

Temporary Lecturer in Biochemistry Practical classes for second year B. Pharm students, North-West University (2008)

Facilitation: Facilitation of second year MBChB group meetings as part of the Problem-Based Learning program at Faculty of Health Sciences, UCT (2006-2007)

POST GRADUATE SUPERVISION & TRAINING:

University of the Free State

MSc:

1. Mr. Steven Makatsa (2013-2015)
2. Miss Lithabiso Motanyane (2014 -)
3. Mr. Wico Sander (2016 -)
4. Miss Matshepo Rakaki (2016 -)
5. Miss Sana Mokhosi (2014 -) (co-supervisor)
6. Miss Cumisa Mlandu (2015 -) (co-supervisor)

PhD:

1. Mr. Samuel Folorunso (2015 -)

Interns:

1. Miss Valerie Oberhardt, Ruprecht-Karls-Univerität, Heidelberg, Germany: DAAD Rise Internship Programme, August-September 2013
2. Miss Fenja Gerpott, University of Münster, Germany: DAAD Rise Internship Programme, August – October 2014
3. Miss Nadja Huempfer, Free University of Berlin, Germany: DAAD Rise Internship Programme, August – October 2015
4. Miss Matshepo Rakaki, NRF Intern, April 2015 – March 2016
5. Mr. Tshidiso Mogotsi, NRF Intern, April 2016 – March 2017

North-West University

MSc:

1. Ms. Mari van der Westhuizen (2009 – 2012) (co-supervisor)
2. Ms. Aliza Naudé (2011 – 2015) (co-supervisor)

PhD:

1. Dr. Khuzwayo Jere (2009 – 2012) (co-supervisor)
2. Dr. Luwanika Mlera (2010 – 2013) (co-supervisor)
3. Dr. Jaco Wentzel (2010 – 2014) (co-supervisor)

University of Pretoria
MSc:

1. Ms. Belinda Blignaut (2002-2004) (co-supervisor)
2. Ms. Pamela Opperman (2000 – 2005) (co-supervisor)
3. Ms. Marsha Sorril (2002-2006) (co-supervisor)

OTHER ACHIEVEMENTS:

- Obtain **C1 – NRF rating**: 2016-2021
- Attended 61st Lindau Nobel Laureate Meeting (Physiology / Medicine), 26 June – 1 July 2011 in Lindau, Germany as academic guest.
- **External Assessor**: Eleven MSc Dissertations (UNISA, University of the Free State; University of Pretoria; University of Limpopo & North-West University) and 1 PhD thesis (University of the Free State)
- **Assessor**: NRF rating applications (2012 & 2014); Review SA/China Joint Research Proposal (2014)
- **Reviewer:** Review manuscripts for international peer-reviewed journals, ***Journal of General Virology***, 2013; ***Archives of Virology***, 2005, 2007, 2011, 2012, 2013, 2014 & 2015, ***Vaccine***, 2008, ***PLoS Neglected Tropical Diseases***, 2014 and ***Letters in Applied Microbiology***, 2014.
- **Funding:** Senior Fellowship in Neglected Tropical Diseases (EFINTD) for development of Regional Rotavirus strains through reverse genetics, 2009-2012 ($200,000); Thuthuka award from National Research Foundation (NRF Rating Track) for Rotavirus VLP production in yeast, 2012-2014 ($37,300); SA/MOZ Bilateral Grant from National Research Foundation for Whole-genome characterization of Mozambican rotavirus strains, 2013-2015 ($20,000).
- Founding member and member of Management Board of African Research Network for Neglected Tropical Diseases (ARNTD) (www.arntd.org)
- **Associations/Societies**: South African Society for Biochemistry and Molecular Biology and American Society for Virology