

Surname, first name, title: Vanderschuren, Hervé, PhD

Date of birth: 24th March, 1977

Place of birth: Tournai (Belgium)

Nationality: Belgian

Address: ETH Zurich, LFW E17, Plant Biotechnology Lab, Universitätstrasse 2, Zürich, 8092 Switzerland

Position: Cassava Research Team leader, Oberassistent ETH Zürich

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EDUCATION

2007 *ETH Doctor of Sciences* (Biology, Specialization: Plant Biotechnology). Swiss Federal Institute of Technology Zurich (Switzerland)

2002 *Master degree* (Agricultural Sciences, Specialization: Crop breeding). AgroParisTech, Institut National Agronomique Paris-Grignon (France).

2002 *Master degree* (Agricultural Sciences, Specialization: Crop protection). Gembloux Agro-Bio Tech, University of Liège (Belgium).

1998 *Bachelor degree* (Agricultural Sciences). Gembloux Agro-Bio Tech, University of Liège (Belgium).

PROFESSIONAL EXPERIENCE

2010 – Team Leader and Oberassistent ETH Zurich. Cassava biotechnology research team leader in the Plant Biotechnology Lab at the Swiss Federal Institute of Technology (ETH Zurich, Switzerland).

2007 – 2009 Cassava biotechnology research team leader in the Plant Biotechnology Lab at the Swiss Federal Institute of Technology (ETH Zurich, Switzerland).

2003 – 2007 PhD student in the Plant Biotechnology Lab at Swiss Federal Institute of Technology (Zurich, Switzerland). Theme: *Engineering RNA-mediated resistance to African Cassava Mosaic Virus in cassava*.

Since 2007 management, supervision and coordination of a research team (2 apprentices, 1 technician, 3 international trainees, 6 undergraduate students, 7 graduate students and 3 postdocs). In charge of grant applications (PI or co-PI on every cassava-related project), collaboration, research and supervision.

LANGUAGES

French:	native tongue	Dutch:	basic
English:	fluent	Spanish:	basic
German:	good		

AWARD

Swiss Forum for International Agricultural Research (SFIAR) 2011 Award for “*Technology transfer and capacity building: Making tropical crop technologies available where it can have an impact*”.

TEACHING & EDITORIAL ACTIVITIES

Lecturer activities

Lecturer at ETH Zürich in charge of the course “Applied Plant Biotechnology”, course number 551-0360-00 G. (6 ECTS). Lecturer in other biology and agronomy

blockcourses at ETH Zurich.

Editorial activities

Member of the editorial board of the peer-reviewed journal GMCrops.

Reviewer for Plant Molecular Biology, Molecular Plant-Microbe Interaction, Journal of Virological Methods, Transgenic Research, Planta, Virus Gene, Virology, Journal of the science of Food & Agriculture, Plant Science, Proteomics, Proteome Science, Journal of Proteomics, Journal of Experimental Botany.

ONGOING RESEARCH ACTIVITIES WITH NATIONAL & INTERNATIONAL INSTITUTIONS

Kenya:

- Cassava transformation technology transfer (Dr Leena Tripathi, IITA-Nairobi / BecA)
- Investigating staygreen phenotype in cassava (Dr Morag Ferguson, IITA-Nairobi / BecA, Dr Joseph Kamau (KARI))
- Field trial of virus resistant cassava (Professor Hasan Were, Masinde Muliro University of Science and Technology (MMUST))

Ghana:

- Cassava transformation technology transfer and development of virus resistant cassava (Professor Kenneth Danso, BNARI)

Nigeria:

- Field trial of virus resistant cassava (Dr Chiedozi Egesi, National Root Crops Research Institute (NRCRI))

Tanzania:

- Cassava transformation technology transfer (Dr Joseph Ndunguru, Mikocheni Agricultural Research Institute)
- Investigating natural resistance to cassava brown streak disease (Dr Edward Kanju, IITA-Dar es Salaam)

South Africa:

- Cassava transformation technology transfer (Professor Chrissie Rey, Witwatersrand University)
- Engineering resistance to cassava mosaic disease in South African industry-preferred cassava varieties and field testing of transgenic cassava (Professor Chrissie Rey, Witwatersrand University / Jim Casey, Casquip Ltd)

China:

- Engineering cassava for higher biofuel yields (Professor Peng Zhang, CAS Shanghai)
- Field testing of transgenic cassava with high vitamin content (Professor Peng Zhang, CAS Shanghai)

Indonesia:

- Investigating natural tolerance and molecular responses to post-harvest deterioration in cassava (Professor Enny Sudarmonowati, LIPI Bogor)

Brazil:

- Engineering cassava and jatropha for drought tolerance (Professor Francisco Campos, Federal University of Ceará)

Columbia:

- Engineering resistant to cassava bacterial blight (Professor Adriana Bernal, Universidad de los Andes)
- Investigating molecular responses to green mite in cassava (Professor James

Montoya, Universidad del Valle / Soroush Parsa, CIAT - Cali)

USA:

- Engineering resistant to cassava bacterial blight (Professor Brian Staskawicz, UC Berkeley)

UK:

- Investigating natural resistance to cassava brown streak disease (Dr Maruthi Gowda, NRI)

Switzerland:

- Vitamin biofortification of cassava and rice using transgenic strategies (Professor Teresa Fitzpatrick, University of Geneva)
- Engineering cassava for higher biofuel yields (Professor Sam Zeeman, ETHZ)

PUBLICATIONS (Peer-reviewed Journals)

Agronomy, Biology & Biotechnology

Chetty, C.C., Rossin, C.B., Gruissem, W., Vanderschuren, H.*, Rey, M.E.C. (2013). *Empowering green biotechnology in southern Africa: Establishment of a robust transformation platform for the production of transgenic industry-preferred cassava*. **New Biotechnology Journal**, 30 (2), 136-143.

Vanderschuren, H.* (2012). *Strengthening African R&D through effective transfer of tropical crop biotech to African Institutions*. **Nature Biotechnology** 30 (12), 1170-1172.

Vanderschuren, H.*, Moreno, I., Anjanappa, R.B., Zainuddin, I.M., Gruissem, W. (2012). *Exploiting the combination of natural and genetically engineered resistance to cassava mosaic and cassava brown streak viruses impacting cassava production in Africa*. **PLoS ONE**, 7 (9), e45277.

Zainuddin, I.M., Schlegel, K., Gruissem, W., Vanderschuren, H.* (2012). *Robust transformation procedure for the production of transgenic farmer-preferred cassava landraces*. **Plant Methods**, 8 (1), 24.

Bart, R., Cohn, M., Kassen, A., McCallum, E.J., Shybut, M., Petriello, A., Krasileva, K., Dahlbeck, D., Medina, C., Alicai, T., Kumar, L., Moreira, L.M., Rodrigues Neto, J., Verdier, V., Santana, M.A., Kositcharoenkul, N., Vanderschuren, H., Gruissem, W., Bernal, A., Staskawicz, B.J. (2012). *High-throughput genomic sequencing of cassava bacterial blight strains identifies conserved effectors to target for durable resistance*. **PNAS**, 109 (32), 13130.

Niklaus, M., Gruissem, W., Vanderschuren, H.* (2011). *Efficient transformation and regeneration of transgenic cassava using the neomycin phosphotransferase gene as aminoglycoside resistance marker gene*. **GMCrops**, 2 (3), 193-200.

Moreno, I., Gruissem, W., Vanderschuren, H.* (2011). *Reference genes for reliable potyvirus quantitation in cassava and analysis of Cassava brown streak virus load in host varieties*. **Journal of Virological Methods**, 177(1): 49-54.

Owiti, J.A., Grossmann, J., Gehrig, P., Laloi, C., Dessimoz, C., Benn Hansen, M., Gruissem, W., Vanderschuren, H.* (2011). *iTRAQ-based analysis of changes in the cassava root proteome reveals new pathways associated with post-harvest physiological deterioration*. **The Plant Journal**, 67 (1), 145-156.

Sayre, R., Beeching, J., Cahoon, E.B., Egesi, C., Fauquet, C., Fellman, J., Fregene, M., Gruissem, W., Mallowa, S., Manary, M., Maziya-Dixon, B., Mbanaso, A., Shachtman, D., Siritunga, D., Taylor, N., Vanderschuren, H., Zhang, P. (2011). *The BioCassava Plus Program: Biofortification of Cassava for Sub-Saharan Africa*. **Annual Review of Plant Biology**, 62 (1), 251-272.

- Bull, S. E., Ndunguru, J., Gruissem, W., Beeching, J. R., Vanderschuren, H.* (2011). *Cassava: constraints to production and the transfer of biotechnology to African laboratories*. **Plant Cell Reports**, 30 (5), 779-787.
- Bull, S. E., Owiti, J. A., Niklaus, M., Beeching, J. R., Gruissem, W., Vanderschuren, H.* (2009). *Agrobacterium-mediated transformation of friable embryogenic calli and regeneration of transgenic cassava*. **Nature Protocols**, 4 (12), 1845-1854.
- Vanderschuren, H., Alder, A., Zhang, P., Gruissem, W. (2009). *Dose-dependent RNAi-mediated geminivirus resistance in the tropical root crop cassava*. *Plant Molecular Biology*. **Plant Molecular Biology**, 70(3), 265-72.
- Walser, M., Pellaux, R., Meyer, A., Bechtold, M., Vanderschuren, H., Reinhardt, R., Magyar, J., Panke, S., Held, M. (2009). *Novel method for high throughput colony PCR screening in nanoliter-reactors*. **Nucleic Acids Research**, 37(8):e57.
- Vanderschuren, H., Akbergenov R., Pooggin M.M., Hohn T., Gruissem, W, Zhang, P. (2007). *Transgenic cassava resistance to Africa cassava mosaic virus is enhanced by the virus promoter derived siRNAs*. **Plant Molecular Biology**, 64 (5), 549-557.
- Vanderschuren, H., Stupak, M., Futterer, J., Gruissem, W, Zhang, P. (2007). *Engineering resistance to geminiviruses – Review and perspectives*. **Plant Biotechnology Journal**, 5 (2), 207-220.
- Stupak, M., Vanderschuren, H., Gruissem, W., Zhang, P. (2006). *Biotechnological approaches to cassava protein improvement*. **Trends in Food Science and Technology** 17, 634-641.
- Akbergenov, R., Si-Ammour, A., Blevins, T., Amin, I., Kutter, C., Vanderschuren, H., Zhang, P., Gruissem, W., Meins, F.Jr, Hohn T., Pooggin, M.M. (2006). *Molecular characterization of geminivirus-derived small RNAs in different plant species*. **Nucleic Acids Research** 34(2), 462-471
- Zhang, P., Vanderschuren, H., Futterer, J., Gruissem, W. (2005). *Resistance to cassava mosaic disease in transgenic cassava expressing antisense RNAs targeting virus replication genes*. **Plant Biotechnology Journal**, 3 (4), 385-397.

Public Understanding & Biotechnology

- Vanderschuren, H.*, Heinzmann, D., Faso, C., Stupak, M., Arga, K.Y., Laizet, Y., Leduchowska, P., Silva, N., Simkova, K. (2010). *A cross-sectional study of biotechnology awareness and teaching in European high schools*. **New Biotechnology Journal** 31;27(6):822-8.

Manuscripts submitted and under revision

- Vanderschuren, H.*, Boycheva, S., Li, K-T, Szydlowski, N., Gruissem, W., Fitzpatrick, T.B. *Strategies for vitamin B6 biofortification of plants: A dual role as a micronutrient and a stress protectant*. Submitted to **Frontiers in Plant Science**.
- Vanderschuren, H.*, Lentz, E., Zainuddin, I., Gruissem, W. *Proteomics of model and crop plant species: status, current limitations and strategic advances*. Submitted to **Journal of Proteomics**.
- Nyaboga, E., Njiru, J., Nguu, E., Gruissem, W., Vanderschuren, H. and Tripathi, L. *Efficient Agrobacterium-mediated transformation of African farmer-preferred cassava (Manihot esculenta Crantz) cultivars using friable embryogenic calli*. Submitted to **Journal of Plant Biotechnology**.

* Corresponding author

OTHER CONTRIBUTIONS AND MEDIA COVERAGE

Nature Blog (October 2012): Transgenic cassava armed with dual disease resistance.

(<http://blogs.nature.com/news/2012/09/updated-transgenic-cassava-armed-with-dual-disease-resistance.html>)

Scidev News (October 2012): African farmers could soon grow virus-resistant cassava. (<http://www.scidev.net/en/sub-suهران-africa/news/african-farmers-could-soon-grow-virus-resistant-cassava-1.html>)

Vanderschuren, H. (2012). *Empowering Biotechnology in Africa through Effective Technology Transfer: the Success Story of Cassava Biotechnology*. The Technical Centre for Agricultural and Rural Cooperation (CTA) 11/07/2012. (<http://knowledge.cta.int/en/Dossiers/CTA-and-S-T/Selected-publications/>)