

Heino M. Heyman

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Profile

Holder of a PhD in Medicinal Plant Science, presently conducting postdoctoral biochemical research on plant metabolomics projects, working on techniques such as GC-MS and LC-MS. Has contributed significantly to metabolomics research since 2006 by making use of NMR-based metabolomics as a tool to speed up drug discovery from natural products. Fascinated by metabolomics (both LC-MS and NMR) not only in respect of future health care but also as a potential tool for solving food security and other critical issues. A dedicated, committed researcher, experienced in international collaboration, and an enthusiastic, effective educator / supervisor with a passion for solving challenging problems in biological science.

Career Summary

04/2014 – date **POSTDOCTORAL RESEARCH FELLOW** **University of Johannesburg**

- Conducting biochemical research on plant metabolomics research projects, to better understand the physiology of plants in response to pathogenic attacks; using GC-MS and LC-MS
- Managing technical equipment including LC-IT-TOF, MALDI-TOF, LC-TripleQuad, GCxGC-MS
- Supervising honours, masters and PhD students in plant metabolomics and natural product research
- Conducting interdisciplinary work in collaboration with Plant Science, Biotechnology and Biochemistry departments on projects including HIV, Biochemical Engineering and Natural Products

02/2011 – 03/2014 **LECTURER** **University of Pretoria**

- Fostering international collaboration through working with Swiss, Italian and Japanese researchers
- Lecturing and practically assessing plant science subjects including BOT 161 (Plant Biology), BOT 261 (Plant Biochemistry), BOT 356 (Plant Ecophysiology) and BOT 719 (Primary Plant Metabolites)
- Supervising honours and masters students in natural product research
- Actively assisting in final process of relocating and setting up department in new premises, including managing funds in excess of R2million for several labs
- Combining PhD study with continued research and discovery
- Conducting interdisciplinary work with departments of Biotechnology, Chemical Engineering and Biochemistry on projects including Malaria and HIV

07/2009 – 02/2010 **INTERN** **Department of Science and Technology**

- Developing draft project plans in respect of Food Security; engaging with service providers to monitor progress on project deliverables; developing submission
- Scoping new studies and conducting desktop scans
- Providing administrative assistance for conferences, workshops and seminars
- Conducting research into indicator data relating to innovation, science and technology
- Conducting research into relevant topics on innovation, science and technology for the purpose of creating advice for the Minister of Science and Technology
- Supporting board of experts in obtaining relevant information needed to create and formulate advice; consulting with relevant role players in S & T industry; contributing to development of advice

02/2008 – 01/2011 **LAB ASSISTANT / TUTOR** **University of Pretoria**

- Analysing plant samples
- Running lab and lab equipment; using and maintaining equipment including LC-MS, HPLC, NMR; managing lab supplies and operations; researching up-to-date equipment and lab techniques
- Tutoring 30 – 40 MLB 111 students; providing demonstrations of practical components
- Training junior post-graduate students on equipment, software and laboratory practices
- Tutoring, invigilating and marking tests and exams of BOT 161 students

07/2007 – 01/2008 TECHNICAL SALES REPRESENTATIVE

Bonchem

- Advising clients on use of chemicals in industrial processes; providing training to clients in correct use of product and equipment; ensuring sufficient levels of stock for client requirements
- Responsible for product sales, promotions and the provision of technical advice
- Assisting technically and recommending on the administration of chemicals in the industrial process

Key Achievements

- ✓ **2014:** Completed PhD Studies in NMR metabolomics
- ✓ **2012:** Invited to attend Biotech Business Development Program, Switzerland
Represented Department of Plant Science in Japan, to report back on progress and strengthen relations with partners from Osaka University
- ✓ **2011:** Presented winning proposal, Bio-Entrepreneurship course
- ✓ **2010:** Became member of Golden Key International Honours Society
Completed MSc Plant Science degree CUM LAUDE

Education

PhD:	Medicinal Plant Science, <i>University of Pretoria</i> (2014) Research Project: <i>Helichrysum</i> drug discovery by means of NMR-based metabolomics
MSc:	Plant Science, <i>University of Pretoria</i> (2010)
BSc (Hons):	Plant Science, <i>University of Pretoria</i> (2007)
BSc:	Biochemistry (Majors: Biochemistry & Chemistry), <i>University of Pretoria</i> (2006)

Publications

- ✓ The only African wild tobacco, *Nicotiana africana*: Alkaloid content and the effect of herbivory
(Journal: *Plos One*, July 15 2014)
Author(s): Danica Marlin, Susan W. Nicholson, Abdullahi A. Yusuf, Philip C. Stevenson, Heino M. Heyman and Kerstin Krüger
- ✓ NMR-based metabolomics as a quality control tool for herbal products
(Journal: *South African Journal of Botany*, 2012; 82: 21 – 32)
Author(s): H.M. Heyman and J.J.M. Meyer
- ✓ Antibacterial activity of South African medicinal plants against methicillin resistant *Staphylococcus aureus*
(Journal: *Pharmaceutical Biology*, 2009; 47(1): 67 – 71)
Author(s): H.M. Heyman, A.A. Hussein, J.J.M. Meyer, N. Lall

Dissertations

- ✓ Identification of anti-HIV compounds in *Helichrysum* species (Asteraceae) by means of NMR-based metabolomic guided fractionation (Author: H.M. Heyman)
Degree: PhD Medicinal Plant Science (2010 – 2014)
Supervisors: Prof. J.J.M. Meyer (University of Pretoria), Prof. V. Maharaj (University of Pretoria)
- ✓ Metabolomic comparison of selected *Helichrysum* species to predict their antiviral properties
(Author: H.M. Heyman) Degree: MSc Plant Science (2008 – 2010)
Supervisors: Prof. J.J.M. Meyer (University of Pretoria), Dr V. Maharaj (CSIR)
- ✓ Investigating 10 plant extracts for activity against methicillin-resistant *Staphylococcus aureus* (MRSA)
(Author: H.M. Heyman) Degree: BSc (Hons) Plant Science (2006)
Supervisor: Prof. N. Lall (University of Pretoria)

Workshops and Forum Presentations

- ✓ Determination of anti-HIV active constituents of *Helichrysum* species by means of metabolomics
Authors: H.M. Heyman, J.J.M. Meyer, F.J. Kruger
Workshop: Special Meeting for Cooperative Research Project, *Osaka University*
- ✓ NMR-based metabolomics and drug discovery: In search of antiviral compounds
Authors: H.M. Heyman, J.J.M. Meyer, F.J. Kruger, A. Theron, A. Moll, J. Baphela
Workshop: Sixth Regional Plant Biotechnology Forum, *University of Johannesburg (African Centre for Gene Technologies)*
- ✓ Determination of anti-HIV active constituents of *Helichrysum* species by means of metabolomics
Authors: H.M. Heyman, C. Kenyon, V. J. Maharaj, J.J.M. Meyer
Workshop: South African Association of Botanists Conference, *University of Pretoria*

Reviews

- ✓ Journal: Plos One (Impact factor: 4.069) May 2013
- ✓ Journal: South African Journal of Botany (Impact factor: 1.6) April 2013

Student Supervision

- ✓ Simin Yazdi, PhD Medicinal Plant Science: co-supervisor 2014 – date, University of Pretoria
- ✓ Kirsty Botha, MSc Plant Biotechnology: co-supervisor 2014 – date, University of Pretoria
BSc(Hons) Plant Biotechnology (CUM LAUDE): co-supervisor 2013, University of Pretoria
- ✓ Claire Martins, MSc Medicinal Plants: co-supervisor 2013 – date, University of Pretoria
BSc(Hons) Medicinal Plants (CUM LAUDE): co-supervisor 2012, University of Pretoria
- ✓ Liezl Ebersohn, BSc(Hons) Medicinal Plants (CUM LAUDE): supervisor 2012, University of Pretoria

Affiliations

- ✓ Metabolomics Society
- ✓ South African Association of Botanists
- ✓ Chemometrics Society

Additional Skills

I.T. Proficiency: Windows; MS Excel, PowerPoint, Word, Outlook; Internet
MAC / Apple
SIMCA+P (Chemometrics software)
MesreNova (NMR software)
ChemDraw

Languages: Fluent English, German, Afrikaans; Conversational Zulu

References

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