

Curriculum vitae

Jan-Hendrik Servaas Hofmeyr



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1 Personal particulars

Date of birth: 25 August 1953
Place of birth: Durban, South Africa
Marital Status: Married to Zoettje,
with two daughters (Clara and Nell)
Citizenship: South African
Languages: English and Afrikaans;
reasonably proficient in Dutch and German
Present post: Distinguished Professor of Biocomplexity and Biochemistry
Co-Director: Stellenbosch Centre for Complex Systems in Transition
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2 Academic record

Degrees	Subject	University	Year	Distinctions
B.Sc	Biochemistry Microbiology	Stellenbosch	1974	Cum laude
B.Sc.Hons.	Biochemistry	Stellenbosch	1976	Cum laude
M.Sc.	Biochemistry	Stellenbosch	1978	Cum laude
Ph.D.	Biochemistry	Stellenbosch	1986	

3 Professional appointments

3.1 Full-time

In the Department of Biochemistry, University of Stellenbosch:

1975–1977	Junior lecturer
1977–1986	Lecturer
1986–1987	Senior lecturer
1988–1995	Associate Professor
1996–2014	Professor
2014–present	Distinguished Professor
<i>Administrative functions</i>	
1991	Acting Head of Department
1995–1998	Departmental Chair
1999	Deputy Dean, Faculty of Science
2002	Departmental Chair
2005–present	Member of the Fellowship and Research Programme Committee, Member of the Research Advisory Board, Stellenbosch Institute for Advanced Study
2009–2011	Co-director: Centre for Studies in Complexity
2011–2015	Director: Centre for Studies in Complexity
2016–present	Co-Director: Stellenbosch Centre for Complex Systems in Transition

4 Professional societies

1976–present: Member of the South African Biochemical Society

1976–1990: Member of the Experimental Biology Group of the Universities of Stellenbosch, Cape Town and Western Cape

1992–present: Member of the International Study Group on Systems Biology (formerly BioThermoKinetics)

2001–present: Member of the Academy of Science of South Africa

2003–present: Fellow of the Royal Society of South Africa

2004–present: Member of The African Society for Bioinformatics and Computational Biology

2006–2010: Member of The Biochemical Society (UK)

2009–2014, 2017–present: Member of Council of the Royal Society of South Africa

2010–present: Member of the International Society for Biosemiotic Studies

2012–present: Member of the Governing Board of the International Society for Biosemiotic Studies

2012–present: Founder Member and Vice-President of the International Society of Code Biology

2013–2014: General Secretary of the Royal Society of South Africa

2017–2018: President of the Royal Society of South Africa

5 Editorial boards and peer-review

2000–2009 Member of the editorial advisory board of FEBS Journal (formerly the European Journal of Biochemistry).

2006–2009 Member of the editorial advisory board of Biochemical Journal.

2010–present Honorary editor of LitNet Akademies (Natuurwetenskappe), an open online science journal

2010–2013 Member of the editorial board of Computational and Mathematical Methods in Medicine

2012–2014 Member of the editorial board of Biosemiotics

2012–present Subject editor (Philosophy) for E:CO (Emergence: Complexity and Organization)

2017–present Member of the Scientific Board of the Springer series on Anticipation Science

2017–present Co-editor of the Special Issue for Code Biology of the journal BioSystems

Reviewer for the FEBS Journal (formerly European Journal of Biochemistry), Journal of Theoretical Biology, Bioinformatics (formerly Computer Applications for the Biosciences), Biosystems, Biotechnology and Bioengineering, Biophysical Journal, Ecology and Society, Journal of Physical Chemistry, Biochimica et Biophysica Acta, Journal of Biological Systems, Royal Society Interface Journal, PLOS Computational Biology, FEBS Letters, Plant Science, Metabolic Engineering.

6 Bursaries, grants, awards, and fellowships

1972–1974 FEDCHEM bursary

1972 University of Stellenbosch Merit Bursary

1973 University of Stellenbosch Merit Bursary

1974	University of Stellenbosch Merit Bursary
1975	FEDCHEM postgraduate bursary
1977	Abe Bailey Travel Bursary
1985	CSIR overseas bursary, Harry Crossley grant
1989–present	NRF (National Research Foundation) evaluated researcher and grant holder
1989–present	University of Stellenbosch Research Committee grant holder
1993	FRD grant for overseas studies
1999	University of Stellenbosch Vice-Chancellors’s Award for outstanding research
2002	Harry Oppenheimer Fellowship Award and Gold Medal
2003	Beckman-Coulter Gold Medal of the South African Society for Biochemistry and Molecular Biology
2007	Award for best lecturer in Science Faculty (Golden Key Society)
2009–2015	NRF Incentive Grant
2009	Havenga Prize for Biological Sciences from the Suid-Afrikaanse Akademie vir Wetenskap en Kuns (South African Academy for Science and Art)
2014–2015	Fellowship of the Wissenschaftskolleg zu Berlin (WIKO)

7 National Research Foundation evaluation record

1988, 1991	C (Established researchers with a sustained recent record of productivity)
1995	B (Researchers who enjoy considerable international recognition by their peers for the high quality and impact of their recent research outputs)
1999, 2001, 2010	A (Researchers who are unequivocally recognised by their peers as leading international scholars in their field)

8 Workshops presented

1984: Co-presenter of a workshop in yeast biochemistry and physiology with Prof. Anthony Rose, University of Bath (held at the University of Stellenbosch)

1988–1991: Developed and presented on several occasions at various universities in South Africa a 2–3 day workshop on *Understanding the behaviour and control of metabolic systems*.

1993: 5-Day workshop on *Modelling to Understand the Dynamics, Control and Regulation of Living Cells*, held for a group of 24 doctoral and post-doctoral students from various Universities in the Netherlands.

- 1996:** International IMBS/BCA Course (University of Amsterdam and Free University, 15–26 July). Principle lecturer; postgraduate students.
- 1997:** AECL, Modderfontein, South Africa: One-week workshop on *Kinetics of enzymes and enzyme-catalysed networks*.
- 1997:** Course in *Metabolic Control Analysis and Modelling*. Department of Applied Microbiology, Lund University Sweden.
- 1998:** Lecturer at UNESCO/Mircen Yeast Biotechnology Course, Bloemfontein, South Africa. Metabolic regulation and control analysis.
- 1998:** Joint Workshop on *Control analysis and Metabolic Modelling* (Univ. of Stellenbosch, Univ. of the North, Free University (Amsterdam)), Stellenbosch
- 2000:** 5-Day satellite workshop to the 9th International Meeting on BioThermoKinetics on *Modelling of Cellular Processes* (Univ. of Stellenbosch), Stellenbosch.
- 2004:** European Science Foundation Workshop, Oxford, UK: Modelling Metabolic and Signal Transduction Networks (lecture on enzyme kinetics for systems biology)
- 2005:** Computational Systems Biology, African Institute for Mathematical Sciences, March 2005 (8-day workshop)
- 2008:** Phd Summer School, Milan, June 2007 (5-day workshop)
- 2008:** DISC Summer School, Utrecht, June 2007 (4-day workshop)
- 2010, 2012, 2014, 2016:** Complexity, Transdisciplinary PhD Summer School
- 2016:** Complexity & Transdisciplinary Workshop, Swakopmund

9 International collaboration

- 1985–present:** Six months research during 1985 in the laboratory of dr. Athel Cornish-Bowden, University of Birmingham. Since then I have continued collaborating with dr. Cornish-Bowden, who is now at the CNRS-BIP in Marseille, and we are currently involved in several projects. I have visited dr. Cornish-Bowden on numerous occasions and spent a 3-month sabbatical in 1993 and a 5-month sabbatical in 2004 in his laboratory in Marseilles.
- 1985–1995:** Three months research during 1985 in the laboratory of dr. Henrik Kacser, University of Edinburgh, co-founder of the field of metabolic control analysis. Since then I have kept close contact with dr. Kacser and his co-workers. Unfortunately dr. Kacser died early in 1995.

- 1985:** Three months research in the laboratory of Prof. Nico van Uden, Gulbenkian Institute of Science, Oeiras, Portugal.
- 1993–2004:** Since I spent a 3-month sabbatical 1993 with Prof. Hans Westerhoff, then at the Netherlands Cancer Institute, now at the Department of Microbiology of the Free University of Amsterdam, I have established close ties with him, his research group and collaborators, notably prof. Karel van Dam and dr. Pieter Postma (sadly deceased) of the Department of Biochemistry of the University of Amsterdam, and Dr. Jacky Snoep of the Free University (now professor and my colleague at Stellenbosch), who also spent 2 months in my laboratory during 1997. I have since visited Amsterdam numerous times and spent a 6-month sabbatical with Westerhoff during 2004.
- 1997–present:** In 1997 I was joined by prof. Johann Rohwer, and in December 1999 by prof. Jacky Snoep; together we form the new *Triple-J Group for Molecular Cell Physiology*. Besides our theoretical and simulation work, we have set up an experimental laboratory specialising in techniques for studying microbial physiology, especially chemostat growth and analysis, where we are testing many of our ideas.
- 1997–2001:** In 1997 I began collaborating with prof. Bärbel Hahn-Hägerdal of the Dept. of Applied Microbiology at the University of Lund. Her project is the engineering of yeast to utilise xylose as carbon source. Together we have modelled the initial reactions of xylose metabolism to test various strategies for manipulation.
- 1997–1999:** With dr. Rohwer I collaborated with dr. Dean Brady of AECI in which we modelled lysine metabolism of *Corynebacterium glutamicum* in order to design strategies for improving yields.
- 2001–2006:** With prof. Wil Konings of the Dept. of Microbiology at the Rijks University of Groningen we are modelling multi-drug resistance of *Lactococcus lactis* in order to distinguish between drug transporter mechanisms.
- 2005–present** With prof. Olaf Wolkenhauer of the University of Rostock. Exploring the nature and implications Robert Rosen's theories, especially with regard to metabolism-repair systems [(M,R)-systems] and the use of category theory to model biological relationships.
- 2006–2008** With proff. Robert Shulman and Douglas Rothman. Supply-demand analysis and kinetic modelling of glycogen storage and mobilisation in skeletal muscle.
- 2009–2011** With the late prof. Paul Cilliers I started the Centre for Studies in Complexity, a project of the Stellenbosch University overarching strategic plan (a Hope project). The Centre has now been assimilated into the Centre for Complex Systems in Transition, which I co-direct with prof. Mark Swilling.

2011–present With prof. Marcello Barbieri and dr. Joachim de Beule on Code Biology.

2013–present With Dr Ben Loos on the measurement and modelling of autophagosome flux.

10 Research interests

My research is driven by the two fundamental questions of biology: ‘What is life and how does the living cell work?’ and ‘How did life come about and evolve?’. In order to answer these questions we must first understand the living cell as an evolved and integrated dynamic system. The fields in which I work are:

- The theory of metabolic behaviour, control and regulation
- Computer modelling of the dynamic behaviour of intracellular systems
- Bioenergetics
- Enzyme kinetics
- Category theoretic description of biological organisation (relational biology)
- Self-fabrication as the key distinction between life and non-life
- Complexity studies
- Code biology (Biosemiotics)
- Anticipation - Autophagy

11 Research management

1980–1981: Committee member: Experimental Biology Group

1982–1983: Secretary: Experimental Biology Group

1984: Vice Chair: Experimental Biology Group

1986–1987: Committee member: Yeast and Fermentation Group

1991–1995: Member and Honourary Treasurer: National Council of the South African Biochemical Society

1994–1995: Member: Faculty of Science Research Committee, Univ. Stellenbosch.

1996–1999: Member: Science Subcommittee of the Research Committee, Univ. Stellenbosch.

1997–1999: Member: Central Research Committee, Univ. of Stellenbosch.

1996–present: Member: BTK committee for nomenclature of metabolic control analysis; this work here has culminated a new nomenclature proposal published on the world-wide web (mentioned on p. 19).

- 1997–1998:** BioThermoKinetics98 Conference, Fiskebäckskil, Sweden: Member of the International Advisory Committee.
- 1998–1999:** NATO Advanced Research Workshop: Technological & Medical Applications of Metabolic Control Analysis Visegrád, Hungary, 10–16 April 1999: Member: Organising Committee.
- 1998–2000:** BioThermoKinetics2000 Conference, Stellenbosch: Chair: Organising Committee.
- 2000–2005:** Member of the 3-person chairgroup of the International Study Group on BioThermoKinetics (Rohwer, Snoep, Hofmeyr)
- 2001:** Member: NRF Specialist Evaluation Committee for Biochemistry
- 2002:** 10th BioThermoKinetics Meeting, Arcachon, France: Member of International Advisory committee
- 2002–2003:** Chair: NRF Specialist Evaluation Committee for Biochemistry
- 2003–2008** Member of the STRENDA Commission (Standards for Reporting Enzymology Data), a Beilstein initiative.
- 2004:** Organiser of Biotechnology track, 2nd Conference of the African Genome Initiative on *Genomics and Society: The Future Health of Africa*, Cairo, Egypt
- 2004:** 11th BioThermoKinetics Meeting, Oxford, UK: Member of International Advisory committee
- 2005:** Co-organiser of the symposium: *Towards a philosophy of systems biology*, Amsterdam.
- 2005–present** Member of the Research Programme Committee of the Stellenbosch Institute for Advanced Study
- 2006:** 12th International Study Group for Systems Biology Meeting, Trakai, Lithuania: Member of International Advisory committee
- 2008:** 13th International Study Group for Systems Biology Meeting, Elsinore, Denmark: Member of International Advisory committee
- 2012:** Satellite Meeting on Critical Complexity in Practice, European Conference on Complex Systems 2012: Co-chair and organiser
- 2012:** Complexity Forum 2012, Stellenbosch (Chair and organiser)
- 2014:** Colloquium on Anticipation: Complexity and the Future (Chair and organiser)

12 University affairs (not research related)

- 1994–2003:** Member: Faculty of Science Committee on Academic Development Programmes
- 1994–2003:** Member: Faculty of Science Committee on Development of Student Computer Skills
- 1994–present:** Member: Stellenbosch Forum Committee (chair 1998–2003)
- 1994–1998:** Member: University Library Committee
- 1997:** Chair: Task group for US Strategic Planning of Academic Programmes
- 1998:** Chair: Committee for formation of School for Biological Sciences
- 1999:** Deputy Dean Faculty of Science
- 1999:** Chair: Management Council of Science and Mathematics Teaching Institute
- 1999:** Chair: Management Council of Institute for Applied Computer Science
- 2000:** Member: University Task Group for Teaching and Learning
- 2000, 2002:** Chair: Programme Committee: Molecular and Cellular Biology
- 2001–2002:** Chair: Faculty of Science Teaching and Learning Committee
- 2001–2002:** Member: University Committee for Teaching and Learning
- 2002:** Member: Rector's Task Group for Senate Procedures
- 2002:** Member: Rector's Task Group for Language Policy and Plan
- 2007:** Member: Appointment committees for two Vice-Rectors and Director (STIAS)
- 2012:** Member: Appointment committee for Vice-Rector Research and Innovation
- 2012:** Member: Governing body of the TsamaHub
- 2012–2014:** Mentor of Dr. Hermann Swart under the Mellon Early Research Career Programme
- 2015–present:** Mentor of Mr. Willem Bester under the Mellon Early Research Career Programme
- 2017** Member of University Task Group for formulating transdisciplinary research themes

13 Public understanding of science

Regular participant in “Hoe verklaar jy dit?” (“How do you explain that”, a question and answer radio programme about the natural sciences on the South African Broadcasting Corporation (SABC) Afrikaans service programme *Radio sonder Grense*.

14 Service to the community

2007–present Council member of the Arthritis Foundation of South Africa

2009–present National Chair of the Arthritis Foundation of South Africa

15 Publications

15.1 M.Sc. Thesis (1978)

The influence of 2,4'-dihydroxy-3'-methoxy-acetophenone (substance Z) on the 11- β -hydroxylase in adrenal cortex mitochondria.

15.2 Ph.D. Thesis (1986)

Studies in steady-state modelling and control analysis of metabolic systems.

15.3 Peer-reviewed journals and conference proceedings

1. Van der Merwe, K.J., **Hofmeyr, J.-H.S.**, Swart, P., Parkin, D.P., Rossouw, J., Harts-horne, J., Van Rensburg, S.J., Morgenthal, J.C. & Basson, P.A. (1976) Natural products affecting the gestation period of sheep and their mode of action. *South African J. Sci.* **72**, 184.
2. **Hofmeyr, J.-H.S.**, Van der Merwe, K.J., Swart, P. & Thiel, P.G. (1979) The effect of moniliformin on pyruvate dehydrogenase multi-enzyme complex. *South African J. Sci.* **75**, 469.
3. Gathercole, P.S., Thiel, P.G. & **Hofmeyr, J.-H.S.** (1986) Inhibition of pyruvate dehydrogenase complex by moniliformin. *Biochem. J.* **233**, 719–723.
4. **Hofmeyr, J.-H.S.** (1986) Steady-state modelling of metabolic pathways: A guide for the prospective simulator. *Comp. Appl. Biosci.* **2**, 5–11.
5. **Hofmeyr, J.-H.S.**, Kacser, H. & Van der Merwe, K.J. (1986) Metabolic control analysis of moiety-conserved cycles. *Eur. J. Biochem.* **155**, 631–641.
6. **Hofmeyr, J.-H.S.** & Van der Merwe, K.J. (1986) METAMOD: Software for steady-state modelling and control analysis of metabolic pathways. *Comp. Appl. Biosci.* **2**, 243–249.

7. **Hofmeyr, J.-H.S.** (1989) Control-pattern analysis of metabolic pathways: Flux and concentration control in linear pathways, *Eur. J. Biochem.* **186**, 343-354.
8. **Hofmeyr, J.-H.S.** (1990) Comments on Atkinson's pre-conference working paper, in *Control of Metabolic Processes* (Cornish-Bowden, A. & Cardenas, M.L., eds), Plenum Press, New York, pp. 17-26.
9. **Hofmeyr, J.-H.S.** (1990) Control-pattern analysis of metabolic systems, in *Control of Metabolic Processes* (Cornish-Bowden, A. & Cardenas, M.L., eds), Plenum Press, New York, pp. 239-248.
10. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1991) Quantitative assessment of regulation in metabolic systems. *Eur. J. Biochem.* **200**, 223-236.
11. Cornish-Bowden, A. & **Hofmeyr, J.-H.S.** (1991) MetaModel: a program for modelling and control analysis of metabolic pathways on the IBM PC and compatibles. *Comp. Appl. Biosci.*, **7**, 89-93.
12. **Hofmeyr, J.-H.S.** (1991) Metabolite channelling and metabolic regulation. *J. Theor. Biol.* **152**, 101.
13. Swart, P., Van der Merwe, K.J., Swart, A.C., Todres, P.C. & **Hofmeyr, J.-H.S.** (1993) Inhibition of cytochrome P-450_{11 β} by some naturally occurring acetophenones and plant extracts from the shrub *Salsola tuberculatiformis* Botsch. *Planta Medica*, **59**, 139-143.
14. Stevens, S. & **Hofmeyr, J.-H.S.** (1993) Effects of ethanol, octanoic and decanoic acids on fermentation and the passive flux of protons through the plasma membrane of *Saccharomyces cerevisiae*. *Appl. Microbiol. Biotechnol.*, **38**, 656-663.
15. **Hofmeyr, J.-H.S.**, Cornish-Bowden, A. & Rohwer, J.M. (1993) Taking enzyme kinetics out of control; putting control into regulation (a priority paper). *Eur. J. Biochem.* **212**, 833-837.
16. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1993) Control analysis of regulation in complex metabolic systems. *Modern Trends in BioThermoKinetics 2*, (Schuster, S., Rigoulet, M., Ouhabi, R. & Mazat, J-P., eds.) Plenum Press, New York, pp. 193-198.
17. Cornish-Bowden, A. & **Hofmeyr, J.-H.S.** (1994) Determination of control coefficients in intact metabolic systems. *Biochem. J.*, **298**, 367-375.
18. Westerhoff, H.V., **Hofmeyr, J.-H.S.** & Kholodenko, B. (1994) Getting to the inside of cells using metabolic control analysis. *Biophys. Chem.*, **50**, 273-283.
19. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1994) How should we quantify metabolic regulation? *Modern Trends in BioThermoKinetics 3* (Gnaiger, E., Gellerich, F.N. & Wyss, M., eds.) Innsbruck University Press, pp. 91-94.

20. Appel, M., Ries, G.F. de W., **Hofmeyr, J.-H.S.** & Bellstedt, D.U. (1995) A method for the quantitative assessment of chitinase activity in potato tubers. *J. Phytopathol.* textbf143, 525-529.
21. **Hofmeyr, J.-H.S.** (1995) Metabolic Regulation: a control-analytic perspective. *J. Bioenerg. Biomembranes* **27**, 479-490.
22. Cornish-Bowden, A., **Hofmeyr, J.-H.S.** & Cárdenas, M.L. (1995) Strategies for manipulating metabolic fluxes in biotechnology. *Bioorg. Chem.* **23**, 439-449.
23. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1996) Co-response analysis: A new experimental strategy for metabolic control analysis. *J. Theor. Biol.* **182**, 371-380.
24. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1996) Predicting metabolic pathway kinetics with control analysis. *BioThermoKinetics of the living cell* (Westerhoff, H.V., Snoep, J.L., Wijker, J.E., Sluse, F.E., Kholodenko, B.N., eds) BioThermoKinetics Press, pp. 155-158.
25. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1996) Mathematical description of regulation in metabolic systems. *Proceedings of the First World Congress of Non-linear Analysts '92* (V. Lakshmikantham, ed.), Walter de Gruyter, Berlin, Vol. IV pp. 3305-3310.
26. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1997) The reversible Hill-equation: how to incorporate cooperative enzymes into metabolic models. *Comp. Appl. Biosci.*, **13**, 377-385.
27. **Hofmeyr, J.-H.S.** & Rohwer, J.M. (1998) Control analysis of adenylate-conserving cycles in the absence or presence of adenylate kinase. In: *BioThermoKinetics in the Post Genomic Era* (Larsson, C., Pålman, I.-L. & Gustafsson, L., eds.) pp. 7-10. Göteborg University, Göteborg.
28. Rohwer, J.M., **Hofmeyr, J.-H.S.** & Postma, P.W. (1998) Retro-regulation of the bacterial phosphotransferase system: A kinetic model. In: *BioThermoKinetics in the Post Genomic Era* (Larsson, C., Pålman, I.-L. & Gustafsson, L., eds.) pp. 340-344. Göteborg University, Göteborg.
29. **Hofmeyr, J.-H.S.**, Olivier, B.G. & Rohwer, J.M. (2000) Putting the cart before the horse: Designing a metabolic system in order to understand it. In: *Technological and Medical Implications of Metabolic Control Analysis* (Cornish-Bowden, A. & Cárdenas, M.L., eds.), pp.299-308. Kluwer Academic Publishers, Dordrecht.
30. Rohwer, J.M. & **Hofmeyr, J.-H.S.** (2000) An integrated approach to the analysis of the control and regulation of cellular systems. In: *Technological and Medical Implications of Metabolic Control Analysis* (Cornish-Bowden, A. & Cárdenas, M.L., eds.), pp.27-32. Kluwer Academic Publishers, Dordrecht.

31. Rohwer, J.M., Olivier, B.G. & **Hofmeyr, J.-H.S.** (2000) Moiety conservation and flux enhancement. In: *Technological and Medical Implications of Metabolic Control Analysis* (Cornish-Bowden, A. & Cárdenas, M.L., eds.), Kluwer Academic Publishers, Dordrecht.
32. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (2000) Regulating the cellular economy of supply and demand. *FEBS Lett.*, **476**, 47-51.
33. **Hofmeyr, J.-H.S.**, Olivier, B.G. & Rohwer, J.M. (2000) From mushrooms to isolas: surprising behaviour in a simple biosynthetic system subject to feedback inhibition. In: *Animating the Cellular Map* (Hofmeyr, J.-H.S., Rohwer, J.M. and Snoep, J.L., eds), pp. 199-206, Stellenbosch University Press, Stellenbosch.
34. Rohwer, J.M., Hoorneman, M., **Hofmeyr, J.-H.S.** & Snoep, J.L. (2000) Assessing the control of fermentative free-energy metabolism in yeast: a modelling exploration. In: *Animating the Cellular Map* (Hofmeyr, J.-H.S., Rohwer, J.M. and Snoep, J.L., eds), pp. 213-219, Stellenbosch University Press, Stellenbosch.
35. **Hofmeyr, J.-H.S.** & Westerhoff, H.V. (2001) Building the cellular puzzle: control in multi-level reaction networks. *J. Theor. Biol.*, **208**, 261-285.
36. Eliasson, A., **Hofmeyr, J.-H.S.**, Pedler, S. and Hahn-Hägerdal, B. (2001) The xylose reductase/xylytol dehydrogenase/xylylokinase ratio affects product formation in recombinant xylose-utilising *Saccharomyces cerevisiae*, *Enzyme Microbial. Technol.*, **29**, 288-297.
37. **Hofmeyr, J.-H.S.** (2001) Metabolic control analysis in a nutshell. (T.-M. Yi, M. Hucka, M. Morohashi, and H. Kitano, eds.) Proceedings of the 2nd International Conference on Systems Biology, Omnipress, Wisconsin, pp. 291-300.
38. **Hofmeyr, J.-H.S.** & Olivier, B.G. (2002) The regulatory design of an allosteric feedback loop: the effect of saturation by pathway substrate. *Biochem. Soc. Trans.* **30**, 19-25.
39. Cornish-Bowden, A., **Hofmeyr, J.-H.S.** & Cárdenas, M.-L. (2002) Stoichiometric analysis in studies of metabolism. *Biochem. Soc. Trans.* **30**, 43-47.
40. Cornish-Bowden, A. & **Hofmeyr, J.-H.S.** (2002) The role of stoichiometric analysis in studies of metabolism: an example. *J. theor. Biol* **216**, 179-191.
41. **Hofmeyr, J.-H.S.**, Rohwer, J.M., Snoep, J.L., Westerhoff, H.V. & Konings, W.N. (2002) How to distinguish between the vacuum cleaner and flippase mechanisms of the LmrA multi-drug transporter in *Lactococcus lactis*, *Mol. Biol. Rep.*, **29** 107-112.
42. Olivier, B.G. & **Hofmeyr, J.-H.S.** (2002) Modelling cellular processes with Python and Scipy. *Mol. Biol. Rep.*, **29** 249-254.

43. Kroukamp, O., Rohwer, J.M., **Hofmeyr, J.-H.S.** & Snoep, J.L. (2002) Experimental supply-demand analysis of anaerobic yeast energy metabolism. *Mol. Biol. Rep.*, **29** 203–209.
44. Westerhoff, H.V., Getz, W.M., Bruggeman, F., **Hofmeyr, J.-H.S.**, Rohwer, J.M. & Snoep, J.L. (2002) ECA: Control in ecosystems. *Mol. Biol. Rep.*, **29** 113–117.
45. Getz, W.M., Westerhoff, H.V., **Hofmeyr, J.-H.S.** & Snoep, J.L. (2003) Control analysis of trophic chains. *Ecological Modelling* **168**, 153–171.
46. M. Hucka, A. Finney, H. M. Sauro, H. Bolouri, J. C. Doyle, H. Kitano, A. P. Arkin, B. J. Bornstein, D. Bray, A. Cornish-Bowden, A. A. Cuellar, S. Dronov, E. D. Gilles, M. Ginkel, V. Gor, I. I. Goryanin, W. J. Hedley, T. C. Hodgman, **J.-H.S. Hofmeyr**, P. J. Hunter, N. S. Juty, J. L. Kasberger, A. Kremling, U. Kummer, N. Le Novere, L. M. Loew, D. Lucio, P. Mendes, E. Minch, E. D. Mjolsness, Y. Nakayama, M. R. Nelson, P. F. Nielsen, T. Sakurada, J. C. Schaff, B. E. Shapiro, T. S. Shimizu, H. D. Spence, J. Stelling, K. Takahashi, M. Tomita, J. Wagner & J. Wang (2003) The systems biology markup language (SBML): A medium for representation and exchange of biochemical network models. *Bioinformatics* **19**, 524–531.
47. Westerhoff, H.V., Bruggeman, F.J., **Hofmeyr, J.-H.S.** & Snoep, J.L. (2003) Attractive models: how to make the silicon cell relevant and dynamic. *Comparative and Functional Genomics*, **4**, 155–158.
48. Olivier, B.G., Rohwer, J.M. & **Hofmeyr, J.-H.S.** (2005) Modelling cellular systems with PySCeS. *Bioinformatics* **21**, 560–561.
49. Apweiler, R., Cornish-Bowden, A., **Hofmeyr, J.-H.S.**, Kettner, C., Leyh, T.S., Schomburg, D. & Tipton, K. (2005) The importance of uniformity in reporting protein-function data. *Trends in Biochemical Sciences* **30**, 11–12.
50. Conradie, R., Westerhoff, H.V., Rohwer, J.M., **Hofmeyr, J.-H.S.** & Snoep, J.L. (2006) Summation theorems for flux and concentration control coefficients of autonomously oscillating systems. *IEE Trans. Systems Biol.* **153**, 314–317.
51. Hanekom, A.J., **Hofmeyr, J.-H.S.**, Snoep, J.L. & Rohwer, J.M. (2006) Experimental evidence for allosteric modifier saturation as predicted by the reversible Hill equation. *IEE Trans. Systems Biol.* **153**, 342–345.
52. **Hofmeyr, J.-H.S.**, Rohwer, J.M. & Snoep, J.L. (2006) Conditions for effective allosteric feedforward and feedback in metabolic pathways. *IEE Trans. Systems Biol.* **153**, 327–331.
53. Olivier, B.G., Rohwer, J.M., Snoep, J.L. & **Hofmeyr, J.-H.S.** (2006) Comparing the regulatory behaviour of two cooperative, reversible enzyme mechanisms. *IEE Trans. Systems Biol.* **153**, 335–337.

54. Rohwer, J.M., Hanekom, A.J., Crous, C., Snoep, J.L. & **Hofmeyr, J.-H.S.** (2006) Evaluation of a simplified generic bi-substrate rate equation for computational systems biology. *IEE Trans. Systems Biol.* **153**, 338–341.
55. Snoep, J.L., Rohwer, J.M. and **Hofmeyr, J.-H.S.** (2006) Is there an optimal ribosome concentration for maximal protein production? *IEE Trans. Systems Biol.* **153**, 398–400.
56. Uys, L., **Hofmeyr, J.-H.S.**, Snoep, J.L. & Rohwer, J.M. (2006) Software tools that facilitate kinetic modelling with large data sets: An example using growth modelling in sugarcane. *IEE Trans. Systems Biol.* **153**, 385–389.
57. Uys, L., Botha, F.C., **Hofmeyr, J.-H.S.** & Rohwer, J.M. (2007) Kinetic model of sucrose accumulation in maturing sugarcane culm tissue. *Phytochemistry* **68**, 2375–2392.
58. Wolkenhauer, O. & **Hofmeyr, J.-H.S.** (2007) An abstract cell model that describes the self-organization of cell function in living systems, *J. theor. Biol.*, **246**, 461–476.
59. Rohwer, J.M., Hanekom, A.J. & **Hofmeyr, J.-H.S.** (2007) A universal rate equation for systems biology. Proceedings of the 2nd International ESCEC Symposium on “Experimental Standard Conditions of Enzyme Characterization”, pp. 175–187.
60. Rohwer, J.M., Akhurst, T.J. & **Hofmeyr, J.-H.S.** (2008) Symbolic control analysis of cellular systems. Proceedings of the 3rd International ESCEC Symposium on “Experimental Standard Conditions of Enzyme Characterization”, pp. 137–148.
61. **Hofmeyr, J.-H.S.** (2008) The harmony of the cell: the regulatory design of cellular processes. *Essays in Biochemistry* **45**, 57–66.
62. Rohwer, J.M. & **Hofmeyr, J.-H.S.** (2008) Identifying and characterising regulatory metabolites with generalised supply-demand analysis. *J. theor. Biol.* **252**, 546–554.
63. Wolkenhauer, O. & **Hofmeyr, J.-H.S.** (2008) A contribution towards a theory of living cells. *Automatisierungstechnik* **56**, 225–232.
64. Pillay, C.S., **Hofmeyr, J.-H.S.**, Olivier, B.G., Snoep, J.L. & Rohwer, J.M. (2009) Enzymes or redox couples? The kinetics of thioredoxin and glutaredoxin reactions in a systems biology context. *Biochem. J.* **417**, 269–275.
65. Rohwer, J.M. & **Hofmeyr, J.-H.S.** (2010) Using generalised supply-demand analysis to identify regulatory metabolites. Proceedings of the 4th International ESCEC Symposium on “Experimental Standard Conditions of Enzyme Characterization”, pp. 149–163.

66. Rohwer, J.M. & **Hofmeyr, J.-H.S.** (2010) Kinetic and thermodynamic aspects of enzyme control and regulation. *J. Phys. Chem. B* 114, 16280–16289
67. Apweiler, R., Armstrong, R., Bairoch, A., Cornish-Bowden, A., Halling, P.J., **Hofmeyr, J.-H.S.**, Kettner, C., Leyh, T.S., Rohwer, J.M., Schomburg, D. Steinbeck, C. & Tipton, J. (2010) A large-scale protein-function database. *Nature Chemical Biology* 6, 785.
68. Pillay, C.S., **Hofmeyr, J.-H.S.**, & Rohwer, J.M. (2011) The logic of kinetic regulation in the thioredoxin system. *BMC Systems Biology* 5:15.
69. Dekker, S., Cilliers, F.P. & **Hofmeyr, J.-H.S.** (2011) The complexity of failure: Implications of complexity theory for safety investigations. *Safety Science* 49, 939–945.
70. **Hofmeyr, J.-H.S.** & Rohwer, J.M. (2011) Supply-demand analysis: A framework for exploring the regulatory design of metabolism. *Methods. Enzymol.* 500, 533–554.
71. Palm, D.C., Rohwer, J.M. & **Hofmeyr, J.-H.S.** (2013) Regulation of glycogen synthase from mammalian skeletal muscle — a unifying view of allosteric and covalent regulation, *FEBS J.* 280, 2–27.
72. Pillay, C.S., **Hofmeyr, J.-H.S.**, Mashamaite, L.N. & Rohwer, J.M. (2013) From Top-Down to Bottom-Up: Computational Modeling Approaches for Cellular Redoxin Networks, *Antioxidants & Redox Signalling*, 18(16), 2075–2086.
73. Cilliers, F.P., Biggs, H.C., Blignaut, S., Choles, A.G., **Hofmeyr, J.-H.S.**, Jewitt, G.P.W. & Roux, D.J. (2013) Complexity, modeling and natural resource management, *Ecol. Soc.* 18(3), Article 1.
74. **Hofmeyr, J.-H.S.**, Gqwaka, O.P.C. & Rohwer, J.M. (2013) A generic rate equation for catalysed, template-directed polymerisation, *FEBS Lett.* 587 (17), 2868–2875.
75. Kühn, S. & **Hofmeyr, J.-H.S.** (2014) Is the histone code an organic code? *Biosemitotics*, 7(2), 203–222.
76. Palm, D.C., & Rohwer, J.M. & **Hofmeyr, J.-H.S.** (2014) Incorporating covalent and allosteric effects into rate equations: the case of muscle glycogen synthase. *Biochem. J.* 462, 525–537.
77. Loos, B., du Toit, A. & **Hofmeyr, J.-H.S.** (2014) Defining and measuring autophagosome flux—concept and reality, *Autophagy* 10 (11), 2087–2096.
78. Carl D. Christensen, **Jan-Hendrik S. Hofmeyr** & Johann M. Rohwer (2015) Tracing regulatory routes in metabolism using generalised supply-demand analysis. *BMC Systems Biology* 9:89.

15.4 Chapters in books

1. **Hofmeyr, J.-H.S.** (1998) Anaerobic energy metabolism in yeast as a supply-demand system, in *New beer in an old bottle: Eduard Buchner and the growth of biochemical knowledge* (Athel Cornish-Bowden, ed.), Universitat de València, Valencia, pp. 225–243.
2. Westerhoff, H.V., Getz, W.M., Van Verseveld, H.W., **Hofmeyr, J.-H.S.** & Snoep, J.L. (2002) Bioinformatics, Cellular Flows, and Calculation in Bioinformatics and Genome Analysis (Mewes, H.-W., Seidel, H., Weiss, B., eds.), Springer, Berlin, pp. 221–243.
3. Westerhoff, H.V. and **Hofmeyr, J.-H.S.** (2005) What is Systems Biology?: From genes to function and back. In *Systems Biology: Definitions and Perspectives* (L. Alberghina & H. Westerhoff, eds.), Springer, Berlin. pp. 119–142.
4. Boogerd, F.C., Bruggeman, F.J., **Hofmeyr, J.-H.S.** and Westerhoff, H.V. (2007) Towards philosophical foundations of Systems Biology: Introduction. In *Systems Biology: Philosophical foundations* (F. Bruggeman, F.C. Boogerd, J.-H.S. Hofmeyr, H.V. Westerhoff, eds.) Elsevier, Amsterdam, pp. 3–19.
5. **Hofmeyr, J.-H.S.** (2007) The biochemical factory that autonomously fabricates itself: A systems-biological view of the living cell. In *Systems Biology: Philosophical foundations* (F. Bruggeman, F.C. Boogerd, J.-H.S. Hofmeyr, H.V. Westerhoff, eds.) Elsevier, Amsterdam, pp. 217–242.
6. Boogerd, F.C., Bruggeman, F.J., **Hofmeyr, J.-H.S.** and Westerhoff, H.V. (2007) Afterthoughts as foundations for systems biology. In *Systems Biology: Philosophical foundations* (F. Bruggeman, F.C. Boogerd, J.-H.S. Hofmeyr, H.V. Westerhoff, eds.) Elsevier, Amsterdam, pp. 321–336.
7. **Hofmeyr, J.-H.S.** (2011) Relational humanism, in *The Humanist Imperative in South Africa*, (De Gruchy, J., ed.), pp. 181–184, A STIAS Publication, Sun Press, Stellenbosch.
8. Wolkenhauer, O. and **Hofmeyr, J.-H.S.** (2013) Interdisciplinarity as both Necessity and Hurdle for Progress in the Life Sciences, in *New Challenges to Philosophy of Science* (Andersen, H., Dieks, D., Gonzalez, W.J., Uebel, Th., Wheeler, G., eds.), Springer, pp. 225–235.
9. Loos, B., **Hofmeyr, J.-H.S.**, Müller-Nedebock, K., Boonzaaier, L. and Kinnear, C. (2014) Autophagic flux, fusion dynamics and cell death, in *Autophagy: Cancer, Other Pathologies, Inflammation, Immunity, Infection, and Aging: Vol.3—Mitophagy* (Hayat, E., ed.), Elsevier, pp. 39–56.
10. Du Toit, A., **Hofmeyr, J.-H.S.**, Loos, B. (2017) Methods for Measuring Autophagosome Flux—Impact and Relevance, in *Cancer, Other Pathologies, Inflammation, Immunity, Infection, and Aging: Vol.11* (Hayat, E., ed.), Elsevier, pp. 91–104.

11. **Hofmeyr, J.-H.S.** (2017) Exploring the metabolic marketplace through the lens of systems biology, in *Philosophy of Systems Biology—Perspectives from Scientists and Philosophers* (Green, S., ed.), Springer International Publishing, pp. 117–124.
12. **Hofmeyr, J.-H.S.** (2017) Basic Biological Autonomy, in *Handbook of Anticipation* (Poli, R., ed.), Springer (https://link.springer.com/referenceworkentry/10.1007/978-3-319-31737-3_51-1)

15.5 Edited books

1. Hofmeyr, J.-H.S., Rohwer, J.M. and Snoep, J.L., eds (2000) *Animating the Cellular Map* Stellenbosch University Press, Stellenbosch.
2. Bruggeman, F., Boogerd, F.C., **Hofmeyr, J.-H.S.** and Westerhoff, H.V. eds. (2007) *Systems Biology: Philosophical foundations*, Elsevier, Amsterdam.

15.6 Book Forewords

1. Barbieri, M. (2015) *Code Biology*, Springer.
2. Cilliers, F. P. (2015) *Collected papers* (Preisner, R. and Woerman, M., eds), De Gruyter.

15.7 Technical reports

1. Foster, E.J.F. & **Hofmeyr, J.-H.S.** (1982) The biochemical basis of ethanol tolerance in *Saccharomyces cerevisiae* Y102 - a literature survey. *National Chemical Products Project* 6159/10.
2. Foster, E.J.F. & **Hofmeyr, J.-H.S.** (1982) The effect of ethanol on hexokinase from *Saccharomyces cerevisiae* Y102: Investigation with the cresol red assay. *National Chemical Products Project* 6159/10.
3. Foster, E.J.F. & **Hofmeyr, J.-H.S.** (1983) The reversible and irreversible effect of ethanol on hexokinase from *Saccharomyces cerevisiae* Y102 determined with the G6PDH-coupled assay. *National Chemical Products Project* 6159/10.
4. Foster, E.J.F. & **Hofmeyr, J.-H.S.** (1983) The effect of ethanol on the assay, activity and stability of hexokinase in yeast. *National Chemical Products Project* 6159/10.

15.8 Other research publications

1. Cornish-Bowden, A., Cárdenas, M.L. & **Hofmeyr, J.-H.S.** (1994) Vers une meilleure compréhension de la régulation métabolique. *Images de la Recherche*, Centre National de la Recherche Scientifique.

2. **Hofmeyr, J.-H.S.** & Rohwer, J.M. (1998) A revised nomenclature and symbolism for metabolic control analysis. *Electronic document published on the World-Wide Web and discussed in the biosci.metabolic-reg news group and at the BTK96 and BTK98 conferences.*
(<http://www.sun.ac.za/local/academic/natural/biochem/mcanom.html>)
3. **Hofmeyr, J.-H.S.** (2004) Book review of Athel Cornish-Bowden *Enzyme Kinetics*, 3rd ed. *The Biochemist* (<http://www.biochemist.org/reviews/page.htm?item=1061>)
4. Cornish-Bowden, A. and **Hofmeyr, J.-H.S.** (2005) Enzymes in Context: kinetic characterization of enzyme for systems biology. *The Biochemist*, April 2005, 11-14.
5. Hofmeyr, J.-H.S. (2017) Commentary: Mathematics and biology. *S.A. J. Sci.* 113 (3/4), 1-3

15.9 Miscellaneous publications

1. Hoe verklaar jy dit? (2016) Penguin. Questions 2, 13, 14, 21, 23, 39, 40, 46, 48, 67, 68.

16 Contributions to conferences and symposia

16.1 International

1. Thiel, P.G., **Hofmeyr, J.-H.S.** & Van der Merwe, K.J. (1979) Studies on the mode of action of moniliformin, a secondary metabolite of several *Fusarium* species. *Vith International Symposium on Animal, Plant and Microbial Toxins, Uppsala.*
2. **Hofmeyr, J.-H.S.**, Van der Merwe, K.J., Thiel, P.G. & Swart, P. (1982) The effect of moniliformin on 2-oxoacid dehydrogenase complexes. *IUBS Symposium on Toxins and Lectins, Pretoria.*
3. Swart, P., Van der Merwe, K.J., Swart, A.C. & **Hofmeyr, J.-H.S.** (1982) The isolation of certain natural products from *Salsola tuberculata* that inhibit the cytochrome P-450 dependent steroid-11 β -hydroxylase from sheep adrenals. *IUPAC Symposium on Natural Products, Pretoria.*
4. Foster, E.J.F. & **Hofmeyr, J.-H.S.** (1984) The effect of ethanol on hexokinase from *Saccharomyces cerevisiae* Y102. *Vith International Symposium on Yeasts, Montpellier.*
5. **Hofmeyr, J.-H.S.** (1987) Control-pattern analysis of metabolic systems. *ASM Symposium on Theoretical and Experimental Approaches to the Study of Metabolic Processes. Bigfork, Montana.*

6. **Hofmeyr, J.-H.S.** (1987) Formal discussant in the section on theory of metabolic control. *ASM Symposium on Theoretical and Experimental Approaches to the Study of Metabolic Processes*. Bigfork, Montana.
7. **Hofmeyr, J.-H.S.** (1989) Control-pattern analysis of metabolic pathways (invited lecture), *NATO Advanced Research Workshop on "Control of Metabolic Processes"*, Il Ciocco, Italy.
8. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1991) Quantitative assessment of regulation in metabolic systems (invited lecture) *11th Conference of the School of Theoretical Biology*, Solignac, France.
9. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1992) Mathematical description of regulation in metabolic systems (invited lecture) *First World Congress for Nonlinear Analysts*, Tampa, Florida, USA.
10. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1992) Control analysis of regulation in complex metabolic systems (lecture) *5th BioThermoKinetics Workshop*, Bombannes, France.
11. Cornish-Bowden, A. & **Hofmeyr, J.-H.S.** (1992) Simulation of metabolic systems on small computers. *Proceedings of MoBBEL 7*, Aix-en-Provence, France.
12. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1994) How should we quantify metabolic regulation? *6th BioThermoKinetics Conference*, Schröcken, Austria.
13. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1994) Co-response analysis: a new strategy for experimental metabolic control analysis. *6th BioThermoKinetics Conference*, Schröcken, Austria.
14. **Hofmeyr, J.-H.S.** & Westerhoff, H.V. (1994) Regulation and control of hierarchically organised metabolic systems. *6th BioThermoKinetics Conference*, Schröcken, Austria.
15. Van Rotterdam, B.J., Crielaard, W., **Hofmeyr, J.-H.S.**, Westerhoff, H.V. & Hellingwerf, K.J. (1994) Control over electron transfer between ubiquinol and cytochrome *c* during light driven electron transfer by solubilized *Rhodobacter sphaeroides* reaction centres. *6th BioThermoKinetics Conference*, Schröcken, Austria.
16. **Hofmeyr, J.-H.S.** (1995) Understanding metabolic behaviour with control analysis. International conference on *Transport, Signalling and its Metabolic Consequences in Micro-Organisms*, Leuven, Belgium. (invited lecture)
17. **Hofmeyr, J.-H.S.** (1996) Application of metabolic control analysis to biotechnology. *24th Meeting of the Federation of European Biochemical Societies*, Barcelona, Spain. (invited lecture)

18. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1996) Predicting metabolic pathway kinetics with control analysis. *7th BioThermoKinetics Conference*, Louvain-la-Neuve, Belgium
19. **Hofmeyr, J.-H.S.** (1997) Cellular economics: implications of control by demand. *18th International Conference on Yeast Genetics and Molecular Biology*, Stellenbosch, South Africa. (invited lecture)
20. Rohwer, J.M. & **Hofmeyr, J.-H.S.** (1998) The kinetics and stoichiometry of ATP supply in fermenting yeast cells. *10th European Bioenergetics Conference*, Göteborg, Sweden.
21. **Hofmeyr, J.-H.S.** (1998) A bird's-eye view of the regulation of bio-energetic systems. *10th European Bioenergetics Conference*, Göteborg, Sweden. (invited lecture)
22. **Hofmeyr, J.-H.S.** & Rohwer, J.M. (1998) Control analysis of adenylate-conserving cycles in the absence or presence of adenylate kinase. *BioThermoKinetics in the Post Genomic Era. Eighth International Meeting on BioThermoKinetics*, Fiskebäckskil, Sweden.
23. Rohwer, J.M., **Hofmeyr, J.-H.S.** & Postma, P.W. (1998) Retro-regulation of the bacterial phosphotransferase system: A kinetic model. *BioThermoKinetics in the Post Genomic Era. Eighth International Meeting on BioThermoKinetics*, Fiskebäckskil, Sweden.
24. **Hofmeyr, J.-H.S.**, Olivier, B.G. & Rohwer, J.M. (1999) Putting the cart before the horse: designing a metabolic system in order to understand it. *NATO Advanced Research Workshop*, Visegrad, Hungary. (invited lecture)
25. Rohwer, J.M. & **Hofmeyr, J.-H.S.** (1999) An integrated approach to the analysis of the control and regulation of cellular systems. *NATO Advanced Research Workshop*, Visegrad, Hungary.
26. Rohwer, J.M., Olivier, B.G. & **Hofmeyr, J.-H.S.** (1999) Moiety conservation and flux enhancement. *NATO Advanced Research Workshop*, Visegrad, Hungary.
27. **Hofmeyr, J.-H.S.**, Olivier, B.G. & Rohwer, J.M. (2000) From mushrooms to isolas: surprising behaviour in a simple biosynthetic system subject to feedback inhibition. *Ninth International Meeting on BioThermoKinetics*, Stellenbosch, South Africa. (lecture)
28. Rohwer, J.M., Hoorneman, M., **Hofmeyr, J.-H.S.** & Snoep, J.L. (2000) Assessing the control of fermentative free-energy metabolism in yeast: a modelling exploration. *Ninth International Meeting on BioThermoKinetics*, Stellenbosch, South Africa.

29. **Hofmeyr, J.-H.S.** (2000) Regulating the cellular economy of supply and demand *Beyond the Genome*, 18th International Congress of Biochemistry and Molecular Biology, Birmingham, UK. (invited lecture)
30. **Hofmeyr, J.-H.S.** (2000) Control and regulation analysis of metabolic networks. *Biomedical Engineering Society 2000 Annual Fall Meeting*, Seattle, USA. (invited lecture)
31. **Hofmeyr, J.-H.S.** (2001) Control and regulation in cellular systems. *2nd International Conference on Systems Biology*, Pasadena, California, USA. (invited lecture)
32. **Hofmeyr, J.-H.S.** (2001) Regulatory design and function, Biochemical Society (UK) Meeting, York, UK. (invited lecture)
33. **Hofmeyr, J.-H.S.** (2002) How to distinguish between the vacuum cleaner and flippase mechanisms of the LmrA multi-drug transporter in *Lactococcus lactis* *Tenth International Meeting on BioThermoKinetics*, Archachon, France. (lecture)
34. **Hofmeyr, J.-H.S.** (2002) The Metabolic Marketplace: an integrative view of the molecular economy in living cells, COMBIO2002, Sydney, Australia. (plenary lecture)
35. **Hofmeyr, J.-H.S.** (2003) *Vivus economicus*: the living cell as economic system, Human Genome and Africa Conference, Spier Estate, Stellenbosch. (invited lecture)
36. **Hofmeyr, J.-H.S.** (2003) Beyond Mechanism: Enzyme kinetics in the context of systems biological modelling. 1st Beilstein Symposium on Experimental Standard Conditions of Enzyme Characterizations (ESCEC). Rüdesheim, Germany. (invited lecture)
37. **Hofmeyr, J.-H.S.** (2004) Biotechnology in Africa: Do we understand enough about life to manipulate it responsibly? 2nd Conference of the African Genome Initiative on *Genomics and Society: The Future Health of Africa*, Cairo, Egypt (plenary lecture)
38. **Hofmeyr, J.-H.S.** (2004) Systems Biology: Wholes in terms of parts or parts in terms of wholes? *11th International Meeting on BioThermoKinetics*, Oxford, UK. (lecture)
39. **Hofmeyr, J.-H.S.** (2005) The biochemical factory that fabricates itself: A systems-biological view of the living cell. Symposium: Towards a philosophy of systems biology, Amsterdam. (lecture)
40. **Hofmeyr, J.-H.S.** (2006) Bottom-up systems biology: from enzymes to pathways to cells. BTK: International Study Group for Systems Biology, BTK-ISSB 2006, Trakai, Lithuania. (Plenary lecture)

41. **Hofmeyr, J.-H.S.** (2007) Metabolic regulation from a systems biology perspective. 6th International Conference of Biological Physics, Montevideo, Uruguay. (Invited lecture)
42. **Hofmeyr, J.-H.S.**, Rohwer, J.M. and Snoep, J.L. (2008) A framework for kinetic modelling of multicompartment systems with variable compartment sizes. International Study Group for Systems Biology, ISGSB 2006, Copenhagen (lecture)
43. **Hofmeyr, J.-H.S.** (2011) Fragile, yet persistent: Biosemiotics and self-fabrication (lecture) The 11th Annual International Gathering in Biosemiotics, New York, USA.
44. **Hofmeyr, J.-H.S.** (2011) Putting ‘systems’ back into systems biology (plenary lecture), Joint Meeting AGI-SIBV-SIGA, Assisi, Italy.
45. **Hofmeyr, J.-H.S.** (2012) 2 Lectures on metabolic control analysis and metabolic regulation, Discussion Meeting-cum-Workshop on the theme “Individuals and Groups”, Almora, India.
46. **Hofmeyr, J.-H.S.** (2012) Modelling the cell as a formal system that writes its own production rules (lecture), 12th Annual International Gathering in Biosemiotics, Tartu, Estonia.
47. **Hofmeyr, J.-H.S.** (2012) Critical Complexity and Biosemiotics, Satellite Meeting on Critical Complexity in Practice, European Conference on Complex Systems 2012, Brussels, Belgium.
48. **Hofmeyr, J.-H.S.** (2012) The Devil is in the relations: Robert Rosen’s view of complexity, Symposium on Critical Complexity, Utrecht, The Netherlands.
49. **Hofmeyr, J.-H.S.** (2013) A linguistic model of self-fabrication (lecture), 13th Annual International Gathering in Biosemiotics, Castiglioncello, Italy.
50. **Hofmeyr, J.-H.S.** (2013) A generic rate equation for catalysed, template-directed polymerisation and its use in computational systems biology. 6th Beilstein Symposium on Experimental Standard Conditions of Enzyme Characterizations (ESCEC), Rüdeshheim, Germany. (invited lecture)
51. **Hofmeyr, J.-H.S.** (2014) On formal representations of organic codes. First Conference of the International Society for Code Biology, Paris, France (invited lecture).
52. **Hofmeyr, J.-H.S.** (2014) Fragile, yet persistent: A systems view of self-fabrication as the key to life. International Society for the System Sciences, Washington, USA (plenary lecture).
53. **Hofmeyr, J.-H.S.** (2014) Self-fabrication: the art and rules for making oneself, from cells to language. Weekly Colloquium of the Wissenschaftskolleg zu Berlin, Berlin, Germany.

54. **Hofmeyr, J.-H.S.** (2015) On the logical necessity for a manufacturing code in self-fabricating systems. 2nd Conference of the International Society for Code Biology, Jena, Germany (invited lecture).
55. **Hofmeyr, J.-H.S.** (2016) On Rosen's Paradox, formal cause, and codes. 3rd Conference of the International Society for Code Biology, Urbino, Italy (invited lecture).
56. **Hofmeyr, J.-H.S.** (2016) Sustainable and renewable systems: What can we learn from the living cell? Leadership for Sustainable Socio-Ecological Systems, Valdamudi, India (plenary lecture).
57. **Hofmeyr, J.-H.S.** (2017) Revisiting the Ribotype. 4th Conference of the International Society for Code Biology, Kőszek, Hungary (invited lecture)
58. **Hofmeyr, J.-H.S.** (2017) How the cell makes itself: the functional organisation that underlies self-fabrication. Konrad Lorenz Institute, Vienna, Austria (invited lecture)

16.2 National

1. Van der Merwe, K.J., **Hofmeyr, J.-H.S.**, Swart, P. & Swart, A.C. (1976) Natural products affecting the gestation period of sheep and their mode of action. *SA Biochemical Society IInd Congress.*
2. **Hofmeyr, J.-H.S.** & Van der Merwe, K.J. (1976) The effect of certain non-steroidal adrenal compounds on steroid synthesis. *SA Biochemical Society IInd Congress.*
3. Swart, P., Van der Merwe, K.J. & **Hofmeyr, J.-H.S.** (1978) The effect of parahydroxypropiophenone on steroid-hormone biosynthesis. *SA Biochemical Society IIIrd Congress.*
4. **Hofmeyr, J.-H.S.**, Van der Merwe, K.J., Thiel, P.G. & Swart, P. (1979) The effect of moniliformin on α -ketoacid dehydrogenase complexes. *SA Biochemical Society IVth Congress.*
5. Van der Merwe, K.J., **Hofmeyr, J.-H.S.**, Swart, P. & Swart, A.C. (1979) Natural products affecting the reproduction of animals. *SA Biochemical Society IVth Congress.*
6. Swart, P., Van der Merwe, K.J., **Hofmeyr, J.-H.S.** & Swart, A.C. (1980) The use of ultrafiltration, liquid ion exchangers and reverse phase HPLC for the isolation of certain inhibitors of cytochrome P-450_{11 β} . *SA Biochemical Society Vth Congress.*
7. Swart, P., Van der Merwe, K.J., Swart, A.C. & **Hofmeyr, J.-H.S.** (1981) The influence of certain compounds from *Salsola tuberculata* on sheep cytochrome P-450. *SA Biochemical Society VIth Congress.*

8. Swart, P., Van der Merwe, K.J., Swart, A.C. & **Hofmeyr, J.-H.S.** (1981) The separation of certain biologically active compounds from *Salsola tuberculata* with the aid of HPLC using two different PIC reagents. *SA Biochemical Society Vith Congress.*
9. Swart, P., Van der Merwe, K.J., Meyer, P.C., Swart, A.C. & **Hofmeyr, J.-H.S.** (1983) A rapid assay for the conversion of 11-deoxicorticosterone to corticosterone by cytochrome P-450_{11β}. *SA Biochemical Society VIIth Congress.*
10. Foster, E.J.F. & **Hofmeyr, J.-H.S.** (1984) The effect of ethanol on hexokinase from *Saccharomyces cerevisiae* Y102. *IIIrd Congress of the SA Society for Microbiology.*
11. **Hofmeyr, J.-H.S.** & Van der Merwe, K.J. (1986) METAMOD: a program for steady-state modelling and control analysis. *Ist Joint Congress of the SA Biochemical Society, SA Genetics Society & the SA Society for Microbiology.*
12. Gathercole, P.S., Thiel, P.G. & **Hofmeyr, J.-H.S.** (1986) Inhibition of components of pyruvate dehydrogenase complex by moniliformin. *Ist Joint Congress of the SA Biochemical Society, SA Genetics Society & the SA Society for Microbiology.*
13. **Hofmeyr, J.-H.S.** (1988) Understanding metabolic behaviour and control (lecture). *SA Biochemical Society XIth Congress.*
14. Stevens, S., Foster, E.J.F. & **Hofmeyr, J.-H.S.** (1988) The effect of ethanol, octanoic and decanoic acids on the passive flux of protons through the yeast cell membrane. *SA Biochemical Society IXth Congress.*
15. Stevens, S. & **Hofmeyr, J.-H.S.** (1989) Die effek van etanol, oktanoë- en deka-noësuur op die passiewe fluksie van protone deur die gisselmembraan. *1989 SAWWV Kongres.*
16. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1991) Quantitative assessment of regulation in metabolic systems. *SA Biochemical Society Xth Congress.*
17. **Hofmeyr, J.-H.S.** (1991) Manipulating metabolic flux and concentrations in micro-organisms. *Annual AECl symposium for post-graduate scholarship holders.*
18. Rohwer, J.M. & **Hofmeyr, J.-H.S.** (1991) An experimental control analysis of the regulation of serine biosynthesis in *Escherichia coli*. *Annual AECl symposium for post-graduate scholarship holders.*
19. **Hofmeyr, J.-H.S.** & Cornish-Bowden, A. (1992) Regulatory Potential: a quantitative criterion for the identification of regulatory metabolites. *SA Biochemical Society XIth Congress, Sun City.*

20. Rohwer, J.M. & **Hofmeyr, J.-H.S.** (1992) Serine biosynthesis in *Escherichia coli*: the measurement of flux and metabolite concentrations using HPLC analysis. *SA Biochemical Society XIth Congress*, Sun City.
21. Rohwer, J.M. & **Hofmeyr, J.-H.S.** (1992) Serine biosynthesis in *Escherichia coli*: the measurement of flux and metabolite concentrations using HPLC analysis. *Annual AECI symposium for post-graduate scholarship holders*.
22. **Hofmeyr, J.-H.S.** (1994) Analysis of metabolic control and regulation using co-response coefficients. *SA Biochemical Society XIIIth Congress*, Stellenbosch.
23. **Hofmeyr, J.-H.S.** (1997) Molecular economy of the cell: who meets the demand? *14th Congress of the South African Society for Biochemistry and Molecular Biology*, Grahamstown.
24. Olivier, B.G. & **Hofmeyr, J.-H.S.** (1997) How long does a metabolic system take to get from one steady state to another? *14th Congress of the South African Society for Biochemistry and Molecular Biology*, Grahamstown.
25. Olivier, B.G., Rohwer, J.M. & **Hofmeyr, J.-H.S.** (1998) Designing a functional 4-way metabolic junction. *15th Congress of the South African Society for Biochemistry and Molecular Biology and 2nd FASBMB Conference*, Potchefstroom.
26. **Hofmeyr, J.-H.S.** & Rohwer, J.M. (1998) Rate characteristic analysis of control and regulation of systems containing adenylate-conserving cycles. *15th Congress of the South African Society for Biochemistry and Molecular Biology and 2nd FASBMB Conference*, Potchefstroom.
27. Downing, T. & **Hofmeyr, J.-H.S.** (1998) Control distribution in interacting autocatalytic growth systems. *15th Congress of the South African Society for Biochemistry and Molecular Biology and 2nd FASBMB Conference*, Potchefstroom.
28. Rohwer, J.M., **Hofmeyr, J.-H.S.** & Postma, P.W. (1998) Retro-regulation of the bacterial phosphotransferase system: A kinetic model. *15th Congress of the South African Society for Biochemistry and Molecular Biology and 2nd FASBMB Conference*, Potchefstroom.
29. **Hofmeyr, J.-H.S.**, Rohwer, J.M. & Cornish-Bowden, A. (2000) Functional differentiation in cellular reaction networks. BIOY2K Combined Millenium Meeting, Grahamstown. (lecture)
30. Kroukamp, M., Rohwer, J.M., Snoep, J.L. & **Hofmeyr, J.-H.S.** (2000) Inside the bug in the machine: A 'see-through box' model of a micro-organism growing in a chemostat. BIOY2K Combined Millenium Meeting, Grahamstown.
31. Olivier, B.G., Rohwer, J.M. & **Hofmeyr, J.-H.S.** (2000) From mushrooms to isolas: Surprising behaviour in a simple biosynthetic system subject to end-product inhibition. BIOY2K Combined Millenium Meeting, Grahamstown.

32. **Hofmeyr, J.-H.S.** (2002) Using sensitivity analysis to understand metabolic regulation. 26th Annual Conference of the South African Society for Numerical and Applied Mathematics. Stellenbosch. (invited lecture)
33. **Hofmeyr, J.-H.S.** (2002) Sisteembilogie: die integrasie van teorie, eksperiment en model. SA Akademie Biologiesimposium, Stellenbosch. (invited lecture)
34. **Hofmeyr, J.-H.S.** (2002) The Digital Academic Library: an academic's perspective. The Digital Academic Library: a reality check. Fifth Annual Symposium presented by the Library Services and the Department of Information Technology, University of Stellenbosch. (invited lecture)
35. **Hofmeyr, J.-H.S.** (2003) The molecular physiology of the living cell: functional organisation, regulation and control. 18th SASBMB Meeting, Pretoria (Beckman-Coulter Gold Medal Lecture).
36. Olivier, B.G., Rohwer, J.M. & **Hofmeyr, J.-H.S.** (2003) Modelling cellular systems with Python, SciPy and PySCeS. 18th SASBMB Meeting, Pretoria.
37. Mahlerbe, C.J., Westerhoff, H.V., Rohwer, J.M., Getz, W.M., **Hofmeyr, J.-H.S.** & Snoep, J.L. (2003) Control analysis of mixed populations of *Gluconobacter oxydans* and *Saccharomyces cerevisiae*. 18th SASBMB Meeting, Pretoria.
38. Bailey, D.O., **Hofmeyr, J.-H.S.**, Snoep, J.L. & Rohwer, J.M. (2003) Experimental metabolic control analysis and regulation of serine biosynthesis in *Escherichia coli*. 18th SASBMB Meeting, Pretoria.
39. Genade, T., **Hofmeyr, J.-H.S.** Swart, A.C. & Swart, P. (2003) Towards control analysis of adrenal steroidogenesis. 18th SASBMB Meeting, Pretoria.
40. **Hofmeyr, J.-H.S.** (2005) The chemical factory that fabricates itself. A systems-biological view of the living cell. 19th SASBMB Meeting, Stellenbosch (Plenary Lecture).
41. **Hofmeyr, J.-H.S.** (2006) Multiple steady states lead to interesting regulatory behaviour in a supply-demand system. 20th SASBMB Meeting, Pietermaritzburg. (lecture)
42. **Hofmeyr, J.-H.S.** (2010) Modelling the complexity of life. Akili Workshop, Stellenbosch (plenary lecture).
43. **Hofmeyr, J.-H.S.** (2011) Paul Cilliers, Models and Complex Causality. Akili Workshop in honour of Paul Cilliers, Stellenbosch (plenary lecture).
44. **Hofmeyr, J.-H.S.** (2012) The Complexity of Life in the context of Code Biology. Complexity Forum 2012, Stellenbosch (plenary lecture).

45. **Hofmeyr, J.-H.S.** (2013) How 'Wicked Problems' arise from Complexity. Symposium on Wicked Problems: A challenge for invasion science, organised by the Centre for Invasion Biology, Stellenbosch (plenary lecture).
46. **Hofmeyr, J.-H.S.** (2014) Modelling anticipatory systems à la Robert Rosen. Anticipation: Complexity and the Future, A joint colloquium organised by the Centre for Studies in Complexity (CSC) and the Association of Professional Futurists (APF), Stellenbosch (plenary lecture).
47. **Hofmeyr, J.-H.S.** (2014) From dead molecules to living organisms: the functional organisation of biochemical processes. SASBMB Meeting, Goudini Spa (opening plenary lecture).
48. **Hofmeyr, J.-H.S.** (2016) Mathematics and Biology. ASSAf Mathematical Sciences Workshop, Cape Town (plenary lecture).

17 Research supervision

17.1 Completed

Christensen	C	PhD	2016
Huyssen	H	PhD	2015
Prigge-Pienaar	S	PhD	2015
Palm	D	PhD	2013
Preiser	R	PhD	2012
Ackhurst	T	PhD	2011
Uys	L	PhD	2009
Olivier	BG	PhD	2005
Downing	T	PhD	2005
Rautenbach	M	PhD	1999
Swart	A	PhD	1999
Louw	A	PhD	1998
Du Toit	A	MSc	2016
Coetzee	M	MSc	2016
Kuhn	S	MSc	2014
Van Niekerk	C	MSc	2014
Christensen	C	MSc	2013
Van Zyl	J	MSc	2013
Gwqaka	OPC	MSc	2011
Dominy	JG	MSc	2009
Hanekom	AJ	MSc	2006
Genade	T	MSc	2004
Hubbe	ME	MSc	2000
Olivier	BG	MSc	1999
Mapstone	S	MSc	1999
Schafer	W	MSc	1999
Rohwer	JM	MSc	1990
Du Toit	A	BSc Honours	2013
Swart	T	BSc Honours	2012
de la Harpe	A	BSc Honours	2012
Kuhn	S	BSc Honours	2011
Van Niekerk	C	BSc Honours	2011
Van Zyl	J	BSc Honours	2010
Palm	D	BSc Honours	2008
Coetzee	M	BSc Honours	2008
De Beyer	JA	BSc Honours	2007
Hodgskin	T	BSc Honours	2006
Gwqaka	OPC	BSc Honours	2005
Singh	N	BSc Honours	2003

17.2 In Progress

Du Toit	A	PhD
Janse van Rensburg	WTB	PhD