

**Bryan Trevor Sewell***Professor in the Department of Integrative**Biomedical Sciences**Director of the Electron Microscope Unit**University of Cape Town**55 Madiba Circle**University of Cape Town**7700 Rondebosch, South Africa***Curriculum Vitae**

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Web: <http://sbio.uct.ac.za>**EDUCATION**

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| 1976 – 1981 | <b>PhD</b> in Protein Crystallography, Birkbeck, London              |
| 1992 – 1996 | <b>MSc</b> Biophysics, University of Witwatersrand                   |
| 1973 – 1974 | <b>BSc (Hons)</b> Physics, University of Witwatersrand               |
| 1970 – 1973 | <b>BSc</b> Physics, Applied Mathematics, University of Witwatersrand |

**POSITIONS AND EMPLOYMENT**

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| 2015 –      | Professor & Director of the Electron Microscope Unit, Department of Integrative Biomedical Sciences, University of Cape Town |
| 2011 – 2015 | Professor & Director of the Electron Microscope Unit, Division of Medical Biochemistry, University of Cape Town              |
| 2010 – 2011 | Associate Professor & Director of the Electron Microscope Unit, Division of Medical Biochemistry, University of Cape Town    |
| 1992 – 2009 | Director of the Electron Microscope Unit, University of Cape Town  |
| 1988 – 1991 | Associate Professor, Department of Biochemistry, University of Cape Town.  |
| 1985 – 1988 | Senior Lecturer, Department of Biochemistry, University of Cape Town   |
| 1981 – 1985 | Lecturer, Department of Biochemistry, University of Cape Town  |

**HONORS AND AWARDS**

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| 2009-     | <b>Honorary Life Member:</b> Microscopy Society of Southern Africa                          |
| 2008-     | <b>Member,</b> Institute for Infectious Disease and Molecular Medicine                      |
| 2007-2010 | <b>Member,</b> Institute for Microbial Biotechnology and Metagenomics                       |
| 2004-2010 | <b>Extraordinary Professor,</b> Department of Biotechnology, University of the Western Cape |

**OTHER EXPERIENCE AND PROFESSIONAL MEMBERSHIPS**

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| 2015-     | South African Institute of Physics, Biophysics Committee member for International Relations |
| 2015-2017 | IUPAP Committee C6, Biological Physics  |
| 2011 -    | The Biophysical Society   |
| 2011 -    | SA Science at Synchrotrons Roadmap Implementation Committee (SSRIC)                         |
| 2011-     | American Society for Biochemistry and Molecular Biology (ASBMB)                             |
| 2001 -    | South African Society for Biochemistry and Molecular Biology (SASBMB)                       |
| 2001 -    | South African Crystallographic Association  |
| 1997 -    | Microscopy Society of Southern Africa   |

**CONFERENCE / WORKSHOP ORGANIZATION**

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- **Macromolecular crystallography convenor:** European Crystallographic Association, Durban, 2003
- **Organizer:** First African Structural Biology Conference, The Wilderness, 2006
- **Organizer:** EMBO world workshop on functional microscopy, 2007

- **Chairman of session on High resolution single particle analysis:** Gordon Conference on 3DEM, New London, 2009
- **Chairman of session of macromolecular complexes:** International Microscopy Conference 17, Rio de Janeiro, Brazil, 2010
- **Convenor and organizer:** Course on Macromolecular Image Processing , 2010.
- **Convener and Co-organizer** (with Dr Jean Watermeyer) of a course on Molecular Modelling and Simulation 2011.
- **Convenor and co-organizer:** Structural Biology in the Bio-economy 2012
- **Organizer:** Microscopy Society of Southern Africa annual meeting 2012
- **Co-organizer** (with Prof Jim Sacchettini): “Biophysics in the Understanding, Diagnosis and Therapy of Infectious Diseases” held in Stellenbosch from 16-20 November 2015 under the auspices of the Biophysical Society

## RESEARCH INTERESTS

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We have established a structural biology laboratory that provides for protein expression, purification, crystallization, biophysical and biochemical characterization and structure determination by x-ray diffraction and single particle cryo-electron microscopy. We study enzyme structure, specificity and mechanism with a view to enabling the design of interventions in both non-communicable and infectious diseases as well as improving the applications of the enzymes in synthetic chemistry. We use primarily X-ray crystallography, electron microscopy and molecular modelling techniques gain our insights.

**COMPLETE PUBLICATION LIST:** <http://sbio.uct.ac.za/staff-and-students/about-our-staff/bryan-trevor-sewell/>

## SELECTED PUBLICATIONS

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- Weber, BW , Kimani, SW, Varsani, A., Cowan, DA, Hunter, R., Venter, GA, Gumbart,JC and Sewell, BT (2013) The mechanism of the amidases: Mutating the glutamate adjacent to the catalytic triad inactivates the enzyme due to substrate mispositioning. *J. Biol. Chem.* 288:28514-28522
- Broadley, SG, Weber, BW, Marakalala, MJ, Steenkamp, DJ, Gumbart, JC, Sewell, BT (2012) A new crystal form of MshB from *Mycobacterium tuberculosis* with glycerol and acetate in the active site suggests the catalytic mechanism (2012). *Acta Crystallographica*, D68:1450-1459
- Manole, V, Laurinmäki, P, Van Wyngaardt, W, Potgieter C, Wright, I, Venter, G, van Dijk, A, Sewell, BT and Butcher, S (2012) Structural insight into African Horsesickness virus infection, *J Virol.* 86:7858-7866.
- Miller JL, Woodward J, Chen S, Jaffer M, Weber B, Nagasaki K, Tomaru Y, Wepf R, Roseman A, Varsani A, Sewell T. (2011) Three-dimensional reconstruction of *Heterocapsa circularisquama* RNA virus by electron cryo-microscopy. *J Gen Virol* 92:1960-1970.
- Nel AJ, Tuffin IM, Sewell, BT , Cowan DA.(2011) A unique aliphatic amidase from a psychrotrophic and haloalkaliphilic *Nesterenkonia* isolate. *Appl. Environ. Microbiol.* 77:3696-3702.
- van Rooyen, JM. . Abratt, VR, Belrhali, H, Sewell, BT, (2011) Crystal Structure of Type III Glutamine Synthetase: Surprising Reversal of the Inter-Ring Interface, *Structure*, 19:471-483
- Watermeyer JM, Kroger WL, O'Neill HG Sewell BT, Sturrock ED (2010) Characterization of domain-selective inhibitor binding in angiotensin-converting enzyme using a novel derivative of lisinopril. *Biochemical Journal* 428:67-74
- Sewell,BT, Best,RB, Chen,S, Roseman,AM, Farr,GW, Horwich,AL & Saibil,HR (2004). A mutant chaperonin with rearranged inter-ring electrostatic contacts, defective cooperativity, and temperature-sensitive dissociation of rings, *Nature Structural and Molecular Biology*, 11,1128-1133.
- Sewell, B.T., Berman, M., Meyers, P.R.,Jandhyala, D., and Benedik, M.J. (2003). The Cyanide Degrading Nitrilase from *Pseudomonas stutzeri* AK61 Is a Two-Fold Symmetric, 14-Subunit Spiral, *Structure*, 11, 1413-1422.