



**Dr PAUL MWASHIMBA GUYO (PhD)**

# CURRICULUM VITAE

## 1. PERSONAL INFORMATION

**Name:** Dr Paul Mwashimba Guyo  
**Date of Birth:** 14<sup>th</sup> November 1966  
**Nationality:** Kenyan  
**Languages:** English and Kiswahili  
**Contacts:** Pwani University  
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### Personal Profile

Scientist with over six years' experience in the pharmaceutical industry. Expertise in the application of synthetic organic chemistry and heterocyclic chemistry for pharmaceuticals production. Strong project management, good team leadership and team working abilities.

## 2. ACADEMIC QUALIFICATIONS

### University Education

#### Oct. 1995-Sept. 1998 (Ph.D.)

University of Manchester (UK), Department of Chemistry  
Birch Reduction and Stereoselective Birch Reductions of Electron-Deficient Pyrroles  
Using Group I and II Metals in Ammonia.  
Supervisor: **Prof. Timothy J. Donohoe**

#### Oct. 1995-Sept. 1998 (MPhil.)

University of Manchester (UK), Department of Chemistry  
Birch Reductions of Electron-Deficient Pyrroles.  
Supervisor: **Prof. Timothy J. Donohoe**

#### Nov. 1987-Aug. 1990 (B.Sc. Hons.)

Moi University (Kenya), Department of Chemistry  
Isolation and characterisation of some major and minor constituents of *Warburgia ugandensis*: Formal synthesis of Polygodial.  
Supervisor: **Prof. Mohamed S. Rajab**

## School Education

**Jan. 1985-Dec. 1986 (KACE, A-Level): High School F5 and F6**

Kenyatta High School (Taita-Taveta, Kenya),

**Jan. 1981-Dec. 1984 (KCSE, O-Level): Secondary School F1 to F4**

Khamis High School (Mombasa, Kenya),

**Jan. 1974-Dec. 1980 (CPE): Primary School STD 1 to STD 7**

Makande Primary School (Mombasa, Kenya)

## 3. PROFESSIONAL WORK EXPERIENCE

### Academic Career

**Sept. 2013 – To date:** Dean School of Pure of and Applied Sciences (Pwani University-Kenya)

**Sept. 2011 – Sept. 2012:** Acting Dean School of Pure of and Applied Sciences (Pwani University-Kenya)

**Sept. 2010 – To date:** Senior Lecturer (Pwani University-Kenya)

**Undergraduate:** Teaching and tutoring students (at all level) in;

- Basic and Modern concepts in Organic Chemistry
- Medicinal/ Pharmaceutical Chemistry
- Natural Product Chemistry
- Heterocyclic Chemistry

**Postgraduate:** Teaching and tutoring in;

- Modern Organic Synthetic Chemistry
- Special topics in the advances of Organic Synthesis

**Aug. 2008 – Aug 2010:** Break to relocate back to Kenya

### Pharmaceutical Industry Career ( in AstraZeneca PLC)

**April 2002 – July 2008:** Senior Research Scientist

- Responsible for the synthesis and delivery of pre-toxicological compounds for drug nomination across all therapeutic areas. Delivered three (3) drugs, in cancer and infection, which are currently on Phase III clinical trial.
- Supervision of PhD students.
- Chair of chemical knowledge sharing team for the AstraZeneca (Cancer Section), Alderley Edge site.
- Seconded for eighteen (24) months (Jan 2006 - Dec 2007) to AstraZeneca Process Research and Development division. Acquired experience in process development (early to late phase), good manufacturing practice (cGMP) and quality assurance.
- Development of manufacturing process for a fast tracked cancer drug from Phase I to early Phase III.

### **Postdoctoral Fellowship (Research and Supervision)**

**May. 2001 – April 2002:** Postdoctoral fellow (The University of Manchester-UK);

Supervisor: **Prof. Eric J Thomas**

Developed the synthesis of fluoro-benzazepin-4-one based compounds to be tested as potentially selective Muscarinic (M (3)) receptor antagonists.

**May. 2000 – April 2001:** Postdoctoral fellow (The University of Manchester-UK);

Supervisor: **Prof. Timothy J. Donohoe**

- Designed and optimised a synthetic route for preparation of Lactacystin *via* a Birch reductive aldol reaction. Lactacystin is a novel microbial metabolite which induces neurogenesis of neuroblastoma cells.

**Feb. 1999 – April 2000:** Postdoctoral fellow (University of Southern California-USA);

Supervisor: **Prof. George A. Olah (Nobel laureate)**

- Worked on the partial oxidation of methane using high-pressure supercritical and hydrothermal systems, incorporating super-electrophilic catalysis and noble metal catalysts; for the use in the conversion of methane to methanol.
- Investigated new stereoselective fluorination procedures for incorporating a fluorine atom in organic compounds.

### **Graduate and Teaching Assistantship (Research, Supervision and Teaching)**

**Oct. 1995 - Oct. 1998:** Teaching Assistantship (The University of Manchester-UK);

Supervisor: **Prof. Timothy J. Donohoe**

- Supervised final year under graduate research projects, and 1<sup>st</sup> and 2<sup>nd</sup> year Ph.D. students.
- Organised weekly problem sessions and research presentations within the research group; designed for knowledge sharing and research problems solving.

**Feb. 1991 - Aug. 1995:** Research/ Teaching Assistantship (Moi University, Kenya);

Supervisor: **Prof. Mohamed S. Rajab**

- Taught and tutored undergraduate students
- Assisted in the supervision of 6 student final year undergraduate research projects during that period.
- Isolated and characterised some major and minor constituents of *Calodendrum capense*, *Azadirchta indica* and *Ajuga remota*.
- Assisted in the design of a formal synthesis of ( $\pm$ ) Calodendrolide; to be tested for insect anti-feedant activity.
- Performed some synthetic modifications on Ajugarin-1 (from *Ajuga remota*) to be used in models for testing antihypertensive activity

### **Teaching Career in Secondary Schools**

**Aug. 1990 - Jan.1991:** Likoni Secondary School (Mombasa)

Mathematics/ Chemistry/ Physics Teacher

#### 4. ADMINISTRATIVE APPOINTMENTS

**Sept 2012 to date:** Dean, School of Pure and Applied Sciences Pwani University  
Duties:

**Sept 2011 to Sept 2012:** Chair of Department, of Chemistry and Biochemistry

**Jan 2011 to Date:** Science Technology and Innovation (STI) Desk Co-ordinator

##### Appointments to University Committees

- Member, PUC Academic Board: 2011-2013
- Chair, SPAS Postgraduate Committee for Pwani University: 2012 to date
- Chair, PUC Special Committee for Examination Results Audit (SEAC): 2012
- Member, PUC School of Medicine Steering Committee (SMSC): 2012
- Member, PU, Deans Committee: 2012 to date
- Member, PU Tender Committee: 2012 -date
- Member, PU Reference Team For Expression of Interest: 2012
- Member, Pwani University Statutes Committee-2013
- Member, PU Senate-2013
- Member, PU Graduation Committee 2013
- Member, PU Senate Budget Committee 2013
- Chair, Special Committee to look into the Extraneous, Non-Practicing, Clinical and Other Allowances: 2013
- Chair, Special Committee of the Deans Committee for Faculty Capacity Development Framework -2014

#### 5. SUPERVISION OF POSTGRADUATE STUDENTS

##### Doctor of Philosophy (PhD)

**Kipkorir Zacchaeus Rotich:** Registered for PhD (Chemistry) at Pwani University (2013)

**Title:** Design, Synthesis and In Vitro Evaluation of Anti-Fungal and Anti-Bacterial Activities of Novel 1, 3, 5-Trisubstituted-2-Pyrazoline Derivatives.

**Nyinge Mwadzombo Nyinge:** Registered for PhD (Chemistry) at Pwani University (2013)

**Title:** Pollution Assessment of Organometallic Derivatives and Persistent Organic Pollutants along the Kenyan Coastal Marine Environment using Coral Reefs as Environmental Indicator.

##### Others

- Supervised AstraZeneca funded PhD students during their industrial visits
- Supervised Ph.D. students as part of my Postdoctoral responsibilities

##### Masters

**Mwandogo Omari Chigodi:** Registered for MSc (Chemistry) at Pwani University (2011)

- **Title:** Isolation and Characterization of Active Anti-Pulmonic Compounds of *Acacia Stuhlmannii* Plant
- Due to complete by end of 2014

**George Nyaboga Nyarieko:** Registered for MSc (Microbiology) at Pwani University (2012)

- **Title:** Evaluation of *Acacia Stuhlmannii* Plant Extracts for the control of Bacteria Wilt Disease.
- Due to complete in 2015

## 6. REVIEWER OF JOURNAL ARTICLES AND PROPOSALS

**Journal Article Reviewer** (September 2010 – To date)

EAPAS (Review of articles for publication)

- *Activity of extractive from Albiza anthelmintica Brongu and Teclea trichocarpa Engl as birational alternatives to control the maize weevil (Sitophilus zeamais)*  
**MS/EAPAS/1001/12**
- *HIV drug design: Synthesis of reverse transcriptase double-drugs.* **MS/EAPAS/1014**

**Proposal Review**

**PURB (Full Proposal Review)**

- *An evaluation of Moringa Oleifera in the supportive treatment of patients with HIV/AIDS in the Bahari Division, Kilifi County Kenya*

## 7. PUBLICATIONS

1. Studies on the Antihypertensive effects of Ajugarin-1 on Experimentally Hypertensive Rats and the Syntheses of closely related Ajugarin derivatives. M. S. Rajab and **P. M. Guyo** (published in The Kenya Chemical Society Proceedings **1991**).
2. A formal Synthesis of ( $\pm$ )-Calodendrolide. M. S. Rajab and **P. M. Guyo**, *Bull. Chem. Soc. Ethiop.* **1994**, *8*, 35-38.
3. Application of Stoichiometric Organotransition Metal Complexes in Organic Synthesis. T. J. Donohoe, **P. M. Guyo**, P. R. Moore and C. A. Stevenson, *Contemp. Org. Synth.*, **1996**, *4*, 22-39.
4. Birch Reduction of Electron-Deficient Pyrroles. T. J. Donohoe and **P. M. Guyo**, *J. Org. Chem.*, **1996**, *61*, 7664-7665.
5. The Reduction of Electron-Deficient Pyrroles Using Group II and I Metals in Ammonia. T. J. Donohoe and **P. M. Guyo**, R. L. Beddoes and M. Helliwell, *J. Chem. Soc., Perkin Trans. 1*, **1998**, 667-676.
6. Birch reduction of nitrogen-containing heterocycles. Donohoe, Timothy J.; **Guyo, Paul M.**; Harji, Rakesh R. Book of Abstracts, 216th ACS National Meeting, Boston, August 23-27 (**1998**),
7. The Birch Reduction of 3-Substituted Pyrroles. T. J. Donohoe and **P. M. Guyo**, R. Harji, M. Helliwell and R. P. C. Cousins, *Tetrahedron Letters*, **1998**, *39*, 3075-3078.
8. The Birch Reduction of Aromatic Heterocycles. T. J. Donohoe, **P. M. Guyo** and A. Raouf, Targets in Heterocyclic systems, *Italian Society of Chemistry*, **1999**, *3*, 117-

- 145 (*Review article*).
- The Stereoselective Birch Reduction of Pyrroles. T. J. Donohoe and **P. M. Guyo** and M. Helliwell, *Tetrahedron Letters*, **1999**, *40*, 435-438.
  - The Reductive Aldol Reaction of Aromatic Heterocycles. T. J. Donohoe K. W. Ace, **P. M. Guyo**, M. Helliwell, J. Mckenna, *Tetrahedron Letters*, **2000**, *41*, 989-993
  - Synthesis of a 5-alkoxyprido[4,3-d]pyrimidin-4(3H)-one derivative via a regioselective Meisenheimer N-oxide rearrangement. E. J. Williams, P. W. Kenny, J. G. Kettle and **P. G. Mwashimba** *Tetrahedron Letters*, **2004**, *45*, 3737-3739
  - Utility of the ammonia-free Birch reduction of electron-deficient pyrroles: Total synthesis of the 20S proteasome inhibitor, clasto-lactacystin beta-lactone. T. J. Donohoe, H. O. Sintim, L. Sisangia, K. W. Ace, **P. M. Guyo**, A. Cowley and J. D. Harling. *Chemistry: A European Journal*, **2005**, *11*, 4227-4238
  - Synthesis of 5-hydroxy-2,3,4,5-tetrahydro-[1H]-2-benzazepin-4-ones: selective antagonists of muscarinic (M<sub>3</sub>) receptors. Benjamin Bradshaw, Paul Evans, Jane Fletcher, Alan T L Lee, **Paul G Mwashimba**, Daniel Oehlich, Eric J Thomas, Robin H Davies, Benjamin C P Allen, Kenneth J Broadley, Amar Hamrouni, Christine Escargueil *Org Biomol Chem.*, **2008**, *6* (12), 2138-2157.

## 8. WORKSHOPS, CONFERENCE SHORT COURSES AND TRAINING

### Short Courses and Training

- Breathing Apparatus: Handling and Use: Manchester-UK (**5<sup>th</sup> June, 2003**)
- Breathing Apparatus: Handling and Use: Manchester-UK (**8<sup>th</sup> June, 2004**)
- Breathing Apparatus: Handling and Use: Manchester-UK (**7<sup>th</sup> June, 2005**)
- Introduction to Global Electronic Library (GEL) for Authors: Manchester-UK (**16<sup>th</sup> August, 2006**)
- Heterocycles Synthesis, a Two-Day Course: AstraZeneca, Macclesfield, (**October, 2007**)
- Basics of Regulatory Affairs: London-UK (**13<sup>th</sup> August, 2009**)

### Workshops

- Advanced Synthetic Strategy Workshop: AstraZeneca, Alderley Park (**13<sup>th</sup>-14<sup>th</sup> January, 2003**)
- Palladium Catalysed Synthesis workshop?: AstraZeneca, Alderley Park (**5<sup>th</sup> November, 2003**)
- Mechanism and Synthesis Workshop: AstraZeneca, Alderley Park (**22<sup>nd</sup>-23<sup>rd</sup> November, 2004**)
- Retrosynthesis and the use of Illogical Disconnections Workshop: AstraZeneca, Alderley Park (**2<sup>nd</sup> February, 2005**)
- Process Chemistry Literature Review for (2005-2006), AstraZeneca, Macclesfield, (**15<sup>th</sup> November, 2006**)
- Asymmetric Synthesis Workshop: AstraZeneca, Alderley Park (**4<sup>th</sup>-5<sup>th</sup> July, 2005**)
- Capacity Building: Higher Education and Corporate Social Responsibility workshop: *Quality Management of Higher Education*. Pwani University College (**15<sup>th</sup> June,**

**2011)**

- Impact of Social Change: UN Convention on the Rights of Persons with Disabilities (UNCPRD) as a trigger? Pwani University College (**16<sup>th</sup>-17<sup>th</sup> June, 2011**).
- Capacity Building: Higher Education and Corporate Social Responsibility workshop: *The UN Convention on Rights of Persons with Disabilities*. Pwani University College (**20<sup>th</sup> June, 2011**)
- Capacity Building: Higher Education and Corporate Social Responsibility workshop: *Didactics in Higher Education*. Pwani University College, (**21<sup>st</sup> June, 2011**)
- Capacity Building: Higher Education and Corporate Social Responsibility workshop: *Good Governance*. Pwani University College, (**25<sup>th</sup> June, 2011**)
- AAU-EARN Conference on HIV/AIDS Mainstreaming and integration into the University Curriculum: Getting to Zero. North Coast Beach Hotel (**27<sup>th</sup>-28<sup>th</sup> March, 2013**)
- Stakeholders Meeting on Curriculum Review (Discussant role): Pwani University, (**20<sup>th</sup> January, 2014**)
- Strengthening Aid Control Unit (ACU) Capacity on Early Identification of ADA among Employee and Students: Pwani University, (**24<sup>th</sup> January, 2014**)

### **Conferences**

#### **Presented**

- The Kenya Chemical Society (KCS), Nairobi, Kenya (**1991**).
- Society of Chemical Industry (SCI) Colloquium Competition. Manchester-UK (**1998**)
- Society of Chemical Industry (SCI) and the Royal Society of Chemistry (RSC) Greater Manchester Prize Colloquium Competition. Manchester-UK (**1998**)

#### **Attended**

- The 18<sup>th</sup> Lakeland Heterocyclic Symposium [RSC Heterocyclic & Synthesis Group] Grasmere (**10<sup>th</sup>-14<sup>th</sup> May, 2007**)
- Coast Education Conference, held at Pwani University College in collaboration with the National council for Science and Technology (**3<sup>rd</sup> July, 2012**).

#### **Seminar**

- Boronic Acid Mannich Reaction: A Few Applications: AstraZeneca (**17<sup>th</sup> July, 2003**)
- EGFR Selective Kinase Inhibitor Back-up Project: AstraZeneca (**26<sup>th</sup> May, 2004**)
- EGG-5 Project, AstraZeneca, Macclesfield- (**10<sup>th</sup> May, 2005**)

#### **Posters**

- The Pfizer Organic Chemistry Poster symposium: London (**December, 1997**)
- CCTAP Poster Event 2004: EGFR Selective Kinase Inhibitor Back-up Project: AstraZeneca (**25<sup>th</sup> May, 2005**)

## **9. RELEVANT SKILLS AND OTHER PROFESSIONAL ATTRIBUTES**

### **Research Interests**

My research interests lie in the development of new organic synthetic methodologies, synthesis of natural products of pharmaceutical significance and enhancing efficacy of known anti-malarials through functional group/s modification.



### **Strategic Planning and Policy Formulation:**

Key role in preparation of:

- Pwani University Charter
- Pwani University Statutes
- Education for Sustainable Development (ESD) Policy.

### **Curriculum Development:**

- Development of Curricula for Degree level programmes e.g. MBChB, BED Sc and BSc. Industrial Chemistry
- Curriculum Review and evaluation of various programmes

### **Report Writing:**

- Research reports: AstraZeneca
- Self-Assessment Reports (Annual planning and review report): AstraZeneca
- Quarterly Performance reports: Pwani University

### **Computer Literacy:**

- Competence in packages such as Chemdraw<sup>®</sup>, ISIS, MS-Project, MS-Power Point, MS-Excel, MS-Word<sup>®</sup> etc).
- Competence in use of Apple Macintosh<sup>®</sup> and Chemical databases (e.g. MDL Cross Fire, SciFinder, ACD-Labs etc).

### **Instrumental techniques:**

- Skilled user of NMR (Bruker and Gemini), FT-IR, DSC, GC-FID, GC-MS, LC-MS, HPLC, Microwave reactors, High-pressure reactors and Companion<sup>®</sup> (small scale preparative chromatography).

## **10. PROFESSIONAL SOCIETIES AND LINKAGES**

### **Professional Affiliations memberships**

- The Royal Society Chemistry (*MRSC*)
- The Organisation for Professionals in Regulatory Affairs (*TOPRA Member*)
- The Kenyan Chemical Society (*K.C.S*)

### **Linkages**

- Member, Kenya Coast Development Project (KCDP)-Capacity Building Committee
- Member, Pwani University Health Research Institute (PUHRI) Steering Committee
- Member, Community Based Development Agency Pwani University (COBA-PU) Partnership Steering Committee

## **11. HONOURS AND ACHIEVEMENTS**

- MPhil Scholarship (The Government of Kenya)-**1995**
- PhD Scholarship (The University of Manchester)-**1996**
- Society of Chemical Industry (*SCI*) Colloquium Competition.(Financial Award)-**1998**
- Society of Chemical Industry (*SCI*) and the Royal Society of Chemistry (*RSC*) Greater Manchester Prize Colloquium Competition. (Certificate-Silver)-**1998**
- Lead applicant for the Seeding Labs equipment grant worth over USD 350,000 (grant no. SL2012-5)-**2013**

## 12. REFEREES

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