

## **CAROLINE CHELANG'AT LANG'AT THORUWA**

Department of Chemistry  
Kenyatta University  
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**CURRENT POSITION:** Associate Professor - Department Chemistry,

**CITIZENSHIP:** Kenyan

### **1. EDUCATIONAL BACKGROUND**

<b>UNIVERSITY OF LONDON:</b>	<b>1995</b>	The School of Pharmacy, Doctor of Philosophy (PhD) Faculty: Medicine. Field of Study: Pharmacognosy
<b>KENYATTA UNIVERSITY:</b>	<b>1988</b>	Master of Science (M.Sc), Field of Study: Chemistry
<b>UNIVERSITY OF NAIROBI:</b>	<b>1985</b>	Kenyatta University College Bachelor of Education (B.Ed) (Hons) Field of Study: Education, Chemistry, Mathematics
<b>MOI GIRLS HIGH SCHOOL, ELDORET</b>	<b>1980</b>	Kenya Advanced Certificate of Education "A" level Field of study: Chemistry, Mathematics, Biology
<b>LIMURU GIRLS' HIGH SCHOOL, LIMURU:</b>	<b>1978</b>	East African certificate of Education, "O" Level, Division I

## **2. EMPLOYMENT HISTORY**

### **Administration (16 years, 9 months)**

7<sup>th</sup> January, 2011 to 18<sup>th</sup> August 2015  
(4 years, 8 months)

**Director**  
**City Center Campus**  
**Kenyatta University**

**21<sup>st</sup> June 2004 to January 7<sup>th</sup> 2011**  
**(6 years, 6 months)**

**Director**  
Centre for Linkages and International Programs.  
Kenyatta University

**8<sup>th</sup> September 2003 to 20<sup>th</sup> June 2004:**  
**(9 months)**

**Director**  
Board of Undergraduate Studies  
Kenyatta University

**July 1998 to 14<sup>th</sup> May 2003 (4yrs, :**  
**(4 years, 10 months)**

**Chairperson**  
Department of Chemistry  
Kenyatta University

### **Academic -Teaching Experience ( 27 years)**

**August 2005 to date:**

**Associate Professor**  
Department of Chemistry  
Kenyatta University

**31<sup>st</sup> January, 1997 to August 2005**

Kenyatta University  
Department of Chemistry  
**Senior Lecturer**

**Position:**

**March, 1990 to January, 1997:**

Kenyatta University  
Department of Chemistry  
**Lecturer**

**Position:**

**January, 1989 to March, 1990:**

Kenyatta University  
Department of Chemistry  
**Tutorial Fellow**

**Position:**

**July, 1988 to December, 1988:**

Kenyatta University  
Department of Chemistry  
**Graduate Assistant**

**Position:**

**July, 1985 to July, 1988:**

Teachers Service Commission  
Njoro Boys High School, Njoro, Kenya  
**Graduate Teacher**

**Position:**

### **FIELD EXPERIENCE**

**January, 1994 to May 1994:**

University of London  
The School of Pharmacy  
Student Demonstrator  
Professor J.D. Phillipson

**Position:**

**Supervisor:**

**Course of Study:**

PhD

**Nature Of Field Work:**

Supervision of Undergraduate Pharmacognosy  
Laboratory Classes

### **3. OTHER COURSES**

<b>2014 Nairobi</b>	<b>Teaching Excellence – Setting Examinations and Moderation. Kenyatta University</b>
<b>2012 Mombasa</b>	Balanced Score Card and Value Chain Management Training (July).
<b>2009 Nairobi, Kenya</b>	<b>Management Training for Directors</b>
<b>2009 Nairobi, Kenya</b>	<b>Training for University Student Mentors</b>
<b>2003 Nairobi – Kenya</b>	TDR/WHO Good Laboratory Practice (GLP) Training Workshop 8-10, January, 2003. Museum of Kenya.
<b>2002 Eldoret – Kenya</b>	WIPO/KIPI Seminar on Intellectual Property Rights in Universities : Moi University 3-6 <sup>th</sup> September
<b>2002 Mombasa – Kenya</b>	10 <sup>th</sup> Senior staff Management Seminar by Kenyatta University 20 <sup>th</sup> – 26 <sup>th</sup> August. Diani Reef Hotel
<b>2001 California - USA</b>	Science Education for New Civic Engagements and Responsibilities (SENCER) Summer Institute, Santa Clara University, California 3 <sup>rd</sup> – 7 <sup>th</sup> August
<b>2001 Mombasa – Kenya</b>	9 <sup>th</sup> Senior staff workshop on leadership & management by Kenyatta University 25 <sup>th</sup> – 29 <sup>th</sup> August. Diani Reef Hotel
<b>2001 Colorado - USA</b>	7 <sup>th</sup> Annual Conference on Teaching Survival Skills and Ethics by University of Pittsburgh Snowmass, Colorado, 2 <sup>nd</sup> – 10 <sup>th</sup> June
<b>2001 Harare - Zimbabwe</b>	Professional Skills for Scientists, 10 <sup>th</sup> – 11 <sup>th</sup> March
<b>2000 Nairobi - Kenya</b>	Precision Management. African Virtual University, Kenyatta University. 14 <sup>th</sup> Sept.
<b>2000 Mombasa – Kenya</b>	8 <sup>th</sup> Senior staff workshop on leadership & management 25 <sup>th</sup> – 29 <sup>th</sup> August. Diani Reef Hotel
<b>2000 Arusah Tanzania</b>	"Leadership for Change" Workshop by Winrock International 14 <sup>th</sup> - 25 <sup>th</sup> May. Esami Centre
<b>1999 Mombasa - Kenya</b>	Senior staff workshop on leadership & management, by Kenyatta University. 25 <sup>th</sup> – 29 <sup>th</sup> August, Travellers Beach Hotel
<b>1998 Iowa – USA</b>	"International Women in Science and Engineering (IWISE) Summer Leadership Program" June -August. Iowa State University
<b>1993 London – UK</b>	The School of Pharmacy, First European Postgraduate Summer School, July 3-14. The School of Pharmacy, University of London

#### **4. TEACHING**

I teach undergraduate and postgraduate organic chemistry courses including: organic chemistry II, Heterocyclic Chemistry, Environmental Chemistry, Stereochemistry, Conformational Studies and Reaction Mechanisms, Concepts of Organic Synthesis, Petrochemical Industries. Postgraduate courses: Modern Methods in Synthetic Chemistry, Environmental Chemistry. I have also facilitated African Virtual University organic chemistry courses (transmitted from California, USA). For all courses this includes teaching, practical and tutorials.

#### **5. POST GRADUATE SUPERVISION**

##### **Successful Postgraduate Supervision:**

##### **PhD**

1. Ms. Gladwell W. Mbugua(2014) A Comparison of fibre extracted from *Agave Americana* Plant from two locations in Kenya for production of textile fibres in Kenya
2. Mrs. Maraget Ng'ang'a (2008) Investigation of Plants from Coast Province used in traditional medicine for anti-malarial compounds
3. Mr. Paul Tarus (2001) Isolation and Structure Elucidation of Bioactive Metabolites from Fungi *Trichoderma* Species and a Plant, *Tephrosia aequilata*.

##### **Masters Degrees**

1. **Muinde Esther Syombua(2015)** Effects Of Essential Oils Of *Lantana Camara* And Two *Ocimum* Species On Bean Weevil (*AcanthoscelidesObtectus*) And Their Chemical Compositions
2. **Mathu R. Davis (2015)** Composition And Activities Of Essential Oils Of *Ocimum kilimandscharicum* And *Ocimum americanum* From Different Geographical Regions Against *Sitophilus zeamais*
3. **Nyamu Samuel (2014)**. Determination of selected trace elements and beta-carotene in fresh and dried indigenous vegetables as potential food supplement from Kiambu.
4. **Mr. Ngeno (2013)** The Efficacies of Selected Plants from Western Kenya as Possible Stored Grain Protectants Against the *Sitophilu zeamais*
5. **Mr. Joel Mutai (2012)** Evaluation of Selected Botanicals and Diatomaceous Earth as Maize Protectant against *Sitophilus zeamais* Motsch.
6. **Mr. Fredrick Isigi (2012)** Toxic, antifeedant and repellency action of plant components and ashes used by communities in Western Kenya against *Sitophilus zeamais* (maize weevil).
7. **Ms. Agatha Wagutu (2009)** Investigation for biofuel properties of indigenous seed oil from Kenyan plants.
8. **Ms. Gladwell W. Mbugua (2008)** Potential of fibre extracted from *Agave americana* Plant for production of textile fibres in Kenya
9. **Ms. Joyce Njagi (2007)** Analysis of Deltamethrin and Lambda-Cyhalothrin Pesticide Residues of some Pyrethroid Insecticides in selected vegetables from Urban and Rural areas in Kenya
10. Ms. Caroline Ocharo (2005) MSc Isolation and Identification of Antibacterial and Antifungal Compounds from Selected Kenyan Medicinal Plants.

11. Ms. Catherine Malele (2005) MSc The search for Anti-malarial Compounds from Plants Used in Traditional Medicine against Malaria in Kenya.
12. Ms. Beth Ndunda (2005) MSc. Isolation and Characterization of Anti-bacterial anti-fungal and nematicidal compounds from Kenyan Plant species of the genus Croton.
13. Mr. Peter W. Mulandi (2005) MSc Isolation and identification of antibacterial, anti-fungal and nematicidal compounds from selected Kenyan Croton species used in traditional Medicine.
14. Mr. Wamakima Muregi (2001) MSc Antimalarial Activity of Some Kenyan Plants Used In Traditional Medicine.
15. Mr. G. Wanyoike (2000) - M.Sc. Antimalarial Screening and Chemical Studies of Some Antimalarial Plants Used In Traditional Medicine in Kenya.
16. Mr. Joshua Owago (2000) - M.Env.Sc Determination of Blood Lead Levels in Pregnant Women Living in Nairobi City.
17. Ms. Beatrice Omuero (1999) - M.Sc

### **ONGOING SUPERVISION**

#### **Master of Science (M. Sc.)**

1. Priscillah Nyagah (submitted) Potentials of *Telfairia pedata* for biofuel and soap production for domestic uses
2. Kaguchia Simon Muchiri Evaluation of *Ocimum kilimandscharicum* oil for post-harvest management of *Aspergillus flavus* and *Sitophilus zeamais*.
3. Mungere Susan Njeri (B.Sc.) - Essential oils of *Ocimum kilimandscharicum* and *Ocimum americanum* as potential post-harvest protectants against *Aspergillus* fungi and associated mycotoxins in maize
4. Samuel Guya Onyoyo (current) Antimalarial and Phytochemical studies of plants used in traditional medicine to treat malaria.
5. Issac Onyango (current) Phytochemical and biological investigation of Antimicrobial Compounds from Croton plants.
6. Ms. Caroline Muthee (current) A study of traditional plants for potential antifungal and antibacterial agents.
7. Donatus Njoroge (current) A study of *Ocimum Suave* and as post harvest protectants against maize weevil, *sitophilus zeamais*

### **FOURTH YEAR UNDERGRADUATE STUDENT PROJECTS**

#### **Successful Undergraduate Supervision:**

King'ori Grace Wangechi (2015) Repellence of the essential oils of *Ocimum kilimandscharicum*, *Ocimumsuave* and *Lippia ukambensis* against *Rhipicephalus evertsi* ticks.

Njoroge Kelvin Mwangi (2014) Repellence potential of essential oils extracts of *Ocimum Kilimandscharicum*, *O. suave* and *Lippia ukambensis* against *Rhipicephalus appendiculatus* tick species .

John Magak (2014) - Essential oil of *O. kilimandscharicum* as a post harvest grain protectant against the bean weevil, (*Callosobruchus maculatus* (f.)).

Ms. Sally Eteye (2009) Use of Plant Extracts as Protectants Against Maize Weevil (*Sitophilus Zeamais*).

Mr. Kimaya Joseph Olindo (2009) Use of Plants Ashes as Protectants of Maize Grain During Storage Period.

Mr. Dan Onunga (2003) Phytochemical investigation of Croton plants used in traditional medicine for novel anti fungal and anti bacterial compounds.

Mr. Symon Mukigi (2003) Investigation of bioactive compounds from a *Croton* ***Megalocarpus* plant**

Mr. Issac Onyango (2002) Antimicrobial compounds from Croton plants.

Mr. Nelson Omolo (2001) "Phytochemical Studies of the Roots of *Maytenus Heterophyla*"

Ms. Catherine Malele (2000)

Mr. Martin Thuo (1999) " Bioassay Guided Fractionation and Phytochemical Screening, of Three Kenyan Plants against the *Plasmodium falciparum*"

Ms. Caroline Ocharo (1999) "Phytochemical and Biological Studies of Leaf Extracts of *Maytenus Heterophyla*"

Ms. Luhindi Nuru (1998) Phytochemical and biological studies on an Oscmum plant.

## **6. RESEARCH PUBLICATIONS**

Catherine Malele, **Caroline Langat Thoruwa**, Anastasia N. Guantai, and Sumes C. Chhabra. A new pterocarpan from the leaves of *Abrus precatorius* L. **Journal of Medicinal Plants Research**. Vol 9(27): 749-754. July 2015.

N.S Nyamu, J. Murungi, **C.C Langat-Thoruwa**, T.F.N. Thoruwa. The Effect of Supplementing Mice Basal Diet With Solar Dried Indigenous Vegetatable Food Formulation On Growth and Immune Indicators in Kiambu, Kenya. **European International Journal of Science and Technology**. Vol 4:(3) pp13-21. March, 2015.

Margaret Mwihaki Ng'ang'a, Hidayat Hussain, Sumesh Chhabra, **Caroline Langat-Thoruwa**, Ahmed Al-Harrasi, Karsten Krohn, Ivan Robert Green. ***Eucleanal A and B: Two new naphthalene derivatives from Euclea divinorum***. Chinese Chemical Letters, 2012. 23:576 -578.

Margaret Mwihaki Ng'ang'a, Hidayat Hussain, Sumesh Chhabra, **Caroline Langat-Thoruwa**, Beatrice N. Irungu, Ahmed Al-Harrasi, Muhammad Riaz and Karsten Krohn. ***Antiplasmodial activity of compounds from Drypetes gerrardii***. Chemistry of Natural Compounds, 2012. Vol 48(2):339-340.

Margaret Mwihaki Ng'ang'a, Hidayat Hussain, Sumesh Chhabra, **Caroline Langat-Thoruwa**, Karsten Krohn, Javid Hussain, Ahmed Al-Harrasi and Ivan Robert Green. ***Eucleanal: A New Naphthalene Derivative from Euclea divinorum***. Natural Products Communications, 2012. 7(2):193-194.

Margaret Mwihaki Ng'ang'a, Hidayat Hussain, Sumesh Chhabra, **Caroline Langat-Thoruwa**, Muhammad Riaz, Karsten Krohn. ***Drypetedimer A: a new flavone dimer from Drypetes gerrardii***. Natural product communications 08/2011; 6(8):1115-6.

Wagutu A. W., Thoruwa, T. F. N., Chhabra, C. S. and Lang'at, C. T. 2010. ***Performance of a domestic cooking wick stove using fatty acid methyl esters (FAME) from oil plants in Kenya***. [Biomass and Bioenergy](#), Volume 34, Issue 8, August 2010, Pages 1250-1256

A.W. Wagutu, S.C. Chhabra, **C.L. Thoruwa**, T.F. Thoruwa, R.L.A. Mahunnah. ***Indigenous Oil Crop: As a Source for Production of Biodiesel in Kenya***. Bull. Chem. Soc. Ethiop. 2009, 23(3), 1-12.

Owago Joshua Odhiambo, Jane Murungi and **Caroline Lang'at-Thoruwa**. ***A Survey of Blood Lead Levels in Pregnant Women attending two Public Prenatal Clinics in Nairobi City, Kenya***. Journal of American Science 2009:5(3) 41-51.

Margaret Mwihaki Ng'ang'a, Sumesh Chhabra, **Caroline Langat-Thoruwa**, Hidayat Hussain and Karsten Krohn. ***Chemical constituents from the root bark of Ozoroa insignis*** **Biochemical Systematics and Ecology**, 2009. 37(2) : 116-119., Available online

Margaret Mwihaki Ng'ang'a, Sumesh Chhabra, **Caroline Langat-Thoruwa**, Hidayat Hussain and Karsten Krohn. ***Chemical constituents from the leaves of Drypetes gerrardii***. **Biochemical Systematics and Ecology**, 2008. 36 : 320 – 322., Available online

S.C. Chhabra, **C.L. Thoruwa**, G.T.Thiongo, TRA Agenga, P. Wambua, B. Ndunda and I.O. Onyango. Phytochemical and Biological Studies of the Genus *Croton* for the Development of Agrochemical and Pharmaceutical Products. **J. Kenya Chemical Society**, vol.4.no1, 2007.

Michael Kelly, Alice Ochanda, Mabel Imbuga and **Caroline Lang'at-Thoruwa (Editors)**. Workshop Report on Higher Education Science and Curriculum Reforms: African Universities responding to HIV and AIDS, 2006 . <http://www.hiv aids.nairobi-unesco.org/docs/Main%20Edited%20Version.pdf?PHPSESSID=2595367fbee8e0b0c13dd94d94606f9d>.

**Caroline Lang'at Thoruwa**. African Women Scientists: Education, Science Knowledge and Indigenous Medicine. **In African Women and Globalization: Dawn of the 21<sup>st</sup> Century.- pp 121-152**. Edited by Jepkorir Rose Chepyator-Thomson. Africa World Press. 2005.  
G.N. Wanyoike, S.C., Chhabra, C.C. Lang'at-Thoruwa, S.A. Omar. *Brine Shrimp Toxicity and Antiplasmodial Activity of Five Kenyan Medicinal Plants*. **J. of Ethnopharmacology, 2004, 90: 129-133.**

Muregi, F.W., Chhabra, S.C., Njagi, E.N., **Lang'at-Thoruwa, C.C.**, Njue, W.M., *Anti-plasmodial Activity of some Kenyan Medicinal Plant Extracts Singly and in Combination with Chloroquine*. **Phytotherapy Research, 2004, 18: 379-384.**

Paul K. Tarus, Sumesh. C. Chhabra, **Caroline C. Lang'at-Thoruwa**, and Alphonse W. Wanyonyi. *Fermentation and Antimicrobial Activities of Extracts from different species of fungus belonging to Genus, Trichoderma.. East African Journal of Health Sciences, Vol. 11, No.1-2, 2004.*

**Caroline Lang'at-Thoruwa**, Geoffrey C. Kirby, J. David Phillipson, David C. Warhurst, Robert A. Watt, and Colin W. Wright. *Enhancement of the Antiplasmodial Activity of Quassin by Transformation into a  $\gamma$ -lactone*. **J. Nat. Prod. 2003, 66 (11) : 1486-1489.**

**Caroline Lang'at-Thoruwa<sup>†</sup>**, Tong T Song<sup>‡</sup>, Jiang Hu<sup>‡</sup>, Andrean L. Simons<sup>‡</sup>, Patricia A. Murphy<sup>†\*</sup>. *A Simple Synthesis of 7,4'-Dihydroxy-6-methoxyisoflavone, Glycitein, the Third Soybean Isoflavone*. **J. Nat. Prod. 2003, 66 (1) :149-151.**

P.K. Tarus, **C.C. Lang'at-Thoruwa**, A. W. Wanyonyi and S. C. Chhabra; *Bioactive Metabolites from Trichoderma Harzianum and Trichoderma Longibrachiatum.*, **Bull. Chem. Soc. Ethiop., 2003, 17(2): 185-190.**

Muregi, F.W., Chhabra, S.C., Njagi, E.N., **Lang'at-Thoruwa, C.C.**, Njue, W.M., Orago, A.S.S., Omar S.A. and Ndiege, I.O. *In-Vitro antiplasmodial activity of Some Plants Used in Kisii, Kenya against Malaria and their Chloroquine Potentiation effects*. **Journal of Ethnopharmacology , 2003, 84 (2/3):235-239.**

**Caroline Lang'at-Thoruwa<sup>a,d</sup>**, David.Phillipson<sup>a</sup>, Pablo Solis,<sup>a</sup> Robert.Watt<sup>b</sup>, Istvan. Toth<sup>b</sup>, Geof.Kirby<sup>c</sup>, David.Warhurst. *Antimalarial Activity Against P. falciparum in vitro and Lethality Against Brine Shrimp of Semisynthetic Quassin Analogues*. Proceedings of African Women in Science and Engineering: A Vision for the 21<sup>st</sup> Century. A PanAfrica Workshop, 29<sup>th</sup> November - 4<sup>th</sup> December, 1999, Nairobi, Kenya. 2003: pp432-435.

Tarus, P.K., Machocho, A., **Lang'at-Thoruwa, C.C.** and Chhabra, S.C. 2002. Flavanoids from *Tephrosia aequilata*. **Phytochemistry 2002, 60: 375-379.**

**Caroline C. Lang'at**, Robert A. Watt, Istvan Toth and J. David Phillipson, (1998) "*Synthetic Bicyclic Analogues of Quassinoids*". **Tetrahedron 54:6857-6866.**



**Caroline C. Lang'at**, Robert A. Watt, Istvan Toth and J. David Phillipson, (1998). "Semisynthetic Derivatives of Quassin". **Tetrahedron** **54:6841-6856**.

**C.C. Lang'at**, R.A. Watt, J.D. Phillipson, G.C. Kirby, D.C. Warhurst, (1996). "The *In Vitro* Antimalarial Activities of Hydroxyquassin Derivatives". Proceedings of The Kenya Chemical Society Conference, September 2-4, 1996, Moi University, Eldoret, Kenya.

**Lang'at C.C.**, (1995) "Synthesis and Biological Activities of Quassinoid Analogues", Ph.D. Thesis. The School of Pharmacy, University of London.

Solis, P.N., **Lang'at, C.C.** Gupta, M.P., Kirby., G.C. Warhurst, D.C., Phillipson, J.D., (1995). "Bioactive compounds from *Psychotria Camponotans*". **Plant Medica**, **61:62-65**.

**Lang'at C.C.**, Watt R.A., Phillipson, J.D., Kirby, G.C., Warhurst, D.C. (1994). "In Vitro Studies on the Mode of Action of Quassinoid Analogues Against Chloroquine Resistant *Plasmodium falciparum*". **J. Pharm. Pharmac.** **46(Suppl.2): 1062**.

Solis, P.N., **Lang'at, C.C.**, Gupta, M.P., Kirby, G.C., Warhurst, D.C., Phillipson, J.D., (1994). "Cephaelis Species, Diversity of Bioactive and Novel Compounds". **J. Pharm. Pharmac.** **46 (Suppl.2): 1063**.

**Lang'at, C.C.**, (1993). "The Activity of Quassinoid Analogue Against Chloroquine Resistant *Plasmodium falciparum In Vitro*". The Square Journal, The School of Pharmacy, University of London.

**Lang'at, C.C.**, Allen, D., Solis, P., Phillipson, J.D., Watt, R.A., Toth, I., Kirby, G.C., Warhurst, D.C., (1993). "The activity of Quassinoid Analogues Against Chloroquine Resistant *Plasmodium falciparum In Vitro*." Proceedings of the 2<sup>nd</sup> Annual Conference of the U.K. Association of Pharmaceutical Scientists. April, 1993.

Allen, D., Kirby, G.C., **Lang'at, C.C.**, Phillipson, J.D., Warhurst, D.C., Wright, C.W., (1992). "A Simple Method for Testing Combinations of Drugs In Vitro". **Trans. Roy. Soc. of Trop. Med. And Hyg.** **86:334**.

**Lang'at, C.C.**, (1988). "The Use of Crown Ethers in the Von Richter Reaction". M.Sc. Thesis. Kenyatta University, Nairobi, Kenya.

## **7. PRESENTATION OF PAPERS AT ACADEMIC AND PROFESSIONAL CONFERENCES**

Enhancing Girls Participation and Performance in Science, Mathematics and Information Technology at Primary level of Education in Kenya: Intervention Strategies. INWES Regional Conference in Munyonyo, Uganda **21 – 23<sup>rd</sup> October, 2015**. Olive Mugenda and Caroline Thoruwa

Enhancing Girls Participation and Performance in Science, Mathematics and Information Technology at Primary level of Education in Kenya: Intervention Strategies. ICWES 16 Conference in Los Angeles, California. **21 – 30<sup>th</sup> October, 2014**. Olive Mugenda and Caroline Thoruwa

The Potential of fibre extracted from *Agave Americana* Plant for production of textile fibres in Kenya. Gladwel Mbugua, Dina Tumuti, Caroline Thoruwa, E. Nguku. INWES Regional Conference, Kenya School of Monetary Studies. **November 2013**.

1. Mutai Joel, **Caroline Langat Thoruwa**, Sumes Chhabra and Thomas Thoruwa. Evaluation of Botanicals as Maize Protectant against Maize Weevil, *Sitophilus zeamais* motsch. Proceedings of the First International Conference on Pesticidal Plants Volume 1 (August 2013) pp96-98.
2. Ngeno K, Livingstone, Sumesh Chhabra and **Caroline Langat Thoruwa**. Phytochemical Studies of Some Indigenous Plants as Grain Protectants against *Sitophilus zeamais* (maize weevil). Proceedings of the First International Conference on Pesticidal Plants. Volume 1 (August 2013) pp116 – 121.
3. The Potential of fibre extracted from *Agave Americana* Plant for production of textile fibres in Kenya. Gladwel Mbugua, Dina Tumuti, Caroline Thoruwa, E. Nguku. INWES Regional Conference, Kenya School of Monetary Studies. **November 2013**.
4. Margaret Mwihaki Ng'ang'a<sup>1</sup>, . Hidayat Hussain<sup>2\*</sup>, Sumesh Chhabra<sup>1\*</sup>, Caroline Langat-Thoruwa<sup>1</sup>, Beatrice N. Irungu<sup>3</sup>, Karsten Krohn<sup>2\*</sup>. '*Antiplasmodial Compounds from *Drypetes gerrardii**: A Decade into the 21<sup>st</sup> Century: The Contribution of African Women Scientists and Engineers. 18<sup>th</sup> – 20<sup>th</sup> August 2010 Nairobi, Kenya. August 2010.
5. Potential of Fatty Acid Methyl Esters (fame) fuels for domestic cooking applications and transport diesel fuel extender in kenya. Agatha W. Wagutu<sup>1</sup>, Sumesh C. Chhabra<sup>1</sup>, Caroline L. Thoruwa<sup>1</sup>, Thomas F.N. Thoruwa<sup>2</sup> and R.L.A. Mahunnah<sup>3</sup>. A Decade into the 21<sup>st</sup> Century: The Contribution of African Women Scientists and Engineers. Conference Proceedings. 18<sup>th</sup> – 20<sup>th</sup> August 2010 Nairobi, Kenya. August 2010. Kenya School of Monetary Studies Nairobi, Kenya
6. Wagutu, A.O., Chhabra, SC., Thoruwa, C., Mahunnah, R.L.A, Thoruwa, F.N.2010. *Jatropha curcas* as a source for the production of biodiesel in Kenya. In:Aspects of African Biodiversity. J.O. Midiwo & Clough (Eds.). Proceedings of the Pan African Chemistry Network Conference on Biodiversity. 10-12 September 2008. The Royal Society of Chemists Publishing, Cambridge, pp 152-159.
7. Muthee, C. C., Monda, E.O., Thoruwa, TN., Gathumbi, Thourwa, CC., Chhabra, SC. Mycotoxins in Maize in Kuria, Makueni, and Transzoia Districts in Kenya. The first Kenyatta University Research Conference: Moving research to Wealth Creation. 28-30<sup>th</sup> April, 2009.
8. Ngeno, C.L Thoruwa, Mahunnah, TN. Thoruwa, S.C. Chhabra. The efficacies of selected plants from Western Kenya as possible Stored Grain Protectants Against the *Sitophilus zeamais*. The first Kenyatta University Research Conference: Moving research to Wealth Creation. 28-30<sup>th</sup> April, 2009.
9. T. N. Thoruwa, C.Langat, Chhabra, S.C., Mahunnah, R. The performance of a Solar Photovoltaic Powered System for Grain Drying in Lake Victoria Basin. The first Kenyatta University Research Conference: Moving research to Wealth Creation. 28-30<sup>th</sup> April, 2009.
10. African Universities initiatives on HIV & AIDS and Curriculum Reforms: Uganda In-Country Training Workshop, Speke Resort, Munyonyo, 25- 27<sup>th</sup> November, 2009.
11. East African Universities initiatives on HIV & AIDS and Curriculum Reforms: In-Country Training, Kenya Institute of Education, 8<sup>th</sup> – 10 May, 2007.

[Universities Response to HIV & AIDS and Curriculum Reforms](#): Faculty of Engineering Jomo Kenyatta University of Agriculture and Technology, Kenya, 25<sup>th</sup> -26<sup>th</sup> April 2007

African Universities Response to HIV & AIDS: Kenyatta University, Utali Hotel, 4<sup>th</sup> April 2007  
East African Universities initiatives on HIV & AIDS and Curriculum Reforms: In-Country  
Training University of Botswana University of Botswana, Gaborone, Botswana, 17<sup>th</sup> - 19<sup>th</sup> April  
2007 East African Universities initiatives on HIV & AIDS and Curriculum Reforms: In-Country  
Training Kwame Nkrumah University of Science and Technology Kumasi, Ghana  
6-8<sup>th</sup> December 2006

Antimalarial Drug Combination Studies. August 2005. Caroline Langat Thoruwa. Kenyatta  
University. Kenya Chemical Society Conference.

Antimalarial Drug Combination Studies. 5<sup>th</sup> –8<sup>th</sup> April 2005. Caroline Langat Thoruwa. Chiromo  
Campus. University of Nairobi. NAPRECA Summer School.

Critical Capacities for African Women Scientists and Engineers. Mabel Imbuga and Caroline  
Lang'at Thoruwa. 13<sup>th</sup> International Conference of Women Engineers and Scientists. 26-29<sup>th</sup>  
August, 2005. Ewha Womans University, Seoul, Korea.

**“Women in Science and Technology in Africa in the 21<sup>st</sup> Century” . Caroline Lang’at-  
Thoruwa.** Physics Education in Kenya: Trends and Challenges. Conference for the Kenya National  
Association of Physicists. held at Kenyatta University. 13-14 September 2001.

The State of the Art Conference on African Women in Global Society, March 20<sup>th</sup> - 23<sup>rd</sup> 2000  
University of Georgia, Atlanta, USA. **Herbal Remedies: Challenges of the African Woman  
Scientist in the 21<sup>st</sup> Century**". Caroline Lang’at

Ethnobotanical and antimalarial Studies of Plants used in the Highlands of Kenya. I.O Ndiege,  
A.S.S. Orago, **C.C. Lang’at-Thoruwa**, W.M. Njue, E.N. Njagi, S.C. Chhabra. The Vice  
Chancellor’s Research Grant Awardees 1998-2000 Seminar. 27<sup>th</sup> November, 2001. Kenyatta  
University, Nairobi, Kenya.

*In Vitro* Antiplasmodial Activity of Some Plants used in Kisii, Kenya Against Malaria and Their  
Chloroquine Potentiation Effects. W. M. Wamakima, S.C. Chhabra, E.N.M. Njagi, **C.C. Lang’at-  
Thoruwa**, W.M. Njue, A.S.S. Orago, S.A. Omar and I. O Ndiege. The Vice Chancellor’s Research  
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9<sup>th</sup> Napreca International Symposium on Natural products: Unraveling of the Socio-economic  
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**Lang’at-Thoruwa, C.C.**, and Machocho, A.K. The 9<sup>th</sup> International Symposium of  
Natural Products Research Network for Eastern and Central Africa (NAPRECA) at  
KICC, Nairobi, Kenya. August 2001.

NAPRECA-KENYA One day Seminar. Kenyatta University, Nairobi Kenya. Friday, 26 January,  
2001.

Phytochemical Studies and Bioactivity of Traditional Antimalarial Herbs from Kisii.  
Malele, C. A., **Lang’at-Thoruwa, C.C.**, Ndiege, I. O., Chhabra, S.C., Njue, W.M.  
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The first International meeting of Research Initiative on Traditional Antimalaria Methods (RITAM). Tumaini University of Health Sciences, Moshi, Tanzania, 8-11 December, 1999. Sumesh C. Chhabra and **Caroline C. Lang'at**. "**Kenyan and Tanzanian Medicines for the Treatment of Malaria**".

African Women in Science and Engineering: A Vision for the 21<sup>st</sup> Century. A Pan Africa Workshop, 29<sup>th</sup> November - 4<sup>th</sup> December, 1999, Nairobi, Kenya. **Lang'at, C.C.** "**Semisynthetic Quassin Analogues: Their In-vitro antimalarial and Cytotoxic Activities**".

Seventh NAPRECA Symposium on Natural Products. 1997, Dar es Salaam, Tanzania. **Quassinoid Analogue: In Vitro Studies on the Mechanism of Action Against Plasmodium falciparum**" **C.C. Lang'at**, R.A. Watt, J.D. Phillipson, G.C. Kirby, D.C. Warhurst.

Department of Chemistry Kenyatta University Seminar Quassinoid Analogues. In **In Vitro Studies on the Mechanism of Action Against Plasmodium falciparum**" **C.C. Lang'at**

Cloning, Identification and Characterisation of Cydophilin-Binding Proteins Genes of African Trypanosomes by Use of the Yeast Two-Hybrid System. Omusiro Beatrice Ondondo, Roger Pelle, Murphy, **Caroline Lang'at**, Peter Muchiri.

The 3<sup>rd</sup> Kenya Chemical Society International Conference, Jomo Kenyatta University of Agriculture & Technology, Nairobi Kenya 16<sup>th</sup> - 20<sup>th</sup> August, 1999. "**Antimalarial and Phytochemical Studies of Five Plants Used for the Treatment of Malaria in Kenya**". Wanyoike, G.N., **Lang'at, C.C.**, Chhabra, S.C.

The 3<sup>rd</sup> Kenya Chemical Society International Conference, Jomo Kenyatta University of Agriculture & Technology, Nairobi Kenya 16<sup>th</sup> - 20<sup>th</sup> August, 1999. "**Fermentation and Antimicrobial Activities of Extracts from Different Species of Fungus, Trichoderma**". Paul Tarus, S.C. Chhabra, H. Anke, **C.C. Lang'at**.

The 3<sup>rd</sup> Kenya Chemical Society International Conference, Jomo Kenyatta University of Agriculture & Technology, Nairobi Kenya 16<sup>th</sup> - 20<sup>th</sup> August, 1999.

**"*Maytenus heterophylla*: Phytochemical and Biological Studies of the Leaf Extracts"**. C.M. Ocharo, C.C. Lang'at, S.C. Chhabra, G. Wanyoike, H. Okech, K. Machocho.

Antiplasmodial and Phytochemical Screening of three Kenyan medicinal plants. The 3<sup>rd</sup> Kenya Chemical society Thuo, M., Chhabra, S.C., and Langa't, C.C. The Kenya Chemical Society Conference. September 2-4, 1996, Moi University, Eldoret, Kenya **"The *In Vitro* Antimalarial Activities of Hydroxyquassin Derivatives"**. C.C. Lang'at, R.A. Watt, J.D. Phillipson, G.C. Kirby, D.C. Warhurst, (1996).

Dept of Chemistry, Kenyatta University Seminar. New Antimalarial Drugs: Synthesis of Quassinoid Analogue 26<sup>th</sup> July 1995. **Caroline c. Lang'at**.

Sixth NAPRECA Symposium on Natural Products. September 10-15, 1995, Kampala, Uganda. **"The *In Vitro* Antimalarial Activities of Quassin Analogues"**. C.C. Lang'at, R.A. Watt, J.D. Phillipson, G.C. Kirby, D.C. Warhurst, (1996).

British Pharmaceutical Conference, September 16-19, 1994. 131<sup>st</sup> Meeting, London, U.K. **"*In Vitro* Studies on the mode of Action of Quassinoid Analogues Against Chloroquine Resistant *Plasmodium falciparum*"**. C.C. Lang'at, R.A. Watt, J.D. Phillipson, G.C. Kirby, D.C. Warhurst, 16<sup>th</sup> - 20<sup>th</sup> August, (1994).

Postgraduate Seminars, The School of Pharmacy, University of London, U.K. March, **"The Activity of Quassinoid Analogues Against Chloroquine Resistant *Plasmodium falciparum In Vitro*"**. **Caroline C. Lang'at**.

The 2<sup>nd</sup> Annual Conference of the U.K. Association of Pharmaceutical Scientist. Exeter, U.K. April, 1993. **"The Activity of Quassinoid Analogues Against Chloroquine Resistant *Plasmodium falciparum in Vitro*"**. C.C. Lang'at, R.A. Watt, J.D. Phillipson, G.C. Kirby, D.C. Warhurst,

Lang'at, C.C., Solis, P.N., Watt, R.A., Phillipson, J.D., Kirby, G.C., Warhurst, D.C., (1993). "Quassinoid Analogues: Their *In Vitro* Antimalarial and Cytotoxic Activities". International Symposium of the Phytochemical Society of Europe. Lausanne, Switzerland, 29 Sept. - 1 Oct..

## **2. National Committees (For the Country)**

**Physical Sciences Specialist Committee** (PSSC) – member (2002-2005) for the National Council for Science and Technology (NCST) – Appointed 15<sup>th</sup> October, 2002.

**National Gender Advisory Board** – member (2002-2005) (Min. of Education). Appointed Dec. 2002.

## **7. MEMBERSHIPS / Editorial Committee Member**

- International Network of Women Scientists and Engineers (INWES) – Board Member 2014 to date
- African Women in Science and Engineering (AWSE) - Chairperson (2010 – to date)
- The Kenya Chemical Society (KCS)
- American Chemical Society (ACS) - 2014
- African Women in Science and Engineering (AWSE) - Secretary (1999- to 2010).
- Natural Products Research in East and Central Africa (NAPRECA)

- Secretary of NAPRECA – Kenya (2005 –to 2008)
- The Kenya Chemical Society (member of Governing Council 2002 -2012)
- The Kenya Chemical Society (Member of Editorial Committee (1999 - 2005)
- East African Journal of Science (Member of Editorial Board (1998-2002)
- -Member of Editorial committee for Proceedings of NAPRECA Symposium of 2001 held in Nairobi
- Research Initiative on Traditional Antimalarial Methods (RITAM) 2001 -2005
- Association of African Women in Research and Development (AAWORD)

## 8. AWARDS/SCHOLARSHIP

Travel and Conference Grant	INWES Conference, Los Angeles, October, 2014
Travel Grant	INWES Board Meeting, Germany 2013
<b>Research Project (1998-2001)</b>	Kenyatta University Vice Chancellor’s Research Award (Ksh. 500,000):” Exploration of some Kenyan Medicinal Plants for Novel Anti-malarial Drugs”.
<b><u>Fellowship (June-August, 1998):</u></b>	International Women In Science and Engineering (IWISE): Summer Leadership Program. : Iowa State University, USA
<b><u>PhD Scholarship (1990):</u></b>	Commonwealth Scholarship Commission in the UK.
<b><u>Masters Degree Scholarship (1985):</u></b>	Kenyatta University MSc. Scholarship.

## 9. Awards / Successful and Ongoing Research Projects

- “Downstream promotion of Ocimum based products for protecting stored maize against post-harvest pests”. National Council for Science and Technology. (2011 to date).
- 
- University- Industry Link Case Study between Kenyatta University and University of Ottawa. Funded by Association of African Universities (AAU and AUCC). 2011 -2013
- Management of Grain spoilage and Aflatoxin contamination using Solar Drying, Grain storage and Pesticide technologies in lake Victoria Basin. **Lake Victoria Baisn Initiative Award. 2004 to date.**
- **Research Project 2001-2003 Agricultural Research Fund (ARF) Grant (Ksh. 2.5m)**, Kenya Agriculture Research Institute, Ministry of Agriculture, Government of Kenya and World Bank. ARF/CSWP/1002009/1: “Phytochemical and biological Studies of the Genus Croton for the Development of Agrochemical and Pharmaceutical Products”. In this project the research work of **three** MSc. Students ( Ndunda, Onyango and Mulandi –see above) and three undergraduate 4<sup>th</sup> year students (**Mukigi, Onyango and Onunga**).

**Investigation of Indigenous Kenyan plants as antimalarial agents (2005 to date)**

Exploration of some Kenyan Medicinal Plants for Novel Anti-malarial Drugs –**Vice Chancellor’s Research Award (1999-2002)**. Under this project, one MSc student Muregi (2001), successfully supervised and published **two** papers in international journals.

Research and Development of Botanical Anti-malarial Drugs in Kenya – **WHO/MIM** sponsored project (2000-to 2006). In this project, supervision of **Two** MSc. Students ( C. Malele and S. Guya).

### **10. Science Education Projects** ( Involved in)

1.Higher Education and Science: African Universities Responding to HIV/AIDS sponsored by UNESCO, CHE, ALO, AWSE, AAAS, AACU, IWISE, CGIAR (**2001 –to date**) This project is encouraging universities in Africa (Kenya, Ghana, Rwanda, Botswana and Uganda) to integrate HIV/AIDS in their curriculum. KU is a participating institution on curriculum reforms on HIV /AIDS.

2. Enhancing the Participation and Performance of Female Students in Science and Mathematics at *Primary level* of Education – Sponsored by Rockefeller Foundation and Kenyatta University (**1999- 2006**).

3. Enhancing the Participation and Performance of Female Students in Science and Mathematics at *University level* of Education – Sponsored , Ford Foundation, and Kenyatta University (**1999-date**).

3. The Role Model Project – Sponsored by IWISE (Iowa State University) and WINROCK (Kenya) (**1999-2001**)

4. The Waalimu Project – Sponsored by IWISE – Iowa State University (**1999-2001**)

### **11. RESEARCH INTERESTS**

My research interests lies in the area of Organic chemistry, Natural Products Chemistry, Organic Synthesis and Environmental Chemistry. I am interested in the potential of synthetic and natural products for herbal medicine, pharmaceuticals, insecticides, cosmetics, etc. Specifically, I am currently looking into some of the local Kenyan plants which are used to treat malaria and microbial diseases and am interested in isolating and identifying the active constituents which may serve as potential lead compounds for drug development. I am also looking at the potential of plants for the management of post-harvest pests in grains such as maize and beans. My interest in chemical synthesis of natural products includes quassinoid analogues, isoflavanoids which have been tested for bioactivity such as antimalarial, cytotoxicity and insecticidal properties.

In the area of science education, I am involved in projects designed to improve the educational and social status of women and girls. At KU, I have been involved in an intervention program designed to encourage female students to pursue science and technology courses at the primary and university level such as KUFESST and GEMSIT projects. I am also a founder member and

Chairperson of the international association, African Women in Science and Engineering (AWSE), an organization which was launched in December 1999 in Nairobi during a Pan African workshop at ICRAF. The organization is concerned with increasing and empowering African women scientists and engineers professionally and encouraging young girls to pursue science courses and careers. We recently implemented the UNESCO funded project: Higher Education and Curricular reforms: African Universities Responding to HIV/AIDS. This project catalyses universities in Kenya, Ghana, Rwanda, Uganda and Botswana to mainstream HIV/AIDS related courses and issues in the curriculum.

## **12. REFEREES**

### **1. Prof. John Okumu**

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Kenyatta University  
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**2. Prof. S.C. Chhabra**  
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