

CURRICULUM VITAE – JUNE 2016

NAME Sanika Samuel CHIRWA

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EDUCATION

1968-72: **High School Diploma.** Munali National School. Lusaka, Zambia.
1973-75: **Pre-Medicine.** Faculty of Natural Sciences, University of Zambia, Lusaka, Zambia.
Transferred to University of British Columbia, Vancouver (Canada) on Canadian International Development Aid scholarship.
1977-81: **BSc. in Pharmacy.** Faculty of Pharmaceutical Sciences, University of British Columbia. Vancouver, Canada.
1983-85: **MD/MSc. Pharmacology and Therapeutics.** Faculty of Medicine, University of British Columbia. Vancouver, Canada.
1986-88: **PhD. Pharmacology and Therapeutics.** Faculty of Medicine, University of British Columbia. Vancouver, Canada.
1988-92: **Postdoctoral Research Scholar.** (Sleep; Aging). Brain Research Institute, University of California. Los Angeles, USA

PROFESSIONAL APPOINTMENTS

1981: **Pharmacist.** PharmaSave Drugs. Vancouver, Canada.
1984-1985: **Clinical Research Assistant.** University Hospital, University of British Columbia. Vancouver, Canada.
1985-1986: **Lecturer of Medical Pharmacology.** Department of Physiological Sciences, School of Medicine, University of Zambia. Lusaka, Zambia.
1986-1988: **Teaching Assistant.** Department of Pharmacology and Therapeutics, University of British Columbia. Vancouver, Canada.
1992-1995: **Assistant Professor.** Department of Physiology, Meharry Medical College. Nashville, USA.
1995-2001: **Assistant Professor.** Department of Anatomy and Physiology, Meharry Medical College. Nashville, USA.
1999-2002: **Adjunct Professor.** Department of Physician Assistants, Trevecca Nazarene University. Nashville, USA.

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- 2000-2003: **Assistant Professor (Visiting)** – Primary Appointment, Department of Pharmacology, School of Medicine, Vanderbilt University. Nashville, USA.
- 2000-2003: **Assistant Professor** – Secondary Appointment, Department of Anatomy & Physiology (formerly Department of Physiology), Meharry Medical College. Nashville, USA.
- 2003-2004: **Associate Professor – Primary Appointment.** Department of Anatomy and Physiology, Meharry Medical College. Nashville, USA.
- 2003-2004: **Assistant Professor – Secondary Appointment.** Department of Pharmacology, School of Medicine, Vanderbilt University. Nashville, USA.
- 2003-2005: **Associate Professor.** Department of Anatomy and Physiology, Meharry Medical College. Nashville, USA.
- 2004-on: **Adjunct Associate Professor.** Department of Pharmacology, School of Medicine, Vanderbilt University. Nashville, USA.
- 2005-2007: **Associate Professor.** Division of Neurobiology & Neurotoxicology in newly established Department of Biomedical Sciences, Meharry Medical College. Nashville, USA.
- 2005-2007: **Director of Graduate Studies (Neuroscience).** Division of Neurobiology and Neurotoxicology, Department of Biomedical Sciences, Meharry Medical College. Nashville, USA.
- 2007-2009: **Associate Professor.** Department of Neurobiology and Neurotoxicology, (formerly Division of the now disbanded Department of Biomedical Sciences), Meharry Medical College. Nashville, USA.
- 2009: **Associate Professor.** Department of Neuroscience and Pharmacology, (formerly Department of Neurobiology and Neurotoxicology), Meharry Medical College. Nashville, USA.
- 2009-on: **Professor.** Department of Neuroscience and Pharmacology, (formerly Department of Neurobiology and Neurotoxicology), Meharry Medical College. Nashville, USA.
- 2011-on: **Adjunct Professor.** Department of Pharmacology, School of Medicine, Vanderbilt University. Nashville, USA.

HONORS AND AWARDS

- 1993: **ACT-SO Certificate of Appreciation,** National Association for the Advancement of Colored People. Nashville, USA.
- 1995: **Pre-Alumni Award for Excellence in Service.** Meharry Medical College.
- 1996: **Pre-Alumni Award for Excellence in Service.** Meharry Medical College.
- 1996: **Faculty Senate Outstanding Service Award.** Meharry Medical College.
- 1996: **Finalist, Exemplary Teachers Award.** Meharry Medical College.
- 1998: **Finalist, Exemplary Teachers Award.** Meharry Medical College.
- 1999: **Didactic Professor of the Year.** Physician Assistants Program, Trevecca Nazarene University. Nashville, USA.
- 2000: **Award for Outstanding Service.** Council of Historically Black Graduate Schools, USA.
- 2000: **Finalist, Exemplary Teachers Award.** Meharry Medical College.
- 2001: **Outstanding Professor Award.** Class of 2001, School of Medicine, Meharry Medical College. Nashville, USA.
- 2007: **Distinguished Faculty in Research Training.** School of Graduate Studies and Research, Meharry Medical College. Nashville, USA.
- 2012: **PhD & MD/PhD Program Faculty Member of the Year.** Pre-Alumni Association. Meharry Medical College. Nashville, USA.

SCHOLARSHIPS

- 1973-1976: **University Scholarship.** Zambia Consolidated Copper Mines, Zambia.

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- 1976-1981: **International Student Scholarship.** Canadian International Development Aid, Canada.
1984-1985: **Staff Development Fellow.** University of Zambia. Lusaka, Zambia.
1986: **Graduate Student Research.** Medical Research Council. Canada.
1988: **CSH Course Bursary.** Cold Spring Harbor. New York, USA.
1986: **Pre-Doctoral Fellowship (Declined).** Beit Trust. United Kingdom.
1986-1988: **Pre-Doctoral Scholarship.** World Health Organization. United Nations.

SELECTED TRAVEL GRANTS

- 1984: **International Union of Pharmacologists (IUPHAR) Young Scholars Travel Grant.** IUPHAR World Congress. London, United Kingdom.
1986: **Winthrop Canada Travel Grant.** Western Pharmacologists Conference. Hawaii, USA.
1986: **Junior Scholars Travel Grant.** Western Pharmacologists Conference. Hawaii, USA.
1987: **University of British Columbia Travel Grant.** Federation of American Societies for Experimental Biology. Winnipeg, Canada.
1987: **World Health Organization Travel Grant.** International Brain Research Organization World Congress. Budapest, Hungary.

PROFESSIONAL SOCIETIES

- 1981: **Registered Member.** Pharmaceutical Examination Board of Canada.
1981: **Registered Member.** Zambia Medical Council.
1984-on: **Member.** Society for Neuroscience.
1987-on: **Member.** International Brain Research Organization.
1989-1992: **Member.** Sleep Research Society.
2000-2004: **Member.** Serotonin Club.
2003-on: **Member.** Middle Tennessee Chapter of the Society for Neuroscience.
2005-2009: **President.** Middle Tennessee Chapter of the Society for Neuroscience.
2008-on: **Member.** American Society for Pharmacology and Experimental Therapeutics.

RESEARCH EMPHASIS AREAS

Basic Research: Studies have focused on understanding the mechanisms undergirding episodic memory formation (encoding, recall and consolidation) and how these are altered by psychostimulants (e.g. methamphetamine) and neurologic diseases (e.g. epilepsy). New project is focusing on determining in the guinea pig model the mechanisms and long-term consequences of prenatal exposure to methamphetamine on neurocognitive functions and behaviors in offspring across the life span. Experiments in lab routinely employ behavioral tests for assessing motor and higher cognitive functions, electrophysiology techniques that span the gamut, pharmacological manipulations, and molecular assays particularly of mRNA and protein expression.

Clinical Research: Past studies include a randomized double-blind clinical trial that validated the use of bupivacaine for analgesia following arthroscopic knee surgery. Furthermore, recently completed a randomized clinical trial in Zambia that demonstrated that lipid-based nutrient supplements containing vitamins and minerals successfully reduced electrolyte loss in HIV-infected patients. New studies include spearheading the development of a novel high-throughput multidrug mass spectrometry assay to simultaneously quantify >50 drugs widely prescribed to HIV-infected adults. This platform will be used to evaluate and discover how unexpected but clinically significant drug-drug interactions affect many HIV-infected patients as a consequence of polypharmacy for HIV and comorbidities. A separate project is investigating causal links between sleep-related chronic stress and a) adverse pregnancy outcomes (e.g. gestational diabetes, pre-eclampsia, perinatal hemorrhage, preterm birth, etc).

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SUMMARY OF RESEARCH SKILLS

Proficient in a) Electrophysiology: e.g. extracellular and intracellular recordings in vivo and in vitro, patch clamp, b) Pharmacological Manipulations: e.g. oral and parenteral drug assessments, acute and chronic drug infusion methods, iontophoresis techniques, clinical trials/design, c) Molecular Techniques: e.g. Northern, Western, RT-PCR, antisense knock downs, mRNA hybridization, d) Brain Histological Methods: e.g. intrasomatic staining, immunocytochemistry, Nissl tissue stains, e) Behavior Assays: novel object recognition tests, spatial learning, home cage phenotyping f). Computational Analyses: utilize several data processing and analysis software suites including MATLAB, pCLAMP 10, EthoVision XT 8, Origin 8.5, SciWorks 8, ActionW 2.6 and GraphPad Prism 6.

RESEARCH GRANTS – NEW AND PENDING

P30 AI110527 supplement: (Mallal, S: Program Director); CHIRWA S, Principal Investigator on project titled “**Unexpected Drug-Drug Interactions During Polypharmacy for HIV & Comorbidities**”. Currently under administrative review with prospective start date of July 2016. Direct Cost: \$100,000.

R01 DA040479-01: CHIRWA S, Principal Investigator on project titled “**Prenatal Methamphetamine Exposure and Neurocognitive Outcomes in Offspring**”. Undergoing A0 revision for resubmission in October 2016. Direct Cost: \$1,250,000.

R01 HD084184-01: CHIRWA S, Principal Investigator on project titled “**Sleep Disturbance and Adverse Pregnancy Outcomes**”. Undergoing A1 revision for resubmission in October 2016. Direct Cost: \$1,250,000.

R21 NS094042-01: CHIRWA S, Principal Investigator on project titled “**Strengthening Control of Pediatric Epilepsy (SCOPE) in Zambia**”. Undergoing A1 revision for resubmission in December 2016. Direct Cost: \$250,000.

RESEARCH GRANTS – COMPLETED

R24 DA021471: CHIRWA S, Principal Investigator on project titled “**In utero exposure to methamphetamine: risk and adverse outcomes in progeny**”. [Rucker H, Prog. Director]. Funded by NIH/NIDA: Methamphetamine Drug Addiction Research Program. Amount Funded in current Fiscal Year, \$76,450. Period 2008–2014.

U54 RR070155: CHIRWA S, Principal Investigator on pilot project titled “**Sleep Quality and Adverse Pregnancy Outcomes**”. [Adunyah S, Interim Program Director]. Funded by NIH/NICHD: Meharri Translational Research Center (MeTRC). Amount funded \$100,000; Period 2010 – 2014.

R24 MH57067: CHIRWA S, Principal Investigator on a project titled “**Neuromolecular Biology of Synaptic Plasticity in Hippocampus in vivo**”. [Townsel JG, Program Director]. Funded by NIH/NIMH. Project Period: 2001–2008.

R56 ES014156: CHIRWA S. Co-Investigator on project titled “**Mechanisms of B(a)P-Induced Neurotoxicity**”. [Hood D, Principal Investigator]. Funded by NIH/NIEHS. Project period: 2010–2011.

R37 MH 34001 Supplement: CHIRWA S, Principal Investigator on project titled “**Characterization of Central Serotonin Receptors**”. Sanders-Bush E, Sponsor and Principal Investigator on parent grant]. Funded by NIH/NIMH, Period: 2000–2003.

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USAID Grant Award: CHIRWA S, Principal Investigator on project titled “**African Sleeping Sickness: Methods for Screening Neurotoxic Effects of Trypanocides**”. Funded by the United States Agency for International Development. Project Period: 1995–1996.

INSTITUTIONAL RESEARCH AND TRAINING GRANTS

T32 NS061201: CHIRWA S, Co-Director. A Vanderbilt – Meharry training grant titled “**Alliance for Research Training in Neuroscience**”. [Wallace M, Program Director – Vanderbilt]. Funded by NIMH and NINDS. Period: 2002–2011.

R24 DA021471 Diversity Training Supplement: CHIRWA S, Principal Investigator on project titled “**DIDARP Student Training Supplement – LEE K-N**”. [Rucker H, Prog. Director]. Funded by NIH/NIDA. Period 2011–2013.

C06 RR022072: CHIRWA S, Core Neuroscience Faculty. Titled “**Extramural Research Facilities Construction: Neuroscience**.” [Lima MF, Program Director]. Funded by NIH/NCRR, Project Period: 2005–2010.

R25 MH063306: CHIRWA S, Preceptor & Member on Internal Advisory Committee. “**Neuroscience Training: Meharry and Vanderbilt Alliance**”. [Townsel JG, Program Director; Sanders-Bush E, Co-Director]. Funded by NIH/NIMH, Period: 2001–2005

T32 MH019843: CHIRWA S, Preceptor. “**Neuroscience Training Program**”. [Townsel JG, Program Director]. Funded by NIH/NIMH, Project Period: 1993 – 2004.

T37 TW000043: CHIRWA S, Preceptor and Country Coordinator – Zambia. “**Meharry International Research and Training Program**”. [Hill G, Program Director]. Funded by NIH/Fogarty International Center, Project Period: 1993–1998.

MISCELLANEOUS GRANTS

World AIDS Foundation Conference Grant. CHIRWA S, Co-Director. “**HIV/AIDS Education in Zambia Workshop**”. [Sukwa T, Program Director – Zambia]. Funded by World AIDS Federation (Switzerland), 1996.

PFIZER Student Scholarships: CHIRWA S, Faculty Sponsor and Mentor. **Pfizer Scholars Program** Awarded to medical students, Kevin DENNIS, Meecca WALKER and TaTanasha SMITH. Funded by PFIZER Pharmaceuticals. Periods: 1996 and 2002.

SELECTED PRESENTATIONS

2000: **Keynote Speaker**. *Developing Strategies to Expand Graduate Educational Opportunities*. 30th Annual Winter Meeting. Council of Historically Black Graduate Schools. Nashville, USA. 17-18 February.

2002: **Speaker**. *The embodiment of the Meharry mission: Struggles and triumphs of service. Why are we here?* Black History Month. Nashville, USA. 11 February.

2002: **Speaker**. *Bilateral Synaptic Plasticity In Vivo*. Winter Conference on Synaptic Plasticity. Monroe, Tahiti. 23 February – 2 March.

2002: **Symposium Speaker**. *Erectile Dysfunction: Pathophysiology*. Issues in Men’s Health. 25th Annual Clinical Pharmacy Symposium. Tallahassee, USA. 22-24 March.

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- 2002: **Colloquium Lecture.** *Dopamine D₁ Receptors Modulate GAP-43 Protein and Gene Expression that is Associated with Long-Term Potentiation in Guinea Pig Hippocampus in vivo.* Northeastern University. Boston, USA. 8 May.
- 2002: **Speaker.** *An In Vivo Model for Investigating Bilateral Synaptic Plasticity in the Hippocampus.* 2nd Annual Conference of Specialized Neuroscience Research Program. San Antonio, USA. 17 May.
- 2002: **Symposium Speaker.** *Methamphetamine and Synaptic Plasticity: Key to brain repair?* Annual Neuroscience Symposium – Synapses, Substrates and Synergy. Meharry Medical College. Nashville, USA. 1-2 August.
- 2002: **Lecture:** *Erectile Dysfunction: Pathophysiology.* Tennessee State University. Nashville, USA. 20 September.
- 2002: **Speaker.** *Functional Specificity of G Protein Subunits in Serotonin-2 Receptor Modulation of K⁺ Conductances.* 8th RCMI International Symposium On Health Disparities. Honolulu, USA. 7-12 December.
- 2003: **Colloquium Lecture.** *Functional Specificity of G protein Subunits in Serotonin-2 Receptor Modulation of K⁺ Conductances.* Northeastern University. Boston, USA. 22 January.
- 2003: **Lecture.** *Sleep Pathophysiology.* Tennessee State University. Nashville, USA. 21 February.
- 2003: **Speaker.** *Selective Antagonism of D₁ Receptors Attenuates GAP-43 Phosphorylation and Blocks Late-LTP in Guinea Pig Hippocampus.* RCMI 2003 Symposium and Collaborative Workshops. San Antonio, USA. 25-29 April.
- 2004: **Speaker.** *Dopamine D₁ Signaling Pathways Couple Neural Activity and Gene Expression Associated with Long-Term Potentiation.* 4th Annual Conference of Specialized Neuroscience Research Programs. Nashville, USA. 19-21 May.
- 2005: **Speaker.** *D₁ Receptor/cAMP Signaling Couples the Activity-Induced GAP-43 Expression and Late-LTP.* Joint Biennial Conference of the International Brain Research Organization and the Society of Neuroscientists of Africa. Cape Town, South Africa. 18-22 April.
- 2005: **Speaker.** *Dopaminergic Modulation of Synaptic Plasticity.* Joint Conference of the Southeastern Pharmacological Society and the Southeastern Society of Toxicology, Nashville. 19-21 October.
- 2006: **Speaker.** *5-HT_{2C} Receptor mRNA Editing and Chronic Depressive Disorders.* Division of Neurobiology and Neurotoxicology Seminar series. Meharry Medical College. April
- 2007: **Speaker.** *Uncovering the Mysteries of Sleep.* Grambling University, Grambling, 11-12 February.
- 2008: **Speaker.** *In Utero Exposure to Methamphetamine: Risks and Adverse Outcomes in progeny.* American Society for Biochemistry and Molecular Biology, San Diego, 6 – 9 April.
- 2009: **Plenary Speaker.** *Brain Disease Burden in the Global South.* Epilepsy and Stigma: How Do We Conquer It In Africa. International Conference, Lusaka, Zambia. 13 – 17 April.
- 2009: **Speaker.** *Cellular Mechanisms of Seizure Generation.* Epilepsy and Stigma: How Do We Conquer It In Africa. International Conference, Lusaka, Zambia. 13 – 17 April.
- 2009: **Speaker.** *Chronic Methamphetamine Alters Spontaneous Neural Discharges and Synaptic Plasticity in Guinea Pig Hippocampus.* International Behavioral Neuroscience Society, Nassau, Bahamas. June.
- 2011: **Plenary Speaker.** *Sleep Deprivation as a Risk Factor for Diabetes.* First UNZAMEDSA International Medical Student Conference – Burden of Non-Communicable Diseases in Sub-Saharan Africa. 1 – 3 July 2011.
- 2011: **Speaker.** *Sleep Quality and Adverse Pregnancy Outcomes.* Winstom Salem State University. 8 September 2011.
- 2011: **Plenary Panelist.** *Applying to Graduate and Professional Schools.* MBRS RISE Program and the Center for Career development. Morgan State University. 21 September 2011.
- 2012: **Invited Speaker.** *Optimal Treatment for Status Epilepticus in Children.* The First African Epilepsy Congress. Sponsored by International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE). Nairobi, Kenya.

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- 2013: **Speaker.** *Sleep quality and Adverse Pregnancy Outcomes.* Philadelphia College of Osteopathic Medicine Georgia Campus. 14 January 2013.
- 2013: **Speaker.** *Sleep and Learning: Is There a Connection?* Department of Biology, Tennessee State University. 20 September 2013.
- 2013: **Speaker.** *Sleep's Role in Memory: Implications for Designing Efficacious Learning Strategies.* Center for Educational Development and Support (CEDs). Meharry Medical College. 29 October 2013.
- 2014: **Grand-Rounds Speaker.** *Sleep quality and adverse pregnancy outcomes.* Department of Obstetrics and Pharmacology, Korle-Bu University Teaching Hospital, Accra Ghana. 26 March 2014.
- 2014: **Invited Speaker.** *Methamphetamine abuse usurps hippocampal neural network operations undergirding memory consolidation.* American Society for Biochemistry and Molecular Biology. Experimental Biology 28 April 2014.
- 2014: **Research Seminar Speaker.** *Memory consolidation: Does sleep matter?* Philadelphia College of Osteopathic Medicine – Georgia Campus. 12 May 2014.
- 2015: **Speaker.** *Methamphetamine abuse usurps neural network operations undergirding memory consolidation.* Department of Biology, Tennessee State University. 30 January 2015.
- 2015: **Plenary Speaker.** *Sleep quality and adverse pregnancy outcomes.* Improving maternal and child health outcomes in Zimbabwe. Agencies/institutions in attendance were: Africa University, Meharry Medical College, United Methodist Women, and United Methodist Church General Board of Higher Education. Mutare, Zimbabwe, 17–19 February 2015.
- 2015: **Research Seminar Speaker.** *Dopaminergic modulation of memory consolidation.* Philadelphia College of Osteopathic Medicine – Georgia Campus. 5 May 2015.
- 2016: **Grand Rounds Speaker.** *Sleep deprivation: The missing link undergirding non-communicable diseases.* Vanderbilt Institute of Global Health. Nashville, USA. 18 April 2016.

WORKSHOPS AND SYMPOSIA

- 1995: **Co-Organizer.** R.T. Rolfe Memorial Lecture. Department of Anatomy and Physiology, Meharry Medical College. Nashville. October
- 1996: **Co-Organizer.** R.T. Rolfe Memorial Lecture. Department of Anatomy and Physiology, Meharry Medical College. Nashville. October.
- 1996: **Co-Organizer.** HIV/AIDS Education in Zambia. Workshop and Symposium. Tropical Diseases Research Center. Ndola, Zambia. June.
- 1996: **Organizer.** African Sleeping Sickness. Workshop and Symposium. Tropical Diseases Research Center. Ndola, Zambia. April.
- 1996: **Co-Organizer.** Violence and Aggression: The Neurochemical Basis? Symposium. Meharry Medical College. Nashville, USA. July.
- 1997: **Co-Organizer.** 6th Annual Behavioral and Molecular Neuroscience. Symposium. Opryland Hotel. Nashville, USA.
- 1997: **Co-Organizer.** Computers in Biological Sciences. A workshop. Opryland Hotel. Nashville, USA.
- 1998: **Organizer.** Burroughs Wellcome Visiting Professorship in the Basic Sciences. Hosted Bertile Hille, Ph.D. Department of Anatomy and Physiology, Meharry Medical College. Nashville, USA.
- 1999: **Co-Organizer.** 11th International Conference on AIDS and STDs in Africa. An international conference held in Lusaka, Zambia. 12-16 September.
- 2002: **Chairperson.** Annual Neuroscience Symposium. Synapse, Substrates and Synergy. Meharry Medical College. Nashville, USA. 1-2 August.
- 2004: **Member.** Planning Committee. 4th Annual Conference for Specialized Neuroscience Research Programs. Nashville, USA. 19-21 May.
- 2004: **Member.** Planning Committee. Frontiers in Addiction Biology: Genomics and Beyond. Vanderbilt University Summer Conferences. Nashville, USA. 23-26 May.

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- 2005: **Chairperson, Mini-Symposium Coordinator.** Summer Neuroscience Apprenticeship Program 2005. Meharry Medical College. Nashville, USA. 22 July.
- 2005: **Coordinator and Host.** Poster and Business Meeting for the Middle Tennessee Chapter of the Society for Neuroscience. Meharry Medical College. Nashville, USA. 26 August.
- 2005: **Member.** Planning Committee. Joint Conference of the Southeastern Pharmacological Society and the Southeastern Society of Toxicology. Nashville, USA.. 19-21 October.
- 2006: **Coordinator and Host.** Poster and Business Meeting for the Middle Tennessee Chapter of the Society for Neuroscience. Vanderbilt University. Nashville, USA. 25 August.
- 2007: **Chair – Planning Committee.** Infection and Brain Disease Burden; an international meeting organized by the Middle Tennessee Chapter Society for Neuroscience and held in Lusaka, Zambia. 13-15 June.
- 2009: **Conference Chair and Organizer.** Epilepsy and Stigma: How Do We Conquer It In Africa. An international meeting held at the Mulungushi International Conference Center. Lusaka, Zambia. 13-17 April.
- 2011: **Faculty Advisor.** Burden of Non-Communicable Diseases in Sub-Saharan Africa. University of Zambia Medical Student Association (UNZAMEDSA)'s inaugural international medical student conference. Lusaka, Zambia. 1-3 July 2011.
- 2014: **Faculty Advisor.** Meharry for Africa international training and service trip to Korle-Bu Teaching Hospital, Accra, Ghana. Supervised and accompanied 9 Meharry Medical College students (7 medical and 2 graduate scholars). Accra, Ghana. 20-30 March 2014.
- 2014: **Session Chair.** Molecular basis of addiction: Transporters. American Society for Biochemistry and Molecular Biology. Experimental Biology. San Diego, USA. 29 April 2014.
- 2016: **Plenary Session Speaker.** Sleep deprivation: The missing link undergirding non-communicable diseases. University of Zambia School of Medicine–Vanderbilt International Global Health Workshop on HIV, Nutrition and NCDs: Knowledge Gaps and Burning Issues. Lusaka, Zambia. 19-21 January 2016.

DIDACTIC COURSES

- 1985-1986: **Clinical Pharmacology.** School of Nursing, University Teaching Hospital. Lusaka, Zambia.
- 1985-1986: **Veterinary Pharmacology.** School of Veterinary Medicine, University of Zambia. Lusaka, Zambia.
- 1985-1986: **Medical Pharmacology.** School of Medicine, University of Zambia. Lusaka, Zambia.
- 1986-1988: **Medical Pharmacology.** Faculty of Medicine, University of British Columbia. Vancouver, Canada.
- 1993-1995: **Dental Human Physiology.** School of Dentistry, Meharry. Nashville, USA.
- 1993-1999: **Graduate Human Physiology.** School of Graduate Studies, Meharry. Nashville, USA.
- 1993-2004: **Medical Physiology.** School of Medicine, Meharry. Nashville, USA.
- 1994-1996: **Neuropharmacology.** School of Graduate Studies, Meharry. Nashville, USA.
- 1995-1996: **Synaptic Physiology.** School of Graduate Studies, Meharry. Nashville, USA.
- 1995-1999: **Animal Experimentation.** School of Graduate Studies, Meharry. Nashville, USA.
- 1999-2002: **Pharmacology.** Physician Assistants Program. Trevecca University. Nashville, USA.
- 2003: **Post-Bac Neuroscience.** School of Medicine, Meharry. Nashville, USA.
- 2003: **Dental Neuroscience.** School of Dentistry, Meharry. Nashville, USA.
- 2003-2004: **Medical Neuroscience.** School of Dentistry, Meharry. Nashville, USA.
- 2003-on: **Molecular Neuropharmacology.** School of Graduate Studies, Meharry. Nashville, USA.
- 2004: **Introduction to Clinical Medicine.** School of Medicine, Meharry. Nashville, USA.
- 2004-on: **Integrated Medical Neuroscience.** School of Medicine, Meharry. Nashville, USA.
- 2006-on: **Graduate Neuroscience.** School of Graduate Studies, Meharry. Nashville, USA.

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- 2006-2008: **Neuroscience Foundation.** Neuroscience Graduate Program, Vanderbilt University. Nashville, USA.
- 2007-on: **Dental Neuroscience.** School of Dentistry, Meharry. Nashville, USA.
- 2007-on: **Neuroscience.** School of Medicine, University of Zambia. Lusaka, Zambia.
- 2007-on: **Neurobiology of Disease.** School of Graduate Studies, Meharry. Nashville, USA.
- 2011-on: **Dental Neuroscience.** School of Dentistry, Meharry. Nashville, USA.
- 2011-on: **Biomedical Sciences – IIB.** School of Graduate Studies and Research, Meharry. Nashville, USA.
- 2014-on: **Research Methods - RES 8020.** MSc in Pharmacology Program, University of Zambia School of Medicine. Lusaka, Zambia.
- 2014-on: **General Principles of Pharmacology (PHM 8110).** MSc in Pharmacology Program, University of Zambia School of Medicine. Lusaka, Zambia.
- 2014-on: **Systems Pharmacology (PHM 8120).** MSc in Pharmacology Program, University of Zambia School of Medicine. Lusaka, Zambia.

SELECTED SERVICE FUNCTIONS – DEPARTMENT

- 1993-1995: **Journal Club Coordinator.** Modulated weekly journal presentations by students and faculty.
- 1995-1996: **Seminar Coordinator.** Scheduled and managed seminars in department.
- 1995-1999: **Graduate Admission Representative.** Reviewed student applications and coordinated the selection process for admission of students to the Ph.D. in Physiology program.
- 1996-1997: **Chairperson,** Graduate Studies Committee. Chaired activities of the committee; tracked student progress; reviewed course offerings.
- 1997-1999: **Committee Member.** Graduate Studies Committee. Reviewed and updated guidelines for Ph.D. in Physiology; tracked student progress.
- 1997-1999: **Course Coordinator for Medical Physiology.** Directed course activities including revising and compiling a comprehensive course syllabus; key instructor for the Cell and Muscle section in course; managed teaching team, exam administration, and day-to-day course activities.
- 2001-2004: **Committee Member.** Neuroscience Seminars and Symposium Committees. Assist with planning and managing the Spring Seminar series in department; key member in organizing the annual neuroscience symposia at Meharry.
- 2005-2008: **Committee Member.** Appointments, Promotion and Tenure, Division of Neurobiology and Neurotoxicology, Department of Biomedical Sciences. Review faculty dossier submitted for consideration for appointment, promotion, and/or tenure.
- 2007-2009: **Director of Graduate Studies for PhD in Neuroscience.** Department of Neuroscience and Pharmacology. Managed training program on behalf of department.
- 2008-2014: **Committee Member.** Appointments, Promotion and Tenure, Department of Neuroscience and Pharmacology. Review faculty dossier submitted for consideration for appointment, promotion, and/or tenure.
- 2014-2015: **Chairperson.** Appointments, Promotion and Tenure, Department of Neuroscience and Pharmacology. Review faculty dossier submitted for consideration for appointment, promotion, and/or tenure.

SELECTED SERVICE FUNCTIONS – SCHOOL OF MEDICINE

- 1994-on: **Faculty Interviewer of Prospective Applicants.** Admissions Committee.
- 1997-1999: **Committee Member.** First Year Curriculum Committee.
- 1997-1999: **Committee Member.** Basic Sciences Curriculum Committee.

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- 1997-1999: **Committee Member.** Academic Support Services. Reviewed medical student progress; helped in identifying and/or developing remedial interventions for students in need of academic intervention.
- 1999-on: **Committee Member.** Meharry Library Committee. Advisory to the Dean of Medicine and President of Meharry.
- 2003-2004: **Internal Reviewer.** Pediatric Curriculum Review Committee. Tasked with conducting extensive review of the clinical program in pediatrics.
- 2007-2009 **Committee Member.** Search Committee for the Director of the Center for Brain and Behavior, Meharry Medical College.
- 2008-on: **Course Content Director & Co-Coordinator.** Integrated Neuroscience. Update and review course content for medical students.
- 2013-on: **Member.** Student Evaluation and Promotion Committee. Tasked with evaluating medical student progress and recommend promotions to subsequent years in program.
- 2014-on: **Member.** Pharmacology Curriculum Subcommittee. Tasked with revamping medical pharmacology course at Meharry Medical College.
- 2014-on: **Member.** Research Advisory Council. ‘Think-tank’ tasked with reviewing funding prospects and identifying new research directions at Meharry Medical College.
- 2015-on: **Chairperson.** Global Health Initiative. Sub-committee of the Research Advisory Council tasked with spearheading international training and research programs at Meharry Medical College.

SELECTED SERVICE FUNCTIONS – SCHOOL OF GRADUATE STUDIES

- 1995-1999: **Committee Member.** Graduate Studies Admissions Committee. Reviewed and selected candidates for admission to graduate school.
- 1999: **Adjudicator.** Research Day.
- 2005-on: **Committee Member.** Graduate Studies Admissions Committee. Review and select candidates for admission to graduate school.
- 2006-2007: **Committee Member.** School of Graduate Studies Executive Committee. An advisory body to the Dean of Graduate Studies and Research at Meharry Medical College.
- 2007-on: **Committee Member.** School of Graduate Studies Executive Committee. Advisory to the Dean of Graduate Studies and Research.
- 2007-on: **Committee Member.** Curriculum Design Committee. Tasked with designing the curriculum for the PhD students in the First (core) year, Second year and Third year including the comprehensive examination.
- 2007-on: **Course Director.** Neurobiology of Disease. Oversee the conduct of five course modules covering Parkinson’s disease and related movement disorders, drug addiction, Alzheimer’s disease, chronic pain and depression and mood disorders.
- 2009-2011: **Committee Member.** Curriculum Design Committee. Oversee the curriculum design, schedule and performance for PhD graduate students.
- 2011-on: **Chairperson.** Graduate Studies Admissions Committee – PhD & MD/PhD programs.

SELECTED SERVICE FUNCTIONS – COLLEGE LEVEL

- 1994: **Committee Member.** Governance and Administration sub-committee. A self-study. Preparations for medical school accreditation review by the Liaison Committee on Medical Education.
- 1994-1997: **Chairperson.** Health and Welfare Committee, Faculty Senate, Meharry.
- 1998: **Committee Member.** Governance and Administration sub-committee. A self-study. Preparations for medical school accreditation review by the Liaison Committee on Medical Education.

**Curriculum Vitae
Sanika Samuel Chirwa**

- 2004-on: **Committee Member.** Academic Pathways Committee. Charged with selecting faculty candidates for special recognition and awards.
- 2005-2007: **Committee Member.** Governance and Administration sub-committee. A self-study. Preparations for accreditation review by the Southern Association of Colleges and Schools (SACS) in 2007.
- 2012-on: **Member.** School of Dentistry Disciplinary Committee.
- 2015: **Member.** Masters in Health Sciences (MHS) Review Committee. Tasked with determining which of the students that have been referred to the MHS program by the Schools of Medicine and Dentistry will secure spots in freshman classes.

SELECTED SERVICE FUNCTIONS – NATIONAL AND INTERNATIONAL

- 1996-on: **Advisory Board Member.** Safe and Drug-Free Schools, Metropolitan Public Schools, Nashville. Review safety programs and intervention activities for implementation in public schools with the goals of increasing student safety and promoting drug-free schools.
- 2000-on: **Research Grant Primary Reviewer.** A panel member who reviews competitive research grant applications seeking funding from the Alzheimer's Association. USA.
- 2004: **Small Business Innovative Research (SBIR) Panel,** Scientific Review Group ZMH1 CRB-C C1 B, SBIR Phase I, Topic 44. National Institute for Mental Health in the National Institutes for Health. Reviewed competitive applications submitted to NIMH/NIH.
- 2006-on: **Panel Member.** Primary Research Grant Reviewer, Academy for Young Scientists, National Science Foundation, USA.
- 2006: **Grant Review Panel Member.** Primary Research Grant Reviewer, Integrative Cellular Neuroscience, National Science Foundation, USA
- 2006: **MBRS Grant Review Panel Member.** NIH Scientific Review Group, MPRC-B Workgroup 002, MBRS Review Panel, National Institute of General Medical Sciences, National Institutes of Health, USA.
- 2007-on **Manuscript Reviewer.** Manuscript review for journal *Experimental Neurology* and *Synapse*.
- 2008-on: **Member.** American Society for Pharmacological and Experimental Therapeutics, USA.
- 2009: **Chair and Organizer.** Epilepsy and Stigma: How Do We Conquer It In Africa' international Conference. Lusaka, Zambia. 13–17 April.
- 2009: **Grant Review Panel Member,** ZRG1 ETTN – A58 Study Section. Challenge Grants for Emerging Technologies and Training in Neurosciences, NIH, USA
- 2009-2014: **Grant Review Panel Member,** F02A Study Section. Emerging Technologies and Training in Neurosciences, National Institutes of Health.
- 2011: **Ad-Hoc Reviewer,** Pathophysiological Basis of Mental Disorders and Addictions (PMDA) Study Section, National Institutes of Health, USA (October).
- 2012: **Ad-Hoc Reviewer,** Pathophysiological Basis of Mental Disorders and Addictions (PMDA) Study Section, National Institutes of Health, USA (February, June).
- 2013: **Ad-Hoc Reviewer,** Pathophysiological Basis of Mental Disorders and Addictions (PMDA) Study Section, National Institutes of Health, USA (February, June, November).
- 2014: **Ad-Hoc Reviewer,** Pathophysiological Basis of Mental Disorders and Addictions (PMDA) Study Section, National Institutes of Health, USA (February, June, October).
- 2014: **Panelist,** Neural Systems Cluster/Modulation, National Sciences Foundation (October).
- 2015: **Ad-Hoc Reviewer,** Pathophysiological Basis of Mental Disorders and Addictions (PMDA) Study Section, National Institutes of Health, USA (February).
- 2013-2015: **Grant Reviewer,** Medical Research Council, South Africa.
- 2016: **Reviewer,** NIH Study Section ZRG1 BDCN-N (55). Fogarty Global Brain Disorders. Washington DC. 24-25 March 2016.

**Curriculum Vitae
Sanika Samuel Chirwa**

**TRAINING OF GRADUATE SCHOLARS
PhD & MD/PhD SCHOLARS**

- 1997: **Janea Mack, PhD.** (Chirwa S, Preceptor).
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: Alterations in membrane lipid composition and synaptic plasticity in hippocampus from young and adult guinea pigs.
Postdoc: Department of Psychiatry, Vanderbilt University, Nashville.
Current Position: Health Science Associate, Merck Neurology.
- 2001: **Adwoa Aduonum, PhD.** (Chirwa S, Preceptor).
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: Methamphetamine-induced expression of GAP-43 and its mRNA in the guinea pig hippocampus in vivo: Correlation with LTP.
Postdoc: Department of Physiology, Emory University, Atlanta.
Current Position: Assistant Professor, Philadelphia College of Osteopathic Medicine, Georgia Campus.
- 2003: **Jonathan Reasor, PhD.** (Chirwa S, Preceptor).
Department of Physiology, Meharry Medical College.
Dissertation: Modulation of GAP-43 and its role in synaptic plasticity.
Postdoc: Department of Anesthesiology, University of Michigan, Ann Arbor.
- 2003: **Deanna Wormley, PhD.** (Chirwa S, Co-Preceptor; Hood D, Preceptor).
Department of Pharmacology, Meharry Medical College.
Dissertation: Consequences of prenatal exposures to 2,3,7,8-tetrachloro-dibenzo-p-dioxin and benzo(a)pyrene on synaptic plasticity mechanisms.
- 2006: **Shimere Williams, PhD.** (Chirwa S, Preceptor).
Department of Biomedical Sciences, Meharry Medical College.
Dissertation: Monoaminergic control of synaptic plasticity.
Current Position: Congressional Research Fellow, House of Representatives, Capitol Hill, Washington DC.
- 2011: **Alexis Hammond, PhD component of MD/PhD program.** (Chirwa S, Co-Preceptor; Conn J, Preceptor, Pharmacology, Vanderbilt).
Dissertation: Discovery of a Novel Chemical Class of mGlu₅ Allosteric Ligands with Distinct Modes of Pharmacology.
Current Position: Completing medical residency program.
- 2013: **Albert Wafula Nyongesa, PhD.** (Chirwa S, Co-Preceptor; Other Preceptors: Jemimah A. Oduma and Pius A. Adoyo, University of Nairobi). Veterinary and Animal Physiology, University of Nairobi, Kenya.
Dissertation: Mechanism of action of cathinone from khat (*Catha edulis*) on behavioural and reproductive function in vervet monkey.
Current Status: Lecturer at University of Nairobi.
- 2014: **Kiera-Nicole Lee, PhD.** (Chirwa S, Preceptor). Department of Neuroscience and Pharmacology, Meharry Medical College.
Dissertation: Dopaminergic modulation of hippocampal neural output and memory consolidation.

**Curriculum Vitae
Sanika Samuel Chirwa**

- (2016): **Derick Munkombwe, PhD student** (Chirwa S, Co-Preceptor; Other Preceptors, Muungo T & Michelo C – University of Zambia). University of Zambia School of Medicine. Lusaka, Zambia.
Dissertation: The effect of lipid-based nutrient supplements containing vitamins and minerals on renal excretion of electrolytes and antiretroviral drugs among Zambian HIV/AIDs Patients.

MSc & MSc/MD SCHOLARS

- 1999: **Anita Jeyakumar, MSc, M.D.** (Chirwa S – Preceptor)
Thesis: Differential effects of acute methamphetamine on synaptic plasticity. Department of Chemistry, Tennessee State University.
- 2007: **Lela Jackson, MSc.** (Chirwa S – Co-Preceptor).
Division of Neurobiology and Neurotoxicology, Department of Biomedical Sciences, Meharry Medical College.
- 2011: **Cathy Payne, MSc.** (Chirwa S, Thesis Advisor; Hodges MP, Preceptor).
Thesis: Creating Memories and Keeping Them. Vanderbilt University.
2012. **Vanessa Louis, MSc.** (Chirwa S, Co-Preceptor; Aduonum A, Preceptor). Department of Biological Sciences, Philadelphia College of Osteopathic Medicine, Georgia Campus.
Thesis: Effects of chronic methamphetamine on novel object recognition memory and BDNF expression.
2012. **Adnouse Blanc, MSc.** (Chirwa S, Co-Preceptor; Aduonum A, Preceptor). Department of Biological Sciences, Philadelphia College of Osteopathic Medicine, Georgia Campus.
Thesis: Regulation of α -synuclein following chronic methamphetamine administration and washout: correlation with memory and synaptic plasticity.
2012. **Onize Aiyede, MSc.** (Chirwa S, Co-Preceptor; Aduonum A, Preceptor). Department of Biological Sciences, Philadelphia College of Osteopathic Medicine, Georgia Campus.
Thesis: Evaluating behavioral and molecular changes associated with chronic methamphetamine treatment in guinea pigs.
2013. **Chauncey Darden, MSc–Professional Science** (Chirwa S, Co-Preceptor; Smith V, Preceptor). College of Basic & Applied Science, Middle Tennessee State University, Murfreesboro, Tennessee.
Project: Effects of acute methamphetamine on spontaneous and evoked field potentials.

**MEMBER ON ADVISORY COMMITTEES ON INSTRUCTION (COI)
PhD LEVEL COMPLETED**

- 1996: **Corigan Smothers, PhD.**
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: Enhancement of NMDA receptor function following chronic ethanol exposure.

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- 1997: **Sheila Mathias, PhD.**
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: Nitric oxide tonically regulates Y-1 mouse adrenal tumor cell differentiated function.
- 1998: **Karmadi Mills, PhD.**
Department of Pharmacology, Meharry Medical College.
Dissertation: The effects of various L-type calcium channel blockers on cocaine-induced behavior in rats.
- 1998: **Aaron Hilliard, PhD.**
Department of Pharmacology, Meharry Medical College.
Dissertation: lead exposure modulates critical developmental markers in the neonatal rat brain.
- 1998: **Artenzia Young-Seigler, Ph.D.**
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: Physiological regulation of the choline cotransporter: Subcellular distribution of the cotransporter under different physiological conditions.
- 1998: **Kawonia Mull, Ph.D.**
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: Differential effects of potassium channel modulators in myocardial tissues and cell.
- 1998: **Tracey Wilson, Ph.D.**
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: Inhibition of synaptic plasticity in *Aplysia californica* by cannabinoid receptor agonists.
- 1999: **Mark Davis, Ph.D.**
Department of Biochemistry, Meharry Medical College.
Dissertation: Involvement of G in sodium butyrate-induced erythroblastic differentiation of K562 cells.
- 2000: **Tiffany Robinson, Ph.D.**
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: The role of potassium ion channels in the genesis of frequency dependent actions of CIII antiarrhythmic agents.
- 2001: **Letha Woods, Ph.D.**
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: Conditioned-related release of dopamine in the rat medial prefrontal cortex.
- 2001: **Melanie Freeman, Ph.D.**
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: The role of nitric acid in the regulation of human sperm function.

Curriculum Vitae
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- 2001: **Easton Reid, Ph.D.**
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: Molecular cloning and quantitative distribution of putative PKC ξ in L. Polyphemus brain using modified competitive RT-PCR.
- 2003: **Marlo Kemp, Ph.D.**
Department of Anatomy and Physiology, Meharry Medical College.
Dissertation: Evidence for endosomal trafficking in the regulation of the Limulus cholinergic choline cotransporter.
- 2005: **Quentin Scott, Ph.D.**
Department of Physiology, Meharry Medical College.
Dissertation: Kainic acid induced changes in behaviours and synaptic plasticity in juvenile, adult and old Apysia californica.
- 2006: **La’Nissa Brown, Ph.D.** Division of Neurobiology and Neurotoxicology. Department of Biomedical Sciences.
Dissertation: Effects of gestational benzo(a)pyrene exposure on the development CNS of rats.
- 2006: **Yolanda R. Dale, Ph.D.** Division of Cancer Biology. Dept. Biomedical Sciences.
Dissertation: The role of calpain in the regulation of the Aryl hydrocarbon receptor signaling.
- 2009: **Uade Brimmy Olaghere-DaSilva, PhD.** Neuroscience, Interdisciplinary Graduate Program. Vanderbilt University.
Dissertation: In vivo functional consequences of the fully edited 5-HT_{2C}-VGV receptor.
- 2010: **Kera Lawson, PhD.** Neuroscience. Meharry.
Dissertation: Sex-specificity and estrogen-dependence of kappa opioid receptor-mediated spinal antinociception and antihyperalgesia.
- 2011: **Stephanie Sullivan, PhD.** Neuroscience, Vanderbilt University.
Dissertation: Dopamine receptor stimulation regulates expression of developmental genes and disrupts NTN-1-mediated axon guidance.
- 2014: **Marquitta Smith, PhD.** Neuroscience Track. Meharry Medical College.
Dissertation:
- 2014: **Veronica McKay, PhD.** Neuroscience Track. Meharry Medical College.
Dissertation:
- 2016: **Ashley Fennell-North, PhD.** Neuroscience Track. Meharry Medical College.
Dissertation: Methamphetamine exposure impairs short-term memory in vivo and triggers Ca⁺⁺ release in dopamine transporter expressing cells through a sigma-1 receptor dependent pathway.
- 2016: **Douglas Robinson. PhD (MD).** Neuroscience Track. Meharry Medical College.
Dissertation: Sex-related differences and mediation by KOR and MOR underlie pentazocine analgesia.

**Curriculum Vitae
Sanika Samuel Chirwa**

**MEMBER ON ADVISORY COMMITTEES ON INSTRUCTION (COI)
PhD LEVEL – IN TRAINING**

Denesha McIntosh. PhD in Pharmacology Track, Meharry Medical College.

Treniqka Walters. PhD in Pharmacology Track. Meharry Medical College.

Jeremy Sprouse. PhD in Neuroscience Track. Meharry Medical College.

Keisha Smith. PhD in Neuroscience Track. Meharry Medical College

James Johnson. PhD in Neuroscience Track. Meharry Medical College

Sudan Loganathan. PhD in Neuroscience Track. Meharry Medical College

Kristopher Abney. PhD in Pharmacology Track. Meharry Medical College

Shalonda Ingram. PhD in Neuroscience Track. Meharry Medical College.

POSTDOCTORAL ASSOCIATES

2003-2004: **Yumiko Kawai, Ph.D.** Department of Anatomy and Physiology, Meharry Medical College.

ACADEMIC DISSERTATIONS

Chirwa SS. Studies on the asynchronous synaptic responses and endogenous potentiating substances of neurotransmission in the hippocampus. Ph.D. Thesis. University of British Columbia, 1988.

Chirwa SS. Differential effects of calcium and tetanic stimulation frequencies on hippocampal synaptic potentiation and depression. M.Sc. Thesis. University of British Columbia. 1985.

FULL LENGTH PUBLICATIONS

Sastry BR, **Chirwa SS**, Goh JW, Maretic H, Murali Mohan P. Verapamil counteracts homo- and heterosynaptic depression of hippocampal CA1 population spike. Life Sciences. 1984; 34: 1075-1086.

Saint DA, Quastel DMJ, **Chirwa SS**. Effect of a volatile anesthetic upon nerve terminal excitability in mammalian hippocampus. Can. J. Physiol. Pharmacol. 1986; 64: 221-223.

Sastry BR, **Chirwa SS**, May PBY, Maretic H, Pillai G, Kao EYH , Sidhu SD. Are nerve growth factors involved in long-term synaptic potentiation in the hippocampus and spatial memory. In: H. I. Haas, G. Buzsaki. (Ed). Synaptic plasticity in the hippocampus. Springer-Verlag.1988 pp.102-105.

Sastry BR, Goh JW, May PBY, **Chirwa SS**. The involvement of non-spiking cells in long-term potentiation of synaptic transmission in the hippocampus. Canadian J. Physiol. Pharmacol. 1988; 66: 841-844.

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Sanika Samuel Chirwa

Sastry BR, **Chirwa SS**, May PBY, Maretic H. Substances released during tetanic stimulation of rabbit neocortex induce neurite growth in PC-12 cells and long-term potentiation in guinea pig hippocampus. *Neurosci. Lett.* 1988; 91: 101-105.

Chirwa SS, Sastry BR. Asynchronous synaptic responses in hippocampal CA1 neurons during synaptic potentiation in hippocampus. *Neurosci. Lett.* 1988; 89: 355-360.

Chirwa SS, Macleod BA, Day B. Intra-articular bupivacaine (Marcaine) after arthroscopic meniscectomy: A randomized double-blind controlled study. *Arthroscopy: J. Arthroscopic. Related Surg.* 1989; 5: 33-35.

Chirwa SS, Stafford-Segert I, Soja PJ, Chase MH. Strychnine antagonizes jaw-closer motoneuron IPSPs induced by reticular stimulation during active sleep. *Brain Res.* 1991; 547: 323-326.

Chase MH, Engelhardt JK, Adinolfi AM, **Chirwa SS**. Age-dependent changes in cat masseter nerve: An electrophysiological and morphological study. *Brain Res.* 1992; 586: 279-288.

Morishita W, Xie Z, **Chirwa SS**, May P, Sastry BR. The blockade of hippocampal long-term potentiation by saccharin. *Neuroscience* 1992; 47: 21-31.

Onaivi ES, Bishop-Robinson C, Motley E, Charkrabarti A, **Chirwa SS**. Neurobiological actions of cocaine in the hippocampus. *Annals New York Acad. Sciences.* 1996; 801: 76-94.

Chirwa SS, Mack J, Park H, Dennis K, Aduonum A. An *in vivo* model for investigating bilateral synaptic plasticity across CA3/CA1 synapses in guinea pig dorsal hippocampus. *J. Neurosci. Meth.* 2001; 110: 25-30.

Onaivi, ES, Ali SF, **Chirwa SS**, Zwiller J, Thiriet N, Akinshola BE, Ishiguro H. Ibogaine signals addiction genes and methamphetamine alteration of long-term potentiation. *Annals New York Acad. Sci.* 2002; 965: 24-86.

Wormley DD, **Chirwa S**, Nayyar T, Wu J, Harris E, Hood D. Inhaled benzo(a)pyrene impairs LTP in the rat dentate gyrus. *Cell. Molec. Biol.* 2004; 50: 715-721.

Chirwa S, Aduonum A, Pizarro J, Reasor J, Kawai Y, Gonzalez M, McAdory BS, Onaivi E, Barea-Rodriguez EJ. Dopaminergic DA₁ signaling couples growth associated protein-43 and long-term potentiation in guinea pig hippocampus. *Brain Res. Bull.* 2005; 64: 433-440.

Onaivi ES, Ishiguro H, Zhang PW, Lin Z, Akanshola BE, Leonard CM, **Chirwa SS**, Uhl GR. Endocannabinoid receptor genetics and marijuana use. In: Onaivi ES. (Editor), Endocannabinoids: The brain and body's marijuana and beyond. Taylor and Francis. 2005 pp. 57-117.

Williams S, Mmbaga N, **Chirwa SS**. Dopaminergic D₁ agonist SKF38393 induces GAP-43 expression and long-term potentiation in hippocampus in vivo. *Neurosci. Lett.* 2006; 402: 46-50.

Onaivi ES, Ishiguro H, Gong J-P, Patel S, Meozzi PA, Myers L, Perchuk A, Mora Z, Tagliaferro PA, Gardner E, Brusco A, Akinshola EB, Liu Q-R, **Chirwa SS**, Hope B, Lujilde J, Inada T, Iwasaki S, Macharia D, Teasenfitz L, Arinami T, Uhl GR. Functional expression of brain neuronal CB2 cannabinoid receptors are involved in the effects of drugs of abuse in depression. *Annals New York Acad. Sci.* 2008; 1139: 434 – 449.

Curriculum Vitae
Sanika Samuel Chirwa

Swant J, **Chirwa S**, Stanwood G, Khoshbouei H. The acute effects of methamphetamine on synaptic plasticity in the CA1 region of the mouse hippocampus. PLoS ONE. 2010 Jun 30; 5(6): e11382.

Hood DB, Ramesh A, Khoshbouei H, **Chirwa S**, Archibong A. Developmental toxicity of polycyclic aromatic hydrocarbons, In: Gupta RC (Editor), Reproductive and Developmental Toxicology. 2011 Academic Press.

Swant J, Goodwin JS, North A, Ali AA, Gamble-George G, **Chirwa S**, Khoshbouei H. Alpha-synuclein stimulates a dopamine transporter-dependent chloride current and modulates the activity of the transporter. J. Biol. Chem. 2011; 286: 43933-43943.

Lee K-N, Pellom ST, Oliver E, **Chirwa S**. Characterization of the guinea pig animal model and subsequent comparison of the behavioral effects of selective dopaminergic drugs and methamphetamine. Synapse 2014; 68: 221-233.

Ladson GM, **Chirwa S**, Nwabuisi C, Whitty JE, Clark JT, Atkinson R. Sleep disturbances in pregnancy increases risk for gestational diabetes. Obstet Gynecol. 2014; 123 Suppl 1: 152S.

Lee K-N, **Chirwa S** (2015) Blocking dopaminergic signaling soon after learning impairs memory consolidation in guinea pigs. PLoS ONE 10(8):e0135578. Doi:10.1371/journal.pone.0135578.

Nyongesa AW, Oduma JA, al'Absib M, **Chirwa S**. Immunohistochemical localization of anterior pituitary cell types of vervet monkey (*Chlorocebus aethiops*) following sub-chronic cathinone exposure. Ethnopharmacology (in review) J. Ethnopharmacology. 2015; 174: 168–177

Munkombwe D, Muungo TL, Michelo C, Kelly P, **Chirwa S**, Filteau S. Lipid-based nutrient supplements containing vitamins and minerals attenuate renal electrolyte loss in HIV/AIDS patients starting antiretroviral therapy: A randomized controlled trial in Zambia. Clinical Nutrition ESPEN 2016; 13: e8 – e14.

Leger P, **Chirwa S**, Turner M, Richardson DM, Baker P, Leonard M, Erdem H, Olson L, Haas DW. Pharmacogenomics of efavirenz discontinuation for reported central nervous system symptoms appears to differ by race. Pharmacogenetics and Genomics (provisionally accepted)

SELECTED SCIENTIFIC ABSTRACTS

Chirwa SS, Goh JW, Maretic H, Sastry BR. Evidence for a presynaptic role in long-term potentiation in the rat hippocampus. J. Physiol. Lond. 339 (1983) 41P.

Chirwa SS. Studies on the asynchronous synaptic responses and endogenous potentiating factors of neurotransmission in the hippocampus. Dissertation Abstr. Intern. 50 (1989).

Weiss C, **Chirwa SS**, Engelhardt JK, Morales FR, Chase MH. Aged-like electrical properties induced by acrylamide in trigeminal motoneurons of the awake cat. Soc. Neurosci. Abstr. 18 (1992) 1050.

Adinolfi AM, Engelhardt JK, **Chirwa SS**, Morales FR, Chase MH. Electrophysiological and morphological changes in the masseter nerve of aged cats. American Assoc. Anatomists. 232 (1992) 6A.

Curriculum Vitae
Sanika Samuel Chirwa

Onaivi ES, Parker KA, Bishop-Robinson C, Charkrabarti A, Chaudhuri G, Motley ED, **Chirwa SS**. Neurobiological action of cocaine in the hippocampus. *FASEB J.* (1995) A401.

Mack J, **Chirwa SS**. LTP development is restricted to tetanized side in hippocampus. *Soc. Neurosci. Abstr.* 22 (1996) 1460.

Mack J, **Chirwa SS**. Alterations in membrane lipid composition and synaptic plasticity in hippocampus from young and adult guinea pigs. *Neurobiol. Neuroendocrin. Aging.* 3rd International Symposium, Austria. (1996).

Aduonum-McKinney A, Jeyakumar A, Oyekan E, **Chirwa SS**. Acute low but not high methamphetamine supports late-phase LTP in hippocampus in vivo. *FASEB J.* 13 (1999) 149.

Chirwa SS, Musonda RM. Combating sleeping sickness in rural Zambia. In: Research Projects 1992-1999. USAID (2000).

Aduonum A, **Chirwa SS**, Gonzalez M, Pizarro J, Wormley D, Barea-Rodriguez E. D₁ receptors modulate GAP-43 mRNA upregulation during LTP. *Soc. Neurosci. Abstr.* 26 (2000) 563.

Chirwa S, Parks H, Aduonum A. Differences in decay properties of bilateral long-term potentiation in dorsal hippocampus. *Soc. Neurosci. Abstr.* 26 (2000) 562.

Chirwa S, Aduonum A, Pizarro J, Gonzalez M, McAdory BS, Barea-Rodriguez EJ. Methamphetamine upregulates GAP-43 protein and gene expression that is associated with LTP in hippocampus. *Intern. Soc. Neurochem.* (2001) 88.

Reasor J, Wormley D, Zhang W, Nayar T, Greenwood M, **Chirwa S**, Hood D. Transplacental exposure to TCDD and B(a)P impairs LTP in F1 off-springs. *Intern. Behavioral Neuroscience Society* 11 (2002) 41.

Chirwa S, Reasor JD, Onaivi E. Alterations in the expression of dopamine D₁ and D₂ mRNA and the induction of long-term potentiation (LTP) in rats sensitized to methamphetamine. *Intern. Behavioral Neuroscience Society.* 11 (2002) 31.

Chirwa S, Lovinger D, Sanders-Bush E. Dissecting serotonin 5-HT₂ receptor signaling pathways modulating K⁺ conductances (gK⁺). *Pharmacologist* 44 Supp.1 (2002) A196.

Chirwa SS, Reasor JD, Kawai Y. Antagonism of dopamine-1 receptors attenuates GAP-43 phosphorylation and blocks late-LTP in hippocampus. 6th International Brain Research Organization's World Congress of Neuroscience (2003).

Chirwa SS, Kawai Y. Dopamine D₁ receptors modulation of GAP-43 and cAMP/Ca⁺⁺ pathway specific gene expression during LTP in guinea pig hippocampus in vivo. Program No. 547.4. Abstract Viewer/Itinerary Planner, Washington DC. Society for Neuroscience (2003).

Chirwa SS, Mmbaga N, Williams S. Upregulated D₁-dependent cAMP/Ca⁺⁺ signaling pathways couple neural activity and gene expression associated with LTP. Program No. 19.2. Abstract Viewer/Itinerary Planner, Washington DC. Society for Neuroscience (2004).

Curriculum Vitae
Sanika Samuel Chirwa

Chirwa SS, Mmbaga N, Williams S. D₁ receptor/cAMP signaling couples activity-induced GAP-43 expression and late-LTP. Biennial Conferences of the International Brain Research Organization and the Society of Neuroscientists of Africa. CINP (2005) Abstract pp.39.

Williams S, Mmbaga N, **Chirwa S**. Dopaminergic D₁ Agonist SKF38393 Induces GAP-43 Expression and Synaptic Potentiation in Hippocampus In Vivo. Joint Conference of the Southeastern Pharmacological Society and the Southeastern Society of Toxicology, (2005) Abstract pp. 36.

Williams S, **Chirwa S**. Activation of D₁ receptors with SKF38393 induces GAP-43 up-regulation and a persistent LTP-like potentiation in hippocampus in vivo. Abstract Viewer/Itinerary Planner, Atlanta GA. Society for Neuroscience (2006).

Goodwin JS, Logan MN, **Chirwa SS**, DeFelice LJ, Khoshbouei H. Methamphetamine has an exclusive and a shared target with amphetamine to regulate DAT function. Program 880.17. Neuroscience Meeting Planner, San Diego CA. Society for Neuroscience (2007). Online.

Chirwa S. In Utero exposure to methamphetamine: Risks and adverse outcomes in offspring. FASEB J. 2008; 22: 533.3

Swant J, **Chirwa S**, Khoshbouei H. The acute effects of methamphetamine on synaptic plasticity in the CA1 region of the mouse hippocampus. FASEB J. 2009; 23: LB361.

Chirwa S, Khoshbouei H. Alpha-synuclein interaction with the dopamine transporter stimulates a transporter mediated chloride current. FASEB J. 2009; 23: LB362.

Aduonum A, Tilghman-Lee C, **Chirwa S**. Chronic methamphetamine exacerbates rebound depolarization and attenuates late-LTP in CA1 subfield of guinea pig hippocampus in vivo. Program 347.3. 2009 Neuroscience Meeting Planner, Chicago IL: Society for Neuroscience (2009). Online.

Swant JM, **Chirwa S**, Stanwood G, Khoshbouei H. The acute effects of methamphetamine on synaptic plasticity in the CA1 region of mouse hippocampus. Program 554.20. 2009 Neuroscience Meeting Planner, Chicago IL: Society for Neuroscience (2009). Online.

Chirwa S, Goodwin S, Swant J, Khoshbouei H. Alpha-synuclein interaction with the dopamine transporter stimulates a transporter mediated chloride current. Program 554.3. 2009 Neuroscience Meeting Planner, Chicago IL: Society for Neuroscience (2009). Online.

Chirwa S, Aduonum A, Lee K-N. Methamphetamine alters hippocampal EEG and LTP in CA1 subfield in guinea pig hippocampus. Program 576/1. 2010 Neuroscience Meeting Planner, San Diego CA: Society for Neuroscience (2010). Online.

Swant JM, **Chirwa S**, Khoshbouei H. Methamphetamine exposure decreases LTP. Program 576/14. 2010 Neuroscience Meeting Planner, San Diego CA: Society for Neuroscience (2010). Online.

Chirwa, Goma F, Akani M. Sleep deprivation as a risk factor for diabetes and brain disease burden. 1st UNZAMEDSA International Medical Student Conference – Burden of Non-Communicable Diseases in Sub-Saharan Africa. Lusaka, Zambia. 1-3 July 2011.

Lee K-N, Pellom ST, Oliver E, Aduonum A, **Chirwa S**. Multi-level analysis of guinea pig behavior in a home cage environment. Program No. 266.04. Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011.

**Curriculum Vitae
Sanika Samuel Chirwa**

North A, Swant J, T. Ansah T, Clark J, **Chirwa S**, Prins P, Khoshbouei H. Methamphetamine exposure alters sigma-1 receptor protein levels. Program No. 935.19. Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011.

Aduonum A, Louis V, Blanc A, Aiyede O, **Chirwa S**. Chronic methamphetamine (METH) induces memory deficits that are associated with changes in hippocampal functions and plasticity factors. *FASEB J.* 2012; 26: LB515.

Lee K-N, **Chirwa S**. Dopaminergic receptor antagonists attenuate memory consolidation and long-term potentiation in guinea pig hippocampus in vivo. *FASEB J.* 2012; 26: LB513.

Chirwa S. Refractory status epilepticus: mechanisms and treatment. First African Epilepsy Congress. ILAE-IBE. 2012 Nairobi, Kenya.

Chirwa S, Nwabuisi CR, Ladson GM, Whitty JE, Damen S, Atkinson R, Clark JT. Sleep loss in pregnancy increases the risk for gestational diabetes. 13th RCMI International Symposium on Health Disparities. 2012 San Juan, Puerto Rico.

Chirwa S, Methamphetamine abuse usurps hippocampal neural network operations undergirding memory consolidation. *Experimental Biology* 2014; Prog. 222.2.

Leger P, MD, **Chirwa S**, Turner M, Richardson D, Baker P, Olson L, Haas DW. Pharmacogenetics of efavirenz discontinuation for central nervous system symptoms at a Southeastern United States clinic may differ by race. 17th International Workshop on Clinical Pharmacology of HIV & Hepatitis Therapy. 8-10 June 2016. Washington DC, USA. 8-10 June 2016.