

**BIOGRAPHICAL SKETCH**

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NAME: Seth Y Ablordeppey

eRA COMMONS USER NAME (credential, e.g., agency login): sablordeppey

POSITION TITLE: Professor and Eminent Scholar Chair in Biomedical Sciences

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Start Date MM/YYYY Y	Completion Date MM/YYYY	FIELD OF STUDY
University of Cape Coast, Ghana	BS	08/1973	05/1977	Chemistry
Kwame Nkrumah University of Science and Technology	MS	08/1977	03/1980	Natural Product Chem
University of Mississippi	PhD	09/1985	12/1990	Medicinal Chemistry
Medical College of Virginia, VCU	Post doc	12/1990	06/1993	Drug Design/Synthesis

**A. Personal Statement**

This application is in response to the recent opportunity announcement toward Florida A&M University application for postdoctoral research funding. I have been a primary user of the research infrastructure here at Florida A&M University for the past 29 years and in fact I have served as an investigator on several FAMU research grants in the past.

I began my research career in 1981 having completed my MS degree with concentration in the use of Natural products as sources of new drugs. At the time the primary focus was to identify components of herbal medications used by traditional folks in Africa. Through that endeavor we identified the compound cryptolepine as a lead against opportunistic infections and made over 200 analogs leading to improvement of potency up to over 250-fold and reduction in toxicity up to over 300-fold. During my PhD studies, my focus on drug discovery switched to CNS agents and in particular, the discovery of agents for the treatment of schizophrenia and depression. We began with the modification of haloperidol, preventing its avid transformation to quaternary compounds that were associated with its extrapyramidal side effects. We have also focused on sigma receptors as targets for developing novel antipsychotic drugs resulting in a well cited publication in Journal of Medicinal Chemistry. We have published over 30 articles in this area, and these have been cited numerous times. This research has led to a filling of a patent protection by Florida A&M University for several novel agents. We have been funded earlier by the NIGMS to continue the development of third generation antipsychotic agents that target the recruitment of  $\beta$ -arrestin to dopamine D2 receptor, so as to obtain agents without the extrapyramidal side effects. Our current research efforts are directed to identifying 5-HT7R biased agonists as agents for the treatment of certain sleep disorders, neuropathic pain and several other CNS ailments.

By May 2021, I have served as the major advisor for thirteen PhD students and two MS pharmaceutical sciences students who have graduated and are serving in the biomedical field, and I currently serve as the major professor for five PhD students. I have been involved in reviewing grants for NIH since 1995 and I have served on numerous panels (>100) including serving as the Chair of NIH NIMHD Special Emphasis panel for the review of RO1/R21 grants in 2012, chair of the MBRs Score grant (chemistry panel) for 4 years and the chair of NIGMS MPRC-B Subcommittee Review Panel for 2 years. I have led numerous site visits to review RISE and IMSD programs for

NIGMS. In addition, I have served as Chair for Pharmaceutical Sciences for 13 years and as Interim Dean for about 4 years. These activities have prepared me to play a part in the current application.

## **B. Positions, Scientific Appointments and Honors**

1985 -1990	Teaching Assistant in Medicinal Chemistry & Chemistry, Univ of MS, Oxford. MS
1990 -1992	Postdoctoral Research Fellow, Dept of Med. Chem., MCV/VCU, Richmond, VA
1992 -1993	Research Fellow, Dept of Medicinal Chemistry, MCV/VCU, Richmond, VA
1993 -1997	Asst Prof of Med Chem, Florida A&M University (FAMU) Coll of Pharm & Pharm Sc
1997 – 2002	Associate Professor of Medicinal Chemistry, FAMU COPPS
2001 – 2011	Division Director, Basic Pharmaceutical Sciences, FAMU COPPS
2002 – Present	Professor of Medicinal Chemistry, Basic Pharmaceutical Sciences, FAMU COPPS
2011 - 2012	Interim Dean and Professor, Florida A&M University, COPPS
2012 - 2014	Division Director, Basic Pharmaceutical Sciences, FAMU COPPS
2014-to date	Professor and Fulbright Scholar, Basic Pharmaceutical Sciences, FAMU COPPS
2016 – 2017	Division Director, Basic Pharmaceutical Sciences, FAMU COPPS
2017 – 2018	Interim Dean, Florida A&M University, COPPS
2019- to date	Professor and Eminent Scholar Chair of Biomedical Sciences

## **Honors and awards**

2016/17 Florida A&M University Distinguished Researcher Award recipient **August 2017**.

Florida Education Fund's (FEF) 2016 the William R. Jones Outstanding Mentor Award, for outstanding contribution to the McKnight Doctoral Fellowship Program. November 2016

Joseph Sam Distinguished Alumnus Award in Recognition of Outstanding Contribution in the Field of Medicinal Chemistry, University of Mississippi, April 2014.

Fulbright Fellowship to Africa, US State Department Award 2010/11

Florida A&M University Research Excellence Award, 2010

College of Pharmacy Researcher of the Year, 2008-2009 AY.

Advanced Florida A&M University Teacher of the Year, 2003

FAMU College of Pharmacy Teacher of the Year, 2002

Florida A&M University Teacher of the Year, 2001

Rho Chi Teacher of the Year, 1998/99.

Teaching Incentive Program Award for Excellence in Teaching, 1997

Graduate Achievement Award, University of Mississippi, 1990.

Noble & Sam Grad. Res. Award in Med. Chemistry, Univ. of Mississippi, 1989-1990.

National Honor Society of Phi Kappa Phi, Highest Student Recognition at Ole Miss, 1989.

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## **C. Contribution to Science**

### **1. Early Contributions:**

I began my research career focusing on the development of novel sigma receptor ligands. At the time, we needed potent and selective agents to probe hypotheses involving sigma receptor involvement in multiple CNS diseases. Our efforts resulted in the identification of some of the most potent sigma ligands to date as indicated in the following publications on which I served as co-author or the corresponding author.

1. Ablordeppey, S.Y.; Fischer, J. B.; Law, H.; Glennon, R. A. Probing the Proposed Phenyl-A Region of the  $\sigma$ -1 Receptor. *Bioorg Med Chem*, **2002**, *10*, 2759 – 2765.
2. Ablordeppey, S.Y.; Fischer, J. B.; Glennon, R. A. Is a Nitrogen Atom an Important Pharmacophoric Element in Sigma Ligand Binding? *Bioorg Med Chem*, **2000**, *8*, 2105 – 2111.
3. Ablordeppey, S.Y., El-Ashmawy, M.B., Fischer, J.B., Burke Howie, K.B. Glennon, R.A., A CoMFA investigation of  $\sigma$ -receptor ligand binding: Re-examination of a spurious sigma ligand. *Eur J Med Chem*, **1998**, *33*, 625- 633.
4. Glennon, R.A., Ablordeppey, S.Y., Ismaiel, A.M., El-Ashmawy, M.B., Fischer, J.B., and Burke Howie, K.B. Structural Features Important for  $\sigma$ -1 Receptor Binding, *J. Med. Chem.*, **1994**, *37*, 1214-1219

### **2. Drug Discovery and Development as an Independent Scientist**

Following the acceptance of an independent faculty position at Florida A&M University, my research focus changed to designing and synthesizing new agents for evaluation as novel anti-infective or antipsychotic agents. The idea has been to obtain small molecules with antipsychotic properties but without the known side effects of current agents. To achieve this goal requires the development of agents that target simultaneously multiple receptors, a feat some have described as the challenge of the century. This effort has now led to the synthesis and testing of over five hundred agents and patent protections for several of these compounds. The key publications and the patents are recorded below.

- a. Bricker, BA, Voshavar, C, \*Onyameh, EK, Gonela, UM, Lin, X, Swanson, TL, Kozell, LB, Schmachtenberg, JL, Bloom, SH, Janowsky, AJ, Ablordeppey SY. Enantiomeric Separation, Absolute Configuration by X-ray Crystallographic Analysis, and Functional Evaluation of Enantiomers of the Dual Ligand, SYA0340 at 5-HT<sub>1A</sub> and 5-HT<sub>7A</sub> Receptors, *ACS Omega*, **2023**, 8(24): 21736–21744. [doi.org/10.1021/acsomega.3c01283](https://doi.org/10.1021/acsomega.3c01283)
- b. \*Asong, G. M.; Voshavar, C, S.; Amissah, F.; Barbara B.; Lamango, N. S.; Ablordeppey, S. Y. An Evaluation of the Anticancer Properties of SYA014, a Homopiperazine-Oxime Analog of Haloperidol in Triple Negative Breast Cancer Cells. *Cancers (Basel)* **2022**, 24, 6047. doi: 10.3390/cancers14246047 PMID: PMC9776707
- c. \*Onyameh, E.K., \*Ofori, E., Bricker, B.A., Gonela, U., Eyunni, S.V.K., Kang, H.J., Voshavar, C., Ablordeppey, S.Y. Design and discovery of a high affinity, selective and  $\beta$ -arrestin biased 5-HT<sub>7</sub> receptor agonist. *Med Chem Res* **2022**, 31, 274–283
- d. \*Ofori, E, \*Onyameh, EK, Gonela, UM, Voshavar, C, Bricker, B, Swanson, TL, Eshleman, AJ, Schmachtenberg, JL, Bloom, SH, Janowsky, AJ, Ablordeppey SY. New dual 5-HT<sub>1A</sub> and 5-HT<sub>7</sub> receptor ligands derived from SYA16263. *Eur J Med Chem.* **2021**, 214, 113243. PMID: 33582388
- e. \*Onyameh, E.K.; Bricker, B.A.; Eyunni, S.V.K.; Voshavar, C.; Gonela, U.M.; \*Ofori, E.; \*Jenkins, A.; Ablordeppey, S.Y. A Study of the Structure-Affinity Relationship in SYA16263; Is a D<sub>2</sub> receptor interaction essential for inhibition of apomorphine-induced climbing behavior in mice? *Bioorg Med Chem.* **2021**, 30, 115943. PMID: 33338898
- f. \*Edward Ofori and Seth Y Ablordeppey, Antipsychotic Agents, *In Burger's Medicinal Chemistry, Drug Discovery and Development*, 8th Edition Set Volumes 1-8, 8th Ed, Donald J. Abraham (Author), Michael Myers (Consultant Editor), **2020**
- g. \*Asong, G.; Amissah, F.; Voshavar, C.; \*Nkembo, A. T.; Ntantie, E.; Lamango, N.; Ablordeppey, S.Y. Mechanistic Investigation on the Anticancer properties of SYA013, a homopiperazine analog of Haloperidol with activity against Triple Negative Breast Cancer Cells. *ACS Omega*, **2020**, 5, 32907–32918. PMID: PMC7774091
- h. Bricker, B. A, \*Peprah, K.; Kang, H. J.; Ablordeppey, S. Y. Evaluation of SYA16263 as a new potential antipsychotic agent without catalepsy. *Pharmacol Biochem Behav.* **2019**, 179, 55-62. PMID: PMC6581196
- i. \*Onyameh, E. K.; Bricker, B.; \*Ofori, E.; Ablordeppey, S. Y. Enantioseparation of 5-chloro-2-(2-(3,4-dihydro-isoquinoline-2(1H)-yl)ethyl)-2-methyl-2,3-dihydro-1H-inden-1-one (SYA 40247), a high affinity 5-HT<sub>7</sub> receptor ligand, by HPLC-PDA using amylose tris-(3, 5- dimethylphenylcarbamate) as a chiral stationary phase. *Biomed Chromatogr.* **2019**, 33 (9), e4565. PMID: PMC6685742
- j. \*Asong, G.; Zhu, X.Y.; Bricker, B.; Andey, T.; Amissah, F.; Lamango, N.; Ablordeppey, S.Y. New analogs of SYA013 as sigma-2 ligands with anticancer activity. *Bioorg Med Chem.* **2019**, 27(12):2629-2636. PMID: PMC6536312
- k. \*Al-Ghanim, L.; Zhu, X.Y.; \*Asong, G.; Ablordeppey, S. Y. SYA 013 analogs as moderately selective sigma-2 ( $\sigma_2$ ) ligands: Structure-affinity relationship studies. *Bioorg Med Chem.* **2019**, 27(12):2421-2426. PMID: PMC6536313.
- l. Gonela, U. M.; Ablordeppey, S. Y. Copper-Catalyzed, Ceric Ammonium Nitrate Mediated N-Arylation of Amines. *New J Chem.* **2019**, 43(7), 2861-2864. PMID: PMC6419960.
- m. Mazzio, E., Badisa, R., Eyunni, S., Ablordeppey, S., George, B., Soliman, K. F. A. Bioactivity-Guided Isolation of Neuritogenic Factor from the Seeds of the Gac Plant (*Momordica cochinchinensis*) *Evid Based Complement Alternat Med.* **2018**; 2018, 8953958.
- n. \*Ofori, E.; Zhu, X. Y., Etukala, J. R., Bricker, B. A.; Ablordeppey, S. Y. Synthesis and evaluation of the structural elements in alkylated tetrahydroisoquinolines for binding to CNS receptors. *Bioorg Med Chem.* **2016**, 24, 5730-5740. PMID: PMC5079764

- o. Etukala, J. R.; Zhu, X. Y.; Eyunni, S. V.; \*Onyameh, E. K.; \*Ofori, E.; Bricker, B. A.; Kang, H. J.; Huang, X. P.; Roth, B. L.; Ablordeppey, S. Y. Development of CNS multi-receptor ligands: Modification of known D2 pharmacophores. *Bioorg Med Chem.* **2016**, *24*, 3671-9. PMID: PMC5209244
- p. \*Ofori, E.; Zhu, X. Y.; Etukala, J. R.; \*Peprah, K.; Jordan, K. R.; Adkins, A. A.; Bricker, B. A.; Kang, H. J.; Huang, X. P.; Roth, B. L.; Ablordeppey, S. Y. Design and synthesis of dual 5-HT1A and 5-HT7 receptor ligands. *Bioorg Med Chem.* **2016**, *24*, 3464-71. PMID: PMC5060005
- q. \*Sampson, D.; Zhu, X. Y.; Eyunni, S. V.; Etukala, J. R.; \*Ofori, E.; Bricker, B.; Lamango, N. S.; Setola, V.; Roth, B. L.; Ablordeppey, S. Y. Identification of a new selective dopamine D<sub>4</sub> receptor ligand. *Bioorg Med Chem.* **2014**, *22*, 3105 - 3114. PMID: PMC4096627
- r. Bricker B, \*Sampson, D. Ablordeppey, S. Y. Evaluation of the potential of antipsychotic agents to induce catalepsy in rats: Assessment of a new, commercially available, semi-automated instrument, *Pharmacol Biochem Behav.* **2014**, *120*, 109-116 PMID: PMC3992273
- s. Bricker, B.; Jackson, T.; \*Boateng, B.; Zhu, X. Y.; Ablordeppey, S. Y. Evaluation of the behavioral and pharmacokinetic profile of SYA013, a homopiperazine analogue of haloperidol in rats. *Pharmacol Biochem Behav.* **2012**, *102*, 294-301. PMID: PMC3383382

\*Note that articles with names bearing asterisks are student contributions.

### 3. Contribution to NIH Goal of Increasing URMs in Biomedical & Behavioral Research

The PI has served as the major advisor for a total of 13 PhD students who have graduated in the biomedical sciences. Currently, there is one graduate student studying under my mentorship for the PhD degree in medicinal chemistry.

#### Postdoctoral Fellows/Res Associates

Dr. Pincheng Fan  
 Dr. Jing Xia  
 Dr. Shouming Li  
 Dr. Ramazan Altundas  
 Dr. Cosmas M. Medou  
 Dr. Abdul Khan  
 Dr. Wang Zhang.  
 Dr. Xue You Zhu  
 Dr. Suresh K. Eyunni  
 Dr. Reddy Etukala  
 Ms Barbara Bricker  
 Dr Kalyani Buch  
 Dr. Riaz Khan  
 Dr. Edem Onyameh  
 Dr. Uma Gonela  
 Dr. Chandra Voshavar

#### Ph.D. Students

Dr. Donald Sikazwe  
 Dr. Leroy Mardenborough  
 Dr. Margaret Lyles-Eggleston  
 Dr. Joe Sweet  
 Dr. Kimberly Lebby /with Dr Ann Heiman  
 Dr. Tryphon Mazu  
 Dr. Comfort Boateng  
 Dr. Kwakye Peprah  
 Dr. Sidney Bolden  
 Dr. Dinithia Sampson  
 Dr. Edward Ofori  
 Dr. Gladys Asong  
 Dr. Edem Onyameh

#### Undergrad Students

Over 20 in the last 20 years

### 4. Contribution to the Patent Literature

1. **Date of Issue:** April 20, 2010: **US Patent # 7,700,587** Ablordeppey, S. Y.; Sikazwe, D. M. N. Haloperidol Analogs.
2. **Date of Issue:** April 17, 2012: **US Patent # 8,158,646**: Ablordeppey, S. Y. Preparation of indoloquinolines and related compounds as antifungals and parasiticides.
3. **Date of Issue:** October 16, 2012: **US Patent # 8,288,410**: Ablordeppey, S. Y. 3-Substituted quinolinium and 7H-indolo[2,3-c]quinolinium salts as New Antiinfectives.
4. **Date of Issue:** April 22, 2014: **US Patent # 8,703,798**: Ablordeppey, S.Y. Antifungal and antiparasitic indoloquinoline derivatives
5. **Date of Issue:** January 7, 2020: **US Patent #10525050**: Ablordeppey, S. Y. Alkylated tetrahydro-isoquinolines for binding to central nervous system receptors.”
6. **Date of Issue:** September 28, 2021. **US Patent # 11,129,831** Ablordeppey, S. Y. & Zhu, X. Identification of agents displaying functional activation of dopamine D2 and D4 receptors

## 5. Contribution to Scientific Review

Chair, NIH NIGMS Review Panel, ZGM1 TWD-3 (SC). July 12 2019  
Chair, NIH NIGMS Review Panel, ZGM1 TWD-3 (SC). July 21 2017  
Member, HHS Drug Discovery for Nervous System (DDNS) Review Panel, July 2017 - 2023  
Chair, NIH NIGMS Review Panel, ZGM1 TWD-3 (SC). Feb 26, 2014  
Co-Chair, ZRG1 OTC-T NIH Cancer Drug Discovery for Therapeutics Study Section. 2014  
Chair, Special Emphasis Panel/Scientific Review Group 2014/05 ZGM1 TWD-3  
Chair of Chemistry Review Panel, NIGMS (NIH/MBRS), 2006 – 2012  
Chair, NIGMS MBRS MPRC-B Subcommittee, July 2010 – June 2012.  
Member of Research & Graduate Affairs Committee for AACP, 2004 – 2005  
Member, ACS, Project SEED committee, (2004 –2013) and Committee on Minority Affairs, 2014 –15.  
Reviewer for J. Med. Chem, Eur. J. Med. Chem., J. Heterocyclic Chem., J Computer Aided Drug Design, Bioorg Med Chem, Bioorg Med Chem Lett., Med. Chem. Res  
Member of the Steering Committee of the University Faculty Senate, 1995 -1996  
Ad Hoc Reviewer for NIH Bioorganic and Medicinal Chemistry Study Section.  
Ad Hoc. Reviewer NIH/NCRR RIMI Panel Review Member, 2004, 2007; EXPORT, Health Disparities, NIH AIDS Discovery and Development for Therapeutics Study Section  
Member, NIGMS MBRS Subcommittee, July 2006 – June 2010.  
External referee for university P&T committees, VCU, Spellman College, Ole Miss, WV Univ, UT & USP.

**Selected List of Published Work in MyBibliography: (2008 – 2023; out of a total of over 70)**

<http://www.ncbi.nlm.nih.gov/pubmed/?term=Ablordeppev+SY>