

# KIRK YANCY WILLIAMS

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## VITAL STATISTICS

### EDUCATION

- 2009 Ph.D. in Biomedical Sciences  
*Tulane University*, New Orleans, LA  
***Quantitative Structure Activity Relationships (QSARs) of Phytoestrogens***  
Sponsor: Dr. John McLachlan  
• Characterizing the effects of Phytoestrogens on human and wildlife physiology
- 2001 M.S. Medical Sciences  
*University of Kentucky*, Lexington, KY  
***Computational Approaches to Cell Division***  
Advisor: Dr. Mike Mendenhall  
• Determining via experimentation other components of the *Pho85* system  
• Computation/Mathematical Modeling of the *Pho85* system
- 1997 M.S. Biochemistry and Biophysics  
*Rensselaer Polytechnic Institute*, Troy, New York  
***Mathematical Modeling of T-Cells of HIV/AIDS patients in African-American Communities***  
Advisor: Dr. Charles Pfau  
• Researched the effectiveness of AZT as a monotherapy drug during the stages of HIV/AIDS  
• Investigated the Molecular, Social, Economical, and Psychological effects of HIV/AIDS and its relationship to *M. tuberculosis* in the African-American Community

### PUBLICATIONS

- 2009 **Identification of the potent phytoestrogen glycinol in elicited soybean (*Glycine max*).** Boué SM, Tilghman SL, Elliott S, Zimmerman MC, **Williams KY**, Payton-Stewart F, Miraflor AP, Howell MH, Shih BY, Carter-Wientjes CH, Segar C, Beckman BS, Wiese TE, Cleveland TE, McLachlan JA, Burow ME. *Endocrinology*. 2009 May; 150(5):2446-53.
- 2009 **Glyceollin I, a novel antiestrogenic phytoalexin isolated from activated soy.** Zimmermann MC, Tilghman SL, Boue SM, Salvo VA, Elliott S, **Williams KY**, Skripnikova EV, Ashe H, Payton-Stewart F, Vanhoy-Rhodes L, Fonseca JP, Corbitt C, Collins-Burow BM, Howell MH, Lacey M, Shih BY, Carter-Wientjes C, Cleveland TE, McLachlan JA, Wiese TE, Beckman BS, Burow ME. In *Journal of Pharmacology and Experimental Therapeutics*. Oct 1 2009.
- 2010 **High viremia is associated with high levels of *in vivo* MHC-I downregulation in rhesus macaques infected with SIVmac239** - Thomas C. Friedrich, Shari M. Piaskowski, Enrique J. León, Jessica R. Furlott, Nicholas J. Maness, Kimberly L. Weisgrau, Caitlin E. Mac Nair, Andrea M. Weiler, John T. Loffredo, Matthew R. Reynolds, **KY Williams**, Yann C. Klimentidis, Nancy A. Wilson David B. Allison, and Eva G. Rakasz – *Journal of Virology*
- 2010 **Book Chapter: Bitter Orange (*Citrus aurantium*)** Haaz S, **Williams KY**; Fontaine KR; and Allison DB – *Encyclopedia of Dietary Supplements*

### PUBLICATIONS (submitted)

- 2010 **Conformational Searching and Flexibility of Five Mycoestrogens and their similarity to 17 $\beta$ -Estradiol** *Williams KY, Wiese TE, and McLachlan JA – Steroids*
- 2010 **Scientific Evidence Regarding the Effectiveness of Weight Loss Supplements**  
*Williams KY, Thomas DM, Keith J, Sites C, Allison DB – Annual Review of Nutrition Vol. 31*
- 2010 **Real Data Examples in Statistical Methods Papers: Tremendously valuable, and also tremendously misvalued** *Williams KY, Yoo YJ, Patki A, Allison DB – Statistics at its Interface*

2010 **Quantitative Structure Activity Relationships of Phytoestrogens, Mycoestrogens, and Diethylstilbestrol Derivatives as Estrogens** *Williams KY B, Wiese TE, and McLachlan JA – Molecular Informatics*

#### **P U B L I C A T I O N S (in preparation)**

2010 **Molecular Dynamics of Docked/Scored Phytoestrogens, Mycoestrogens, and Diethylstilbestrol Derivatives to Estrogen Receptor- $\alpha$**  *Williams KY B – Molecular Informatics*

#### **R E S E A R C H F U N D I N G**

- 2005-2009 **QSAR of Phytoestrogens**, NIH, Bethesda, MD 125,350.47 –F31GM069318
- Develop QSAR models that will describe the structure and chemical properties required for phytochemical estrogen receptor binding.
  - Utilize ligand-receptor models (docking) to determine what structural features are required for phytoestrogens to bind to the estrogen receptor.
  - Utilize ligand-receptor and QSAR models to predict the estrogen activity of phytochemicals that have not been tested for ER binding.
- 2003-2004 **Predicting Binding Free Energy of Endocrine Disrupting Compounds**, NIH, Bethesda, MD 100,400.06—F31GM069318
- Develop a predictive algorithm for determining the binding free energy of a variety of known or suspected EDCs.
  - Analyze the binding free energies to determine the contribution of each functional group to the overall binding free energy at an atomic level.
  - Determine the relationship between ligand-binding domain conformation and sequence (different species of ER) and the binding free energy in conjunction with molecular dynamics of the entire system.

#### **R E S E A R C H E X P E R I E N C E**

- 2002 **National Institute of Health Sciences**, Tokyo, Japan  
Dr. Jun Sekizawa  
*Predicting the Free Energy of Binding of Endocrine Disrupting Compounds*  
Travel Award from the Center for Bioenvironmental Research allowed me to work with two members in the field of Endocrinology in Okazaki and Tokyo, Japan. This research was done in conjunction with the current research perform for my doctoral thesis.
- 2002 **National Institute of Basic Biology**, Okazaki, Japan  
Dr. Taisen Iguchi  
*Predicting the Free Energy of Binding of Endocrine Disrupting Compounds*  
Travel Award from the Center for Bioenvironmental Research allowed me to work with two members in the field of Endocrinology in Okazaki and Tokyo, Japan. This research was done in conjunction with the current research perform for my doctoral thesis.
- 1999 **RIKEN (The Institute of Physical and Chemical Research)**, Wako, Japan  
Dr. Toshikazu Ebisuzaki  
*Hydrogen Bonding within Polyproline II (PPII) Helices*  
Summer internship through the National Science Foundation Summer Program. This research was in conjunction with the research that was performed in Dr. Trevor P. Creamer's Laboratory (below).
- 1998-1999 **University of Kentucky**, Lexington, KY  
Dr. Trevor P. Creamer  
*Hydrogen Bonding within Polyproline II (PPII) Helices*  
We researched the conformations of amino acids and their hydrogen bond capacity within the PPII helix. We discovered that the PPII helices' stability is helped by the formation of hydrogen bonds from the amino acids directly adjacent to each other in the PPII helix.

- 1994 **University of Rochester**, Rochester, New York  
 Dr. Robert Bambara  
*Gene Specific Expression from Estrogen Responsive Elements (EREs)*  
 Hormone-reception interaction within the nuclei leads to increased binding to EREs near the promoters of responsive genes. We hypothesized that variations in the number of adjacent EREs, and their spacing modulate the response of individual genes. We concluded that EREs controlled the ligand binding within the sequence for binding where the length of the ERE sequence and the spacer region regulates binding affinity.
- 1993 **NSF/Carnegie-Mellon University**, Pittsburgh, Pennsylvania  
 Dr. Peter Berget  
*Construction of T7 Bacteriophages Incapable of Viral Infection*  
 The T7 Bacteriophage uses a specific gene for formation of the tail-cylinder protein complex used in DNA injection. We constructed mutant T7 Bacteriophages to infect host cells. We concluded T7 Bacteriophage missing the p22 gene product is incapable of DNA injection and viral infection of host cells.
- 1992 **LSU Medical Center**, New Orleans, Louisiana  
 Renee Smith, R.N.  
*Activating Response Elements of Infant Severe Combined Immunodeficiency (SCID)*  
 We investigated the response elements which produce the autoimmune response in infant T-cells, SCID. We were not able to make definitive conclusions on the development and response of SCID within an infant immune system.

## TEACHING EXPERIENCE

- 2005 **Instructor of Biology**, Baton Rouge Community College  
 • Instructor of several sections of Introduction to Biology Lecture and Laboratory course and General Biology Lecture and Laboratory.
- 2004 **Instructor of Biology**, Delgado Community College  
 • Instructor of several sections of General Biology Lecture and Laboratory; Anatomy and Physiology I and II Lecture and Laboratory; Medical Terminology; Microbiology Lecture and Laboratory; Health and Human Diseases Lecture; and Introduction to Anatomy and Physiology I and II Lecture and Laboratory.
- 2002 **Embryology**, Tulane University  
 • Assisted in developing an interactive learning environment for students via web page designs and images
- 2001 **Cell Biology Lab**, Tulane University  
 • Instructed students in cell biology techniques and protocols.
- 2000 **Biochemistry**, University of Kentucky  
 • Instructed students in Biochemistry in the fundamentals and application of Biochemical techniques and protocols.
- 1998 **Molecular Biochemistry**, Rensselaer Polytechnic Institute  
 • Instructed students in Molecular Biochemistry and the usage of computers for determining information on Protein and Nucleic Acid Structure and Function.
- 1998 **Organic Chemistry Lab**, Rensselaer Polytechnic Institute  
 • Instructed students in organic synthesis and protocols.

## ADVISING EXPERIENCE

- 2001-2003 **SEED/SPRITE Program**, New Orleans, Louisiana  
 • Instructed students on the proper usage of the various programs on RCS  
 • Assisted in developing an interactive learning environment for students

- 1997 **Student Advisor - Rensselaer's Office of Minority Affairs**, Troy, New York
- Instructed students on the proper usage of the various programs at Rensselaer
  - Developed an interactive learning environment for students
- 1996 - 1998 **Communications Instructor**, Troy, New York
- Instructed students on the proper usage of English--Grammar, Sentence Structure, Essay Writing and Research Paper Development
  - Developed an interactive learning environment for students/instructed students in web page design.

## INVITED SPEAKER

- 2002 **National Institute of Health Sciences**, Tokyo, Japan  
 Dr. Jun Sekizawa  
*Predicting the Free Energy of Binding for Endocrine Disrupting Compounds*  
 Seminar on the usefulness and process of determining the Binding Free Energy of Pharmaceutical, Pollutants, and Steroids to Estrogen Receptor $\alpha$ . This seminar also focused on the method currently used in drug design, the Molecular Mechanics/Poisson-Boltzman Surface Accessibility (MM/PBSA).

## HONORS & AWARDS

- Emerging Scholars Network – Summer Fellowship. U of Michigan 2010
- Travel Award: ENAR Diversity in Biostatistics. New Orleans, LA 2010
- Travel Award: 2010 Boulder TWIN STUDIES. Boulder, CO 2010
- Annual Post-Doctoral Research Day 2<sup>nd</sup> Place Presentation Award 2010
- GAELA/NSF Dissertation Year Fellowship 2008-2009
- NIGMS National Research Service Award (NRSA) 2003-2009
- National Science Foundation Summer Programs Travel/Research Award 1999
- Southern Region Education Board Fellowship 1998-2001
- Lyman T. Johnson Graduate Fellowship (University of Kentucky) 1998-2001
- NIGMS Minority Access to Research Careers (MARC) Trainee 1992-1994
- Dillard University Merit Scholarship 1990-1994
- Scholastic Achievement Awards in Natural Sciences  
 Chemistry, Calculus, Japanese, & Spanish 1990-1994

## LEADERSHIP/MEMBERSHIPS

- President of the Chemistry Club. Dillard University; New Orleans, LA.
- Vice-President of the Graduate School Student Association. Tulane University; New Orleans, LA.
- Member Alpha Phi Alpha Fraternity, Inc. Dillard University; New Orleans, LA.
- Mu Alpha Theta Mathematical Honor Society. Dillard University; New Orleans, LA.
- Future Health Professionals of America. Dillard University; New Orleans, LA.
- Member of the Graduate Council. U of Kentucky; Lexington, KY.
- Chair, Diversity Promotion Panel UAB – Birmingham, AL.

## COMPUTER SKILLS

Platforms/ Operation Systems: DOS, Vax/Vms, UNIX/LINUX, Mac OS 10, Windows 2000, NT, XP, Vista, 7  
 Programming Languages: UNIX, C/C++, HTML, Perl, Python, and JAVA  
 Software: R, SAS, PLINK, Tripos' Sybyl, AMBER, MOE, Accelrys: InsightII, Office 2007, other  
 QSAR/Docking Programs.

## SOCIAL ACTIVITIES

Language knowledge/skills: Japanese and Spanish  
 Computer programming

## REVIEWER

- International Journal of Obesity 2009
- Nature Biotechnology 2009 – 2010

## REFERENCES

Dr. John McLachlan  
Center for Bioenvironmental Research  
Health & Environmental Research Bldg  
1430 Tulane Avenue, SL-3  
New Orleans, LA 70112  
[john.mclachlan@tulane.edu](mailto:john.mclachlan@tulane.edu)  
(504) 988 – 6910

Dr. Simon Hocart  
Health & Environmental Research Bldg  
1430 Tulane Ave, SL-3  
New Orleans, LA 70112  
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Ryals Public Health Building, Suite 414  
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