

# John C. Carlson, MD, PhD

## Curriculum Vitae

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### Current Positions at Tulane University:

Pediatric Residency Program Director

Allergy/Immunology Fellowship Program Director

Assistant Professor of Pediatrics, Section of Allergy & Immunology

Clinical Assistant Professor of Internal Medicine, Section of Allergy & Immunology

Adjunct Assistant Professor, Department of Epidemiology; Co-investigator, NO-ROACH and NICHE Studies

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## EDUCATION/TRAINING

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### Allergy and Immunology Clinical Fellowship ■ 2010

Tulane University, New Orleans, LA

Research: *Immune reactions to arthropods*

### Pediatrics Chief Resident ■ 2008

Tulane University, New Orleans, LA

Research: *Structured mentorship used to promote publication of case reports by pediatrics residents*

### Pediatrics Residency Training (Integrated Research Pathway) ■ 2007

Tulane University, New Orleans, LA

Research: *Effect of flood on aquatic predator and larval mosquito distributions in natural and man-made habitats*

### M.D. & Ph.D. (Parasitology) ■ 2004

Tulane University, New Orleans, LA

Dissertation: *Ecological variables affecting trophic cascades in Anopheles gambiae larval habitats*

### B.S. (Entomology) ■ 1998

University of Maryland, College Park, MD

High Honors in Microbiology and University Honors Citation

Honors Thesis: *Assessment of the antifungal properties of endosymbiotic bacteria in Zootermopsis nevadensis*

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## POSITIONS AND RESPONSIBILITIES

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2010-present Assistant professor, Dept Pediatrics, Sections of Allergy & Immunology and Community Pediatrics and Global Health, Tulane University SOM.

Responsibilities: As an allergist, I specialize in treating adults and children with high risk disorders including anaphylaxis and severe asthma. I established a high risk allergy clinic where patients are referred for rapid desensitization and other higher risk allergy procedures. Clinical care is also provided in clinics at Ochsner Hospital and a variety of community venues through contracts and grants that allow me to provide care for uninsured and underinsured patients. Currently these include contracts with the School-Based Health Centers of Jefferson Parish, the FQHC NOELA Clinic in New Orleans East, and as medical director of the ReNEW Charter network in Orleans Parish.

2010-present Adjunct assistant professor, Department of Epidemiology, Tulane University SPH&TM.

Responsibilities: I am a member of Felicia Rabito's research team, investigating the factors that contribute to poor respiratory health outcomes in children with asthma. The majority of our work has examined the exposures that children have to cockroaches and we have conducted federally-funded, controlled, interventional trials to investigate how these health disparities can be reduced. We are a part of the Tulane Stress and Environment Research Collaborative on Health Disparities (SERCH).

2013-present Director, Tulane/Ochsner Pediatrics Residency Training Program

Responsibilities: I oversee the training of 58 residents training in pediatrics with the help of two associate program directors and two chief residents, including ensuring compliance with ACGME requirements to maintain an accredited program. I also oversee our Advocacy training program in which residents develop sustainable community advocacy projects by partnering with community members to identify needs and solutions.

2014-present Director, Tulane Allergy/Immunology Fellowship Training Program

Responsibilities: I oversee four Allergy/immunology fellows with the assistance of an associate program director. I supervise clinical work doing high risk procedures, seeing complex patients at Ochsner, and understanding health disparities in the resource limited settings of community settings.

2011-2014 Section Head, Community Pediatrics and Global Health, Tulane University

Responsibilities: Over this three year period, I established an assortment of partnerships throughout the greater New Orleans area, providing clinical care in four different parishes. I performed needs assessments following floods, the influx of undocumented children fleeing violence from Central America, and the BP oil spill and worked effectively with community partners to help vulnerable families. New Orleans Children's Health Project: This project is collaborative partnership between Tulane University's Department of Pediatrics and the Children's Health Fund, a national-non-profit organization that funds similar projects across the US to provide medical services to those facing the greatest barriers in obtaining high quality medical care. I began working on the mobile clinics in July 2010. I have developed a fully operational allergy clinic capable of performing allergy skin tests, spirometry, and incremental food challenges, bringing these specialty skills to uninsured patients and those with chronic illness that have notoriously poor follow-up rates at traditional clinics. Using a variety of unconventional approaches we have found ways to diagnose and treat children with recurrent anaphylaxis, immunodeficiency, and other life-threatening conditions. As medical director of NOCHP from in August 2011 to December 2014, I oversaw the expansion of staff to target the growing population of uninsured Hispanic children in the New Orleans area, implement mechanisms to identify and track children with additional chronic health conditions, and piloted approaches with patients living in remote, rural locations.

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#### AWARDS

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2011, 2012 Leventhal Foundation Professorship Award, financial award for work in community medicine

2009 Tulane School of Medicine Dean's Award For Excellence in Research and Presentation

2007 Pediatrics Resident of the Year for excellence in leadership, scholarship, fellowship, and competence

2003 CDC Vector Borne Infectious Disease Training Fellowship

2001 J. Bennett Johnston Science Foundation Research Grant

2001 Bill & Melinda Gates Foundation Grant to the Tulane Life Support Society

1997 Howard Hughes Medical Research Fellowship

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#### MEMBERSHIPS IN PROFESSIONAL ORGANISATIONS (CURRENT)

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Entomological Society of America, Section on Medical, Urban, and Veterinary Entomology

American Academy of Allergy, Asthma & Immunology, member Anaphylaxis Committee

American College of Allergy, Asthma & Immunology, member Insect Committee

Louisiana Society of Allergy, Asthma, and Immunology, member

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#### PROFESSIONAL ACTIVITIES

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**Peer review:** Journal of Allergy and Clinical Immunology (23), Emerging Infectious Diseases (3), Clinical Pediatrics (7), Infections in Medicine (1), Journal of the Louisiana State Medical Society (5), Environmental Entomology (1), Disaster Medicine and Public Health Preparedness (1)

**Outreach:** Contributing Editor for BugGuide.net, explaining the immune system's response to arthropods, and providing identifications of cockroach and venomous arthropod species

**Children's Health Fund:** Asthma Special Interest Group working to standardize measurement of process measures and health outcomes across the national network, and consultant for projects that involve reduction of health disparities for disadvantaged children with asthma.

**Autoinjectable epinephrine in schools program:** I help to establish policies, conduct training, and prescribe epinephrine autoinjectors for schools in the Greater New Orleans area. These autoinjectors are available for use in any child that is experiencing anaphylaxis rather than being prescribed to a single child. Currently this provides protection for children at 22 schools in the Greater New Orleans area.

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## FUNDED RESEARCH ACTIVITIES

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- The Green Housing Study: Centers for Disease Control and Prevention grant U01EH001130, PI: F Rabito. Role: Con-investigator, 10% effort. Total direct costs: \$403,600. 07/01/2014-12/31/2016  
The goal of this study is to examine the effects of green housing on the health of children with asthma living in New Orleans, collected in a manner that facilitates comparisons with children at other Green Housing Study sites across the country.
- The Niche-based Cockroach Intervention for the Home Environment (NICHE). HUD grant LAHHU0013-13, PI: FA Rabito. Role: Co-PI, 10% effort. Total direct costs: \$497,415. 02/01/2013 – 11/30/2016.  
This study examines the metapopulation dynamics of different cockroach species found in the indoor environment, including species that are thought to enter homes from the outdoors. I wrote the proposal, trained the field staff, analyzed the data, and am writing manuscripts.
- The New Orleans Roach Control and Asthma in Children (NO-ROACH). HUD grant LAHH0228-10, PI: FA Rabito. Role: Co-PI, 20% effort. Total direct costs: \$744,341. 04/01/2011 – 03/31/2014  
Funded by Federal Housing and Urban Development with additional support from the National Institutes of Health, NIEHS. This controlled, interventional trial enrolled children with asthma to examine the effect of an inexpensive cockroach IPM interventions in homes on clinical outcomes of asthmatic children. This study stems from our previous research that identified cockroach fecal proteins present in household dust as the driver of hospitalizations for asthma among children in New Orleans.
- Multilevel Pathways to Biological Risk and Health Disparities in Children. NIH grant 1R01ES020447-01, PI: KP Theall. Role: consultant, 5% effort. 09/01/2011 – 08/31/2013  
This study examines the role of emotional stress on measures of biological stress including salivary cortisol, telomere length, and markers of inflammation. I examined inflammatory markers such as eosinophil counts from nasal swabs.

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## TEACHING EXPERIENCE

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- Pediatrics Residency Program Director:** Since July 2013, I have been spending 0.5 FTE overseeing the training of pediatrics residents (including residents completing combined residencies) training within the Tulane and Ochsner Health systems. I run monthly meetings to evaluate the educational experience through the Clinical Learning Environment Review Committee and the Program Evaluation Committee. Quarterly meeting of the Clinical Competency Committee and monthly meetings with select residents ensure that individuals are receiving the individualized experiences needed to train strong clinicians.
- Allergy and Immunology Fellowship:** Since July 2012 I meet weekly with the allergy/immunology fellows. This time is used to run the monthly journal club and the quality improvement projects for the allergy/immunology fellows at Tulane. In addition, I provide specific clinical experiences needed to address deficiencies identified through the course of their training, such as performing high risk procedures, treating uncommon conditions, and work within communities and among patients from different socioeconomic and cultural backgrounds. Beginning in July 2014, I have taken over the role of Program Director of the fellowship.
- Immunology:** graduate-level, 3-credit course taught for the Tulane School of Public Health and Tropical Medicine, Department of Tropical Medicine developed in Fall 2010, also taught in Fall 2011.
- Methods in Clinical Research for Allergy/Immunology, 5-part lecture series for fellows of the Tulane and LSU allergy/immunology training programs given in 2009, to Tulane only in 2010-2016:
- Introduction: Historical trends, current crisis and the need for clinical research
  - Statistical methods: Data types, sample size, statistical power, and independence of observations
  - Ethics in research: Funding sources, vulnerable populations, informed consent and IRBs
  - Publishing results: Anticipating and overcoming common barriers
  - Getting started in clinical research: Collaborators and the continuous quality improvement model
- American Heart Association instructor (1998-2010):
- BLS instructor, BLS instructor-trainer 1998-2005
  - PALS instructor and Instructor trainer 2004-2010; PALS Center Faculty 2008-2010.

#### Pediatrics Chief Resident (July 2007-June 2008)

- Morning report: Four mornings each week I directed case presentations and led discussions about patients recently admitted to one of the three teaching hospitals affiliated with the Tulane/Ochsner Pediatrics Residency Training Program at either Tulane or Ochsner Hospital.
- Noon conference curriculum: I developed and implemented a new curriculum for the daily noon conference lecture series based on content specifications from the American Academy of Pediatrics
- Professional development: I met with each pediatrics resident to discuss career plans and directed them to activities and faculty that would facilitate achievement of those career plans. In addition, I reviewed the CVs of all residents within 2 years of graduation in order to guide the format and identify weaknesses.
- Attending physician: I provided back-up coverage in the NICU, PICU, pediatric wards, and the pediatric mobile medical unit during which time I rounded with residents and medical students.

#### Guest lectures

- Immune reactions to Arthropod Bites and Stings (March 2016) for a graduate course on the molecular basis of pediatric diseases for Zubaida Saifudeen at Tulane University, New Orleans, LA
- Hypersensitivity Reactions (November 2015) for medical students as part of their Immunology course directed by James McLachlan at Tulane University, New Orleans, LA
- Urban ecology and Human Health (December 2006) presented to an Introduction to Ecology class of Gail Langellotto at Fordham University in New York, NY
- Trophic cascades (April 2006) presented to an Introduction to Ecology class of Lee Dyer at Tulane University, New Orleans, LA
- Field methods in medical entomology (February 2002) presented to an Introduction to Entomology class of Lee Dyer at Tulane University, New Orleans, LA
- Ecology and Human Health (December 2002) presented to an Introduction to Ecology class of Michael Stuart at University of North Carolina, Asheville, NC

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### SCIENTIFIC PUBLICATIONS

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- Carlson, JC. **Look for the helpers**. Disaster Medicine and Public Health Preparedness. Accepted.
- Arroyave WD, Rabito FA, Carlson JC, Sever ML, Lefante J. **Asthma severity, not asthma control, is worse in atopic compared with nonatopic adolescents with asthma**. *Ann Allergy Asthma Immunol*. 2016 Jan;116(1):18-25.
- Arroyave WD, Rabito FA, Carlson JC, Friedman EE, Stinebaugh SJ. **Impermeable dust mite covers in the primary and tertiary prevention of allergic disease: a meta-analysis**. *Ann Allergy Asthma Immunol*. 2014 Mar;112(3):237-48. PMID: 24484971
- Arroyave WD, Rabito FA, Carlson JC. The relationship between a specific IgE level and asthma outcomes: results from the 2005-2006 National Health and Nutrition Examination Survey. *J Allergy Clin Immunol Pract*. 2013 Sep-Oct;1(5):501-8. PMID: 24565622
- Rabito FA, Horter L, Langlois EC, Carlson JC, White LE, Schwartz K, Osman P, Rice JC. **Blood Lead and Pediatric Asthma**. *Epidemiology*. 2013 May;24(3):474-476.
- Caillouët KA, Riggan AE, Bulluck LP, Carlson JC, Sabo RT. **Nesting bird "host funnel" increases mosquito-bird contact rate**. *J Med Entomol*. 2013 Mar;50(2):462-6.
- Rabito, FA, JC Carlson, EC Langlois, LV Horter, and JC Rice. A multilevel prospective analysis of pediatric lead exposure and risk of asthma. Submitted.
- Carlson, JC and MS Fox. **Citizen science in entomology research**. *American Entomologist*. 2012, 58(1):8
- Carlson, JC, J McClarin, and MS Fox. **Passive surveillance in medical entomology**. *American Entomologist*. 2012, 58(1):29-31.
- Rabito, FA, JC Carlson, EW Holt, S Iqbal, MA James. Cockroach exposure, independent of sensitization status, is associated with hospitalization for asthma in inner-city children. *Annals of Allergy, Asthma, and Immunology*, 2011;106:103-109.
- Carlson, JC and N Charney. **Signs of invertebrates on humans**. In: *Tracks & Sign of Insects and Other Invertebrates* by C. Eiseman and N. Charney. Mechanicsburg: Stackpole Books, March 2010.
- Carlson, JC, LA Dyer, FX Omlin, and JC Beier. **Diversity cascades and malaria vectors**. *Journal of Medical Entomology*. 2009, 46(3):460-4.
- Carlson, JC. **Louisiana brown recluse distribution study**. *J La State Med Soc*. 2009, 161(2):11.
- Carlson, JC, and MS Fox. A sticktight flea removed from the cheek of a two year old boy from Los Angeles. *Dermatology Online Journal* 2009, 15(1):5.
- Caillouët, KA, JC Carlson, D Wesson, and F Jordan. Colonization of abandoned swimming pools by larval mosquitoes and their predators following Hurricane Katrina. *Journal of Vector Ecology* 2008, 33(1):166-72.

- Omlin, FX, JC Carlson, CB Ogbunugafor, and A Hassanali. **Anopheles gambiae exploits the treehole ecosystem in Western Kenya: A new urban malaria risk?** *American Journal of Tropical Medicine and Hygiene* 2007 77: 264-269.
- Carlson, JC, J Keating, CM Mbogo, S Kahindi, and JC Beier. **Ecological limitations on aquatic mosquito predator colonization in the urban environment.** *Journal of Vector Ecology* 2004, 29(2): 331-9.
- Carlson, JC, BD Byrd and FX Omlin. Field assessments in western Kenya link malaria vectors to environmentally disturbed habitats during the dry season. *BMC Public Health* 2004, 4(33): 1-7.
- Depinay, J-M, CM Mbogo, G Killeen, B Knols, J Beier, J Carlson, J Dushoff, P Billingsley, H Mwambi, J Githure, AM Toure, and FE McKenzie. **A simulation model of African Anopheles ecology and population dynamics for the analysis of malaria transmission.** *Malaria Journal* 2004, 3(1):1-21.
- Omlin, FX, and JC Carlson. **Predicting malaria epidemics in the Kenyan highlands.** Special report to the Kisii District Minister of Health. Nairobi: ICIPE, 2003.

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#### SELECTED PRESENTATIONS

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- Invited speaker-** “Arthropod bites and stings” Invited to be the keynote speaker for the International Master Gardener Conference in Portland, Oregon, July 2017.
- Invited Speaker-** “Clinical outcomes of house dust mite and cockroach avoidance measures” to be presented at the Annual meeting of the Louisiana Society of Allergy, Asthma and Immunology in New Orleans, LA.
- Speaker-** “Updates on Food Allergies” Presented to the Tulane Pediatric CME Saturday series November 2015
- Speaker-** “Overland versus underground movement of American cockroaches, *Periplaneta americana*, in New Orleans, Louisiana: Results of the NICHE study” Carlson, JC, Fox, MS, and Rabito FA. November 2015. Presentation at the Entomological Society of America’s annual meeting in Minneapolis.
- Invited Speaker-** “Immune reactions to arthropod bites and stings”. June 2015. Presentation at the annual Louisiana Society of Allergy, Asthma, and Immunology in New Orleans.
- Grand Rounds speaker-** “Adverse reactions to psychotropic medications” Child psychiatry grand rounds January 2015.
- Invited Grand Rounds Speaker-** “Immune Reactions to Arthropod Bites and Stings” Carlson, JC. February 2014. Presented during a grand rounds at Phoenix Children’s in Phoenix, AZ.
- Session leader-** “Standardizing measures of asthma” Carlson, JC and AJ Khaw. November 2011. Asthma Special Interest Group of the Children’s Health Fund’s national network, presented at the CHF Winter Conference in New York, NY.
- Symposium organizer-** “Citizen Science in Entomology Research” November 2011. Proposal was selected by the Entomological Society of America in a competitive process, with participants consisting of top entomology researchers across North America, attempting to solve critical issues facing the future of biological sciences. Presented at the Entomological Society of America annual meeting in Reno, NV. The quality of the symposium resulted in a request to publish a series of articles covering the issues in American Entomologist.
- Symposium speaker-** “Passive surveillance in medical entomology using BugGuide.” November 2011. A comparison between open-access databases and USDA databases on distributional data for medically important arthropods presented as part of the “Citizen Science in Entomology Research” symposium, presented at the annual meeting of the Entomological Society of America’s annual meeting in Reno, NV.
- Grand Rounds speaker-** “Inner-city asthma” Carlson, JC. August 2011. Presented to the Tulane Department of Pediatrics for weekly grand rounds in New Orleans, LA.
- Session leader-** “Standardizing measures of asthma” Carlson, JC and D Gracy. Asthma Special Interest Group of the Children’s Health Fund, presented at the Spring Clinical Conference in July 2011 in Washington DC.
- Invited Speaker-** “Management of asthma and combornid conditions: Carlson JC. April 2011. Presented to the nurses of the Recovery School District in New Orleans, LA.
- Symposium speaker-** “Entomophagy and allergy: Immune reactions to ingested arthropods” Carlson, JC. Within Program Symposium: *Entomophagy Reconsidered: Current Status and Challenges, Potential Directions, and an Invitation to Entomologists*. December 2010. Presentation at the annual meeting of the Entomological Society of America in San Diego, CA.
- Speaker-** “Hospitalization for asthma is associated with cockroach exposure in the homes of children in New Orleans, LA” December 2010. Carlson, JC and FA Rabito. Presentation at the annual meeting of the Entomological Society of America in San Diego, CA.

**Invited Speaker-** “Human Ectoparasites” October 2010. Carlson, JC. Presented at the annual General Pest Control Academy sponsored by City of New Orleans & the Greater New Orleans Pest Control Association in New Orleans, LA.

**Case presentation-** “Immunologic danger as a stimulus for IgE production.” November 2010. Carlson, JC and JM El-Dahr. Presented at the weekly Citywide Allergy/Immunology Case Conference in New Orleans, LA.

**Speaker-** “Atopic psychoneuroimmunology” March 2010. Presented at the weekly Citywide Allergy/Immunology Conference in New Orleans, LA.

**Grand rounds speaker-** “Atopic psychoneuroimmunology” February 2010. Carlson, JC. Presented to the Tulane Child and Adolescent Psychiatry Department during their weekly Grand Rounds in New Orleans, LA.

**Speaker-** “Is that a person or a flower? Experimental evaluation of the standard recommendations given by physicians to venom-allergic patients regarding foraging Hymenoptera” December 2009. Carlson, JC and MS Fox. Presented at the annual meeting of the Entomological Society of America in Indianapolis, IN.

**Case presentation-** “Treatment options in severe, steroid-dependent asthma” November 2009. Carlson, JC and N Parada. Presented at the weekly Citywide Allergy/Immunology Case Conference in New Orleans, LA.

**Invited speaker-** “Near-fatal anaphylaxis from fire ant stings.” October 2009. Carlson, JC. Presented at the annual meeting of the American Academy of Pediatrics in Washington DC.

**Grand rounds speaker-** “Immunologic reactions to arthropods” May 2009. Carlson, JC. Presented to the Tulane Department of Pediatrics during their weekly Grand Rounds in New Orleans, LA.

**Case presentation-** “Contact urticaria” April 2009. Carlson, JC and L Wild. Presented at the weekly Citywide Allergy/Immunology Case Conference in New Orleans, LA.

**Invited speaker-** “Application of structural equation models to human health.” March 2009. Carlson, JC. Vector Biology Research Initiative monthly seminar at Tulane University in New Orleans, LA.

**Case presentation-** “Venom reactions” December 2008. Carlson, JC and L Wild. Presented at the weekly Citywide Allergy/Immunology Case Conference in New Orleans, LA.

**Speaker-** “Niche-width expansion by *Anopheles gambiae* (Diptera: Culicidae) in western Kenya: Larvae found in novel habitats generated by human disturbance” November 2008. Carlson, JC, LA Dyer and FX Omlin. Presented at the annual meeting of the Entomological Society of America in Reno, NV.

**Case presentation-** “Atopic disease and parasites” October 2008. Carlson, JC and JM El-Dahr. Presented at the weekly Citywide Allergy/Immunology Case Conference in New Orleans, LA.

**Speaker-** “The biogeography of aquatic maggots in New Orleans, LA” December 2007. Carlson, JC, MS Fox, and KA Caillouet. Presented at the Louisiana Mosquito Control Association annual meeting in Metairie, LA.

**Grand rounds speaker-** “Humbugs” November 2007. Carlson, JC. Presented to the Ochsner and Tulane Pediatrics departments at their weekly combined grand rounds at Ochsner Hospital in Metairie, LA.

**Speaker-** “The biogeography of puddle “islands” in urban New Orleans” December 2006. Carlson, JC, MS Fox, and KA Caillouet. Presented at the Entomological Society of America annual meeting in Indianapolis, IN.

**Presenter-** “Modeling trophic cascades to determine indirect effects on mosquito survivorship.” August 2006. Carlson, JC. Presented to the laboratory of Lee Dyer, Tulane University in New Orleans, LA.

**Speaker-** “Distribution of immature mosquito predators on seasonally floating freshwater marsh in Louisiana’s Barataria Basin”. October 2004. Carlson, JC, KA Caillouet and D. Wesson. Presented at the Environmental Research Consortium of Louisiana, in New Orleans, LA

**Speaker-** “Structural complexity alters predator-prey ecology in *Anopheles* larval habitats”. Carlson, JC. May 2003. Presented at the NIH annual ICTIDR meeting, in Bethesda, MD.

**Speaker-** “Investigations into the etiology of highland malaria epidemics”. March 2003. Carlson, JC and FX Omlin. Presented at the Kenya Medical Research Institute seminar series in Kilifi, Kenya.

**Invited speaker-** “The trophic cascades of *Anopheles* larval habitat in the Kenyan highlands”. October 2002. Carlson, JC, FX Omlin and J Beier. Presented to NIH, Fogarty modeling group in Bethesda, MD.