

**CURRICULUM VITAE – APRIL 22, 2019**

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- BIRTHPLACE/DATE:** San Juan, Puerto Rico, USA, 1974

**B. DEGREES EARNED**

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- Bachelor of Arts, University of Chicago, 1996; Biology.*
- Master of Science, University of Wisconsin-Madison, 1999; Veterinary Science.*
- Biological Imaging/Pharmacology. Advisor, Dr. Ralph M. Albrecht.
  - Thesis title: "Gastrointestinal persorption and tissue distribution of colloidal gold nanoparticles: effect of particle size."
- Doctor of Philosophy, University of Wisconsin-Madison, 2004; Comparative Biomedical Sciences.*
- Vector Biology/Parasitology/Entomology. Advisor, Dr. Bruce M. Christensen.
  - Thesis title: "Cellular immune response of mosquitoes to pathogens."

**C. EMPLOYMENT HISTORY**

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- Post-doctoral associate/fellow, University of Minnesota-Twin Cities, 2004-2007.*
- Vector Biology/Parasitology/Entomology. Mentor, Dr. Kenneth D. Vernick (presently Head of Genetics and Genomics of Insect Vectors Division, Institut Pasteur, France).
- Assistant Professor of Biological Sciences, Vanderbilt University, 2007-2014.*
- Associate Professor of Biological Sciences, Vanderbilt University, 2014-present.*
- Director, College of Arts & Science Program in Career Development, August 2017-present.
  - Chair, Institutional Biosafety Committee, April 2015-present.
  - Secondary appointment: Vanderbilt University Institute for Global Health, 2007-present.
  - Secondary appointment: Center for Medicine Health and Society, 2011-present.
  - Faculty member, Program in Microbial Pathogenesis, Program in Immunology, and Vanderbilt Institute for Infection, Immunology and Inflammation (VI4), 2011-present.

**D. HONORS, AWARDS, & FELLOWSHIPS**

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|------------|---|
| 1994, 1995 | University of Chicago Summer Research Opportunities Fellow.   |
| 1997-1998  | University of Wisconsin-Madison Advanced Opportunity Fellow.  |
| 1998, 1999 | University of Wisconsin-Madison, Vilas Professional Development Award.  |
| 1998-2001  | National Science Foundation (NSF) Minority Graduate Research Fellow.  |
| 2000       | Microscopy Society of America Presidential Student Award.   |
| 2000, 2001 | University of Wisconsin, Animal Health & Biomedical Sciences Travel Award.  |
| 2001-2004  | National Institutes of Health (NIH) Ruth L. Kirschstein National Research Service Award (NRSA), Individual Pre-doctoral Fellow (F31). |
| 2003       | American Society of Parasitologists Marc Dresden Student Travel Grant Award.  |

- 2004 University of Wisconsin-Madison Richard F. Marsh Animal Health & Biomedical Sciences Outstanding Graduate Student Research Award.
- 2005 American Society of Parasitologists Ashton Cuckler New Investigator Award.
- 2006-2007 National Institutes of Health (NIH) Ruth L. Kirschstein National Research Service Award (NRSA), Individual Post-doctoral Fellow (F32).
- 2011 Vanderbilt University Jeffrey Nordhaus Award for Excellence in Undergraduate Teaching.
- 2012 Recognition Award in Insect Physiology, Biochemistry & Toxicology; Southeastern Branch of the Entomological Society of America.
- 2012-2016 Elected to American Society of Parasitologists' Council (governing board).
- 2013 Elected to the Academy of Arts and Sciences of Puerto Rico.
- 2015 American Society of Parasitologists Henry Baldwin Ward Medal.
- 2015-2016 Vanderbilt University Littlejohn Faculty Fellow.
- 2016-2018 Vanderbilt University Chancellor Faculty Fellow.
- 2017-2021 Elected to the presidential cycle of the American Society of Parasitologists: Vice-President, 2017-2018; President-Elect, 2018-2019; President, 2019-2020; Immediate Past President, 2020-2021.

## E. RESEARCH

### ARTICLES IN REFEREED JOURNALS:

- Hillyer, J.F., and R.M. Albrecht. 1998. Correlative instrumental neutron activation analysis, LM, and TEM to track in vivo distribution of colloidal gold spheres in BALB/c mice. *Microscopy and Microanalysis*. 4(Suppl 2: Proceedings):998-999.
- Hillyer, J.F., and R.M. Albrecht. 1998. Correlative instrumental neutron activation analysis, light microscopy, transmission electron microscopy, and X-ray microanalysis for qualitative and quantitative detection of colloidal gold spheres in biological specimens. *Microscopy and Microanalysis*. 4(5):481-490. (PMID 9990870)
- Zhao, X., C.T. Smartt, J.F. Hillyer, and B.M. Christensen. 2000. A novel member of the RING finger gene family associated with reproductive tissues of the mosquito, *Aedes aegypti*. *Insect Molecular Biology*. 9(3):301-308. (PMID 10886414)
- Hillyer, J.F., and R.M. Albrecht. 2000. Correlative neutron activation and TEM to determine the uptake mechanism and distribution of orally administered colloidal gold nanoparticles. *Microscopy and Microanalysis*. 6(Suppl 2: Proceedings):1006-1007.
- Smartt, C.T., L.M. Kiley, J.F. Hillyer, and B.M. Christensen. 2001. *Aedes aegypti* glutamine synthetase: expression and gene structure. *Gene*. 274(1-2):35-45. (PMID 11674996)
- Hillyer, J.F., and R.M. Albrecht. 2001. Gastrointestinal persorption and tissue distribution of differently sized colloidal gold nanoparticles. *Journal of Pharmaceutical Sciences*. 90(12):1927-1936. (PMID 11745751)
- Hillyer, J.F., and B.M. Christensen. 2002. Characterization of hemocytes from the yellow fever mosquito, *Aedes aegypti*. *Histochemistry and Cell Biology*. 117(5):431-440. (PMID 12029490)
- Hillyer, J.F., S.L. Schmidt, and B.M. Christensen. 2003. Rapid phagocytosis and melanization of bacteria and *Plasmodium* sporozoites by hemocytes of the mosquito, *Aedes aegypti*. *Journal of Parasitology*. 89(1):62-69. (PMID 12659304)
- Johnson, J.K., T.A. Rocheleau, J.F. Hillyer, C.C. Chen, J. Li, and B.M. Christensen. 2003. A potential role for phenylalanine hydroxylase in mosquito immune responses. *Insect Biochemistry and Molecular Biology*. 33(3):345-354. (PMID 12609519)

Hillyer, J.F., S.L. Schmidt, and B.M. Christensen. 2003. Hemocyte-mediated phagocytosis and melanization in the mosquito *Armigeres subalbatus* following immune challenge by bacteria. *Cell & Tissue Research*. 313(1):117-127. (PMID 12838409)

Boyle, J.P., J.F. Hillyer, and T.P. Yoshino. 2003. Pharmacological and autoradiographical characterization of serotonin-like activity in sporocysts of the human blood fluke, *Schistosoma mansoni*. *Journal of Comparative Physiology A-Neuroethology, Sensory, Neural, and Behavioral Physiology*. 189(8):631-641. (PMID 12861423)

Hillyer, J.F., S.L. Schmidt, and B.M. Christensen. 2004. The antibacterial innate immune response by the mosquito *Aedes aegypti* is mediated by hemocytes and independent of gram type and pathogenicity. *Microbes and Infection*. 6(5):448-459. (PMID 15109959)

Wang, X., T.A. Rocheleau, J.F. Fuchs, J.F. Hillyer, C.C. Chen, and B.M. Christensen. 2004. A novel lectin with a fibrinogen-like domain and its potential involvement in the innate immune response of *Armigeres subalbatus* against bacteria. *Insect Molecular Biology*. 13(3):273-282. (PMID 15157228)

Hillyer, J.F., S.L. Schmidt, J.F. Fuchs, J.P. Boyle, and B.M. Christensen. 2005. Age-associated mortality in immune challenged mosquitoes (*Aedes aegypti*) correlates with a decrease in haemocyte numbers. *Cellular Microbiology*. 7(1):39-51. (PMID 15617522)

Wang, X., J.F. Fuchs, L-C Infanger, T.A. Rocheleau, J.F. Hillyer, C.C. Chen and B.M. Christensen. 2005. Mosquito innate immunity: involvement of beta 1,3-glucan recognition protein in melanotic encapsulation immune responses in *Armigeres subalbatus*. *Molecular and Biochemical Parasitology*. 139(1):65-73. (PMID 15610820)

Hillyer, J.F., and B.M. Christensen. 2005. Mosquito phenoloxidase and defensin colocalize in melanization innate immune responses. *The Journal of Histochemistry & Cytochemistry*. 53(6):689-698. (PMID 15928318)

Hillyer, J.F., C. Barreau, and K.D. Vernick. 2007. Efficiency of salivary gland invasion by malaria sporozoites is controlled by rapid sporozoite destruction in the mosquito haemocoel. *International Journal for Parasitology*. 37(6):673-81. (PMID 17275826) (PMCID: PMC1905829)

\*\*\* Article featured on journal cover.

\*\*\* For the articles listed above, Dr. Hillyer conceived, planned, and carried out or directed the work for which he is a first author, under the guidance of the anchor author. Dr. Hillyer also wrote all articles for which he is the first author. For the papers first authored by Zhao or Smartt, Dr. Hillyer designed, performed and analyzed experiments concerning light microscopic analyses of sectioned tissues. For the paper first authored by Johnson, Dr. Hillyer designed, performed and analyzed electron microscopic colloidal gold labeling experiments. For the paper first authored by Boyle, Dr. Hillyer participated in autoradiography experiments and designed and performed light microscopic analysis of sectioned tissues. For the papers first authored by Wang, Dr. Hillyer performed immunofluorescence experiments. For all non-first author papers, Dr. Hillyer wrote the sections of the manuscripts that relate to his experimental participation.

Hillyer, J.F. 2009. Transcription in mosquito hemocytes in response to pathogen exposure. *Journal of Biology*. 8(5):51. (Invited Review) (PMID 19519953) (PMCID: PMC2736665)

\*\*\* Contribution: 100% of the effort is attributable to Hillyer.

Hillyer, J.F., T.Y. Estevez-Lao. 2010. Nitric oxide is an essential component of the hemocyte-mediated mosquito immune response against bacteria. *Developmental and Comparative Immunology*. 34(2):141-149. (PMID 19733588)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Glenn, J.D., J.G. King, and J.F. Hillyer. 2010. Structural mechanics of the mosquito heart and its function in bidirectional hemolymph transport. *Journal of Experimental Biology*. 213(4):541-50. (PMID 20118304)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Aliota, M.T., J.F. Fuchs, T.A. Rocheleau, A.K. Clark, J.F. Hillyer, C.C. Chen, and B.M. Christensen. 2010. Mosquito transcriptome profiles and filarial worm susceptibility in *Armigeres subalbatus*. *PLoS Neglected Tropical Diseases*. 4(4):e666. (PMID 20421927) (PMCID: PMC2857672)

\*\*\* Contribution: 30% of the effort is attributable to the Hillyer Lab (Clark and Hillyer).

Andereck, J.W., J.G. King, and J.F. Hillyer. 2010. Contraction of the ventral abdomen potentiates extracardiac retrograde hemolymph flow in the mosquito hemocoel. *PLoS ONE*. 5(9):e12943. (PMID 20886066) (PMCID: PMC2944847)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Honegger, H.-W., T.Y. Estévez-Lao, and J.F. Hillyer. 2011. Bursicon-expressing neurons undergo apoptosis after adult ecdysis in the mosquito *Anopheles gambiae*. *Journal of Insect Physiology*. 57(7):1017-1022. (PMID 21554887)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

King, J.G., K.D. Vernick, and J.F. Hillyer. 2011. Members of the salivary gland surface protein family (SGS) are major immunogenic components of mosquito saliva. *Journal of Biological Chemistry*. 286(47):40824-40834. (PMID 21965675) (PMCID: PMC3220476)

\*\*\* Contribution: 80% of the effort is attributable to the Hillyer Lab (King and Hillyer).

Hillyer, J.F. 2011. Introduction of Bruce M. Christensen, Recipient of the 2011 Clark P. Read Mentor Award. *Journal of Parasitology*. 97(6):974-975 (Invited commentary). (PMID 21671724)

\*\*\* Contribution: 100% of the effort is attributable to JFH.

Coggins, S.A., T.Y. Estévez-Lao, and J.F. Hillyer. 2012. Increased survivorship following bacterial infection by the mosquito *Aedes aegypti* as compared to *Anopheles gambiae* correlates with increased transcriptional induction of antimicrobial peptides. *Developmental and Comparative Immunology*. 37(3-4):390-401. (PMID 22326457)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Hillyer, J.F., T.Y. Estévez-Lao, L.J. Funkhouser, and V.A. Aluoch. 2012. *Anopheles gambiae* Corazonin: gene structure, expression, and effect on mosquito heart physiology. *Insect Molecular Biology*. 21(3):343-355. (PMID 22404523)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Murdock, C.C, K.P. Paaijmans, A.S. Bell, J.G. King, J.F. Hillyer, A.F. Read, and M.B. Thomas. 2012. Complex effects of temperature on mosquito immune function. *Proceedings of the Royal Society B: Biological Sciences*. 279(1741):3357-66. (PMID 22593107) (PMCID: PMC3385736)

\*\*\* Contribution: 25% of the effort is attributable to the Hillyer Lab (King and Hillyer).

King, J.G., and J.F. Hillyer. 2012. Infection-induced interaction between the mosquito circulatory and immune systems. *PLoS Pathogens*. 8(11): e1003058. (PMID 23209421) (PMCID: PMC3510235)

\*\*\* Article featured in journal cover. Also, an image from this article is *PLoS Pathogens'* Twitter profile picture (November 2012 till the end of 2013).

\*\*\* Faculty of 1000 (F1000) recommendation (2 recommendations; 5 total stars).

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Estévez-Lao, T.Y, D.S. Boyce, H.-W. Honegger, and J.F. Hillyer. 2013. Cardioacceleratory function of the neurohormone CCAP in the mosquito *Anopheles gambiae*. *Journal of Experimental Biology*. 216(4):601-613. (PMID 23364571)

\*\*\* Article is the focus of an "Inside JEB" story titled "CCAP sets mosquito hearts racing".

\*\*\* Article selected as "Editor's Choice" for the month of February 2013.

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Xu, J. ‡, J.F. Hillyer ‡, B. Coulibaly, M. Sacko, A. Dao, O. Niare, M.M. Riehle, S.F. Traoré, and K.D. Vernick. 2013. Wild *Anopheles funestus* mosquito genotypes are permissive for infection with the rodent malaria parasite, *Plasmodium berghei*. *PLoS ONE*. 8(4): e61181. (PMID 23593423) (PMCID: PMC3620233)

‡ Contributed equally.

\*\*\* Contribution: 25% of the effort is attributable to Hillyer.

King, J.G., and J.F. Hillyer. 2013. Spatial and temporal in vivo analysis of circulating and sessile immune cells in mosquitoes: hemocyte mitosis following infection. *BMC Biology*. 11:55. (PMID 23631603) (PMCID: PMC3660217)

\*\*\* Article is highlighted in a BioMed Central blog titled “A quantitative map of immune cells in mosquitoes”.

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Chen, W., and J.F. Hillyer. 2013. FlyNap (triethylamine) increases the heart rate of mosquitoes and eliminates the cardioacceleratory effect of the neuropeptide CCAP. *PLoS ONE*. 8(7): e70414. (PMID 23875027) (PMID: PMC3713048)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Estévez-Lao, T.Y., and J.F. Hillyer. 2014. Involvement of the *Anopheles gambiae* Nimrod gene family in mosquito immune responses. *Insect Biochemistry and Molecular Biology*. 44:12-22. (PMID 24200842)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Lu, A., X. Li, J.F. Hillyer, B.T. Beerntsen, K. Söderhäll, and E. Ling. 2014. Recombinant Drosophila prophenoloxidase 1 is sequentially cleaved by  $\alpha$ -chymotrypsin during in vitro activation. *Biochimie*. 102:154-165. (PMID: 24657220)

\*\*\* Contribution: 15% of the effort is attributable to Hillyer.

Hillyer, J.F., T.Y. Estévez-Lao, and L.E. de la Parte. 2014. Myotropic effects of FMRFamide containing peptides on the heart of the mosquito *Anopheles gambiae*. *General and Comparative Endocrinology*. 202:15-25. (PMID: 24747482)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Raphemot, R., T.Y. Estévez-Lao, M.F. Rouhier, P.M. Piermarini, J.S. Denton, and J.F. Hillyer. 2014. Molecular and functional characterization of *Anopheles gambiae* inward rectifier potassium (Kir1) channels: A novel role in egg production. *Insect Biochemistry and Molecular Biology*. 51:10-19. (PMID: 24855023) (PMCID: PMC4121989)

\*\*\* Contribution: 55% of the experiments are attributable to the Hillyer Lab (Raphemot [shared], Estévez-Lao and Hillyer).

Boppana, S., and J.F. Hillyer. 2014. Hemolymph circulation in insect sensory appendages: functional mechanics of antennal accessory pulsatile organs (auxiliary hearts) in the mosquito *Anopheles gambiae*. *Journal of Experimental Biology*. 217(17):3006-3014. (PMID 24948635)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Hillyer, J.F., and M.R. Strand. 2014. Mosquito hemocyte-mediated immune responses. *Current Opinion in Insect Science*. 3:14-21. ([Invited Review](#)) (PMID 25309850) (PMCID: PMC4190037)

\*\*\* Article featured on journal cover.

\*\*\* Contribution: 70% of the effort is attributable to Hillyer.

Hillyer, J.F. 2014. Editorial overview: Vectors and medical and veterinary entomology: Immune responses to pathogen infections in insect vectors. *Current Opinion in Insect Science*. 3:v-vii. ([Invited Editorial](#))

\*\*\* Contribution: 100% of the effort is attributable to Hillyer.

Kong, L., A. Lu, J. Guan, B. Yang, M. Li, J.F. Hillyer, N. Ramarao, K. Söderhäll, C. Liu, and E. Ling. 2015. Thermolysin damages animal life through degradation of plasma proteins enhanced by rapid cleavage of serpins and activation of proteases. *Archives of Insect Biochemistry and Physiology*. 88(1): 64-84. (PMID 25042057)

\*\*\* Contribution: 10% of the effort is attributable to Hillyer.

League, G.P., O.C. Onuh and J.F. Hillyer. 2015. Comparative structural and functional analysis of the larval and adult dorsal vessel and its role in hemolymph circulation in the mosquito *Anopheles gambiae*. *Journal of Experimental Biology*. 218:370-80. (PMID 25524976) (PMCID: PMC4317240)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Ellison, H.E., T.Y. Estévez-Lao, C.S. Murphree, and J.F. Hillyer. 2015. Deprivation of both sucrose and water reduces the mosquito heart contraction rate while increasing the expression of nitric oxide synthase. *Journal of Insect Physiology*. 74:1-9. (PMID 25640058).

\*\*\* Contribution: 95% of the effort is attributable to the Hillyer Lab (Ellison, Estévez-Lao and Hillyer).

Hillyer, J.F. 2015. Integrated immune and cardiovascular function in Pancrustacea: Lessons from the insects. *Integrative and Comparative Biology*. 55(5):843-855 (PMID 25898841) (Invited Review)

\*\*\* Contribution: 100% of the effort is attributable to Hillyer.

Hillyer, J.F., T.Y. Estevez-Lao, and H.E. Mirzai. 2015. The neurotransmitters serotonin and glutamate accelerate the heart rate of the mosquito *Anopheles gambiae*. *Comparative Biochemistry and Physiology - Part A: Molecular & Integrative Physiology*. 188:49-57. (PMID 26099947)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Hillyer, J.F. 2015. Acceptance of the 2015 Henry Baldwin Ward Medal: My journey in parasitology, and with parasitologists. *Journal of Parasitology*. 101(6):623-626 (PMID: 26335281) (Invited Commentary)

\*\*\* Contribution: 100% of the effort is attributable to Hillyer.

Sigle, L.T. and J.F. Hillyer. 2016. Mosquito hemocytes preferentially aggregate and phagocytose pathogens in the periostial regions of the heart that experience the most hemolymph flow.

*Developmental and Comparative Immunology*. 55:90-101. (PMID 26526332)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Hillyer, J.F. 2016. Insect immunology and hematopoiesis. *Developmental and Comparative Immunology*. 58:102-118. (PMID: 26695127) (PMCID: PMC4775421) (Invited Review)

\*\*\* Contribution: 100% of the effort is attributable to Hillyer.

Suggs, J.M., T.H. Jones, S.C. Murphree, and J.F. Hillyer. 2016. CCAP and FMRFamide-like peptides accelerate the contraction rate of the antennal accessory pulsatile organs (auxiliary hearts) of mosquitoes. *Journal of Experimental Biology*. 219(15): 2388-2395. (PMID: 27247317)

\*\*\* Contribution: 95% of the effort is attributable to the Hillyer Lab (Suggs, Jones and Hillyer).

League, G.P., and J.F. Hillyer. 2016. Functional integration of the circulatory, immune, and respiratory systems in mosquito larvae: immunity in the hemocyte-rich tracheal tufts. *BMC Biology*. 14: 78. (PMID 27643786) (PMCID: PMC5027632)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Hillyer, J.F. 2016. In memoriam: George V. Hillyer (1943-2015). *Journal of Parasitology*. 102(6): 659-661. (PMID 27553686)

\*\*\* Contribution: 100% of the effort is attributable to Hillyer.

Chintapalli, R.T.V., and J.F. Hillyer. 2016. Hemolymph circulation in insect flight appendages: physiology of the wing heart and circulatory flow in the wings of the mosquito *Anopheles gambiae*. *Journal of Experimental Biology*. 219: 3945-3951. (PMID: 27742896)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Doran, C.R., T.Y. Estévez-Lao, and J.F. Hillyer. 2017. Mosquito aging modulates the heart rate and the proportional directionality of heart contractions. *Journal of Insect Physiology*. 101: 47-56. (PMID: 28655496)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

League, G.P., T.Y. Estévez-Lao, Y. Yan, V.A. Garcia-Lopez, and J.F. Hillyer. 2017. *Anopheles gambiae* larvae mount stronger immune responses against bacterial infection than adults: evidence of adaptive decoupling in mosquitoes. *Parasites & Vectors*. 10:367. (PMID 28764812)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Brown, L.D, G.A. Thompson, and J.F. Hillyer. 2018. Transstadial transmission of larval hemocoelic infection negatively affects development and adult female longevity in the mosquito *Anopheles gambiae*. *Journal of Invertebrate Pathology*. 151: 21-31. (PMID 29111355)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Sigle, L.T. and J.F. Hillyer. 2018. *Eater* and *draper* are involved in the periostial hemocyte immune response in the mosquito, *Anopheles gambiae*. *Insect Molecular Biology*. 27(4):429-438. DOI: 10.1111/imb.12383 (PMID: 29520896)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Sigle, L.T. and J.F. Hillyer. 2018. Structural and functional characterization of the contractile aorta and associated hemocytes of the mosquito *Anopheles gambiae*. *Journal of Experimental Biology*. 221: jeb181107. DOI: 10.1242/jeb.181107 (PMID: 29724775)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Hillyer, J.F. 2018. Insect heart rhythmicity is modulated by evolutionarily conserved neuropeptides and neurotransmitters. *Current Opinion in Insect Science*. 29: 41-48. DOI: 10.1016/j.cois.2018.06.002 (PMID 30551824) ([Invited Review](#))

\*\*\* Contribution: 100% of the effort is attributable to Hillyer.

Sigle, L.T. and J.F. Hillyer. 2018. Mosquito hemocytes associate with circulatory structures that support intracardiac retrograde hemolymph flow. *Frontiers in Physiology*. 9: 1187. DOI: 10.3389/fphys.2018.01187 (PMID: 30210361)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Hillyer, J.F. 2016. Presentation of the 2018 ASP Distinguished Service Award to Dennis J. Minchella. *Journal of Parasitology*. 104(6): 601-602. ([Invited commentary](#)) (PMID 30011243)

\*\*\* Contribution: 100% of the effort is attributable to Hillyer.

Yan, Y., and J.F. Hillyer. 2019. Complement-like proteins TEP1, TEP3 and TEP4 are positive regulators of periostial hemocyte aggregation in the mosquito *Anopheles gambiae*. *Insect Biochemistry and Molecular Biology*. 107:1-9. (PMID 30690067)

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Brown, L.D., L.L.M. Shapiro, G.A. Thompson, T.Y. Estévez-Lao, and J.F. Hillyer. 2019. Transstadial immune activation in a mosquito: adults that emerge from infected larvae have stronger antibacterial activity in their hemocoel yet increased susceptibility to malaria infection. *Ecology and Evolution*. DOI: 10.1002/ece3.5192

\*\*\* Contribution: 100% of the effort is attributable to the Hillyer Lab.

Hillyer, J.F., and G. Pass. The insect circulatory system: structure, function and evolution. [Invited review submitted on March 8, 2019 to: Annual Review of Entomology](#).

\*\*\* Contribution: 50% of the effort is attributable to Hillyer.

#### BOOK CHAPTER (INVITED):

Hillyer, J.F. (2010) Mosquito immunity. In *Invertebrate Immunity*, K. Söderhäll (ed.). Book Series: Advances in Experimental Medicine and Biology, Vol. 708. Springer-Verlag, pp. 218-238. ISBN: 978-1-4419-8058-8. (PMID 21528701)

\*\*\* Contribution: 100% of the effort is attributable to JFH.

MEDIA COVERAGE AND OTHER RESEARCH NOTES:

1. In 2010 my lab published in *Journal of Experimental Biology* a paper describing the structural mechanics of the mosquito heart. The three general textbooks on insect physiology that have been published since then have cited this paper. The chapter on circulation and immunity in the well-respected "Insects: Structure and Function" textbook, now in its fifth edition, lists six papers as recommended reading, and one of those papers is the 2010 paper on the mosquito heart.
2. In 2010, an image of the mosquito heart acquired by one of my graduate students, Jonas King, was awarded 1st place in Nikon's Small World Photomicrography competition. This news was highlighted in the front page of the NSF website.
3. In 2012 my lab published in *PLoS Pathogens* a paper describing the interaction between the mosquito circulatory and immune systems. This research was highlighted in (1) a Vanderbilt University press release, (2) the front page of the NSF website, and (3) the Faculty of 1000 (F1000).
4. In 2013 my lab published in *Journal of Experimental Biology* a paper describing the cardioacceleratory function of mosquito CCAP. *Journal of Experimental Biology* highlighted this paper with a news article titled "CCAP sets mosquito hearts racing" (<http://jeb.biologists.org/content/216/4/ii>), and as the "Editor's Choice" for February 2013.
5. In 2013 my lab published in *BMC Biology* an article describing a hemocyte map in *An. gambiae*. This article was the subject of a BioMed Central blog titled "A quantitative map of immune cells in mosquitoes" (<http://blogs.biomedcentral.com/bmcblog/2013/04/30/a-quantitative-map-of-immune-cells-in-mosquitoes/>).
6. In 2014 and 2019 I served as Guest Editor of issues on vector immunology for *Current Opinion in Insect Science* and *Developmental and Comparative Immunology*, respectively.
7. Articles featured in journal cover: *International Journal for Parasitology*, May 2007; *PLoS Pathogens*, Nov 2012; *Current Opinion in Insect Science*, Sep 2014.

RESEARCH GRANTS:

ONGOING RESEARCH SUPPORT:

- NSF/BIO IOS-1456844 (SDS program) Hillyer (PI) 08/01/15-07/31/2019  
"Deciphering the physiological interaction between the mosquito immune and circulatory systems."

The aims of this project are to (1) uncover molecular mechanisms behind perioistial hemocyte aggregation; (2) assess the effect of nitric oxide and immune factors on cardiac physiology; (3) determine the developmental conservation of infection-induced hemocyte aggregation; (4) determine whether perioistial hemocyte aggregation is a universal phenomenon that occurs across the insect tree of life.

Role: PI Award: \$543,999

- NIH/GM 2P20GM103646 (COBRE) Pruett (PI) 09/01/2018-06/30/2023  
"Center of Biomedical Research Excellence in Pathogen Host Interactions"

This grant was awarded to Mississippi State University to augment and strengthen institutional biomedical research capacity. In this project I serve as a senior mentor.

Role: Mentor Award for the entire project: \$2,131,604

PENDING RESEARCH SUPPORT:

- NIH/NIAID 1R21AI149170-01 (Vector Biology) Hillyer (PI) 12/01/2019-11/30/2021  
"Manipulating mosquito heart physiology to influence malaria sporozoite migration across the hemocoel"

The aims of this project are to (1) determine the effects of blood feeding on cardiac physiology; (2) elucidate whether a malaria infection impacts circulatory physiology; (3) uncover the importance of hemolymph flow dynamics on sporozoite migration and invasion of the salivary glands.

Role: PI

Request: \$431,510

COMPLETED RESEARCH SUPPORT:

- NIH/NIAID 1R21AI119596-01 (Vector Biology) Hillyer (PI) 07/01/2015-06/30/2018  
 "Effect of mosquito larval infection on adult life history traits"  
 The aims of this project are to (1) compare the potency and composition of the antibacterial response in larvae and adults; (2) determine the effect of larval infection on subsequent infections as adults; (3) determine the effect of larval infection on life history traits.  
 Role: PI Award: \$431,510
  
- NSF/BIO IOS-1257936 (PSI program) Hillyer (PI) 03/01/2013-02/28/2017  
 "Hemolymph circulation in mosquitoes."  
 The aims of this project are to (1) quantitatively map hemolymph flow in all regions of the mosquito, (2) assess the role accessory pulsatile organs play in hemolymph propulsion, (3) determine how heart rhythms and hemolymph currents change under various physiological conditions, and (4) determine how infection affects circulatory physiology.  
 Role: PI Award = \$359,880  
 \*\*\* Research Experiences for Undergraduates (REU) supplement awarded on 3/26/13 (Proposal IOS-1338640), for an additional \$5,000.
  
- NSF/BIO IOS-1051636 (SDS program) Hillyer (PI) 02/01/2011-01/31/2015  
 "Dynamics of the mosquito heart: hemolymph flow and associated immune cells."  
 The aim of this project is to characterize the infection-induced interaction between hemocytes (immune cells) and the mosquito heart.  
 Role: PI Award = \$406,192  
 \*\*\* Research Experiences for Undergraduates (REU) supplement awarded on 4/8/11 (Proposal IOS-1132411), for an additional \$5,875.  
 \*\*\* Research Experiences for Undergraduates (REU) supplement awarded on 4/5/12 (Proposal IOS-1232084), for an additional \$5,875.
  
- NSF/BIO IOS-0817644 (SDS program) Hillyer (PI) 08/01/2008-07/31/2011  
 "RIG: Mosquito circulatory system: hemolymph flow and associated immune cells."  
 The aim of this project was to structurally, functionally, and molecularly characterize the heart and associated immune tissues of mosquitoes.  
 Role: PI Award = \$175,000
  
- Vanderbilt University Discovery Grant Hillyer (PI) 05/01/2008-04/30/2010  
 "Mosquito immunity against the sporogonic stages of malaria parasites."  
 The aim of this project was to analyze the cellular and humoral immune response mounted by the mosquito *Anopheles gambiae* against the hemocoel stages of *Plasmodium berghei*.  
 Role: PI Award = \$50,000
  
- NIH/NIAID F32 AI065075 Hillyer (PI) 05/03/2006-05/02/2009  
 "Mosquito-malaria interactions in the hemocoel." Terminated 2007 when post-doc completed.  
 The major goal of this project was to characterize the temporal and spatial distribution of two *Anopheles gambiae* genes with homology to an *Aedes aegypti* putative salivary gland sporozoite receptor, and determine their role in salivary gland invasion by sporozoites.  
 Role: PI Award = \$151,272.00
  
- NIH/NIAID F31 AI050252 Hillyer (PI) 09/01/2001-05/11/2004  
 "Cellular immune response of mosquitoes to pathogens."  
 The aim of this project was to characterize the blood cells of the mosquitoes *Aedes aegypti* and *Armigeres subalbatus*, and determine their role in controlling infections.  
 Role: PI Award = \$112,686.00

- NSF Minority Graduate Research Fellowship Hillyer (PI) 09/01/1998-08/31/2001  
The aim of this project was to quantitatively and qualitatively assess the organ, tissue, and cellular distribution of gold nanoparticles following oral administration.  
Role: PI

INVITED PRESENTATIONS OUTSIDE VANDERBILT UNIVERSITY (E.G., PEER INSTITUTIONS):

- University of Wisconsin-Madison Entomology Colloquium, Madison, WI, 11/8/2002. Title: Cellular immune response of the mosquito, *Aedes aegypti*.
- Midwest Microscopy & Microanalysis Meeting, Madison, WI, 10/3/2003. Title: Morphological and functional characterization of mosquito immune cells.
- 56<sup>th</sup> annual meeting of the American Society of Tropical Medicine & Hygiene, Philadelphia, PA, 11/6/2007. Special symposium: *Anopheles anti-Plasmodium* defense systems. Title: *Plasmodium* sporozoite destruction in the *Anopheles* haemocoel.
- University of South Florida, Department of Global Health, Tampa, FL, 2/17/2009. Title: Exploring the biology of malaria sporozoites in the mosquito hemocoel: hemolymph flow and the molecular basis of salivary gland invasion.
- Meharry Medical Center, Nashville, TN, 3/13/2009. Title: Biology of *Plasmodium* in the mosquito hemocoel: in search of novel mechanisms for malaria control.
- Virginia Polytechnic Institute and State University, Blacksburg, VA, 10/15/2009. Title: Functional mechanics of the mosquito heart and its role in immune surveillance and pathogen dissemination.
- Johns Hopkins University, Baltimore, MD, 3/18/2010. Title: Functional mechanics of the mosquito heart and its role in immune surveillance and pathogen dissemination.
- George Washington University, Washington, DC, 9/1/2010. Title: Functional mechanics of the mosquito heart and its role in immune surveillance and pathogen dissemination.
- Penn State University, State College, PA, 10/22/2010. Title: Exploring the physiological interaction between the mosquito circulatory and immune systems.
- Western Kentucky University, Bowling Green, KY, 2/4/2011. Title: Exploring how the physiological interaction between the mosquito circulatory and immune systems impacts pathogen survival in the hemocoel.
- National Institutes of Health, Bethesda, MD, 5/26/2011. Special workshop: Immunological Consequences of Vector-Derived Factors. Title: Involvement of mosquito salivary gland proteins in malaria transmission.
- 86<sup>th</sup> Annual Meeting of the American Society of Parasitologists, Anchorage, AK, 6/4/2011. Title: Introduction of Bruce M. Christensen, Recipient of the 2011 Clark P. Read Mentor Award.
- University of New Mexico, Albuquerque, NM, 9/29/2011. Title: Physiological interaction between the mosquito circulatory and immune systems: cellular immunology from an organismal perspective.
- 60<sup>th</sup> annual meeting of the ASTMH, Philadelphia, PA, 12/8/2011. Special symposium: Cellular Immunity in Mosquito-Pathogen Interactions. Title: Exploring mosquito hemocyte biology in vivo and in real time: cellular immunity from an organismal perspective.
- University of Georgia, Athens, GA, 2/13/2012. Title: Physiological Interaction Between the Mosquito Circulatory and Immune Systems: Cellular Immunology from an Organismal Perspective.
- International Course on Innate Immunity, sponsored by Fundação Oswaldo Cruz, Belo Horizonte, Brazil, 5/19/2012. Title: Innate immunity in the insect hemocoel: interactions between circulatory and immune systems.
- Workshop on Innate Immunity: From Vector Resistance to Human Disease, sponsored by Fundação Oswaldo Cruz, Belo Horizonte, Brazil, 5/21/2012. Title: Mosquito cellular immune responses to bacteria and malaria parasites.
- Infectious Disease Symposium, University of Wisconsin-Madison, Madison, WI, 6/23/2012. Title: Cellular immune response of mosquitoes to pathogens.
- XXIV International Congress of Entomology, Daegu, South Korea, 8/23/2012. Symposium: The role of immunity in host-pathogen interactions. Title: Infection-induced physiological interaction between the mosquito circulatory and immune systems.

- Washington State University, Pullman, WA, 3/6/2013. Title: Infection-induced interaction between the mosquito circulatory and immune systems.
- Harvard School of Public Health, Department of Immunology and Infectious Diseases, Cambridge, MA, 3/15/2013. Symposium: Towards malaria eradication: targeting the mosquito vector. Title: Hemocyte-mediated immune responses and hemolymph flow dynamics during the migration of malaria parasites across the mosquito hemocoel.
- Belmont University, Nashville, TN, 4/2/2013. Title: Cellular immune responses and hemolymph flow dynamics in the body cavity of the malaria mosquito, *Anopheles gambiae*.
- Meharry Medical College, Nashville, TN, 4/4/2013. Title: Cellular immune responses and hemolymph flow dynamics in the body cavity of the malaria mosquito, *Anopheles gambiae*.
- Southeastern Society of Parasitologists 2013 Annual Meeting, Presidential symposium speaker, Bowling Green, KY, 4/10/2013. Title: Hemocyte-mediated immune responses and hemolymph flow dynamics in the body cavity of the malaria mosquito, *Anopheles gambiae*.
- Cornell University, Rogoff lectureship, Department of Entomology Jugatae Seminar Series, Ithaca, NY, 10/28/2013. Title: Cellular immune responses and hemolymph flow dynamics in the body cavity of the malaria mosquito, *Anopheles gambiae*.
- Entomology 2013: 61<sup>st</sup> annual meeting of the Entomological Society of America, Austin, TX, 11/10/2013. Symposium: The Future of Mosquito Endocrinology. Title: Neurohormonal control of mosquito heart contractions.
- University of Pittsburgh, Department of Biological Sciences, Pittsburgh, PA. 3/3/2014. Title: Heart physiology and immunology in an insect: how the mosquito circulatory and immune systems have co-adapted to fight infection.
- University of Cincinnati, Department of Biological Sciences, Cincinnati, OH. 11/24/2014. Title: Going with the flow: co-adaptation of the mosquito circulatory and immune systems.
- Annual meeting of the Society for Integrative and Comparative Biology, West Palm Beach, FL. 1/7/2015. Symposium: Breaking Boundaries for Evolutionary Synthesis: An Interactive, and Integrative Symposium Linking Crustacean and Insect Physiology. Title: Integrated immune and cardiovascular function in insects.
- \*\*\* This symposium was highlighted in *Science* (DOI: 10.1126/science.347.6219.220).
- 90th Annual Meeting of the American Society of Parasitologists, Omaha, NE, 6/28/2015. Title: Acceptance of the 2015 Henry Baldwin Ward Medal: My journey in parasitology, and with parasitologists.
- Annual Midwestern Conference of Parasitologists, Presidential Symposium Speaker, Makanda, IL. 6/10/2016. Title: Functional integration of the immune, circulatory and respiratory systems of mosquitoes in the anti-pathogen response.
- Northeastern Illinois University, Keynote Speaker at the 8<sup>th</sup> Annual Student Center for Science Engagement Research Symposium, Chicago, IL. 9/16/2016. Title: Cooperation and persistence: Functional integration of the immune and circulatory systems of mosquitoes.
- XXV International Congress of Entomology, Orlando, FL. 9/28/2016. Symposium: The Insect Circulatory System: Vital but Widely Neglected! Title: Structural mechanics of hemolymph circulation in mosquitoes.
- Kansas State University, Division of Biology, Manhattan, KS, 3/31/2017. Title: Developmental decoupling of the functionally integrated immune and circulatory systems of mosquitoes.
- Florida International University, Plenary speaker at 20<sup>th</sup> Annual Biomedical and Comparative Immunology (BCI) Symposium, Miami, FL, 3/8/2018. Title: Not so heartless: functional integration of the immune and circulatory systems of mosquitoes.
- 93<sup>rd</sup> Annual Meeting of the American Society of Parasitologists, Cancún, Mexico, 6/23/2018. Symposium: Immunological and physiological interactions between insects and pathogens. Title: Involvement of Nimrod family genes in the periostial hemocyte immune response of a mosquito.
- 93<sup>rd</sup> Annual Meeting of the American Society of Parasitologists, Cancún, Mexico, 6/24/2018. Title: Introduction of Dennis Minchella, Recipient of the 2018 Distinguished Service Award.
- Entomology 2013: annual meeting of the Entomological Society of America, Vancouver, Canada, 11/13/2018. Symposium: Mosquito-Microbe Interactions Beyond Vector-Pathogen. Title:

Mosquito larval infection impacts adult life history traits and the ability to combat a secondary infection.

Johns Hopkins University, Malaria Research Institute, Baltimore, MD, 4/5/2019. Title: Not so heartless: functional integration of the immune and circulatory systems of mosquitoes.

University of Rochester, Department of Microbiology & Immunology, Rochester, NY, 4/15/2019.

Title: Not so heartless: functional integration of the immune and circulatory systems of mosquitoes. (Postponed due to flight cancellation).

Molecular and population biology of mosquitoes and other disease vectors, Kolybari, Greece, 7/22/2019. Tentative title: Mosquito larval infection impacts adult life history traits and the ability to combat a secondary infection.

#### INVITED PRESENTATIONS AT VANDERBILT UNIVERSITY:

Vanderbilt Biological Sciences Graduate Student Retreat, 10/22/2007. Title: Efficiency of salivary gland invasion by malaria sporozoites is controlled by rapid sporozoite destruction in the mosquito hemocoel

Vanderbilt University Department of Microbiology and Immunology Seminar Series, 10/28/2008.

Title: Life and death journey of malaria sporozoites in the mosquito.

Vanderbilt University Medical Center Department of Medicine, Division of Infectious Diseases, I.D.

Grand Rounds, 2/4/2009. Title: Biology of *Plasmodium* in the mosquito hemocoel: in search of novel mechanisms for malaria control.

Vanderbilt University's Institute for Global Health's Tennessee Global Health Forum, 2/27/2009.

Title: Interrupting the cycle: a look at how local researchers are using innovation to work towards breaking the transmission cycle of malaria by merging high- and low-tech methods.

Vanderbilt University Young Scholar's Medical Program Global Health Day (high school students),

7/20/2009. Title: Malaria parasites and their interaction with their obligate mosquito host.

Vanderbilt University Pediatric Global Health Program Seminar Series, 2/25/2010. Title: Biology of

pathogens inside the mosquito hemocoel.

Vanderbilt Institute for Global Health Faculty Development Series, 9/20/2011. Title: Immunology and physiology of mosquito vectors.

Vanderbilt Microbes and Defense Academic Society, 10/26/2011. Keynote speaker at MDAS new member induction ceremony. Title: Immunology and physiology of mosquito vectors.

Vanderbilt Department of Biological Sciences Seminar Series, 11/12/2011. Title: Physiological interaction between the mosquito circulatory and immune systems: cellular immunology from an organismal perspective.

Vanderbilt University Superfly Seminar Series, 2/12/2013. Title: Coordinated interaction between the mosquito circulatory and immune systems in response to infection.

Vanderbilt University Department of Pathology, Microbiology, and Immunology Seminar Series, 3/19/2018. Title: Not so heartless: functional integration of the immune and circulatory systems of mosquitoes.

#### CONFERENCE ORAL PRESENTATIONS (CONTRIBUTED):

*Annual meeting of the American Society of Parasitologists:*

(a) 75<sup>th</sup> annual meeting, San Juan, PR, 2000.

(b) 77<sup>th</sup> annual meeting (10<sup>th</sup> Intl. Congress of Parasitology), Vancouver, Canada, 2002.

(c) 78<sup>th</sup> annual meeting, Halifax, Canada, 2003.

(d) 80<sup>th</sup> annual meeting, Mobile, AL, 2005

(e) 83<sup>rd</sup> annual meeting, Arlington, TX, 6/29/2008.

(f) 84<sup>th</sup> annual meeting, Knoxville, TN, 8/14/2009 and 8/15/2009 (2 talks).

(g) 85<sup>th</sup> annual meeting, Colorado Springs, CO, 6/22/2010 (2 talks).

(h) 86<sup>th</sup> annual meeting, Anchorage, AK, 6/3/2011 (2 talks).

(i) 87<sup>th</sup> annual meeting, Richmond, VA, 7/14/2012.

(j) 88<sup>th</sup> annual meeting, Quebec City, CA, 6/26/2013 and 6/27/2013 (2 talks).

(k) 89<sup>th</sup> annual meeting, New Orleans, LA, 7/26/2014.

(l) 90<sup>th</sup> annual meeting, Omaha, NE, 6/27/2015.

- (m) 91<sup>st</sup> annual meeting, Edmonton, Canada, 7/13/2016.
- (n) 92<sup>nd</sup> annual meeting, San Antonio, TX, 6/30/2017.
- (o) 93<sup>rd</sup> annual meeting, Cancún, Mexico, 6/23/2018.

*Annual meeting of the American Society of Tropical Medicine & Hygiene:*

- (a) 52<sup>nd</sup> annual meeting, Philadelphia, PA, 2003 (late breaker).
- (b) 55<sup>th</sup> annual meeting, Atlanta, GA, 2006 (late breaker).
- (c) 57<sup>th</sup> annual meeting, New Orleans, LA, 12/9/2008.
- (d) 58<sup>th</sup> annual meeting, Washington, DC, 11/21/2009.
- (e) 59<sup>th</sup> annual meeting, Atlanta, GA, 11/4/2010.
- (f) 63<sup>rd</sup> annual meeting, New Orleans, LA, 11/5/2014.

*Annual meeting of the Entomological Society of America:*

- (a) 58<sup>th</sup> annual meeting, San Diego, CA, 12/12/2010.
- (b) 59<sup>th</sup> annual meeting, Reno, NV, 11/13/2011.
- (c) 60<sup>th</sup> annual meeting, Knoxville, TN, 11/13/2012.
- (d) 62<sup>nd</sup> annual meeting, Portland, OR, 11/16/2014.
- (e) 63<sup>rd</sup> annual meeting, Minneapolis, MN, 11/15/2015.

*Annual meeting of the Microscopy Society of America (Microscopy and Microanalysis):*

- (a) 56<sup>th</sup> annual meeting, Atlanta, GA, 1998.
- (b) 58<sup>th</sup> annual meeting, Philadelphia, PA, 2000.
- (c) 69<sup>th</sup> annual meeting, Nashville, TN, 8/9/2011.

CONFERENCE ORAL PRESENTATIONS BY HILLYER LAB TRAINEES:

King, Jonas (graduate student):

- (a) 84<sup>th</sup> annual meeting of the American Society of Parasitologists, 8/14/2009.
- (b) 59<sup>th</sup> annual meeting of the American Society of Tropical Medicine & Hygiene, 11/6/2010.
- (c) "Science Behind Malaria Control and Eradication" Gordon Research Conference, 2011.
- (d) 59<sup>th</sup> annual meeting of Entomological Society of America, 11/14/2011.

League, Garrett (graduate student):

- (a) 61<sup>st</sup> annual meeting of Entomological Society of America, 11/11/2013.
- (b) 62<sup>nd</sup> annual meeting of Entomological Society of America, 11/17/2014.
- (c) 90<sup>th</sup> annual meeting of the American Society of Parasitologists, 6/27/2015.
- (d) 64<sup>th</sup> annual meeting of American Society of Tropical Medicine & Hygiene, 10/26/2015.  
(Invited).
- (e) 66<sup>th</sup> Annual Meeting of the American Society of Tropical Medicine and Hygiene, 11/6/2017.

Sigle, Leah (graduate student):

- (a) 61<sup>st</sup> annual meeting of Entomological Society of America, 11/11/2013.
- (b) 62<sup>nd</sup> annual meeting of Entomological Society of America, 11/17/2014.
- (c) XXV International Congress of Entomology, Orlando, FL. 9/28/2016. (Invited).
- (d) Entomology 2017 (Annual Meeting of the Entomological Society of America), 11/5/2017.

Yan, Yan (graduate student):

- (a) Entomology 2018 (Annual Meeting of the Entomological Society of America), 11/11/2018.

Brown, Lisa (post-doc):

- (a) Entomology 2017 (Annual Meeting of the Entomological Society of America), 11/7/2017.

Shapiro, Lillian (post-doc):

- (a) Entomology 2017 (Annual Meeting of the Entomological Society of America), 11/7/2017.

Glenn, Justin (undergraduate student):

- (a) 2009 Middle Collegiate Meeting of the Tennessee Academy of Sciences, 4/18/2009.

Coggins, Sarah (undergraduate student):

- (a) 85<sup>th</sup> annual meeting of the American Society of Parasitologists, 6/22/2010.
- (b) 2011 Middle Collegiate Meeting of the Tennessee Academy of Sciences, 4/16/2011.

Chen, Weihang (undergraduate student):

- (a) 2011 Middle Collegiate Meeting of the Tennessee Academy of Sciences, 4/16/2011.
- (b) 60<sup>th</sup> annual meeting of Entomological Society of America, Knoxville, TN, 11/12/2012.

PUBLISHED CONFERENCE PROCEEDINGS (E.G., ABSTRACTS):

Hillyer, J.F., and B.M. Christensen. 2000. Ultrastructural characterization of hemocytes from two species of mosquito vectors. *Proceedings of the 2000 Joint Meeting of the American Society of Parasitologists and the Society of Protozoologists*. p.56.

Hillyer, J.F., J. Johnson, and B.M. Christensen. 2001. Hemocyte response against bacterial and *Plasmodium* infections in two species of mosquito vectors. *Keystone Symposia 2001: Genetic Manipulation of Insects*. p.63.

Smartt, C.T., L.M. Kiley, J.F. Hillyer, and B.M. Christensen. 2001. *Aedes aegypti* glutamine synthetase: expression and gene structure. *Keystone Symposia 2001: Genetic Manipulation of Insects*. p.68.

Hillyer, J.F., and B.M. Christensen. 2001. Characterization of hemocytes from the mosquitoes *Aedes aegypti* and *Armigeres subalbatus*. *Program and Abstracts of the 50th Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p.302.

Hillyer, J.F., S.L. Schmidt, and B.M. Christensen. 2002. Functional characterization of the hemocytes from the yellow fever mosquito, *Aedes aegypti*. *Proceedings of the Tenth International Congress of Parasitology*. p.117-118.

Dasgupta, R., L.L. Cheng, J.F. Hillyer, N. Kato, M. Hugues, K.E. Olson, B.J. Olson, and B.M. Christensen. 2002. Silencing enzymes of chitin biosynthetic pathway: effect on peritrophic matrix formation. *Program and Abstracts of the 51st Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p.175.

Hillyer, J.F., L.C. Bartholomay, T.A. Rocheleau, and B.M. Christensen. 2003. Mosquito hemocytes represent a primary line of defense against invading pathogens. *Program and Abstracts of the 78th Annual Meeting of the American Society of Parasitologists*. p.72

Hillyer, J.F., S.L. Schmidt, and B.M. Christensen. 2003. The mosquito antibacterial innate immune response is independent of gram type and pathogenicity. *Program and Abstracts of the 52nd Annual Meeting of the American Society of Tropical Medicine and Hygiene: Late Breaker*.

Hillyer, J.F., S.L. Schmidt, and B.M. Christensen. 2004. Age-associated mortality cost in *Aedes aegypti* following challenge with large numbers of *Escherichia coli*. *Keystone Symposia 2004: Genetic Manipulation of Insects*. p.58.

Wang, X., L. Bartholomay, T. Rocheleau, J. Fuchs, J. Hillyer, C-C Chen, and B.M. Christensen. 2004. Pattern recognition receptors in the mosquito *Armigeres subalbatus*. *Keystone Symposia 2004: Genetic Manipulation of Insects*. p.62.

Hillyer, J.F., and K.D. Vernick. 2005. Mosquito-*Plasmodium* interactions in the hemocoel. *Program and Abstracts of the 80th Annual Meeting of the American Society of Parasitologists*. p.63

Hillyer, J.F., and B.M. Christensen. 2005. Phenoloxidase and defensin co-localize in mosquito melanization immune responses. *Program and Abstracts of the 80th Annual Meeting of the American Society of Parasitologists*. p.87.

Hillyer, J.F., J. Xu, F. Oduol, and K. Vernick. 2005. Mosquito-malaria interactions in the hemocoel. *Program and Abstracts of the 54th Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p.295.

Hillyer, J.F., S. Korochnik, J. Xu, and K.D. Vernick. 2006 Late Breaker. Characterization of a salivary gland-specific protein complex in mosquitoes. *Program and Abstracts of the 55th Annual Meeting of the American Society of Tropical Medicine and Hygiene: Late Breaker*.

- Hillyer, J.F., J.G. King, and J.D. Glenn. 2008. Malaria sporozoite migration through the mosquito hemocoel. *Program and Abstracts of the 83rd Annual Meeting of the American Society of Parasitologists*. p.66-67.
- King, J.G., and J.F. Hillyer. 2008. Possible involvement of agSGS proteins during invasion of *Anopheles* salivary glands by *Plasmodium* sporozoites. *Program and Abstracts of the 57th Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p.195.
- Hillyer, J.F., J.G. King, and J.D. Glenn. 2008. Does hemolymph flow drive malaria sporozoite migration through the mosquito hemocoel? *Program and Abstracts of the 57th Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p.221.
- King, J.G., and J.F. Hillyer. 2009. Investigating the role of *Anopheles* SGS proteins in *Plasmodium*-mosquito interactions and immunity. *Program and Abstracts of the 84th Annual Meeting of the American Society of Parasitologists*. p.26.
- Hillyer, J.F., J.G. King, and J.D. Glenn. 2009. Functional characterization of the mosquito heart and its implication in malaria sporozoite transport. *Program and Abstracts of the 84th Annual Meeting of the American Society of Parasitologists*. p.45.
- Hillyer, J.F., and T. Estévez-Lao. 2009. Antibacterial activity of nitric oxide in the mosquito hemocoel. *Program and Abstracts of the 84th Annual Meeting of the American Society of Parasitologists*. p.58.
- King, J.G., and J.F. Hillyer. 2009. Proteolytic processing of *Anopheles* SGS: candidate receptors for salivary gland invasion by *Plasmodium* sporozoites. *Program and Abstracts of the 58th Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p.275.
- Hillyer, J.F., J.G. King, and J.D. Glenn. 2009. The mosquito heart: functional mechanics and role in malaria sporozoite migration. *Program and Abstracts of the 58th Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p.292.
- Hillyer, J.F., and J.G. King. 2010. Antimicrobial function of sessile hemocytes in the mosquito hemocoel. *Program and Abstracts of the 85th Annual Meeting of the American Society of Parasitologists*. p.43.
- Hillyer, J.F., J.W. Andereck, and J.G. King. 2010. Abdominal contractions facilitate extracardiac retrograde hemolymph propulsion in the mosquito hemocoel. *Program and Abstracts of the 85th Annual Meeting of the American Society of Parasitologists*. p.38.
- Coggins, S.A., and J.F. Hillyer. 2010. Comparative susceptibility of *Aedes aegypti* and *Anopheles gambiae* mosquitoes to bacterial infection. *Program and Abstracts of the 85th Annual Meeting of the American Society of Parasitologists*. p.31.
- Honegger, H.-W., L. Shirley, T. Estevez- Lao, and J. Hillyer. 2010. Bursicon expression in adult insects may reveal a division between holometabolous and hemimetabolous insects. *Program and Abstracts of the 9th International Congress of Neuroethology*. p. 116.
- Hillyer, J.F., J.W. Andereck, and J.G. King. 2010. Abdominal contractions drive extracardiac hemolymph circulation in the mosquito hemocoel. *Program and Abstracts of the 59th Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p. 18.
- King, J.G., J.F. Hillyer. 2010. Mosquito immune cells form sessile foci in response to infection. *Program and Abstracts of the 59th Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p. 352.
- Hillyer, J.F. 2010. Hemolymph circulation in the mosquito hemocoel. *The 58th Annual Meeting of the Entomological Society of America*. p. 59.

Hillyer, J.F., and J.G. King. 2011. Infection-induced hemocyte aggregation on the surface of the mosquito heart. *Program and Abstracts of the 86<sup>th</sup> Annual Meeting of the American Society of Parasitologists*. p. 77.

Hillyer, J.F., and T.Y. Estévez-Lao. 2011. Role of mosquito EGF-repeat containing proteins in the antibacterial immune response in the hemocoel. *Program and Abstracts of the 86<sup>th</sup> Annual Meeting of the American Society of Parasitologists*. p. 79.

Hillyer, J.F. 2011. Fluorescence-Based Intravital Imaging for the Study of Hemolymph Circulation in Mosquitoes. *Program and Abstracts of Microscopy and Microanalysis 2011: Microscopy and Microanalysis*. 17(Suppl 2)224-225.

Hillyer, J.F., S.A. Coggins, and T.Y. Estévez-Lao. 2011. Comparative analysis of the immune competencies of the mosquitoes *Aedes aegypti* and *Anopheles gambiae* in response to bacterial infections. *The 59<sup>th</sup> Annual Meeting of the Entomological Society of America*. p. 54.

King, J.G., and J.F. Hillyer. 2011. Rapid phagocytic response and sessile phagocytic foci formation by mosquito hemocytes following infection. *The 59<sup>th</sup> Annual Meeting of the Entomological Society of America*. p. 79.

King, J.G., and J.F. Hillyer. 2011. SGS proteins form a major component and immunogen of mosquito saliva. *Program and Abstracts of the 60<sup>th</sup> Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p. 222.

Hillyer, J.F. 2012. Insights into the control of mosquito heart contractions. *Program and Abstracts of the 87<sup>th</sup> Annual Meeting of the American Society of Parasitologists*. p. 50-51.

Hillyer, J.F. 2012. Effect of the neuropeptides corazonin and CCAP on mosquito heart physiology. *The 60<sup>th</sup> Annual Meeting of the Entomological Society of America*. p. 121.

Chen W., and J.F. Hillyer. 2012. Triethylamine as a potential anesthetic agent for the study of mosquito heart physiology. *The 60<sup>th</sup> Annual Meeting of the Entomological Society of America*. Accepted for oral presentation. p. 80.

Hillyer, J.F., T.Y. Estévez-Lao, S.N. Gómez, and L.T. Sigle. 2013. Effect of infection on mosquito heart physiology. *Program and Abstracts of the 88<sup>th</sup> Annual Meeting of the American Society of Parasitologists*. p. 37.

Hillyer, J.F., and J.G. King. 2013. Mapping the mosquito cellular immune response: hemocyte distribution throughout the hemocoel. *Program and Abstracts of the 88<sup>th</sup> Annual Meeting of the American Society of Parasitologists*. p. 62.

Sigle, L.T., T.Y. Estévez-Lao, and J.F. Hillyer. 2013. Mosquito infection with various bacterial species induces peristial hemocyte aggregation and reduces heart contraction rates. *The 61<sup>st</sup> Annual Meeting of the Entomological Society of America*. p. 109.

League, G.P., and J.F. Hillyer. 2013. Dorsal vessel structure and hemolymph circulation in *Anopheles gambiae* larvae. *The 61<sup>st</sup> Annual Meeting of the Entomological Society of America*. p. 109.

Raphemot, R., E. Days, T.Y. Estevez-Lao, D. Swale, M.F. Rouhier, J.F. Hillyer, C.D. Weaver, C.R. Hopkins, K.W. Beyenbach, P.M. Piermarini, J.S. Denton. 2013. Reverse-genetic and pharmacologic strategies for probing mosquito inward rectifier potassium channels as insecticide targets. *Program and Abstracts of the 60<sup>th</sup> Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p. 337.

Hillyer, J.F., and S. Boppana. 2014. Hemolymph propulsion through the mosquito antennae. *Program and Abstracts of the 89<sup>th</sup> Annual Meeting of the American Society of Parasitologists*. p. 82.

Hillyer, J.F., L.T. Sigle, and T.Y. Estévez-Lao. 2014. Periostial hemocyte aggregation in *Anopheles gambiae* occurs following diverse immune stimuli and is accompanied by changes in mosquito heart physiology. *Program and Abstracts of the 63<sup>rd</sup> Annual Meeting of the American Society of Tropical Medicine and Hygiene*. p. 307

Hillyer, J.F., and S. Boppana. 2014. Physiology of accessory pulsatile organs: hemolymph circulation in the mosquito antennae. *The 62<sup>nd</sup> Annual Meeting of the Entomological Society of America*. p. 94

League, G.P., and J.F. Hillyer. 2014. Comparative analysis of *Anopheles gambiae* larval and adult dorsal vessel structure and hemolymph circulation. *The 62<sup>nd</sup> Annual Meeting of the Entomological Society of America*. p. 121

Sigle, L.T., and J.F. Hillyer. 2014. Periostial hemocyte aggregation patterns correlate with differential pathogen phagocytosis on the heart of *Anopheles gambiae*. *The 62<sup>nd</sup> Annual Meeting of the Entomological Society of America*. p. 121

Hillyer, J.F. 2015. Integrated immune and cardiovascular function in insects. *The 2015 annual meeting of The Society for Integrative and Comparative Biology*. p. 103.

League, G.P., and J.F. Hillyer. 2015. Comparative analysis of the larval and adult circulatory system and its role in pathogen aggregation in the mosquito *Anopheles gambiae*. *Program and Abstracts of the 90<sup>th</sup> Annual Meeting of the American Society of Parasitologists*. p. 59.

Hillyer, J.F., and T.Y. Estévez-Lao. 2015. Effect of blood feeding on mosquito heart physiology. *Program and Abstracts of the 90<sup>th</sup> Annual Meeting of the American Society of Parasitologists*. p. 61.

Hillyer, J.F., and L.T. Sigle. 2015. Periostial hemocyte aggregation on the surface of the mosquito heart. *The 62<sup>nd</sup> Annual Meeting of the Entomological Society of America*. p. 129.

Hillyer, J.F., L.T. Sigle, and G.P. League. 2016. Mosquito hemocyte-mediated immune responses occur in areas of high hemolymph flow. *Program and Abstracts of the 91<sup>st</sup> Annual Meeting of the American Society of Parasitologists*. p. 73.

Hillyer, J.F. 2016. Structural mechanics of hemolymph circulation in mosquitoes. *The XXV International Congress of Entomology*. p. 308.

Sigle, L.T., and J.F. Hillyer. 2016. Circulatory and immune system interactions in a mosquito. *The XXV International Congress of Entomology*. p. 308.

Hillyer, J.F., and G.P. League. 2017. Comparative analyses of immune responses in larvae and adults of the mosquito, *Anopheles gambiae*. *Program and Abstracts of the 92<sup>nd</sup> Annual Meeting of the American Society of Parasitologists*. p. 91.

Sigle, L.T., T.Y. Estévez-Lao, D. Rinker, J.A. Capra, and J.F. Hillyer. 2017. Immune gene expression varies across different mosquito tissues containing either circulating, sessile, or periostial hemocytes. *Entomology 2017 (Annual Meeting of the Entomological Society of America)*. p. 110.

Brown, L.D., G. Thompson, and J.F. Hillyer. 2017. Effect of larval hemocoelic infection on the biology of adult *Anopheles gambiae*. *Entomology 2017 (Annual Meeting of the Entomological Society of America)*. p. 232.

Shapiro, L., E. Gaviria, and J.F. Hillyer. 2017. Temperature accelerates age-specific mortality and mediates immune senescence in malaria mosquitoes. *Entomology 2017 (Annual Meeting of the Entomological Society of America)*. p. 232.

Rinker, D., L.T. Sigle, J.A. Capra, and J.F. Hillyer. 2017. A comprehensive transcriptome profile of the heart of *Anopheles gambiae*. *Entomology 2017 (Annual Meeting of the Entomological Society of America)*. p. 235.

League, G.P., T.Y. Estévez-Lao, Y. Yan, V.A. García-Lopez, and J.F. Hillyer. 2017. Mosquito immunity before and after metamorphosis: evidence of adaptive decoupling in *Anopheles gambiae*. *Program and Abstracts of the 66<sup>th</sup> Annual Meeting of the American Society of Tropical Medicine and Hygiene*.

Hillyer, J.F., and L.T. Sigle. 2018. Involvement of Nimrod family genes in the periostial hemocyte immune response of a mosquito. *Program and Abstracts of the 93<sup>rd</sup> Annual Meeting of the American Society of Parasitologists*. p. 66.

Yan, Y., and J.F. Hillyer. 2018. Complement-like proteins (TEPs) are involved in the periostial hemocyte aggregation response of the mosquito *Anopheles gambiae*. *Entomology 2018 (Annual Meeting of the Entomological Society of America)*. p. 95.

Hillyer, J.F., and Brown, L.D. 2018. Mosquito larval infection impacts adult life history traits and the ability to combat a secondary infection. *Entomology 2018 (Annual Meeting of the Entomological Society of America)*. p. 167.

#### PATENT:

Albrecht, R.M., D.A. Meyer, and J.F. Hillyer. March 2, 2004. Colloidal particles of different element composition for specific labeling purposes. P98246US. US patent number 6,699,507.

#### **F. TEACHING-RELATED ACTIVITIES (AT VANDERBILT UNIVERSITY)**

##### CURRENT COURSES: (year and student enrollment)

- BSCI1511 – Introduction to Biological Sciences (2<sup>nd</sup> semester). Role: Instructor (50% of the course).
 

a) Spring '16: 228	b) Spring '17: 235	c) Spring '18: 236	d) Spring '19: 237
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- BSCI3236/5236 (formerly BSCI236) – *Parasitology*. Role: Instructor.
 

a) Spring '09: 22	c) Spring '11: 29	e) Spring '13: 35	g) Fall '16, 31
b) Spring '10: 39	d) Spring '12: 17	f) Spring '15, 13	h) Fall '18, 32
- BSCI3860 (BSCI280) – *Introduction to Research*. Role: Mentor or co-mentor.
 

a) Fall '07: 1	d) Fall '09: 1	g) Spring '11: 1	j) Spring '13: 1
b) Fall '08: 3	e) Spring '10: 1	h) Fall '11: 1	k) Fall '13: 1
c) Spring '09: 1	f) Fall '10: 1	i) Fall '12: 1	l) Fall '17: 2
- BSCI 3861 (BSCI283) – *Directed Laboratory Research*. Course organizer (entire program).
 

a) Fall '17: 30
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- BSCI 3861 (BSCI283) – *Directed Laboratory Research*. Role: Mentor or co-mentor.
 

a) Spring '08: 1	e) Spring '11: 1	i) Fall '13: 1	m) Spring '18: 2
b) Spring '09: 3	f) Fall '11: 1	j) Fall '14: 1	
c) Fall '09: 1	g) Spring '12: 1	k) Spring '16: 1	
d) Fall '10: 1	h) Spring '13: 1	l) Spring '17: 1	
- BSCI 3961 (BSCI286) – *Independent Laboratory Research*. Role: Course organizer (entire program).
 

a) Fall '17: 33
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- BSCI3961 (BSCI286) – *Independent Laboratory Research*. Role: Mentor or co-mentor.
 

a) Fall '09: 1	e) Spring '13: 1	i) Spring '15: 2	m) Fall '17: 1
b) Spring '10: 1	f) Fall '13: 1	j) Fall '15: 1	n) Spring '18: 1
c) Fall '11: 1	g) Fall '14: 1	k) Fall '16: 1	o) Fall '18: 2
d) Spring '12: 2	h) Spring '14: 2	l) Spring '17: 1	p) Spring '19: 2
- BSCI4999 (BSCI296) *Honors Research*. Role: Mentor or co-mentor
 

a) Fall '08: 1	c) Fall '10: 1	e) Fall '12: 2	g) Fall '13: 1
b) Spring '09: 1	d) Spring '11: 1	f) Spring '13: 2	h) Fall '15: 1

i) Spring '16: 1

PAST COURSES:

- BSCI6320 (BSCI275) – *Graduate Seminar in Biological Sciences*. Role: Instructor.
  - a) Spring '08: 15.
- BSCI3965 (BSCI275) – *Biology of Host-Parasite Interactions*. Role: Instructor.
  - a) Fall '08: 8.
- BSCI3965 (BSCI275) – *Epidemiology and control of infectious diseases*. Role: Instructor.
  - a) Fall '09: 16                      c) Fall '12, 8                      e) Fall '14, 10
  - b) Fall '11: 12                      d) Fall '13, 12                      f) Fall '15, 10
- INDS280 – *Interdisciplinary Internship*. Mentor in Fall '08 (1 student).

COURSE PARTICIPATION (GUEST LECTURES):

- BSCI3965 (BSCI275) – *Vector Biology and Global Health*. Presented two-hour lectures, 10/31/07, 2/23/2011, 2/22/2012, 2/6/2013, 2/5/2014 and 2/18/2015 (Course instructor: Laurence Zwiebel).
- BSCI3965 (BSCI275) – *Living in Symbiosis*. Presented a two-hour lecture, 10/27/10. (Course instructor: Seth Bordenstein).
- M&IM353 – *Microbial Diseases*, Guest lecturer in Dept. Microbiology and Immunology course, 2/15/2011, 2/15/2012, 2/13/2013, 2/12/2014 and 2/11/2015. (Course instructor: Eric Skaar).
- SPAN4760 – *Literature and Medicine (formerly Disease Constructs in Puerto Rico)*. Guest lecture in Dept. of Spanish course, 2/21/2017, 2/20/2018. (Course instructor: Benigno Trigo)
- BSCI 3230 – *Biological Clocks*. Guest lecture on parasite rhythmicity, 10/31/2018. (Course instructor: Carl Johnson)
- IGP 8002 – *Adventure Travel Guide to the Microbial World*. Lecture titled “Life in a mosquito”, 1/23/2019. (Course instructor: Borden Lacy)

GRADUATE STUDENTS:

- Jonas G. King, Ph.D., Graduate Program in Biological Sciences, 2007-2012. Thesis title: Exploring the importance of mosquito hemocoelic and salivary gland components during host-pathogen interactions.
  - \*\*\* **First author** of articles published in *J Exp Biol*, *J Biol Chem*, *PLoS Pathogens*, and *BMC Biology*.
  - \*\*\* **Co-author** of articles published in *PLoS ONE* and *Proc Biol Sci*.
  - \*\*\* Dept. of Biol. Sci Hickory Stick Award for outstanding teaching assistant, 2009.
  - \*\*\* Marc Dresden Student Travel Award from American Society of Parasitologists, 2009.
  - \*\*\* 1st place in Nikon Small World Photomicrography Competition, 2010.
  - \*\*\* Vanderbilt University Dissertation Enhancement Award, 2011.
  - \*\*\* *American Society of Parasitologists Ashton Cuckler New Investigator Award, 2013.*
  - \*\*\* After Vanderbilt: Post-doc, Johns Hopkins University and USDA.
  - \*\*\* Current Position: Assistant Professor, Mississippi State University.
- Garrett P. League, Ph.D. student, Graduate Program in Biological Sciences, 2011-2017.
  - \*\*\* **First author** of articles published in *J Exp Biol*, *BMC Biol*, and *Parasites & Vectors*.
  - \*\*\* VU Dept. of Biol. Sci. Ann Bernard Martin Award for graduate research, 2013.
  - \*\*\* VU Dept. of Biol. Sci. Gisela Mosig Best Presenter Award (Dept. retreat), 2013.
  - \*\*\* Best presentation in his session (1<sup>st</sup> place award) at the 2014 ESA annual meeting.
  - \*\*\* Marc Dresden Student Travel Award from American Society of Parasitologists, 2015.
  - \*\*\* After Vanderbilt: Post-doc, Cornell University.
- Leah T. Sigle, Ph.D. student, Graduate Program in Biological Sciences, 2012-2018.
  - \*\*\* **First author** of articles published in *Dev Comp Immunol*, *Insect Mol Biol*, *J Exp Biol*, and *Front Physiol*.
  - \*\*\* VU Dept. of Biol. Sci. Ann Bernard Martin Award for graduate research, 2014.
  - \*\*\* Best presentation in her session (1<sup>st</sup> place award) at the 2017 ESA annual meeting.
  - \*\*\* After Vanderbilt: Post-doc, Penn State University.

- Yan Yan, PhD student, Graduate Program in Biological Sciences, 2016-present.
  - \*\*\* **First author** of article published in *Insect Mol Biol*.
  - \*\*\* **Co-author** of article published in *Parasites & Vectors*.
  - \*\*\* Best presentation in her session (1<sup>st</sup> place award) at the 2018 ESA annual meeting.

POST-DOCTORAL RESEARCHERS:

- Lisa D. Brown, 2016-2018.
  - \*\*\* **First author** of articles published in *J Invert Pathol* and *Ecol Evol*.
  - \*\*\* After Vanderbilt: Assistant Professor, Georgia Southern University.
- Lillian Shapiro, 2016-2018.
  - \*\*\* Contributing author of article published in *Ecol Evol*; other articles are forthcoming.
  - \*\*\* After Vanderbilt: Research Analyst at Battelle Memorial Institute Chemical, Biological, Radiological, Nuclear and Explosive Threat Monitoring Center.

GRADUATE STUDENT DISSERTATION COMMITTEES:

- |  |   |
|--|---|
| • R. Jason Pitts (BSCI), 2008-2011.        | • Garrett P. League (BSCI), 2013-2017.                    |
| • Jonas G. King (BSCI), 2009-2012.         | • Daniel LePage (BSCI), 2013-2016.                        |
| • Daniel M. Erickson (BSCI), 2009-2011.    | • Leah T. Sigle (BSCI), 2014-2018.                        |
| • Joseph Conrad (M&IM), 2009-2011.         | • Teddy van Opstal (BSCI), 2015-2018; <i>Chair</i> .      |
| • Chao Liu (BSCI), 2010-2013.              | • Stephanie Birnbaum (BSCI), 2016-2019; <i>Chair</i> .    |
| • Sarah Broderick (CDB), 2010-2012.        | • Jiyun (Michelle) Moon (BSCI), 2016-2019; <i>Chair</i> . |
| • Lisa J. Funkhouser (BSCI), 2011-present. | • Jessamyn Perlmutter (BSCI), 2016 pres.; <i>Chair</i> .  |
| • Jeffrey S. Fites (BSCI), 2011-2014.      | • Stephen T. Ferguson (BSCI), 2016 pres.; <i>Chair</i> .  |
| • Sarah P. Lawson (BSCI), 2011-2014.       | • Zi Ye (BSCI), 2017-pres.; <i>Chair</i> .                |
| • Rene Raphemot (Pharm), 2012-2014.        | • Chauncey Darden (Meharry MC), 2017-pres.                |
| • David Rinker (Human Genet.), 2012-2015.  | • Yan Yan (BSCI), 2018-pres.                              |
| • Jason Metcalf (BSCI), 2012-2014.         | • Justin Critchlow (BSCI), 2019-pres.; <i>Chair</i> .     |
| • Joseph T. Smith (Meharry MC), 2012-2018. |   |

UNDERGRADUATE STUDENT RESEARCHERS (INCLUDING LAB-BASED ACCOMPLISHMENTS):

- **Justin D. Glenn:** BSCI280, Fall 2007; BSCI283, Spring 2008; BSCI296 (Honors research), Fall 2008; BSCI296 (Honors research), Spring 2009. Mr. Glenn researched the functional mechanics of mosquito heart contractions.
  - \*\*\* **First author** of a 2010 paper in the *Journal of Experimental Biology*.
  - \*\*\* Co-author of 2008 & 2009 ASP and 2008 & 2009 ASTMH meeting abstracts.
  - \*\*\* 1<sup>st</sup> prize (best presentation) in the entomology session of the 2009 Middle Collegiate Meeting of the Tennessee Academy of Sciences (TAS).
  - \*\*\* Graduated with “Honors” in Molecular and Cellular Biology and received a “Research Commendation” from the Department of Biological Sciences, 2009.
  - \*\*\* After Vanderbilt Undergraduate: *Johns Hopkins Cellular and Molecular Medicine graduate program*.
- **Sarah A. Coggins:** BSCI280, Fall 2008; BSCI283, Spring 2009; BSCI286, Fall 2009; BSCI286, Spring 2010; BSCI296, Fall 2010; BSCI296, Spring 2011. Ms. Coggins carried out a comparative analysis of the immune responses of two distantly related mosquito species against bacterial infection.
  - \*\*\* **First author** of a 2012 paper in *Developmental and Comparative Immunology*.
  - \*\*\* Co-author of 2010 ASP and 2011 ESA meeting abstracts.
  - \*\*\* *Vanderbilt University’s 2011 Founder’s Medalist*; first honors in the 2011 undergraduate graduating class.
  - \*\*\* Graduated with “Highest Honors” in Molecular and Cellular Biology, 2011.
  - \*\*\* Vanderbilt University’s Department of Biological Sciences 2011 Award for Outstanding Research in Biological Sciences.
  - \*\*\* Vanderbilt Undergraduate Summer Research Fellowship (VUSRP), 2010.
  - \*\*\* Marc Dresden Student Travel Award from American Society of Parasitologists, 2010.

- \*\*\* Speaker at the 85<sup>th</sup> annual meeting of ASP, Colorado Springs, CO, 6/22/2010.
- \*\*\* 1<sup>st</sup> prize (best presentation) in the entomology session of the 2011 Middle Collegiate Meeting of the Tennessee Academy of Sciences (TAS).
- \*\*\* After Vanderbilt Undergraduate: *Vanderbilt University Medical School*.
- **Imade Imasuen**: BSCI280, Fall 2008; BSCI283, Spring 2009. Ms. Imasuen researched the enzymatic activities of mosquito hemocytes.
  - \*\*\* After Vanderbilt Undergraduate: *Emory's Post-Baccalaureate Program (PREP)*.
- **Chance Panter**: BSCI280, Fall 2008. Mr. Panter researched bursicon biology in mosquitoes.
  - \*\*\* After Vanderbilt Undergraduate: *US Army*.
- **Lindsay Ford**: INDS280, Fall 2008. Ms. Ford researched mosquito hemolymph circulation.
- **Jonathan Andereck**: BSCI280, Spring 2009; BSCI283, Fall 2009; Spring 2010. Mr. Andereck researched the role of abdominal contractions in propelling extracardiac hemolymph.
  - \*\*\* **First author** of a 2010 paper in the journal *PLoS ONE*.
  - \*\*\* Co-author of 2010 ASP and 2010 ASTMH meeting abstracts.
  - \*\*\* *Vanderbilt U. Joel Tellinghuisen Phi Beta Kappa Award for outstanding research*, 2010.
  - \*\*\* Vanderbilt Undergraduate Summer Research Fellowship (VUSRFP), 2009.
  - \*\*\* Vanderbilt U. Merck Index Award (Chemistry), 2010.
  - \*\*\* "Research Commendation" from the Department of Biological Sciences, 2010.
  - \*\*\* After Vanderbilt Undergraduate: *Vanderbilt University Medical School*.
- **Rachel Fogg**: BSCI283, Spring 2009. Ms. Fogg researched salivary gland biology.
  - \*\*\* After Vanderbilt Undergraduate: *Cornell University College of Veterinary Medicine*.
- **Jessica Aviles**: BSCI280, Fall 2009. Ms. Aviles studied hemolymph circulation.
- **Lauren Sloane Speakman**: BSCI280, Spring 2010; BSCI283, Fall 2010. Ms. Speakman researched mosquito heart physiology.
- **Weihan Chen**: BSCI280, Fall 2010; BSCI283, Spring 2011; BSCI286, Fall 2011 and Spring 2012; BSCI296, Fall 2012 and Spring 2013. Mr. Chen researched the effect of FlyNap (triethylamine) on mosquito heart physiology.
  - \*\*\* **First author** of a 2013 paper in *PLoS ONE*.
  - \*\*\* 2<sup>nd</sup> prize in the entomology session of the 2011 Middle Collegiate Meeting of the Tennessee Academy of Sciences (TAS).
  - \*\*\* NSF REU fellow (supplement to IOS-1051636) in the Hillyer Lab, summer of 2011.
  - \*\*\* Speaker at Entomology 2012: 60<sup>th</sup> annual meeting of ESA, Knoxville, TN, 11/12/2012.
  - \*\*\* Graduated with "Highest Honors" in Molecular and Cellular Biology, 2013.
  - \*\*\* After Vanderbilt Undergraduate: *University of Texas Southwestern Medical School*.
- **Dacia Boyce**: BSCI280, Spring 2011; BSCI283, Fall 2011; BSCI286, Spring 2012; BSCI296, Fall 2012 and Spring 2013. Ms. Boyce researched the function of CCAP in mosquitoes.
  - \*\*\* **Second author** of a 2013 paper in *Journal of Experimental Biology*.
  - \*\*\* Graduated with "Honors" in Ecology, Evolution and Organismal Biology, 2013.
  - \*\*\* After Vanderbilt Undergraduate: *Uniformed Services University of the Health Sciences*.
- **Sushma Boppana**: BSCI280, Fall 2011; BSCI283, Spring 2012; BSCI286, Spring 2013; BSCI296, Fall 2013; BSCI296, Spring 2014. Ms. Boppana researched the biology of mosquito antennal accessory pulsatile organs.
  - \*\*\* **First author** of a 2014 paper in *Journal of Experimental Biology*.
  - \*\*\* NSF REU fellow (supplement to IOS-1051636) in the Hillyer Lab, summer of 2012.
  - \*\*\* Graduated with "Honors" in Molecular and Cellular Biology, 2013.
  - \*\*\* After Vanderbilt Undergraduate: Univ. of Alabama-Birmingham MD/PhD program.
- **Lauren de la Parte**: BSCI280, Fall 2012; BSCI283, Spring 2013; BSCI286, Fall 2013; BSCI286, Spring 2014. Ms. de la Parte researched the effect of FMRFamide on mosquito heart physiology.
  - \*\*\* **Third author** of a 2014 paper in *General and Comparative Endocrinology*.
  - \*\*\* After Vanderbilt Undergraduate: *London School of Hygiene and Tropical Medicine*.
- **Ashlyn M. Alongi**: BSCI280, Spring 2013; BSCI283, Fall 2013; BSCI286, Spring 2014. Ms. Alongi researched the hormonal control of mosquito circulatory physiology.
  - \*\*\* After Vanderbilt Undergraduate: *Univ. of Alabama-Birmingham Medical School*.

- **Haley E. Ellison** (Belmont University): Summer and Fall 2013. Ms. Ellison researched the effect of diet on mosquito heart physiology.
  - \*\*\* **First author** of a 2015 paper in *Journal of Insect Physiology*.
  - \*\*\* NSF REU fellow (supplement to IOS-1257936) in the Hillyer Lab, summer of 2013.
  - \*\*\* First place, Zoology section, 2014 Tennessee Academy of Sciences annual meeting.
- **Ravi T. V. Chintapalli**: BSCI280, Fall 2013; BSCI283, Spring 2014; BSCI286, Fall 2014; BSCI286, Spring 2015; BSCI4999, Fall '15 and Spring '16. Mr. Chintapalli researched the physiology of mosquito wing accessory pulsatile organs.
  - \*\*\* **First author** of a 2016 paper in *Journal of Experimental Biology*.
  - \*\*\* Undergraduate fellow, Beckman Scholars Program, 2014-2015.
  - \*\*\* Vanderbilt University Littlejohn Student Fellow, 2015-2016.
  - \*\*\* Presented a poster at the 2015 Annual Beckman Symposium, Irvine, CA, 8/8/2015.
  - \*\*\* After Vanderbilt Undergraduate: University of Chicago Pritzker School of Medicine.
- **Talitha Jones** (Belmont University): Summer 2014. Ms. Jones researched the effect of neuropeptides on mosquito circulatory physiology.
  - \*\*\* **Second author** of a 2016 paper in *Journal of Experimental Biology*.
  - \*\*\* Third place, Zoology section, 2014 Tennessee Academy of Sciences annual meeting.
- **Julia M. Suggs**: BSCI283, Fall 2014; BSCI286, Spring 2015; BSCI3961, Fall '15. Ms. Suggs researched the effect of neuropeptides on mosquito circulatory physiology.
  - \*\*\* **First author** of a 2016 paper in *Journal of Experimental Biology*.
  - \*\*\* Vanderbilt Undergraduate Summer Research Fellow (VUSRP) and Undergraduate Littlejohn Summer Research Scholar, 2015.
  - \*\*\* Vanderbilt University Littlejohn Student Fellow, 2015-2016.
  - \*\*\* After Vanderbilt Undergraduate: Washington University in St. Louis Medical School.
- **Charlotte Doran**: BSCI3861, Spring '16; BSCI3961, Fall '16, Spring 2017. Ms. Doran investigated the effect of aging on mosquito heart physiology.
  - \*\*\* **First author** of a 2017 paper in *Journal of Insect Physiology*.
  - \*\*\* Vanderbilt Undergraduate Summer Research Fellow (VUSRP), 2016.
  - \*\*\* After Vanderbilt Undergraduate: Research Assistant, Boston VA Research Institute.
- **Grayson Thompson**: BSCI3861, Spring '17; BSCI3961, Fall '17; BSCI3961, Spring '18. Mr. Thompson investigates mosquito life history traits.
  - \*\*\* **Second author** of article published in *J Invert Pathol*; **third author** of article in *Ecol Evol*.
  - \*\*\* After Vanderbilt Undergraduate: M.S. program in Medicine Health and Society, Vanderbilt U.
- **Joseph Carter Powers**: BSCI3860, Fall '17; BSCI3861, Spring '18; BSCI3961, Fall '18; BSCI3961, Spring '19.
  - \*\*\* Undergraduate fellow, Beckman Scholars Program, 2018-2019.
- **Raymar Turangan**: BSCI3860, Fall '17; BSCI3861, Spring '18; BSCI3961, Fall '18; BSCI3961, Spring '19.
  - \*\*\* Vanderbilt Undergraduate Summer Research Fellow (VUSRP) Research Scholar, 2018.

UNDERGRADUATE STUDENT RESEARCHER CO-MENTOR:

- Since 2010, co-mentor of over 10 students.

HIGH SCHOOL STUDENT RESEARCHERS (INCLUDING LAB-BASED ACCOMPLISHMENTS):

- **Vivian Aluoch**: mentored as part of Vanderbilt's Research Internship Program for High School Students, Summer of 2011. Ms. Aluoch researched the effect of the neuropeptide corazonin on mosquito heart contractions. Ms. Aluoch went on to attend Vanderbilt U.
  - \*\*\* **Co-author** of a 2012 paper in the journal *Insect Molecular Biology*.
- **Scherly Gomez**: mentored as part of the School for Science and Math at Vanderbilt (SSMV), spring, summer and fall of 2012. Ms. Gomez researched the effect of infection on mosquito heart physiology. Ms. Gomez went on to attend Lipscomb University.
- **Ogechukwu Onuh**: mentored as part of the School for Science and Math at Vanderbilt, spring, summer and fall of 2013. Ms. Onuh researched mosquito larval circulatory physiology. Ms. Onuh went on to attend Mercer University.

\*\*\* **Co-author** of a 2015 paper in *Journal of Experimental Biology*.

- **Valeria Garcia-López:** mentored as part of the School for Science and Math at Vanderbilt, spring, summer and fall of 2014. Ms. Garcia researched mosquito larval immunity. Ms. Garcia-Lopez went on to attend Centre College.

\*\*\* **Co-author** of article published in *Parasites & Vectors*.

- **Elizabeth Gaviria:** mentored as part of the School for Science and Math at Vanderbilt, spring, summer and fall of 2017. Ms. Gaviria researched mosquito immunity. MS. Gaviria went on to attend Rice University
  - **Ella Halbert:** mentored as part of the School for Science and Math at Vanderbilt, spring, summer and fall of 2018. Ms. Halbert researched mosquito immunity.
- \*\*\* Semifinalist in the national Regeneron Science Talent Search.

#### UNDERGRADUATE ADVISING:

- *Undergraduate major advising (number of students):*

- |            |             |             |             |
|------------|-------------|-------------|-------------|
| a) 2009: 1 | d) 2012: 10 | g) 2015: 16 | j) 2018: 20 |
| b) 2010: 5 | e) 2013: 9  | h) 2016: 14 | k) 2019: 16 |
| c) 2011: 8 | f) 2014: 16 | i) 2017: 21 |             |

- *Undergraduate minor advising (number of students):*

- |            |            |            |            |
|------------|------------|------------|------------|
| a) 2008: 1 | c) 2010: 3 | e) 2014: 1 | g) 2016: 2 |
| b) 2009: 2 | d) 2011: 2 | f) 2015: 1 |            |

- *Undergraduate honors committees (number of students [mentor]):*

- |                   |                   |                   |               |
|-------------------|-------------------|-------------------|---------------|
| a) '07-'08: 1     | d) '11-'12: 1     | g) '14-'15: 1     | j) '18-'19: 1 |
| b) '08-'09: 2 [1] | e) '12-'13: 2 [2] | h) '15-'16: 1 [1] |               |
| c) '10-'11: 1 [1] | f) '13-'14: 2 [1] | i) '17-'18: 1     |               |

#### **G. SERVICE (WHILE AT VANDERBILT UNIVERSITY)**

Note: Service related to research seminars, student committee participation, and participation in official courses for which Dr. Hillyer is not the instructor of record (e.g., M&IM353) is detailed in sections E and F.

#### SERVICE TO THE DEPARTMENT OF BIOLOGICAL SCIENCES:

- Committee membership:
  - Co-chair, Seminar Series Committee, 2008-2011.
  - Graduate Program Committee, 2011-2013.
  - Graduate Admissions Committee, 2014-2016.
  - Graduate Studies Advisory Committee, 2015-2016.
  - Dept. of Biological Sciences faculty search committee: '14-'15: 2 positions; '15-'16; 1 pos.
  - Committee on Faculty Awards, 2016-2017.
- Submitted numerous letters of recommendation on behalf of undergraduate students.

#### SERVICE TO THE COLLEGE OF ARTS & SCIENCE:

- Programs:
  - Director, Program in Career Development, August 2017-Present.
- Committees:
  - College of Arts and Science Junior Advisory Review Committee (JARC), 2017.
  - Humanities Capital Planning Faculty Advisory Committee, 2018-2019.
- Other:
  - Panelist, A&S Program in Career Development event titled, "Making Progress on your Second Project", 5/23/2015.
  - An image provided by the Hillyer Lab served as the cover of the 2011 College of Arts and Science Holiday Card. The image was taken by Jonas King, as part of NSF IOS-0817644.

SERVICE TO THE UNIVERSITY:

- Committees:
  - (a) Member, Graduate Faculty Delegate Assembly, 2013-2014.
  - (b) Chair and Member, Institutional Biosafety Committee, 2014-present; Chair, 2015-present.
- Reviewer or evaluator:
  - (a) Evaluator of nominations for graduate student topping-up awards, 2011.
  - (b) Evaluator of essays for the assessment of the AXLE curriculum, 2011, 2013, 2015.
  - (c) Evaluator of proposals for the Dissertation Enhancement Awards, 2014.
  - (d) Discovery Grant Review Committee, 2017 and 2018; co-Chair, 2018.
  - (e) Judge, Vanderbilt Postdoctoral Association Symposium, 4/9/2019.
- Mentor in university-wide programs (internally and externally funded):
  - (a) Vanderbilt Undergraduate Summer Research Program, 2009 (J. Andereck), 2010 (S. Coggins), 2015 (J. Suggs), 2016 (C. Doran), 2018 (R. Turangan).
  - (b) School of Medicine Emphasis Program for medical students, 2009 (N. Burjek).
  - (c) Research Internship Program for High School Students, 2011 (V. Aluoch).
  - (d) School for Science and Math at Vanderbilt for high school students, 2012, 2013, 2014, 2017, 2018 (S. Gomez, O. Onuh, V. Garcia, E. Gaviria, E. Halbert).
  - (e) Beckman Scholars Program grant, 2007-present.
    - a. Participant in Beckman Scholars funded grant proposal, 2007, 2011, 2015.
    - b. Mentor of a Beckman Scholar, 2014-2015 (Chintapalli); 2018-2019 (Powers).
- Teaching:
  - (a) Participated and provided specimens for lab session on malaria for 1<sup>st</sup> year medical students, 2009 and 2010.
  - (b) Small group leader for 1<sup>st</sup> year medical students, global health intercessions, 2009.
  - (c) Hosted a "Teaching Visit" and led a discussion for the Center for Teaching, 2/22/2012.
  - (d) Invited Discussant at Vanderbilt University Medical Center Brittingham Society's Fox and Hedgehog series; 2008, 2009, 2010.
- Faculty participant in the VU Institute for Global Health AIDS International Training and Research Program (AITRP) NIH grant, 2008.
- Images provided by the Hillyer Lab decorate the entryway of the Stevenson Science Library and the Stevenson Center 2 hallway.
- At "The Commons", spoke to students about undergraduate research at Vanderbilt, including the importance of research, engaging the faculty, and obtaining positions, 1/13/2015 and 11/26/2018.
- Faculty Marshal, Vanderbilt University Commencement, 2015-2019.

SERVICE TO THE PROFESSION:

- *Membership in scientific societies:*
  - (a) Microscopy Society of America (1998-2012)
  - (b) American Association for the Advancement of Science (1998-present)
  - (c) American Society of Tropical Medicine and Hygiene (1998-2014)
  - (d) Sigma Xi, The Scientific Research Society (1999-present)
  - (e) American Society of Parasitologists (2000-present)
  - (f) Entomological Society of America (2010-present)
- *Service to the American Society of Parasitologists:*
  - (a) Student Awards Committee (2006-2008).
  - (b) Henry Baldwin Ward Medal Committee (2008-2010; highest honor bestowed by ASP).
  - (c) Elected to the Nominating Committee (2009-2010).
  - (d) Ashton Cuckler New Investigator Award Committee (2010-2012).
  - (e) Session chair at the 83<sup>rd</sup>-90<sup>th</sup> annual meetings (2008-2016).
  - (f) *Elected to ASP Council* for a four-year term (the society's governing board; 2012-2016).
  - (g) Journal Archive and Access Ad Hoc Committee; Co-Chair; 2015.
  - (h) Conduct and Ethics Ad Hoc Committee; 2015.
  - (i) Priorities and Planning Committee; 2016-2019.

- (j) Chair, Ad Hoc Committee to Identify a new Editor-in-Chief of the Journal of Parasitology, 2017
- (k) Elected to the presidential cycle: Vice-President, 2017-2018; President-Elect, 2018-2019; President, 2019-2020; Immediate Past President, 2020-2021.
- *Service to the American Society of Tropical Medicine and Hygiene:*
  - (a) Young Investigator Award Committee (2009-2011).
  - (b) Session chair at the 58<sup>th</sup>, 59<sup>th</sup>, 60<sup>th</sup> and 63<sup>rd</sup> annual meetings (2009-2011, 2014).
- *Service to the Entomological Society of America:*
  - (a) Judge for the Student Ten-minute papers (TMP) competition, 2011.
  - (b) Session chair at the annual meeting (2011-2015).
  - (c) Symposium organizer for Entomology 2013 (with Mark Brown, University of Georgia).
  - (d) Symposium organizer for the XXV International Congress of Entomology (2016; with Günther Pass, University of Vienna).
- *Service to Sigma Xi:*
  - (a) President of the Vanderbilt Chapter of Sigma Xi (2014-2016).
  - (b) Evaluator of membership applications (2015).
- *Service to the National Science Foundation (NSF):*
  - (a) Advisory panel service for BIO: Division of Integrative Organismal Systems: October 2008, October 2011, April 2015, October 2016.
  - (b) Ad hoc reviewer for NSF:IOS (2009, 2010, 2015, 2018); and NSF:MCB (2013, 2014, 2015).
- *Service to the National Institutes of Health (NIH):*
  - (a) Study section member, July 2016, "Eukaryotic Parasites and Vectors".
  - (b) Study section member, November 2016, "Eukaryotic Parasites and Vectors".
  - (c) Study section member, April 2017, "Eukaryotic Parasites and Vectors".
  - (d) Study section member, July 2017, "Eukaryotic Parasites and Vectors".
  - (e) Study section member, July 2018, "Eukaryotic Parasites and Vectors".
- *Service to the Arnold and Mabel Beckman Foundation:*
  - (a) Beckman Scholars Program Advisory Panel to assist in proposal reviews, 2016.
- *Editorial service to scientific journals:*
  - (a) *American Entomologist* Editorial Board; published by the Entomological Society of America; 2012-present. Chair of the Editorial Board, 2015-2016.
  - (b) *Insect Molecular Biology* Editorial Board; published by the Royal Entomological Society; 2016-present.
  - (c) *Journal of Insect Physiology* Editorial Board; published by Elsevier; 2017-present.
  - (d) *Insects* Editorial Board; published by MDPI; 2018-present.
  - (e) *Journal of Medical Entomology* Subject Editor for the topics "vector-pathogen interactions, insect pathology, and immunity"; published by the Entomological Society of America; 2018-present.
  - (f) *Current Opinion in Insect Science* Guest Editor of issue on "Vectors and medical and veterinary entomology", 2014.
  - (g) *Developmental and Comparative Immunology* Co-Guest Editor (with Coenraad Adema) of an issue on "Invertebrate Vectors."
- *Ad hoc reviewer for peer reviewed journals and foreign agencies (in alphabetical order):*

<ul style="list-style-type: none"> <li><i>Acta Tropica</i> ('13, '19)</li> <li><i>Applied and Environmental Microbiology</i> ('09, '10, '11, '12)</li> <li><i>Archives of Insect Biochemistry and Physiology</i> ('17)</li> <li><i>Arthropod Structure &amp; Development</i> ('13, '17)</li> <li><i>Biology Open</i> ('15)</li> <li><i>BMC Genomics</i> ('08)</li> <li><i>BMC Research Notes</i> ('16)</li> <li><i>Cell &amp; Tissue Research</i> ('04, '12)</li> <li><i>Cellular Microbiology</i> ('06)</li> <li><i>Current Opinion in Immunology</i> ('15)</li> </ul>	<ul style="list-style-type: none"> <li>Czech Science Foundation ('05)</li> <li><i>Developmental Biology</i> ('19)</li> <li><i>Developmental and Comparative Immunology</i> ('11, '15, '16, '17, '18)</li> <li><i>Diseases of Aquatic Organisms</i> ('17)</li> <li><i>eLife</i> ('16)</li> <li><i>Environmental Entomology</i> ('16)</li> <li><i>Environmental Microbiology</i> ('13)</li> <li><i>European Journal of Entomology</i> ('14, '16)</li> <li><i>Florida Entomologist</i> ('10)</li> <li>France's Agence Nationale de la Reserche ('12)</li> <li><i>Frontiers in Zoology</i> ('14)</li> </ul>
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*Gene* ('15, '16)  
*General and Comparative Endocrinology* ('14, '16)  
*Histochemistry and Cell Biology* ('03)  
*Immunology Letters* ('16)  
*Infection and Immunity* ('09, '10, '11, '12)  
*Insect Biochemistry and Molecular Biology* ('09, '12, '16, '17)  
*Insect Molecular Biology* ('06, '07, '08, '10, '11, '14, '16, '17)  
*Insect Science* ('12)  
*Insects* ('18)  
*International Journal of Tropical Insect Science* ('11, '17)  
*Invertebrate Biology* ('02)  
*Journal of Biological Chemistry* ('14)  
*Journal of Chemical Ecology* ('04)  
*Journal of Comparative Physiology B* ('16, '18)  
*Journal of Experimental Biology* ('10, '12, '16)  
*Journal of Infectious Diseases* ('13)  
*Journal of Innate Immunity* ('13)  
*Journal of Insect Physiology* ('13, '14, '15, '16, '17, '18, '19)  
*Journal of Insect Science* ('09, '10, '11)  
*Journal of Invertebrate Pathology* ('18)  
*Journal of Medical Entomology* ('10, '11, '12, '15, '18)  
*Journal of Parasitology* ('08, '13)  
*Journal of Visualized Experiments* ('10)  
*Malaria Journal* ('11)  
*Marine Drugs* ('12)  
*Medical & Veterinary Entomology* ('06, '11)  
*Methods in Ecology and Evolution* ('10)  
*Micron* ('04, '07)  
*Microscopy & Microanalysis* ('02, '03, '04)  
*Neotropical Entomology* ('16)  
*Neuropeptides* ('14)  
*Parasites & Vectors* ('13, '14, '17, '18)  
*PeerJ* ('14, '16, '18)  
*Peptides* ('17)  
*Physiological Reports* ('15)  
*PLoS ONE* ('12, '13, '14, '15, '16, '17)  
*PLoS Pathogens* ('11, '12, '13, '14, '15, '17, '18)  
*PLoS Neglected Tropical Diseases* ('13, '14, '14, '16, '18)  
*Proceedings of the National Academy of Sciences USA* ('18, '19)  
*Science of Nature* ('18)  
*Scientific Reports* ('14, '15, '18)  
*Tropical Biomedicine* ('18)  
*Turkish Journal of Entomology* ('17)  
*Turkish Journal of Zoology* ('18)  
 U.S.-Israel Binational Science Foundation ('07)  
*Veterinary Parasitology* ('09)

SERVICE TO THE COMMUNITY:

- Service seminars and research tours for the community:
  - (a) Gave presentations on vector-borne diseases, led discussions, and provided tours of our facilities to delegations of the United Methodist Communications, Global Health Division Group, 9/26/2008, 10/27/2010 and 11/29/2011.
  - (b) Co-speaker (with Dr. L. Zwiebel) at Vanderbilt University's Institute for Global Health's Tennessee Global Health Forum, 2/27/2009.
  - (c) Speaker at VU's Young Scholar's Medical Program Global Health Day, 7/20/2009. Service entailed Speaking to high school students about vector-borne diseases and current research efforts at VU.
  - (d) Gave a presentation, led a discussion, and provided a tour for the visiting Fogarty International Clinical Research Scholars, Vanderbilt University, 7/22/2010.
  - (e) Gave a seminar and tour of our insectary facilities as part of Montgomery Bell Academy's International Health Care Symposium, 3/30/2011. The audience was composed of international high school-equivalent students from Colombia, United Kingdom, Czech Republic, South Africa, Pakistan, India, Japan, Singapore and China.
  - (f) Hosted in the laboratory and gave a presentation to elementary school students. The presentation detailed the structure of a research laboratory, discussed the manner in which scientists tackle scientific questions, and introduced various aspects of mosquito biology. The presentation was followed by a tour of the Hillyer laboratory and insectary, including hands-on use of (1) stereo microscopes to visualize all mosquito life stages and (2) a compound microscope to visualize fluorescence preparations of the mosquito heart. The groups include 5<sup>th</sup> and 6<sup>th</sup> graders participating in the Saturday Academy at Vanderbilt for the Young (SAVY; 5<sup>th</sup> and 6<sup>th</sup> graders: 7/10/2012, 1<sup>st</sup> graders 6/21/2016) and students from Southside Elementary School (5/13/2015).

- (g) Gave a presentation on mosquito biology, symbiotic relationships, and pathogen transmission to high school students (9<sup>th</sup> graders) in the School for Science and Math at Vanderbilt, Vanderbilt Center for Science Outreach, 9/24/2012, 8/21/2013, 9/29/2014, 9/28/2015, 9/12/2016, 9/18/2017, 9/17/2018.
- (h) Gave a presentation to students at Gower Elementary School, Nashville, TN. The presentation described insect diversity, insect life cycles, and a description of mosquito biology. It also included the visualization of all mosquito life stages using a stereomicroscope, 3/8/2013, 4/23/2014, 4/20/2016, 4/19/2017, 5/22/2018.
- (i) Hosted AP Biology students from Blackman High School, Murfreesboro, TN. Gave a presentation on our research, provided an insectary tour, and a fluorescence microscopy demonstration, 12/9/2013.