

CURRICULUM VITAE

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EDUCATION **Ph.D**

1984-87, University of Western Ontario
London, Ontario, Canada with Dr. M. Locke

POSTDOCTORAL SCHOLAR

1988-1992, University of Washington
Seattle, WA 98195 U.S.A with Dr. L.M. Riddiford

WORK EXPERIENCE **RESEARCH SCIENTIST**

1992-1998: Great Lakes Forestry Centre
Canadian Forest Service, Sault Ste. Marie, Ontario, Canada

SENIOR SCIENTIST

1998-2002: RheoGene LLC
Rohm and Haas Company, Spring House, PA 19477

ASSISTANT PROFESSOR

2002-2005: Department of Entomology
The University of Kentucky, Lexington, KY 40546

ASSOCIATE PROFESSOR:

2005-2008: Department of Entomology and
Graduate Center for Toxicology

PROFESSOR:

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2008: Department of Entomology
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The University of Kentucky, Lexington, KY 40546

CO-DIRECTOR

2013- NSF I/UCRC on Center for Arthropod pest management

CHAIR

2015- Department of Entomology

HONORS AND AWARDS

1997: Recipient of Research Award for Foreign Specialists administered by National Institute of Sericulture and Entomological Science, Tsukuba, Japan.

2008: Thomas Cooper Research Award, University of Kentucky.

2009: Bobby Pass Excellence in Grantsmanship Award, University of Kentucky.

2010: University Research Professor, University of Kentucky.

2011: High Impact Research/Extension Award, University of Kentucky.

2012: President, Physiology, Biochemistry, and Toxicology Section of Entomological Society of America.

2013: President, Bluegrass Indo-American Cultural Society.

2013: ESA Recognition Award in Insect Physiology, Biochemistry, and Toxicology.

2013: Prestigious Research Paper Award, University of Kentucky.

2014: Selected as a Fellow of ESA

2014: Fulbright-Nehru Academic and Professional Excellence Award

JOURNAL PUBLICATIONS:

138. Liu, X., Dai, F. Y., Guo, E., Li, K., Ma, L., Tian, L., Cao, Y., Zhang, G. Z., Palli, S. R. & Li, S. (2015) 20-Hydroxyecdysone (20E) Primary Response Gene E93 Modulates 20E Signaling to Promote *Bombyx* Larval-Pupal Metamorphosis, *J Biol Chem.* 290, 27370-27383.
137. Kalsi, M. & Palli, S. R. (2015) Transcription factors, CncC and Maf, regulate expression of CYP6BQ genes responsible for deltamethrin resistance in *Tribolium castaneum*, *Insect Biochem Molec.* 65, 47-56.
136. Das, S., Debnath, N., Cui, Y. J., Unrine, J. & Palli, S. R. (2015) Chitosan, Carbon Quantum Dot, and Silica Nanoparticle Mediated dsRNA Delivery for Gene Silencing in *Aedes aegypti*: A Comparative Analysis, *Acs Appl Mater Inter.* 7, 19530-19535.
135. Xu, J. J., Anciro, A. L. & Palli, S. R. (2015) Nutrition regulation of male accessory gland growth and maturation in *Tribolium castaneum*, *Sci Rep* 5, 10567.
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131. Li, Z. Q., You, L., Zeng, B. S., Ling, L., Xu, J., Chen, X., Zhang, Z. J., Palli, S. R., Huang, Y. P. & Tan, A. J. (2015) Ectopic expression of ecdysone oxidase impairs tissue degeneration in *Bombyx mori*, *P Roy Soc B-Biol Sci.* 282.
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128. He, Q. Y., Wen, D., Jia, Q. Q., Cui, C. L., Wang, J., Palli, S. R. & Li, S. (2014) Heat Shock Protein 83 (Hsp83) Facilitates Methoprene-tolerant (Met) Nuclear Import to Modulate Juvenile Hormone Signaling, *J Biol Chem.* 289, 27874-27885
127. Cui, Y., Sui, Y., Xu, J., Zhu, F., Palli, S.R. (2014). Juvenile hormone regulates *Aedes aegypti* Kruppel homolog 1 through a conserved E box motif. *Insect Biochem Mol Biol* 52C, 23-32.
126. Shukla, J.N., Palli, S.R. (2014) Production of all female progeny: evidence for the presence of male sex determination factor on Y chromosome. *J. Exp. Biol.* 217, 1653-1655.
125. Shukla, J.N., Palli, S.R. (2013) *Tribolium castaneum* transformer-2 regulates sex determination and development in both males and females. *Insect Biochem. Mol. Biol.* 42, 1125-1132.
124. Xu J, Sheng Z, Palli S.R. (2013) Juvenile hormone and insulin regulate trehalose homeostasis in the red flour beetle, *Tribolium castaneum*. *PLoS Genet.* 9, e1003535.
123. Parthasarathy R., Farkas, R. and Palli, S.R. (2013) Recent Progress in Juvenile hormone analogs (JHA) research. *Adv. Insect Physiol.* 43, 353-436.
122. Zhu F, Moural TW, Shah K, Palli SR (2013) Integrated analysis of cytochrome P450 gene superfamily in the red flour beetle, *Tribolium castaneum*. *BMC Genomics.* 14,174-182.
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- castaneum*. Sci Rep 2, 948.
117. Shukla, J.N., and Palli, S.R. (2012). Sex determination in beetles: Production of all male progeny by Parental RNAi knockdown of transformer. Sci Rep 2, 602.
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Ishaaya, I, Palli, S.R and Horowitz, A.R. (2012) *Advanced technologies for managing insect pests*. Springer.

PATENTS ISSUED

1. Palli SR, Kapitskaya MZ, & Cress DE (2012) Novel Ecdysone Receptor-Based Inducible Gene Expression System. (US Patent 20,120,322,148).
2. Palli SR & Kapitskaya MZ (2012) Novel Ecdysone Receptor/invertebrate Retinoid X Receptor-based Inducible Gene Expression System. (EP Patent 1,456,346).
3. Palli SR & Kapitskaya MZ (2012) Chimeric Retinoid x receptors and their use in a novel ecdysone receptor-based inducible gene expression system. (EP Patent 1,572,862).
4. Palli SR & Kapitskaya MZ (2012) Novel substitution mutant receptors and their use in a nuclear receptor-based inducible gene expression system. (EP Patent 1,534,738).
5. Kapitskaya MZ & Palli SR (2012) Chimeric Retinoid X Receptors and Their Use in a Novel Ecdysone Receptor-Based Inducible Gene Expression System. (US Patent App. 13/618,742).
6. Palli SR, Kumar MB, Cress DE, & Fujimoto TT (2011) Novel substitution mutant receptors and their use in a nuclear receptor-based inducible gene expression system. (EP Patent 2,275,558).
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9. Palli SR, Kapitskaya MZ, & Cress DE (2006) Ecdysone receptor-based inducible gene expression system. (EP Patent 1,266,015).

10. Palli SR & Kumar M (2005) Mutant receptors and their use in a nuclear receptor-based inducible gene expression system. (WO Patent 2,005,108,617).
11. Michelotti EL, Tice CM, Palli SR, Thompson CS, & Dhadialla TS (2005) Tetrahydroquinolines for modulating the expression of exogenous genes via an ecdysone receptor complex. (EP Patent 1,513,530).
12. Zhang J, Cress DE, Palli SR, & Dhadialla TS (2004) Whitefly Ecdysone receptor nucleic acids, polypeptides, and uses thereof. (EP Patent 1,490,686).
13. Palli SR, Kumar MB, Cress DE, & Fujimoto TT (2004) Novel substitution mutant receptors and their use in a nuclear receptor-based inducible gene expression system. (EP Patent 1,373,470).
14. Palli SR (2004) Leafhopper ecdysone receptor nucleic acids, polypeptides, and uses thereof. (EP Patent 1,436,394).
15. Zhang J, Cress D, Palli S, & Dhadialla T (2003) Whitefly Ecdysone receptor nucleic acids, polypeptides, and uses thereof. (WO Patent 2,003,027,266).
16. Palli SR, Arif BM, Sohi SS, & Retnakaran A (2003) Transgenic Virus for use as a pesticide. (EP Patent 1,323,822).
17. Palli S (2003) Minimal DNA binding domain polynucleotides, polypeptides, and uses thereof. (WO Patent 2,003,060,103).
18. Palli S (2003) Leafhopper ecdysone receptor nucleic acids, polypeptides, and uses thereof. (WO Patent 2,003,027,289).
19. Michelotti E, Tice C, Palli S, Thompson C, & Dhadialla T (2003) Tetrahydroquinolines for modulating the expression of exogenous genes via an ecdysone receptor complex. (WO Patent 2,003,105,849).
20. Weinstein B, Keller LH, & Palli SR (2002) Methods for identifying products employing reporter gene expression. (EP Patent 1,199,371).
21. Palli S, Kumar M, Cress D, & Fujimoto T (2002) Novel substitution mutant receptors and their use in a nuclear receptor-based inducible gene expression system. (WO Patent 2,002,066,612).
22. Palli S & Kapitskaya MZ (2002) Novel ecdysone receptor/invertebrate retinoid x receptor-based inducible gene expression system. (WO Patent 2,002,066,613).
23. Palli S & Kapitskaya MZ (2002) Chimeric Retinoid x receptors and their use in a novel ecdysone receptor-based inducible gene expression system. (WO Patent 2,002,066,614).
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26. Palli S & Kapitskaya MZ, & Cress D (2001) Ecdysone receptor-based inducible gene expression system. (WO Patent 2,001,070,816).
27. Palli SR, Arif BM, Sohi SS, & Retnakaran A (1998) Recombinant insect viruses comprising insect transcription factors. (EP Patent 0,861,901).
28. Palli, S.R. and Sigh, A (2012) Expression Modulation System For Use In Plants And Method For Modulating Gene Expression In Plants. (US. Patent 8,115,059).

GRANTS AWARDED:

1992-1998: Canadian Forest Service: PI and Co-PI on grants (\$1,200,000) received from Canadian government agencies (Canadian Biotechnology Strategy Fund, Science and Technology Fund and Engineering and Natural Sciences Research Council) and Industries (Rohm and Haas and American Cyanamid).

1998-2002: Rohm and Haas/RheoGene Inc. Co-PI on two grants (\$4,000,000) awarded by NIST to RheoGene Inc.

2002- Current: University of Kentucky:

1. Studies on EcR-based gene switch: To develop ecdysone receptor-based gene switches for use in medicine. PI: S.R. Palli, Agency; RheoGene Inc., Award: \$196,000 for two years (09/01/2002 to 08/30/2004).
2. 20-hydroxyecdysone suppression of juvenile hormone action: To study the cross-talk between 20E and JH. PI: S.R. Palli, Agency: NSF, Award: \$482,296 for four years (08/01/2004 to 07/31/2008).
3. Characterization of EcR-based gene switches: To understand the functioning of ecdysone receptor-based gene switches. PI: S.R. Palli, Agency; RheoGene Inc., Award: \$196,000 for two years (09/01/2004 to 08/30/2008).
4. Molecular analysis of juvenile hormone action in *Heliothis virescens*: To identify and characterize critical genes involved in JH action in *Heliothis virescens*. Agency: USDA-NRI, Award: \$260,033 for three years (12/1/2004-11/30/2007).
5. HATCH: Molecular Analysis of Pest Development and Resistance to Insecticides.
6. Micro array analysis of JH-response: To conduct pilot studies on JH-response in *Drosophila* L57 cells. PI: S.R. Palli, Agency: UK micro array core facility, Award: \$5,000.
7. Development of ligand-inducible gene switches for simultaneous and independent regulation of expression of two genes in transgenic tobacco plants. PI: S.R. Palli, Co-PIs: Drs. Collins and Dinkins of Agronomy department. Agency: KTRDC, Award: \$119,643 for two years (01/01/2003 to 06/30/2005).
8. Identification of juvenile hormone receptors: Research award from UK VP research, \$15,000. (11/01/03-10/30/04).
9. Molecular analysis of juvenile hormone action. . To identify molecules involved in juvenile hormone action. PI: S.R. Palli, Agency: National Institute of Health Award: \$1,020,000 for five years (2/1/2005-1/31/2010).
10. Development of tightly regulated gene switches for trait improvement, pest resistance and functional genomics applications in tobacco plants. To develop and test tight gene switches for use in agriculture. PI: S.R. Palli, Co-PI: Dr. Collins of Agronomy department. Agency: Kentucky Tobacco Research and Development Center. Award: \$116,382 for two years (07/01/2005 to 06/30/2007).
11. Evaluation methoxyfenozide as geneswitch legend. To evaluate formulations for methoxyfenozide for use as gene switch ligands. PI: S.R. Palli, Co-PI: Dr. Collins of Agronomy department. Agency: Dow AgroSciences Award: \$32,000 (01/01/2005 to 5/31/2005).
12. Novel active insecticidal compounds from Kentucky native plants. To screen natural products against insect pests. PI: S.R. Palli, Agency: Neprogenix Inc. Award: \$51,000 (01/01/2006 to 12/31/2006).
13. Development of tightly regulated ecdysone receptor-based gene switches. To develop two-hybrid gene switch so that background activity in the absence of ligand and ligand sensitivity are improved. PI: S.R. Palli, Co-PI: Dr. Collins of Agronomy department. Agency: Consortium for Plant Biotechnology Research, Award: \$162,000 for two years (01/01/2006 to 12/31/2007).

14. Development of tightly regulated ecdysone receptor-based gene switches. This Dow AgroSciences match for CPBR project. PI: S.R.Palli, Co-PI: Dr. Collins of Agronomy department. Agency: Dow AgroSciences Inc. Award: \$50,000 for two years (01/01/2006 to 12/31/2007).
15. 20-hydroxyecdysone suppression of juvenile hormone action: NSF supplement to attract high school students into science. . PI: S.R. Palli, Agency: NSF, Award:\$6,000 (07/01/2006-06/30/2008).
16. Functional genomics on nuclear receptors: Target sites for insecticide development and resistance management. To characterize nuclear receptors and develop screening assays for identifying new insecticides as well as for fighting insecticide resistance development. PI: S.R.Palli. Agency: USDA-NRI. Award: \$567,944 for four years (01/01/08 to 12/31/11).
17. Molecular analysis of juvenile hormone action. . To identify molecules involved in juvenile hormone action. PI: S.R.Palli, Agency: National Institute of Health Award: \$820,000 for four years (2/1/2010-1/31/2014).
18. 20-hydroxyecdysone suppression of juvenile hormone action: To study the function and JH regulation of accessory gland proteins. PI: S.R. Palli, Agency:NSF, Award:\$450,000 for four years (08/01/2010 to 07/31/2014).
19. Molecular Insect Physiology: Basic science to applications: To organize a symposium at ESA meeting. P.I S.R. Palli, Agency: USDA, Award: \$10,000 (01/01/2010-12/31/2010).
20. Molecular mechanisms of synthetic pyrethroid resistance: To identify genes responsible for synthetic pyrethroid resistance in the bed bugs. PIs: S.R. Palli, K.F. Haynes and M. F. Potter, Agency: Bayer, \$100,000. (2010-2013)
21. Molecular Analysis of Xenobiotic Response: To study the role of P450s in the xenobiotic response of Colorado potato beetle. PI: S.R.Palli. Agency: USDA-AFRI. Award: \$499,000 for four years (02/14/2011 to 02/14/2015).
22. Planning grant to establish National Science Foundation Industry/University Collaborative Research Center for Arthropod Management Technologies. PI: S.R.Palli. Agency: NSF. Award: \$ 11,582 (08/22/2012 to 07/31/2013).
23. P450 Inhibition Assays. PI: S.R.Palli. Agency: USDA-ARS. Award: \$125,918 (02/1/2013 to 08/30/2014).
24. Ecdysteroid Signaling in Filarial Parasite PI: Thomas Unnasch Co-PI: S.R.Palli. Agency: NIH. Award: \$ \$275,000 for two years (08/15/2013 to 07/31/2015). \$32,666 is amount sub-contracted to my laboratory.
24. Center for Arthropod Management Technologies. To administer UK part of CAMTech. PI: S.R.Palli. Agency: NSF. Award: \$360,000 (08/01/2013 to 07/31/2018).
- 25: Research Experience for Undergraduates. To train two undergraduate students during summer. PI: S.R.Palli. Agency: NSF. Award: \$8,000 (08/01/2013 to 07/31/2014).
26. Mechanisms of RNA interference. To study the mechanisms of RNAi in different insect species. PI: S.R.Palli Agency: CAMTech Award:\$120,000 (1/1/2014 to 12/31/2015).

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Psyche-A Journal of Entomology (2007-)

The Open Anatomy Journal (2008- 2014)

BMC Developmental Biology, Associate Editor (2009-)

Insect Biochemistry and Molecular Biology (2009-)

Insects (2010---)

PLoSOne (2011--)

Scientific Reports (2013---)

Annual Review of Entomology (2013--)

MEMBER GRANT REVIEW PANELS

USDA-NRI (2005, 2006, 2008)

NIH-VECTOR BIOLOGY (2005, 2006, permanent member for 5 years from 2009-2014)

NIH-MCE (2009)

NSF-BIO-IOS (2009, 2015)

NIH-VB/P THE (2014, 2015)

MEMBERSHIP IN SCIENTIFIC SOCIETIES

1. American Society for Cell Biology (1989-93)

2. Entomological Society of America (1988-91, 1998-)

3. American Society for Microbiology (1998-2002)

4. American Society for Gene Therapy (1999- 2002)

SERVICE TO ESA

1. Vice-president elect, vice-president, president and past president of PBT section (2011-2013).

2. Member publications council (2013----)

3. Member Nan-Yao Su Award for Innovation and Creativity in Entomology (2013---)

4. Chair, Lillian & Alex Feir Graduate Student Travel Award in Insect Physiology, Biochemistry, and Molecular Biology (2012----).

5. Member of team who organized program symposia at 2006, 2009, 2010, 2012 ESA annual meetings.

6. Member ESA annual meeting program committee (2011-2012).

7. Member, Publication Council (2013--)

8. Member, ESA Science Policy Committee (2014-)

1996-2002: Canadian Forest Service and Rohm and Haas Company

Trained 11 students and nine postdoctoral fellows. Most of them are employed and are conducting research at universities, government laboratories, and private companies. Seven students and eight postdoctoral fellows published refereed journal articles with me as a co-author.

2002- Current: University of Kentucky

Courses Taught

ENT 567 Applications of Molecular Genetics (taught once)

ENT 635 Internal morphology and Insect Physiology (taught twice)

ENT 690 Molecular Entomology (taught twice)

ENT 635 Insect Physiology (taught four times)

ENT 636 Molecular Entomology (taught twice)

ABT460 Advanced Molecular Genetics (taught four times)

GRADUATE STUDENT ADVISING

Major Advisor

1. Margam Venumadahan, completed M.Sc. Joined Perdue University for Ph.D.
2. Zhang, Zhaolin, completed Ph.D. Research associate at Northwestern University
3. Kavita Bitra, completed Ph.D. PDF at University of Georgia
4. Hua Bai, completed Ph.D., PDF at Brown University

5. Sun Zhiyuan, completed M.Sc Facility Manager, University of Pittsburgh
6. Robert Miller (GCT rotation student)
7. Aline Mackert Santos (visiting Ph.D. student from Brazil, spent four months at the UK).
8. John Wigginton, Ph.D. student
9. Megha Kalsi, Ph.D. student
10. Hemant Gujar, Ph. D. student
11. Sunny Yoon, Ph.D. student
12. Neuhaus, Kaylee, GCT rotation student
13. Smitha George, Ph.D. student

Served on the advisory committees of two M.Sc and 12 Ph.D. students.

Serving on the advisory committees of 12 Ph. D. students

POST-DOCTORAL SCHOLARS TRAINED

1. Yun Jin Cui
2. Jay Shukla
3. Jingjing Xu
4. Ganga Bhagavati
5. Sumistha Das (left after one year stay, Senior Lecturer, Ameti University)
6. Venu Uppu ((left after three year stay)
7. Fang Zhu (left after five-year stay, Research Professor, WSU)
8. Zhantao Sheng (left after two years stay, Research Associate, University of Chicago)
9. Raman Chnadraseshar (left after two year stay, Research Associate, KSU)
10. Yipeng Sui (left after 2 years training, PDF at UKY)
11. Parthasarathy R (Left in 2009 after 5 year stay and joined Monsanto Company)
12. Sresty Tavva (left in 2008 after 4 year stay, works for Dupont)
13. Anjian Tan (left in 2008 after 4 year stay, professor at Chinese Academy of sciences)
14. Ajay Singh (left in 2008 after 2 year stay, Principal scientist, ICAR)
15. Damu Kethidi (left in 2006 after 4 years stay)
16. Wu Yu (left in 2006 after one year stay, professor in Sun-Yat-Sun University)
17. Siva Kumar P (left 2007 after 2 years stay, Instructor University of Louisville)
18. Yiping Li (left in 2007 after 2 years stay, Research Assistant Professor at WSU)

UNDERGRADUATE STUDENTS WHO DID THESIS WORK IN PALLI LAB

Megan Dillery, Elizabeth Berlin, Clay Turner, Rachel Ward, Ali More, Perdan Erica, Zeltner Mathew, Zhang Zijing, Reiya Heyden, James Baldwing, Fariba Kanga, Mathew Testa, Anciro Ashlee, Alexander Wilk, Admin Lincoln

Advising an average of 6 Agricultural Biotechnology undergraduate students per year during the past 10 years.

HIGH SCHOOL STUDENTS

A number of high school students including Kim Ferguson, Ryan Will, Roshan Palli and Joseph Ferguson conducted research for Science Fair projects in Palli lab and won awards at district, regional, state and International science fair competitions.