CURRICULUM VITAE

Personal Information

Family Name, First Name: Riga Maria

Gender: Female**, Date of Birth**: 20/09/1985

Contact Information

Place of Residence: Heraklion, Crete, Greece

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EDUCATION

Ph.D: 1/03/2012-15/07/2016**,** Supervisor: Prof. John Vontas, *Title of Dissertation*: "Molecular, genetics and functional characterization of pesticide resistance mechanisms of *Tetranychus urticae*", Department of Biology, University of Crete - IMBB

M.Sc: 21/09/2009-18/11/2011, Supervisor: Prof. John Vontas, *Title of Dissertation*: "Genetics and molecular analysis of resistance in the two-spotted spider mite *Tetranychus urticae* (Acari : Tetranychidae) in avermectins", Department of Biology, University of Crete

B.Sc.: 24/09/2003-22/7/2008, Department of Biology, University of Crete, Greece.

CURRENT POSITION

01/10/2017-to date: Postdoctoral researcher/fellow, Molecular Entomology Group, IMBB-FORTH, Greece.

RESEARCH EXPERIENCE

10/2017 – 12/2019: Post-doctoral researcher in Bayer CropScience AG funded project entitled: **"**Discovery of novel insecticide targets"

06/2017 – 09/2017: Post-doctoral researcher in Bayer CropScience AG funded project entitled: "Characterization of *T. urticae* and toxicity bioassays"

03/2012 - 07/2016: Doctoral Thesis in Molecular Entomology Laboratory, IMBB

03/2016 – 05/2016: Participation in Bayer funded project: "Genetic and Functional characterization of *B. tabaci* and *N.lungens* resistance mechanisms"

01/2016 – 12/2016: Participation in Bayer funded project: "Toxicity assays in agricultural pests"

08/2014 – 06/2015: Participation in the research project: "Genomic approaches for understanding xenobiotic detoxification of the olive fruit fly and its adaptation to olives" "Aristia II Project", Laboratory of Molecular Entomology, Biology Department, University of Crete

10/2012 – 12/2012 and 10/2014 – 06/2015: Participation in the research project: "Genomic and functional approaches for understanding insecticide resistance mechanisms in major agricultural pests", Project "Thales" Laboratory of Molecular Entomology, Biology Department, University of Crete

10/2011 – 12/2011: Participation in the research project: "Pyrethroid Quantification Kit", Laboratory of Molecular Entomology/Pesticide Science, Agricultural University of Athens

02/2011 – 04/2011: Participation in the research project: "Integrated approach for compacting acari Tetranychidae", Laboratory of Molecular Entomology/Pesticide Science, Agricultural University of Athens

FELLOWSHIPS / AWARDS

11/2019 – 11/2021: State Scholarship's Foundation (IKY) fellowship for **postdoctoral researchers**

07/2018-09/2019: Post-doctoral researcher in scientific program 'ΕΣΠΑ-ΕΔΒΜ34' entitled 'Assessment of the contribution of individual insecticide resistance mechanisms of agronomically important pests and the role of molecular diagnostics in resistance management'

2004: State Scholarship's Foundation (IKY) fellowship (for undergraduate studies)

LABORATORY SKILLS

Molecular techniques: PCR, Real-Time PCR, cloning, RNA/DNA extraction, PCR-RFLP, 5'- RACE, cDNA synthesis, Long-PCR, mutagenesis, baculovirus preparation, RNAi

Protein techniques: enzyme isolation and purification, biochemical assays, enzyme kinetics, Western blot analysis

Toxicity assays in insects (*B. tabaci, B. oleae, D. melanogaster*)**,** spidermites

Genetics in insects (*Drosophila melanogaster*) and spider mites

Insect culture maintenance (spider mites, *drosophila*, *B. tabaci*)

TEACHING ACTIVITIES

2012-current: Assistant supervisor 3 undergraduate/ Bachelor theses, 1 Master Thesis, 1 PhD and 2 foreigner PhD students in the Department of Biology, University of Crete (2012-current).

2010-2011: Teaching Assistant during the practical exercise laboratories in undergraduate students, Department of Biology, University of Crete

MEMBERSHIPS & REVIEWING ACTIVITIES

Reviewer in four international journals (Pest Management Science, Journal of Pest Science, International Journal of Molecular Sciences, PlosOne)

MOBILITY / VISITS

1/3/2012-4/4/2012, 4/7/2012-10/8/2012, 5/9/2012-8/10/2012: Short term visits in the institute Vector Group in Liverpool School of Tropical Medicine (LSTM), Liverpool, UK

11/08/2010-11/11/2010: Training agreement, Erasmus Student Project in Laboratory of Agrozoology, University of Ghent, Belgium

PUBLICATIONS (* indicates equal first authorship),

1. Dermauw W., Jonckheere W., **Riga M.**, Livadaras I., Vontas J., Van Leeuwen T., 2020. Targeted mutagenesis using CRISPR-Cas9 in the helicerate herbivore *Tetranychus urticae*. *Insect Biochem. Mol. Biol.*, 120: 103347

2. **Riga M.**, Denecke S., Livadaras I., Geibel S., Nauen R., Vontas J., 2020. Development of efficient RNAi in *Nezara viridula* for use in insecticide target discovery. *Arch. Insect Biochem. Physiol*., 103 (3): e21650.

3. Wei P., Demaeght P., De Schutter K., Grigoraki L., Labropoulou V., **Riga M**., Vontas J., Nauen R., Dermauw W., Van Leeuwen T., 2020. Overexpression of an alternative allele of carboxyl/choline esterase 4 (CCE04) of *Tetranychus urticae* is associated with high levels of resistance to keto-enol acaricide spirodiclofen. *Pest Manag. Sci.,* 76 (3): 1142-1153

4. Tsakireli D.*, **Riga M.***, Kounadi S., Douris V., Vontas J., 2019. Functional characterization of CYP6A51, a cytochrome P450 associated with pyrethroid resistance in the Mediterranean fruit fly *Ceratitis capitate. Pest. Biochem. And Physiol*., 157: 196 – 203.

5. Çağatay N.S., **Riga M.**, Vontas J., Çevik B., Ay R., 2018. Biochemical and molecular characterizations of cypermethrin resistance in laboratory-selected cypermethrin-resistant strains of *Tetranychus urticae* Koch. (Acari: Tetranychidae). *Int J Acarol*., 44 (6): 262 – 267.

6. Çağatay N.S., Menault P., **Riga M.**, Vontas J., Ay R., 2018. Identification and characterization of abamectin resistance in *Tetranychus urticae* (Koch) strains from greenhouses in Turkey. Crop Prot. 112: 112-117.

7. Bajda S.*, **Riga M.***, Wybouw N., Papadaki S., Ouranou E., Fotoukkiaii S.M., Vontas J., Van Leeuwen T., 2018. Fitness costs of key point mutations that underlie acaricide target-site resistance in the two-spotted spider mite *Tetranychus urticae*. *Evolutionary Applications,* 11, 1540-1553.

8. Kapantaidaki D. E., Sadikoglou E., Tsakireli D., Kampanis V., Stavrakaki M., Schorn C., Ilias A., **Riga M.**, Bourtzis K., Nauen R., Skavdis G., Vontas J., Tsagkarakou A., 2018. Insecticide resistance in *Trialeurodes vaporariorum* populations and novel diagnostics for kdr mutations. *Pest Management Science* 74(1): 56-59.

9. **Riga M.*,** Bajda S.*, Papadaki S., Themistokleous C., Papadaki S., Palzewicz M., Dermauw W., Vontas J., Van Leeuwen T., 2017. The relative contribution of target-site mutations in complex acaricide resistant phenotypes as assessed by marker assisted backcrossing in *Tetranychus urticae*. *Scientific Reports* 7:9202.

10. Douris V., Papapostolou K.M., Ilias A., Roditakis E., Kounadi S., **Riga M.**, Nauen R., Vontas J., 2017. Investigation of the contribution of RyR target-site mutations in diamide resistance by CRISPR/Cas9 genome modification in Drosophila. *Insect Biochemistry and Molecular Biology*, 87:127-135.

11. Bryon A., Kurlovs A.H., Dermauw W., Greenhalgh R., **Riga M.**, Grbić M., Tirry L., Osakabe M., Vontas J., Clark R.M., Van Leeuwen T., 2017. Disruption of a horizontally transferred phytoene desaturase abolishes carotenoid accumulation and diapause in *Tetranychus urticae. PNAS* 114(29): E5871-5880.

12. Matos G., Wybouw N., Martins N.E., Zélé F., **Riga M.**, Leitão A.B., Vontas J., Grbić M., Van Leeuwen T., Magalhães S., Sucena É., 2017. *Tetranychus urticae* mites do not mount an induced immune response against bacteria. *Proceedings B* 284: 20170401.

13. Roditakis E.M., Mavridis K., **Riga M.**, Vasakis E., Morou E., Rison J. L., Vontas J., 2017. Identification and detection of indoxacarb resistance mutations in the para sodium channel of the tomato leafminer, *Tuta absoluta*. *Pest Management Science* 73(8): 1679-1688.

14. **Riga M.**, Myridakis A., Tsakireli D., Morou E., Stefanou E.G., Nauen R., Van Leeuwen T., Douris V., Vontas J., 2015. Functional characterization of the *Tetranychus urticae* CYP392A11, a cytochrome P450 that hydroxylates the METI acaricides cyenopyrafen and fenpyroximate. *Insect Biochemistry and Molecular Biology* 65: 91-99.

15. Pavlidi N., Tseliou V., **Riga M.**, Nauen R., Van Leeuwen T., Labrou N.E., Vontas J., 2015. Functional characterization of glutathione S – transferases associated with insecticide resistance in *Tetranychus urticae. Pesticide Biochemistry and Physiology* 121: 53 – 60.

16. **Riga M.**, Tsakireli D., Ilias A., Morou E., Myridakis A., Stefanou E.G., Nauen R., Dermauw W., Van Leeuwen T., Paine M., Vontas J., 2014. Abamectin is metabolized by CYP392A16, a cytochrome P450 associated with high levels of acaricide resistance in *Tetranychus urticae. Insect Biochemistry and Molecular Biology* 46: 43-53.

17. Dermauw W., Ilias A., **Riga M.**, Tsgkarakou A., Grbic M., Van Leeuwen T.,Vontas J., 2012. The cys-loop ligand-gated ion channel gene family of *Tetranychus urticae*: implications for acaricide toxicology and a novel abamectin resistance mutation. *Insect Molecular Biology and Biochemistry* 42(7): 455-465.

18. Roditakis E., Morou E., Tsagkarakou A., **Riga M.**, Nauen R., Paine M., Morin S.,Vontas J., 2011. Assessment of the ***Bemisia tabaci CYP6CM1vQ*** transcript and protein levels in laboratory and field-derived imidacloprid-resistant insects and cross-metabolism potential of the recombinant enzyme. *Insect Science* 18 (1): 23 – 29.

CONFERENCES

1. Kampouraki A., Stavrakaki M., **Riga M.**, Roditakis E., Zarboutis I., Karataraki A., Katsikogiannis G., Krassakopoulos A., Mathioulakis A., Malandraki E., Marouli E., Paraskevopoulos A., Rallis I., Sidiropoulos N., Stavridis D., Tsaparas A., Fili P., Theodorakopoulou F., Skoula F., Fillipou A., Vontas J. Monitoring and operational impact of insecticide resistance in olive fruit fly *Bactrocera oleae* populations from Greece. 18th Panhellenic Entomological Congress, Komotini, Greece, October, 2019.

2. Skoufa E., Papapostolou K.M., Ilias A., **Riga M**., Souchlas V., Balabanidou V., Ioannidis P., Dermauw W., VanLeeuwen T., Vontas J., Detection and molecular characterization of acaricide resistance in *Tetranychus urticae.* 18th Panhellenic Entomological Congress, Komotini, Greece, October, 2019.

3. Douris V., **Riga M.**, Ilias A., Vontas J. Investigation of abamectin resistance following expression of *Tetranychus urticae* CYP392A16 in *Drosophila.* 8th International Symposium on Molecular Insect Science, Stiges nr Barcelona, Spain, July 2019

4. Douris V., Panteleri R., Smantsidis G.R., Lamprousi M., Papapostolou K.M., Christou I.K., **Riga M.**, Denecke S., Nauen R., Van Leeuwen T., Vpntas J. Dissecting insecticide resistance via genetic manipulation and genome modification in *Drosophila.* 8th International Symposium on Molecular Insect Science, Stiges nr Barcelona, Spain, July 2019

5. **Riga M.,** Papapostolou K.M., Skoufa E., Tsakireli D., Bajda S., Ilias A., Douris V., Dermauw W., Van Leeuwen T., Vontas J. Genetic, molecular and functional characterization of acaricide resistance in *Tetranychus urticae.* 14th International IUPAC Congress, Ghent, Belgium, 2019.

6. **Riga M.**, Papadaki S., Bajda S., Douris V., Balabanidou V., Tsagkarakou A., Van Leeuwen T., Vontas J. Genomic and functional characterisation of acaricide resistance in *Tetranychus urticae.* 17th Panhellenic Entomological Congress, Athens, September 2017.

7. Vontas J., **Riga M.**, Papadaki S., Pavlidi N., Douris V., Nauen R., Van Leeuwen T. Functional characterization of insecticide resistance in *Tetranychus urticae.* IOBC Meeting of the Workgroup Integrated Control of Plant-Feeding Mites. Chania, Greece, 4-7 September 2017.

8. Çagatay N.S., **Riga M.**, Vontas J., Çevik B., Ay R. Biochemical and Molecular Characterization of Cypermethrin Resistance in *Tetranychus urticae Koch (Acari: Tetranychidae*). 8th Symposium of the European Association of Acarologists, Universitat Politecnica de Valencia, Valencia, Spain, 11-15 July, 2016.

9. Çagatay N.S., Menault P., **Riga M.**, Vontas J., Ay R.. Resistance ratio, detoxification enzyme activity and mutation of *Tetranychus urticae* Koch (Acari:Tetranychidae) in populations of collected from greenhouses in Turkey against abamectin. 8th Symposium of the European Association of Acarologists, Universitat Politecnica de Valencia, Valencia, Spain, 11-15 July, 2016.

10. Pavlidi N., **Riga M.**, Nauen R., Van Leeuwen T., Labrou N., Vontas J. Molecular and functional characterization of glutathione transferase-based acaricide resistance in Tetranychus urticae. 248th ACS National Meeting. San Francisco, 9-15 August 2014.

11. Tsagkarakou A., Ilias A., **Riga M.**, Kapaintadaki D., Lagnel J., Morou E., Roditakis E., Marountas J., Louis C., Vontas J. Insecticide resistance in agricultural pests: from mechanisms to resistance management. 10th European Congress of Entomology, York, United Kingdom, 3-8 August, 2014.

12. **Riga M.**, Morou E., Tsakireli D., Ilias A., Christou I.K., Nauen R., Dermauw W., Van Leeuwen T., Douris V., Vontas J. Functional analysis of cytochrome P450-based detoxification mechanisms in Tetranychus urticae. 14th International Congress of Acarology, Kyoto, Japan, 13-18 July, 2014.

13. Matos G., Wybouw N., **Riga M.**, Vontas J., Van Leeuwen T., Sucena E., Magalhaes S. Is the immune response of Tetranychus urticae representative of the basal arthropods'? XIV International Congress of Acarology, Kyoto, Japan, 14-18 July 2014.

14. **Riga M.**, Morou E., Tsakireli D., Ilias A., Tsagkarakou A., Siozou E., Douris V., Kalantidis K., Vontas J. Molecular and functional analysis of detoxification mechanisms of two spotted spider mite *Tetranychus urticae* (Acari: Tetranychidae). 15th Panhellenic Entomological Congress, Kavala, 22-25 October 2013.

15. Balabanidou V., **Riga M.,** Chalepakis G., Paine M., Ranson H., Lycett G., Vontas J. A potential role for cytochrome P450s in conferring insecticide resistance in *Anopheles gambiae* by altering cuticule structure. EMBO Conference. Molecular and Population Biology of Mosquitoes and Other Disease Vectors: From Basic Vector Biology to Disease Control, Kolymbari, Greece, 15-19 July 2013.

16. Morou E., **Riga M.**, Tsakireli D., Ilias A., Siozou E., Pavlidi N., Nauen R., Kalantidis K., Van Leeuwen T., Paine M., Vontas J. Molecular and functional approaches for understanding cytochrome P450-based detoxification mechanisms in insects and mites. FEBS Congress, St. Petersburg, Russia, 6-11 July 2013.

17. Ilias A., Dermauw W., **Riga M.**, Tsagkarakou A., Van Leeuwen T., Vontas J. Characterization of abamectin resistance in *Tetranychus urticae* fron Greece. 7th Symposium European Association of Acarologists, Vienna, Austria, July 9-13 2012.

18. Vontas J., Ilias A., **Riga M.**, Dermauw W., Pavlidi N., Tsagkarakou A., Van Leeuwen T. Molecular and functional characterization of insecticide/acaricide resistance in *Tetranychus urticae* from Greece. 6th International Symposium on Molecular Insect Science, Amsterdam, 2011.

19. Ilias A., **Riga M.**, Dermauw W., Grispou M., Van Leeuwen T., Tsagkarakou A., Vontas J. Characterization of abamectin resistance in *Tetranychus urticae* (Acari: Tetranychidae). 14th Panhellenic Entomological Congress, Nafplio, Novemver 2011.