

Valentina Mastrantonio

Current position:

RTDa (SC 05/C1 – SSD BIO/07)
Department of Environmental Biology
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Bibliometric indicators (March 2022)

Articles in ISI-ranked journals: 26 (88% Q1 ISI-JCR quartile)

Citations: 631 (Google Scholar), 448 (Scopus)

H-index: 14 (Google Scholar), 12 (Scopus)

Total Impact Factor: 91,47

Main research topics and interests

The main research interests are addressed to investigate the processes underpinning the origin and maintenance of biological diversity at population and species level. The main issues addressed concern: i) the hybridization process in relation to the ecological context in which it occurs and its effect on diversity in natural populations; ii) the study of how species living in ephemeral aquatic habitats interact with conspecifics and the physical environment; iii) the relationship between the ecological traits of species and their response to past and future climate changes.

The study-systems are represented by arthropod species, including those of medical-veterinary interest; therefore, research activity is also focused on applicative aspects related to the development of strategies to control their abundance.

ACADEMIC EXPERIENCE

- 2021-present Member of OD (Commissione Osservatorio della Didattica), Sapienza University of Rome
- From 2016-present: Subject matter expert in Molecular ecology.
- From 2016-present: Subject matter expert in Ecology

QUALIFYING EXPERIENCES

- 2019: First Annual Conference on *Aedes* Invasive Mosquito COST ACTION CA17108. Athens, Greece.
- 2017: Short-term scientific mission “*Diflubenzuron resistance investigations in Culex mosquitoes*” COST Action funded by the “European Network for Neglected Vectors and Vector-Borne Infections”. Heraklion, Crete
- 2016: “NGS for evolutionary biologists: from basic scripting to variant calling”, Elixir-Italy, Napoli
- 2014: Short Visit Grant “ConGenOmics Research Networking Programmes” funded by the European Science Foundation. Imperial College, Londra. Title: *Introgressive hybridization and its evolutionary consequences in animal species*.

- 2011: GIS Advanced Course, Sapienza University of Rome.
- 2011: Introduction to Evolutionary Genetics Workshop (2ECT), Institute of Science and Technology, Vienna.
- 2011: “Approximate Bayesian Computation (ABC) in population genetics: some practical guidelines”, Sapienza University of Rome.

TEACHING EXPERIENCE

- 2021-present: Member of PhD committee in Ecology and Sustainable Management of the Environmental Resources. Tuscia University.
- 2021-present Teaching: Ecology. Bachelor degree: Tecniche della Prevenzione nell'Ambiente e nei Luoghi di Lavoro. Sapienza University of Rome.
- 2021-present Teaching: Fundamentals of Environmental Sciences. Bachelor degree: Technologies for conservation and restoration of cultural heritages. Sapienza University of Rome.
- 2019-2021 Teaching: Ecology. Bachelor degree: Agro-industrial Biotechnology. Sapienza University of Rome.
- 2018 Teaching: Conservation of mountain ecosystems. Bachelor degree: Mountain Sciences. Tuscia University

REFEREE ACTIVITY

ISI-ranked journals: PlosOne, Scientific Reports, Insects, International Journal of Molecular Sciences, Pathogens, Parasite and Vectors, International Journal of Environmental Research and Public Health

RESEARCH GRANTS

2020: PROGETTO PRIN finanziato da Ministero dell’Istruzione, dell’Università e della Ricerca (MIUR). Titolo del progetto: *Rafts on the water, for mosquito vector control: hydrogel-based delivery systems and inhibition of insect defence mechanisms, to improve sustainable use of insecticides and counteract resistance development* (RAFTING). (Numero di protocollo: 2017J8JR57) (Ruolo: Ricercatore).

2018: PROGETTO PER AVVIO ALLA RICERCA (Tipo 2) finanziato da Sapienza, Università di Roma. Titolo del progetto: *Pressione antropica e sviluppo della resistenza agli insetticidi: monitoraggio delle popolazioni della zanzara Culex pipiens mediante diagnostica molecolare* (Numero di protocollo: AR21816427169B50) (Ruolo: Responsabile del progetto)

2016: PROGETTO DI ATENEO finanziato da Sapienza, Università di Roma. Titolo del progetto: *Analisi trascrittomica per lo studio dei meccanismi di difesa cellulare agli insetticidi nel vettore malarico Anopheles stephensi* (Numero protocollo: C9CFDE3B) (Ruolo: Ricercatore)

2015: PROGETTO DI ATENEO finanziato da Sapienza, Università di Roma. Titolo del progetto: *Controllo eco-compatibile del vettore malarico Anopheles stephensi attraverso l'inibizione dei trasportatori ABC-multidrug mediante RNA interference* (Numero protocollo: C26A1573ST) (Ruolo: Ricercatore)

2014: PROGETTO DI ATENEO finanziato da Sapienza, Università di Roma. Titolo del progetto: *Sviluppo di una nuova strategia per il controllo di zanzare del genere Anopheles mediante inibizione delle difese cellulari legate ai trasportatori ABC-multidrug* (Numero protocollo: C26A149B88) (Ruolo: Ricercatore)

2012: PROGETTO DI ATENEO finanziato da Sapienza, Università di Roma. Titolo del progetto: *Inibizione delle pompe di efflusso multidrug-resistance come nuova strategia per il controllo delle zecche e delle malattie da loro trasmesse* (Numero protocollo: C26A12PNL8) (Ruolo: Ricercatore)

THESIS ADVISOR

2019-present: Co-tutor of 11 BSc and 4 MSc students. BSc degree: Natural Sciences; Agro-industrial Biotechnology. MSc degree: Ecobiology; Industrial and Environmental Genomic Biotechnologies. Sapienza University.

PUBLICATIONS

1. Porretta, D., **Mastrantonio, V.**, Lucchesi, V., Bellini, R., Vontas, J., Urbanelli, S. (2022). Historical samples reveal a combined role of agriculture and public-health applications in vector resistance to insecticides. *Pest Management Science*, **78**: 1567-1572.
2. **Mastrantonio V.**, Porretta D., Lucchesi V., Güz N., Cagatay N.S., Bellini R., Vontas J., Urbanelli S. (2021). Evolution of adaptive variation in the mosquito *Culex pipiens*: Multiple independent origins of insecticide resistance mutations. *Insects*, 12:8.
3. **Mastrantonio V.**, Crasta G., Urbanelli S., Porretta D. (2021). Cannibalism and necrophagy promote a resource loop and benefit larval development in insects of temporary waters. *Insects*, 12, 657.
4. Fotakis* E.A. **Mastrantonio* V.**, Grigoraki* L., Porretta D, Puggioli A, Chaskopoulou A., Osório H., Weill M., Bellini R, Urbanelli S. Vontas J. (2020). Identification and detection of a novel point mutation in the chitin synthase gene of *Culex pipiens* associated with diflubenzuron resistance. *PLoS Neglected Tropical Diseases*, 14, 1-10 [*co-primary authorship]

5. **Mastrantonio V.**, Urbanelli S. and D. Porretta. (2019). Ancient hybridization and mtDNA introgression behind current paternal leakage and heteroplasmy in hybrid zones. *Scientific Reports*, 9: 19177
6. Negri A., Ferrari M., Nodari R., Coppa E., **Mastrantonio V.**, Zanzani S., Porretta D., Bandi C., Urbanelli S. and S. Epis. (2019). Gene silencing through RNAi and antisense Vivo-Morpholino increases the efficacy of pyrethroids on larvae of *Anopheles stephensi*. *Malaria Journal*, 18: 294
7. Porretta, D., Fotakis, E.A., **Mastrantonio, V.**, Chaskopoulou, A., Michaelakis, A., Kioulos, I., Weill, M., Urbanelli, S., Vontas, J., Bellini, R. (2019). Focal distribution of diflubenzuron resistance mutations in *Culex pipiens* mosquitoes from Northern Italy. *Acta Tropica*, 193: 106-112
8. **Mastrantonio V.**, Ferrari M., Negri A., Sturmo T., Favia, G., Porretta, D., Epis, S., Urbanelli, S. (2019). Insecticide exposure triggers a modulated expression of ABC transporter genes in larvae of *Anopheles gambiae* s.s. *Insects*, 10(3),66.
9. **Mastrantonio V.**, Latrofa M.S., Porretta D., Lia R.P., Parisi A., Iatta R., Dantas-Torres F., Otranto D., Urbanelli S. (2019). Paternal leakage and mtDNA heteroplasmy in *Rhipicephalus* spp. ticks. *Scientific Reports*, 9:146.
10. Rosenfeld S., Porretta D., Rahav E., **Mastrantonio V.**, Duchet, C., Blaustein L. (2018) Molecular identification of *Aedes phoeniciae* (Diptera: Culicidae) in rockpools along the northern Israeli coast. *Journal of vector ecology*, 43, 344-346.
11. **Mastrantonio V.**, Crasta G., Puggioli A., Bellini R., Urbanelli S., Porretta D. (2018) Cannibalism in temporary waters: Simulations and laboratory experiments revealed the role of spatial shape in the mosquito *Aedes albopictus*. *Plos One* 13(5): e0198194.
12. **Mastrantonio V.**, Ferrari M., Epis S., Negri A., Scuccimarra G., Montagna M., Favia G., Porretta D., Urbanelli S., Bandi C. (2017) Gene expression modulation of ABC transporter genes in response to permethrin in adults of the mosquito malaria vector *Anopheles stephensi*. *Acta Tropica*, 171:37-43
13. De Marco L., Sasserà D., Epis S., **Mastrantonio V.**, Ferrari M., Ricci I., Comandatore F., Bandi C., Porretta D., Urbanelli S. (2017). The choreography of the chemical defensive response to insecticide stress: insights into the *Anopheles stephensi* transcriptome using RNA-Seq. *Scientific Reports*, 7:41312.
14. De Marco L., Epis S., Comandatore F., Porretta D., Cafarchia C., **Mastrantonio V.**, Dantas-Torres F., Otranto D., Urbanelli S., Bandi C., Sasserà D. (2017). Transcriptome of larvae

- representing the *Rhipicephalus sanguineus* complex. *Molecular Cellular Probes*, S0890-8508(16)30013-5.
15. Porretta D., Epis S., **Mastrantonio V.**, Ferrari M., Bellini R., Favia G., Urbanelli S. (2016). How heterogeneous is the involvement of ABC transporters against insecticides? *Acta Tropica*, 157: 131-5.
 16. Porretta D., Latrofa M.S., Dantas-Torres F., **Mastrantonio V.**, Iatta R., Otranto D., Urbanelli S. (2016). Exon-intron structure and sequence variation of the calreticulin gene among *Rhipicephalus sanguineus* group ticks. *Parasites & Vectors*, 9:640.
 17. Porretta D., **Mastrantonio V.**, Crasta G., Bellini R., Comandatore F., Rossi P., Favia G., Bandi C., Urbanelli S. (2016) Intra-instar larval cannibalism in *Anopheles gambiae* (s.s.) and *Anopheles stephensi* (Diptera: Culicidae). *Parasites & Vectors*, 9:566.
 18. **Mastrantonio V.**, Porretta D., Urbanelli S., Crasta G., Nascetti G. (2016). Dynamics of mtDNA introgression during species range expansion: insights from an experimental longitudinal study. *Scientific Reports*, 6:30355.
 19. **Mastrantonio V.**, Porretta D., Bellini R., Nascetti G. and Urbanelli S. (2015). Molecular systematic and origin of the Mediterranean Sea rock-pool mosquitoes of the *Aedes mariaae* complex. *Annals of the Entomological Society of America*, 108(4): 593-599.
 20. Cafarchia C., Porretta D., **Mastrantonio V.**, Epis S., Sassera D., Iatta R., Immediato D., Ramos R.A.N., Lia R.P., Dantas-Torres F., Urbanelli S., Otranto D. (2015). Potential role of ATP- binding cassette transporters against acaricides in the brown dog tick *Rhipicephalus sanguineus* sensu lato. *Medical and Veterinary Entomology* 29(1): 88–93.
 21. Urbanelli S., Porretta D., **Mastrantonio V.**, Bellini R., Pieraccini G., Romoli R., Crasta G., and Nascetti G. (2014) Hybridization, natural selection and evolution of reproductive isolation: a 25-years survey of an artificial sympatric area between two mosquito sibling species of the *Aedes mariaae* complex. *Evolution*, 68(10):3030-3038
 22. Epis S., Porretta D., **Mastrantonio V.**, Comandatore F., Sassera D., Rossi P., Favia G., Bandi C., Urbanelli S. (2014). Temporal dynamics of the ABC transporter response to insecticide treatment: insights from the malaria vector *Anopheles stephensi*. *Scientific Reports*, 4,7435. doi:10.1038/srep07435
 23. Epis S., Porretta D., **Mastrantonio V.**, Comandatore F., Sassera D., Rossi P., Cafarchia C., Otranto D., Favia G., Genchi C., Bandi C., Urbanelli S. (2014). ABC transporters are involved in defense against permethrin insecticide in the malaria vector *Anopheles stephensi*. *Parasites and Vectors*, 7 (1), 349.

24. Porretta D., **Mastrantonio V.**, Amendolia S. et al. (2013) Effects of global changes on the climatic niche of the tick *Ixodes ricinus* inferred by species distribution modelling. *Parasites and Vectors*, 6(1):271.
25. Porretta D*, **Mastrantonio V***, Mona S. et al. (2013) The integration of multiple independent data reveals an unusual response to Pleistocene climatic changes in the hard tick *Ixodes ricinus*. *Molecular Ecology*, **22**, 1666–1682. [*co-primary authorship].
26. Porretta D., **Mastrantonio V.**, Bellini R., Somboon P. and Urbanelli S. (2012) Glacial history of a modern invader: phylogeography and species distribution modelling of the Asian Tiger Mosquito *Aedes albopictus*. *Plos One*, **7**, e44515.

CONGRESS CONTRIBUTIONS

1. **Mastrantonio V.**, Fotakis E.A., Grigoraki L., Porretta D., Puggioli A., Chaskopoulou A., Osório H., Weill M., Bellini R., Urbanelli S., Vontas J. 2021. Snapshot of the insecticide resistance in Southern European populations of the mosquito *Culex pipiens*. 10th EMCA Conference, Vienna
2. **Mastrantonio V.**, Crasta G., Puggioli A., Bellini R., Urbanelli S., Porretta D. 2021. The topology of the breeding site affects intra-specific predation in the mosquito vector *Aedes albopictus*. Virtual Meeting of the Society of Vector Ecology (SOVE)
3. Porretta D., **Mastrantonio V.**, Lucchesi V., Güz N., Çağatay N.S., Bellini R., Vontas J., S. Urbanelli. 2021. Insecticide resistance evolved multiple times in the mosquito *Culex pipiens*. 10th EMCA Conference, Vienna
4. Porretta D., **Mastrantonio V.**, Crasta G., Urbanelli S., 2021. Conspecific consumption promotes a resource loop in the vector *Aedes albopictus*. SOVE Meeting. Virtual Meeting of the Society of Vector Ecology (SOVE)
5. Porretta D., **Mastrantonio V.**, Urbanelli S. Vontas J, Bellini R. 2018. Spread of diflubenzuron resistance in the mosquito *Culex pipiens* in Northern Italy. 21th Conference E-SOVE, Palermo.
6. Ferrari M., Marco L.D., Porretta D., **Mastrantonio V.**, Negri A., Urbanelli S., Favia G., Sasseria D., Bandi C., Epis S. (2017). Temporal patterns of insecticide response in *Anopheles stephensi* and identification of molecular targets for gene silencing. Annual meeting of the Italian Malaria Network. Roma
7. Ferrari M., Porretta D., **Mastrantonio V.**, De Marco L., Negri A., Urbanelli S., Favia G., Bandi C., Epis S. (2016) The involvement of ABC transporters in the resistance to permethrin insecticide in the malaria vector *Anopheles stephensi*, Congresso Nazionale Italiano di Entomologia (CNIE). Padova, Italia

8. Porretta D., **Mastrantonio V.**, Latrofa M.S., Dantas-Torres F., Urbanelli S., D. Otranto. 2016. Nuclear genetic markers for multilocus phylogeny of *Rhipicephalus* ticks. SOIPA, Bari
9. Cafarchia C., Porretta D., Dantas-Torres F., Iatta R., Immediato D., **Mastrantonio V.**, Epis S., De Marco L., Ferrari M., Negri A., Sasserà D., Urbanelli S., D. Otranto. 2016. The “first line of defense” against acaricides in the brown tick *Rhipicephalus sanguineus sensu lato*. SOIPA, Bari
10. **Mastrantonio V.**, Porretta D., Nascetti G., Urbanelli S. 2015. Ecological and evolutionary consequences of a colonization event: the case study of the mosquitoes *Aedes mariaae* and *Ae. zammitii*. Congresso “*Ecology at the Interface: Science-Based Solutions for Human well Being*”, SITE e EEF, Roma
11. Porretta D., **Mastrantonio V.**, and Urbanelli S. 2014. Natural selection and Speciation in *Ochthebius* beetles. Xth EUROPEAN CONGRESS OF ENTOMOLOGY University of York, York, UK
12. **Mastrantonio V.**, Porretta D., Epis S., Bandi C., Otranto D., and Urbanelli S. 2014. “Staying alive”: persistence of the hard tick *Ixodes ricinus* across Europe under past and future climatic changes. Xth EUROPEAN CONGRESS OF ENTOMOLOGY, University of York, UK.
13. **Mastrantonio V.**, Amendolia S., Porretta D., Gaiarsa S., Epis S., Genchi C., Bandi C., Otranto D., and Urbanelli S. 2013. Effects of climatic changes on the distribution of the ticks *Ixodes ricinus* and *Ixodes persulcatus* inferred by Species Distribution Modelling. XXIII congresso *S.It.E.* Ancona.
14. Porretta D., **Mastrantonio V.**, S. Epis, C. Bandi, D. Sasserà, M. Pajoro, L. Kramer, L. Rinaldi, Genchi and S. Urbanelli 2010. Connectivity among European *Ixodes ricinus* populations and its implication for pathogens diffusion: a genetic population approach. XX congresso *S.It.E.* Roma.
15. Porretta D., **Mastrantonio V.**; S. Epis, C. Bandi, D. Sasserà, D. Pistone, L. Kramer, L. Rinaldi, Genchi and S. Urbanelli 2010. Influence of the cellular endoparasite *Midichloria mitochondrii* on the mitochondrial genetic diversity in *Ixodes ricinus* tick. IV congresso *SIBE*. Milano.