University of Genova

Department of Earth, Environmental and Life Sciences

Doctorate Course in Earth and Environmental Science and Technology

Università degli Studi di Genova

STAT

Dottorato in Scienze e Tecnologie per l'Ambiente e il Territorio

Curriculum in biology applied to agriculture and the environment

Research Theme n. 6

Titolo Contributo alla conoscenza e valorizzazione della biodiversità in ambito urbano: la pedofauna nelle aree verdi pubbliche e nei parchi storici cittadini
Title Contribution to the knowledge and enhancement of biodiversity in urban areas: the soil fauna in public green areas and in historic city parks

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Program description including the formation program abroad (Inglese)

The study aims at mapping the biodiversity of microarthropods in public green areas and historical parks of Genoa, as well as in natural and semi-natural areas adjacent to the city. An order level analysis of the soil fauna diversity would be performed using soil biological quality indices (QBS-ar), diversity indices and rarefaction curves. Taxonomic in depth studies would be carried out on at least three "minor" taxa important from an ecological point of view: Isopoda Oniscidei (detritivores), Proturi (mycetophages) and Pseudoscorpions (predators). These analyses would be supported and integrated with DNA-barcoding analysis of a subset of individuals of different taxa and, where possible, with metabarcoding of environmental DNA from soil samples, to obtain an estimate of biodiversity also from a genetic point of view. Moreover, the genome size of some species would be measured by an improved Feulgen protocol. The result of the research should be a map of urban biodiversity of soil microarthropods in reference to a broader context which also identifies possible ecological corridors of connection with the natural and semi-natural areas surrounding the city. For the more isolated sites, on the basis of their origin and management and of the eco-ethological characteristics of the taxa, it would be defined which groups are of primary origin (deriving from the incorporation of their habitat into the urban area) and which ones have actively or passively dispersed from neighboring green areas.This study could contribute to the drafting of management measures aimed at the conservation and management of the soil fauna, and consequently of the soils, with particular attention to the taxa of ecological/biogeographical interest or to the local biodiversity hot-spots.The abroad internship would be carried out in the lab of Ecological & evolutionary genomics of the Université libre de Bruxelles. This laboratory is specialized on research about genome size measurements, species delimitation, genome bioinformatics, comparative genomics and metagenomics.

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Departmental research funds to Loris Galli.

Tutor's publications (max 3)

Lo Pinto S., Giordani G., Tuccia F., Ventura F., Vanin S. 2017 First records of *Synthesiomyia nudiseta* (Diptera: Muscidae) from forensic cases in Italy. Forensic Science International 276:e1-e7
Maistrello L., Lombroso L., Pedroni E, Reggiani A., Vanin S. 2006 Summer raids of *Arocatus melanocephalus* (Heteroptera, Lygaeidae) in urban buildings in Northern Italy: is climate change to blame? Journal of thermal Biology 31: 594-598.
Vanin S., Tasinato P., Ducolin G., Terranova C., Zancaner S., M. Montisci, P. Ferrara & Turchetto M. 2008 Use of *Lucilia* species (Diptera: Calliphoridae) for forensic investigations in Southern Europe. Forensic Science International 177: 37-41.