University of Genova

Department of Earth, Environmental and Life Sciences
Doctorate Course in Earth and Environmental Science and Technology

Università degli Studi di Genova

SIAT

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

Curriculum in biology applied to agriculture and the environment

Research Theme n. 5

Titolo (Italiano):
Dinamiche vegetazionali nell'ecosistema urbano e aspetti applicativi

Title (inglese):
Vegetation dynamics in urban ecosystems and applied aspects

Tutor (name and email) and eventual co-tutor: Enrica Roccotiello, enrica.roccotiello@unige.it

Program description including the formation program abroad (Inglese)

ECOLOPES (www.ecolopes.org) is a HORIZON 2020-FET OPEN funded research project proposing a radical change for city development: instead of minimizing the negative impact of urbanisation on nature, we aim at urbanisation to be planned and designed such that nature – including humans – can co-evolve within the city. We envisage a radically new integrated ecosystem approach to architecture that focuses equally on humans, plants, animals, and associated organisms such as microbiota. ECOLOPES will provide the technology that will help to achieve this vision. The ECOLOPES will design the building envelope with a multi-species approach to restore the beneficial human – nature relationships in cities.

The advertised PhD position will be critical in studying the vegetation dynamics within the urban ecosystems in response to abiotic and biotic components. The PhD student will select plant traits useful to identify Plant Function Group to model the dynamics of the plant component of the proposed building envelope ecosystem and will considered all applied aspects of the main outputs in terms of the ecosystem services provision. The PhD student will also monitor the plant colonization in the pilot area of the city of Genoa with mock-up testing on buildings in the final phase of the project.

Program abroad

ECOLOPES partners are the Technical University of Munich (TUM) in Germany (leader partner), the University of Genoa in Italy, the Technical University of Vienna (TU Vienna), Austria, TECHNION in Haifa, Israel, McNeel Europe, based in Barcelona, Spain, and Studio Animal-Aided Design (SAAD) in Germany. The project team works on various topics, including biodiversity and ecosystem functioning, plant-microbiota interactions, urban ecology. The program abroad will include visiting periods at least in one of the Universities/Company of the partners involved that are in charge with the biotic components (TUM, SAAD and the INRAE of Grenoble).

Financial support: cofinancing MIUR/DISTAV within the project FET-OPEN H2020 ECOLOPES

Tutor's publications (max 3)

1. Perini, K., Castellari, P., Giachetta, A., Turcato, C., Roccotiello, E. (2020) Experiencing innovative biomaterials for buildings: Potentialities of mosses. Building and Environment, 172, art. no. 106708, DOI: 10.1016/j.buildenv.2020.106708
2. Perini, K., Roccotiello, E. Vertical greening systems for pollutants reduction (2018) In: Nature Based Strategies for Urban and Building Sustainability, pp. 131-140. Elsevier. DOI: 10.1016/B978-0-12-812150-4.00012-4
3. Perini, K., Ottelé, M., Giulini, S., Magliocco, A., Roccotiello, E. (2017) Quantification of fine dust deposition on different plant species in a vertical greening system Ecological Engineering, 100, pp. 268-276. DOI: 10.1016/j.ecoleng.2016.12.032