International Research School in Applied Ecology

FONDAZIONE EDMUND MACH

IRSAE Summer Course
Integrating 'Omics' Technologies into Aquatic Ecology
New perspectives in Metagenomic, Metabolomic and Bioinformatic applications in the study of aquatic ecosystems

When
25–29 June 2018

Where
S. Michele all'Adige, Fondazione Edmund Mach, Istituto Agrario di S. Michele all'Adige (FEM), Trento, Italy

Local responsibles for the course: Nico Salmaso (FEM, Hydrobiology; nico.salmaso@fmach.it), Claudio Donati (Computational Biology; claudio.donati@fmach.it)

Description of the Course
The course is aimed to provide both the theoretical foundations and examples of applications of the "Omics" in aquatic ecology, with a focus on the genetic analysis of genomes (metagenomics), proteins and metabolites (proteomics, metabolomics) in biological and environmental aquatic samples. These topics are relevant not only for the advancement of freshwater ecology, but also for the monitoring and management of water resources and the associated biological communities.
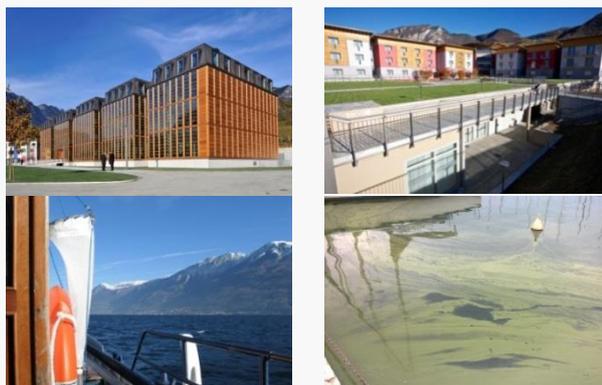
The techniques that will be described are commonly used in the analysis of environmental DNA (eDNA) extracted from a variety of aquatic and terrestrial environments, as well as biological hosts. Therefore, to broaden the scope of the course, a few lectures will focus on the use of metagenomics/metabolomics in other complementary research fields (e.g. terrestrial).

Specific fields of application of the 'Omics' approaches in ecology include, among the others, the quantitative evaluation and functions of biodiversity in ecosystems; the impact of climate change, anthropogenic stressors, and pollutants; the introduction and early detection of alien species; production of active metabolites. Lectures will be followed by the critical discussion of case studies and organization of practical laboratory sessions (including R, bioinformatic pipelines, and guided practice in the laboratories of genomics and metabolomics). The course will be completed by a mid-course field excursion with sampling (Lake Garda).

Participants are requested to bring their laptop with them.

Lecturers: Davide Albanese (FEM, Computational Biology), Panagiotis Arapitsas (FEM, Food Quality and Nutrition Department), Francesco Asnicar (University of Trento, CIBIO - Centre for Integrative Biology), Andrea Cattani (Information Systems and Communication), Leonardo Cerasino (FEM, Hydrobiology), Claudio Donati (FEM, Computational Biology), Graziano Guella (University of Trento, Centro Agricoltura, Alimenti, Ambiente - C3A), Rainer Kurmayer (Research Institute for Limnology, University of Innsbruck, Austria), Stefan Martens (FEM, Food Quality and Nutrition Department), Diego Micheletti (FEM, Computational Biology), Jon Museth (Norwegian Institute for Nature Research, Lillehammer, Norway), Michele Perazzolli (FEM, Plant pathology and Applied Microbiology), Massimo Pindo (FEM, Genomics Platform), Federica Pinto (University of Trento, CIBIO - Centre for Integrative Biology), Samantha Riccadonna (FEM, Computational Biology), Nico Salmaso (FEM, Hydrobiology), Nicola Segata (University of Trento, CIBIO - Centre for Integrative Biology), Adrian Tett (University of Trento, CIBIO - Centre for Integrative Biology)

Applications have to be sent before the 25th of May
For updates on the program of the course, and details on application and registration, please visit the website:
https://eventi.fmach.it/IRSAE2018-summer-course