

**Public competition announcement for admission to a positions at the PhD Programme Agri-Food System Doctoral School, Università Cattolica del Sacro Cuore, Piacenza Campus**

[http://progetti.unicatt.it/progetti-ateneo-ROALIMENTARE\\_33\\_BANDO\\_INGLESE.pdf](http://progetti.unicatt.it/progetti-ateneo-ROALIMENTARE_33_BANDO_INGLESE.pdf)

**Theme of the doctoral study: Development of rapid molecular diagnostics methods for the agro-food sector**

The research activities will focus on the development of nanotechnology-based innovative diagnostic methods for the agro-food sector. The aim is to design new rapid molecular methods for food traceability and identity, for detection a viable microorganism and of specific molecules of biological relevance. The project will be developed within the joint activities between the Istituto Italiano di Tecnologia (IIT) and the Faculty of Agricultural, Food and Environmental Sciences of Università Cattolica and will merge the complementary expertise of IIT on molecular diagnostics and nanotechnologies and that of UCSC on microbial, plant and animal molecular biology and on food science.

**PhD candidate student profile**

Candidates should preferably hold a biotechnology, molecular biology and/or biochemistry background.

**Theme of the doctoral study: Waste-derived new materials for agriculture and food systems**

The project will benefit from complementary expertise of IIT on synthesis of a wide range of bioplastics from waste materials and that of UCSC on the agriculture and food systems. The project will firstly focus on existing biomaterials already developed by IIT but will also modify and improve them to address the specific issues of the agro-food sector. In particular, the following topics will be investigated: Bioplastics for forage and feed conservation in farms; irrigation water supply by materials having controlled biodegradation rates; seeding system using active strips processing, quality and safety.

**PhD candidate student profile**

Candidates should preferably hold a chemistry, biochemistry, material science or agricultural science background.

**Theme of the doctoral study: Robotics for monitoring and management of crop systems**

The project in robotics will aim at implementing an already existing intelligent machine to become suitable for guided and selective operations on high value fruit trees and crops. The PhD student initially involved should have an engineering and/or bio-physic

background which will have to be integrated with some basic knowledge in plant structures and functions provided by UCSC. Taking the grapevine plant as a preliminary case study, objectives are to provide the robot with a suitable vision system to identify vegetative and reproductive organs within a canopy, assess machine dexterity at performing selective winter or summer pruning operations and verify operational machine features such as ground speed, autonomy, ability to manage different type of soils and slopes.

**PhD candidate student profile**

Candidates should preferably hold a robotics, engineering and/or bio-physic background.