

COTE

Evolution, Adaptation and Governance of Continental and Coastal Ecosystems



COTE LabEx Call for Research Projects Year 2014

Application File

To be handed in before **30 June 2014 12:00 am** to:

manager-labexcote@univ-bordeaux.fr

Project Title	Vineyard ecosystem vulnerability to pathogens and drought in the context of climate change (VIVALDI)
LabEx Unit Project Leader	UMR SAVE
Intra-Unit Team	-
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Co-contracting COTE LabEx Unit(s)	INRA/Université de Bordeaux, UMR EGFV INRA/Université de Bordeaux, UMR BIOGECO
Intra-unit Team(s)	UMR BIOGECO, équipe « Écologie et Génomique Fonctionnelle »
Other Project Partners	University of Tasmania
Priorities	<input type="checkbox"/> Coupling of approaches <input type="checkbox"/> Interactions between ecosystems as a factor in their evolution <input type="checkbox"/> Modelling as a long-term forecasting tool <input checked="" type="checkbox"/> Global responses of ecosystems
Keywords	Adaptation, climate change, drought, grapevine, multiple stresses, pathogen, phytohormones, resilience, resistance to pathogens, temperature, vineyard agrosystem, vulnerability

Project abstract

The impacts of abiotic and biotic stresses on agrosystems have been mainly considered separately despite global surveys of agrosystem vulnerability are a key step toward an accurate management of crop production in the context of climate change. Climate change and especially increased drought frequency and severity influences the extent of pathogen aggressiveness, plant physiology and their interaction. The general objective of the VIVALDI project is to study the global response of vineyard agrosystems (vulnerability and resilience) to biotic and abiotic stresses in the context of climate change. VIVALDI integrates: (i) a survey of grapevine responses to both pathogen exposure and drought stress: Xylem vulnerability to hydraulic failure, pathogen aggressiveness and joint signalling responses to drought and pathogens will be assessed on both sensitive and resistant grapevine genotypes; (ii) a survey of the adaptive potential of pathogens to climate (varying temperature) and to host resistance and (iii) a long-term monitoring of global responses of vineyard agrosystems to cultural practice modifications: xylem vulnerability to hydraulic failure, disease epidemiology, pathogen evolution and yield will be investigated in a system based on partially disease resistant varieties, a conventional system and an organic system (ResIntBio experimental vineyard). Using an original and integrative study focusing on both plant crop physiological responses and pathogen adaptive capacities to climate change via the study of plant and pathogen life history traits, suitable grapevine cultivars will be identified to provide new opportunities for a durable viticulture in the context of climate change.