IMPLANTEUS
SUSTAINABLE MEDITERRANEAN AGRICULTURE FOR HEALTH | GRADUATE SCHOOL

MAFEN MASTER **Academic Year 2026 - 2027**

Proposal of M1 tutored project

PROJECT TITLE AND SUMMARY:

Bifunctionality of structural genes involved in growth, development, stress memory, and priming

In this tutored project, you will prepare a mini-literature review focusing on the bifunctionality of structural genes involved in plant growth, development, stress memory, and priming. The objective is to explore how certain genes can simultaneously support developmental processes while also contributing to adaptive responses to abiotic or biotic stress. You are expected to search for and critically analyze recent peer-reviewed publications, identify well-characterized examples of bifunctional genes, and describe the molecular mechanisms underlying their dual roles. As starting points, you may examine ACS and ACO genes from the ACC–ethylene pathway (regulating growth, root elongation, and stress-induced ethylene bursts), root-hair regulators such as RHD6 and RSL4 (controlling epidermal differentiation while mediating drought or osmotic stress memory), WRKY transcription factors like WRKY30 or WRKY53 (involved in developmental transitions and priming responses), HSFA2 and HSP21 (key actors in heat-stress memory with roles in developmental robustness), or DREB2A, which integrates drought priming with growth-related transcriptional programs. The mini-review should include a clear introduction to the topic, a structured synthesis of the selected studies, a critical discussion comparing different experimental approaches, and a short section outlining future research perspectives.

HOST UNIT: ERIT – PSII (Plant Sciences Interactions and Innovation), IAgES, Avignon University

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INRAE
INVESTIR L'AVENIR