Our project is very appropriate to integrate a PhD student and offers excellent possibilities for her/his formation. She/he will be in charge of the functional characterization of U6.3, U6.5 and U6.26 snRNAs in Arabidopsis, as well as the identification and characterization of proteins specifically associated with these U6 snRNAs under abiotic stress conditions. Considering our preliminary results and the materials we are already generating, the reliability, interest and relevance of this working plan, ensure an excellent and consistent work of thesis. The wide range of experimental approaches required to achieve the proposed working plan, from very basic standard genetic and molecular biology techniques to cutting-edge technologies, will provide the student with a very complete methodological training. In addition, our Centre, the CIB Margarita Salas, is a multidisciplinary institute for biological research where PhD students have access to state-of-the-art technologies and a rich scientific international environment. In this environment, students can establish fruitful collaborations/discussions with groups working in many different disciplines and experimental systems, and are exposed to the best and timely international research on biology through the excellent seminars that are day-to-day organized. All these characteristics, along with its excellent location on the campus of the Universidad Complutense in Madrid (UCM), surrounded by the Faculties of Biology, Chemistry, Pharmacy and Medicine, as well as the Schools of Forestry and Agronomy, make the CIB Margarita Salas ideal for early-stage researchers starting their scientific careers.

The formation plan of the Ph.D. student will include her/his enrollment in the UCM's Ph.D. programme entitled "Bioquímica, Biología Molecular y Biomedicina" which is accredited to deliver a European Doctorate Certificate and received a "Mención hacia la Excelencia" by the Ministerio de Educación of Spain. The student will benefit from common activities provided by the Program, including the mentoring and follow-up of their progress by a Committee independent of her/his PhD supervisor. The Ph.D. student will be directly supervised by the PIs of the project in all scientific aspects of his Ph.D. research. In addition, she/he will interact and collaborate with the other members of the lab to develop her/his project, and will participate in the lab meetings in which research from our group is discussed. Like all students in the CIB, she/he will participate in different Seminar Programs and Workshops where they must present their results to different audiences in English. Ph.D. students in our group are also scheduled to present their work at national and international congresses in the area of Plant Physiology and Molecular Biology. These activities will allow the student to learn writing and presenting their work in public, getting used to defend it from external criticisms and comments. Last, she/he will benefit from our contacts with companies to interact with the private sector, as well as from

our international collaborations and from the FPI Program provisions to realize various short-term stays in labs abroad.

Most relevant works of the lab in the last 10 years:

Related to the PhD project:

Esteve-Bruna, D., Carrasco-López, C., Blanco-Touriñán, N., Iserte, J., Calleja-Cabrera, J., Perea-Resa, C., Úrbez, C., Carrasco, P., Yanovsky, M.J., Blázquez, M.A., Salinas, J., Alabadí, D. [2020]. Prefoldins contribute to maintaining the levels of the spliceosome LSM2-8 complex through Hsp90 in Arabidopsis. Nucleic acids research. 48:6280-6293.

Huertas, R., Catalá, R., Jiménez-Gómez, J.M., Mar Castellano, M., Crevillén, P., Piñeiro, M., Jarillo, J.A., Salinas, J. [2019]. Arabidopsis SME1 Regulates Plant Development and Response to Abiotic Stress by Determining Spliceosome Activity Specificity. Plant Cell. 31:537-554.

Catalá, R., Carrasco-López, C., Perea-Resa, C., Hernández-Verdeja, T., Salinas, J. [2019]. Emerging roles of lsm complexes in posttranscriptional regulation of plant response to abiotic stress. Frontiers in Plant Science. 10: 10.3389/fpls.2019.00167.

Carrasco-López, C., Hernández-Verdeja, T., Perea-Resa, C., Abia, D., Catalá, R., Salinas, J. [2017]. Environment-dependent regulation of spliceosome activity by the LSM2-8 complex in Arabidopsis. Nucleic Acids Research. 45:7416-7431.

Perea-Resa, C., Carrasco-López, C., Catalá, R., Turečková, V., Novak, O., Zhang, W., Sieburth, L., Jiménez-Gómez, J.M., Salinas, J. [2016]. The LSM1-7 complex differentially regulates Arabidopsis tolerance to abiotic stress conditions by promoting selective mRNA decapping. Plant Cell. 28:505-520.

Related to other projects:

Catalá, R., López-Cobollo, R., Álvaro Berbís, M., Jiménez-Barbero, J., Salinas, J. [2021]. Trimethylamine N-oxide is a new plant molecule that promotes abiotic stress tolerance. Science Advances. 7:-.

Ruiz-Lopez, N., Pérez-Sancho, J., del Valle, A.E., Haslam, R.P., Vanneste, S., Catalá, R., Perea-Resa, C., van Damme, D., García-Hernández, S., Albert, A., Vallarino, J., Lin, J., Friml, J., Macho, A.P., Salinas, J., Rosado, A., Napier, J.A., Amorim-Silva, V., Botella, M.A. [2021]. Synaptotagmins at the endoplasmic reticulum–plasma membrane contact sites maintain diacylglycerol homeostasis during abiotic stress. Plant Cell. 33:2431-2453.

Sanchez-Serrano, J.J., Salinas, J. [2021]. Preface. Methods in Molecular Biology. 2200:v-.

Albertos, P., Tatematsu, K., Mateos, I., Sánchez-Vicente, I., Fernández-Arbaizar, A., Nakabayashi, K., Nambara, E., Godoy, M., Franco, J.M., Solano, R., Gerna, D., Roach, T., Stöggl, W., Kranner, I., Perea-Resa, C., Salinas, J., Lorenzo, O. [2021]. Redox feedback regulation of ANAC089 signaling alters seed germination and stress response. Cell Reports. 35: 109263.

Barrero-Gil, J., Mouriz, A., Piqueras, R., Salinas, J., Jarillo, J.A., Piñeiro, M. [2021]. A MRG-operated chromatin switch at SOC1 attenuates abiotic stress responses during the floral transition. Plant Physiology. 187:462-471.

Perea-Resa, C., Catalá, R., Salinas, J. [2020]. Identification of Arabidopsis Mutants with Altered Freezing Tolerance. Methods in Molecular Biology. 2156:85-97.

Costa-Broseta, Á., Perea-Resa, C., Castillo, M.-C., Ruíz, M.F., Salinas, J., León, J. [2019]. Nitric oxide deficiency decreases C-repeat binding factor-dependent and -independent induction of cold acclimation. Journal of Experimental Botany. 70:3283-3296.

Olate, E., Jiménez-Gómez, J.M., Holuigue, L., Salinas, J. [2018]. NPR1 mediates a novel regulatory pathway in cold acclimation by interacting with HSFA1 factors. Nature Plants. 4:811-823

Barrero-Gil J., Salinas J. [2018]. Gene Regulatory Networks Mediating Cold Acclimation: The CBF Pathway. In: Iwaya-Inoue M., Sakurai M., Uemura M. (eds) Survival Strategies in Extreme Cold and Desiccation. Advances in Experimental Medicine and Biology, vol 1081:3-22 Springer, Singapore

Catalá, R., Salinas, J. [2018]. Tailoring crop nutrition to fight weeds. Proc Natl Acad Sci USA 115 (29) 7456-7458. doi.org/10.1073/pnas.1809311115

Costa-Broseta, Á., Perea-Resa, C., Castillo, M.-C., Ruíz, M.F., Salinas, J., León, J. [2018]. Nitric Oxide Controls Constitutive Freezing Tolerance in Arabidopsis by Attenuating the Levels of Osmoprotectants, Stress-Related Hormones and Anthocyanins. Scientific Reports. 8 (1): 9268.

Egea, I., Pineda, B., Ortíz-Atienza, A., Plasencia, F.A., Drevensek, S., García-Sogo, B., Yuste-Lisbona, F.J., Barrero-Gil, J., Atarés, A., Flores, F.B., Barneche, F., Angosto, T., Capel, C., Salinas, J., Vriezen, W., Esch, E., Bowler, C., Bolarín, M.C., Moreno, V., Lozano, R. [2018]. The SLCBl10 calcineurin B-Like protein ensures plant growth under salt stress by regulating Na+ and Ca2+ homeostasis. Plant Physiology. 176:1676-1693.

Barrero-Gil, J., Salinas, J. [2017]. CBFs at the Crossroads of Plant Hormone Signaling in Cold Stress Response. Molecular Plant. 10 (4), 542-544

Perea-Resa, C., Rodríguez-Milla, M.A., Iniesto, E., Rubio, V., Salinas, J. [2017]. Prefoldins Negatively Regulate Cold Acclimation in Arabidopsis thaliana by Promoting Nuclear Proteasome-Mediated HY5 Degradation. Molecular Plant. 10:791-804.

Barrero-Gil, J., Huertas, R., Rambla, J.L., Granell, A., Salinas, J. [2016]. Tomato plants increase their tolerance to low temperature in a chilling acclimation process entailing comprehensive transcriptional and metabolic adjustments. Plant Cell and Environment. 39:2303-2318.

Catala R, Salinas J [2015]. The Arabidopsis ethylene overproducer mutant *eto1-3* displays enhanced freezing tolerance. Plant Signaling and Behavior 10:3, e989768

Catala R, Lopez-Cobollo R, Castellano MM, Angosto T, Alonso JM, Ecker JR, Salinas J [2014]. The Arabidopsis 14-3-3 protein RARE COLD INDUCIBLE 1A links low-temperature response and ethylene biosynthesis to regulate freezing tolerance and cold acclimation. Plant Cell 26: 3326-3342

Perea-Resa C, Salinas J [2014]. Identification of Arabidopsis mutants with altered freezing tolerance. Eds: Hincha DK, Zuther E. Plant Cold Aclimation: Methods and protocols. Springer Science, New York, pp 79-89

Rodriguez-Hernandez AA, Ortega-Amaro MA, Delgado-Sanchez P, Salinas J, Jimenez-Bremont JF [2014]. AtGRDP1 gene encoding a glycine-rich domain protein is involved in germination and responds to ABA signaling. Plant Mol Biol Rep 32: 1187-1202

Coego A, Brizuela E, Castillejo P, Ruiz S, Koncz C, del Pozo JC, Piñeiro M, Jarillo J A, Paz-Ares J, Leon J et al. [2014]. The TRANSPLANTA collection of Arabidopsis lines: A resource for functional analysis of transcription factors based on their conditional overexpression. Plant J 77: 944-953

Sanchez-Serrano JJ, Salinas J [2013]. Arabidopsis Protocols (Third Edition). Springer Science, New York. ISBN 978-1-62703-579-8

Barrero J, Salinas, J [2013]. Post-translational regulation of cold acclimation response. Plant Sci 205-206: 48-54

López-Torrejon G, Guerra D, Catalá R, Salinas J, Pozo JC [2013]. Identification of SUMO targets by a novel proteomic approach in plants. J Integr Plant Biol 55: 96-107