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CV SUMMARY

Associate Professor at the Oviedo University. My research professional career has been devoted, practically all my life, to the study of seedless plants, in particular ferns (Monophytes). My first contribution to the generation of knowledge was my PhD, in 1993, which obtained the highest outstanding Cum Laude rating. I then completed a postgraduate stay at the INRA (named Institute de la Recherche Agronomique by then) in Orléans, France, under the cover of a European project, and where I acquired skills in the chromatography and mass spectrometry techniques. This training served to establish several collaborations with other universities and research centers, such as The Universities of León (Spain), or Guelph (Florida, USA), and different subjects: somatic embryogenesis in Vitis, biotechnological methods in hop, etc. In 2003, I engaged the Ramón y Cajal National Program, and my main hypothesis of work was to use the free-living gametophyte generation in ferns to gain insight on plant reproduction. Given the difficulties found to create my own team, I have to be member of other projects, and trying to cooperate with foreign Institutions interested in my work. I was accepted as guest researcher in the prestigious Dr. Ueli Grossniklaus' lab, expertise in plant reproduction, and especially in apomixis. I visited him since 2012, at the Institute of Plant Biology, University of Zurich. The challenge was to use the gametophyte of the not yet sequenced apogamous fern species *Dryopteris affinis* ssp. *affinis*, diploid and obligate. Deciphering the molecular clues behind apomixis would serve in the future to bypassing the segregation linked to sexual reproduction in species of agronomic interest. I was granted by the Spanish Government and my own University, and also supported by the University of Zurich and the project PRIME-XS-0002520 funded by the European Union's 7th Framework Program. We have published the first transcriptome of an apogamous fern species (Grossmann et al. 2017), by using proteogenomics. Then, a genomic approach by RNA-seq was also performed (Wyder et al 2020), focusing on the filamentous-to-prothallus growth transition, that revealed a total of 6,110 proteins up-regulated in two-dimensional gametophytes (undergoing apogamy), some of which are implicated in the regulation of meristem growth, auxin signalling, reproduction, and sucrose metabolism, among others. Recently, Fernández et al. 2020 have published the existence of large proteome and phytohormonal differences between the apogamous species and the sexual relative *D. oreades*, and recruited a list of candidate genes linked to reproduction pending to validation, which is one scope of this project. We have also annotated four hundred proteins, common to both species, with biological functions associated to biotic and abiotic stress, that represents an upcoming publication. The fern gametophyte is a good experimental system to deepen our understanding of plant reproduction, but also in evo-devo, environmental and climate change, medicinal, and other areas of great impact. The research done was subject of several publications, being in the most part of them first or last author, except in a few cases, despite to be invited to be last author by Prof. Ueli Grossniklaus. The production comprises 55 articles, including indexed high/medium impact journals (30), edited books with Springer (3), in 2011 (362,000 downloads), and in 2018 (29,000 downloads), and book chapters (13). I have attended 44 National and International meetings. I was IP on 1 regional, 2 national project, and 1 international project, and member of 8 national projects. I am reviewer of several ISI journals (Genes, Plant Journal, Planta, etc.). Evaluator of projects for ANEP/EVALUA, and for the National Science Foundation of EEUU. Guest editor of the issue Molecular Approach to Fern Development, for International Journal of Molecular Science. https://www.mdpi.com/journal/ijms/special_issues/Fern, and also in Frontiers of Plant Science.

My activity linked to industry is reduced to a couple of contracts in the past, with Plant Biotechnology S.L. in 1988, the Foundation Bosch i Gimpera in 1993, and a regional project in 2004-2006. Along these years, I have directed 3 Doctoral Theses (one currently), 4 Bachelor's Thesis, 3 DEA, 8 End Degree Project and 5 End Master Project. I have 4 sexennia, 4 quinquennia and 6 triennia. Member of the Spanish Society of Plant Physiology and the Spanish Society of In Vitro Culture of Plant Cells and Tissues. I am always ready to collaborate in outreach tasks whenever I have the opportunity, at regional, national or international scale. The most recent are: The international fascination day of



plants (2015), Pint of Science (2018), Talks of the Bioali Network (2020), etc. In parallel with the teaching and research activity, I engaged the position of Academic Secretary of the Faculty of Biology for five and a half year (2011-2017).

<https://fernandezelena9.wixsite.com/helenafernandez>