Irene Merino

PhD in Plant Biotechnology

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# Profile Summary

# PhD in Plant biotechnology with more than ten years of experience in molecular biology handling proteomic, genomic and transcriptomic techniques.

Up to now my research work has been mainly focused on different demanding topics within forest biotechnology: phytoremediation, biomass production, tree breeding selection, abiotic stress tolerance and plant propagation through somatic embryogenesis. During my postdoctoral training at SLU I also gained knowledge in statistical analyses and bioinformatics tools for sequencing data analysis.

I am passionate about applied science and I am always looking for opportunities to continue learning and acquiring new skills.

## Technical skills and knowledge

In vitro culture: plant cell culture, plant tissue culture, callus culture, shoot induction, somatic embryogenesis.

**Proteomics**: Protein extraction and quantification, SDS-PAGE (1-D, 2-D), Western blotting, ELISA, enzyme assays, Bradford assay, recombinant protein expression.

**Molecular biology**: Analysis of nucleic acids (extraction, purification, quantification and gel electrophoresis). cDNA synthesis and amplification. cDNA libraries construction and screening. Southern and Northern blotting. Gene cloning. PCR. Restriction enzyme digestion.

**Transcriptomic**: RNA extraction and quantification. qRT-PCR. RNA-seq data analyses.

**Microbiology**: Aseptic and sterile techniques, media preparation, bacterial cell culture, competent cells preparation, bacterial transformation (*Escolar* and *A.tumefaciens*), plasmid isolation and propagation.

**Transgenic**: Biolistic transformation, Agrobacterium-mediated plant transformation (*Arabidopsis thaliana*, hybrid poplar and Norway spruce).

**Microscopy**: Light microscopy, stereomicroscope.

**Bioinformatics**: genetic and proteomic Webtools, sequence alignments, phylogenetic studies, gene bank searching, clustering, blast database setup, basic knowledge of UNIX and R.

**Laboratory management duties**: Equipment and consumables purchases, budget administration and invoices. Introduction of the rules, protocols and use of equipment for new coming people.

## Experience

Postdoctoral Researcher	August 2014 - November 2016	SLU, Uppsala
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Working within the framework of the EU project ProCoGen (https://bfw.ac.at/rz/bfwcms2.web?dok=9020).

Responsible for conducting the experiments of the ProCoGen project focused on identifying relevant processes and transcripts involved in embryo development, by using transcriptomic (RNA-seq and qRT-PCR) and genetic tools (cloning and plant transformation). Experimental design. supervising and article writing.

Research scientist	February 2013 - April 2014	UPM, Madrid

Working within the framework of the EU project BIOXISOIL. "New approach to soil remediation by combining biological and chemical oxidation processes" (<u>http://bioxisoil.eu/en/</u>. See Action B1).

Responsible for selecting tree species for phytoremediation of the polluted area by performing small scale analysis in greenhouses. Plantation final design, contacting plant nurseries, supervision of the plantation on-site. Sampling collection, data analyses and report writing.

Research scientist	September 2010 - January 2013	UPM, Madrid

Working on different collaboration R&D innovation projects between the Polytechnic University of Madrid and several Spanish forestry companies.

Responsible for conducting experiments of one of the R&D projects aimed to improve tree growth and biomass production. And for the supervision of technicians, master and undergraduate students to carry out other research projects of the group.

PhD fellow September 2006 - September 2010 UPM, Madrid
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Working on my Thesis project. Using molecular, biochemical and bioinformatics tools to identify and functionally characterize major stress proteins in poplar and economically important species.

Others responsibilities include day-to-day management of the laboratory, ordering new equipment and consumables, contributing to the teaching of new methods and protocols to others PhD and undergraduate students.

Research internship	March 2005 - September 2006	UPM, Madrid

Working on a collaboration project between the Polytechnic University of Madrid and the forestry company Bosques Naturales, S.A (<u>http://bosquesnaturales.com/</u>).

Responsible for conducting the experiments to analyse the accumulation (by Western blotting) of stress proteins to be used as markers for the company tree breeding selection program.

## Education

- 2014 PhD in Plant Biotechnology. Polytechnic University of Madrid, Spain. Thesis title "Molecular chaperones and abiotic stress tolerance in tree species" (Summa cum laude).
- 2008 Research Proficiency Award (D.E.A). Forestry School of Madrid (UPM), Spain.
- 2007 Master in Biotechnology and Genetic Resources of Plants and their Associated Microorganisms. Agronomy and Forestry School of Madrid (UPM), Spain.
- 2002 BSc, School of Environmental Sciences. University of Cordoba, Spain

## Languages

Native **Spanish** speaker. Using **English** as working language.

# Publications

7 articles published in international journals, 5 book chapters, 5 abstract conference communications.

Full details at <u>www.irenemerino.com</u>.

### Awards

2014 XI Competition of Business Ideas ACTUA-UPM. "Increasing sustainability and efficiency of bioenergy production with forest plantations". Polytechnic University of Madrid, Spain.

#### Courses and seminars

- 2015 Training Workshop on "Bioinformatics and Trees". Austrian Research Centre for Forests (2 days)
- 2014 Introduction to Bioinformatics using NGS data. Uppsala University (40 h).
- 2006 Protein Analysis Seminar. Madrid (8 h)

## References

Prof. Sara von Arnold Department of Plant Biology Swedish University of Agricultural Sciences (SLU) Uppsala, Sweden. e-mail: <u>Sara.von.Arnold@slu.se</u> Prof. Luis Gómez Fernández. Department of Biotechnology. Centre for Plant Biotechnology and Genomics Polytechnic University of Madrid, Spain. e-mail: <u>luis.gomez@upm.es</u>

## Links

LinkedIn Profile: www.linkedin.com/in/irenemerinosierra

Personal web site: <u>www.irenemerino.com</u>