

Carla PINHEIRO

[Adjunct Professor FCT/UNL](#)

[Senior Researcher ITQB-UNL](#)

ResearcherID (WoK): [A-4053-2008](#) (> 1400 citations; h-index 11)

Scopus author ID: [54402224100](#)

<http://docentes.fct.unl.pt/cm-pinheiro/>

www.itqb.unl.pt/~pinheiro/cv.html



Core Management Committee and WG chair of the COST Action FA1306 "[The quest for tolerant varieties: Phenotyping at plant and cellular level](#)"

Editorial Board of [Frontiers](#) (review editor for the specialities Plant Proteomics; Agroecology and Land Use Systems)

Country Representative of the International Plant Proteomics Organization ([INPPO](#))

Member of the European Plant Science Organisation ([EPSO](#)) and European Technology Platform "[Plants for the Future](#)"

Member of the "[Sociedade Portuguesa de Bioquímica](#)" and of the "[Sociedade Portuguesa de Fisiologia Vegetal](#)"

Member of the [Society for Experimental Biology](#)

[Journal of Integrated -OMICS Associated Editor](#)

Date and place of Birth: 18.12.971, Huambo (Angola)

Nationality: Portuguese

Email: cm.pinheiro@fct.unl.pt, pinheiro@itqb.unl.pt

Academic Qualifications

2015. Science communication: people, projects, events. University of the West of England (online course)

2004. Biology PhD. Instituto de Tecnologia Química e Biológica

1998. Master of Science in Plant Physiology and Biochemistry. Universidade de Lisboa and Universidade Técnica de Lisboa

1994. Degree in Biology, with a major in Plant Biology. Universidade de Lisboa

Teaching and training activities

Adjunct Professor at FCT/UNL

- Plant Biology (2012 to date)
- General Biology (2013 to date)
- Laboratory Techniques in Biology (2014 to date)
- Cellular Biology (2014 to date)

Training officer of the [3to4 consortium](#) (Converting C3 to C4 photosynthesis for sustainable agriculture, 2012 to date)

ITQB PhD program

- Tutorials (2009-2012)
- Design of the Plant Metabolic Regulation curricular unit (2012-2013)

Invited lecturer at **ISA/UTL Functional Biology Master** (2008-2011)

Current Research Activities

- Photosynthetic performance and productivity
- Carbon metabolism (CO₂ fixation, metabolism, cellular distribution)
- Seed development, yield and nutritional quality
- Microbiota impact on growth and development

Main methods

- Proteomics and electrophoresis
- Protein fractionation and purification
- Enzymology
- Small molecules extraction and quantification (e.g. sugars, amino-acids, phenolics)
- Spectrophotometry (with assay miniaturization)
- Multivariate and univariate statistical analysis

Scientific Publications (2009 to date)

1. [Guerra-Guimarães L., Tenente R.T., Pinheiro C., Chaves I., Silva M.C.M.L, Cardoso F., Planchon S., Barros D.R., Renaut J., Ricardo, C.P. 2015. "Proteomic analysis of apoplastic fluid of *Coffea arabica* leaves highlights novel biomarkers for resistance against *Hemileia vastatrix*". *Frontiers in Plant Science* 6:478. doi: 10.3389/fpls.2015.00478](#)
2. [Zivy M., Wienkoop S., Renaut J., Pinheiro C., Goulas E., Carpentier S. 2015. "The quest for tolerant varieties: the importance of integrating "omics" techniques to phenotyping". *Frontiers in Plant Science* 6: 448. doi 10.3389/fpls.2015.00448.](#)
3. [Teixeira R.T., Fortes A.M., Pinheiro C., Pereira H. 2014. "Comparison of good- and bad-quality cork: application of high-throughput sequencing of phellogenetic tissue". *Journal of Experimental Botany* 65, 4887-05. doi10.1093/jxb/eru252](#)
4. [Guerra-Guimarães L., Vieira A, Chaves I., Pinheiro C., Queiroz V., Renaut J., Ricardo C.P. 2014. "Environmental modulation of leaf apoplast proteome of *Coffea arabica* plants grown under greenhouse conditions". *Journal of Proteomics* 104, 128-39. doi: 10.1016/j.jprot.2014.03.024](#)
5. [Fonseca C., Planchon S., Pinheiro C., Renaut J., Ricardo C.P., Oliveira M.M., Batista R. 2014. "Maize-induced allergy: each plant a different reaction?". *Proteome Science* 12, 17. doi:10.1186/1477-5956-12-17](#)
6. [Pinheiro C., Guerra-Guimarães L., David T.S., Vieira A. 2014. "Proteomics of Mediterranean woody species under stress: agronomical perspective and systematic](#)

- [review](https://doi.org/10.1016/j.envexpbot.2014.01.010)". Environmental and Experimental Botany 103, 117-27. doi:10.1016/j.envexpbot.2014.01.010
7. [Pinheiro C., Sergeant K., Machado, C., Renaut, J. & Ricardo C. "Two traditional maize inbred lines of contrasting technological abilities are discriminated by the seed flour proteome". Journal of Proteome Research 12, 3152–65. doi: 10.1021/pr400012t](#)
 8. [Zarrouk O., Francisco R., Pintó-Marijuan M., Brossa R., Santos R.R., Pinheiro C., Costa M., Lopes C. & Chaves M. "Impact of irrigation regime on berry development and flavonoids composition in Aragonez \(Syn. Tempranillo\) grapevine". Agricultural Water Management 114, 18-29. doi: 10.1016/j.agwat.2012.06.018.](#)
 9. [Pinheiro C., António C., Ortuño M.F., Dobrev P.I., Hartung W., Thomas-Oates J., Ricardo C.P., Vanková R., Chaves M.M., Wilson J.C. 2011. "Initial water deficit effects on *Lupinus albus* photosynthetic performance, carbon metabolism and hormonal balance: metabolic reorganisation prior to early stress responses". Journal of Experimental Botany 62, 4965-4974. doi:10.1093/jxb/err194](#)
 10. [Alves M., Moes S., Jenö P., Pinheiro C., Passarinho J., Ricardo C.P. 2011. "The analysis of *Lupinus albus* root proteome revealed cytoskeleton altered features due to long-term boron deficiency". Journal of Proteomics 74, 1351-1363. doi: 10.1016/j.jprot.2011.03.002](#)
 11. [Alves M., Chicau P., Matias H., Passarinho J., Pinheiro C., Ricardo C.P. 2011. "Metabolic analysis revealed altered amino acid profiles in *Lupinus albus* organs due to boron deficiency". Physiologia Plantarum 142, 224-232. doi: 10.1111/j.1399-3054.2011.01462.x](#)
 12. [Ricardo C.P.P., Martins I., Francisco R., Sergeant K., Pinheiro C., Campos A., Renaut J. and Fevereiro P. 2011. "Proteins associated with cork formation in *Quercus suber* L. stem tissues". Journal of Proteomics 74, 1266-1278. doi:10.1016/j.jprot.2011.02.003](#)
 13. [Pinheiro C. and Chaves M.M. 2011. "Photosynthesis and drought - can we make metabolic connections from available data?" Journal of Experimental Botany 63, 869-882. doi:10.1093/jxb/erq340 \(HIGHLY CITED PAPER in the PLANT & ANIMAL SCIENCE field\)](#)
 14. [Felisberto-Rodrigues C., Ribeiro I.C., Veloso M., Ricardo C.P. and Pinheiro C. 2010. "Germination under aseptic conditions of different ecotypes of wild beet \(*Beta vulgaris* L. ssp *maritima*\)". Seed Science and Technology 38, 517-521.](#)
 15. [Pinheiro C., Baeta J.P., Pereira A.M., Domingues H. and Ricardo C.P. 2010. "Diversity of seed mineral content in *Phaseolus vulgaris* L. germplasm". Journal of Food Composition and Analysis 23, 319–325. doi:10.1016/j.jfca.2010.01.005](#)
 16. [Sergeant* K., Pinheiro* C., Hausman J.-F., Ricardo C.P. and Renaut J. 2009. "Taking advantage of non-specific trypsin cleavages for the identification of seed storage proteins in cereals". Journal of Proteome Research 8, 3182-3190. doi: 10.1021/pr801093f \(* equal contribution\)](#)
 17. [Chaves* I., Pinheiro* C., Paiva J., Planchon S., Sergeant K., Renaut J., Graça J.A., Costa G., Coelho A.V. and Ricardo C.P.P. 2009. "Proteomic evaluation of wound-healing processes in potato \(*Solanum tuberosum* L.\) tuber tissue". Proteomics 9, 4154–4175. doi: 10.1002/pmic.200700649 \(* equal contribution\)](#)
 18. [Chaves M.M., Flexas J. and Pinheiro C. 2009. "Photosynthesis under drought and salt stress - regulation mechanisms from whole plant to cell". Annals of Botany 103, 551–560. doi:10.1093/aob/mcn125 \(HIGHLY CITED PAPER in the PLANT & ANIMAL SCIENCE field\)](#)

Invited Lectures

- 2015. Pinheiro C.** "Fenotipagem na produção vegetal e o seu papel na seleção de variedades multi-tolerantes". Congresso Brasileiro de Agrometeorologia – CBAgro, Brasil.
- 2013. Pinheiro C.** "Understanding drought stress in plants: analysis of multiple data sources". York Centre for Complex Systems Analysis Seminars, University of York, UK.
- 2012. Pinheiro C.** "Water deficit and plant performance: time scales of metabolic and physiological responses". XI Simposio Hispano-Portugués de Relaciones Hídricas en las Plantas, Sevilla, Spain.
- 2011. Pinheiro C.** "Maize seed proteome: combining 19th century biochemistry with 21st century tools." The 2nd International Congress on Analytical Proteomics, Ourense, Spain.
- 2009. Pinheiro C.** "Water deficit: when, how and where are alterations perceived?" XVIII Reunión de la Sociedad Española de Fisiología Vegetal (SEFV) & XI Congreso Hispano-Luso de Fisiología Vegetal, Zaragoza, Spain.
- 2009. Pinheiro C.** "Proteomics approach to water deficit: lessons from a legume". COST Dynamic Training School - Forest and water stress in a changing environment: from cell to ecosystems", Orvieto, Italy.
- 2009. Pinheiro C.** "Suberization proteomics - from the tree to the model". COST Dynamic Training School - Forest and water stress in a changing environment: from cell to ecosystems", Orvieto, Italy.

Current Research Projects

- Evaluation of a *Vitis vinifera* dehydrin (VvDhn) when expressed in tobacco plants: plant performance under water deficit. Portuguese-Tunisian Joint Research Programme (PT-coordinator). Tunisian partners - Rahma Jardak and Ahmed MLIKI (Centre de Biotechnologie de Borj Cédria).
- INNOVINE - Combining innovation in vineyard management and genetic diversity for a sustainable European viticulture. KBBE-2012-6-311775. Project Coordinator: Anne-Françoise Adam-Blondon (URGV-Plant Genomics Research).
- GENOSUBER - Cork Oak Sequencing Project. QREN. Project Coordinator: Sónia Gonçalves (CEBAL).
- Converting C3 to C4 photosynthesis for sustainable agriculture - 3to4. KBBE-2011-289582. Project coordinator: Professor Richard C. Leegood (Department of Animal and Plant Sciences of the University of Sheffield). 3to4.org

Research Projects (2008-2015)

- Search for candidate protein biomarkers of *Coffea arabica* resistance to *Hemileia vastatrix* (leaf rust). (PTDC/AGR-GPL/109990/2009). Project coordinator: Leonor Guimarães (IICT).
- Phenotypic plasticity of maritime pine to climate change. PTDC/AGRCFL/99614/2008.
- Phosphoproteomics of soybean seeds matured at Chernobyl. Scientific Cooperation Agreement between Portugal and Slovakia.
- IMPROVIRON: Improved PROductiVity and IRON nutrition in legume grains (PTDC/AGR-GPL/102861/2008).
- Genetic analysis of suber differentiation in *Quercus suber* L. (PTDC/AGR-AAM/100465/2008).
- Sustainable water use securing food production in dry areas of the Mediterranean region - SWUP-MED (KBBE-2008-212337).
- The wild relatives of Beta: genetic diversity assessment and biochemical studies (PTDC/AGR-AAM/73144/2006).
- Screening for stress responsive metabolites, B-18/08 Treaty of Windsor, Anglo-Portuguese Joint Research Programme.

Student supervision

2011 – to date. Supervision of one PhD student; Co-supervision of one PhD student;

2009 – to date. Short term trainer of four PhD students;

2007 – to date. Supervision of eight graduate students (funded projects);

2005 – to date. Supervision of ten undergraduate students;

Training-courses organisation

2015. “3to4 Summer School in Science Communication” with [Melissa Marshall](#) and [StreamProjects](#). Workshop in the frame of the 3to4 project. Florence, Italy.

2014. “3to4 Summer School in Metabolite profiling”, Max-Planck-Institute of Plant Molecular Physiology, Germany. Workshop in the frame of the 3to4 project

2013. “3to4 Summer School on Bioinformatics”. Nebion workshop in the frame of the 3to4 project. ETZ, Switzerland

2011. "Differential gel electrophoresis (ETTANTM 2D-DIGE) - Check it with your own samples" GE Healthcare training workshop, ITQB, Portugal

2010. "Advanced hands-on training in Refraction-2D (multiplex-fluorescence 2D gel electrophoresis) analysis" NHD workshop, ITQB, Portugal

2009. "Gel image analysis" Progenesis SameSpots hands-on training, ITQB, Portugal

Scientific referee & Thesis examiner

- **Main opponent in four PhD thesis** (Portugal, Spain, Australia)
- **Since 2004 referee in Scientific journals in the categories:**
 - Biochemical Research Methods** (e.g. Journal of Proteomics; Molecular & Cellular Proteomics; Journal of Proteome Research)
 - Multidisciplinary Sciences** (PLOS One)
 - Plant & Agricultural Sciences** (e.g. Journal of Experimental Botany; BMC Plant Biology; Journal of Plant Physiology; Physiologia Plantarum, Planta)
- **Referee in books**
- **Ad hoc reviewer for: Ad hoc reviewer for:**
 - FWO - Research Foundation Flanders (2015)
 - ERA.Net RUS Plus – Strengthening STI links between Russia and the European Research Area (2014)
 - BARD - The US-Israel Agricultural Research & Development Fund (2012)

Committees

- Organizing Committee of the 2nd InPPO Congress (scheduled for 2016 in Slovakia)
- Scientific and Organizing Committee of the COST meeting "Diving into integrative cell phenotyping through -omics" (scheduled for 2016 in France)
- Scientific Committee of the 1st general COST meeting "The quest for tolerant and stable varieties I: the role of omics" (2015), Gatersleben, Germany
- Scientific and Organizing Committee of the COST meeting "The quest for tolerant and stable varieties I: the role of omics" (2015), Carvavelos, Portugal
- Organizing Committee of the [XIII Congresso Luso-Espanhol de Fisiologia Vegetal](#) (2013), Lisboa, Portugal
- Scientific Committee of the [1st InPPO World Congress](#) (2014), Hamburg, Germany
- Management Committee of the [COST Action FA1306](#) "The quest for tolerant varieties: Phenotyping at plant and cellular level (2014 to date). Chair of the working group "Phenotyping at cellular level"

Other activities

Consulting activities for private and industrial partners.