Rubén Rellán Álvarez

- **Birthplace**: Oviedo, Asturias, Spain.
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- **Github**: github.com/rellan

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Career Summary and Education

Current Position:

Assistant Professor
National Laboratory of Genomics and Biodiversity, Cinvestav (2015-Present)
Irapuato, Guanajuato.
México.

Previous:

- **Postdoctoral Scholar** Department of Plant Biology (2012-2014) Carnegie Institution for Science at Stanford
  Advisor: José Ramón Dinneny
  Research Topic: Development of new methods to visualize root system architecture and gene expression of plants growing in soil.

- **Postdoctoral Scholar** Dept of Plant Nutrition (2011-2012)
  Aula Dei Experimental Station, Zaragoza, Spain
  Advisor: Javier Abadía
  Research Topic: Systems Biology of Iron Deficiency

- **PhD**: Plant Biology, Department of Plant Nutrition (2005-2011)
  Aula Dei Experimental Station, Zaragoza, Spain
  Advisor: Javier Abadía and Ana Álvarez-Fernández
  Research Topic: Long distance transport of iron and metabolomics of iron deficiency

- **Visiting Scientist** Genome Center (2006/07/08, 3 mo each year)
  University of California, Davis
  Advisor: Oliver Fiehn
  Research Topic: Plant Metabolomics

- **MSc** Plant Biotechnology, Dept. of Biology (2002-2005)

Universidad Autónoma de Madrid
Advisor: Luis Eduardo Hernández in collaboration with Ana Álvarez-Fernández
Research Topic: Heavy metal and oxidative stress

- **BS** Environmental Sciences (1998-2002)
  Universidad Autónoma de Madrid

Fellowships and Awards

- ASPB Annual Scientific Meeting Travel Award. Portland, Oregon (2014)
- Marschner Young Scientist Award. International Plant Nutrition Colloquium. Istanbul. Turkey (2013)
- ASPB Western Section Meeting Travel Award. Davis, California (2013)
- Postdoctoral Fellowship for Foreign Researchers (2012) Japanese Society for the Promotion of Science. (Declined)
- Long Term Postdoctoral Fellowship (2011) Federation of European Biochemical Societies. (Declined)
- Doctorate Extraordinary Price, Biology (2011) Autonomous University of Madrid.
- FPI PhD Fellowship (2005–2009). Spanish Ministry of Science.

Grants

- Conacyt Ciencia Básica Young Investigator. Natural Variation of lipid organization upon phosphorus deficiency. (PI, $ 90,000 USD)

Scientometrics Summary

- 20 Publications (2 Reviews)
- 1000 citations
- 9 first authorships
- h-index: 16
- h10: 18

More bibliographical info can be found here:

- Orcid-ID
- Google Scholar Webpage

Publications are organized by research themes. Numbers indicate chronological order of publication. Journal names were intentionally left blank but links are provided to Pubmed full texts.

Root Biology

20. Rellán-Álvarez R, Lobet G, Dinneny J.R. (2016) Environmental control of Root System Biology *In Press* Publisher Link

19. Rellán-Álvarez R, Lobet G, Hildner H, Pradier PL, Sebastian J, Yee MC, Yu G, La Rue T, Trontin C, Schrager A, Haney C, Nieu R, Maloof J, Vogel J, Dinneny JR (2015) GLO-Roots: an imaging platform enabling multidimensional characterization of soil-grown roots systems PubMed, Github repo

10. Rellán-Álvarez R, Andaluz S, Rodríguez-Celma J, Wohlgemuth G, Zocchi G, Álvarez-Fernández A, Fiehn O, López-Millán AF, Abadía J (2010) Changes in the proteomic and metabolic profiles of Beta vulgaris root tips in response to iron deficiency and resupply. PubMed

Long Distance Iron Transport and Metal Speciation

17. Schüler M, **Rellán-Álvarez R**, Fink-Straube C, Abadía J, Petra Bauer (2012) New functions of nicotianamine in the phloem-based transport of iron to sink organs, in pollen development and in pollen tube growth. PubMed

13. Abadía J, Vázquez S, **Rellán-Álvarez R**, El Jendoubi H, Abadía A, Álvarez- Fernández A, López-Millán AF (2011) Towards a knowledge-based correction of iron chlorosis. PubMed

9. Rellán-Álvarez R, Giner-Martínez-Sierra J, Orduna J, Orera I, Rodríguez- Castrillón JA, García-Alonso JI, Abadía J, Álvarez-Fernández A (2010) Identification of a tri-iron(III), tri-citrate complex in the xylem sap of iron-deficient tomato resupplied with iron: new insights into plant iron long-distance transport. PubMed

5. Rellán-Álvarez R, Abadía J, Álvarez-Fernández A (2008) Formation of metal- nicotianamine complexes as affected by pH, ligand exchange with citrate and metal exchange. A study by electrospray ionization time-of-flight mass spectrometry. PubMed

Metabolomics of the iron deficiency and resupply response

18. Sudre D, Gutiérrez-Carbonell E, Lattanzio G, **Rellán-Álvarez R**, Gaymard F,Wohlgemuth G, Fiehn O, Álvarez Fernández A, Zamarreño AM, Bacaicoa E, Duy D, Garcíamina JM, Abadía J, Philippar K, López-Millán AF, Briat JF (2013) Iron-dependent modifications of the flower transcriptome, proteome, metabolome and hormonal content in an Arabidopsis ferritin mutant. PubMed

15. Rellán-Álvarez R, El Jendoubi H, Wohlgemuth G, Fiehn O, Abadía A, Abadía J, Álvarez Fernández A (2011) Metabolite profile changes in xylem sap and leaves of Strategy I plants in response to iron deficiency and iron resupply. PubMed

14. Jiménez S, Ollat N, Deborde C, Maucourt M, **Rellán-Álvarez R**, Moreno MA, Gogorcena Y (2011) Metabolic response in roots of Prunus rootstocks submitted to iron chlorosis. PubMed

10. Rellán-Álvarez R, Andaluz S, Rodríguez-Celma J, Wohlgemuth G, Zocchi G, Álvarez-Fernández A, Fiehn O, López-Millán AF, Abadía J (2010) Changes in the proteomic and metabolic profiles of Beta vulgaris root tips in response to iron deficiency and resupply. PubMed

Development of metabolite targeted profiling methods

13. Rellán-Álvarez R, López-Gomollón S, Abadía J, Álvarez-Fernández A. (2011) Development of a new high-performance liquid chromatography electrospray ionization time-of-flight mass spectrometry method for the determination of low molecular mass organic acids in plant tissue extracts. PubMed

3. Rellán-Álvarez R, Hernández LE, Abadía J, Álvarez-Fernández A (2006) Direct and simultaneous determination of reduced and oxidized glutathione and homoglutathione by liquid chromatography-electrospray/mass spectrometry in plant tissue extracts. PubMed

Heavy metal and oxidative stress in plants

16. Navascués J, Pérez-Rontomé C, Sánchez DH, Staudinger C, Wienkoop S, **Rellán- Álvarez R**, Becana M. (2012) Oxidative stress is a consequence, not a cause, of aluminum toxicity in the forage legume Lotus corniculatus. PubMed

15. Sagardoy R, Morales F, **Rellán-Álvarez R**, Abadía A, Abadía J, López-Millán AF (2011) Carboxylate metabolism in sugar beet plants grown with excess Zn. PubMed

8. Rodríguez-Celma J, **Rellán-Álvarez R**, Abadía A, Abadía J, López-Millán AF (2010) Changes induced by two levels of cadmium toxicity in the 2-DE protein profile of tomato roots. PubMed

7. Pascual I, Azcona I, Aguirreolea J, Morales F, Corpas FJ, Palma JM **Rellán- Álvarez R**, Sánchez-Díaz M. (2010) Growth, yield and fruit quality of pepper plants amended with two sanitized sewage sludges. PubMed

6. Martí MC, Camejo D, Fernández-García N, **Rellán-Álvarez R**, Marques S, Sevilla F, Jiménez A (2009) Effect of oil refinery sludges on the growth and antioxidant system of alfalfa plants. PubMed

4. Ortega-Villasante C, Hernández LE, **Rellán-Álvarez R**, Del Campo FF, Carpena- Ruíz RO (2007) Rapid alteration of cellular redox homeostasis upon exposure to cadmium and mercury in alfalfa seedlings. PubMed

2. Rellán-Álvarez R, Ortega-Villasante C,Álvarez-Fernández A, Del Campo FF, Hernández LE (2006) Stress responses of *Zea mays* to cadmium and mercury. Link to Article

1. Ortega-Villasante C, **Rellán-Álvarez R**, Del Campo FF, Carpena-Ruíz RO, Hernández LE (2005) Cellular damage induced by cadmium and mercury in Medicago sativa. PubMed.

Conferences talks and invited seminars

Organized by research themes.

Root Imaging

19. XVI National Congress of Biochemistry and Plant Molecular Biology, IX Simposium Mexico-USA Queretaro, México. (2015). **Invited Seminar** Towards a root system level understanding of how plants adjust root funtcion and shape and integrate heterogeneous environmental cues.

18. Instituto de Biotecnología, UNAM, Cuernavaca, México. (2015). **Invited Seminar** Multidimensional mapping of root responses to soil environmental cues using a luminescence-based imaging system.

17. BASF 2014 Symposium on Unlocking Yield Potential in Soil. Limburgerhof, Germany (2014). **Invited Seminar**

16. Annual Scientific Meeting of the American Society of Plant Biology. Portland, USA (2014). **Rellán-Álvarez R**, Muh-Ching Y, Pradier PL, Winfield E, Geng Y, Dinneny J. The Ground Truth: Understanding Root Physiology in Soil Using a Novel Imaging Platform. **Selected Talk**

15. Annual Scientific Meeting of the Western Section of the American Society of Plant Biology. Santa Clara, USA (2014). **Rellán-Álvarez R**, Muh-Ching Y, Pradier PL, Winfield E, Geng Y, Dinneny J. Root structure and gene expression revealed in soil grown plants using a novel imaging system. **Selected Talk**

14. Biology Research Seminar for Undergrads. Santa Clara University. Santa Clara, California (2014). **Rellán-Álvarez, R**. From cells to root systems. Visualizing the Plant ´s hidden half**Invited Seminar**

13. PAG XXII Plant Phenotypes Workshop. San Diego, USA (2014). **Rellán-Álvarez R**, Muh-Ching Y, Winfield E, Geng Y, Dinneny J. Growth and Luminescence Observatory of Roots (GLO-Roots) A platform for the Analysis of Root Structure and Physiology in Soil **Invited Seminar**

12. BIO Seminar Series. California State University Monterrey Bay, Monterey, California (2013). **Rellán-Álvarez**. From cells to root systems. Visualizing the Plant ´s hidden half. **Invited Seminar**

11. Second International Workshop on Imaging Analysis Methods in the Plant Sciences, Nottingham, UK (2013) **Rellán-Álvarez R** Growth and Luminescence Observatory of Roots (GLO-Roots) A platform for the Analysis of Root Structure and Physiology in Soil. **Selected Talk**

10. XVII International Plant Nutrition Colloquium, Istanbul, Turkey (2013) Rellán-Álvarez R Growth and

Luminescence Observatory of Roots (GLO-Roots) A platform for the Analysis of Root Structure and Physiology in Soil. **Invited presentation. (Marschner Young Scientist Award)**

9. 30th Annual IPG Symposium on Root Biology, Columbia, Missouri. USA (2013) **Rellán-Álvarez R**, Muh-Ching Y, Geng Y, Dinneny J. Growth and Luminescence Observatory of Roots (GLO-Roots) A platform for the Analysis of Root Structure and Physiology in Soil. **Selected Talk**

Long Distance Iron Transport and Metal Speciation

8. 3rd Japan-China Joint Workshop on Plant Nutrition, Kurashiki, Japan. (2011) **Rellán-Álvarez R**, Vázquez S, Álvarez-Fernández A, Abadía J. Iron xylem transport, the long and short of it. **Invited Talk**

6. 6th International Franco-Spanish Workshop on Bio-Inorganic Analytical Chemistry, Pau, Francia (2010). Rellán-Álvarez R, Abadía J, Álvarez-Fernández A. Iron speciation in plant xylem sap using LC-ESI- TOFMS. **Selected Talk**

5. XVIII Reunión de la Sociedad Española de Fisiología Vegetal. XI Congreso Hispano-Luso de Fisiología Vegetal, Zaragoza, Spain (2009). Rellán-Álvarez R, Giner-Martínez-Sierra J, Orduna J, Orera I, Rodríguez-Castrillón JA, García-Alonso JI, Abadía J, Álvarez-Fernández A. Iron is transported as a tri-Fe(III), tri-citrate complex in plant xylem sap. **Selected Talk**

4. VII Jornada de Fisiología Vegetal. Barcelona, Spain (2009).**Rellán- Álvarez R**, Álvarez-Fernández A, Abadía J. Plant iron deficiency metabolomics. Identificación de compuestos organometálicos en tejidos vegetales mediante espectrometría de masas Invited Presentation

2. Soil Remediation Technologies meeting, Madrid, Spain (2006) Rellán- Álvarez R. La espectrometría de masas en el estudio de metales pesados en plantas. **Invited Presentation**

Metabolomics of the iron deficiency and resupply response

7. XV International Symposium on Iron Nutrition and Interactions in Plants, Budapest, Hungary (2010). **Rellán-Álvarez R**, El Jendoubi H, Wohlgemuth G, Abadía A, Fiehn O, Abadía J, Álvarez- Fernández A. Delving into iron deficiency metabolomics. **Selected Talk**

3. XVI International Plant Nutrition Colloquium. Sacramento, California, USA (2009) **Rellán-Álvarez R**, Andaluz S, Álvarez-Fernández A, Fiehn O, López-Millán AF, Abadía J. Changes in the proteomic and metabolic profiles of Beta vulgaris root tips in response to iron deficiency and resupply **Keynote**

Heavy metal and oxidative stress in plants

1. X Simposio Ibérico de Nutrición Mineral de Plantas, Lisboa, Portugal (2004) **Rellán-Álvarez R**, Villasante-Ortega C, Rosero DF, Del Campo FF, Hernández LE. Stress response of Zea mays to cadmium and mercury. **Selected**

Talk

Mentoring

- **Jonathan Ojeda.** National Laboratory of Genomics and Biodiversity. México (2016). Coadvisor **Master of Science**
- **Vladimir Torres.** National Laboratory of Genomics and Biodiversity. México (2016). Coadvisor **Master of Science**
- **Christian Escoto.** National Laboratory of Genomics and Biodiversity. México (2016). Coadvisor **Master of Science**
- **Pierre-Luc Pradier.** University of Bordeaux. Francia. (2014) Coadvisor. **Master of Science**
- **Emilie Winfield**. University of California Santa Cruz. California (2013). **Summer Undergraduate**
- **Pablo Díaz de Benito** Aula Dei Experimental Station. Zaragoza, Spain (2011). **PhD Student**

Service

- Member of the Academic Life Committee at Langebio
- Member of 10 masters and doctorate students committee from the Plant Biotechnology and Integrative Biology Program at Langebio.
- Organizer of Langebio Retreat 2015
- Organizer of the Round Table Seminar Series, Carnegie Institution for Science. (Sept 2012-2014)
- Journal peer review: Plant Physiology and Biochemistry, Frontiers in Plant Science, Plant Methods, PLOS One, Plant and Soil, Plant Science, Plant Physiology.

Outreach

- Aula Dei Experimental Station representative at the Aragón ´s Science Week and Science Fair (2004, 2006, 2009, 2010)
- Plant Fascination Day at the Plant Biology Department, Carnegie Institution for Science (2013)