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## Jose Maria Barrero

**Current position:** Team Leader (Cereal Gene Discovery). CSIRO Agriculture and Food

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<http://www.csiro.au/Outcomes/Food-and-Agriculture/Sprout-control-in-cereals.aspx>

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**Research Gate:** [https://www.researchgate.net/profile/Jose\\_Barrero/](https://www.researchgate.net/profile/Jose_Barrero/)

### SUPERIOR STUDIES

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- Bachelor Degree in Biology, University of Alicante (Spain), June 2000.
- Masters in Plant Genetics, University Miguel Hernandez (Spain), July 2002.
- PhD in Plant Genetics, University Miguel Hernandez (Spain), July 2005. Supervisors: Drs. José Luis Micol Molina and María Rosa Ponce Molet.

### SCIENTIFIC OR PROFESIONAL ACTIVITIES

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Nov/2011-Present	Research scientist	CSIRO Plant Industry (Canberra)
May/2006-Nov/2011	Postdoctoral researcher	CSIRO Plant Industry (Canberra)
Nov/2005-Feb/2006	Postdoctoral researcher	Division of Genetics. University Miguel Hernández (Elche, Spain)
Jun/2005-Nov/2005	Lab representative	Iberlab, S.A., Murcia (Spain)
Jul/2001-Jun/2005	Predocctoral fellow of the Spanish Ministry of Science	Division of Genetics. University Miguel Hernández (Elche, Spain)
Jun/2000-Jul/2001	Environmental Biologist	“Amat y Maestre” Technical Bureau (Alicante, Spain)

### RESEARCH LINES

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**1.- Seed Dormancy in *Arabidopsis thaliana* and cereals (Current research).**

CSIRO Plant Industry, Canberra (Australia). Funding agency: GRDC-CSIRO. Period: 1/07/2005-30/06/2015. Principal researcher: Dr. Frank Gubler

**2.- Genetic dissection of leaf morphogenesis in *Arabidopsis thaliana*.**

University Miguel Hernández (Spain). Division of Genetics. Funding agency: Spanish Scientific Council. Period: 1/12/2002-1/12/2005. Principal researcher: Dr. José Luis Micol Molina.

**3.- Characterization of genes of *Arabidopsis thaliana* involved in salinity tolerance.**

University Miguel Hernández (Spain). Division of Genetics. Funding agency: Spanish Scientific Council. Period: 1/12/2000-1/12/2003. Principal researcher: Dr. José Luis Micol Molina.

**PUBLICATIONS (PEER-REVIEWED)**

Career Total Publications: 22      Career Total Citations: 659      H-Index: 12

- 1.-Xu Q, Truong T, **Barrero JM**, Jacobsen JV, Hocart C, and Gubler F. A Role for Jasmonates in the Release of Dormancy by Cold Stratification in Wheat. **Journal of Experimental Botany**. DOI: 10.1093/jxb/erw172 (2016).
- 2.-Micol-Ponce R, Sánchez-García AN, **Barrero JM**, Micol JL and Ponce MR. Arabidopsis INCURVATA2 epigenetically regulates abscisic acid signaling and oxidative stress resistance. **Plant and Cell Physiology**. DOI: 10.1093/pcp/pcv132 (2015).
- 3.-**Barrero JM**, Cavanagh C, Verbyla KL, Verbyla AP, Huang BE, Rosewarne GR, Stephen S, Wang P, Whan A, Rigault P, Tibbits JFG, Hayden MJ, and Gubler F. Multi-NIL transcriptomic analysis of the major wheat dormancy QTL identifies the PM19-A1 and A2 genes. **Genome Biology**. 16, 1 (2015).
- 4.-Rodríguez MV, **Barrero JM**, Corbineau C, Gubler F, and Benech-Arnold RL. Dormancy in cereals (not too much, not so little): About the mechanisms behind this trait. **Seed Science Research**. 25, 99-119 (2015).
- 5.-**Barrero, JM**, Downie, AB, Xu, Q, and Gubler, F. A novel role for the barley CRYPTOCHROME1: the light control of grain dormancy and germination. **The Plant Cell**. 26, 1094-1104 (2014)
- 6.-Hägglund, P, Björnberg, O, Navrot, N, Jensen, JM, Maeda, K, Kirkensgaard, K, Shahpiri, A, Sultan, A, Bunkenborg, J, Gubler, F, **Barrero, JM**, Henriksen, A, Finnie, C and Svensson, B. The Barley Grain Thioredoxin System – an Update. **Frontiers in Plant Proteomics**. 4, 151 (2013).
- 7.-Jacobsen, JV, **Barrero, JM**, Hughes, T, Julkowska, M, Taylor, JM, Xu, Q, and Gubler, F. Roles for blue light, jasmonate and nitric oxide in the regulation of dormancy and germination in wheat grain (*Triticum aestivum* L.). **Planta**. 238, 121-138 (2013).
- 8.-**Barrero, JM**, Mrva, K, Talbot, MJ, White, RG, Taylor, J, Gubler, F, and Mares, DJ. Genetic, hormonal and physiological analysis of late maturity alpha-amylase (LMA) in wheat. **Plant Physiology**. 161, 1265-1277 (2013)
- 9.-Jover-Gil, S, Candela, H, Robles, P, Aguilera, V, **Barrero, JM**, Micol, JL and Ponce, MR. The microRNA pathway participates in leaf proximal-distal, venation and stomatal patterning in *Arabidopsis*. **Plant and Cell Physiology**. 53, 1322-1333 (2012).
- 10.-**Barrero, JM**, Jacobsen, JV, Talbot, MJ, White, RG, Swain, SM, Garvin, D and Gubler, F. Grain dormancy and light quality effects on germination in the model grass *Brachypodium distachyon*. **New Phytologist**. 193, 376-386 (2012).
- 11.-Griffiths, J, **Barrero, JM**, Taylor, J, Helliwell, CA and Gubler, F. *ALTERED MERISTEM PROGRAM 1* is involved in Development of Seed Dormancy in *Arabidopsis*. **PLoS ONE**. 6(5): e20408 (2011).
- 12.-**Barrero, JM**, Millar, AA, Griffiths, J, Czechowski, T, Scheible, WR, Udvardi, M, Reid, JB, Ross, JJ, Jacobsen, JV and Gubler, F. Gene expression profiling identifies two regulatory genes controlling dormancy and ABA sensitivity in *Arabidopsis* seeds. **Plant Journal**. 61, 611-622 (2010).
- 13.-**Barrero, JM**, Talbot, MJ, White, RG, Jacobsen, JV and Gubler, F. Anatomical and transcriptomic studies of the coleorhiza reveal the importance of this tissue in regulating dormancy in barley. **Plant Physiology**. 150, 1006-1021 (2009).
- 14.-**Barrero, JM**, Rodríguez, PL, Quesada, V, Alabadí, D, Blázquez, MA, Boutin, JP, Marion-Poll, A, Ponce, MR and Micol, JL. The *ABA1* gene and carotenoid biosynthesis are required for late skotomorphogenic growth in *Arabidopsis thaliana*. **Plant, Cell and Environment**. 31, 227-234 (2008).

- 15.-**Barrero, JM**, González-Bayón, R, del Pozo, JC, Ponce, MR and Micol, JL. INCURVATA2 Encodes the Catalytic Subunit of DNA Polymerase and Interacts with Genes Involved in Chromatin-Mediated Cellular Memory in *Arabidopsis thaliana*. **Plant Cell**. 19, 2822-2838 (2007).
- 16.-**Barrero, JM**, Rodríguez, PL, Quesada, V, Piqueras, P, Ponce, MR and Micol, JL. Both ABA-dependent and ABA-independent pathways govern the induction of NCED3, AAO3 and ABA1 in response to salt stress. **Plant, Cell and Environment**. 29, 2000-2008 (2006).
- 17.-**Barrero, JM**, Piqueras, P, González-Guzmán, M, Serrano, R, Rodríguez, PL, Ponce, MR and Micol, JL. A mutational analysis of the ABA1 gene of *Arabidopsis thaliana* highlights the involvement of ABA in vegetative development. **Journal of Experimental Botany** 56, 2071-2083 (2005).
- 18.-González-Guzmán, M, Apostolova, N, Bellés, JM, **Barrero, JM**, Piqueras, P, Ponce, MR, Micol, JL., Serrano, R and Rodríguez, PL. The short-chain alcohol dehydrogenase ABA2 catalyzes the conversion of xanthoxin to abscisic aldehyde. **Plant Cell** 14, 1833-1846 (2002).

### INVITED BOOK CHAPTERS

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1. Book title: Seed Genomics. Chapter title: High-throughput genetic dissection of seed dormancy. Pag. 111-122. Authors: **JM Barrero**, F Cavanagh, and F Gubler. Editor: Dr. Philip W. Becraft. Publisher: Wiley-Blackwell Publishing. 2013
2. Book title: Plant Developmental Biology – Biotechnological Perspectives, Vol. 1  
Chapter title: Seed Dormancy: Approaches for Finding New Genes in Cereals. Pag 361-381. Authors: **JM Barrero**, JV Jacobsen, and F Gubler  
Editors: Drs. Eng-Chong Pua and Michael Davey. Publisher: Springer. 2010

### PARTICIPATION IN SCIENTIFIC CONGRESSES (2000-2016)

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- Total communications: over 35      Only details of International conferences are given:
- 1.-**Barrero JM**, and Frank Gubler. High and low temperature effects on grain dormancy in wheat. *Keynote speaker*. 13th International symposium on Pre-harvest sprouting in Cereals. Perth (Australia). 2016
  - 2.-**Barrero JM**, Colin Cavanagh, Klara Verbyla, Josquin Tibbets, Matthew Hayden and Frank Gubler. The wheat genes PM19-A1 and A2 are involved in dormancy acquisition during grain maturation. National Seed Science Forum. Sydney (Australia). 2016
  - 3.-**Barrero JM**, Xu Q, Troung T, Hocart C, Jacobsen J, and Gubler F. The role for jasmonates in wheat dormancy release by stratification. *Invited speaker*. XXIV Plant and Animal Genome Conference. San Diego (USA). 2016
  - 4.-**Barrero JM**, Cavanagh C, Wang P, Stephen S, Verbyla A, Verbyla K, Huang E, Tibbets J, Hayden M, and Gubler F. Cloning a major QTL for grain dormancy. International Wheat Conference. Sydney (Australia). 2015
  - 5.-**Barrero JM**, Cavanagh C, Wang P, Stephen S, Verbyla A, Verbyla K, Huang E, Tibbets J, Hayden M, and Gubler F. Cloning a major QTL for grain dormancy. XXIII Plant and Animal Genome Conference. *Invited speaker*. San Diego (USA). 2015
  - 6.-**Barrero JM**, Cavanagh C, Wang P, Stephen S, Verbyla A, Verbyla K, Huang E, Tibbets J, Hayden M, and Gubler F. THE USE OF A MULTI-PARENTAL MAPPING POPULATION AND HETEROGENEOUS INBRED FAMILIES FOR CHARACTERIZING A MAJOR GRAIN DORMANCY QTL IN WHEAT. 11th Conference of the international Society of seed Science. Changsha (China). 2014

- 7.-**Barrero JM**, Downie AB, Jacobsen JV and Gubler F. Functional analysis of the light inhibition of germination in dormant barley grains. *Invited speaker*. 4th Workshop on molecular aspects of seed dormancy and germination. Paris (France). 2013
- 8.-**Barrero JM** and Gubler F. The use of Arabidopsis for cereal grain dormancy studies. *Invited speaker*. 24th International Conference on Arabidopsis Research Sydney (Australia).
- 9.-Cavanagh C, **Barrero JM**, Verbyla A, Verbyla K, Stephen S, Huang E, Tibbits J, Hayden M and Gubler F. Mapping of dormancy QTLs in a multiparental population and gene candidate analysis using HIFs families. *Invited speaker*. Wheat Breeding Assembly. Brisbane (Australia). 2013
- 10.-**Barrero JM**, Downie AB, White R, Jacobsen JV, and Gubler F. Hormonal and light regulation of grain dormancy in barley. *Oral presentation by Frank Gubler*. Plant reproduction for food. Melbourne (Australia). 2012
- 11.-**Barrero JM**, White, RG, Jacobsen, JV and Gubler, F. NCED1 has a principal role in wheat grain dormancy and integrates changes in hormone levels and environmental factors. *Invited Keynote speaker*. 12<sup>th</sup> International Symposium on Pre-harvest sprouting in Cereals. Red Deer (Canada) . 2011
- 12.-**Barrero JM**, Julkowska, M, White, RG, Hocart, C, Jacobsen, JV and Gubler, F. Hormonal regulation of dormancy in wheat grains. *Invited speaker*. 20<sup>th</sup> IPGSA Conference. Tarragona (Spain). 2010
- 13.-**Barrero JM**, Griffiths, J, Millar, AA, Jacobsen, JV, Hughes, T, Venables, I and Gubler, F. Genomic approaches to identifying dormancy genes in Arabidopsis and barley. *Invited speaker*. ComBIO. Canberra (Australia). 2008
- 14.-**Barrero JM**, Millar, A, Jacobsen, J, Waterhouse, P, Czechowski, T, Scheible, WR, Udvardi, M and Gubler, F. Regulation of dormancy and germination in barley and Arabidopsis. *Oral presentation by Frank Gubler*. International Plant Growth Substances Association. 19<sup>th</sup> Annual Meeting. Puerto Vallarta (Mexico). 2007
- 15.-**Barrero JM**, Millar, AA, Czechowski, T, Scheible, WR, Udvardi, M, Burgess, D, Jones, RL, Jacobsen, J and Gubler, F. New transcription factors affecting dormancy in *Arabidopsis* seeds. *Poster*. 18<sup>th</sup> International Conference on Arabidopsis Research. Beijing (China). 2007
- 16.-**Barrero JM**, Millar, AA, Czechowsky, T, Scheible, WR, Udvardi, M, Jacobsen, J and Gubler, F. Transcription factor analysis of dormant and non-dormant *Arabidopsis* seeds. *Poster*. 8<sup>th</sup> International Congress of Plant Molecular Biology. Adelaide (Australia). 2006
- 17.-**Barrero JM**, Ponce, MR and Micol, JL. The *INCURVATA2* gene is involved in chromatin-mediated cellular memory. *Poster*. 15th International conference on *Arabidopsis* research. Berlin (Germany). 2004
- 18.-**Barrero JM**, Piqueras, P, González-Guzmán, M, Serrano, R, Rodríguez, PL, Ponce, MR and Micol, JL. A mutational analysis of the *ABA1* gene of *Arabidopsis thaliana* highlights the involvement of ABA in vegetative development. *Poster*. 15th International conference on *Arabidopsis* research. Berlin (Germany). 2004
- 19.-**Barrero JM**, Piqueras, P, González-Guzmán, M, Apostolova, N, Serrano, R, Rodríguez, PL, Ponce, MR and Micol, JL. The phenotypes of *aba1* mutants suggest a role for ABA as a growth promoter in *Arabidopsis thaliana*. *Poster*. 7th International Congress of Plant Molecular Biology. Barcelona (Spain). 2003
- 20.-**Barrero JM**, Piqueras, P, González-Guzmán, M, Apostolova, N, Serrano, R, Rodríguez, PL, Ponce, MR and Micol, JL. A mutational analysis of *ABA1* in *Arabidopsis thaliana*. *Poster*. 13th International Conference on Arabidopsis Research. Seville (Spain) 2002
- 21.-**Barrero JM**, Ponce, MR and Micol, JL. Positional cloning of the *ICU2* gene. *Poster*.  
13th International Conference on Arabidopsis Research. Seville (Spain) 2002

## OTHER MERITS

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### **Relevant courses:**

- “Phylogenies and Genealogies of DNA: Construction and Applications”. 50 hours. Dr Julio Rozas and Dr Marta Riutort. University of Barcelona (Spain). July 2003.
- II National Course of Genetics. Organized by the Spanish Society of Genetics (SEG). University Pablo de Olavide (Sevilla, Spain). July 16-20 2004.
- Career and Leadership Development training: Coaching for Performance (2009), Challenging Conversations (2010), Planning and Organising (2012), Writing Scientific Papers Workshop (2012), HSE for Leaders (2012 and 2013), Bullying, Harassment and Discrimination (2012), Writing Winning Scientific Proposals (2013), Leadership Essentials (2014), Managing Mental Health at Work for Leaders (2015). Emerging Leaders workshop (2015). Organized by CSIRO, Canberra (Australia).

### **Supervisor and Teaching experience:**

- Teaching: 140 hours (2001-2005). Subjects of General Biology (Genetics), Genetic Engineering and Molecular Genetics of the Superior Studies of Environmental Sciences and Biochemistry, in the Miguel Hernández University (Spain).
- Co-supervisor of four under-graduated students of Environmental Sciences and Biochemistry (2001-2005). Miguel Hernández University (Spain).
- Supervision of under-graduates international internships at CSIRO:
  - *Marie Dorr, from Agro Paris Tech. January 2012 – July 2012.*
  - *Clara Rohrlisch, from ENSAT Toulouse. July 2013 – September 2013.*
  - *Corentin Losson, from Agro Paris Tech. March 2014 – July 2014.*
  - *Ronan Griot, from Agro Paris Tech. March 2016 – August 2016.*
- Co-supervisor of postdoc project at CSIRO:
  - *Dr Qian Xu, Hormonal regulation of grain dormancy. 2012 – 2015.*
- Supervisor of nine Technical Officers at CSIRO since 2006.

### **Awards:**

- Grant for attendance to the Congress of the Spanish Society of Genetics. Seville (Spain). September 2001.
- Grant for attendance to the course Phylogenies and Genealogies of DNA: Construction and Applications. Barcelona (Spain). July 2003.
- Grant for attendance to II National Course of Genetics. Seville (Spain). July 2004.
- ACORN Grant for early-career scientist. CSIRO Transformational Biology Capability. Project title: “Analysis of mRNA decay in grains during after-ripening”. Awarded with \$25000. January 2011.
- 2015 Inspire Travelling Award from the Perth Convention Bureau for organising the International Seed Science conference in 2020.
- Director Award: Breakthrough Innovation Award. CSIRO Agriculture. 2015.

### **Invited talks:**

- Invited speaker at the upcoming International Wheat Conference, September 2015, Sydney (Australia).
- Invited speaker at the Plant and Animal Genome conference, QTL Cloning workshop, 2015 San Diego (USA).
- GRDC Western Panel visit, Canberra. “Genetic control of Pre-Harvest Sprouting: Fine-mapping a major gene for grain dormancy”. March 2014.
- CSIRO Pre-breeding Day, Canberra. “Fine-mapping a major gene for grain dormancy”. August 2013.
- Invited speaker at Wheat Breeding Assembly, 2013, Brisbane (Australia).
- Invited speaker at 24<sup>th</sup> International Conference on Arabidopsis Research, 2013, Sydney (Australia).
- Invited speaker at the 4<sup>th</sup> Workshop on molecular aspects of seed dormancy and germination, 2013 Paris (France).
- Invited speaker at CombIO 2012, Adelaide (Australia).

- Keynote speaker at the 12<sup>th</sup> International symposium on Pre-harvest Sprouting in Cereals 2011, Red Deer (Canada).
- Invited speaker at the CSIRO Pre-breeding Day, 2010, Canberra (Australia).
- Invited speaker at 20<sup>th</sup> IPGSA Conference 2010, Tarragona (Spain).
- IBMCP-CSIC, Valencia (Spain). "Manipulación genética de la dormición de las semillas de cereales". June 2010.
- OCE CSIRO Science Day, Canberra. "Genomic approaches for finding new dormancy-related genes". November 2008.

***Position on editorial boards, advisory boards or major committees***

- Frequent manuscript reviewer for high impact journals such as Plant Journal, Plant Cell and Plant Physiology.
- Regional Representative for Australia and New Zealand in the International Seed Science Society (2014).
- CSIRO representative at the International Wheat Genome Sequencing Consortium (2015).