

Julio Isidro Sánchez, PhD.

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Current position

Senior Beatriz Galindo Researcher, Genomic assisted Breeding, Centre for Plant Biotechnology and Genomics- Technical University of Madrid.

Appointments held

2003-2007	Doctorate Studies, University of Granada
2007-2008	Technician Researcher at CSIC, Armilla, Granada, Spain.
2009-2011	Postdoctoral Fellow at the University of Western Ontario, Ontario, Canada.
2011-2012	Postdoctoral Fellow at SPARC Centre in Saskatchewan, Canada (NSERC).
2015-Jun15	Postdoctoral Fellow at Cornell University, USA.
Sep2015-2020	Lecturer Professor, UCD.
2020-Current	Senior Beatriz Galindo position, CBGP-UPM.

Education

2001	MSc in Biology Bachelor degree, University of Seville (Spain)
2005	MSc in Agrobiology, University of Granada (Spain)
2008	PhD in Crop Physiology, University of Granada (Spain)
2015	MSc in Plant Breeding, Cornell University (USA)
2017	Professional teaching certificate and the certificate of Continuing Professional Development from University College Dublin.

Grants, honors & awards

2020	Senior Beatriz Galindo scholarship (Investigador Distinguido) to work at the Centre for Plant Biotechnology and Genomics starting on May 2020.
2018-Current	Vicepresident of the Spanish Research Society in Ireland http://srsireland.org .
2012	Talentia Fellowship Program award scholarship by the Ministry for Innovation, Science and Enterprise in Andalusia, Spain.
2009	Professional scholarship award scholarship by the Ministry of Education and Science of Spain. Posdoctoral grant
2003	Professional scholarship award scholarship by the Ministry of Education and Science of Spain. Ph.D. grant

My Role in Research granted projects (Last 10 years)

2019-2024	H2020-European Grant. <i>Next generation variety testing for improved cropping on European farmland (Innovar).</i> https://www.h2020innovar.eu/about-innovar/ . €319K. Deputy WP leader of WP2. Tasks on WP2, WP3, WP4 and WP7.
2020-2023	Interreg-European Grant. <i>Healthy Oats – innovation in oat product development.</i> UCD, IBERS, Swansea University and Teagasc. €1 million. Project Coordinator. Julio Isidro Sanchez and Fiona Doohan.
2019-2022	European Grant. <i>WheatSustain.</i> Knowledge-driven genomic predictions for sustainable disease

- resistance in wheat. €174K. <https://www.suscrop.eu/projects-first-call/wheatsustain>. PI. Work Package 1. Julio Isidro-Sánchez
- 2017-2022 **Irish Grant.** *Oats for the future: deciphering potential of host resistance and RNAi to minimise mycotoxin contamination under present and future climate scenarios.* €67K. PI. Fiona Doohan, Julio Isidro-Sánchez, Naresh Magan, Ángel Medina.
- 2019-2022 **Irish Grant.** Developing multi-use barley to improve the organic Irish market. *Granted*-€96K. PI. Julio Isidro-Sánchez.
- 2016 **Irish Grant.** *PICS: Physiology Infrastructure for Crop Stress.* €295K. PI. Julio Isidro-Sánchez
- 2015-2019 **Canadian Grant.** *Canadian Triticum Applied Genomics (CTAG).* Scientific advisor of WPs.
- 2012-2017 **Canadian Grant.** *Improving Wheat Productivity under Conditions of Abiotic Stress. A proposed project as part of the National Research Council Wheat Flagship Program and the Canadian Wheat Improvement Consortium.* €14 million. Postdoctoral Project.
- 2009-2011 **European Grant.** *Identification and selection of traits that maximize biomass production as well as enhance the efficiency of biomass conversion by novel processes are critical for the viability of biorefineries.* AGRNEX2008No475. Postdoctoral Project.

Publications (Last 10 years)

JOURNAL ARTICLES

- 2021 Rio S, Akdemir D, Carvalho T, **Isidro y Sánchez, J.** “Assessment of genomic prediction reliability and optimization of experimental designs in multi-environment trials”. *Theoretical and applied Genetics*. In press. **IF: 4.439. Q1.**
- 2021 **Isidro y Sánchez, J** and Deniz Akdemir. “Training set optimization for sparse phenotyping in genomic selection”. *Frontier in Plant Science*. 12:715910. doi: 10.3389/fpls.2021.715910. **IF: 4.402. Q1.**
- 2021 Simon Rio, Luis Gallego-Sánchez, Gracia Montilla-Bascón, Francisco J. Canales, **Isidro y Sánchez, J** and Elena Prats. “Genomic prediction and training set optimization in a structured Mediterranean oat population”. *Theoretical and applied Genetics*, 134, 3595–3609. <https://doi.org/10.1007/s00122-021-03916-w>. **IF: 4.439. Q1.**
- 2021 Hilmarsson, H.S, Rio, S, **Isidro y Sánchez, J.** “Genotype by Environment Interaction Analysis of Agronomic Spring Barley Traits in Iceland Using AMMI, Factorial Regression Model and Linear Mixed Model”. *Agronomy* 2021, 11, 499. **IF: 1.689. Q3.**
- 2021 Akdemir D, Rio. S and **Isidro y Sánchez Julio.** “TrainSel: an R package for selection of training populations”. *Frontiers in Genetics, section Statistical Genetics and Methodology*. 12, p.607. **IF: 3.226. Q2.**
- 2020 **Isidro-Sánchez, J.**, D’Arcy Cusack, K., Verheecke-Vaessen, C., Kahla, A., Bekele, W., Doohan, F., Magan, N. and Medina, A., 2020. “Genome-wide association mapping of Fusarium langsethiae infection and mycotoxin accumulation in oat (Avena sativa L.)”. *The Plant Genome*, 13(2), p.e20023. **IF: 3.847. Q2.**
- 2020 Deniz Akdemir, Ron Knox and **Isidro-Sánchez Julio.** “Combining Partially Overlapping Multi-Omics Data in Databases Using Relationship Matrices”. *Frontiers of Plant Science*, 11:947.. **IF: 4.402. Q1.**
- 2019 Deniz Akdemir and **Isidro-Sánchez Julio.** “Design of training populations for genomic prediction”, *Scientific Report*. 9: 1446. **IF: 3.998. Q1.**
- 2019 Gul, A., Diepenbrock, et.al and **Isidro-Sánchez J.** “Mark E. Sorrells: Plant Breeder, Geneticist, Innovator, Mentor”, *Plant Breeding Reviews* 42: 1-38. **IF: 1.662. Q1.**
- 2019 Deniz Akdemir, William Beavis, Roberto Fritsche-Neto, Asheesh K.Singh, **Isidro-Sánchez J.** “Multi-objective optimized genomic breeding strategies for sustainable food improvement”, *Heridity* 27: 1. **IF: 3.432. Q1.**
- 2018 Kumar S, Knox R, Asheesh K.Singh, Depauw Ron, Campbell Heather, **Isidro-Sánchez J** et al “High-Density Genetic Mapping of a Major QTL for Resistance to Multiple Races of Loose Smut in a Tetraploid Wheat Cross”, *Plos One*13:2. **IF: 2.776. Q2.**
- 2017 **Isidro-Sánchez J**, Ben Perry, Asheesh K. Singh, Hong Wang, Ronald M. DePauw et al. “Effects of Seeding Rate on Durum Crop Production and Physiological Responses”, *Agronomy Journal*. 109:1981-1990. **IF: 1.683 Q3.**
- 2017 Akdemir D, Jannink JL, **Isidro-Sánchez J.** “Locally Epistatic Models for Genome-wide Prediction and Association by Importance Sampling”, *Genetics Selection Evolution* 109:1981-1990. **IF: 3.950. Q1.**
- 2016 Akdemir D, **Isidro-Sánchez J.** “Efficient Breeding by Genomic Mating”, *Frontiers of Genetics* 7:210. **IF: 3.26. Q1.**
- 2015 **Isidro-Sánchez J**, Jannink JL, Akdemir D, Poland J, Heslot N, Sorrells ME. “Training set optimiza-

tion under population structure in genomic selection“, *Theoretical and Applied Genetics* 128(1):145-58. **IF:3.900.Q1.**

- 2015 Akdemir D, **Isidro-Sánchez J**, Jannink J. “Optimization of genomic selection training populations with a genetic algorithm”, *Genetics Selection Evolution* 47(1):38. **IF: 3.950. Q1.**
- 2012 **Isidro-Sánchez J**, Knox R, Singh A.K, Clarke F.R, Krishna P, DePauw R.M, Clarke, J.M, Somers D. “Brassinosteroid leaf unrolling QTL mapping in durum wheat“ *Planta* 236(1):273-81. **IF: 3.347. Q1.**
- 2012 **Isidro-Sánchez J**,Knox R, Singh A.K, Clarke F.R, DePauw R.M, Clarke, J.M, Somers D. “Quantitative genetic analysis and mapping of leaf angle in durum wheat”. *Planta* 236(6):1713-23. **IF: 3.347. Q1.**
- 2011 **Isidro-Sánchez J**, Alvaro F, Royo C, Villegas D, Miralles D, Garcia del Moral,L. “Changes duration of developmental phases of durum wheat caused by breeding in Spain and Italy during the 20th century and its impact on yield”. *Annals of Botany* 107(8):1355-66. **IF: 3.449. Q1.**

BOOKS

- 2022 **Isidro-Sánchez J**, Rio Simon, and Akdemir Deniz. *Book Chapter: “Hands on Training Optimization in Genomic Selection”*. Submitted to Springer, Cham.
- 2020 **Isidro-Sánchez J**, Elena Prats, Catherine Howarth, Tim Langdon, Gracia Montilla-Bascón *Book Chapter: Genomic approaches for climate resilience breeding in Oats*. In *Genomic Designing of Climate-Smart Cereal Crops 2020* (pp. 133-169). Springer, Cham.
- 2016 **Isidro-Sánchez J**, Akdemir D, Burke J. *Book Chapter 32: “Genomic Selection”*. The World Wheat Book, Volume III, Lavoisier, Paris.
- 2016 **Isidro-Sánchez J**, Akdemir D, Montilla-Bascón, Gracia. *Book Chapter: Genome wide association analysis using R chapter in Oat*. Methods and Protocols. Springer.
- 2016 Montilla-Bascón, Gracia, Corey D. Broeckling, O. Hoekenga, E. Prats, M. Sorrells and **Isidro-Sánchez J**. *Book Chapter: Chromatographic methods to quantify nutritional components in oat*. Methods and Protocols. Springer.

CONFERENCES/TALKS/POSTERS

- 2020 Monogram network meeting. University of Dundee. Adventures in in multi-omics. Combining heterogeneous data sets via relationship matrices. Isidro-Sánchez Jand Deniz Akdemir. Talk and poster (Postponed-Covid19).
- 2019 Genomic Selection a tool for crop improvement. Irish Cereals Improvement Network, Galway, Ireland. Invited speaker. Isidro-Sánchez J.
- 2018 Plant and Animal Genome XVI Conference. January 13-17, 2018. Multi-Objective Optimized Breeding Strategies. Akdemir D, Beavis W, Singh A, Fristsche-Nieto R, Isidro-Sánchez J. Talk and Poster.
- 2017 Monogram network meeting. University of Bristol. Selection of training population set in genomic selection using STPGA. Invited Speaker.
- 2017 Plant and Animal Genome XV Conference. Identification of genomic regions determining the grain quality and agronomic characters in durum wheat. S. Kumar, R. E. Knox, J. Isidro, Y. Ruan, R. D. Cuthbert, C. J. Pozniak, A. NDiaye, B. Meyer, S. Berraies, A. K. Singh. Poster.
- 2016 The 10th International Oat Conference. How should I select the individuals of my training population to make selection in GS? Invited Speaker.
- 2015 Plant and Animal Genome XXII Conference. Optimization of Training Population Under Population Structure in Genomic Selection. Isidro J, Jannink JL, Akdemir D., Poland J, Heslot N, Sorrells M. Poster
- 2014 2st Canadian Wheat Symposium. Saskatoon SK. Field evaluation of a collection of wheat lines for performance under irrigated and rain-fed conditions in the semi-arid region of Saskatchewan Yong H, Knox R, DePauw R, Wang H, Cuthbert R, Clarke F, Singh, Isidro J, Cutler A, Selvaraj G. Poster.
- 2014 Cereals for Food, Feed and Fuel – Challenge for Global Improvement. Eucarpia. Environmental effects on the estimation of yield genetic gains of Mediterranean durum wheat. Joan Subira, Fanny Alvaro, Luis F. García del Moral, Julio Isidro, Conxita Royo. ITMI Joint Conference Wernigerode, Germany, June 29 – July 4, 2014
- 2013 Plant and Animal Genome XXI Conference. Quantitative trait loci for chlorophyll content in durum wheat. Isidro J, Knox R, Singh A.K., Clarke F, DePauw R, Clarke J, Somers D. Poster
- 2012 Plant and Animal Genome XX Conference. Leaf angle and its relationship with brassinosteroid response loci in durum wheat. Isidro J, Knox R, Singh A.K., Clarke F, DePauw R, Clarke J, Somers D. Poster.

- 2011 1st Congress of Cereal Biotechnology and Breeding. Szeged, Hungary. Brassinosteroid leaf un-rolling QTL mapping in durum wheat. Isidro J, Knox R, Singh A.K, Clarke F, DePauw R, Krishna P, Somers D. Poster.
- 2011 12th International Symposium on Pre-Harvest Sprouting in Cereals. Red Deer, Alberta, Canada. Evaluation of methods of measurement of pre-harvest sprouting resistance in durum wheat. R.E. Knox, F.R. Clarke, J.M. Clarke, S. Fox, R.M. DePauw, A.K. Singh, J.Isidro- Sánchez . Oral presentation and poster.
- 2011 1st Canadian Wheat Symposium. Winnipeg, Manitoba, Canada. Mapping quantitative trait loci for leaf angle in durum wheat. Isidro J, Knox R, Singh A.K., Clarke F, DePauw R, Clarke J, Somers D. Poster.
- 2011 1st Canadian Wheat Symposium. Winnipeg, Manitoba, Canada. Effects of plant density on durum crop production. Perry B, Isidro J, Singh A.K., Wang, H. , DePauw, R.M., Pozniak, C.J., Cuthbert, R.D., Beres, B.L., Johnson, E.N. Poster.

MEDIA ARTICLES/SCIENCE OUTREACH

- 2019 Participating on the Dublin Native Scientist - Promoting Science and Language Learning. <https://www.nativescientist.com/about>.
- 2019 Julio Isidro Sánchez. *Winter organic naked barley trial in co. Wexford*. Organic Matters magazine. Dublin. Ireland. <http://www.irishorganicassociation.ie/about/organic-matters-magazine/>
- 2019 Punto de enlace - RTVE-Julio Isidro-Sánchez investiga en Irlanda la selección genética de los cultivos - Enero 2019 <http://bit.ly/2QqPa6>
- 2018 Gestiona Radio. Investigadores por el mundo. <http://bit.ly/2TlJKfZ>

Teaching

- 2020-Current Genomic assisted breeding. Master in Computational Biology (Spain).
- 2020-Current Molecular markers and its application in plant breeding. Master in Biotechnology agroforestal (Spain).
- 2020-Current Breeding for Abiotic/Biotic and Quality traits. Master in Biotechnology applied to plant breeding (Spain).
- 2015-2020 Introduction of Crop Science-CPSC10010 (Ireland).
- 2015-2020 Introduction of Crop Science-CPSC10010 (Ireland).
- 2015-2020 Crop Breeding-CPSC30090 (Ireland).
- 2016-2020 Organic Agriculture-CPSC30050 (Ireland).
- 2015-2020 Fundamentals of Arable Crop Production-CPSC20090 (Ireland).
- 2016-2018 Emerging Crop Pathogens-CPSC30100 (Ireland).
- 2017-Current Agricultural Botany-HORT20002 (Ireland).
- 2017-2018 Plant Physiology Ecology-CPSC20040 (Ireland).
- 2017-2018 Current developments in Plant Biology-BOTN40200 (Ireland).
- 2015-Current Instructor of the international course on Genomic selection. www.gscourse.com.

PEER REVIEW WORK

- 2015-Current Nature, Crop Science, Euphytica, The Plant Genome, Irish Agricultural journal, Heredity, Theoretical Applied Genetics, Frontiers of Plant Science, Frontiers in Genetics, Agronomy, BMC Genomics, Plants, Planta, Plant Breeding
- 2018-Current Associated Editor of the section "Plant Breeding, Genetics and Genetic Resources" from the journal Spanish Journal of Agricultural Research.