Junrey Amas

Biography

Junrey completed his Bachelors degree in Agriculture (Plant Pathology) and Master of Science in Plant Breeding minor in Molecular Biology and Biotechnology at Central Mindanao University and the University of the Philippines Los Banos, respectively. He worked as a researcher in the Salinity and Problem Soils Tolerance Breeding Team of the International Rice Research Institute for 5 years before moving to the Philippines' Department of Agriculture as a Senior Science Research Specialist. He was accepted to pursue Ph.D. at the University of Western Australia and joined the Batley Lab in October 2019.

Research Interests

Plant-pathogen interaction; abiotic and biotic stress tolerance/resistance; marker-assisted plant breeding; genomics of plant disease resistance

Current Projects

**Mining for novel resistance against Blackleg (*Leptosphaeria maculans*) in diverse *Brassica* germplasm**

Summary: Blackleg, caused by *Leptosphaeria maculans*, is one of the most devastating fungal diseases affecting global canola (*Brassica napus*) production. In severe cases, yield reduction due to this pathogen can reach up to 90%, which translates to significant economic loss. Planting resistant varieties has been employed as a sustainable management option to circumvent such damage in canola production. However, the continuous deployment of the same resistance genes in cultivated varieties has led to the pathogen developing virulence mechanisms to overcome these resistance genes. The monitoring of blackleg populations indicates a breakdown of resistance in the genes *Rlm1, Rlm2, Rlm3, Rlm4, Rlm9* and *LepR3*, which are or have been present in Australian varieties. These resistance-breakdown events will have a negative impact in the canola industry if not immediately addressed. Hence, there is an urgent need to identify new sources of resistance to sustainably protect the canola industry from this devastating disease. In this project, we aim to identify novel qualitative and quantitative resistance in a wide array of plant materials previously described to express resistance, which include *B. napus* introgression lines, wild relatives, synthetic napus (SN), advanced and elite breeding lines. Approaches involving genomics and bioinformatics will be undertaken to subsequently identify, characterize, and verify new gene(s) for blackleg resistance. With the identification of these new genes, we hope to dissect further the complex mechanisms involved in blackleg resistance and reinforce breeding efforts to accelerate the development of resistant varieties.

Publications

**Journal Articles**

**Amas JC**, Anderson R, Edwads D, Cowling W and Batley J. Status and advances in mining for blackleg (*Leptosphaeria maculans*) quantitative resistance (QR) in oilseed rape (*Brassica napus*). Theor Appl Genet. 2021 Jun 9. doi: 10.1007/s00122-021-03877-0. Epub ahead of print. PMID: 34104999.

Cantila AY, Saad NSM, **Amas JC**, Edwards D, Batley J. Recent Findings Unravel Genes and Genetic Factors Underlying *Leptosphaeria maculans* Resistance in *Brassica napus* and Its Relatives. International Journal of Molecular Sciences. 2021; 22(1):313. <https://doi.org/10.3390/ijms22010313>

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Sriskantharajah, K., Osumi, S., Chuamnakthong, S., Nampei, M.,**Amas, J**, Gregorio, G., & Ueda, A. (2020). Acquired Salinity Tolerance in Rice: Plant Growth data set. Data in Brief.

Sriskantharajah, K., Osumi, S., Chuamnakthong, S., Nampei, M.,**Amas, J**, Gregorio, G., & Ueda, A. (2020). Contribution of Two Different Na+ Transport Systems to Acquired Salinity Tolerance in Rice. Plant Science, 110517–. <https://doi.org/10.1016/j.plantsci.2020.110517>

Mondal, S., Borromeo, T. H., Diaz, M. G. Q., **Amas, J**., Rahman, M. A., Thomson, M. J., & Gregorio, G. B. (2019). Dissecting QTLs for Reproductive Stage Salinity Tolerance in Rice from BRRI dhan 47. Plant Breeding and Biotechnology, 7(4), 302–312.

Pascual ED, Dela Viña CB, Mendioro MS, Hernandez JE, **Amas JC**, Sajise AG and Gregorio GB (2017). New QTL for Salt Tolerance at Seedling Stage in Rice var. Hasawi using Recombinant Inbred Lines. Philippine Agricultural Scientist.Vol 100. No.2

Meyer RS, Choi, JY, Sanches M, Plessis A, Flowers JM, **Amas JC**, Dorph K, Barretto A,Briana Gross B, Fuller D, Bimpong IK, Ndjiondjop MN, Hazzouri KM, Gregorio GB & Purugganan MD (2016). Domestication history and geographical adaptation inferred from a SNP map of African rice. Nature Genetics.

Chauhan BS, Abugho S, **Amas JC**, Gregorio GB. (2013). Effect of Salinity on Growth of Barnyardgrass (*Echinochloa crus-galli*), Horse Purslane (*Trianthema portulacastrum*), Junglerice (*Echinochloa colona*), and Rice. Weed Science Society of America.

Platten, J.D., Egadane, J., Vispo., N., Mohammadi,. R., **Amas, JC**, Katimbang, M., Ismail, A. and G. Gregorio. 2011. Phenotyping Protocols for Salinity and other Problem Soils. IRRI. Laguna, Philippines.

**Conference papers**

**Amas, J.**, Arceta M, Diaz MG., Hernandez, J and Gregorio G. (2017) Major Rice Seedling Salinity Tolerance QTLs mapped using Single Nucleotide Polymorphism (SNP) Markers. 24th Federation of Crop Science Societies of the Philippines (FCSSP) Scientific Conference.

**Amas. J**., Soledad, M., Tabudlong, R., Jabagat, G., Mamalis, R., Erana, M., Duque, B., Tonog, A., Tabanao, J., Cabalinan, I., Tusoy FW., Rosales F. and Wagas, A., (2017)Participatory Varietal Selection of Next-Generation Rice Varieties in Major Ecosystems in Caraga Region. 24th Scientific Conference of the Federation of Crop Science Societies of the Philippines 2017

Sajise AG., **Amas, J**., Vispo A.N., Arceta M., and Gregorio G. (2015)Salt Stress affects Grain Quality of Rice. 23rd Federation of Crop Science Societies of the Philippines (FCSSP) Scientific Conference.

Sajise AG., **Amas, J**., Vispo A.N., Arceta M., and Gregorio G. (2015)Next Generation High Yielding Salt Tolerant Rice Varieties. 23rd Federation of Crop Science Societies of the Philippines (FCSSP) Scientific Conference.

Sajise, A.G.C., **Amas, J**., Fuentes, A. and Gregorio, G.B (2014) Zinc deficiency tolerant rice: Where are they? 2014 International Rice Congress Bangkok, Thailand

Islam, R., Arceta, M., **Amas, J**., Sajise, A., Barretto, A. and Gregorio, G. (2014). Marker-assisted Background Selection (MABS): an Alternative strategy in developing stress-tolerant rice varieties. 2014 International Rice Congress- Bangkok, Thailand

Mohammadi, R., Sajise, A.G., Arceta, M., Vispo, A.N., **Amas, J.**, Gregorio, G.B., and Singh, R.K. (2014). Evaluating Salt Stress Tolerance of the Rice Lines Based on Selection Indices. 2014 International Rice Congress- Bangkok, Thailand

Reza M., Sajise, AG, Vispo A. Arceta M, **Amas J**, Singh RK and Gregorio G. (2014) Genetic Components and QTL Analysis for Salinity Tolerance in Rice (Oryza sativa L.) at the Reproductive Stage. 2014 Plant and Animal Genome Symposium, San Deigo California, USA

Kitazumi, A., **Amas, J**., Ramos, J., Alpuerto, J., Ohyanagi, H., Gregorio, G. Cruz, C., Jena, K., Kurata, N., and Reyes, Benildo. (2014). Analysis of the Low-Temperature Stress Transcriptome of the CC-Genome *Oryza officinalis*. 2014 Plant and Animal Genome Symposium, San Deigo California, USA

Yahagi, H., Tada, Yuma., Mekawy, A M. M., **Amas, JC**., Barretto, AD., Gregorio, GB., Ueda, A., Saneoka, H. (2013).Screening of low Na accumulating rice cultivars under salinity stress. 2013 Annual Meeting of the Japanese Society of Soil Science and Plant Nutrition

Awards

University of Western Australia International Fee Scholarship (UIFS) and University Postgraduate Scholarship Award (UPA)

Ranked 7th in 2010 Philippine National Licensure Examination for Agriculturists

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