# ISAIAH CATALINO M. PABUAYON

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De Los Reyes Lab
Department of Plant and Soil Sciences
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## EDUCATION

**Master of Science in Molecular Biology and Biotechnology, Minor in Genetics**

University of the Philippines-Los Baños

- Attended from June 2013 to 2015 (currently under leave of absence)

**Bachelor of Science in Biology, Major in Genetics**

University of the Philippines-Los Baños

- Attended from June 2007- April 2011
- Graduated *Cum Laude* (GWA: 1.58)
- Completed thesis entitled "*In Silico* Determination of Differences Between Cytochrome C Oxidase 1 DNA and Protein Sequences Among Selected Mammalian Groups" (Grade: 1.0)

## AFFILIATIONS

1. Samahan ng mga Mag-aaral ng Pisay (SAMAPI)
   - Member (2007-2011)
   - Academic Officer (2009-2010)
2. Phi Kappa Phi Honor Society
   - Member (Inducted 2011)
3. Phi Sigma Biological Honor Society
   - Member (Inducted 2011)
4. Gamma Sigma Delta Honor Society of Agriculture
   - Member (Inducted 2011)

## PROFESSIONAL EXPERIENCE

**Researcher – Molecular Biology (June 2011 – Present)**

- Plant Molecular Biology Laboratory, Plant Breeding, Genetics and Biotechnology Division, IRRI
- Proficient in plant DNA, RNA and protein extraction;
- Has experience in conducting real-time PCR, conducting protein assays using UV/Vis spectrophotometer, transgenic plant characterization using Southern blotting,

immunoblotting using semi-dry and wet blotting systems, experience in protein purification using FPLC and sample preservation via lyophilization;
- Handled practical lectures and demonstrations related to research conducted in the laboratory for visiting students.

## RESEARCH EXPERIENCE

1. **Molecular analysis of qDTY 12.1, a multi-environment, multi-background QTL for drought tolerance**
   - Managed greenhouse experiments involving parental lines and near isogenic lines, as well as greenhouse experiments involving transgenic lines molecular analyses
   - Conducted the expression analyses of candidate genes at different tissues and different treatments for the donor parent, recipient parent and the NILs, along with other recombinant lines and transgenic lines;
   - Conducted the expression analyses of different genes with relevance to root growth and drought tolerance, taken from two proteomics datasets;
   - Included in the team for the analysis of proteomics data sets between drought stressed treatments of the qDTY12.1 NIL and the QTL recipient parent;
   - Involved in the interpretation of metabolite analysis data from the qDTY12.1 NIL;
   - Conducted experiments in the protein profile analysis of *No Apical Meristem*, or NAM, the main candidate gene for qDTY12.1, leading to the discovery of SUMOylation as one of its main posttranslational modifications governing its function;
   - Conducted root measurements for parent lines, NILs and transgenics of *qDTY12.1.*

2. **Study of OsGLP8-2, a multifunctional germin-like protein crucial for rice endosperm development**

   - Conducted expression analysis using immunoblotting for OsGLP8-2;
   - Worked in profiling different activities of GLP8-2 at different stages of grain development;
   - Worked in the screening of transgenic lines and mutants, mainly for selection of single copy lines and homozygous lines for further analysis.

## PUBLICATIONS, POSTERS AND ORAL PRESENTATIONS

1. Raorane ML, Mutte SK, Varadarajan AR, **Pabuayon IM**, Kohli A (2013) Protein SUMOylation and plant abiotic stress signaling: in silico case study of rice RLKs, heat-shock and $Ca^{2+}$-binding proteins. Plant Cell Reports. 32:1053-1065.

2. Raorane ML, **Pabuayon IM,** Varadarajan AR, Mutte SK, Kumar A, Treumann A, Kohli A (2015) Proteomic insights into the role of the large-effect QTL *qDTY12.1* for rice yield under drought. Molecular Breeding. 35: 139.
3. Raorane ML, **Pabuayon IM,** Miro B, Kalladan R, Reza-Hazirezai M, Oane RH, Kumar A, Sreenivasulu N, Henry A, Kohli A (2015) Variation in primary metabolites in parental and near-isogenic lines of the QTL *qDTY*$_{12.1}$*:* altered roots and flag leaves but similar spikelets of rice under drought. Molecular Breeding. 35: 138.
4. Dixit S, Biswal AK, Min A, Henry A, Oane RH, Raorane ML, Longkumer T, **Pabuayon IM,** Mutte SK, Varadarajan AR, Miro B, Govindan G, Enriquez, BA, Pueffeld M, Sreenivasulu N, Slamet-Loedin I, Sundarvelpandian K, Tsai YC, Raghuvanshi S, Hsing YC, Kumar A, Kohli A (2015) Action of multiple intra-QTL genes concerted around a co-localized transcription factor underpins a large effect QTL. Scientific Reports. 5:15183
5. **Pabuayon IM**, Yamamoto N, Trinidad JL, Longkumer T, Raorane ML, Kohli A (2016) Reference genes for accurate gene expression analyses across different tissues, developmental stages and genotypes in rice for drought tolerance. Rice. 9(1):32
6. Poster: Effect of an amidohydrolase and a kinase on root architecture and drought tolerance by Vishnu Varthini, Lou Serafin Lozada, **Isaiah M Pabuayon**, Amelia Henry, Ajay Kohli and Toshisangba Longkumer. Presented at the 9$^{th}$ International Symposium of the International Society of Root Research (ISRR 9), 2015, in Canberra, Australia.
7. Poster: Comparative proteomics analysis of a QTL NIL: mechanisms for yield under drought in field-grown rice by Manish L Raorane, Adithi R Varadarajan, Sumanth Mutte, **Isaiah Pabuayon**, Angelo Peralta and Ajay Kohli. Presented at AOHUPO 2012 in Beijing, China. Won a Young Scientist Award.
8. Poster: Differential posttranslational modification confers increased yield under drought by **Isaiah Pabuayon,** Manish Raorane and Ajay Kohli. Presented at Interdrought IV, 2013 in Perth, Australia.
9. Poster: OsSWEET13, a member of nod/mtn3 protein family may aid in better transport of sugar in drought tolerant upland rice. **Isaiah Pabuayon**, Manish Raorane and Ajay Kohli. Presented at the Federation of Crop Societies of the Philippines, 2015, in Clark, Pampanga, Philippines.
10. Poster and Oral Presentation: Molecular dissection of the QTL DTY$_{12.1}$ for rice yield under drought stress: Transcription factor *no apical meristem*-mediated lateral root profusion as a functional explanation by Akshaya Biswal (Presentor), Rowena Oane, Aye Min, Manish Raorane, Adithi Varadarajan, Sumanth Kumar Mutte, Blesilda Enriquez, **Isaiah Pabuayon**, Angelo Peralta, Evelyn Mendoza, Arvind Kumar, Inez Slamet-Loedin and Ajay Kohli.

Presented at the Crop Sciences Society of the Philippines, 2011, in Puerto Princesa, Palawan, Philippines. Won as Best Paper in Upstream Category.

11. Oral Presentation: A proteome-based understanding of the Mechanisms for rice yield under drought by **Isaiah Pabuayon**, Manish L Raorane, Sumanth K Mutte, Adithi R Varadarajan, Arvind Kumar and Ajay Kohli. Presented at the Federation of Crop Science Societies of the Philippines, 2012, in Cagayan de Oro, Philippines.