CURRICULUM VITAE

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Associate Professor

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About

My research goals include understanding the genetic architecture of quantitative traits through linkage and QTL mapping, association mapping, and genomic selection. I want to help the implementation of efficient methods of molecular breeding, ensuring food and energy security for mankind.

I also want to provide well-trained and high-quality scientists for society. To achieve this, I coordinate a Statistical Genetics Lab, and my Lab currently has 8 PhD students, 2 MSc students, and 9 undergrads. I have former students working in excellent universities, research centers, and private companies.

1   Education

1986–1990 - Graduation, Agronomy, ESALQ/USP

1991–1993 - MSc in Genetics and Plant Breeding, ESALQ/USP

1993–1998 - PhD in Genetics and Plant Breeding, ESALQ/USP

2004–2006 - Postdoc in Statistical Genetics, Bioinformatics Research Center, North Carolina State University, Raleigh, USA

2   Positions

1995–1998 - Researcher, Sugarcane Breeding Program, Federal University of São Carlos, Brazil

1998–2002 - Professor Doctor, Department of Mathematics and Statistics, ESALQ/USP

2002–2017 - Professor Doctor, Department of Genetics, ESALQ/USP

2017–   - Associate Professor, Department of Genetics, ESALQ/USP

3   Relevant Research Results

3.1   Articles (10 out of 114)

Dias, K.O.G., dos Santos, J.P.R., Krause, M.D., Piepho, H.-P., Guimarães, L.J.M., Pastina, M.M., and Garcia, A.A.F. (2022) Leveraging probability concepts for cultivar recommendation in multi-environment trials. Theor Appl Genet, 135 (4), 1385–1399.

Dias, K.O.G., Piepho, H.P., Guimarães, L.J.M., Guimarães, P.E.O., Parentoni, S.N., Pinto, M.O., Noda, R.W., Magalhães, J.V., Guimarães, C.T., Garcia, A.A.F., and Pastina, M.M. (2020) Novel strategies for

genomic prediction of untested single-cross maize hybrids using unbalanced historical data. Theoretical and Applied Genetics, 133 (2), 443–455.

Mollinari, M., and Garcia, A.A.F. (2019) Linkage analysis and haplotype phasing in experimental autopolyploid populations with high ploidy level using hidden markov models. G3: Genes, Genomes, Genetics, 9 (10), 3297–3314.

Gerard, D., Ferrão, L.F.V., Garcia, A.A.F., and Stephens, M. (2018) Genotyping polyploids from messy sequencing data. Genetics, 210 (3), 789–807.

Margarido, G.R.A., Pastina, M.M., Souza, A.P., and Garcia, A.A.F. (2015) Multi-trait multi-environment quantitative trait loci mapping for a sugarcane commercial cross provides insights on the inheritance of important traits. Molecular Breeding, 35 (8), 175.

Garcia, A.A.F., Mollinari, M., Marconi, T.G., Serang, O.R., Silva, R.R., Vieira, M.L.C., Vicentini, R., Costa, E.A., Mancini, M.C., Garcia, M.O.S., Pastina, M.M., Gazaffi, R., Martins, E.R.F., Dahmer, N., Sforça, D.A., Silva, C.B.C., Bundock, P., Henry, R.J., Souza, G.M., van Sluys, M.-A., Landell, M.G.A., Carneiro, M.S., Vincentz, M.A.G., Pinto, L.R., Vencovsky, R., and Souza, A.P. (2013) SNP genotyping allows an in-depth characterisation of the genome of sugarcane and other complex autopolyploids. Scientific Reports, 3, 1–10.

Serang, O., Mollinari, M., and Garcia, A.A.F. (2012) Efficient exact maximum a posteriori computation for bayesian SNP genotyping in polyploids. PLoS ONE, 7 (2), e30906.

Pastina, M.M., Malosetti, M., Gazaffi, R., Mollinari, M., Margarido, G.R.A., Oliveira, K.M., Pinto, L.R., Souza, A.P., van Eeuwijk, F.A., and Garcia, A.A.F. (2012) A mixed model QTL analysis for sugarcane multiple-harvest-location trial data. Theoretical and Applied Genetics, 124 (5), 835–849.

Garcia, A.A.F., Wang, S., Melchinger, A.E., and Zeng, Z.-B. (2008) Quantitative Trait Loci Mapping and The Genetic Basis of Heterosis in Maize and Rice. Genetics, 180 (3), 1707–1724.

Garcia, A.A.F., Kido, E.A., Meza, A.N., Souza, H.M.B., Pinto, L.R., Pastina, M.M., Leite, C.S., da Silva, J.A.G., Ulian, E.C., Figueira, A., and Souza, A.P. (2006) Development of an integrated genetic map of a sugarcane (Saccharum spp.) commercial cross, based on a maximum-likelihood approach for estimation of linkage and linkage phases. Theoretical and Applied Genetics, 112 (2), 298–314.

3.2   Book Chapters (2 out of 12)

Mackay, I., Piepho, H.-P., and Garcia, A.A.F. (2019) Statistical methods for plant breeding, in Handbook of Statistical Genomics 4th edition, vol. 1, John Wiley Sons Limited, pp. 501–530.

Ferrão, L.F.V., Ortiz, R., and Garcia, A.A.F. (2017) Genomic Selection: State of the Art, in Genetic Improvement of Tropical Crops, 1ed., Springer International Publishing, pp. 19–54.

3.3   Software (2 out of 6)

2011 - *OneMap*: for constructing genetic maps in experimental crosses: full-sib, RILs, F2 and backcrosses

2008 - *WinQTLCartographer*: Module for QTL analysis of "MIM for Design III"

4   Current Research Grants

4.1   Principal Investigator

2021–2026 - Common bean response to the root knot nematode *Meloidogyne incognita*: QTL mapping, transcriptional profile and functional studies of candidate resistance genes.

FAPESP Thematic Grant (20/02755-2), Grantee by M L C Vieira.

4.2 Scholarship for Productive Scientists (CNPq)

2021–2026 - New models for genomic selection in autopolyploids considering G x E and non-additive effects.

CNPq Grant, level 1B (313269/2021-1)

5 Numbers

- 114 articles published in peer reviewed journals
- 12 book chapters
- 12 MSc students graduated
- 20 PhD students graduated
- 7 Postdocs supervised
- 7545 citations in Google Scholar (h=50)
- 3792 citations in the Web of Science (h=38)
- 4435 citations in Scopus (h=40)

6 Editorial Board

2013–   - Editor, *Theoretical and Applied Genetics*

2021–   - Editor, *Annals of Applied Biology*

2012–2015 - Associated Editor, *Scientia Agricola*

2015–2017 - Editor, *BMC Genetics*

7 Reviewer

7.1 Most relevant journals

Theoretical and Applied Genetics, Genetics, Genetics Research, Molecular Breeding, Genetics and Molecular Biology, Scientia Agricola, Hereditas, BMC Bioinformatics, Euphytica, PlOS ONE, G3: Genes, Genomes, Genetics.

7.2 Funding Agencies

FAPESP, CNPq and CAPES.

8 Awards (1 out of 16)

2012 - National Award provided by CAPES as advisor of the best PhD thesis for agricultural sciences in Brazil in 2011 (student: Dr. Maria Marta Pastina)

9 Selected Talks (5 out of more than 30)

2023 - Genetic Mapping in Autopolyploids. Advances in Genome Biology and Technology (AGBT) - Agriculture. San Antonio, Texas, USA.

2020 - Genetic Mapping in Autopolyploids. 7th Annual R. F. Baker Plant Breeding Symposium, Iowa State University, USA.

2019 - Building linkage maps in complex autopolyploids. Potato International Center (CIP), Peru.

2013 - Genetic Mapping in Autopolyploids, with Emphasis in Sugarcane. Wageningen University, The Netherlands.

2013 - Statistical Models for Genetic Mapping in Autopolyploids, with Applications in Sugarcane. School of Mathematics, Statistics and Applied Mathematics. National University of Ireland, Galway.

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