

HENRIQUE C. DE PAOLI

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MOLECULAR BIOLOGIST / RESEARCH SCIENTIST

Enthusiastic scientist with a proven track-record in molecular biology (genetics and biochemistry). Characterized unknown genes, manipulated plants and yeast by engaging a diverse range of techniques. Published a few papers in the field. Demonstrated ability in problem solving, developing new methodologies for gene regulation studies and capable of working individually as well as part of a team. Remarkable multi-task person, strategic-thinking and communicates effectively. Mentor and enable assistants, and is considered a leader in plant molecular biology honored with significant awards.

PRESENT POSITION

Jan/2013 – Postdoctoral Research Associate at OAK RIDGE NATIONAL LABORATORY

Plant Systems Biology Group (Group Leader: Gerald A. Tuskan)

Direct Supervisor: Dr. Xiaohan Yang, Division of Environmental and Biological Sciences.

Research Projects:

- I) (Synthetic Biology) Engineering and characterizing regulatory networks in C3/C4/CAM metabolisms;
- II) (Cell Wall Engineering) Screening and characterizing genes involved in cell wall metabolism.

EDUCATION

UNIVERSITY OF CALIFORNIA SAN DIEGO - UCSD

Postdoc in Cell & Developmental Biology

Supervisor: Dr. Yunde Zhao, Apr/2011-Dec/2012

UNIVERSITY OF SÃO PAULO/UCSD

Ph.D. in Biological Sciences – Genetics

Master of Science in Biological Sciences

Advisor: Dr. Maria Helena S. Goldman, Feb/2004-Jul/2010

Co-Advisor: Dr. Yunde Zhao, Feb/2009-Oct/2009

SÃO PAULO STATE UNIVERSITY

Postdoc in Biochemistry and Biotechnology

Supervisor: Dr. Maria Célia Bertolini, Ago/2010-Mar/2011

FACULDADE METODISTA IZABELA HENDRIX

Bachelor in Biology, Feb/2000- Dec/2003

Monograph Adv.: Dr. José Edson F. Figueiredo

EMBRAPA-CNPMS

TECHNICAL EXPERTISE

- Large scale gene expression
- Protein Expression/Purification
- DNA/Plasmid assembly
- Yeast strains manipulation
- Genome engineering with TAL effectors
- Protein and DNA pull-down assays
- Eletronic/Optical/Confocal microscopies
- Gene mapping in Arabidopsis genome
- Yeast assays (1-Hybrid; 2-Hybrid)
- Promoter characterization
- Bioinformatics
- Plant transformation
- Protoplast studies
- CHIP assays

CAREER HIGHLIGHTS AND ABILITIES

- * CAPES Fellow as a visiting Graduate Student at University of California San Diego (UCSD);
- * *Scientific impact*: invited to referee projects from grant agencies in Brazil; awarded cover of 1st author paper; invited to write a short communication;
- * *Excelet oral and writing skills*: entirely wrote all papers published as a first author (with active participation in the publication process); lectured and presented own work in renowned places: CSHL/SALK/UCSD/Harvard;
- * *Management experience*: Trained and supervised three undergrad students.

RESEARCH EXPERIENCE

POSTDOCTORAL FELLOW, UNIVERSITY OF CALIFORNIA SAN DIEGO: Dr. Y Zhao Apr/2011-Dec/2012

- Key member of Zhao lab responsible for manipulating yeast strains through insertion of plant promoter fragments for 1-hybrid assays, supporting own as well as collaborative projects;
- Collaborated with a group (Pruneda-Paz lab) to screen 17 yeast strains against a transcription factor library comprised of ≈1800 genes in yeast;

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- Developed new methodology for DNA-protein pull down, establishing collaboration with a proteomics group for HILIC/LC-MS analysis of the eluates;
- Characterized a few transcriptional regulators isolated from the yeast 1-hybrid screen and from the pull-down strategy in the auxin synthesis pathway;
- Conducted large scale plant transformation to identify enhancers of weak alleles deficient in auxin, by using both the activation tagging strategy and a transcription factor library cloned in *Agrobacterium*.
- Worked with genetic mapping in the Arabidopsis genome to track genes responsible for the enhancement of the auxin deficient phenotypes.
- Brought cohesion to the team, and collaborated with different research initiatives (generating 1 paper in collaboration, in preparation). Also supervised one student for 3 quarters.
- Conducted detailed analysis of promoters of two members of the YUCCA family, by reporter fusion of fragments, complementation in mutant backgrounds and by mapping transcription factors binding sites in different regions.
- Attended different meetings and conferences about bioenergy in plants and algae, held in San Diego/CA, during the years of 2011/2012.

POSTDOCTORAL FELLOW, SÃO PAULO STATE UNIVERSITY - UNESP: Dr. MC Bertolini, Jul/2010-Mar/2011

- Optimized the protein expression and purification (beads/chromatography system) of different transcription factors in different *E. coli* strains.
- Set up and managed *in vitro* protein pull-down assays, including the handling of sample preparation for mass spec.
- Conducted *in silico* analysis based on protein homology to predict transcriptional regulators involved in glycogen biosynthesis in *Neurospora crassa*.

RESEARCHER, UNIVERSITY OF SÃO PAULO: Dr. MHS Goldman Lab, Feb/2004-Jul/2010

Master thesis Title: “Analysis of gene expression in *Nicotiana tabacum* pistil: identification of specific genes by subtractive hybridization and cellular and temporal characterization”.

Doctoral thesis Title: “SCII, a new tissue-specific inhibitor of the cell proliferation related to auxin signaling”

- Pioneered different techniques in the Goldman’s lab as qRT-PCR, subtractive cDNA libraries, plant *in situ* hybridization, transient expression of fused tags (for BiFC and co-IP), fluorescent and scanning electron microscopies, T-DNA lines genotyping.
- Collaborated with colleagues, enabling people and co-publishing papers (generated 1 publication).
- Performed large scale analysis of gene expression, characterizing pistil-related genes and deciphered a new cell cycle regulator, which is tissue specific, and control pistil development, unraveling a new class of plant CDK inhibitors (generated 2 publications).
- Collaborated with the Agricultural Center of Campinas, IAC, cloning and analyzing the expression of the flowering gene LEAFY from *Coffea arabica*.
- Selected for participation in four international courses (Rio de Janeiro/Brazil, Ribeirão Preto/Brazil, CSHL/USA and Ubatuba/Brazil) learning techniques in plant research (including the use of plants as a source for bioenergy) and gene expression analysis.
- Mentored and trained two students.
- *Internship at UNIVERSITY OF CALIFORNIA SAN DIEGO for 8 months*: conducted independent research, analyzed auxin crosstalk with cell proliferation control in pistils and mastered genetic analysis by means of mutants (T-DNA lines).

RESEARCH ASSISTANT, BRAZILIAN AGRICULTURE COMPANY (EMBRAPA): Dr. JEF Figueiredo Lab/ FEDERAL UNIVERSITY OF MINAS GERAIS, 2001-2003

Monograph thesis Title: “Molecular characterization of microorganisms in the savanes ecosystem - *Coletotrichum graminicola*”.

- Characterized bacteria and fungi strains by RAPD (random amplification of polymorphic DNA) and SDS-PAGE (generated 1 publication); Participated in the protein purification process by electro-elution of proteins.
- Other experiences volunteering in two different laboratories conducting cancer research, to work with protein-protein interaction in a yeast 2-hybrid system.

AWARDS

- 🏆 Award for the best PhD thesis in Brazil at the field of Biological Sciences I during the year of 2010, granted by the Federal Agencies for Research Grants (CAPES/CNPQ). “*Prêmio Capes de Tese Edição 2011 – Ciências Biológicas I*” – Brasília, **Brazil, 2012**.

- ☞ *Cover Gallery*. Selected cover of the Scientific Journal “New Phytologist”, issue 190, June 2011. **England, 2011** (DePaoli et al., 2011). – 1^oAuthor.
- ☞ Best “2010 PhD Thesis” at the Genetics Program of the Medical School from the University of São Paulo, **Brazil, 2010** – (Nomination to the award “Prêmio Capes de Teses Edição 2011”).
- ☞ Award for the best work selected and orally presented at the “Brazilian Congress in Genetics”. “Prêmio Pós-Graduação Oral – Genética, Evolução e Melhoramento de Plantas”, Guarujá, **Brazil, 2010**. – 1^oAuthor.
- ☞ Honorable Mention for outstanding work in: I Brazilian Symposium of Molecular Genetics of Plants. Natal, **Brazil, 2007**. - 1^oAuthor.
- ☞ Award for the best abstract presented at the “Brazilian Congress in Genetics”. Awarded twice. “Prêmio Pós-graduação – Poster de melhor trabalho - Genética, Evolução e Melhoramento de Plantas”, Águas de Lindóia, **Brazil, 2007** (Co-author) and **2011** (Co-author).

PUBLICATIONS (updated Jan/2013)

- DE-PAOLI, H.C.**, DORNELAS, M.C., GOLDMAN, M.H.S. *SCII is a nuclear component of the auxin-dependent control of cell proliferation/differentiation in upper pistil*. **Submitted**.
- AVANCI, N.C., ANGELO, P.C.S., CALIXTO, C.P.G., MOLFETTA-MACHADO, J.B., **DE-PAOLI, H.C.**, QUIAPIM, A.C., GOLDMAN, G.H., BARKMAN, T.J., MURAKAMI, M.T., MORAES, L.A.B. & GOLDMAN, M.H.S. *Is MeJa a hormone with a new role in Solanaceae sexual reproduction? Characterization of a novel tobacco pistil-specific methyltransferase gene*. **Manuscript in preparation**.
- DE-PAOLI, H.C.**; GOLDMAN, G. H.; GOLDMAN, M. H. S. (2012). *SCII, the first member of the tissue-specific inhibitors of CDK (TIC) class, is probably connected to the auxin signaling pathway*. **Plant Signaling & Behavior** 7:1–6.
- DE-PAOLI, H.C.**; BRITO, M. S. ; QUIAPIM, A. C. ; TEIXEIRA, S. P. ; GOLDMAN, G. H. ; DORNELAS, M. C. ; GOLDMAN, M. H. S. (2011). *Stigma/style cell cycle inhibitor 1 (SCII), a tissue-specific cell cycle regulator that controls upper pistil development*. **New Phytologist** 190:882-895.
- QUIAPIM, A. C., BRITO, M.S., Malavazi, I., Bernardes, L.A.S., **DE-PAOLI, H.C.**, Goldman, G.H., Goldman, M.H.S. (2009). *Analysis of the Nicotiana tabacum stigma/style transcriptome reveals gene expression differences between wet and dry stigma species*. **Plant Physiology** 149:1211-1230.
- FIGUEIREDO, José Edson Fontes ; **DE-PAOLI, H. C.** ; COELHO, Vinicio Tadeu da Silva ; CASELA, Carlos Roberto ; FERREIRA, A. S. ; GUIMARÃES, Cláudia Teixeira ; GOMES, Eliane Aparecida ; BRESSAN, Wellington (2006). *Genetic diversity among colletotrichum sublineolum pathotypes isolated from sorghum (Sorghum bicolor)*. **Revista Brasileira de Milho e Sorgo** 5:304-318.

SELECTED ORAL PRESENTATIONS

- DE-PAOLI, HC et al.** SCII is a component of the nuclear signal transduction pathway engaging auxin signaling and cell division/differentiation control in upper pistil”. **Oral presentation**. 56th Congresso Brasileiro de Genética – Guarujá, SP, **BRAZIL, 2010**.
- DE-PAOLI, HC et al.** “SCII is a component of the nuclear signal transduction pathway engaging auxin signaling and cell division/differentiation control in upper pistil”. **Oral presentation**. 6th Cell Cycle Meeting – Salk Institute, San Diego, CA, **USA, 2009**.
- DE-PAOLI, HC et al.** “Suppression Subtractive Hybridization (SSH) to identify genes preferentially expressed in stigma/style of *Nicotiana tabacum*”. **Oral presentation**. XXXIV Congress of the Brazilian Society for Biochemistry and Molecular Biology – SBBQ, Águas de Lindóia, SP, **Brazil, 2005**.
- DE-PAOLI, HC et al.** “Assessment of the genetic diversity of *Colletotrichum graminicola* isolated from sorghum in Brazil based on sequencing analysis of 18S rDNA and 18S-28S intergenic spacer”. **Oral presentation**. I Biological Sciences Week, Belo Horizonte, **Brazil, 2001**.