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Professional experience

- 2018 - present: Assistant Professor, College of Agriculture LSU AgCenter/ Louisiana State University, US.
- 2014 - 2018: Post doctorate, Kansas State University, Plant Pathology, US.
Topics of research: 1) *Magnaporthe*-plasmodesmata-effector interactions. 2) Mechanism of translocation of *Magnaporthe oryzae* effector *in planta*. 3) *Magnaporthe oryzae triticum* pathotype biology during the infection process of wheat leaves and heads. (Mentor: Prof. Dr. Barbara Valent)
- 2013 - 2014: Post doctorate, Martin-Luther-University Halle-Wittenberg, Germany.
Topics of research: 1) Host-induced gene silencing of *Colletotrichum graminicola* essential genes protects maize from infection. 2) Host-induced gene silencing of *Fusarium culmorum* genes protects wheat from infection. (Mentor: Prof. Dr. Holger B. Deising)

Educational qualification

- 2009 – 2013: PhD in Plant Pathology, Martin-Luther-Universität Halle-Wittenberg, Germany.
Subject of dissertation: Infection structure-specificity of β -1,3-glucan synthase is essential for pathogenicity of *Colletotrichum graminicola* and evasion of β -glucan-triggered immunity. (Mentor: Prof. Dr. Holger B. Deising).
German Academic Exchange Service (DAAD) Fellow.
Final examination: 02.25.2013, *Summa cum laude* (1.0), highest mark.
- 2007 – 2008: Master in Plant Pathology. São Paulo University, Brazil.
Subject of thesis: Resistance assessment of potato cultivars against strains of *Streptomyces* spp., causal agent of potato deep scab. (Mentor: Prof. Dr. Sergio F. Pascholati).
São Paulo Research Foundation (FAPESP) Fellow.
- 2002 – 2007: Undergraduate studies in Agronomy, Major in Crop Production. São Paulo University, Brazil.

Visiting scientist

- 2017: **University of Exeter**, Exeter, UK. Dr. Nicholas J Talbot research group.
Topic of research: *Magnaporthe oryzae oryzae* pathotype biology during the infection process of rice lines expressing endocytosis markers.
- 2016: **Samuel Roberts Noble Foundation**, Ardmore, US. Dr. Richard Nelson research group.
Topic of research: Inoculation methods of Brome Mosaic Virus (BMV) in rice plants.
The application of virus-induced gene silencing in plant pathology.

Ongoing research projects:

- 2017 - 2019: On the mechanism of translocation of effectors into living rice cells by the blast fungus *Magnaporthe oryzae*. Funded by **NIFA-USDA** (National Institute of Food and Agriculture -United States Department of Agriculture).
- 2019: Screening of breeding lines against *Magnaporthe oryzae* races for efficient Blast disease management in Louisiana. Collaborator: Adam Famoso, LSU Rice Research Station; Niranjana Baisakh, LSU SPESS.
- 2019: Monitoring of the dynamics and genetic diversity of AVR genes of *Magnaporthe oryzae* population in Louisiana. Collaborator: Donald Groth, LSU Rice Research Station.
- 2019: Assessment of genetic diversity of *Fusarium* sp. strains causing *Fusarium* head blight in wheat". Collaborator: Steven Harrison, LSU SPESS.
- 2019: Two GTPases facilitates biotrophic infection of the maize anthracnose fungus, *Colletotrichum graminicola*. Collaborator: Holger B. Deising, Martin Luther University, Germany.
- 2020: Transcriptome analysis reveals specific-expression of effector genes during the biotrophic invasion of the wheat blast pathogen, *Magnaporthe oryzae*. Collaborator: Barbara Valent, Kansas State University.
- 2020: Functional characterization of effectors of *Colletotrichum graminicola*. Collaborators: Serenella Sukno, Michael R Thon and Ricardo Baroncelli, University of Salamanca, Spain.
- 2020: Understanding the efficacy and mechanism of biological control of toxigenic *Aspergillus flavus* in corn and cotton. Funded by **USDA** (United States Department of Agriculture). Collaborator: Jeromy Moore, USDA.

Synergistic activities

1. Graduate student mentoring committee:

- 1.1 Leonard Johnson (Master student; mentor Dr. Ham, LSU, Plant pathology graduate program). He successfully defended his master thesis on June 14, 2019.
- 1.2 Cesar Escalante (PhD student; mentor Dr. Valverde, LSU, Plant pathology graduate program);
- 1.3 Olanike Omolehin Olukunle (PhD student; mentor Dr. Chen, LSU, Plant pathology graduate program).
- 1.4 Jobelle Bruno (Master student; LSU PPCP; mentor Dr. Ham).
- 1.5 Samuel de Paula (PhD Student; University of Sao Paulo, Brazil; mentor Dr. Sergio Pascholati).
- 1.6 Alfonso Daniel Vitoria Arellano (PhD student; University Federal de Pelotas, Brazil; mentor Dr. Leandro Dallagnol). He successfully defended his PhD dissertation on May 29, 2020.

2. Organizational committees:

I recently joined four organizational committees at the department of Plant Pathology & Crop Physiology, including: Nematologist search committee, Courses and Curricula, Graduate Student Recruiting and Equipment Room –A465. Together with the faculty engaged, I am working to improve the courses of our graduate program. I am also working in better advertising our graduate program, helping to hire high quality/motivated graduate students.

3. Bachelor's student mentoring:

I am currently mentoring the following undergraduate students funded by the President's Aid program:

- (a) An Vu (2019), bachelors studies in Biology: trainee project entitle "Monitoring of rice blast races in Louisiana".
- (b) Tuong M Bui (2019), bachelors studies in Biology: trainee project entitle "Monitoring of genetic diversity of *Fusarium* sp. strains causing *Fusarium* head blight in wheat".

I am currently receiving the following bachelor's student funded by the Zamorano program:

- (a) Ludwin Arnolde Aguilar Gutierrez (2020), undergraduate studies in Agronomy: project entitle "Screening of breeding lines against *Magnaporthe oryzae* races for efficient Blast disease management in Louisiana".

I mentored the following Bachelor's students following the request of my supervisor:

- (a) Theresa Fichtner (2011): trainee project entitled: "Overexpression of fungal β -1.3-glucan-binding proteins in *Saccharomyces cerevisiae*". Martin Luther Universität Halle-Wittenberg Naturwissenschaftliche Fakultät III, Institut für Agrar und Ernährungswissenschaften Halle (Saale).

(b) Fuvia Biazotto (2006): trainee project entitled: “Secondary metabolites from *Streptomyces* spp, and their application for controlling Tobacco mosaic virus (TMV) in tobacco plants”. Department of Plant Pathology, University of São Paulo, Brazil. Funded by FAPESP (São Paulo Research Foundation).

4. Master’s student mentoring:

I am currently receiving the following master student funded by the Louisiana Agricultural Center program:

(a) Maybell Banting (2021), graduate studies in Plant Pathology: project entitle “Monitoring of rice blast races and screening of breeding lines for efficient disease management in Louisiana”.

I assisted with mentoring the following Master’s students at Martin-Luther-University Halle-Wittenberg by request of the major professor, Dr. Holger B. Deising:

(a) Anne Oertel (2012-2013): master thesis entitled “Generierung von *Colletotrichum higginsianum* Transformanten zur Analyse der Bedeutung der β -1,3-Glucansynthase während verschiedener Stadien der Infektion von *Arabidopsis thaliana*.” Martin Luther Universität Halle-Wittenberg Naturwissenschaftliche Fakultät III, Institut für Agrar und Ernährungswissenschaften Halle (Saale).

(b) Björn Sode (2010-2011): master thesis entitled “Screening von ATMT-Banken auf Virulenz-Mutanten von *Colletotrichum graminicola* und Identifizierung der T-DNA Integrationsstellen.” Martin Luther Universität Halle-Wittenberg Naturwissenschaftliche Fakultät III, Institut für Agrar und Ernährungswissenschaften Halle (Saale).

4. General service to the Kansas State University and wheat blast research communities:

(a) Development of standard operating procedures (SOPs) and risk assessments for molecular biology in the wheat blast lab (biosecurity level 3) at the Biosecurity Research Institute – BRI, Kansas State University, USA. In order to accomplish that, I was previously trained and certified for BSL-3 containment research.

(b) Assistance/mentoring with techniques in biosecurity and molecular biology for wheat blast researchers such as Christian Cruz, Giovana Cruppe, Javier Kiyuna, and the visiting researcher Joao Maciel.

(c) Assistance/mentoring with techniques in molecular biology for the plant pathology researchers such as Andres Reyes Gaige and Grethel Y. Busot (Dr. James Stack laboratory, KSU).

Grants Awarded

2020 - : Oliveira-Garcia, E. Understanding the efficacy and mechanism of biological control of toxigenic *Aspergillus flavus* in corn and cotton. **USDA** (United States Department of Agriculture) - Funding: \$ 20,000. (Submitted 19-10-2019; Accepted 23-07-2020).

2017-2019: Valent, B., Oliveira-Garcia, E., Park, S. On the mechanism of translocation of effectors into living rice cells by the blast fungus *Magnaporthe oryzae*. **NIFA-USDA** (National

Institute of Food and Agriculture -United States Department of Agriculture) - Funding: \$634,320.00. (\$584,584.60 to our program) 1-1-2017 to 12-30-2019 (submitted 06-1-2016).

2005-2006: Pascholati, S.F., Oliveira-Garcia, E. Resistance assessment of potato cultivars against strains of *Streptomyces* spp., causal agent of potato deep scab. Assessment of the impact of *Streptomyces* spp. toxins on disease development and on plant resistance induction. **Association of Potato Growers** - Funding: 6,502.50 R\$.

Honors and Awards

2014: **Nachwuchspreis** (Young Scientist Award for the best Ph.D. dissertation) from the Deutschen Phytomedizinischen Gesellschaft e.V. (German Society of Plant Pathology) (<http://dpg.phytomedizin.org/de/die-dpg/auszeichnungen-der-dpg/nachwuchspreis/>).

2008-2013: **DAAD** - German Academic Exchange Service – **Ph.D. Fellowship**.
Topic: Gene expression pattern and secretome of the maize pathogen *Colletotrichum graminicola* during biotrophic and necrotrophic infection phases.
Funding: 49,426.00 EUR.

2006-2007: **FAPESP** - São Paulo Research Foundation – **Master's Fellowship**.
Topic: Resistance assessment of potato cultivars against strains of *Streptomyces* spp., causal agent of potato deep scab. Assessment of the impact of *Streptomyces* spp. toxins on disease development and on plant resistance induction.
Funding: 30,230.40 R\$.

2005: **Dr. Ferdinando Galli** (Award for highest marks in the courses related to the Department of Plant Pathology of the graduate student group of 2002-2007) from the University of São Paulo, Brazil.

2005: **FAPESP** - São Paulo Research Foundation – **Undergraduate studies Fellowship**.
Topic: Resistance assessment of potato cultivars to strains of *Streptomyces* spp., causal agent of potato deep scab.
Funding: 3,859.20 R\$.

2003-2004: **FAPESP** - São Paulo Research Foundation – **Undergraduate studies Fellowship**. Topic: Assessment of inoculum viability and inoculation methods of *Puccinia Melanocephala* in sugarcane plants.
Funding: 7,718.40 R\$.

Accepted Patents

2016: Stahl, D., Temme, N., **Oliveira-Garcia, E.**, Deising, H.B. Host-induced gene silencing (HIGS) of *Colletotrichum graminicola* essential genes protects maize from infection.

- 1) Invention complex targeting *KRE5* and *KRE6* genes
International Application No.: PCT / EP2016 / 068418
- 2) Invention complex targeting GPI-Anchor genes
European Application No.: EP 16 178 896.3

2009: Pascholati, S.F., **Oliveira-Garcia, E.** Composition of *Streptomyces* spp. toxins and their use as resistance inducers in plants.

Brazilian Application No.: A01N8302

Reviewer of scientific journals

- a) Nature Communications (2020), Nature Publishing Group. (one article reviewed)
- b) Planta (2020), Springer Nature. (one article reviewed)
- c) PlosOne (2020). (one article reviewed)
- d) Plant Disease (2020), American Phytopathological Society (one article reviewed)
- e) The Plant Pathology Journal (2019), The Korean Society of Plant Pathology. (one article reviewed)
- f) Tropical Plant Pathology (2020), Springer International Publishing AG. (one article reviewed)
- g) Plant Disease (2019), American Phytopathological Society. (two articles reviewed)
- h) International Journal of Molecular Sciences (2019), Open Access Journal. (one article reviewed)
- i) The Plant Pathology Journal (2019), The Korean Society of Plant Pathology. (one article reviewed)
- j) Tropical Plant Pathology (2018-2019), Springer International Publishing AG. (one article reviewed)
- k) Phytopathology (2016-2017), American Phytopathological Society - (two articles reviewed).
- l) European Journal of Plant Pathology (2015-2016) - (two articles reviewed).
- m) Journal of Plant Diseases and Protection (2013) - (one article reviewed).

Teaching activities

- a) Seminar Series for the Department of Plant Pathology and Crop Physiology - PLHL 7052 – (Fall 2020) Louisiana State University, US.
- b) *Host-Parasite Interaction and Disease Resistance* - PLHL 7080 - (Spring 2020) Louisiana State University, US.
- c) *Fungal genetics* - PLPTH 927 - (Spring 2018) Kansas State University, US.
- d) *General microbiology* - LEF0321 - (2006-2007) São Paulo University, Brazil.
- e) *Physiology of plant pathogenic fungi* - LEF5750 - (2006) São Paulo University, Brazil.
- f) *Plant pathogenic bacteria* - LEF5720 - (2006) São Paulo University, Brazil.

Invited speaker in scientific meetings/ Department seminars

- 2020: **15th European Conference on Fungal Genetics**, Rome, Italy.
Topic: Clathrin-mediated endocytosis facilitates the internalization of cytoplasmic effectors of *Magnaporthe oryzae* into living cells.
- 2019: **Seminar Series of the Department of Plant Pathology and Microbiology**, Texas A&M, College Station, TX US.
Topic: Clathrin-dependent endocytosis mediated the internalization of cytoplasmic effectors of *Magnaporthe oryzae* into living cells.
- 2019: **30th Fungal Genetics Conference**, California, US.
Topic: Clathrin-dependent endocytosis mediated the internalization of cytoplasmic effectors of *Magnaporthe oryzae* into living cells.
- 2018: **International Congress of Plant Pathology - ICPP2018**, Boston, US. On the mechanism of translocation of *Magnaporthe oryzae* effectors into rice cells.
- 2017: **29th Fungal Genetics Conference**, California, US.
Topic: Towards understanding the mechanism of cytoplasmic effector translocation during biotrophic development of *Magnaporthe oryzae*.
- 2016: **13th European Fungal Genetics Conference**, Paris, France.
Topic: Understanding plant cell effector uptake in rice-*Magnaporthe oryzae* interactions.
- 2016: **Magnafest, Magnaporthe Satellite Meeting**, Paris, France.
Topic: Understanding plant cell effector uptake in rice-*Magnaporthe oryzae* interactions.
- 2015: **28th Fungal Genetics Conference**, California, US.
Topic: Infection structure-specific expression of lipase-like effector supports appressorial functionality and fungal cell-to-cell colonization of the rice blast fungus, *Magnaporthe oryzae*.
- 2014: **German Plant Protection Conference - DPG**. Aachen, Germany.
Topic: Infection structure-specific expression of β -1,3-glucan synthase is essential for pathogenicity of *Colletotrichum graminicola* and evasion of β -glucan-triggered immunity in maize.
- 2013: **German Plant Protection Conference - Julius-Kühn Institute - DPG**. Braunschweig, Germany.
- 2012: **German Plant Protection Conference - Julius-Kühn Institute - DPG**. Freizing, Germany.

Areas of expertise

Plant protection, Plant pathology, Plant disease diagnosis, Plant disease management, Epidemiology, Rural extension, Field-scale experiments, Plant-pathogen interactions, Fungal physiology and genetics, Bacteriology, Virology, Nematology, Molecular biology, Transcriptome, Bioinformatics, Gene deletion, RNA interference (RNAi), Host-induced gene silencing (HIGS), Virus-induced gene silencing (VIGS), Crispr Cas9 genome editing, Toxins characterization, and Statistics.

Languages

- 1) *English* - fluent (speaking, reading, writing)
- 2) *German* - fluent (speaking, reading, writing)
- 3) *Portuguese* - native language
- 4) *Spanish* - fluent (speaking, reading), intermediate (writing)

Continuing education courses

- 2018: Teaching Tools to Improve Student Learning and Teacher Evaluations – Workshop, Kansas State University, USA.
- 2017: Course of Student Supervision. Kansas State University, USA.
- 2017: Course of Manage Difficult Conversations. Kansas State University, USA.
- 2017: Course of Bioinformatics. Department of Plant Pathology, Kansas State University, USA.
- 2016: Course of Fungal Genetics. Department of Plant Pathology, Kansas State University, USA.
- 2015: Course of Plant Resistance to Diseases. Department of Plant Pathology, Kansas State University, USA
- 2015: Intensive Course of Biosecurity – Biosafety level 3. Biosecurity Research Institute, Kansas State University, USA.
- 2007: Course of transmission electron microscopy. Department of Plant Pathology, São Paulo University, Brazil.
- 2005: Course of scanning electron microscopy. Department of Plant Pathology, São Paulo University, Brazil.
- 2005: Course of Management of Tractors and Implements. São Paulo University, Brazil.
- 2005: Course of Sociology and Rural Extension. São Paulo University, Brazil.
- 2004: Course of Organic Crop Production. São Paulo University, Brazil.

Professional references

- Dr. Nicholas J. Talbot University Professor, University of Exeter, Exeter, UK
Northcote House, Exeter EX4 4QJ
Phone: + 44 (0)1392 723006 (Ex. PA: Sarah Warren); N.J.Talbot@exeter.ac.uk
- Dr. Barbara Valent University Distinguished Professor, Kansas State University
1712 Claflin Rd, 4002 Throckmorton Ctr., Manhattan, KS 66506
Phone: 785-532-1363 ; bvalent@ksu.edu
- Dr. Holger Deising University Professor, Martin-Luther-Universität Halle-Wittenberg
Betty-Heimann-Str.; D-06120 Halle, Germany
Phone: 0345-5522660 ; holger.deising@landw.uni-halle.de

Dr. Sergio Pascholati Full Professor / Former Department Head, Sao Paulo University
Avenida Pádua Dias, 11; 13418-900 Piracicaba, SP, Brazil
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Dr. Edgar Peiter University Professor, Martin-Luther-Universität Halle-Wittenberg
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Dr. John Leslei University Distinguished Professor, Kansas State University
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Phone: 785-532-1363 ; jfl@ksu.edu

List of scientific publications

2020. Oliveira Garcia, E., von Tiedemann, A., and Deising, H.B. (2020). The measure mix matters: multiple-component plant protection is indispensable for coping with the enormous genome plasticity of pathogenic microorganisms. **Journal of Plant Pathology** (under review).
2020. Oliveira-Garcia, E., Valent, B. (2020). Characterizing the secretion systems of *Magnaporthe oryzae*. **Methods in Molecular Biology, Springer**. (In Press).
2019. Zhao Peng, Z., Oliveira Garcia, E., Lin, G., Hu, Y., Dalby, M., Migeon, P., Tang, H., Farman, M., Cook, D., White, F.F., Valent, B. and Liu, S. (2019). Effector gene reshuffling involves dispensable mini-chromosomes in the wheat blast fungus. **PLOS Genetics** 15(9): e1008272.
<https://doi.org/10.1371/journal.pgen.1008272>
2018. Sakulkoo, W., Ose-Ruiz, M., Oliveira-Garcia, E., Littlejohn, G., Soanes, D., Correie, A., Hacker, C., Valent, B. and Talbot, N.J. A single fungal MAP kinase controls plant cell-to-cell invasion by the rice blast fungus. **Science**. 359: 1399–1403.
<https://science.sciencemag.org/content/359/6382/1399.abstract>
2016. Oliveira-Garcia, E and Deising, H. Attenuation of PAMP-triggered immunity in maize requires infection cell-specific down-regulation of the key β -1,6-glucan synthesis genes *KRE5* and *KRE6* in *Colletotrichum graminicola*. **The Plant Journal**, 87(4) DOI: 10.1111/tpj.13205.
<http://onlinelibrary.wiley.com/doi/10.1111/tpj.13205/abstract>
2016. Oliveira-Garcia, E and Deising, H. The Glycosylphosphatidylinositol Anchor Biosynthesis Genes *GPII2*, *GAA1*, and *GPI8* Are Essential for Cell-Wall Integrity and Pathogenicity of the Maize Anthracnose Fungus *Colletotrichum graminicola*. **Molecular Plant-Microbe interactions**. 29 (11): 889–901.
<http://apsjournals.apsnet.org/doi/full/10.1094/MPMI-09-16-0175-R>
2016. Chen, W., Kastner, C., Nowara, D., Oliveira-Garcia, E., Rutten, T., Zhao, Y., Deising, H.B., Kumlehn, J., Schweizer, P. Host-induced silencing of *Fusarium culmorum* genes protects wheat from infection. **Journal of Experimental Botany** 67(17):erw263, DOI: 10.1093/jxb/erw263.
<https://academic.oup.com/jxb/article/67/17/4979/2197605/Host-induced-silencing-of-Fusarium-culmorum-genes>
2016. Zheng, H., Chen, S., Chen, X., Liu, S., Dang, X., Yang, C., Giraldo, M.C., Oliveira-Garcia, E., Zhou, J., Wang, Z., Valent, B. The Small GTPase *MoSec4* Is Involved in Vegetative Development and Pathogenicity by Regulating the Extracellular Protein Secretion in *Magnaporthe oryzae*. **Frontiers in Plant Science**, <http://dx.doi.org/10.3389/fpls.2016.01458>.
2015. Oliveira-Garcia, E and Valent, B. How eukaryotic filamentous pathogens evade plant recognition. **Current Opinion in Microbiology**. 26: 92-101.
<http://www.sciencedirect.com/science/article/pii/S1369527415000764>
2014. Krijger J-J, Oliveira-Garcia E, Astolfi P, Sommerfeld K, Gase I, Kastner C, Kumlehn J, Deising HB (2014) Discovery of candidate genes for defeating fungal pathogens by Host-Induced Gene Silencing (HIGS). In: Dehne H-W, Deising HB, Fraaije B, Gisi U, Hermann D, Mehl A, Oerke EC, Russell PE, Stammler G, Kuck KH, Lyr H (eds) **Modern Fungicides and Antifungal Compounds**. Deutsche Phytomedizinische Gesellschaft, Braunschweig, pp 35-44.

<https://www.cabdirect.org/cabdirect/abstract/20153047543>

2014. Lange, M., Oliveira-Garcia, E., Deising, H. B., Peiter, E. A modular plasmid system for protein co-localization and bimolecular fluorescence complementation in filamentous fungi. **Current Genetics**, 60: 343-350.
<http://link.springer.com/article/10.1007%2Fs00294-014-0429-y>
2013. Oliveira-Garcia, E and Deising, H.B. Infection structure-specific expression of β -1,3-glucan synthase is essential for pathogenicity of *Colletotrichum graminicola* and evasion of glucan-triggered immunity in maize. **The Plant Cell**. 25: 2356–2378.
<http://www.plantcell.org/content/early/2013/06/27/tpc.112.103499>
2010. Cia, P., Benato, E., Pascholati, S.F., Oliveira-Garcia, E. Chitosan on the postharvest control of soft rot in 'rama forte' persimmon. **Bragantia**. 69: 745-752.
2009. Fischer, I.H., Teixeira, A.P.M., Toffano, L., Oliveira-Garcia, E. Reaction of potato cultivars to *Streptomyces scabies*, causal agent of deep common scab. **Summa Phytopathologica**. 39: 219-222.
2008. Pascholati, S.F., Oliveira-Garcia, E., Dalio, R, Koehl, J, Osswald, W. Elicitins and thaxtomins: roles in plant-pathogen interactions. **Revisao Anual de Patologia de Plantas**. 16: 365-400.
2007. Oliveira-Garcia, E., Casagrande, M.V., Massola Jr., N.S. An inoculation method for sugarcane rust in leave segments. **Fitopatologia Brasileira**. 32: 71-74.
2007. Oliveira-Garcia, E., Casagrande, M.V., Rago, A.R., Massola Jr., N.S. Preservation of uredospores of *Puccinia melanocephala*, the causal agent of sugarcane rust. **Summa Phytopathologica**. 33: 38 - 42.

