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# RESEARCH OPPORTUNITIES



## **Universidade Federal de Lavras**

UFLA is a Brazilian public university, founded in 1908, that has achieved outstanding performance in national and international research rankings. It is ranked 115th in the QS Latin America 2023 ranking (<https://ufla.br/noticias/institucional/15469>). In the QS World University Rankings by Subject 2023, in the field of Agricultural and Forestry Sciences, it ranked in the 101-150 range, being considered one of the top 150 universities in the world in these subjects (<https://ufla.br/noticias/institucional/15840>). UFLA is also the second most sustainable university in Brazil and the third in Latin America (<https://ufla.br/noticias/institucional/15613>). In the THE Impact ranking, UFLA appears in the overall range of 801-1000, having been ranked in eight of the 17 Sustainable Development Goals: SDG 1 - No Poverty (401-600), SDG 2 - Zero Hunger and Sustainable Agriculture (201-300), SDG 3 - Good Health and Well-being (801-1000), SDG 4 - Quality Education (801-1000), SDG 6 - Clean Water and Sanitation (201-300), SDG 7 - Affordable and Clean Energy (201-300), SDG 17 - Partnerships for the Goals (801-1000), and SDG 9 - Industry, Innovation, and Infrastructure (601-800).

UFLA currently has 152 Research Groups certified in the National Council for Scientific and Technological Development (CNPq) Research Groups Directory, working on 754 research lines, and developing 364 funded research projects. It has 789 faculty members (around 85% with a doctoral degree), including 166 recipients of the Productivity in Research and Technology scholarship from CNPq (21%). Scientific production is increasing, with an average of 3 articles per faculty member per year published in the last five years.

In graduate education, UFLA currently offers 33 academic master's programs, 23 doctoral programs, and 8 professional master's programs. Of these, 9 programs are considered internationally excellent - Levels 6 and 7 in the Coordination for the Improvement of Higher Education Personnel (CAPES) assessment system - and another 12 programs are Level 5, distributed across various knowledge areas. There are 2,751 postgraduate students enrolled in different courses. In scientific and technological initiation, UFLA has 923 undergraduate students conducting research projects, with 668 receiving scholarships. Additionally, UFLA has 145 high school students participating in research projects with scholarships. In 2022, the UFLA Undergraduate Research Congress (CIUFLA) received 1,179 submitted abstracts.

UFLA also stands out in the context of innovation and technology through its Scientific and Technological Park. The construction had an investment of 38 million Brazilian Reais, and the total area of the park exceeds 78,000 square meters. UFLA's Scientific and Technological Park houses research and development centers of anchor companies in the R&D sector. The areas of expertise of these companies are Biotechnology, Information Technology, Environmental Management/Agribusiness, and Engineering.

UFLA has a physical infrastructure that ranks among the best in Brazil. In recent years, there has been significant expansion of the physical structure and acquisition of equipment, with UFLA securing approximately 100 million Reais in funding from funding agencies, public agencies, private companies, and the Ministry of Education (MEC).



## ALEXANDRE WAGNER SILVA HILSDORF

Department: Animal Science (Zootecnia)

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### **Brief description of research line:**

I've been working on genetics applied to aquaculture, fish genetic resources conservation, and fisheries. Our research group uses molecular markers and genomics to improve the performance of farming fish using genetic breeding methodologies. Also, such tools are applied to characterize genetic resources of fresh and marine water fish and other aquatic organisms to develop management approaches to conserve them.

### **Brief description of potential areas of partnership with Chinese universities (indicate potential researchers and universities):**

Professor Zexia Gao

Huazhong Agricultural University (HZAU)

Wuhan, Hubei, China

College of Fisheries

<https://ic.hzau.edu.cn/>

[gaozexia@hotmail.com](mailto:gaozexia@hotmail.com)

### **Three references of recent articles published by the group (with DOI):**

NIE, C.H., WAN, S.M., CHEN, Y.L., HUYSEUNE, A., WU, Y.M., ZHOU, J.J., HILSDORF, A.W.S., WANG, W.M., WITTEN, P.E., LIN, Q. AND GAO, Z.X., 2022. Single-cell transcriptomes and *runx2b*<sup>-/-</sup> mutants reveal the genetic signatures of intermuscular bone formation in zebrafish. *National Science Review*, 9(11): nwac152. <https://doi.org/10.1093/nsr/nwac152>

HILSDORF, A.W.S., ULIANO-SILVA, M., COUTINHO, L.L., MONTENEGRO, H., ALMEIDA-VAL, V.M.F., PINHAL, D., (2021). Genome assembly and annotation of the tambaqui (*Colossoma macropomum*): an emblematic fish of the Amazon River basin. *Gigabyte*. [doi.org/10.46471/gigabyte.29](https://doi.org/10.46471/gigabyte.29)

NUNES, J.R.S., PÉRTILLE, F., ANDRADE, S.C.S., PERAZZA, C.A. VILLELA, P.M.S., ALMEIDA-VAL, V.M.F., GAO, Z.-X., COUTINHO, L.L., HILSDORF, A.W.S. (2020). Genome-wide association study reveals genes associated with the absence of intermuscular bones in tambaqui (*Colossoma macropomum*). *Animal Genetics*. 51, p.899 -909. [doi.org/10.1111/age.13001](https://doi.org/10.1111/age.13001).





## ANGÉLICA SOUSA DA MATA

Professor at UFLA

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### **Brief description of research line:**

I have experience in the field of Statistical Physics and Computational Physics, with a focus on complex systems such as the characterization and modeling of complex networks, phase transitions, general dynamic processes like epidemics, diffusion, synchronization, and rumor propagation, data science, and big data.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

I am interested in working with complex systems applied to ecology, quantum information, and neuroscience. I also want to continue exploring dynamic processes in complex networks, such as epidemics. Additionally, I have an interest in working with network characterization using centrality measures, dismantling the giant component, and other related techniques. Lastly, I aim to investigate real-world processes using big data and data science methods.

I am open to collaborating with different professionals working in the field of complex systems. I believe there are researchers at the University of Beijing, Zhejiang University, and Shanghai University who work in this area.

As an example, I can mention: LIU Xiao Fan from the City University of Hong Kong, Yanqing Hu from the Southern University of Science and Technology, and Zi-Ke Zhang from Zhejiang University.

### **Three references of recent articles published by the group (with DOI):**

Ferraz de Arruda, G., Jeub, L.G.S., Mata, A.S. et al. From subcritical behavior to a correlation-induced transition in rumor models. *Nat Commun* 13, 3049 (2022). <https://doi.org/10.1038/s41467-022-30683-z>

Angélica S. Mata; An overview of epidemic models with phase transitions to absorbing states running on top of complex networks. *Chaos* 1 January 2021; 31 (1): 012101. <https://doi.org/10.1063/5.0033130>

Thomas Peron, Bruno Messias F. de Resende, Angélica S. Mata, Francisco A. Rodrigues and Yamir Moreno, Onset of synchronization of kuramoto oscillators in scale-free networks, *Phys. Rev. E* 100, 042302, 2019, <https://doi.org/10.1103/PhysRevE.100.042302>



### **Details of the infrastructure and equipment:**

Physical Facilities: Computing Laboratory of the Department of Physics at UFLA, as well as the institution's multi-user scientific computing laboratory (LCC).

Equipment: The computer cluster consists of 1 server (CPU: 1x Intel(R) Core(TM) i7-2600K CPU 3.40GHz; 6 GB RAM, 64-bit, DDR3, 1333MHz; Storage: 1x HD - 1.8 TB (home), 1x HD - 500 GB (backup)) and 19 compute nodes, including: 8 nodes with CPU: 1x Intel(R) Core(TM) i7-2600K CPU 3.40GHz; 16 GB RAM, 64-bit, DDR3, 1333MHz; 1 node with CPU: 2x Intel(R) Xeon(R) X5650 CPU 2.67GHz, 24 GB RAM, 64-bit, DDR3, 1333MHz; 3 nodes with CPU: 2x Intel(R) Xeon(R) CPU E5-2640 2.50GHz, 32/8/110 GB RAM, 64-bit, DDR3, 1333MHz; and 7 nodes with CPU: 1x Intel(R) Core(TM) i7 CPU 3.60GHz, 24 GB RAM, 64-bit, DDR4



## **BRUNO HENRIQUE GROENNER BARBOSA**

Professor at UFLA

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### **Brief description of research line:**

Our research group have implemented Artificial Intelligence tools in several real engineering problems. Among them, the implementation of soft sensors stands out, that is, the development of models based on Machine Learning for predicting process variables. We have successfully applied these techniques in intelligent vehicles, for state estimation (e.g. localization, forces, and velocities prediction) and fault detection.

### **Brief description of potential areas of partnership with Chinese universities:**

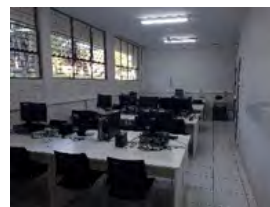
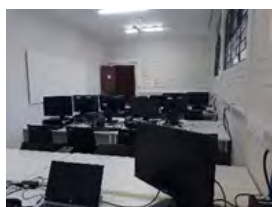
We are currently doing research with State Key Laboratory of Automotive Simulation and Control, Jilin University, with Prof. Nan Xu, with whom we already have published some papers regarding intelligent tires and nanogenerators for vehicular applications. A cooperation agreement between our universities and other Chinese universities could help leverage our joint research projects and also open new research opportunities.

### **Three references of recent articles published by the group (with DOI):**

- Barbosa, B.H.G.; Xu, N.; Haskari, H.; Khajepour, A. Lateral Force Prediction using Gaussian Process Regression for Intelligent Tire Systems. *IEEE Transactions on Systems Man Cybernetics-Systems*, v. 52 (8), p. 5332 - 5343, 2022. JCR: 11.5 DOI: 10.1109/TSMC.2021.3123310

- Haskari, H.; Xu, N.; Barbosa, B.H.G.; Huang, Y.; Chen, L.; Khajepour, A.; Chen, H.; Wang, Z. L. Intelligent systems using triboelectric, piezoelectric, and pyroelectric nanogenerators. *Materials Today*, v. 52, p. 188-206, 2022. JCR: 26.9 DOI: 10.1016/j.matmod.2021.11.027

- Morais, G. A. P.; Marcos, L. B.; Barbosa, F. M.; Barbosa, B.H.G.; Terra, M. H.; Grassi Jr, V. Robust path-following control design of heavy vehicles based on multiobjective evolutionary optimization. *Expert Systems with Applications*, v. 192, p. 116304, 2022. JCR:8.7 DOI: 10.1016/j.eswa.2021.116304







## CARLOS EDUARDO CASTILLA ALVAREZ

Professor at UFLA

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### Brief description of research line:

Use of H<sub>2</sub> in Internal Combustion Engines of Agricultural Machinery and Equipment

Internal combustion engines (ICE) with diesel cycle are the main power source in agriculture. The increasing demands for decarbonization and emission reduction in agricultural ICEs are urgently driving the use of alternative fuels with low or zero carbon content. In this context, hydrogen produced from renewable sources is recognized as a viable alternative fuel for use in ICEs due to its low emissions, as well as being an abundant resource with a relatively low price. For this reason, a partnership is proposed to develop a prototype ICE that operates with hydrogen as an alternative to diversify and optimize the energy matrix of agricultural producers.

### Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):

The partnership between the universities is aimed at exchanging information and technology to carry out the conversion of agricultural machinery and equipment to dual fuel engines with diesel and gaseous fuels.

### Three references of recent articles published by the group (with DOI):

1. SANDOVAL, MIGUEL HUMBERTO BARRIENTOS ; ALVAREZ, CARLOS EDUARDO CASTILLA ; ROSO, VINÍCIUS RÜCKERT ; SANTOS, NATHÁLIA DUARTE SOUZA ALVARENGA ; BRAGA, RAPHAEL MEIRELES . Numerical study of homogeneous pre-chamber design in an ethanol-fueled vehicular engine. JOURNAL OF THE BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING (ONLINE), v. 45, p. 70, 2023.
2. SANTOS, N. D. S. A. ; EDUARDO CASTILLA ALVAREZ, CARLOS ; ROSO, VINÍCIUS RÜCKERT ; BAETA, JOSÉ GUILHERME COELHO ; VALLE, R. M. . Lambda load control in spark ignition engines, a new application of prechamber ignition systems. ENERGY CONVERSION AND MANAGEMENT, v. 236, p. 1-13, 2021.
3. RÜCKERT ROSO, VINÍCIUS ; DUARTE SOUZA ALVARENGA SANTOS, NATHÁLIA ; EDUARDO CASTILLA ALVAREZ, CARLOS ; ANTONIO RODRIGUES FILHO, FERNANDO ; JOSÉ PACHECO PUJATTI, FABRICIO ; MOLINA VALLE, RAMON . Effects of mixture enleanment in combustion and emission parameters using a flex-fuel engine with ethanol and gasoline. APPLIED THERMAL ENGINEERING, v. 7, p. 1, 2019





## DEMOSTENES ZEGARRA RODRIGUEZ

Professor at UFLA

Department: Computer Science

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Curriculum Lattes: <http://lattes.cnpq.br/5761546014615452>

Scopus Author ID: 36242276900 - ResearcherID: L-8322-2013



### **Brief description of research line:**

Artificial Intelligence (Machine learning, Deep Learning)

Telecommunication Systems, 5G and 6G networks

Quality-of-Experience assessment of multimedia services

### **Brief description of potential areas of partnership with Chinese universities (indicate potential researchers and universities):**

Researchers in the area of Computer Science from Tsinghua University:

- Prof. Xiaolin HU, Department of Computer Science and Technology, Tsinghua University, China

- Prof. Qi LI, Department of Computer Science and Technology, Tsinghua University, China (qli01@tsinghua.edu.cn)

- Zhiliang WANG, Department of Computer Science and Technology, Tsinghua University, China

### **Three references of recent articles published by the group (with DOI):**

1. M. R. dos Santos, A. P. Batista, R. L. Rosa, M. Saadi, D. C. Melgarejo and D. Z. Rodríguez, "AsQM: Audio streaming Quality Metric based on Network Impairments and User Preferences," in IEEE Trans. on Consumer Electronics, 2023, doi: 10.1109/TCE.2023.3255411.

2. D. Carrillo et al., "Boosting 5G on Smart Grid Communication: A Smart RAN Slicing Approach," in IEEE Wireless Communications, 2022, doi: 10.1109/MWC.004.2200079.

3. J. Casavilca Silva et al., "Light-Field Imaging Reconstruction Using Deep Learning Enabling Intelligent Autonomous Transportation System," in IEEE Transactions on Intelligent Transportation Systems, vol. 23, no. 2, pp. 1587-1595, Feb. 2022, doi: 10.1109/TITS.2021.3079644.



Department of Computer Science - UFLA



Workstations, with 12 cores and GPUs  
Embedded Intelligent Systems Laboratory (LabSINE)



Multimedia Signal Processing Laboratory



## DENILSON FERREIRA DE OLIVEIRA

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### **Brief description of research line:**

Development of products of natural origin for the control of pests and diseases of plants and animals, with emphasis on the purification and identification of biologically active substances, structural modifications in organic substances with a view to increasing their biological activities, use of computational methods to explain the biological activities of organic substances and to plan structural modifications in them, and uses of quantum chemistry in the structural elucidations of organic substances.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

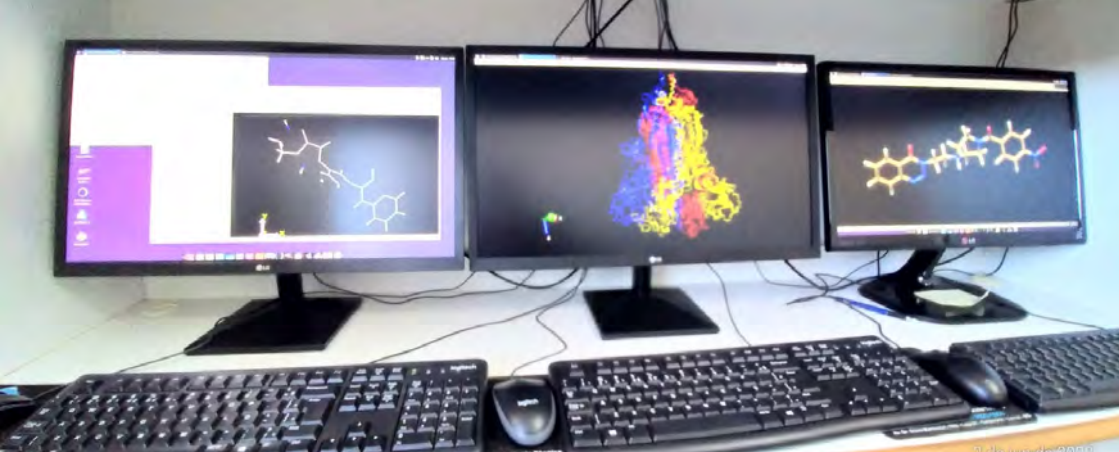
1) Carry out bioassays in Brazil with substances of synthetic or natural origin, obtained in Chinese Universities, to select those active against insects, fungi and nematodes, which attack plants of economic importance in Brazil; 2) Perform computational calculations in Brazil (pharmacophoric search, docking, molecular dynamics, etc.) with a view to contributing to the identification of enzymatic targets of biologically active substances that have been selected in Chinese Universities; 3) Carry out computational calculations in Brazil to propose changes in the chemical structures of selected substances in Chinese Universities, which may make them more biologically active; 4) Perform quantum calculations in Brazil, to contribute to the structural elucidation of organic substances of natural or synthetic origin, obtained in Chinese Universities.

### **Three references of recent articles published by the group (with DOI):**

1) PEREIRA, F.A.C.; ANDRADE, V.S.C.; SOUZA, E.A.; MATTOS, M.C.S.; OLIVEIRA, D.F. 2-Aminoselenazoles and 2-aminothiazoles: One-pot synthesis and control of the fungus *Colletotrichum lindemuthianum* in common beans. PEST MANAGEMENT SCIENCE, v. 2022, p. 1-11, 2022. <http://dx.doi.org/10.1002/ps.6786>

2) PACULE, H.B.; VANEGAS, J.A.G.; TERRA, W.C.; CAMPOS, V.P.; OLIVEIRA, D.F. (R)-Carvone is a potential soil fumigant against *Meloidogyne incognita* whose likely enzymatic target in the nematode is acetylcholinesterase. EXPERIMENTAL PARASITOLOGY, v. 241, p. 108359, 2022. <http://dx.doi.org/10.1016/j.exppara.2022.108359>

3) ALVES, D.S.; COSTA, V.A.; MACHADO, A.R.T.; OLIVEIRA, D.F.; CARVALHO, G.A. *Duguetia lanceolata* A. St.-Hil. Stem bark produces phenylpropanoids lethal to *Spodoptera frugiperda* (JE Smith) (Lepidoptera: Noctuidae). CROP PROTECTION, v. 127, p. 104965, 2019. <http://dx.doi.org/10.1016/j.cropro.2019.104965>





## **EDUARDO VAN DEN BERG**

Professor at UFLA

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Curriculum Lattes: <http://lattes.cnpq.br/3351266298174522>



### **Brief description of research line:**

My main research line is about ecology and conservation of Small Landscape Elements (SLEs – tree lines, small forest fragments, and isolated trees) in cropland and pastures. In areas with old European colonization in South America, like the Atlantic Forest region, most of remained biodiversity is found in private areas focused on agriculture, milk or beef production. In this context, persistence of native populations and communities is harder because of reducing habitat area and loss of connectivity. This remaining diversity present itself mainly in the SLEs and are under constant threat because of the competition with commercial land use. I have been focusing on understand in how much diversity the SLEs retain, how the SLEs change along time, how important they are for conservation of biodiversity and high fragmented landscapes, and how farming and farmers interact with them. One of main goals of the research line is to promote biodiversity conservation in private land used for farming, reducing the conflicts between production and conservation, turning farming more environmental friendly.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

Environmental sciences focusing in conservation of biodiversity in farmlands:

- \* Huaibei Normal University
- \* Beijing Normal University
- \* University of Chinese Academy of Sciences

### **Three references of recent articles published by the group (with DOI):**

SIQUEIRA, F. F. ; CARVALHO, D. ; RHODES, J. ; ARCHIBALD, C. L. ; REZENDE, V. L. ; VAN DEN BERG, E. . Small Landscape Elements Double Connectivity in Highly Fragmented Areas of the Brazilian Atlantic Forest. *FRONTIERS IN ECOLOGY AND EVOLUTION*, v. 9, p. 1-14, 2021. <https://doi.org/10.3389/fevo.2021.614362>

JOSEPH, L. ; CANO, R. M. Y. ; ALMONACID, M. A. ; PYLES, MARCELA VENELLI ; SIQUEIRA, F. F. ; VAN DEN BERG, E. . Socioeconomic Conditions and Landowners' Perception Affect the Intention to Restore Polylepis Forests in the Central Andes of Peru. *Forests*, v. 12, p. 118, 2021. <https://doi.org/10.3390/f12020118>

PYLES, M. ; MAGNAGO, L. F. S. ; MAIA, V. A. ; PINHO, B. X. ; PITTA, G. ; GASPER, A. L. ; VIBRANS, A. C. ; SANTOS, R. M. ; VAN DEN BERG, E. ; LIMA, R. A. . Human impacts as the main driver of tropical forest carbon. *SCIENCE ADVANCES*, v. 8, p. eabl7968, 2022. <https://doi.org/10.1126/sciadv.abl7968>



Department of Ecology and Conservation and Laboratory  
of Plant Ecology



## ELISA MONTEZE BICALHO

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### **Brief description of research line:**

My research interests are related to seed germination, seed priming, dormancy release, seed signaling, and phytohormones roles during seed germination and seedling establishment. I have been working with (i) seed priming for increasing stress tolerance on wild and agronomic species; (ii) physiological dormancy release (ABA, GA and their inhibitors); (iii) reactive oxygen species signaling during seed germination and dormancy.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

Professor Zhou Yuliang; Associate professor of department of seed science and technology; College of Agriculture . SCAU.

Professor Zhou-fei Wang; Associate professor of department of seed science and technology; College of Agriculture . SCAU.

Common areas of interest: seed priming, seed physiology, pre-harvesting sprouting, phytohormones roles during seed germination.

### **Three references of recent articles published by the group (with DOI):**

(1)SILVA, VN; BERNARDES, MM; PEREIRA, APS; FERREIRA, RA; PEREIRA,

EG ; Bicalho, EM . Seed Priming of *Handroanthus heptaphyllus* for the Restoration of the Mining Fields. WATER AIR AND SOIL POLLUTION, v. 234, p. 1, 2023. Doi: 10.1007/s11270-022-06032-7

(2)PEREIRA, APS; NERY, FC; FERREIRA, RA; SILVA, VN; BERNARDES, MM

; SANTOS, HO; Bicalho, EM . Can priming with ascorbic acid or nitric oxide improve the germinability of stored sunflower seeds?. Journal of Seed Sciences v. 44,p. e202244012-11, 2022. Doi: 10.1590/2317-1545v44256600

(3)GARCIA, QS ; BARRETO, LC; Bicalho, EM . Environmental factors driving seed dormancy and germination in tropical ecosystems: A perspective from campo rupestre species. ENVIRONMENTAL AND EXPERIMENTAL BOTANY, v. 178,p. 104164, 2020. Doi: 10.1016/j.envexpbot.2020.104164







## ERICK D. BATISTA

Professor at UFLA

Department: Animal Science

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Curriculum Lattes: <http://lattes.cnpq.br/3891266981447486>



### **Brief description of research line:**

Dr. Batista's research program focuses on ruminant nutrition, feed evaluation, and mainly protein and amino acid utilization by beef cattle. Recent research projects have evaluated urea recycling, rumen-protected urea, amino acid utilization by growing cattle, and nutritional strategies to improve nitrogen efficiency in beef cattle. Some nutritional compounds of interest include: betaine, capsaicin, choline, creatine, guanidinoacetic acid, lysine, methionine, N-carbamoylglutamate, and urea.

### **Brief description of potential areas of partnership with chinese universities**

- Ruminant fermentation, nitrogen metabolism and urea recycling to improve efficiency of nitrogen utilization in beef cattle;
- Amino acids utilization and efficiency in beef cattle;
- Additives to improve growth performance and carcass deposition in beef cattle.

### **Potential researchers and universities:**

- Hongyun Liu, Jianxin Liu – Zhejiang University
- Hao Wu, Liping Ren, Qingxiang Meng – China Agricultural University
- Q. Liu, Shanxi, Yawei Zhang – Shanxi Agricultural University
- Jianguo Li, Yanxia Gao – Hebei Agricultural University
- Yonggen Zhang – Northeast Agricultural University
- Mingren Qu – Jiangxi Agricultural University

### **Three references of recent articles published by the group (with DOI):**

- Effects of varying ruminally undegradable protein supplementation on forage digestion, nitrogen metabolism, and urea kinetics in Nellore cattle fed low-quality tropical forage. doi:10.2527/jas2015-9493
- The effect of CP concentration in the diet on urea kinetics and microbial usage of recycled urea in cattle: a meta-analysis. doi:10.1017/S1751731116002822
- Efficiency of lysine utilization by growing steers. doi:10.2527/jas2015-9716
- Effect of post-ruminal guanidinoacetic acid supplementation on creatine synthesis and plasma homocysteine concentrations in cattle. doi:10.1093/jas/skaa072





## FELIPE OLIVEIRA E SILVA

Professor at UFLA

Department: Automatics (DAT)

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Curriculum Lattes: <http://lattes.cnpq.br/9770219134901991>



### **Brief description of research line:**

His research area includes State Estimation, Stochastic Filtering, Sensor Fusion, Instrumentation and Robotics. Applications include: Guidance, Navigation and Control (GNC) Systems, Inertial Navigation Systems (INS), Global Navigation Satellite Systems (GNSS), Connected Autonomous Vehicles (CAV) and Precision Agriculture (PA).

### **Brief description of potential areas of partnership with Chinese universities (indicate potential researchers and universities):**

Shanghai Jiao Tong University: particularly interested in stablishing collaborations with Prof. Yuanxin Wu (<https://ieeaeess.org/contact/yuanxin-wu>)

Naval University of Engineering: particularly interested in stablishing collaborations with Prof. Lubin Chang (<https://ieeexplore.ieee.org/author/37085445743>)

### **Three references of recent articles published by the group (with DOI):**

1) FARRELL, J. A.; SILVA, F. O.; RAHMAN, F.; WENDEL, J. Inertial Measurement Unit Error Modeling Tutorial: Inertial Navigation System State Estimation with Real-Time Sensor Calibration. IEEE CONTROL SYSTEMS MAGAZINE, v. 42, p. 40-66, 2022. DOI: <https://ieeexplore.ieee.org/document/9955423>

2) MENEZES FILHO, R. P.; SILVA, F. O.; CARVALHO, G. S. Accurate and Computational-Efficient Analytical Solutions for the Extended Two-Step Magnetometer Calibration. IEEE TRANSACTIONS ON AEROSPACE AND ELECTRONIC SYSTEMS, v. 59, p. 1-15, 2022. DOI: <https://ieeexplore.ieee.org/document/9868129>

3) RAHMAN, F.; SILVA, F. O.; JIANG, Z.; FARRELL, J. A. Low-Cost Real-Time PPP GNSS Aided INS for CAV Applications. IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS, v. 23, p. 25018-25032, 2022. DOI: <https://ieeexplore.ieee.org/document/9906805>





## FERNANDO LOURENÇO

Professor at UFLA

Department: Department of Mathematics and Applied Mathematics

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Curriculum Lattes: <http://lattes.cnpq.br/5330802014430414>



### **Brief description of research line:**

The area of holomorphic foliations and distributions is very recent and there are so many authors working in different countries in the world. In this research line we study the decomposition of a complex variety into some disjoint and connected subvarieties and we try to classify it. Recently some authors have worked with derivations of the holomorphic foliations, namely, flag and web of foliations. This last topic is very interesting since we can apply it to solve the conjecture due to Marco Brunella which says that a two-dimensional holomorphic foliation on projective space of dimension three either admits an invariant algebraic surface or it composes a flag of holomorphic foliations.

### **Brief description of potential areas of partnership with Chinese universities (indicate potential researchers and universities):**

Sergey Kryzhevich - School of Mathematical Sciences, Peking University

JIE HONG - East China Normal University, Shanghai  
JUN LU - East China Normal University, Shanghai

SHENG-LI TAN - East China Normal University, Shanghai

Xiang Zhang - Department of Mathematics, Shanghai Jiaotong University, Shanghai

### **Three references of recent articles published by the group (with DOI):**

Cano F. ; SOARES, MÁRCIO G. ; Ravara-Vago M. . Local Brunella's Alternative I. Rich Foliations. International Mathematics Research Notices (DOI: 10.1093/imrn/rnu011)

LORAY, FRANK; PEREIRA, J. V.; TOUZET, FRÉDÉRIC . Singular foliations with trivial canonical class. INVENTIONES MATHEMATICAE (DOI: 10.1007/s00222-018-0806-0)

J.-P. Brasselet, M. Corrêa and F. Lourenço, Residues for  $\#$ ags of holomorphic foliations Adv. Math. 320, n.7 (2017), 1158-1184. (DOI: 10.1016/j.aim.2017.09.007)



## **GABRIEL ARAUJO E SILVA FERRAZ**

Professor at UFLA

Department: Agricultural Engineering

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Curriculum Lattes: <http://lattes.cnpq.br/3594807524148486>



### **Brief description of research line:**

Digital agriculture (DA) brings a series of innovations to optimize agricultural operations with it. Our main focus is to bring digital and precision agriculture to Brazilian fields. The expertise of the UFLA working group lies in the use of artificial intelligence (AI) tools for data analysis and the use of unmanned aerial vehicle (UAV) with embedded cameras and sensors to collect BIG DATA. We have already propose various protocols for coffee crop, that also may be extended for other perennial crops.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

Since Brazil and China has a lot of perennial crops and are very traditional agricultural countries it will be very profitable a partnership between universities from these countries to develop more about Digital Precision and Agriculture. Mainly UAV approaches, IA technologies, bigdata, and others related to this theme.

### **Three references of recent articles published by the group (with DOI):**

Santana, Lucas Santos; FERRAZ, GABRIEL ARAÚJO E SILVA; SANTOS, GABRIEL HENRIQUE RIBEIRO DOS ; BENTO, NICOLE LOPES ; FARIA, RAFAEL DE OLIVEIRA . Identification and Counting of Coffee Trees Based on Convolutional Neural Network Applied to RGB Images Obtained by RPA. Sustainability, v. 15, p. 820, 2023. <https://doi.org/10.3390/su15010820>

BENTO, NICOLE LOPES ; FERRAZ, GABRIEL ARAÚJO E SILVA ; AMORIM, JHONES DA SILVA ; Santana, Lucas Santos ; BARATA, RAFAEL ALEXANDRE PENA ; SOARES, DANIEL VEIGA ; FERRAZ, PATRÍCIA FERREIRA PONCIANO . Weed Detection and Mapping of a Coffee Farm by a Remotely Piloted Aircraft System. Agronomy-Basel, v. 13, p. 830, 2023 <https://doi.org/10.3390/agronomy13030830>

Santana, Lucas Santos; FERRAZ, GABRIEL ARAÚJO E SILVA; Marin, Diego Bedin ; FARIA, RAFAEL DE OLIVEIRA ; SANTANA, MOZARTE SANTOS ; ROSSI, GIUSEPPE ; PALCHETTI, ENRICO . Digital Terrain Modelling by Remotely Piloted Aircraft: Optimization and Geometric Uncertainties in Precision Coffee Growing Projects. Remote Sensing, v. 14, p. 911, 2022. <https://doi.org/10.3390/rs14040911>



## GIOVANA AUGUSTA TORRES

Professor at UFLA

Department: Biology

Email: gatorres@ufla.br

Curriculum Lattes: <http://lattes.cnpq.br/0235093862761350>



### **Brief description of research line:**

Characterization of repetitive DNA, structural and functional aspects of chromatin and mitotic chromosomes of crop plant species applied to genetics, taxonomy, evolution and breeding of different group of plants, using bioinformatics of NGS data, molecular cytogenetic and immunolocalization techniques.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

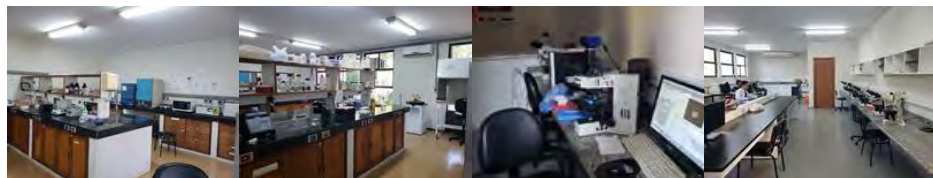
I am interested in collaborate with groups of plant biology that develop and integrate knowledge in cytogenomics and epigenetics applied to crop breeding. A potential collaborator is Dr. Wenli Zhang, College of Agronomy, Nanjing Agriculture University, Nanjin.

### **Three references of recent articles published by the group (with DOI):**

1- SOARES, NINA REIS; CORREA, CAIO TÚLIO RODRIGUES; DA SILVA, JHONATA COSTA; DA SILVA NEGREIROS, JACSON RONDINELLI; TECHIO, VÂNIA HELENA; TORRES, GIOVANA AUGUSTA . Comparative cytogenetics of three economically important Piper L. species from the Brazilian Amazon. PROTOPLASMA, v. 259, p. 1099-1108, 2022. <https://link.springer.com/article/10.1007/s00709-021-01721-2>

2- CORRÊA, CAIO T. R.; BONETTI, NATHALIA G. Z.; BARRIOS, SANZIO C. L.; DO VALLE, CACILDA B.; TORRES, GIOVANA A. ; TECHIO, VÂNIA H. . GISH-based comparative genomic analysis in Urochloa P. Beauv. MOLECULAR BIOLOGY REPORTS, v. 47, p. 887-896, 2020. <https://doi.org/10.1007/s11033-019-05179-7>

3- GAIERO, P.; TORRES, G. A.; IOVENE, M. Cytogenetics of Potato and Tomato Wild Relatives. In: Carputo D., Aversano R., Ercolano M.R.. (Org.). The Wild Solanums Genomes. 1ed.: Springer, Cham, 2021, v. , p. 11-33. [https://link.springer.com/chapter/10.1007/978-3-030-30343-3\\_2](https://link.springer.com/chapter/10.1007/978-3-030-30343-3_2)





## GUSTAVO HENRIQUE DENZIN TONOLI

Professor at UFLA Department: FOREST SCIENCE

Coordinator of the Graduate Program of Biomaterials Engineering

Email: [gustavotonoli@ufla.br](mailto:gustavotonoli@ufla.br)

Curriculum lattes: <http://lattes.cnpq.br/7946548611562682>



**Brief description of research line:** We are interested in research with cellulose-based materials, functional additives and renewable polymers for different applications in materials science, including papers, packaging, wood panels/composites, fiber-cements panels/composites, cellulose nanofibers production techniques and applications for different commercial products. Barrier properties of papers and emulsions with cellulose nanofibers are also applications of interest.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

- Potential area of partnership: Cellulose nanofibers applications. Prof. Dr. Fang Lu. [lufang@dicp.ac.cn](mailto:lufang@dicp.ac.cn). Dalian Institute of Chemical Physics, Chinese Academy of Sciences, 116023 Dalian, P. R. China

- Potential area of partnership: Cellulose nanofibers production and applications. Qian Ren. Ningbo Key Lab of Polymer Materials, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo 315201, China; University of Chinese Academy of Sciences, Beijing 100049, China.

-Potential area of partnership: Cellulose nanofibers production and applications. Minghui Wu. Ningbo Key Lab of Polymer Materials, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo 315201, China; Advanced Materials and Composites Department, University of Nottingham Ningbo China, 199 Taikang East Road, Ningbo 315000, China.

-Potential area of partnership: Cellulose nanofibers production and industrial applications. Prof. Dr. RuiTao Cha. Beijing Engineering Research Center for BioNanotechnology and CAS Key Lab for Biological Effects of Nanomaterials and Nanosafety, CAS Center for Excellence in Nanoscience, National Center for NanoScience and Technology, Beijing, 100190, China

-Potential area of partnership: Cellulose nanofibers production and industrial applications. Dr. MingZheng Wang, Beijing Key Laboratory of Materials Utilization of Nonmetallic Minerals and Solid Wastes, National Laboratory of Mineral Materials, School of Materials Science and Technology, China University of Geosciences (Beijing), Beijing, 100083, China

-Potential area of partnership: Cellulose nanofibers production and industrial applications. Dr. GENG LiHong, National Engineer Research Center of Novel Equipment for Polymer Processing, Key Laboratory of Polymer Processing Engineering of Ministry of Education, South China University of Technology, Guangzhou 510640, China

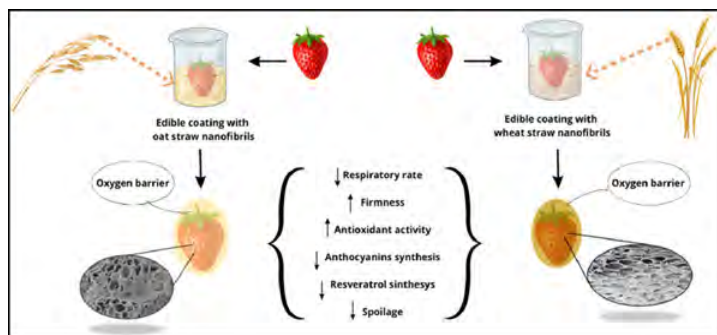
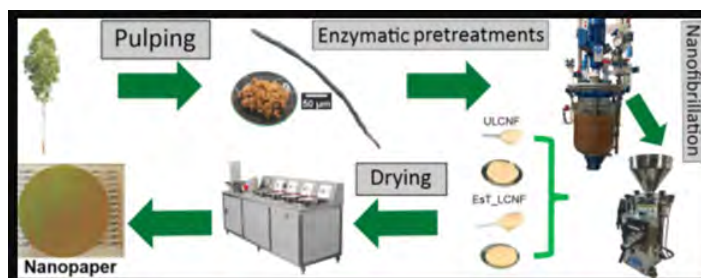
-Potential area of partnership: Cellulose nanofibers production and industrial applications. Dr. Qing-Fang Guan. Division of Nanomaterials & Chemistry, Hefei National Laboratory for Physical Sciences at the Microscale, Institute of Energy, Hefei Comprehensive National Science Center, CAS Center for Excellence in Nanoscience, Department of Chemistry, Institute of Biomimetic Materials & Chemistry, Anhui Engineering Laboratory of Biomimetic Materials, University of Science and Technology of China, Hefei 230026, China.

### Three references of recent articles published by the group (with DOI):

(1) DE OLIVEIRA, MARIA LUIZA CAFALCHIO ; MIRMEHDI, SEYEDMOHAMMAD ; SCATOLINO, MÁRIO VANOLI ; JÚNIOR, MARIO GUIMARÃES ; SANADI, ANAND RAMESH ; DAMASIO, RENATO AUGUSTO PEREIRA ; TONOLI, GUSTAVO HENRIQUE DENZIN . Effect of overlapping cellulose nanofibrils and nanoclay layers on mechanical and barrier properties of spray-coated papers. *Cellulose*, v. 29, p. 1097-1113, 2022. <https://doi.org/10.1007/s10570-021-04350-3>

(2) FERREIRA, LAURA FONSECA ; FIGUEIREDO, LUÍSA PEREIRA ; MARTINS, MARIA ALICE ; LUVIZARO, LUCAS BALDO ; DE LARA, BRUNA RAGE BALDONE ; DE OLIVEIRA, CASSIANO RODRIGUES ; JÚNIOR, MÁRIO GUIMARÃES ; TONOLI, GUSTAVO H.D. ; DIAS, MARALI VILELA . Active coatings of thermoplastic starch and chitosan with alpha-tocopherol/bentonite for special green coffee beans. *INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES*, v. 170, p. 810-819, 2020. <https://doi.org/10.1016/j.ijbiomac.2020.12.199>

(3) DIAS, MATHEUS CORDAZZO ; BELGACEM, MOHAMED NACEUR ; DE RESENDE, JAIME VILELA ; MARTINS, M. A. ; DAMÁSIO, RENATO AUGUSTO PEREIRA ; TONOLI, G. H. D. ; FERREIRA, SAULO ROCHA . Eco-friendly laccase and cellulase enzymes pretreatment for optimized production of high content lignin-cellulose nanofibrils. *INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES*, v. 209, p. 413-425, 2022. <https://doi.org/10.1016/j.ijbiomac.2022.04.005>



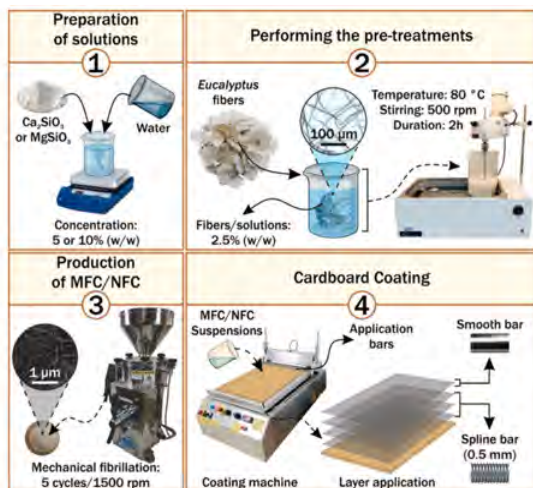
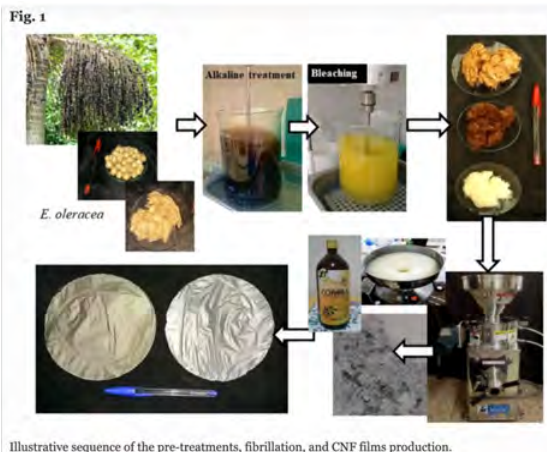
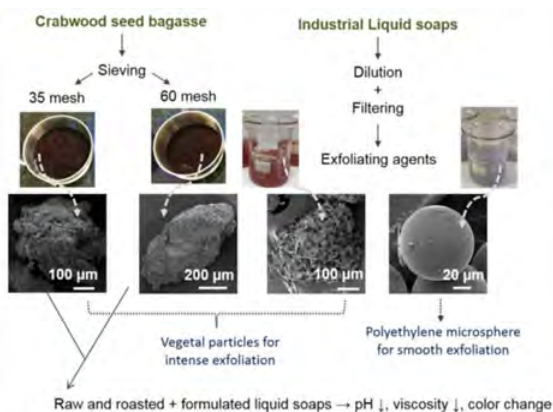


Fig. 1. Scheme of pre-treatments with calcium silicate and magnesium silicate on the EUC fibers; production of MFC/NFC, and cardboard coating.







## HEITOR AUGUSTUS XAVIER COSTA

Professor at UFLA Department: Computer Science

Email: heitor@ufla.br



Curriculum Lattes: <http://lattes.cnpq.br/1320324289662918>

### **Brief description of research line:**

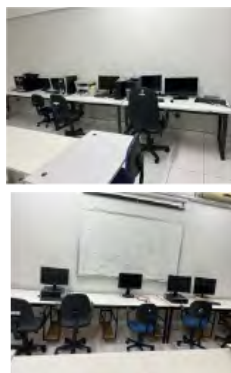
My research area is Software Engineering. In special, Software Quality, Software Maintenance, Software Evolution, Software Metrics.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

- 1) Li ZHENG - Department of Computer Science and Technology, Tsinghua University
- 2) Ma, Zhiyi - School of Computer Science, Peking University
- 3) Zhao, Junfeng - School of Computer Science, Peking University

### **Three references of recent articles published by the group (with DOI):**

- 1) MARTINS, LUANA; COSTA, H.; MACHADO, IVAN. On the Diffusion of Test Smells and Their Relationship with Test Code Quality of Java Projects. *J SOFTW-EVOL PROC*, v. 35, p. 1, 2023. DOI: <https://doi.org/10.1002/smr.2532>
- 2) MARTINS, LUANA; BRITO, VINICIUS; FEITOSA, DANIELA; ROCHA, LARISSA; COSTA, H.; MACHADO, IVAN. From Blackboard to the Office: A Look Into How Practitioners Perceive Software Testing Education. In: *EASE 2021: Evaluation and Assessment in Software Engineering, 2021, Trondheim Norway. Evaluation and Assessment in Software Engineering, 2021*. p. 211. DOI: <https://doi.org/10.1145/3463274.3463338>
- 3) SILVA JUNIOR, N.; MARTINS, L. A.; SOARES, L. R.; COSTA, H.; MACHADO, I. C. How are Test Smells Treated in the Wild? A Tale of Two Empirical Studies. *JOURNAL OF SOFTWARE ENGINEERING RESEARCH AND DEVELOPMENT*, v. 9, p. 1-16, 2021. DOI: <https://doi.org/10.5753/jserd.2021.1802>





## JENAINA RIBEIRO SOARES

Professor at UFLA

Department: Physics

Email: jenaina.soares@ufla.br

### **Brief description of research line:**

Field of expertise: Experimental and Applied Physics

Research lines:

- Materials science: synthesis, characterization, theory and applications;
- Carbonaceous materials in soils. Biochars for soil improvement. Nanostructured fertilizers. Nanostructured decontaminants;
- Biomaterials Engineering at the nanoscale level;
- Advanced optical and spectroscopic properties of condensed matter;
- Carbon nanomaterials, transition-metal dichalcogenides (MoS<sub>2</sub>, WS<sub>2</sub>, ...), post-transition metal monochalcogenides (GaSe, GeSe,...), natural phyllosilicates: from basic science to renewable energy, optoelectronic, mechanical and sensor applications perspectives;
- New two-dimensional materials beyond graphene for optoelectronic and sustainable applications;
- Prospection of new strategic minerals and their possible applications

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

The major scope of possible partnership would be around the theory, synthesis, characterization, scientific instrumentation and application of nanomaterials. At UFLA we focus on nanomaterials use in soil, as well as decontaminants, especially involving carbonaceous materials, and also in the analysis of new nanomaterials like graphene and other layered minerals for their optoelectronic properties. Possible interactions would be with the Physics, Chemistry, Materials Science, Engineering, Agricultural, and Ambient Departments of the Chinese universities.

### **Three references of recent articles published by the group (with DOI):**

- Longuinhos, Raphael, et al. "Raman and far-infrared synchrotron nanospectroscopy of layered crystalline talc: vibrational properties, interlayer coupling, and symmetry crossover." *The Journal of Physical Chemistry C* 127.12 (2023): 5876-5885. (Cover art of its edition), IF: 4.2
- da Silva Carneiro, Jefferson Santana, et al. "Biochar-graphene oxide composite is efficient to adsorb and deliver copper and zinc in tropical soil." *Journal of Cleaner Production* 360 (2022): 132170. IF: 11.1
- Alencar, Rafael Silva, et al. "Raman spectroscopy polarization dependence analysis in two-dimensional gallium sulfide." *Physical Review B* 102.16 (2020): 165307. IF: 3.9

The equipment listed here (among several others for sample preparation and analysis) can be found at the Electron Microscopy and Ultrastructural Analysis Laboratory (LME - UFLA): <https://pnipe.mctic.gov.br/laboratory/1951>



Atomic force microscope – Nanosurf FlexAFM



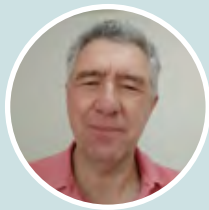
Raman spectrometer Witec Alpha 300



Scanning electron microscope – STEM – FEG – Ultra-high resolution. TESCAN Clara



Confocal fluorescence microscope LSM 780 (Carl Zeiss) for multiple laser lines (405, 458, 488, 514, 543, 633 nm)



## JOÃO DOMINGOS SCALON

Professor at UFLA

Institute of Exact and Technological Sciences

Department: Statistics

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Curriculum Lattes: <http://lattes.cnpq.br/0962359014791482>



### **Brief description of research line:**

I have been working on the development and application of spatial statistics methods. Spatial statistics is a branch of statistics that deals with the analysis and interpretation of data that are geographically referenced or spatially distributed. It involves the use of statistical methods to model and analyze spatial patterns and relationships in data, considering the spatial autocorrelation and other spatial dependencies that may exist in the data. Some of the commonly used techniques in spatial statistics include spatial regression analysis, geostatistics, point pattern analysis, spatial interpolation, and spatial clustering analysis. The goal of spatial statistics is to provide insights into the underlying spatial processes that generate the observed patterns in the data, and to develop models that can be used to make predictions and informed decisions in spatially referenced contexts. I have applied spatial statistics in various fields, including agricultural science, forestry, geography, epidemiology, composite materials, and many others.

### **Brief description of potential areas of partnership with Chinese universities (indicate potential researchers and universities):**

There are many universities in China with undergraduate and graduate programs in statistics that deals with the theories, methodologies and tools of applying statistical concepts and computational techniques to various data analysis problems. More specifically, Hebei Normal University has a Bachelor (Major) in Data Science and Big Data Technology. Other universities are: Hebei University of Technology; Beijing Normal University; University of Science and Technology of China; Southern University of Science and Technology (SUSTech); Xi'an Jiaotong-Liverpool University; Donghua University (Shanghai); Wuhan University (Wuhan); Zhejiang University of Science and Technology (Hangzhou); Jiangsu University (Zhenjiang); Renmin University of China, and Nanjing Medical University to name but a few.

### **Three references of recent articles published by the group (with DOI):**

SCALON, J. D.; SILVA, V. F.; OLIVEIRA, W. A.; PEIXOTO, M. S. Statistical characterization of spatial and size distributions of particles in composite materials used in the manufacturing of biomedical instruments. *Brazilian Journal of Biometrics*, v. 40, p. 428-441, 2022. - <https://doi.org/10.28951/bjb.v40i4.614>

ARAUJO, E. S. B.; SCALON, J. D.; BATISTA, L. S. Exploratory spectral analysis in three-dimensional spatial point patterns. *Brazilian Journal of Biometrics*, v. 39, p. 177-193, 2021. - <https://doi.org/10.28951/rbb.v39i1.524>

MANUEL, L.; SCALON, J. D. Generalized estimating equations approach for spatial lattice data: A case study in adoption of improved maize varieties in Mozambique. *Biometrical Journal*, v. 62, p. 1879-1895, 2020. - <https://doi.org/10.1002/bimj.201800360>



## JÚLIO SÍLVIO DE SOUSA BUENO FILHO

Professor at UFLA

Department: Statistics

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Curriculum Lattes: <http://lattes.cnpq.br/2257137656357636>



### **Brief description of research line:**

Statistical problems in design and analysis of experiments. Genetic experiments, with random effects for genotypes and potentially non-Gaussian outcomes. Bayesian analysis of Genotype by Environment interaction. Analysis protocols for experiments in other areas, like sports performance and medical outcomes.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

I have visited Professors Yu Hengxiu and Zhang Tao, from Agricultural College of Yangzhou University and gave short courses (2017 and 2018). Invited by Prof. Wang Xiue, gave a seminar at Nanjing State Key Laboratory of Crop Genetics and Germplasm Enhancement. I am open to get back there or other places in China.

### **Three references of recent articles published by the group (with DOI):**

- 1- Silva, J.C.O., de Andrade Júnior, V.C., Bueno Filho, J.S.S et al. Mixed model-based indices for selection of sweet potato genotypes for different agronomic aptitudes. *Euphytica* 218, 86 (2022). <https://doi.org/10.1007/s10681-022-03033-9>
- 2- Luciano A. Oliveira, Carlos P. Silva, Júlio S. de S. Bueno F. et.al.. Bayesian GGE model for heteroscedastic multienvi-ronmental trials. *Crop Science* vol. 62, Issue 3, 2022. pp 982-996.
- 3- Gustavo G. Resende, Ricardo C. Lage, Julio S. S. Bueno F. et al. (2022) Blockade of interleukin seventeen (IL-17A) with secukinumab in hospitalized COVID-19 patients – the BISHOP study, *Infectious Diseases*, 54:8, 591-599, DOI: 10.1080/23744235.2022.2066171



## LIDJA DAHIANE MENEZES SANTOS BORÉL

Professor at UFLA

Department of engineering

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Curriculum Lattes: <http://lattes.cnpq.br/7589306638353503>



### **Brief description of research line:**

This research focuses on the performance and design of hybrid dryers equipped with infrared lamps. This group has achieved excellent results by combining convective dryers (trays, fixed bed) or mobile beds (fluidized bed, spouted bed, rotating drum, among others) with infrared radiation for a variety of agro-industrial products. An experimental approach based on statistical designs is used to assess the effect of operational variables on drying kinetics, energy consumption and quality of dried product.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

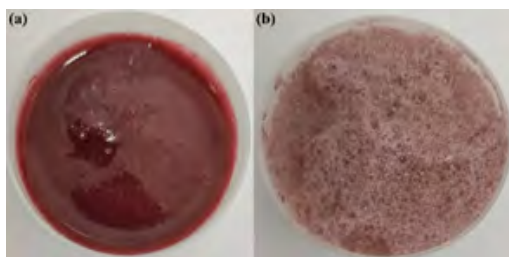
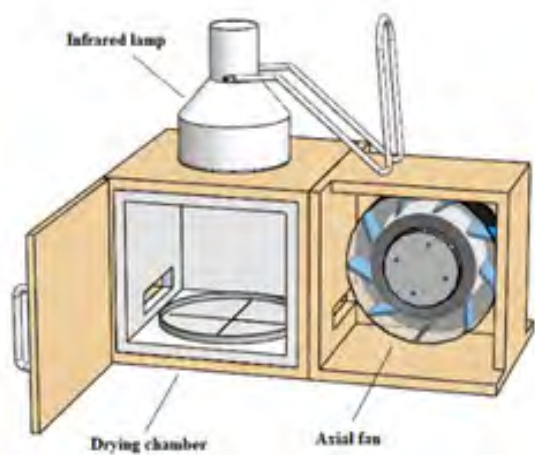
A partnership aimed at developing innovative drying technologies to increase energy efficiency and produce higher quality agricultural products is of common interest to China and Brazil. We are aware of some works developed by Prof. Bimal Chitrakar at Hebei Agricultural University on drying techniques using alternative sources such as microwaves, as well as work by Prof. Hong-Wei Xiao at China Agricultural University on air impingement drying and far-infrared radiation heating, for example.

Three references of recent articles published by the group (with DOI):

Borges, H. M., Borél, L. D., & Lima Corrêa, R. A. (2022). Effects of temperature and foam layer thickness on collard greens powder production by foam mat drying. *Journal of Food Processing and Preservation*, 46(8), e16755. <https://doi.org/10.1111/jfpp.16755>

Borel, L. D. M. S., de Lira, T. S., Ataíde, C. H., & de Souza Barrozo, M. A. (2021). Thermochemical conversion of coconut waste: material characterization and identification of pyrolysis products. *Journal of Thermal Analysis and Calorimetry*, 143, 637-646. <https://doi.org/10.1007/s10973-020-09281-y>

Borel, L. D., Marques, L. G., & Prado, M. M. (2020). Performance evaluation of an infrared heating-assisted fluidized bed dryer for processing bee-pollen grains. *Chemical Engineering and Processing-Process Intensification*, 155, 108044. <https://doi.org/10.1016/j.cep.2020.108044>





## LÍVIA ELISABETH VASCONCELLOS DE SIQUEIRA BRANDÃO VAZ

Professor at UFLA

Department: Engineering

Email: livia.brandao@ufla.br

Curriculum Lattes : <http://lattes.cnpq.br/2365038877512485>



### **Brief description of research line:**

Surface modification of Ti alloys for application as an antimicrobial biomaterial: titanium is an inert material and immune to body fluids that initiate corrosion. So that, is widely used for application in prostheses. The innovation of this project is the development of metallic surface modification processes using physical routes by plasma and nanoparticles aiming the development of antimicrobial metallic surfaces, improving their efficiency as a biomaterial. Since the research group involved has already obtained excellent results in inhibition and extermination of bacteria using this route for MDF wood panels (article in press), it is believed to be a very promising project that would grow considerably from the partnership between the universities involved.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

- Hebei Normal University - College of Chemistry and Materials Science and College of Physics & Information Engineering
- Tsinghua University
- Peking University
- University of Chinese Academy of Sciences
- University of Science & Technology of China, CAS
- Zhejiang University
- Soochow University - China

### **Three references of recent articles published by the group (with DOI):**

Synthesis and characterization of chitosan/montmorillonite nanocomposites for application as edible coating. FOOD SCIENCE AND TECHNOLOGY INTERNATIONAL, v. 29, p. 25-39, 2023. <https://doi.org/10.1177/10820132211057718>

Technological properties of soil-cement bricks produced with iron ore mining waste. CONSTRUCTION AND BUILDING MATERIALS, v. 262, p. 120883, 2020. <https://doi.org/10.1016/j.conbuildmat.2020.120883>

Lignocellulosic Materials for Fiber Cement Production. WASTE AND BIOMASS VALORIZATION, v. 9, p. 1-8, 2018. <https://doi.org/10.1007/s12649-018-0536-y>







## LUCIANO JOSÉ PEREIRA

Professor at UFLA

Medicine Department – Health Sciences Faculty

lucianojosepereira@ufla.br

Curriculum Lattes: <https://lattes.cnpq.br/5640205436872222>



### Brief description of research line:

Dr. Pereira is the current Research Dean at Federal University of Lavras – UFLA. He holds a degree in Dentistry, specialization in Pharmacology, Master, and PhD Doctorate in the Area of Human Physiology.

The research lines involve General and Oral Physiology, such as: 1) The effect of beta-glucans (prebiotics) ingestion in rodent models for preventing and treating chronic diseases, such as obesity, diabetes mellitus, osteoporosis, and periodontal disease; 2) Oral physiology and masticatory performance in children, adults and elderly; 3) Evidence-based medicine by conducting systematic reviews and metaanalysis; 4) Observational studies involving chronic diseases, quality of life and healthcare access; 5) Medical education and active learning methodologies.

### Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):

Oral physiology and masticatory performance in children, adults and elderly.

1) Prof. Hilbert van der Glas

Distinguished Professor & Associated Staff Member

School of Food Science & Biotechnology, Zhejiang Gongshang University

e-mail: [hwvanderglas@hotmail.com](mailto:hwvanderglas@hotmail.com)

### Three references of recent articles published by the group (with DOI):

1) Gonçalves TMSV, Schimmel M, van der Bilt A, Chen J, van der Glas HW, Kohyama K, Hennequin M, Peyron MA, Woda A, Leles CR, José Pereira L. Consensus on the terminologies and methodologies for masticatory assessment. *J Oral Rehabil.* 2021 Jun;48(6):745-761. doi: 10.1111/joor.13161.

2) Gonçalves RFDM, Barreto DA, Monteiro PI, Zangeronimo MG, Castelo PM, van der Bilt A, Pereira LJ. Smartphone use while eating increases caloric ingestion. *Physiol Behav.* 2019 May 15;204:93-99. doi: 10.1016/j.physbeh.2019.02.021.

3) Pereira LJ, van der Bilt A. The influence of oral processing, food perception and social aspects on food consumption: a review. *J Oral Rehabil.* 2016 Aug;43(8):630-48. doi: 10.1111/joor.12395. Epub 2016 Apr 8.



**Figure 1.** Masticatory assessment setup. A: Force transducer. B: Motor. C: Camera. D: Force transducer. E: Motor. F: Camera.



**Figure 2.** Patient gathering IAC, an necessary action step.



**FIGURE 3.** Masticatory performance analysis for a combination test, using Cohort of 16 test-subjects and 20-masticatory cycles. A. Example of a great cheser. B. Example of a medium cheser. C. Example of a bad cheser. D. Cubes before chewing. E. Cubes figure on the second of masticatory cycles.



## **LUIS DAVID SOLIS MURGAS**

Professor at UFLA

Department of Veterinary Medicine

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### **Brief description of research line:**

1. Use of Zebrafish model to study ecotoxicology, Physiology and pharmacology.
2. Reproduction Physiology of Tropical Fishes: semen cryopreservation
3. Integrative Veterinary Medicine: Ozone Therapy

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

Use of zebrafish as model study for toxicological of plants extract and use of Ozone as complementary therapy in veterinary medicine

### **Three references of recent articles published by the group (with DOI):**

1. The Zebrafish (*Danio rerio*) as a Model for Studying Voluntary Physical Exercise and its Effects on Behavior and Metabolism. BRAZILIAN ARCHIVES OF BIOLOGY AND TECHNOLOGY (ONLINE), v. 66, p. e23220279, 2023. <https://doi.org/10.1590/1678-4324-2023220279>
2. Embriotoxic and Antioxidant Effects of *Cymbopogon citratus* Leaf Volatile Oil on Zebrafish. BRAZILIAN JOURNAL OF PHARMACOGNOSY, v. Online, p. 1-06-2023, 2023. <https://link.springer.com/article/10.1007/s43450-023-00410-w>
3. Effects of melatonin supplementation on the quality of cryopreserved sperm in the neotropical fish *Prochilodus lineatus*. THERIOGENOLOGY, v. 179, p. 14-21, 2022. <https://doi.org/10.1016/j.theriogenology.2021.11.012>



## MARCIO MACHADO LADEIRA

Professor at UFLA

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Federal University of Lavras,

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Curriculum Lattes: <http://lattes.cnpq.br/1449777974384482>



### **Brief description of research line:**

Line of research include nutrition of confined beef cattle, lipids in the nutrition of beef cattle, and nutritional factors that influence the quality of meat and carcass of beef cattle.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

### **Three references of recent articles published by the group (with DOI):**

- LADEIRA, M. M.; SCHOONMAKER, J. P.; SWANSON, K. C.; DUCKETT, S. K.; GIONBELLI, M. P.; RODRIGUES, L. M.; TEIXEIRA, P. D.. Review: Nutrigenomics of marbling and fatty acid profile in ruminant meat. *Animal*, v. 12, p. 1-13, 2018. <https://doi.org/10.1017/S1751731118001933>.
- RODRIGUES, RAFAEL TORRES DE SOUZA; CHIZZOTTI, MARIO LUIZ ; VITAL, CAMILO ELBER ; BARACAT-PEREIRA, MARIA CRISTINA ; BARROS, EDVALDO ; BUSATO, KARINA COSTA; GOMES, RAFAEL APARECIDO ; LADEIRA, MÁRCIO MACHADO; MARTINS, TAIANE DA SILVA . Differences in Beef Quality between Angus (*Bos taurus taurus*) and Nellore (*Bos taurus indicus*) Cattle through a Proteomic and Phosphoproteomic Approach. *Plos One*, v. 12, p. e0170294, 2017. <https://doi.org/10.1371/journal.pone.0170294>
- LADEIRA, MARCIO M.; CARVALHO, JOSÉ RODOLFO R.; CHIZZOTTI, MARIO L; TEIXEIRA, PRISCILLA D.; DIAS, JÚLIO CÉSAR O.; GIONBELLI, TATHYANE R.S.; RODRIGUES, ALINE C.; OLIVEIRA, DALTON M. Effect of increasing levels of glycerin on growth rate, carcass traits and liver gluconeogenesis in young bulls. *Animal Feed Science and Technology* (Print), v. 219, p. 241, 2016. <https://doi.org/10.1016/j.anifeedsci.2016.06.010>.



## MARIA EMÍLIA DE SOUSA GOMES

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### Brief description of research line:

I work in the Fish Science and Technology research line, with greater emphasis on the use of residues from fish processing in the elaboration of new products derived from them.

### Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):

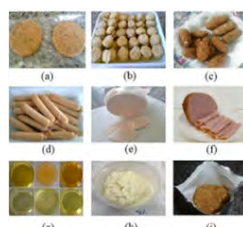
China has been the world's largest fish producer for many years. It is also the world's largest exporter of fish and fishery products, although, due to the high consumption of this kind of protein in that country, it is also a major importer. Knowing that, and considering the Fish Science and Technology research line, there is a lot of possibilities to work with the residues from the fish processing in the development of new products derived from them, creating new products with material that would otherwise be wasted. In terms of intellectual property, I believe that a partnership with Chinese universities would be important for the exchange of experiences, development of projects and exchange of professors/students to experience each other's local expertise.

### Three references of recent articles published by the group (with DOI):

SILVEIRA ALEXANDRE, ANA CLÁUDIA ; CORRÊA ALBERGARIA, FRANCIELLY ; DOS SANTOS FERRAZ E SILVA, LARA MARIA ; CARNEIRO FERNANDES, LUÍZA APARECIDA ; DE SOUSA GOMES, MARIA EMÍLIA ; PIMENTA, CARLOS JOSÉ . Effect of natural and synthetic antioxidants on oxidation and storage stability of mechanically separated tilapia meat. *LWT-FOOD SCIENCE AND TECHNOLOGY* , v. 154, p. 112679, 2022. DOI: <https://doi.org/10.1016/j.lwt.2021.112679>

HILSDORF, ALEXANDRE WAGNER SILVA ; HALLERMAN, ERIC ; VALLADÃO, GUSTAVO MORAES RAMOS ; ZAMINHAN'HASSEMER, MICHELI ; HASHIMOTO, DIOGO TERUO ; DAIRIKI, JONY KOJI ; TAKAHASHI, LEONARDO SUSUMU ; ALBERGARIA, FRANCIELLY CORRÊA ; GOMES, MARIA EMÍLIA DE SOUSA ; VENTURIERI, ROSSANA LUIZA LEITE ; MOREIRA, RENATA GUIMARÃES ; CYRINO, JOSÉ EURICO POSSEBON . The farming and husbandry of *Colossoma macropomum* : From Amazonian waters to sustainable production. *Reviews in Aquaculture* , v. 00, p. 1-35, 2021. DOI: <https://doi.org/10.1111/raq.12638>

ALVES, M. C. ; PAULA, M. M. O. ; COSTA, C. G. C. ; SALES, L. A. ; LAGO, A. M. T. ; PIMENTA, C. J. ; GOMES, MARIA EMÍLIA DE SOUSA . Restructured fish cooked ham: Effects of the use of carrageenan and transglutaminase on textural properties. *Journal of Aquatic Food Product Technology* , v. 30, p. 1, 2021. DOI: <https://doi.org/10.1080/10498850.2021.1895942>





## MATHEUS PUGGINA DE FREITAS

Professor at UFLA

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### Brief description of research line:

Our work is focused on Computational Organic Chemistry, particularly on the molecular modeling of agrochemicals. We use computational techniques to predict chemical structures and biological activities (such as herbicidal activity) of derivatives of known compounds.

### Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):

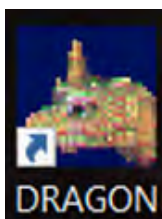
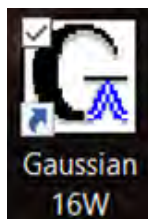
To validate the computational findings, we need to synthesize, characterize, and test the proposed/predicted compounds, but we cannot do these without partnership. Most researchers dealing with this procedure are from China, particularly prof. Guang-Fu Yang (Central China Normal University), profs. Fei Ye and Ying Fu (Northeast Agricultural University).

### Three references of recent articles published by the group (with DOI):

1. Ingrid V. Pereira, Joyce K. Daré, Elaine F. F. da Cunha, Matheus P. Freitas, "MIA-QSAR and docking studies of the structural merging of (thio)benzamide herbicides with photosynthetic system II inhibitory activities", *J. Biomol. Struct. Dyn.*, 41, 2023, 3772-3778. doi: 10.1080/07391102.2022.2055649.

2. Luiz R. Capucho, Elaine F. F. da Cunha, Matheus P. Freitas, "Study of Two Combined Series of Triketones with HPPD Inhibitory Activity by Molecular Modelling", *SAR and QSAR Environ. Res.*, 34, 2023, 231-246. doi: 10.1080/1062936X.2023.2192521.

3. Luiz R. Capucho, Ingrid V. Pereira, Adriana C. de Faria, Joyce K. Daré, Elaine F. F. da Cunha, Matheus P. Freitas, "Multivariate image analysis applied to quantitative structure-activity relationships and docking studies of recent hydroxyphenylpyruvate dioxygenase inhibitors", *J. Sci. Food Agric.*, 2023. doi: 10.1002/jsfa.12608. Online ahead of print.





## NADJA GOMES ALVES

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### **Brief description of the research line:**

Interactions between nutrition and reproduction in ruminants.

Assisted reproduction in small ruminants.

Effects of heat stress and thermoprotective molecules on bovine oocytes quality, and in vitro embryo production.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

Development of studies aimed at understanding the interactions between nutrition and reproduction in cattle, goats and sheep, with emphasis on the influence of nutrition on puberty, follicular development, oocyte and embryo quality.

Studies aimed at improving the reproductive efficiency of small ruminants through the use of biotechnologies.

Evaluation of thermoprotective molecules to mitigate the negative effects of heat stress on in vitro embryo production.

### **Three references of recent articles published by the group (with DOI):**

LIMA, P. H. ; SOUZA, J. C. ; BORGES, A. M. ; Lima, R. R. ; JASMIN, J. ; LEITE, A. C. ; SILVA, E. B. M. ; Faria, L. R. ; ALVES, N. G. . Effects of melatonin in the maturation medium on developmental competence of bovine oocytes exposed to heat shock and on embryo quality. *Animal Production Science*, v. 62, p. 1573-1580, 2022. <https://doi.org/10.1071/AN22133>

FARIA, LETÍCIA RODRIGUES ; JUNQUEIRA, FELIPE BARBOSA ; CAMPOS, JOÃO PEDRO ARAÚJO ; BAZANA, MATHEUS JULIEN FERREIRA ; SACZK, ADELIR APARECIDA ; DE SOUZA, JOSÉ CAMISSÃO ; DE LIMA, RENATO RIBEIRO ; ALVES, NADJA GOMES . Metabolic profiles and follicular dynamics of prepubertal and pubertal Santa Inês ewe lambs with dietary restriction and supplementation with roasted whole soybeans. *SMALL RUMINANT RESEARCH*, v. 216, p. 106833, 2022. <https://doi.org/10.1016/j.smallrumres.2022.106833>

DIAS, BRENDA VERIDIANE ; DA COSTA, GERALDO MÁRCIO ; LEITE, RAFAEL FERNANDES ; LUCAS, FERNANDA ALVES ; CUSTÓDIO, DIRCÉIA APARECIDA DA COSTA ; LIMA, RENATO RIBEIRO DE ; BRIGHENTI, CARLA REGINA GUIMARÃES ; ALVES, NADJA GOMES . Relationship between subclinical mastitis and reproduction in Lacaune sheep. *SMALL RUMINANT RESEARCH*, v. 216, p. 106809, 2022. <https://doi.org/10.1016/j.smallrumres.2022.106809>





## MILLER PEREIRA PALHÃO

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The objective of Dr. Palhão's research is to improve the reproductive efficiency of cattle herds, increasing the productivity and profitability of dairy and beef cattle. To do this, Dr. Palhão carries out basic and applied research in the areas of physiology, endocrinology, and morphology of reproduction, and Imaging diagnoses. He works as an extension agent in rural properties in the southern region of the state of Minas Gerais, always having the support and multidisciplinary partnership of the Federal University of Lavras (UFLA). He works to educate veterinarian students and to disseminate knowledge generated by his research to professionals who work in livestock. His extension work reaches other Latin American countries, with recent work spreading assisted reproductive technologies (ART) for dairy cattle in Honduras (Central America). In addition, Dr. Palhão is involved in projects that include the use of Doppler ultrasonography in physiological processes related to the control of reproductive function and ways to mitigate the residue in milk of steroid hormones used to control the estrous cycle of cows.

### **Three references of recent articles published by the group (with DOI):**

Timing of early resynchronization protocols affects subsequent pregnancy outcome in dairy cows. Doi: 10.1016/j.theriogenology.2021.03.009.

Early resynchronization of non-pregnant beef cows based in corpus luteum blood flow evaluation 21 days after Timed-AI. Doi: 10.1016/j.theriogenology.2020.01.064.

Does previous superovulation affect fertility in dairy heifers? 10.3168/jds.2020-18386. Epub 2020 Sep 10.





CEPE-Leite – UFLA (Experimental Dairy Cattle Farm).



Ultrasound Z50vet with Color Doppler technology.



Experimental Beef Cattle Farm



## PAULA PEIXOTO ASSEMANY

Professor at UFLA

Department: Environmental Engineering

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Curriculum Lattes: <http://lattes.cnpq.br/1498629994153004>



### **Brief description of research line:**

The research line is: Use of microalgae for wastewater bioremediation and valued compounds obtention. Microalgae biotechnology is widely researched for different applications. Among environmental concerns, it can be used for wastewater treatment and concomitantly recover nutrients in the biomass. Within this context, microalgae biotechnology is being studied aiming to optimize biomass production in wastewater (high-rate algal ponds design, operational criteria, and performance in pollutant removal, etc.) and recover resources from wastewater, e.g., bioenergy, biopolymers generation.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

- Biological wastewater treatment;
- Microalgae biotechnology;
- Resource recovery from wastewater.

### **Three references of recent articles published by the group (with DOI):**

1. BRAGA, M. et al. Transforming wastewater treatment plants in sustainable units coupled with local economies: Microalgae as resource recovery agents. *Journal of Cleaner Production*, v. 377, p. 134551, 2022. <https://doi.org/10.1016/j.jclepro.2022.134551>
2. SIQUEIRA, J.C. et al. Recovery of vinasse with combined microalgae cultivation in a conceptual energy-efficient industrial plant: Analysis of related process considerations. *Renewable & Sustainable Energy Reviews*, v. 155, p. 111904, 2022. <https://doi.org/10.1016/j.rser.2021.111904>
3. DE SOUSA OLIVEIRA, A. et al. Copper multifaceted interferences during swine wastewater treatment in high rate algal ponds: Alterations on nutrient removal, biomass composition and resource recovery. *Environmental Pollution*, v. 324, p. 121364, 2023. <https://doi.org/10.1016/j.envpol.2023.121364>



Cultivation reactor under controlled conditions



High-rate algal ponds in lab scale

Equipment for chemical, physical and microbiological characterization of wastewater; and for determination of biochemical composition of the biomass.



## **RAFAEL DUQUE ZENNI**

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Curriculum Lattes: <http://lattes.cnpq.br/9587201169577748>



### **Brief description of research line:**

My research focuses on drivers of global changes, mainly biological invasions, urbanization, and climate change.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

Potential areas of partnership are urban ecology, effects of climate change on ecosystems, and biological invasions (most invasive non-native plants in Brazil are native to China). Potential researchers are:

- Chunlong Liu (Ocean University of China)
- Xuan Liu (Institute of Zoology Chinese Academy of Sciences)

### **Three references of recent articles published by the group (with DOI):**

Bueno, M. L., Heringer, G., de Carvalho, D. R., Robinson, T. B., Pompeu, P. S., & Zenni, R. D. (2023). Ecosystem variables importance in the presence and abundance of a globally invasive fish. *Science of The Total Environment*, 876, 162795. <https://doi.org/10.1016/j.scitotenv.2023.162795>

Tavares Brancher, K.P., Graf, L.V., Heringer, G. & Zenni, R.D. (2023) Urbanization and abundance of floral resources affect bee communities in medium-sized neotropical cities. *Austral Ecology*, 00, 1– 17. Available from: <https://doi.org/10.1111/aec.13299>

Heringer, G., Del Bianco Faria, L., Villa, P.M. et al. Urbanization affects the richness of invasive alien trees but has limited influence on species composition. *Urban Ecosyst* 25, 753–763 (2022). <https://doi.org/10.1007/s11252-021-01189-1>

We currently have no equipment besides basic field gear, such as tape measures, quadrants, handheld GPS, increment borer etc. Our infrastructure, however, includes around 3500 m<sup>2</sup> of research labs, offices, conference rooms and classrooms.

Our infrastructure can be seen here: <https://youtu.be/CqbOsdyMqC0>



## PAULO RICARDO GHERARDI HEIN

Professor at UFLA

Department of Forest Sciences - Wood Science and

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Curriculum Lattes: <http://lattes.cnpq.br/2874231166541071>



### **Brief description of research line:**

The forest industry requires solutions to quickly and reliably characterize and classify the basic raw material of its products. Near infrared (NIR) spectrometers have been used successfully to evaluate the properties of biomaterials, identify flaws, adjust parameters in industrial processing and control in real time the quality of the final product. However, the application of this technology from portable wooden equipment in field, patio or mat situation is conditioned to facing a series of challenges that do not exist in laboratory conditions. Our studies intend to contribute to the development of solutions to characterize, classify and control the quality of wood and its products in real time through the association of spectral signatures in the NIR of portable equipment and data analysis and machine learning tools. Thus, multivariate models and artificial neural networks (ANN) has been developed to identify wood species, estimate the properties of wood and its products, and classify materials into quality levels aiming at control and inspection actions, material selection and genetic improvement, definition of parameters for industrial processing and quality control.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

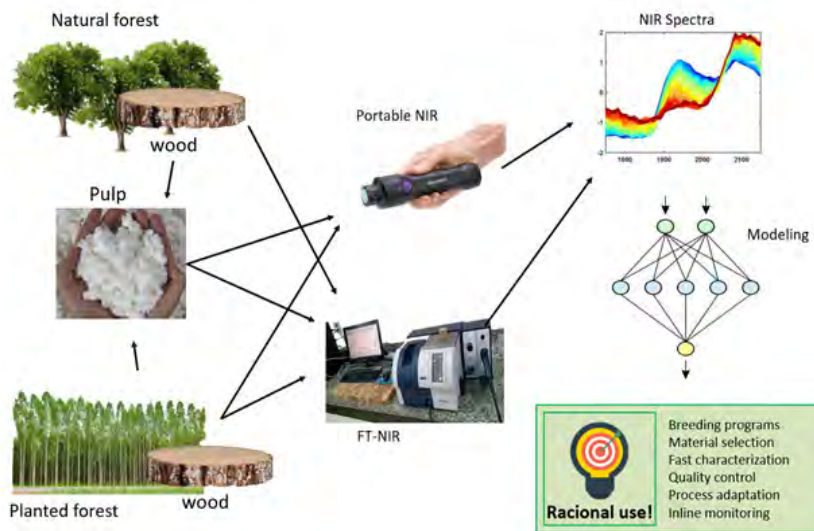
Our group at PPGCTM/UFLA has developed some studies in partnership with teams from the Chinese Academy of Forestry in Hangzhou/China, including consolidation with research articles, led by prof. Honggang Sun ([honggangsun@caf.ac.cn](mailto:honggangsun@caf.ac.cn))

Research Institute of Subtropical Forestry, Chinese Academy of Forestry, 311400 Hangzhou, China

### **Three references of recent articles published by the group (with DOI):**

LF Baliza, CH Silva, EA Amaral, FMG Ramalho, PF Trugilho, H Sun, PRG Hein (2023) Evaluation of the spatial variation in moisture content inside wood pieces during drying by NIR spectroscopy. *Holzforschung* 77 (2), 95-105 <https://doi.org/10.1515/hf-2022-0123>

Yanjie Li, Honggang Sun, TP Protásio, PRG Hein, Baoguo Du (2022) The mechanisms and prediction of non-structural carbohydrates accretion and depletion after mechanical wounding in slash pine (*Pinus elliottii*) using near-infrared reflectance spectroscopy. *Plant Methods* 18, 107. <https://doi.org/10.1186/s13007-022-00939-2>





## RAFAEL FARINASSI MENDES

Professor at UFLA

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Curriculum Lattes: <http://lattes.cnpq.br/2585255322006890>



### Brief description of research line:

Development of sustainable materials. Ceramic composites and polymeric composites.

### Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):

Development of products based on lignocellulosic and industrial waste. Development of more sustainable industrial processes. Sustainable and biodegradable polymers. Construction materials with industrial waste. Circular economy, proper disposal of waste and added value.

### Three references of recent articles published by the group (with DOI):

EUGÊNIO, T.M.C.; FAGUNDES, J.; VIANA, Q. S.; MENDES, R.F. Study on the feasibility of using iron ore tailing (iot) on technological properties of concrete roof tiles. Construction and Building Materials. 2021. <https://doi.org/10.1016/j.conbuildmat.2021.122484>

MENDES, R.F.; VIANA, Q.S.; EUGÊNIO, T.M.M.C, MENDES, J.F.; NARCISO, C.R.P; VILELA, A.P.. Study of the use of polymeric waste as reinforcement for extruded fiber-cement. Environmental Science and Pollution Research. 2021.

<https://doi.org/10.1007/s11356-021-13707-x>

VILELA, A.P.; EUGÊNIO, T.M.C.; DE OLIVEIRA, F.; MENDES, J. F; RIBEIRO, A; VAZ, L.E.V.S.; MENDES, R.F.. Technological properties of soil-cement bricks produced with iron ore mining waste. Construction and Building Materials. 2020. <https://doi.org/10.1016/j.conbuildmat.2020.120883>





## **RAPHAEL LONGUINHOS MONTEIRO LOBATO**

Professor at UFLA

Department of Physics

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Curriculum Lattes: <http://lattes.cnpq.br/1475483971471395>



### **Brief description of research line:**

Density Functional theory, Materials Science, Applied Physics, Advanced Materials, Renewable energy materials, Biochar, Environmental .

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

Open for collaborations with chinese groups with interest in advanced materials, renewable energy materials, biochar, and applied physics.

### **Three references of recent articles published by the group:**

- 1.Raman and Far-Infrared Synchrotron Nanospectroscopy of Layered Crystalline Talc: Vibrational Properties, Interlayer Coupling, and Symmetry Crossover. J. PHYS. CHEM. C. (Issue Cover) <http://dx.doi.org/10.1021/acs.jpcc.3c00017>
- 2.Exploring the structural and optoelectronic properties of natural insulating phlogopite in van der Waals heterostructures. 2D Mater. <http://dx.doi.org/10.1088/2053-1583/ac6cf4>
- 3.Mechanical properties of layered tilkerodeite (Pd HgSe ) and jacutingaite (Pt HgSe ) crystals: Insights on the interlayer, intralayer interactions, and phonons. J. APPL. PHYS. <http://dx.doi.org/10.1063/5.0053171>



**RENATA DE AQUINO BRITO LIMA CORRÊA**

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### **Brief description of research line:**

This research aims to investigate the performance of IR-assisted foam mat drying for powdered food production. Drying of foamed materials allows the operation to be conducted using lower temperatures and the use of infrared radiation (IR) can intensify the process, allowing to obtain a product with better quality and lower energy consumption. The evaluation of this hybrid technique for drying concentrated coffee extract has already been conducted by our research group, and promising results have been obtained.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

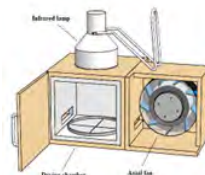
There are researchers developing works on foam mat drying, and on the process combined with other techniques, such as Prof. Xian-Zhe Zheng and Yu Sun from the Northeast Agricultural University and Harbin University, respectively. Partnerships could help in the development of the hybrid technique, aiming to supply useful operational parameters of the dryers and contribute to the powdered food production with lower cost and environmental impact.

### **Three references of recent articles published by the group (with DOI):**

Borges, H.M.; Boré, L.D.; Lima-Corrêa, R.A.B. (2022). Effects of temperature and foam layer thickness on collard greens powder production by foam mat drying. *Journal of Food Processing and Preservation*, 46(8), e16755. <https://doi.org/10.1111/jfpp.16755>

Nunes, G.; Nascimento, B.S.; Lima-Corrêa, R.A.B. (2022). Development of carrot top powders using foam mat drying. *Journal of Food Processing and Preservation*, p. e16487, 2022. <https://doi.org/10.1111/jfpp.16487>

Lima-Corrêa, R.A.B.; Andrade, M.S.; Silva, M.F.G.F.; Freire, J.T.; Ferreira, M.C. (2017). Thin-layer and vibrofluidized drying of basil leaves (*Ocimum basilicum* L.): analysis of drying homogeneity and influence of drying conditions on the composition of essential oil and leaf colour. *Journal of Applied Research on Medicinal and Aromatic Plants*, v. 7, p. 54-63. <https://doi.org/10.1016/j.jarmap.2017.05.001>



Concentrated coffee extract >> Foamed coffee extract >> Drying apparatus >> Soluble coffee





## **ROBSON ANDRÉ ARMINDO**

Professor at UFLA

Department: Physics

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Curriculum Lattes: <http://lattes.cnpq.br/4450395842375027>



### **Brief description of research line:**

My aim in my research line is to study soil variables related to the transport of mass and energy, mainly soil-water, -gases-, and heat transfer in saturated and unsaturated soils to generate math-physical models to assess the soil health and plant yields. Some items of interest are listed below:

i) Soil Physics; ii) Water, vinasse, and fuels infiltration; iii) Spatial and temporal soil variation; iv) Aeration and heat transfer in soil; v) Databases and Modeling; vi) instrumentation; and vii) Pedotransfer functions.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

Any university related to agricultural, environmental and engineering fields.

### **Three references of recent articles published by the group (with DOI):**

TUREK, M. E. ; LIER, Q. J. V. ; ARMINDO, R. A. . Parameterizing field capacity as the upper limit of available water in bucket-type hydrological models. COMPUTERS AND ELECTRONICS IN AGRICULTURE , v. 194, p. 106801, 2022. (<https://doi.org/10.1016/j.iswcr.2022.08.001>)

ARMINDO, R. A.; WENDROTH, O. . Alternative approach to calculate soil hydraulic-energy-indices and -functions. GEODERMA , v. 355, p. 113903, 2019. (<https://doi.org/10.1016/j.geoderma.2019.113903>)

FUENTES-GUEVARA, M. D. ; ARMINDO, R. A. ; TIMM, L. C. ; NEMES, A. . Data correlation structure controls pedotransfer function performance. JOURNAL OF HYDROLOGY , v. 25, p. 128540, 2022. (<https://doi.org/10.1016/j.jhydrol.2022.128540>)



## RENATA LOPES ROSA

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Department: Computer Science

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Curriculum Lattes: <http://lattes.cnpq.br/7065837987569147>

Scopus Author ID: 57219799523 - ORCID: <https://orcid.org/0000-0002-7595-7187>



### **Brief description of research line:**

Artificial Intelligence (Machine learning, Deep Learning)

Social Network and affective computing, mobile networks, cloud network

Multimedia services

### **Brief description of potential areas of partnership with Chinese universities (indicate potential researchers and universities):**

Researchers in the area of Computer Science from Tsinghua University:

- Prof. Jia JIA, Department of Computer Science and Technology, Tsinghua University, China

- Prof. Hui WANG, Department of Computer Science and Technology, Tsinghua University, China

- Ying ZHAO, Department of Computer Science and Technology, Tsinghua University, China

### **Three references of recent articles published by the group (with DOI):**

1. M. R. dos Santos, A. P. Batista, R. L. Rosa, M. Saadi, D. C. Melgarejo and D. Z. Rodríguez, "AsQM: Audio streaming Quality Metric based on Network Impairments and User Preferences," in *IEEE Trans. on Consumer Electronics*, 2023, doi: 10.1109/TCE.2023.3255411.

2. J. Casavílca Silva et al., "Light-Field Imaging Reconstruction Using Deep Learning Enabling Intelligent Autonomous Transportation System," in *IEEE Transactions on Intelligent Transportation Systems*, vol. 23, no. 2, pp. 1587-1595, Feb. 2022, doi: 10.1109/TITS.2021.3079644.



Department of Computer Science - UFLA



Workstations, with 12 cores and GPUs  
Embedded Intelligent Systems Laboratory (LabSINE)



Multimedia Signal Processing Laboratory



## ROSANE FREITAS SCHWAN

After going through all the options, I still think the Zhejiang Agriculture and Forestry university is most suitable for cooperation with you and your department. Within this university, the relevant research is performed within two departments.

1. College of biotechnology: <https://sky.zafu.edu.cn/> Within this department, I recommend contacting Dr. Haiping Lin. She is a teacher and seems to have a very good reputation. I think if she is not interested in cooperating herself, could point you in the direction of other colleagues within her department.

2. College of food and health: <https://spjk.zafu.edu.cn/> Within this department, two interesting researchers are: - Dr. Juan Xu - <https://spjk.zafu.edu.cn/info/1198/1090.htm> She does research related lactic acid bacteria and probiotics, but seems more focused on edible fungi. Some overlap with both you and professor Eustaqio.

- Dr. Jian Guo - <https://spjk.zafu.edu.cn/info/1193/3213.htm>

He does research on decontamination of molds and mycotoxins in rice grains.  
Recent publication: <https://www.sciencedirect.com/science/article/abs/pii/S0308814622021215> It could be interesting to apply in coffee.



## TEODORICO CASTRO RAMALHO

Professor at UFLA

Department: Chemistry

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<https://molecc.wixsite.com/molecc>



### Brief description of research line:

Our general research interest lies Computational Chemistry, Spectroscopy, Medicinal Chemistry, Quantum Chemistry (QM/MM calculations) as well as Catalysis and multiscale modeling in chemistry, which can manifest the synergic connection that exists between theoretical chemistry and experimental techniques.

### Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):

- Medicinal and Biological Chemistry
- Environmental Catalysis
- Computational Chemistry
- Agricultural Chemistry

### Three references of recent articles published by the group (with DOI):

-FILHO, JOSÉ B.G. ; BRUZIQUESI, CARLOS G.O. ; RIOS, REGIANE D.F. ; CASTRO, ALEXANDRE A. ; VICTÓRIA, HENRIQUE F.V. ; KRAMBROCK, KLAUS ; MANSUR, ALEXANDRA A.P. ; MANSUR, HERMAN S. ; SINITERRA, RUBEN D. ; Ramalho, Teodorico C. ; PEREIRA, MÁRCIO C. ; OLIVEIRA, LUIZ C.A. . Selective visible-light-driven toxicity breakdown of nerve agent simulant methyl paraoxon over a photoactive nanofabric. APPLIED CATALYSIS B-ENVIRONMENTAL, v. 285, p. 119774, 2021. <https://doi.org/10.1016/j.apcatb.2020.119774>

-GONÇALVES, MATEUS A. ; GONÇALVES, ARLAN S. ; Franca, Tanos C. C. ; SANTANA, MOZARTE S. ; DA CUNHA, ELAINE F. F. ; Ramalho, Teodorico C. . Improved Protocol for the Selection of Structures from Molecular Dynamics of Organic Systems in Solution: The Value of Investigating Different Wavelet Families. Journal of Chemical Theory and Computation, v. 18, p. 5810-5818, 2022. <https://doi.org/10.1021/acs.jctc.2c00593>

-DE AZEVEDO SANTOS, LUCAS ; C. RAMALHO, TEODORICO ; HAMLIN, TREVOR A. ; BICKELHAUPT, F. MATTHIAS . Intermolecular Covalent Interactions: Nature and Directionality. CHEMISTRY-A EUROPEAN JOURNAL, v. 29, p. e202203791, 2023. <https://doi.org/10.1002/chem.202203791>





## SANDRO PEREIRA DA SILVA

Professor at UFLA

Department: Engineer - DEG

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Curriculum Lattes: <https://lattes.cnpq.br/3310496478173356>



### **Brief description of research line:**

This project aims to develop a low-cost cranial orthosis for newborns, commonly known as a "little helmet." This orthosis assists in the treatment of plagiocephaly and brachycephaly in infants, conditions characterized by cranial asymmetry resulting from gestational factors such as intrauterine mispositioning and excessive support on one side of the skull. This asymmetry can lead to visual problems, chewing difficulties, and facial and cranial aesthetic impacts.

### **Brief description of potential areas of partnership with Chinese universities (indicate potential researchers and universities):**

The orthosis functions by containing the growth in the most prominent part of the skull, providing increased contact in that region, while allowing proper growth in the flattened area, ensuring adequate space. The number of cranial asymmetry cases has been significantly increasing, and the main focus of this project is to address the crucial issue associated with it: the high cost of treatment, with the aim of making it more accessible.

This project could establish connections with Chinese universities in Hebei and nearby regions. For instance, Hebei Normal University may contribute researchers specialized in pediatric medicine, such as Prof. Zhao Hong, a pediatric medicine researcher. This expertise could be valuable in understanding the clinical needs of infants with cranial deformities.

Additionally, Hebei University may have experts in materials technology, such as Prof. Wang Yan, a materials technology specialist. Their knowledge could be helpful in the selection and development of suitable materials for the low-cost cranial orthosis. Some researchers can be cited, like as:

- Prof. Zhang Wei - Specialist in biomedical engineering at Tsinghua University.
- Prof. Li Ming - Pediatrician and researcher at Peking University.
- Prof. Wang Jing - Expert in materials technology at Shanghai Jiao Tong University.
- Prof. Chen Xiaoyan - Pediatrician and researcher at Zhejiang University.
- Prof. Liu Yang - Specialist in biomedical materials engineering at Fudan University.
- Prof. Zhao Hong - Researcher in pediatric medicine at Hebei Normal University.
- Prof. Wang Yan - Expert in materials technology at Hebei University.

These researchers can bring different perspectives and complementary knowledge to the research project, spanning areas such as biomedical engineering, pediatrics, materials technology, and pediatric medicine. Their expertise can contribute to the development and improvement of the low-cost cranial orthosis for newborns.

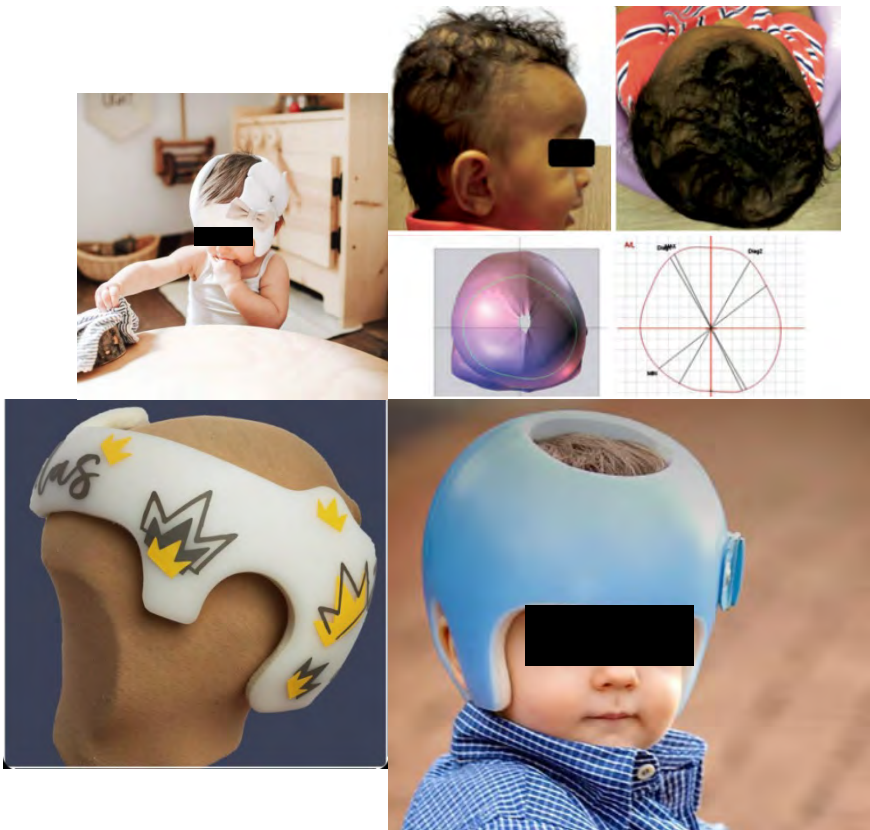
**Three references of recent articles published by the group (with DOI):**

[1] Schreen, Gerd, and Carolina Gomes Matarazzo. "Plagiocephaly and Brachycephaly Treatment with Cranial Orthosis: A Case Report." *Einstein (São Paulo, Brazil)* 11.1 (2013): 114-18. DOI: 10.1590/S1679-45082013000100021

[2] Dörhage, Klaus W.W., MD et al. (2016) "Therapy effects of head orthoses in positional plagiocephaly," *Journal of cranio-maxillo-facial surgery*, 44(10), pp. 1508-1514. DOI: 10.1016/j.jcms.2016.07.017

[3] Karásek, T. et al. (2018) Numerical Modelling of 3D Printed Cranial Orthoses [Preprint]. DOI: 10.20944/preprints201809.0242.v1

[4] Kim, H.Y., Chung, Y.K., and Kim, Y.O. (2014) "Effectiveness of Helmet Cranial Remodeling in Older Infants with Positional Plagiocephaly," *Archives of craniofacial surgery: ACFS*, 15(2), pp. 47-52. DOI: 10.7181/acfs.2014.15.2.47





## VINÍCIUS DE SOUZA CANTARELLI

Professor at UFLA

Department of Animal Science

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Curriculum Lattes: <http://lattes.cnpq.br/2403116608914063>



### **Brief description of research line:**

Our research line (ASIH - Animal Science and Intestinal Health) are focused on developing solutions to improve the performance, intestinal health and well-being of pigs at different stages of production. The evaluated strategies include the use of feed additives, management practices and alternative solutions capable of modulating the intestinal microbiota and, consequently, controlling the development of pathogenic agents. Associated with this, we also seek to validate and use different tools, such as biomarkers and bioinformatics, which can be used to try to minimize losses due to enteric diseases.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

- Relationship between intestinal health and systemic health;
- Relationship between intestinal microbiota and diseases;
- Relationship between intestinal immune response and performance;
- Nutritional strategies and health promotion, with a focus on gut health.

### **Three references of recent articles published by the group (with DOI):**

1. Experimental infectious challenge in pigs leads to elevated fecal calprotectin levels following colitis, but not enteritis. *Porcine Health Management*, v. 7, p. 48, 2021. <https://doi.org/10.1186/s40813-021-00228-9>
2. Benzoic acid and essential oils modify the cecum microbiota composition in weaned piglets and improve growth performance in finishing pigs. *Livestock Science*, v. 1, p. 104311, 2020. <https://doi.org/10.1016/j.livsci.2020.104311>
3. Dietary fiber and zinc additives on performance and intestinal health of *Escherichia coli* challenged piglets. *Scientia Agricola*, v. 77, p. 1, 2020. <https://doi.org/10.1590/1678-992X-2018-0199>

Site: [www.asih.com.br](http://www.asih.com.br)

LinkdIn: <https://www.linkedin.com/company/asih-animal-science-and-intestinal-health/>







## ZUY MARIA MAGRIOTIS

Professor at UFLA

Department: Department of Engineering

Email: zuy@ufla.br

### **Brief description of research line:**

Synthesis and characterization of heterogeneous catalysts for biofuel production.

Use of agro-industrial waste for the production of biofuels, bioproducts and bioadsorbents.

Removal of organic contaminants from effluents using alternative adsorbents (clays and bioadsorbents).

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

Catalysis.

Pyrolysis.

### **Three references of recent articles published by the group (with DOI):**

VIEIRA, S.S.; GRAÇA, I.; FERNANDES, A.; LOPES, J.M.F.M.; RIBEIRO, M.F.; MAGRIOTIS, Z.M. Influence of calcination temperature on catalytic, acid and textural properties of SO<sub>4</sub><sup>2-</sup>/La<sub>2</sub>O<sub>3</sub>/HZSM-5 type catalysts for biodiesel production by esterification. *MICROPOROUS AND MESOPOROUS MATERIALS*, v. 270, p. 189-199, 2018.

MARTINS, J.P.G.; SETTER, C.; ATAIDE, C.H.; OLIVEIRA, T.J.P.; MAGRIOTIS, Z.M. Study of pequi peel pyrolysis: Thermal decomposition analysis and product characterization. *BIOMASS & BIOENERGY*, v. 149, p. 106095, 2021.

LEAL, P.V.B.; PEREIRA, D. H.; PAPINI, R. M.; MAGRIOTIS, Z. M. Effect of dimethyl sulfoxide intercalation into kaolinite on etheramine adsorption: experimental and theoretical investigation. *JOURNAL OF ENVIRONMENTAL CHEMICAL ENGINEERING*, v. 9, p. 105503, 2021.





## **WILIAN SOARES LACERDA**

Professor at UFLA

Department: AUTOMATIC

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Curriculum Lattes: <http://lattes.cnpq.br/3333575573027236>



### **Brief description of research line:**

- Artificial Neural Networks and their applications.
- Development of Embedded Hardware/Software Systems for automation applications.
- Reconfiguration Hardware with FPGA for optimization of computer systems.

### **Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):**

Areas:

Wind energy conversion system

Modeling systems with artificial neural networks

Researchers and universities:

- Shoudao Huang - Hunan University
- Yubo Wang - North China Electric Power University
- Shuang Gao - Hebei Normal University

### **Three references of recent articles published by the group (with DOI):**

SCALCO NETO, H. ; LACERDA, W. S. ; FRANCOZO, R. V. Random Forests for Online Intrusion Detection in Computer Networks. JOURNAL OF COMPUTER SCIENCES, v. 17, p. 905-914, 2021. <http://dx.doi.org/10.3844/jcssp.2021.905.914>

SILVA, V. M. ; RESENDE, J. V. ; LACERDA, W. S. Artificial Neural Network and Regression Models to Evaluate Rheological Properties of Selected Brazilian Honeys. Journal of Apicultural Science, v. 1, p. 1-10, 2020. <http://dx.doi.org/10.2478/jas-2020-0017>

TAVARES, DENNIS SANTOS ; RIBEIRO, DAVID AUGUSTO ; JUNIOR, TADAYUKI YANAGI ; LACERDA, WILIAN SOARES ; TIRADENTES, EDUARDO TADEU ; TEIXEIRA, ROBSON GUILHERME ; GARCIA, HUDSON VENÂNCIO SILVA. Use of artificial neural networks to predict concrete compression strength. Brazilian Journal of Development, v. 6, p. 42815-42826, 2020. <http://dx.doi.org/10.34117/bjdv6n7-050>

-Development kit with FPGA:  
DE10 - Lite Board - Altera  
Corporation:



-Portable digital oscilloscope -  
FLUKE 20MHz:



-Development kit Launch PAD  
Piccolo - Texas Instruments:



-New infrastructure available at  
UFLA - AIA Laboratory:





## **LUÍS ROBERTO BATISTA**

Food Science Department



## **JORGE TEODORO DE SOUZA**

Phytopatology Department



## **VICTOR SATLER PYLRO**

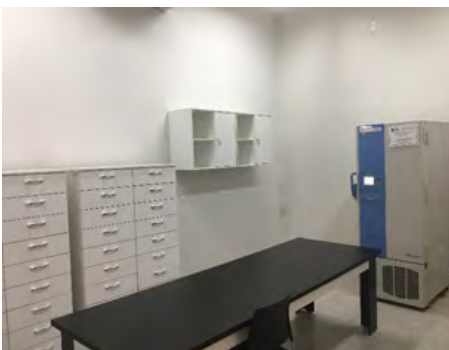
Biology Department

### **Brief description of research line:**

Microbial culture collections are crucial resource centres providing microbial materials. They act as repositories for microbial strains as part of patent deposits, confidential services to store key organisms for research, industry and society and sources of microorganisms cited in scientific papers that can be used in the confirmation of results and for further studies. The Microbiological Resources Unit (URMICRO) – WDCM 1081 (WFCC) of the Federal University of Lavras (UFLA) was created in 2010 with the mission of maintaining representatives of the Brazilian microbial biodiversity, being representative of the Genetic Heritage Management Council of the Ministry of Environment. Currently, URMICRO has a collection of approximately 1650 isolates of filamentous fungi and 250 yeasts from several substrates, such as soil from native areas (Atlantic Forest, Cerrado and Caatinga), soil from agricultural areas (coffee and wine grapes), agricultural products (coffee, wine grapes) and food (cheese, sausages, nuts and grains). Some of the genera that compose the collection are *Aspergillus*, *Penicillium*, *Talaromyces*, *Cladosporium*, *Mucor*, *Geotrichum*, *Paecilomyces*, *Candida*, *Kluyveromyces*, *Yarrowia*, *Debaromyces*, *Trichosporon*, and *Pichia*. URMICRO currently uses three preservation methods (cryopreservation at  $-80^{\circ}\text{C}$ , Castellani and filter paper) to maintain the viability and morphological, physiological and genetic integrity of the cultures over time

## Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):

Besides the preservation and maintenance of the Brazilian genetic heritage, URMICRO also aims to provide pure cultures that can be used in several biotechnological applications (production of enzymes, biological control), teaching and research. URMICRO allows the preservation and proper cataloging of the isolates, generating a database accessible to the scientific community in general, thus integrating part of a country's genetic heritage. The Chinese microbial culture collections have made some inroads into storing representatives of the microflora: there are 14 collections registered with the WDCM with some 30,000 strains of bacteria and fungi and a total of 13,500 species held in ex situ collections. The collaboration involves the development of an online database microbial, identification of microorganisms and the biotechnological potential of microorganisms.



## INTEGRATED PEST MANAGEMENT



### RONALD ZANETTI

Forest Entomology and IPM  
Bioecology, monitoring and control of insects. Estimate of damage and level of control of pestinsects. Antsbioindicators.

zanetti@ufla.br

Orcid: 0000-0001-5698-1838



### ALCIDES MOINO JUNIOR

Insect Pathology and Microbial Control

Insect biological control using entomopathogenic fungi and nematodes

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Orcid: 0000-0002-8566-0694



### STEPHAN MALFITANO CARVALHO

Ecotoxicology of bees

Toxicology of insecticides and ecotoxicology of bees

stephan.carvalho@uflabr

Orcid: 0000-0002-2802-2688



### LUÍS CLÁUDIO PATERNO SILVEIRA

Conservation Biological Control  
Habitat manipulation to enhance natural enemies on crop fields, horticultural and coffee plantations

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Orcid: 0000-0002-8379-8008



### ROSANGELA CRISTINA MARUCCI

Biological Control

Mass rearing and biological control of pests with predators and parasitoids

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Orcid: 0000-0002-9103-0103



### KHALID HADDI

Insect Molecular Biology & Ecotoxicology

Toxicology of insecticides. Molecular biology, physiology, pesticide.

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Orcid: 0000-0002-2655-4365



### GERALDO ANDRADE CARVALHO

Ecotoxicology and IPM

Integrated Pest Management - Selectivity of pesticides, and toxicity of botanical Insecticides to pests, and side-effects on natural enemies.

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Orcid: 0000-0002-8379-8008



### BRUNO H. SARDINHA DE SOUZA

Plantresistance and IPM

Host plant resistance to insects, Transgenic plants and insect resistance management

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Orcid: 0000-0002-2802-2688



### ALEXANDRE DOS SANTOS

Geotechnology and Spatial Statistics in Entomology

Spatial statistics for survey, sampling and monitoring pest insects with geotechnologies.

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### BRÍGIDA SOUZA

Biological Control

Mass rearing and biological control of pests with predators

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Orcid: 0000-0002-4778-4151



### MARIA FERNANDA GOMES VILLALBA PENAFLOR

Chemical Ecology

Addresses applied chemical ecology, chemical ecology of insect-plant, multitrophic and plant-vector-pathogen interactions

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Orcid: 0000-0001-8240-8840

**Brief description of research line:** Integrated Pest Management and Biological Control

**Brief description of potential areas of partnership with chinese universities (indicate potential researchers and universities):** Development of chemical, botanical, and microbiological insecticides to control pests in agricultural and forestry crops. Toxicological evaluation (mortality and side effects), selectivity for bees and natural enemies, and insecticide resistance management. Development of Biological Control Programs and research with potential natural enemies of pests and their maintenance in the environment. Studies with trophic interactions between plants, pests, natural enemies and pathogens.

**Prof. Yalin Zhang**

Key Laboratory of Plant Protection Resources & Pest Management of the Ministry of Education, College of Plant Protection, Northwest A&F University, Yangling 712100, Shaanxi, China.

**Prof. Peng Han**

Yunnan Key Laboratory of Plant Reproductive Adaptation and Evolutionary Ecology and Centre for Invasion Biology, Institute of Biodiversity, School of Ecology and Environmental Science, Yunnan University, Kunming, 650504, China.

**Prof. Shao-hua Gu**

Department of Entomology, China Agricultural University, Beijing, 100193, China.

**Three references of recent articles published by the group (with DOI):**

Moreira, L.B., Lima, L.L.R., de Sá Farias, E. et al. Response of *Doru luteipes* (Dermoptera: Forficulidae) to insecticides used in maize crop as a function of its life stage and exposure route. *Environ Sci Pollut Res* 30, 15010–15019 (2023). <https://doi.org/10.1007/s11356-022-23196-1>

de Souza, L.; Cardoso, M.d.G.; Konig, I.F.M.; Ferreira, V.R.F.; Caetano, A.R.S.; Campolina, G.A.; Haddi, K. Toxicity, Histopathological Alterations and Acetylcholinesterase Inhibition of *Illicium verum* Essential Oil in *Drosophila suzukii*. *Agriculture* 2022, 12, 1667. <https://doi.org/10.3390/agriculture12101667>

Castro, B. M., Santos-Rasera, J. R., Alves, D. S., Marucci, R. C., Carvalho, G. A., & Carvalho, H. W. (2021). Ingestion and effects of cerium oxide nanoparticles on *Spodoptera frugiperda* (Lepidoptera: Noctuidae). *Environmental Pollution*, 279, 116905. <https://doi.org/10.1016/j.envpol.2021.116905>















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