

Curriculum Vitae – David Franco Frazão



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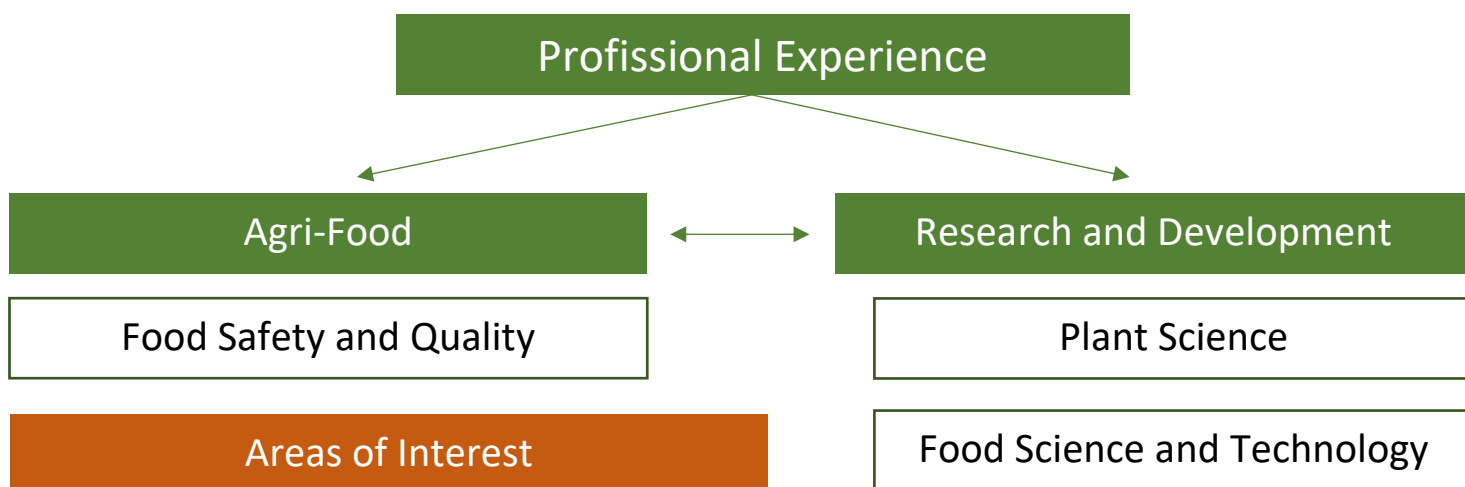
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Professional Experience

Agri-Food

Food Safety and Quality

Research and Development

Plant Science

Food Science and Technology

Areas of Interest

- Food Sustainability.
- Novel Foods.
- Food Regulation.
- Agro-Forestry Products.
- Plant Resins.
- Industrial and non-food crops

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1. Professional Experience.

1.1. Plant Biotechnology Centre of Beira Interior (CBPBI)

01/09/2016 – 31/10/2017 (Castelo Branco, Portugal)

Position: First Stage Researcher R1

- Bioactives from Plants and Food:
 - Extraction and Purification: Soxhlet, Ultrasound, Hydro-distillation, liquid-liquid extraction; Solid Phase Extraction; Thin Layer Chromatography; Column Chromatography, Rotavapor, Freeze Drying.
 - Chemical Characterisation: UV-VIS spectrophotometer; HPLC-DAD; GC-MS; FTIR-ATR; NIR.
 - Bioactivities: Antioxidant (ABTS, DPPH, FRAP, Folin-Ciocalteu) and antimicrobial (microdilution).
- *In Vitro* Plant Tissue Culture:
 - Micropropagation (Media preparation; Plant Growth Regulators; Explants preparation and establishment; Shoots and *Callus* multiplication; organogenesis; rooting; acclimatization and acclimation).
 - Histology (Impregnation, slicing, staining).
- Plant Propagation: Substrate/Soil, Germination, propagation by cuttings, Greenhouse management and Cultivation.
- Field Works: Collection of Natural Medicinal and Aromatic Plants, Soil Sampling and Analysis,
- Scientific Findings Communication.

1.2. JOEIRAS E PANAIIS - TRADIÇÕES BEIRÃS, LDA (Olive Oil Mill)

11/2013 – 01/2014 (Castelo Branco, Portugal)

Bachelor Internship Self-Proposed

HACCP Plan Management; Operation in Every Step of Production; Quality Management

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2. Education

2.1. PhD in Agricultural Production Chains

Aproved

12/2017 – 09/2022

Universidade de Trás-os-Montes e Alto Douro (UTAD)

Curricular Units:

- Abiotic Stress in Horticulture Crops.
- Crops Under a Changing Environment.
- Experimental Design.
- Life Cycle Assessment of Food Systems.
- Plant Biotechnology (UMinho, Braga).
- Interactions Plant-Microbiome (UMinho, Braga).

Lab Rotations:

- Labdanum Fractionation by Column Chromatography- Universidad de Extremadura (UEX), Badajoz – Prof. Doctor Teresa Sosa Dias.
- Chemical Characterisation of Plant Extracts (Preparative LC and UPLC-DAD-ESI-MS) - Department of Food Chemistry and Phytochemistry, Institute of Applied Biosciences, Karlsruhe Institute of Technology (KIT), Germany – Prof. Doctor Mirko Bunzel.

Thesis:

- “Valorisation of *Cistus ladanifer* L.: From production to evaluation of raw materials”, Supervisors: Prof. Doutora Amélia Silva (UTAD), Prof. Doutora Fernanda Delgado (IPCB-ESA), Prof. Doutor José Carlos Gonçalves (IPCB-ESA)

2.2. MSc Food Production Innovation and Quality

Final Classification 18/20

01/2014 – 04/2016

Instituto Politécnico de Castelo Branco – Escola Superior Agrária (IPCB-ESA)

Curricula Units:

- Primary Production Innovation and Quality.
- Food Biochemistry and Toxicology.
- Advanced Microbiology.
- Risk Analysis.
- Packaging, Storing and Logistics.
- Investment and Modernisation Projects.
- Audits.
- Novel Products Development.
- Sensory Analysis.
- Quality Statistical Control.
- Food Processing and Innovation.
- Environment Protection.

Lab Rotation:

- Assessment of water vapor barrier properties of bio-based films– Instituto Superior de Agronomia, Lisboa – Prof. Doutor Vitor Alves.

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Thesis:

- “Active films with resveratrol to control *Campylobacter* spp. e *Arcobacter* spp. in broiler meat”, Orientação: Prof. Doutora Cristina Pintado (IPCB-ESA) e Prof. Doutora Fernanda Domingues (UBI). Classificação de 19 valores.

2.3. BSc Biotechnology

Final Classification 16/20

09/2010 – 01/2014

Universidade da Beira Interior (UBI)

Curricular Units:

- Calculus I and II.
- Numeric and Linear Algebra.
- Chemistry I and II.
- Physics I and II.
- Molecular and Celular Biology.
- Biotechnology Prespectives.
- Plant Biology.
- Analytical Instrumental Methods.
- Biochemistry I and II.
- Physical-Chemistry.
- Biostatistics.
- Organic Chemistry.
- Microbiology.
- Genetics.
- Bioprocesses.
- Biosafety and occupational hygiene.
- Enzimology.
- Biochemical Engineering I and II.
- Food Biotechnology.
- Industrial Bioengineering.
- Environmental Biochemistry.
- Enzimatic Engineering.
- Genetic Engineering.

Final project:

- “*Agrobacterium tumefaciens*-mediated transformation of *Prunus persica* L. Batsch to confer resistance to *Anarsia lineatella* Zeller pest.”, Orientadores: Prof. Doutora Fernanda Domingues e Prof. Doutor José Carlos Gonçalves.

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3. Training

3.1. Entrepreneurship

06/2020

EIT Food Global Food Venture Program Stage I -Summer School

- Challenges in the Food System
- Problem Solving
- Design Thinking
- Customer Empathy Map
- Minimum Viable Product (MVP)
- Market Segmentation
- Beachhead Market Strategy
- Competitor Analysis
- Market Testing
- Value Proposition
- Business Models and Business Model Canvas
- Financial Plan & Financial Forecast
- Managing Assumptions and Risks
- Falsifiable Hypotheses
- Entrepreneur Elevator Pitch

3.2. Training skills

Classification 5/5

01/2018

RPB Consultores

Competences:

- Analysis of the training intervention context.
- Apply diversity management methodologies during training.
- Apply dynamization and pedagogical interaction techniques.
- Evaluate and report results of the training and learning skills.
- Conceive evaluation instruments.
- Conceive/explore didactic resources.
- Design the training program.
- Plan learning activities.
- Manage and use collaborative learning platforms.

3.3. HACCP consulting and auditing

Classification 19/20

08/2022

Cognos, Formação e Desenvolvimento Pessoal

- Food Safety and Legislation.
- Food hazards and diseases.
- Code of food hygiene practices.
- HACCP prerequisites.
- HACCP methodology.
- HACCP plan / generic models.
- Revision of HACCP plan.
- Audition of HACCP system.

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4. Competences

4.1. Languages

Mother-language: Portuguese

	Understanding		Speaking		Writing
	Listening	Reading	Production	Interaction	
English	C1	C1	B2	B2	C1
Spanish	A2	B1	A1	A1	A2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

4.2. Digital

- Text production:
 - Microsoft Word
 - Endnote (references)
 - Mendeley (references)
- Data Analysis and Organisation:
 - Microsoft Excel
 - SPSS
 - Graphpad
- Presentation:
 - Microsoft PowerPoint
- Image Edition:
 - GIMP

4.3. Laboratory Work

- Microbiology
 - Bactéria and funghi.
 - Medium preparation.
 - Liquid and solid culture.
 - Susceptibility tests (MIC e MMC).
 - Staining
- Plant Tissue Culture
 - Medium preparation.
 - Micropropagation (establishment, multiplication, rooting and acclimatization / acclimatation)
 - Cell culture (Callus and Cambial Meristematic Cells).
 - Histology
- Molecular Biology
 - DNA extraction.
 - PCR.
 - Electrophoresis.
- Chemistry
 - Phytochemicals and food chemicals extraction

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- Extract Purification (SPE, TLC, Column Chromatography)
- Compound derivatization.
- GC-FID and GC-MS
- HPLC-DAD, HPLC-UV, HPLC-ESI-MS
- Atomic absorption
- FTIR-ATR and NIR
- UV-VIS spectrophotometry
- Gravimetric methods

- **Bioactivities**
 - Antioxidant Capacity (Folin-Ciocalteu, DPPH, ABTS, FRAP).
 - Enzymatic inhibition.
 - Sun Protection Factor.
 - Cytotoxic activity.

- **Food Science**
 - Bio-base films preparation (casting method, methylcellulose, carboxymethylcellulose e chitosan).
 - Evaluation of resistance to water vapor transfer.
 - Texturometer (tensile tests).
 - Food composition (fiber, crude protein, crude fat, fatty acids profile, ashes, energy)

4.4. Food Production Units

- Food Safety and Quality Management.
- Production operation and management (experience in olive oil mills)

4.5. Horticulture

- Medicinal and Aromatic Plants.
- Vegetative and seminal propagation.
- Plant improvement.

4.6. Experimental Design and Data Analysis

- Factorial Design: mean comparison and factor effects
 - Homogeneity of Variances
 - Normality.
 - Data Transformation.
 - One, Two e Three-way ANOVA
 - Welch's ANOVA
 - Non-parametric Kruskal-Wallis test.
 - Correlation test.

4.7. Other

- Problem solving.
- Persistence.
- Creativity.
- Critical Thinking.
- Multidisciplinary.
- Adaptability (team or individual).
- Planning.

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5. Experience

5.1. Research Projects (Collaboration)

- Cultivar: Skills network for sustainable development and innovation in the Agri-food sector (CENTRO-01-0145-FEDER-000020)
2020-2022
 - Rockrose (*Cistus ladanifer* L.) fruits and seeds for human and animal food.
 - *Cistus ladanifer* provenance trial for genetic improvement and conservation purposes.
- Functional foods with resveratrol to control and prevent pathogenic colonization of poultry meat (PTDC/AGR-ALI/121876/2010)
2014-2016
 - Formulation of a film with bio-based polymers (carboxymethylcellulose and chitosan) with the inclusion complex resveratrol-cyclodextrin to control pathogenic microorganisms associated with the consumption of poultry meat.

5.2. Conference Organising Committee

- III Colóquio Nacional de Plantas Aromáticas e Medicinais
03/2022
Castelo Branco
- XVI Encontro de Química dos Alimentos
10/2022
Castelo Branco

5.3. Professional Technical Course Internship Guidance

- Madalena D' Oliveira Pereira (2018). "Accompaniment of an agricultural and livestock farm in organic production mode: Use of natural resources." Internship Report of the Higher Professional Technical Course in Agricultural Production, Instituto Politécnico de Castelo Branco, Escola Superior Agrária.
- Catarina Alexandra Costa Teixeira Lopes Mateus (2021) "Laboratory activities with plants, fruits and plant extracts. In vitro evaluation assay of the germination capacity of *Lavandula luisieri* seeds." Internship Report of the Higher Professional Technical Course in Chemical and Biological Analysis, Instituto Politécnico de Castelo Branco, Escola Superior Agrária.

5.4. Sport Events Organisation

- National Showjumping Competition (Equestrian)
- Regional Dressage Competition (Equestrian)

5.5. Investment Projects

- Olive Oil Mill (2017 – now)
Sociedade Agrícola do Couto de Penha Garcia, Lda.
- Equestrian Tourism (PDR2020, 2019 – now)

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Sociedade Agrícola do Couto de Penha Garcia, Lda.

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6. Publications list

6.1. Scientific Publications in Indexed Journals.

- Anjos, O., Frazão, D., & Caldeira, I. (2017). Physicochemical and sensorial characterization of honey spirits. *Foods*, 6(8): 58. <https://doi.org/10.3390/foods6080058>.

Citations (Google Scholar)	Journal Citation Reports				Scopus	
	IF (2018)	Q (2018)	IF (2021)	Q (2021)	CiteScore (2018)	CiteScore (2021)
16	3.011	Q2*	5.561	Q1*	0.6	4.1

*Food Science and Technology

- Frazão, D. F., Raimundo, J. R., Domingues, J. L., Quintela-Sabarís, C., Gonçalves, J. C., & Delgado, F. (2018). *Cistus ladanifer* (Cistaceae): a natural resource in Mediterranean-type ecosystems. *Planta*, 247(2): 289-300. <https://doi.org/10.1007/s00425-017-2825-2>.

Citations (Google Scholar)	Journal Citation Reports				Scopus	
	IF (2019)	Q (2019)	IF (2021)	Q (2021)	CiteScore (2018)	CiteScore (2021)
28	3.390	Q1*	4.540	Q1*	5.4	6.9

*Plant Science

- Raimundo, J.R., Frazão, D.F., Domingues, J.L., Quintela-Sabarís, C., Dentinho, T.P., Anjos, O., Alves, M., & Delgado, F. (2018). Neglected Mediterranean plant species are valuable resources: the example of *Cistus ladanifer*. *Planta* 248: 1351–1364. <https://doi.org/10.1007/s00425-018-2997-4>.

Citations (Google Scholar)	Journal Citation Reports				Scopus	
	IF (2019)	Q (2019)	IF (2021)	Q (2021)	CiteScore (2018)	CiteScore (2021)
24	3.390	Q1*	4.540	Q1*	5.4	6.9

*Plant Science

- Frazão, D. F., Paulo, L., Peres, F., Resende, M., Santo, C. E., Barroca, C., & Delgado, F. (2022). *Cistus ladanifer* seeds: From ancient snack to novel and sustainable food ingredient. *Journal of Food Composition and Analysis*, 109: 104503. <https://doi.org/10.1016/j.jfca.2022.104503>.

Citations (Google Scholar)	Journal Citation Reports				Scopus	
	-	-	IF (2021)	Q (2021)	-	CiteScore (2021)
-	-	-	4.520	Q2	-	5.7

* Food Science and Technology

- Frazão DF, Martins-Gomes C, Steck JL, Keller J, Delgado F, Gonçalves JC, Bunzel M, Pintado CMBS, Dias TS, Silva AM (2022) Labdanum resin from *Cistus ladanifer* L.: a natural and sustainable ingredient for skin care cosmetics with relevant cosmeceutical bioactivities. *Plants*, 11 (11): 1477. <https://doi.org/10.3390/plants11111477>.

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Citations (Google Scholar)	Journal Citation Reports				Scopus	
	-	-	IF (2021)	Q (2021)	-	CiteScore (2021)
1	-	-	4.658	Q1	-	3.6

* Plant Science

- 4 scientific papers in preparation/submitted/in revision

6.2. Scientific Publications in Conference Proceedings

- Frazao, D.F., Duarte, A., Goulão, M., Domingues, F., Pintado, C. M. G. S. (2015). Active edible films with a resveratrol-cyclodextrin inclusion complex to control poultry pathogenic microorganisms. In 29th EFFoST International Conference (Atens, Greece), Volume II, 1553-1558.

https://www.researchgate.net/publication/290394405_Active_edible_films_with_a_resveratrolcyclodextrin_inclusion_complex_to_control_poultry_pathogenic_microorganism_s

Food Science and Technology

- Gonçalves, J. C., Skec, A., Krnjac, A., Delgado, T., Frazão, D., Farinha, N., & Coelho, T. (2018). Morphological and physiological effects of two different light sources on in vitro multiplication of chestnut and prickled broom. *Acta Horticulturae* 1224: 57-66. <https://doi.org/10.17660/ActaHortic.2018.1224.9>.

Citations (Google Scholar)	Scopus	
	CiteScore (2019)	CiteScore (2021)
-	0.4	0.5

Plant Science

- Raimundo, J. R., Frazão, D. F., Vitorino, C., Alves, M., & Gonçalves, J. C. (2018, August). Genetic and chemical diversity in *Stevia rebaudiana* Bertoni using microsatellite markers and HPLC analysis. *Acta Horticulturae* 1297: 639-646. <https://doi.org/10.17660/ActaHortic.2020.1297.84>.

Citations (Google Scholar)	Scopus	
	CiteScore (2019)	CiteScore (2021)
-	0.4	0.5

Plant Science

- Frazão, D. F., Silva, H., Silva, A. M., Gonçalves, J. C., Mesquita, C., Delgado, F. (2022). Labdanum resin from *Cistus ladanifer* L.: evaluation of residual water vs. extraction yield. *Actas Portuguesas de Horticultura* 37:73-84. <https://aphorticultura.pt/wp-content/uploads/2022/09/Atas-Portuguesas-de-Horticultura-N%C2%BA37.pdf>

Plant Science

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6.3. Scientific Publications in Non-Indexed Journals

- Frazão, D. F., Barroca, C., Silva, A., Delgado, F. M. G., & Gonçalves, J. C. (2022). *Cistus ladanifer* L. tissue culture from leaf and stem explants. *Journal of Biotechnology & Bioresearch* 4 (3): 544-550.

https://repositorio.ipcb.pt/bitstream/10400.11/8199/1/JBB.000587micropropagaA_A_o.pdf.

Plant Science

- Kivi, M. and Frazão, D. F. (2022). *Cistus ladanifer* extracts – Part 3. *Aromatika* magazine 9.4. Winter: 12-15. Personal copy.

Plant Science

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7. Conference communications

7.1. Oral Communications (Internacional Conferences)

- **Frazão, D. F.**, Gonçalves, J. C., Silva, A. M. & **Delgado, F.** (2022). *Cistus ladanifer* L. natural shrubland management. XII Encontro Internacional de Fitossociologia, Castelo Branco, Portugal.
- **Frazão, D. F.**, Barroca, C., Diamantino, T., Carneiro, J. P., Quintela-Sabarís, C., **Ribeiro, M. M.**, Borralho, N. (2022). Rockrose common garden experiment. XII Encontro Internacional de Fitossociologia, Castelo Branco, Portugal.

7.2. Panel Communications (Nacional Conference)

- **Frazão, D.F.**, Mesquita, C., **Delgado, F.** (2022). Labdanum resin extraction from *Cistus ladanifer* L.: evaluation of residual water vs extraction yield. III Colóquio Nacional de Plantas Aromáticas e Medicinais, Castelo Branco, Portugal.
- Frazão, D. F., **Peres, F.**, Rodrigues, A. M., Paulo, L., Resende, M., Barroca, C., **Delgado, F.** (2021). Ancient food ingredient revisited: seeds from *Cistus ladanifer*. XV Encontro de Química dos Alimentos, Madeira, Portugal.
- Frazão, D. F., Gonçalves, J. C., Silva, A. M. & **Delgado, F.** (2022). Cultivo da esteva como nova abordagem à sua valorização. Congresso Nacional das Escolas Superiores Agrárias, Santarém, Portugal.

7.3. Panel Communications (International Conference)

- **Barroca, C., Frazão, D. F.**, Barata, A., Ramalho, I., Diogo, M. G., **Domingues, J.**, Gonçalves, J. C., **Coelho, M. T.** (2022). XII Encontro Internacional de Fitossociologia, Castelo Branco, Portugal.
- Frazão, D. F.,_Delgado, F., **Gonçalves, J. C.** (2019). Callogenesis from *C. ladanifer* subsp. *ladanifer*. 4th International Conference on Natural Products Utilization: From Plants to Pharmacy Shelf, Albena Resort, Bulgaria.

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8. Hobbies and Interests

8.1. Sport: Equestrian

- **General Riding Coach Level 1 (IPDJ / FEP)**
Beginner and Elementary Riding lessons experience at Centro Equestre de Castelo Branco. 2020-2022

- **Level 1 National Judge of the Show Jumping discipline (FEP)**
 - CSN-C Castelo Branco 2017 (Juri member)
 - CSN-C Castelo Branco 2018 (Juri member)
 - Jogos Equestres Nacionais, CSN-C 2018 (Juri member)
 - CSN-C Castelo Branco 2019 (Juri member)
 - CSN-C Almeida 2019 (Juri member)

- **Senior Dressage Regional Champion (Portugal Centre Region) 2016, 2017, 2018**