

## **CURRICULUM VITAE**

**Name:** RICARDO MANUEL DE SEIXAS BOAVIDA FERREIRA

**Born in:** Almeirim (Portugal)

**Date of Birth:** 11 March 1957

**Home address:** R. Professor Reinaldo dos Santos, nº 12, 2º D, 1500-505 Lisboa, Portugal; tel. 351.309934614

**Institutional address 1:** Departamento de Botânica e Engenharia Biológica, Instituto Superior de Agronomia, Universidade Técnica de Lisboa, 1349-017 Lisboa, Portugal; tel: 351.213653416; fax: 351.213653238; e-mail: [rbferreira@isa.utl.pt](mailto:rbferreira@isa.utl.pt)

**Institutional address 2:** Disease & Stress Biology Laboratory, Instituto de Tecnologia Química e Biológica, Universidade Nova de Lisboa, Apartado 127, 2781-901 Oeiras, Portugal; tel: 351.214469651; fax: 351.214433644; e-mail: [rbferreira@itqb.unl.pt](mailto:rbferreira@itqb.unl.pt)

### **Academic Career:**

Graduate in Agronomy (Technical University of Lisbon), in 1981

Master of Science in Plant Productivity (Technical University of Lisbon), in 1983

Ph.D. in Biochemistry (University of East Anglia, U.K.), in 1987

Agregação (Technical University of Lisbon), in 1994

### **Professional Category:**

Full Professor at the Instituto Superior de Agronomia, Technical University of Lisbon, Portugal; phone 351.213653416; fax 351.213635031; E-mail [rbferreira@isa.utl.pt](mailto:rbferreira@isa.utl.pt)

Researcher at the Instituto de Tecnologia Química e Biológica, New University of Lisbon, Oeiras, Portugal; phone 351.214469651; fax 351.214433644; E-mail [rbferreira@itqb.unl.pt](mailto:rbferreira@itqb.unl.pt)

**Main Research Area:** Biochemistry & Molecular Biology

**Major areas of research, each of which includes both basic and applied lines of research:**

- **New and non-toxic strategies to control and fight pathogenic fungi (ISA)**
  - Transcriptomic, proteomic & metabolomic analyses of the interaction grapevine/pathogenic fungi; major fungi under study: *Uncinula necator* (responsible for grapevine powdery mildew) and several fungi responsible for grapevine wood diseases (ex: *Phomopsis viticola* and *Phaeoemoniella chlamydospora*);
  - Action mechanisms of blad antifungal polypeptide;
  - Host-induced changes in human fungal pathogen exoglycomes (e.g. *Aspergillus fumigatus*);
  - Transcriptomic & metabolomic changes in *Aspergillus fumigatus* when challenged by other fungi
  - Transcriptomic, proteomic & metabolomic analyses of the interaction human cells/pathogenic fungi;
  - Search & development of novel and non-toxic fungicides, active against human, animal and plant pathogens;
  - Stereochemical studies on dirigent protein function;
  - Differential approaches to genetically transform grapevine, rose and other plants, by constitutive expression of antifungal (or other) proteins;
  - Role of sap long-distance macromolecular trafficking in plant signalling;
  - Development of specific bioelectronic methodologies capable of detecting and treating grapevine plants infected with esca and other recalcitrant wood disease-causing fungi.
  
- **The wine proteins (ISA)**
  - Elucidation of the chemical mechanism(s) responsible for wine protein haze formation;
  - Structural identification of the X factor(s).
  
- **Biomedical applications of plant natural products (ITQB)**
  - Search for novel, bioactive, natural plant products (including polyphenols) in a wide range of plants, including Portuguese endemic species, some of which are under threat of extinction;
  - Selection of the bioactive, natural plant products for antioxidant, antiproliferative (using human neuroblastoma and other cell cultures) and/or antimicrobial activities (using human, animal and plant-fungal and bacterial pathogens);

- Transcriptomic and proteomic analyses of the bioactive, natural plant product treatment of Parkinson's disease, using human neuroblastoma cells treated with rotenone;
- Effect of treating rotenone-incubated human neuroblastoma cells with bioactive, natural plant products on the role played by the ubiquitin/proteasome system (UPS) in Parkinson's disease;
- Bioavailability of antioxidant compounds after *in vitro* digestion and human intervention studies of highly antioxidant fruits and other plant organs;
- Redox proteomics in a neurodegeneration cell model and in human peripheral blood mononuclear cells (PBMC);
- Transcriptomic and proteomic changes induced by novel, natural MMP-9 inhibitors on cultured human colon cancer cells.

### **Supervision experience**

Supervision of many final-year undergraduates (>40), Master of Science (>15) and Ph.D. students (>10), as well as other post-graduates (>30) and post-doctorates (>15), from both Portugal and abroad (Italy, Netherlands, France, Egypt, India, China, Russia, Bosnia).

### **Supervision of Ph.D. students:**

**1- Paula Cristina Rodrigues dos Ramos** (1995) "Via proteolítica dependente da ubiquitina. Aspectos particulares em sistemas vegetais". Biochemistry, Faculty of Sciences, University of Lisbon, Lisbon. FCT grant ref. BD/1045/90-IF

**2- Maria da Glória Calado Inglês Esquível** (1995) "Degradação da proteína total e da RuBP carboxilase em plantas C3 e C4 em condições normais e de stresse". Agronomic Engineering, Technical University of Lisbon, Lisbon. Assistant at the Technical University of Lisbon, Lisbon. In collaboration with Professor Artur Teixeira, Technical University of Lisbon, Lisbon.

**3- Emanuel Franco** (1996) "Agregados de proteínas vegetais. Referências particulares à ribulose bisfosfato carboxilase e às globulinas de leguminosas". Agronomic Engineering, Technical University of Lisboa, Lisbon. FCT grant ref. BD/1694/91-IF

**4- Paulo Alexandre Cortes Salgado** (2001) "Digestion des protéines de légumineuses et réponses immunitaires chez le porcelet et le porc en croissance". FCT grant ref. PRAXIS XXI/ In collaboration with Jean-Paul Lallès and João Bengala Freire.

**5- Sara Alexandra Valadas da Silva Monteiro** (2001) "Análise molecular das proteínas responsáveis pela turvação dos vinhos". Agronomic Engineering, Technical University of Lisboa, Lisbon. FCT grant ref. PRAXIS XXI/

**6- Maria Cláudia Godinho Ferreira Dias Nunes dos Santos** (2006) "Diferentes aspectos da proteólise em plantas: A via da ubiquitina/proteassoma e o catabolismo das proteínas de reserva de sementes de leguminosas". Biochemistry, Faculty of Sciences, University of Lisbon, Lisbon. FCT grant ref. PRAXIS XXI/BD/5699/95.

**7- Cristina Maria Mendes Branco Price** (2008) "Gene expression in response to hypoxia stress in *Arabidopsis thaliana*: transcriptional, translational and post-translational regulation". ITQB, New University of Lisbon, Oeiras. FCT grant ref. SFRH/BD/9165/2002. In collaboration with Professor Julia Bailey-Serres, University of Califórnia, USA.

**8- Ana Cristina Ferreira da Conceição Ribeiro** (2009) "Análise molecular de lectinas em sementes de leguminosas". Bromatology, Faculty of Pharmacy, University of Lisbon, Lisbon. Assistant at the University of Lisbon, Lisbon.

**9- Joana Arroz Correia Albuquerque** (2009) "Caracterização da subtilisina relacionada com a degradação da ribulose bisfosfato carboxilase de plantas". Agronomic Engineering, Technical University of Lisboa, Lisbon. FCT grant ref. SFRH/BD/8974/2002.

**10- Regina Maria Fonseca da Luz Freitas** (2009) “Expression of protein biologic activity. Different strategies in a space/time referential”. Biochemistry, ITQB, New University of Lisbon, Oeiras. FCT grant ref. SFRH/BD/17115/2004.

### **Currently involved in the supervision of the following Ph.D. students:**

- 1- **Ana Sofia Henriques da Silca Sénica Caeiro**. FCT grant ref. PRAXIS XXI/BD/19880/99
- 2- **Lucélia Rodrigues Tavares**. FCT grant ref. SFRH/BD/37382/2007. In collaboration with Cláudia Nunes dos Santos
- 3- **Paula Cristina Branco Cabrita Cunha**. FCT grant ref. SFRH/BD/28164/2006. In collaboration with Luísa Brito
- 4- **Alexandre Filipe Guerreiro Borges**. FCT grant ref. SFRH/BD/61903/2009. In collaboration with Sara Monteiro and Ana Lourenço
- 5- **Rui Carlos Soares Pimpão**. FCT grant ref. SFRH/BD/63615/2009. In collaboration with Gary Williamson and Cláudia Santos

### **Supervision of post-doctorates:**

- 1- **Maria Antonieta Piçarra Pereira** (1995-2008) Professora Adjunta do Instituto Politécnico de Castelo Branco
- 2- **Michèle Ridolfi** (1996/1997) In collaboration with Manuela Chaves
- 3- **Maria da Glória Calado Inglês Esquível** (1995 a 2001) Auxiliar Professor, Technical University of Lisbon
- 4- **Dmitri Semenovich Valiushok** (1998 a 2000) FCT grant ref. PRAXIS XXI/BPD/14175/97
- 5- **Tulassi Rajasekhar Baru** (1999 a 2001) FCT grant ref. PRAXIS XXI/BPD/16398/98
- 6- **Sara Alexandra Valadas da Silva Monteiro** (2001-2008) FCT grant ref. SFRH/BPD/5712/2001
- 7- **Sam Cherian** (2002-2005) FCT grant ref. SFRH/BPD/9053/2002
- 8- **Chen Zhenjia** (2003-2006) FCT grant ref. SFRH/BPD/12799/2003
- 9- **Maria Cláudia Godinho Ferreira Dias Nunes dos Santos** (2006-2008) FCT grant ref. SFRH/BPD/26562/2006
- 10- **Alexandra Manuela Lourenço Carreira** (2006-2008) SFRH/BPD/26544/2005
- 11- **Dina Maria Pereira Carrilho** (2006- 2009)
- 12- **Jorge Fernandes Anjos** (2008-2010) FCT grant ref. SFRH/BPD. Em colaboração com Virgílio Loureiro
- 13- **José António Melo da Costa Nunes** (2009-2011) FCT grant ref. SFRH/BPD/30365/2006
- 14- **Damiano Vesentini** (2006-2011) FCT grant ref. SFRH/BPD/26564/2005. In collaboration with Helena Oliveira

### **Currently involved in the supervision of the following post-doctorates:**

- 1- **Ana Cristina Ferreira da Conceição Ribeiro** (2009- )
- 2- **Regina Maria Fonseca da Luz Freitas** (2010- ) FCT grant ref. SFRH/BPD/66235/2009. In collaboration with Sara Monteiro
- 3- **Marta Alexandra Marques Alves** (2011- ) FCT Grant ref. SFRH/BPD/76646/2011. In collaboration with Cláudia Santos and Derek Stewart
- 4- **Ana Isabel Gusmão Lima** (2012- ) FCT Grant ref. SFRH/BPD/79955/2011. In collaboration with Sara Monteiro

### **Participation in research projects**

Coordination and execution of many research projects, both national and international (3 EU, 20 FCT, 7 funded by AdI and FCT, in collaboration with private companies).

Instituto Nacional de Investigação Científica (INIC):

CBA (1981-1987)

CTQB (1989-1992)

CBAA (1987-1995)

Junta Nacional de Investigação Científica e Tecnológica (JNICT):

- PMCT/C/BIO/206/87 (1988-1990)
- PMCT/C/AGR/153/87 (1988-1990)
- 0084/E/91 (1991-1992)
- PMCT/C/BIO/876/90 (1990-1993)
- PMCT/C/BIO/886/90 (1990-1993) - PI
- STRD/AGR/0023 (1993-1995)

EDP (private company)

- Fund for Plant Biodiversity (2010-2011)

Fundação para a Ciência e a Tecnologia (FCT):

- ITQB (1989- )
- CBAA (1995- )
- PRAXIS/2/2.1/QUI/350/94 (1997-2000) - PI
- PRAXIS/2/2.1/BIA/327/94 (1997-2000)
- PRAXIS/3/3.2/CA/2093/95 (1997-2000)
- PRAXIS/3/3.2/HORT/2140/95 (1997-2000) - PI
- PRAXIS/3/3.2/AGR/2180/95 (1997-2000)
- PRAXIS/PCNA/C/BIA/107/96 (1997-1999)
- PRAXIS/P/AGR/11058/1998 (1999-2001) - PI
- POCTI/AGR/36133/2000 (2000-2003)
- REEQ/122/AGR/2005 (2005-2006) - PI
- PTDC/BIA-QOR/68211/2006 (2008-2011) - PI
- PTDC/AGR-AAM/65611/2006 (2008-2011) - PI
- PTDC/BIA-BCM/111617/2009 (2011-2014) - PI

Agência de Inovação, SA (AdI):

- RESÓDIO (2002-2006) - PI
- KITPROT (2002-2006) - PI
- ROSAOÍDIO (2006-2008) - PI
- NEOTEC - PROBLAD (2006-2008) - PI
- QREN TOM.ESCA (2009-2012) - PI

European Union (EU):

- CT920865 (1994-1996)
- PL920248 (1992-1996)
- EU FP7 KBBE-2010-4265942 (EUBERRY) (2011-2014)

## PUBLICATIONS

*In International Books:*

- **Davies, D.D. and Ferreira, R.B.** (1987) Protein turnover under conditions of osmotic stress. *In:* "Drought resistance in plants: physiological and genetic aspects" (pp. 215-232). Monti, L. e Porceddu, E., eds. Agriculture series. Comissão das Comunidades Europeias (EUR 10700 EN), Luxemburgo.
- **Ferreira, R.M.B. and Teixeira, A.R.N.** (1993) Metabolism of amino acids. *In:* "Encyclopaedia of Food Science, Food Technology and Nutrition", (R. Macrae, R.K. Robinson e M.J. Sadler, eds.), vol. 1, pp. 158-166. Academic Press, London.
- **Teixeira, A.R.N. and Ferreira, R.M.B.** (1993) Ripening of fruits. *In:* "Encyclopaedia of Food Science, Food Technology and Nutrition", (R. Macrae, R.K. Robinson e M.J. Sadler, eds.), vol. 6, pp. 3933-3940. Academic Press, London.

- **Ferreira, R.M.B. and Teixeira, A.R.N.** (2003) Amino acids (c) Metabolism. *In: "Encyclopedia of Food Sciences and Nutrition"*, (B. Caballero, L. Trugo and P. Finglas, eds.), Academic Press, London.
- **Teixeira, A.R.N. and Ferreira, R.M.B.** (2003). Ripening of fruit. *In: "Encyclopedia of Food Sciences and Nutrition"*, (B. Caballero, L. Trugo and P. Finglas, eds.), Academic Press, London.
- **Ferreira, R.B.** (1993-2004) Editor of the area of Biochemistry and author of hundreds of entries. *Enciclopédia Luso-Brasileira de Cultura*, 2nd Edition, Editorial Verbo, Lisboa.
- **Monteiro, S., Batista, L., Loureiro, V., Teixeira, A. and Ferreira, R.B.** (2007) Major characteristics of wine proteins. *In: Macromolecules and secondary metabolites of grapevine and wine*, (P. Jeandet, C. Clément and A. Conreux), pp. 153-158. Lavoisier, Paris.
- **Ferreira, R.B., Monteiro, S., Freitas, R., Santos, C.N., Chen, Z., Batista, L.M., Duarte, J., Borges, A. and Teixeira, A.R.** (2008) Plant/fungal interactions studied at the molecular level. *In: Plant pathology concepts and laboratory exercises*. 2nd Edition. Chapter 28, pp. 309-322. R.N. Trigiano, M.T. Windham, and A.S. Windham, Eds. CRC Press, Boca Raton.
- **Monteiro, S. and Ferreira, R.B.** (2008) Testing Blad, a potent antifungal protein. *In: Plant pathology concepts and laboratory exercises*. 2nd Edition. Chapter 29, pp. 323-328. R.N. Trigiano, M.T. Windham, and A.S. Windham, Eds. CRC Press, Boca Raton.
- **Loureiro V, Ferreira MM, Monteiro S and Ferreira RB** (2012) The Microbial Community of Grape Berry. *In: The Biochemistry of the Grape Berry*, Gerós H, Chaves MM and Delrot S (Eds.), Chapter 12, pp. 241-268. Bentham Science Publishers.

***In National Scientific Journals:***

- **Ferreira, R.M. and Teixeira, A.R.** (1985) Some physical and catalytic properties of glutamate synthase from maize roots. *Ciência Biológica* (Portugal), **10** : 15-30.
- **Ferreira, R.M. and Teixeira, A.R.** (1987) Studies on glutamate synthase from the roots of maize. Effects of nicotinamide-adenine dinucleotides and inorganic salts on its activity. *Anais do Instituto Superior de Agronomia*, **42** : 231-247.
- **Ferreira, R.M.B.** (1987) Aspectos bioquímicos da degradação celular de proteínas. *Anais do Instituto Superior de Agronomia*, **42** : 267-297.
- **Franco, E., Ferreira, R.B. and Teixeira, A.N.** (1989) Effect of nitrogen source and protein synthesis inhibitors on glutamate dehydrogenase activity from *Lemna minor*. *Ciência Biológica (Mol. Cell. Biol.)* (Portugal), **14** : 59-70.
- **Monteiro, S., Piçarra-Pereira, M.A., Tanganho, M., Loureiro, V., Teixeira, A. and Ferreira, R.B.** (1998) Study of wine proteins by immunological methods. I- Production of highly specific antibodies. *Polish Journal of Food and Nutrition Sciences*, vol. **7/48**, n.º 2 (S) : 101-106.
- **Piçarra-Pereira, M.A., Monteiro, S., Loureiro, V., Teixeira, A. and Ferreira, R.B.** (1998) Study of wine proteins by immunological methods. II- Evidence for structural dissimilarity with chitinase and thaumatin. *Polish Journal of Food and Nutrition Sciences*, vol. **7/48**, n.º 2 (S) : 107-111.
- **Esquível, M.G., Ferreira, R.B. and Teixeira, A.R.** (1999) Development of a new method for determination of the rates of RuBP carboxylase degradation. *Agronomia Lusitana*, **47** : 351-357.
- **Ferreira, R.B.** (1999) The ubiquitin system for protein modification and degradation. *Agronomia Lusitana*, **47** : 287-315.
- **Ferreira, R.B., Monteiro, S., Batista, L., Loureiro, V. and Teixeira, A.** (2008) Micoses da vinha e instabilidade proteica de vinhos. *Enologia*, **51/52** : 11-23.
- **Ferreira, R.B.** (2008) Fungos patogénicos das plantas. A batalha química para a patogénese. *Agros, MMVIII(2)* : 4-13.
- **Santos, C.N., Tavares, L., Pontes, V., Oliveira, P. and Ferreira, R.B.** (2011) Poder antioxidante dos pequenos frutos e seus efeitos benéficos para a saúde humana. *Revista da Associação Portuguesa de Horticultura*, **104**: 26-29.
- **Ferreira, R.B., Monteiro, S.** (2012) Tanino polimerase – Apenas mais um exemplo da necessidade de entendimento entre investigadores e empresários para a resolução de problemas da nossa sociedade. *Enovitis*, **29** : 32-35.

***In International Scientific Journals:***

- **Ferreira, R.B. and Davies, D.D.** (1986) Is protein degradation correlated with either the charge or size of *Lemna* proteins? *Planta*, **169** : 278-288.
- **Ferreira, R.** (1986) Data in graphs and tables. *Nature*, **324** : 215-216.  
This note was subsequently commented by A.S.Beedle (1987) : Data in graphs and tables. *Nature*, **325** : 305.
- **Ferreira, R.B. and Davies, D.D.** (1987) Protein degradation in *Lemna* with particular reference to ribulose biphosphate carboxylase I. The effect of light and dark. *Plant Physiology*, **83** : 869-877.
- **Ferreira, R.B. and Davies, D.D.** (1987) Protein degradation in *Lemna* with particular reference to ribulose biphosphate carboxylase II. The effect of nutrient starvation. *Plant Physiology*, **83** : 878-883.
- **Ferreira, R.M.B. and Davies, D.D.** (1989) Nitrogen supply and light intensity on properties of glutamate dehydrogenase and glycollate oxidase in *Lemna*. *Phytochemistry*, **28** : 349-354.
- **Ferreira, R.M.B., Bird, B. and Davies, D.D.** (1989) The effect of light on the structure and organization of *Lemna* peroxisomes. *Journal of Experimental Botany*, **40** : 1029-1035.
- **Ferreira, R.B. and Davies, D.D.** (1989) Conversion of ribulose-1,5-biphosphate carboxylase to an acidic and catalytically inactive form by extracts of osmotically stressed *Lemna* fronds. *Planta*, **179** : 448-455.
- **Ferreira, R.B. and Shaw, N.M.** (1989) Effect of osmotic stress on protein turnover in *Lemna minor* fronds. *Planta*, **179** : 456-465.
- **Franco, E., Ferreira, R.M.B. and Teixeira, A.R.N.** (1992) Involvement of membrane damage in stress-induced oxidative deactivation of ribulose biphosphate carboxylase from *Lemna minor*. *Australian Journal of Plant Physiology*, **19** : 297-307.
- **Ferreira, R.M.B. and Teixeira, A.R.N.** (1992) Sulfur starvation in *Lemna* leads to degradation of ribulose-biphosphate carboxylase without plant death. *Journal of Biological Chemistry*, **267** : 7253-7257.
- **Cordeiro, A.F., Ferreira, R.B. and Teixeira, A.N.** (1993) *In vitro* degradation of ribulose biphosphate carboxylase in chloroplasts isolated from *Lemna minor* subjected to sulfur starvation. *Phyton*, **32** : 31-35.
- **Melo, T.S., Ferreira, R.B. and Teixeira, A.N.** (1994) The seed storage proteins from *Lupinus albus* seeds. *Phytochemistry*, **37** : 641-648.
- **Dorresteijn, E., Ferreira, R.B., Laureano, O. and Teixeira, A.R.** (1995) Electrophoretic and FPLC analysis of soluble proteins in four Portuguese wines. *American Journal of Enology and Viticulture*, **46** : 235-242.
- **Ferreira, R.B., Melo, T.S. and Teixeira, A.N.** (1995) Catabolism of the seed storage proteins from *Lupinus albus*. Fate of globulins during germination and seedling growth. *Australian Journal of Plant Physiology*, **22** : 373-381. doi: 10.1071/PP9950373.
- **Ramos, P.C.R., Cordeiro, A.C.F., Ferreira, R.M.B., Ricardo, C.P.P. and Teixeira, A.R.N.** (1995) The presence of ubiquitin-protein conjugates in plant chloroplast lysates is due to cytosolic contamination. *Australian Journal of Plant Physiology*, **22** : 893-901.
- **Ferreira, R.M.B., Ramos, P.C.R., Franco, E., Ricardo, C.P.P. and Teixeira, A.R.N.** (1995) Changes in ubiquitin and ubiquitin protein conjugates during seed formation and germination. *Journal of Experimental Botany*, **46** : 211-219.
- **Ramos, P.C.R., Ferreira, R.M.B. and Ricardo, C.P.P.** (1996) Synthesis of <sup>125</sup>I-ubiquitin conjugates in extracts of *Lemna minor*. *Journal of Experimental Botany*, **47** : 569-575.
- **Ferreira, R.M.B., Franco, E. and Teixeira, A.R.N.** (1996) Covalent dimerization of ribulose biphosphate carboxylase subunits by UV radiation. *Biochemical Journal*, **318** : 227-234.
- **Ferreira, R.B., Esquível, G. and Teixeira, A.R.** (1996) Immunological exercises for beginners. Analysis of plant proteins. *Biochemical Education*, **24** : 176-178.
- **Ramos, P.C.R., Ferreira, R.M.S.B., Franco, E. and Teixeira, A.R.N.** (1997) Accumulation of a lectin-like breakdown product of  $\beta$ -conglutin catabolism in cotyledons of germinating *Lupinus albus* L. seeds. *Planta*, **203** : 26-34. URL: <http://www.springerlink.com/content/7862735715262190/fulltext.pdf>
- **Gaspar, M.M., Ferreira, R.B., Chaves, M.M. and Teixeira, A.R.** (1997) Improved method for the extraction of proteins from *Eucalyptus* leaves. Application in leaf response to temperature. *Phytochemical Analysis*, **8** : 279-285.

- **Fonseca, P.A., Ferreira, R.B. and Teixeira, A.R.** (1997) The seed proteins from *Quercus suber*. *Journal of Agricultural and Food Chemistry*, **45** : 3443-3447.
- **Santos, C.N., Ferreira, R.B. and Teixeira, A.R.** (1997) The seed proteins of *Lupinus mutabilis*. *Journal of Agricultural and Food Chemistry*, **45** : 3821-3825.
- **Franco, E., Ferreira, R.B. and Teixeira, A.R.** (1997) Utilization of an improved methodology to isolate *Lupinus albus* conglutins in the study of their sedimentation coefficients. *Journal of Agricultural and Food Chemistry*, **45** : 3908-3913.
- **Esquível, M.G., Ferreira, R.B. and Teixeira, A.R.** (1998) Protein degradation in C<sub>3</sub> and C<sub>4</sub> plants with particular reference to ribulose biphosphate carboxylase and glycolate oxidase. *Journal of Experimental Botany*, **49** : 807-816.
- **Monteiro, S., Piçarra-Pereira, M.A., Tanganho M.C., Rente, J.P., Loureiro, V.B., Teixeira, A.R. and Ferreira, R.B.** (1999) Preparation of polyclonal antibodies specific for wine proteins. *Journal of the Science of Food and Agriculture*, **79** : 772-778.
- **Seabra, M.A., Freire, J.P.B., Ferreira, R.B., Cunha, L.F. and Teixeira, A.R.** (1999) Utilização do tremçoço (*Lupinus albus*), da féverole (*Vicia faba*) ou do feijão frade (*Vigna unguiculata*) no regime de desmame do leitão: carácter antigénico e implicações zootécnicas. *Revista Portuguesa de Zootécnia*, **6** : 133-149.
- **Ferreira, R.B., Franco, E. and Teixeira, A.R.** (1999) Calcium- and magnesium-dependent aggregation of legume seed storage proteins. *Journal of Agricultural and Food Chemistry*, **47** : 3009-3015. doi: 10.1021/jf981151c
- **Ferreira, R.B., Esquível, M.G. and Teixeira, A.R.** (2000) Catabolism of ribulose biphosphate carboxylase from higher plants. *Current Topics in Phytochemistry*, **3** : 129-165. (review article)
- **Ferreira, R.B., Monteiro, S., Piçarra-Pereira, M.A., Tanganho, M.C., Loureiro, V.B. and Teixeira, A.R.** (2000) Characterization of the proteins from grapes and wines by immunological methods. *American Journal of Enology and Viticulture*, **51** : 22-28.
- **Esquível, M.G., Ferreira, R.B. and Teixeira, A.R.** (2000) Protein degradation in C<sub>3</sub> and C<sub>4</sub> plants subjected to nutrient starvation. Particular reference to ribulose biphosphate carboxylase/oxygenase and glycolate oxidase. *Plant Science*, **153** : 15-23.
- **Freitas, R.L., Ferreira, R.B. and Teixeira, A.R.** (2000) Use of a single method in the extraction of the seed storage globulins from several legume species. Application to analyse structural comparisons within the major classes of globulins. *International Journal of Food Sciences and Nutrition*, **51** : 341-352.
- **Ferreira, R.M.S.B., Esquível, M.G.C.I. and Teixeira, A.R.N.** (2000) An accurate method to quantify ribulose biphosphate carboxylase content in plant tissue. *Plant, Cell & Environment*, **23** : 1329-1340.
- **Rosa, M.J.S., Ferreira, R.B. and Teixeira, A.R.** (2000) Storage proteins from *Lathyrus sativus* seeds. *Journal of Agricultural and Food Chemistry*, **48** : 5432-5439.
- **Seabra, M., Carvalho, S., Freire, J., Ferreira, R., Mourato, R., Cunha, M., Cabral, F., Teixeira, A. and Aumaitre, A.** (2001) *Lupinus luteus*, *Vicia sativa* and *Lathyrus cicera* as protein sources for piglets: ileal and total tract apparent digestibility of amino acids and antigenic effects. *Animal Feed Science & Technology*, **89** : 1-16.
- **Albuquerque, J.A., Esquível, M.G., Teixeira, A.R. and Ferreira, R.B.** (2001) The catabolism of ribulose biphosphate carboxylase from higher plants. A hypothesis. *Plant Science*, **161**, 55-65.
- **Monteiro, S., Piçarra-Pereira, M.A., Mesquita, P.R., Loureiro, V.B., Teixeira, A. and Ferreira, R.B.** (2001) The wide diversity of structurally similar wine proteins. *Journal of Agricultural and Food Chemistry*, **49** : 3999-4010.
- **Mesquita, P.R., Piçarra-Pereira, M.A., Monteiro, S., Loureiro, V.B., Teixeira, A.R. and Ferreira, R.B.** (2001). Effect of wine composition on protein stability. *American Journal of Enology and Viticulture*, **52** : 324-330.
- **Salgado, P., Freire, J.B., Ferreira, R.B., Seabra, M., Teixeira, A.R., Toullec, R. and Lallès, J.-P.** (2002) Legume proteins of the vicilin family are more immunogenic than those of the legumin family in weaned piglets. *Food and Agricultural Immunology*, **14** : 51-63.
- **Salgado, P., Montagne, L., Freire, J.P.B., Ferreira, R.B., Teixeira, A., Bento, O., Abreu, M.C., Toullec, R. and Lallès, J.-P.** (2002) Legume grains enhance ileal losses of specific endogenous serine-protease proteins in the weaned pig. *Journal of Nutrition*, **132** : 1913-1920.



- **Ferreira, R.B., Piçarra-Pereira, M.A., Monteiro, S., Loureiro, V.B. and Teixeira, A.R.** (2002) The wine proteins. *Trends in Food Science & Technology*, **12** : 230-239.
- **Ferreira, R.B., Freitas, R.L. and Teixeira, A.R.** (2003) Self-aggregation of legume seed storage proteins inside the protein storage vacuoles is electrostatic in nature, rather than lectin mediated. *FEBS Letters*, **534** : 106-110.
- **Monteiro, S., Piçarra-Pereira, M.A., Teixeira, A.R., Loureiro, V.B. and Ferreira, R.B.** (2003) Environmental conditions during vegetative growth determine the major proteins that accumulate in mature grapes. *Journal of Agricultural and Food Chemistry*, **51** : 4046-4053.
- **Monteiro, S., Barakat, M., Piçarra-Pereira, M.A., Teixeira, A.R. and Ferreira, R.B.** (2003) Osmotin and thaumatin from grape. A putative general defence mechanism against pathogenic fungi. *Phytopathology*, **93** : 1505-1512.
- **Salgado, P., Freire, J.P.B., Ferreira, R.B., Teixeira, A.R., Bento, O., Abreu, M.C., Toullec, R. E. and Lallès, J.-P.** (2003) Immunodetection of legume proteins resistant to small intestinal digestion in weaned piglets. *Journal of the Science of Food and Agriculture*, **83** : 1571-1580. doi: 10.1002/jsfa.1581
- **Ferreira, R.B., Freitas, R.L. and Teixeira, A.R.** (2003) The structure of *Lupinus* seed storage proteins. Recent developments. *Current Topics in Plant Biology*, **4** : 139-150. (review article)
- **Freitas, R.L., Teixeira, A.R. and Ferreira, R.B.** (2004) Characterization of the proteins from *Vigna unguiculata* seeds. *Journal of Agricultural and Food Chemistry*, **52** : 1682-1687.
- **Ribeiro, A.C., Teixeira, A.R. and Ferreira, R.B.** (2004) Characterization of globulins from common vetch (*Vicia sativa* L.). *Journal of Agricultural and Food Chemistry*, **52** : 4913-4920.
- **Ferreira, R.B., Monteiro, S.S., Piçarra-Pereira, M.A. and Teixeira, A.R.** (2004) Biotechnology of grapevine for increased resistance to fungal pathogens without compromising wine stability. *Trends in Biotechnology*, **22** : 168-173.
- **Branco-Price, C., Kawaguchi, R., Ferreira, R.B. and Bailey-Serres, J.** (2005) Genome-wide analysis of transcript abundance and translation in Arabidopsis seedlings subjected to oxygen deprivation. *Annals of Botany (London)*, **96** : 647-660.
- **Cherian, S., Reddy, M.P. and Ferreira, R.B.** (2006) Transgenic plants with improved dehydration-stress tolerance: Progress and future prospects. *Biologia Plantarum*, **50** : 481-495.
- **Monteiro, S., Piçarra-Pereira, M.A., Batista, L.M., Loureiro, V.B., Teixeira, A.R. and Ferreira, R.B.** (2006) Electrophoretic analysis of the polypeptide composition during berry development. *Vitis*, **45** : 149-150.
- **Santos, C., Caeiro, A.S., Branco-Price, C., Teixeira, A.R. and Ferreira, R.B.** (2006) Exposure of *Lemna minor* to arsenite: expression levels of the components and intermediates of the ubiquitin/proteasome pathway. *Plant and Cell Physiology*, **47** : 1262-1273.
- **Ferreira, R.B., Monteiro, S., Freitas, R., Santos, C.N., Chen, Z., Batista, L.M., Duarte, J., Borges, A. and Teixeira, A.R.** (2006) Fungal pathogens: The battle for plant infection. *Critical Reviews in Plant Sciences*, **25** : 505-524. doi: 10.1080/07352680601054610
- **Freitas, R.L., Teixeira, A.R. and Ferreira, R.B.** (2007) Vicilin-type globulins follow distinct patterns of degradation in different species of germinating legume seeds. *Food Chemistry*, **102** : 323-329.
- **Oliveira, P.B., Silva, M.J., Ferreira, R.B., Oliveira, C.M., and Monteiro, A.A.** (2007) Dry matter partitioning, carbohydrate composition, protein reserves and fruiting in 'Autumn Bliss' red raspberry vary in response to pruning date and cane density. *HortScience*, **42** : 77-82.
- **Monteiro, S., Piçarra-Pereira, M.A., Loureiro, V., Teixeira, A. and Ferreira, R.B.** (2007) The diversity of pathogenesis-related proteins decreases during grape maturation. *Phytochemistry*, **68** : 416-425.
- **Ferreira, R.B., Monteiro, S., Freitas, R., Santos, C.N., Chen, Z., Batista, L.M., Duarte, J., Borges, A. and Teixeira, A.R.** (2007) The role of plant defence proteins in fungal pathogenesis. *Molecular Plant Pathology*, **8** : 677-700.
- **Menezes, R.A., Amaral, C., Batista-Nascimento L., Santos, C., Ferreira R.B., Devaux F., Eleutherio, E.C.A. and Claudina Rodrigues-Pousada, C.** (2008) Contribution of Yap1 towards *S. cerevisiae* adaptation to arsenic mediated oxidative stress. *Biochemical Journal*, **414** : 301-311.
- **Caeiro, A.S., Ramos, P.C., Teixeira, A.R. and Ferreira, R.B.** (2008) The ubiquitin/proteasome pathway from *Lemna minor* subjected to heat shock. *Biologia Plantarum*, **52** : 695-702.

- **Batista,L., Monteiro,S., Loureiro, V.B., Teixeira, A.R. and Ferreira, R.B.** (2009) The complexity of protein haze formation in wines. *Food Chemistry*, **112** : 169-177.
- **Martin, N., Vesentini, D., Rego, C., Monteiro, S., Oliveira, H. and Ferreira, R.B.** (2009) *Phaeomoniella chlamydospora* infection induces changes in phenolic compounds content in *Vitis vinifera*. *Phytopathologia Mediterranea*, **48** : 101-116.
- **Freitas, R., Rego, C., Oliveira, H. and Ferreira, R.B.** (2009) Interactions among grapevine disease-causing fungi. The role of reactive oxygen species. *Phytopathologia Mediterranea*, **48** : 117-127.
- **Monteiro, S., Freitas, R., Rajasekhar. B.T., Teixeira, A.R. and Ferreira, R.B.** (2010) The unique biosynthetic route from *Lupinus*  $\beta$ -conglutin gene to blad. *PLoS ONE* 5(1): e8542. doi:10.1371/journal.pone.0008542
- **Cherian, S. and Ferreira, R.B.** (2010) Analysis of *Lupinus albus* heat-shock granule proteins in response to high temperature stress. *Biologia Plantarum*, **54** : 587-591.
- **Fortalezas, S., Tavares L., Pimpão R., Tyagi, M., Pontes, V., Alves, P.M., McDougall, G., Stewart, D., Ferreira, R.B. and Santos, C.N.** (2010) Antioxidant properties and neuroprotective capacity of strawberry tree fruit (*Arbutus unedo*). *Nutrients*, **2** : 214-229; doi:10.3390/nu2020214
- **Batista, L., Monteiro, S., Loureiro, V.B., Teixeira, A.R. and Ferreira, R.B.** (2010) Protein haze formation in wines revisited. The stabilizing effect of organic acids. *Food Chemistry*, **122** : 1067-1075. doi:10.1016/j.foodchem.2010.03.076
- **Tavares L., Fortalezas, S., Carrilho, C., McDougall, G.J., Stewart, D., Ferreira, R.B. and Santos, C.** (2010) Antioxidant and antiproliferative properties of strawberry tree tissues. *Journal of Berry Research*, **1** : 3-12. doi:10.3233/BR-2010-001
- **Tavares, L., Carrilho, D., Tyagi, M., Barata, D., Serra, A.T., Duarte, C.M.M., Duarte, R.O., Feliciano, R.P., Bronze, M.R., Chicau, P., Espírito-Santo, M.D., Ferreira, R.B. and Santos, C.N.** (2010) Antioxidant capacity of macaronesian traditional medicinal plants. *Molecules*, **15** : 2576-2592. doi:10.3390/molecules15042576
- **Cabrita, P., Fonseca, C., Freitas, R., Carreira, R., Capelo, J.L., Trigo, M.J., Ferreira, R.B., and Brito, L.** (2010) A secretome-based methodology may provide a better characterization of the virulence of *Listeria monocytogenes*: Preliminary results. *Talanta*, **83** : 457-463. doi:10.1016/j.talanta.2010.09.039
- **Tavares, L., Alves, P.M., Ferreira, R.B. and Santos, C.N.** (2011) Comparison of different methods for DNA-free RNA isolation from SK-N-MC neuroblastoma. *BMC Research Notes*, **4** : 3. doi: 10.1186/1756-0500-4-3
- **Tavares L, Figueira I, Macedo D, McDougall GJ, Leitão MC, Vieira HLA, Stewart D, Alves PM, Ferreira RB and Santos CN** (2012) Neuroprotective effect of blackberry (*Rubus* sp.) polyphenols is potentiated after simulated gastrointestinal digestion. *Food Chemistry*, **131**: 1443-1452. doi: 10.1016/j.foodchem.2011.10.025
- **Tavares L, Fortalezas S, Tyagi M, Barata D, Serra AT, Duarte CMM2, Duarte RO, Feliciano RP, Bronze MR, Espírito-Santo MD, Ferreira RB and Santos CN** (2012) Bioactive compounds from endemic plants of Southwest Portugal: Inhibition of acetylcholinesterase and radical scavenging activities. *Pharmaceutical Biology*, **50**: 239-246. doi: 10.3109/13880209.2011.596209
- **Ribeiro, A., Catarino, S. and Ferreira R.B.** (2012) Multiple lectin detection by cell membrane affinity binding. *Carbohydrate Research*, **352**: 206–210. doi:10.1016/j.carres.2012.01.024
- **Tavares L, Figueira I, McDougall GJ, Vieira HLA, Stewart D, Alves PM, Ferreira RB and Santos CN** (2012) Neuroprotective effects of digested polyphenols from wild blackberry species. *European Journal of Nutrition*, Published online 07Feb2012. doi: 10.1007/s00394-012-0307-7
- **Ferreira R, Freitas R and Monteiro S** (2012) Targeting carbohydrates: a novel paradigm for fungal control. *European Journal of Plant Pathology*, **133**: 117–140. doi: 10.1007/s10658-011-9867-2
- **Guerreiro, I., Casaca, A., Nunes, A., Monteiro, S., Nóvoa, A., Ferreira, R.B., Bom, J., Mallo, M.** (2012) Regulatory role for a conserved motif adjacent to the homeodomain of Hox10 proteins. *Development* **139** : 2703-2710. doi: 10.1242/dev.081448
- **Tavares L, McDougall GJ, Fortalezas S, Stewart D, Ferreira RB, Santos CN** (2012) The neuroprotective potential of phenolic-enriched fractions from four *Juniperus* species found in Portugal. *Food Chemistry*, **135**: 562–570. doi: 10.1016/j.foodchem.2012.05.023.
- **Chagas R, Monteiro S and Ferreira RB** (2012) Assessment of potential side-effects of commonly employed fining agents on white wine protein stabilization. *American Journal of Enology and Viticulture*, **63**. Published online 17Aug2012. doi:10.5344/ajev.2012.12016

- **Santos CN, Alves MM, Bento IT, Ferreira RB** (2012) A missing piece in protein deposition and mobilization inside legume seed storage vacuoles: calcium and magnesium. *Seed Science Research*, Published online 25Sep2012. doi:10.1017/S0960258512000177

***Protein and gene sequences***

- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 78 nucleotides (26 amino acids). *Pisum sativum* ubiquitin mRNA, partial cds. GenBank Accession number AY702914 (AAU14829).
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 633 nucleotides (221 amino acids). *Pisum sativum* 26S proteasome ATPase subunit mRNA, partial cds. GenBank Accession number AY623108 (AAT52191).
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 161 nucleotides (54 amino acids). *Pisum sativum* 26S proteasome beta subunit mRNA, partial cds. GenBank Accession number AY623107 (AAT52190).
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 614 nucleotides (204 amino acids). *Pisum sativum* ubiquitin activating enzyme E1 mRNA, partial cds. GenBank Accession number AY623106 (AAT52189).
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 236 nucleotides (61 amino acids). *Pisum sativum* ubiquitin conjugating enzyme E2 mRNA, partial cds. GenBank Accession number AY702915s1 (AAU14827).
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 197 nucleotides (20 amino acids). *Pisum sativum* ubiquitin conjugating enzyme E2 mRNA, partial cds. GenBank Accession number AY702915s2 (AAU14828).
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 118 nucleotides. *Lemna minor* 26S proteasome alpha subunit mRNA, partial cds. GenBank Accession number AY683445.
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 363 nucleotides. *Lemna minor* 26S proteasome ATPase subunit mRNA, partial cds. GenBank Accession number AY683446.
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 245 nucleotides. *Lemna minor* polyubiquitin mRNA, partial cds. GenBank Accession number AY683447.
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 349 nucleotides. *Lemna minor* 26S proteasome beta subunit mRNA, partial cds. GenBank Accession number AY683448.
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 296 nucleotides. *Lemna minor* ubiquitin activating enzyme E1 (UBA1) mRNA, partial cds. GenBank Accession number AY683449.
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 677 nucleotides. *Lemna minor* ubiquitin activating enzyme E1 (UBA2) mRNA, partial cds. GenBank Accession number AY683450.
- **Caiiro A.S., Santos, C.N., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 178 nucleotides. *Lemna minor* ubiquitin conjugating enzyme E2 mRNA, partial cds. GenBank Accession number AY683451.
- **Carvalho, M.B., Caiiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 118 nucleotides. *Vitis vinifera* polyubiquitin mRNA, partial cds. GenBank Accession number AY684128.
- **Carvalho, M.B., Caiiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 134 nucleotides. *Vitis vinifera* 26S proteasome regulatory subunit mRNA, partial cds. GenBank Accession number AY684129.
- **Carvalho, M.B., Caiiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 52 nucleotides. *Vitis vinifera* 20S proteasome beta subunit mRNA, partial cds. GenBank Accession number AY684130.
- **Carvalho, M.B., Caiiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 565 nucleotides. *Vitis vinifera* ubiquitin-activating enzyme mRNA, partial cds. GenBank Accession number AY684131.

- **Carvalho, M.B., Caeiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2004) 133 nucleotides. *Vitis vinifera* ubiquitin-conjugating enzyme mRNA, partial cds. GenBank Accession number AY684132.
- **Monteiro, S.A., Freitas, R.M., Teixeira, A.N. and Ferreira, R.B.** (2004) 1791 nucleotides. *Lupinus albus* beta-conglutin precursor mRNA, complete cds. GenBank Accession number AY500372.
- **Monteiro, S.A., Freitas, R.M., Teixeira, A.N. and Ferreira, R.B.** (2005) 519 nucleotides. *Lupinus albus* BLAD mRNA, complete cds. GenBank Accession number DQ142920.
- **Caeiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2006) 397 nucleotides. *Lupinus albus* polyubiquitin mRNA, partial cds. GenBank Accession number DQ118117.
- **Caeiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2006) 508 nucleotides. *Lupinus albus* ubiquitin activating enzyme E1 mRNA, partial cds. GenBank Accession number DQ118118.
- **Caeiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2006) 178 nucleotides. *Lupinus albus* ubiquitin conjugating enzyme E2 mRNA, partial cds. GenBank Accession number DQ118119.
- **Caeiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2006) 202 nucleotides. *Lupinus albus* ubiquitin conjugating enzyme E2 mRNA, partial cds. GenBank Accession number DQ118120.
- **Caeiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2006) 557 nucleotides. *Lupinus albus* 26 S proteasome ATPase subunit mRNA, partial cds. GenBank Accession number DQ118121.
- **Caeiro A.S., Price, C.B., Teixeira, A.R. and Ferreira, R.B.** (2006) 695 nucleotides. *Lupinus albus* 26 S proteasome beta subunit mRNA, partial cds. GenBank Accession number DQ118122.
- **Borrego, V., Martins, P., Santos, C., Oliveira, P., Teixeira, A.R. and Ferreira, R.B.**(2007) 17 amino acid residues. Rubusin, the storage protein present in raspberry (*Rubus idaeus* L.) roots. UniProtKB/Swiss-Prot entry P85096.
- **Arroz, J.A. and Ferreira, R.B.**(2006) 645 nucleotides. *Triticum aestivum* cv. Torero stressed plant. *Triticum aestivum* cDNA, mRNA partial cds; gi|117909417|gb|EF063001.1|[117909417] released in Nov 2007. GenBank Accession number EF063001.
- **Arroz, J.A., Teixeira, A. and Ferreira, R.B.**(2008) 1821 nucleotides. *Triticum aestivum* cultivar Torero subtilisin protease mRNA. *Triticum aestivum* cDNA, mRNA partial cds. GenBank Accession number EU431190.
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus phoenicea* putative actin mRNA, partial cds, 335 nucleotides. GenBank Accession no GQ389669
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus oxycedrus* var. *badia* putative actin mRNA, partial cds, 335 nucleotides. GenBank Accession no GQ389670
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus phoenicea* putative anthocyanidin reductase mRNA, partial cds, 329 nucleotides. GenBank Accession no GQ389671
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus oxycedrus* var. *badia* putative anthocyanidin reductase mRNA, partial cds, 186 nucleotides. GenBank Accession no GQ389672
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus phoenicea* putative anthocyanidin synthase mRNA, partial cds, 257 nucleotides. GenBank Accession no GQ389673
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus oxycedrus* var. *badia* putative anthocyanidin synthase mRNA, partial cds, 257 nucleotides. GenBank Accession no GQ389674
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus phoenicea* putative chalcone synthase mRNA, partial cds, 545 nucleotides. GenBank Accession no GQ389675
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus phoenicea* putative dihydroflavonol 4-reductase mRNA, partial cds, 264 nucleotides. GenBank Accession no GQ389676
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus phoenicea* putative elongation factor 1a mRNA, partial cds, 465 nucleotides. GenBank Accession no GQ389677
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus oxycedrus* var. *badia* putative elongation factor 1a mRNA, partial cds, 465 nucleotides. GenBank Accession no GQ389678
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus phoenicea* putative favanone 3-hydroxylase mRNA, partial cds, 352 nucleotides. GenBank Accession no GQ389679
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) *Juniperus oxycedrus* var. *badia* putative favanone 3-hydroxylase mRNA, partial cds, 327 nucleotides. GenBank Accession no GQ389680

- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) Juniperus phoenicea putative glyceraldehyde 3-phosphate dehydrogenase mRNA, partial cds, 454 nucleotides. GenBank Accession no GQ389681
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) Juniperus oxycedrus var. badia putative glyceraldehyde 3-phosphate dehydrogenase mRNA, partial cds, 454 nucleotides. GenBank Accession no GQ389682
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) Juniperus phoenicea putative leucoanthocyanidin reductase mRNA, partial cds, 242 nucleotides. GenBank Accession no GQ389683
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) Juniperus oxycedrus var. badia putative leucoanthocyanidin reductase mRNA, partial cds, 242 nucleotides. GenBank Accession no GQ389684
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) Juniperus phoenicea putative phenylalanine ammonia-lyase mRNA, partial cds, 332 nucleotides. GenBank Accession no GQ389685
- **Tavares, L.R., Pimpão, R.C., Santos, C.N. and Ferreira, R.B.** (2009) Juniperus oxycedrus var. badia putative phenylalanine ammonia-lyase mRNA, partial cds, 332 nucleotides. GenBank Accession no GQ389686

## PATENTS

### *Patents – Granted and applied for*

Title: Proteína extraída de plantas do género Lupinus, sequência nucleotídica que a codifica e sua utilização no combate a fungos patogénicos por aplicação directa, na forma recombinante ou por expressão em plantas transgénicas. Inventors: R. Ferreira, S. Monteiro, V. Loureiro and A. Teixeira. Applicant: ISA-UTL. Portugal Patent Application Number PT103322, filed at 21 July 2005

Title: Utilização de uma proteína de plantas do género Lupinus como bioestimulante do crescimento e desenvolvimento de plantas e na formulação de preparados proteicos para alimentação humana e/ou animal. Inventors: R. Ferreira, S. Monteiro, V. Loureiro and A. Teixeira. Applicant: ISA-UTL Portugal Patent Application Number PT103511, filed at 28 June 2006

Title: Protein extracted from plants of the genus Lupinus or produced in recombinant form, nucleotide sequence encoding it and its use in animal nutrition, as a plant growth promoter and in the fight against pathogenic fungi.

Inventors: R. Ferreira, S. Monteiro, V. Loureiro and A. Teixeira.

Applicant: ISA-UTL

- PCT International Patent Application No. PCT/IB2006/052403 (WO2007/010459). Filed on 13 July 2006.

Australian [PCT] Patent Application no. 2006271282 (Publication No. 2007/010459) **Granted.**

Brazil [PCT] Patent Application no. 0613746-6.

Canada [PCT] Patent Application no. 2,617,052.

Chinese [PCT] Patent Application no. 200680034618.3.

Eurasian (Turkmenistan, Belarus, Tajikistan, Russia, Azerbaijan, Kazakhstan, Kyrgyzstan, Armenia and Moldova). Patent no. 200800091. **Granted in 28 AGO 2009.** Expires in 13 July 2026.

European Patent Office (EPO) Patent Application n° 06 780 077.1. Published in 09 April 2008 by the European Patent Office in Section L.1 of the European Patent Bulletin, under no. 1907550 **Granted.**

India [PCT] Patent Application n° 1194/DELNP/2008. Filed on 11 February 2008.

Israeli [PCT] Patent Application n° 188907 (Publication No. 2007/010459).

Japan [PCT] Patent Application n° 2008-522129 **Granted.**

Mexico [PCT] Patent Application n° MX/a/2008/000979 **Granted.**

New Zealand [PCT] Patent Application n° NZ P 565242.

South Africa. Patent no. 2008/00581. **Granted in 25 FEV 2009.** Expires in 13 July 2026.

United States Patent Application no. 11/996,279 (Publication No. 2007/010459). Filed on 15 May 2008. Published in 12 April 2008 by the United States Patent and Trademark Office (USPTO), under no. US-2008-0300137-A1. **Patent US 8,106,252 - Granted on 31 January 2012**

Title: Nucleotide sequence encoding anti-fungal polypeptide

Inventors: Ricardo Manuel de Seixas Boavida Ferreira, Sara Alexandra Valadas da Silva Monteiro, Virgílio Borges Loureiro and Artur Ricardo Nascimento Teixeira

Applicant: Instituto Superior de Agronomia

- European (Divisional) Patent Office (EPO) Patent Application nº 10154293.4.

Published in 25 August 2010 in the European Patent Bulletin nº 2010/34, under no. 2221383

Title: plant growth promoter/fertilizer/ human/animal nutritional supplement

Inventors: Ricardo Manuel de Seixas Boavida Ferreira, Sara Alexandra Valadas da Silva Monteiro, Virgílio Borges Loureiro and Artur Ricardo Nascimento Teixeira

Applicant: Instituto Superior de Agronomia

European (Divisional) Patent Application No. 10177270.5. Filed on 17 September 2010.

Continuation-in-Part (CIP) of the United States Patent Application no. 11/996,279

Inventors: Ricardo Manuel de Seixas Boavida Ferreira, Sara Alexandra Valadas da Silva Monteiro, Virgílio Borges Loureiro and Artur Ricardo Nascimento Teixeira

Applicant: Instituto Superior de Agronomia

United States Patent Application no. US 12/893,889. Filed on 29 September 2010.

Title: Lupinus protein for use against human pathogens

Inventors: Ricardo Manuel de Seixas Boavida Ferreira, Sara Alexandra Valadas da Silva Monteiro and Alexandra Manuela Lourenço Carreira

Applicant: CEV - Biotecnologia das Plantas, S.A.

- Portugal Provisional Patent Application Number 105330, filed at 12 October 2010. Publication 12 April 2012

- U.K. Provisional Patent Application Number 1017284.9, filed at 13 October 2010

- PCT International Patent Application No. PCT/EP2011/067824. Filed on 12 October 2011. International Patent Application, Publication No. WO 2012/049215 (19 April 2012)

Title: Use of a composition comprising an antimicrobial peptide as a food preservative

Inventors: Ricardo Manuel de Seixas Boavida Ferreira, Sara Alexandra Valadas da Silva Monteiro and Alexandra Manuela Lourenço Carreira

Applicant: CEV - Biotecnologia das Plantas, S.A.

- Portugal Provisional Patent Application Number 105331 W, filed at 12 October 2010. Publication 12 April 2012

- U.K. Provisional Patent Application Number 1017283.1, filed at 13 October 2010

- PCT International Patent Application No. PCT/EP2011/067821. Filed on 12 October 2011. International Patent Application, Publication No. WO 2012/049213 (19 April 2012)

Title: Metals chelators for use in improving activity of fungicides / bactericides effective against plant pathogens

Inventors: Ricardo Manuel de Seixas Boavida Ferreira, Sara Alexandra Valadas da Silva Monteiro and Alexandra Manuela Lourenço Carreira

Applicant: CEV - Biotecnologia das Plantas, S.A.

- Portugal Provisional Patent Application Number 105332 A, filed at 12 October 2010. Publication 12 April 2012

- U.K. Provisional Patent Application Number 1017282.3, filed at 13 October 2010

- PCT International Patent Application No. PCT/EP2011/067828. Filed on 12 October 2011. International Patent Application, Publication No. WO 2012/049217 (19 April 2012)

Title: Diagnostic method and treatment

Inventors: Ricardo Manuel de Seixas Boavida Ferreira, Sara Alexandra Valadas da Silva Monteiro, Maria Helena Mendes da Costa Ferreira Correia de Oliveira and Nuno Miguel Pereira de Almeida Gomes

Applicants: Instituto Superior de Agronomia e Exatronic, Engenharia Electrónica, Lda.

- Portugal Patent Application Number 105345 F, filed at 21 October 2010. Publication 23 April 2012

- U.K. Patent Application Number 1018097.4, filed at 27 October 2010.

Title: Diagnostic method and treatment

Inventors: Ricardo Manuel de Seixas Boavida Ferreira, Sara Alexandra Valadas da Silva Monteiro and Maria Helena Mendes da Costa Ferreira Correia de Oliveira

Applicant: Instituto Superior de Agronomia

- PCT International Patent Application No. PCT/EP2011/068320. Filed on 20 October 2011.

Title: Utilização de folhas e frutos de *Corema album* na preparação de sumos e de outras aplicações devido às propriedades benéficas para a saúde humana resultantes da sua ingestão e do facto de alguns dos seus componentes sobreviverem, com ou sem modificação química, ao processo digestivo e/ou de absorção

Inventors: Ricardo Manuel de Seixas Boavida Ferreira, Maria Cláudia Godinho Ferreira Dias Nunes dos Santos, Lucélia Rodrigues Tavares, Rui Carlos Soares Pimpão, Gary Williamson, Derek Stewart

Applicant: Instituto de Tecnologia Química e Biológica

- Portugal Provisional Patent Application, filed at 07 August 2012