



## BIOGRAPHICAL SKETCH

<b>NAME</b> Catarina Dias		<b>POSITION TITLE</b> PhD Student	
<b>EDUCATION / TRAINING</b>			
INSTITUTION AND LOCATION	DEGREE	MM/YY	FIELD OF STUDY
Universidade de Lisboa, Faculdade de Ciências	PhD	Ongoing	Organic Chemistry
Universidade de Lisboa, Faculdade de Ciências	Master	07/12	Chemistry - Chemistry, Health and Nutrition
Universidade de Lisboa, Faculdade de Ciências	Graduation	09/10	Chemistry

### Research Interests

Organic synthesis, phytochemistry. Synthesis of new sugar based molecules with antimicrobial and/or neuroprotective activities.

### Professional experience

- 28.02.2012- 31.03.2013: research fellowship in the project FACIB –Novos fármacos a partir de açúcares para o combate de infecções por Bacillus (*New sugar based drugs against Bacillus infections*; QREN – SI I&DT Co-Promoção Projecto nº 21547). Carbohydrate Chemistry Group, Centre of Chemistry and Biochemistry, Faculdade de Ciências, Universidade de Lisboa (CQB-FCUL); Pharmaceutical company AtralCipan.
- 15.03.2012 to 28.04.2012: research fellowship in a pilot project funded by PCBNet, concerning the analysis of plant extracts and their components in amyloid fibril formation systems. Department of Molecular Biology and Biotechnology, University of Sheffield; Centre of Chemistry and Biochemistry, Faculdade de Ciências, Universidade de Lisboa (CQB-FCUL)

## Publications

A. Martins, M. S. Santos, C. Dias, P. Serra, V. Cachatra, J. Pais, J. Caio, V. H. Teixeira, M. Machuqueiro, M. S. Silva, A. Pelerito, J. Justino, M. Goulart, F. V. Silva, and A. P. Rauter. Tuning the Bioactivity of Tensioactive Deoxy Glycosides to Structure: Antibacterial Activity versus Selective Cholinesterase Inhibition Rationalized by Molecular Docking. *European Journal of Organic Chemistry*, 8, **2013**: 1448-1459.

F. Marcelo, C. Dias, A. Martins, P. J. Madeira, T. Jorge, M- H. Florencio, J. F. Canada, E. Cabrita, J. Jimenez-Barbero and A. P. Rauter. Molecular Recognition of Rosmarinic Acid from *Salvia sclareoides* Extracts by Acetylcholinesterase: A New Binding Site Detected by NMR Spectroscopy. *Chemistry, a European Journal*, 19(21), **2013**: 6641-6649.

C. Airoidi, E. Sironi, C. Dias, F. Marcelo, A. Martins, A. P. Rauter, F. Nicotra and J. Jimenez-Barbero. Natural Compounds against Alzheimer's Disease: Molecular Recognition of Ab1–42 Peptide by *Salvia sclareoides* Extract and its Major Component Rosmarinic Acid, as Investigated by NMR. *Chemistry, an Asian Journal*, 8, **2013**: 596 – 602.

A. Martins, M. S. Santos, C. Dias, P. Serra, V. Cachatra, J.Pais, J. Caio, V. H. Teixeira, M. Machuqueiro, M. S. Silva, A. Pelerito, J. Justino, M. Goulart, F.V. Silva, and A. P. Rauter. Tuning the Bioactivity of Tensioactive Deoxy Glycosides to Structure: Antibacterial Activity Versus Selective Cholinesterase Inhibition Rationalized by Molecular Docking. *European Journal of Organic Chemistry*, **2013**: 1448–1459.

A. P. Rauter, C. Dias, A. Martins, I. Branco, N. R. Neng, J. M. Nogueira, M. Goulart, F. V. M. Silva, J. Justino, C. Trevitt and J. Waltho. Non-toxic *Salvia sclareoides* Brot. Extracts as a source of functional food ingredients: phenolic profile, antioxidant activity and prion binding properties. *Food Chemistry*, 132, **2012**: p. 1930–1935.

## Patents

Rauter, A. P., Jesus, A., Martins, A., Dias, C., Ribeiro, R., Macedo, M.- P., Justino, J., Mota-Filipe, H., Pinto, R., Sepodes, B., Medeiros, M., Barbero, J., Airoidi, C., Nicotra, F. New C-glycosylpolyphenol antidiabetic agents, effect on glucose tolerance and interaction with beta-amyloid. Therapeutic applications of the synthesized agent(s) and of *Genista tenera* ethyl acetate extracts containing some of those agents, PT106202; submitted in 2012.

## Conferences (communications, participation, organization)

### Oral Communications

**C. Dias**, T. Jorge, P. Madeira, F. Marcelo, J. Jimenez-Barbero, C. Airoidi, F. Nicotra, P. Davis, R. Staniford, A. P. Rauter. *Salvia sclareoides* and neurodegenerative diseases: The contribution of innovative functional foods for PERSSILAA. Workshop Moving to a Healthy Life and an Active Ageing: Science and Policy towards Innovative Solutions. Faculdade de Ciências, Universidade de Lisboa, September 2014.

**C. Dias**, T. Lange, A. P. Rauter. An efficient synthetic route towards new antimicrobial deoxy sugars with anti-ageing potential - assessing the importance of configuration and deoxygenation pattern. 4th Portuguese Young Chemists Meeting – 4PYChem, Coimbra, Portugal, April 2014.

**C. Dias**, A. Martins, R. A. Staniford, A. P. Rauter. New antimicrobial structures with anti-ageing potential: an efficient synthesis towards 2-deoxy glycosides and their thio analogues. 10<sup>o</sup> Encontro Nacional de Química Orgânica, Lisbon, Portugal, September 2013.

**C. Dias**, A. Martins, A. P. Rauter, P. Davis, R. Staniforth, J. Louth, B. Chen. Rosmarinic acid as a functional food ingredient for neurodegenerative diseases: NMR molecular recognition by acetylcholinesterase and HPLC-MSn analysis. 1st International Symposium on Prion Chemical Biology and Enabling Technologies –Towards a Cure for Alzheimer's Disease, Sheffield, United Kingdom, July 2012.

#### **Poster communications (as presenting author)**

**C. Dias**, R. F. M. de Almeida, A. S. Viana, A. P. Rauter. Exploring the mechanism of action of 8- $\beta$ -d-glucopyranosylgenistein in the fibrillogenesis of islet amyloid polypeptide (IAPP). CQB Day, Lisbon, Portugal, July 2014.

**C. Dias**, A. Martins, J. P. Pais, P. Davis, R. A. Staniford, A. P. Rauter. An efficient synthetic route towards new 2-deoxy-glycosides and thio analogues targeting ageing and infectious diseases, 10th Carbohydrate Bioengineering Meeting, Prague, Czech Republic, April 2013.

**Dias, C.**, Martins, A., Davis, P., Staniford, R., Chen, B., Rauter, A. P. New 2-deoxy-glycosides and thio analogues as tandem drugs for infectious diseases and ageing. 3<sup>rd</sup> National Meeting on Medicinal Chemistry - 3ENQT, Aveiro, Portugal, November 2012.

**Dias, C.**, Marcelo, F., Martins A., Madeira, P., Jorge, T., Florêncio, M., Cañada, J., Cabrita, E., Jiménez-Barbero, J. Rauter, A. P. Rosmarinic acid as a functional food ingredient for neurodegenerative diseases: NMR molecular recognition by acetylcholinesterase and HPLC-MSn analysis. 11<sup>o</sup> Encontro de Química dos Alimentos, Bragança, Portugal, Setembro 2012.

**Dias, C.**, Martins, A., Rauter, A. P., Neng, N., Nogueira, J.M.F., Davis, P., Staniforth, R., Louth, J., Chen, B. *Salvia sclareoides* extracts for neurodegenerative diseases: the quest for the active principle. 6th Spanish Portuguese Japanese Organic Chemistry Symposium, Lisbon, Portugal, July 2012.

**Dias, C.**, Martins, A., Rauter, A. P., Davis, P., Staniforth, R., Louth, J., Chen, B. Rosmarinic acid as a functional food ingredient for neurodegenerative diseases: NMR molecular recognition by acetylcholinesterase and HPLC-MSn analysis.

1st International Symposium on Prion Chemical Biology and Enabling Technologies –Towards a Cure for Alzheimer's Disease, Sheffield, United Kingdom. July 2012.

**Dias, C.**, Martins, A., Davis, P., Staniforth, R. A., Chen, B., Rauter, A. P. Synthesis of new 2-deoxy-glycosides and thio analogues with application in Infectious diseases and ageing. Aceite para a apresentação no International Carbohydrate Symposium, Madrid, Spain, July 2012.

**C. Dias**, I. Branco, A. Martins, A.P. Rauter, F. Marcelo, J. Jimenez-Barbero, M. Goulart, J. Justino. Phenolic compounds from *Salvia sclareoides* and their synthetic C-glycosylated forms for neurodegenerative diseases. Glycosciences in the International Year of Chemistry – Applications to Human Health and Disease, Lisbon, Portugal, September 2011.

**C. Dias**, I. Branco, A. Martins, A.P. Rauter, F. Marcelo, J. Jimenez-Barbero, M. Goulart, J. Justino. Natural phenolics and synthetic C-glycosylated forms for neurodegenerative diseases – A case study of *Salvia sclareoides*. Glupor 9 - 9th International Meeting of Portuguese Carbohydrate Chemistry Group and 5th Iberian Carbohydrate Meeting, Vila Real, Portugal, September 2011.

**C. Dias**, I. Branco, A. Martins, A.P. Rauter, F. Marcelo, J. Jimenez-Barbero, M. Goulart, J. Justino. *Salvia sclareoides* non-toxic extracts for Alzheimer's disease: interaction studies with AChE. XXII Encontro Nacional da SPQ, Braga, Portugal, July 2011.

**C. Dias**, I. Branco, A. Martins, A.P. Rauter, F. Marcelo, J. Jimenez-Barbero, M. Goulart, J. Justino. Extractos de *Salvia sclareoides* para a doença de Alzheimer: Estudos de interação com a AChE, toxicidade e aspectos fitoquímicos. Ciência QB – 1º Encontro dos alunos de doutoramento do DQB-FCUL, Lisbon, Portugal, May 2011.

**C. Dias**, I. Branco, A. Martins, A.P. Rauter, F. Marcelo, J. Jimenez-Barbero, J. Waltho, C. Trevitt, M. Goulart, J. Justino. *Salvia sclareoides* extracts for brain degenerative diseases: NMR interaction studies and phytochemistry. Segundo Simpósio Iberoamericano de Química Orgânica, Santiago de Compostela, Spain, September 2010.

**C. Dias**, C. Jerónimo, I. Branco, A. Martins, A.P. Rauter, F.V.M. Silva, M. Goulart, N. Gaspar, J. Justino, F. Marcelo, J. Jimenez-Barbero, *Salvia Sclareoides* extracts for Alzheimer disease: Antioxidant activity, toxicity and phytochemical studies. 2nd PyCheM, Aveiro, Portugal, April 2010.

#### **As member of the local organizing committee**

6th Spanish-Portuguese-Japanese Organic Chemistry Symposium, Lisbon, Portugal, July 2012.

Glycosciences in the International Year of Chemistry – Applications to Human Health and Disease, Lisbon, Portugal, September 2011.

EuroGlycoScience Forum – 2nd Steering Committee Meeting, Lisbon, April 2010.

## Awards

- Honorable mention for the award of Best Master Thesis in Organic Chemistry, by the Portuguese Society of Chemistry – Organic Chemistry Division (September 2013)
- UNICAM award for young researchers for the poster entitled “Rosmarinic acid as a functional food ingredient for neurodegenerative diseases: NMR molecular recognition by acetylcholinesterase and HPLC-MSn analysis”, presented at 11º Encontro de Química dos Alimentos (Bragança, September 2012)
- Fundação Jacqueline Dias de Sousa award 2009/2010 – Degree in Chemistry with the highest classification (*Licenciada em Química com melhor classificação*)

## Other activities

### Other formation activities

- Update course of two days lectured by Prof. Dr. Jesus Jimenez-Barbero entitled “NMR and Molecular Recognition” at Faculdade de Ciências da Universidade de Lisboa, Portugal, February 2011.
- Update course of three days lectured by Prof. Dr. Hans Peter Wessel (Hoffman-La Roche) entitled “Industrial Drug Research”, with final classification of 15 (0- 20), at Faculdade de Ciências da Universidade de Lisboa, Portugal, May 2010.
- Update course of three days lectured by Prof. Dr. Beat Ernst entitled “Molecular Mechanisms of Drugs”, with final classification of 18 (0- 20), at Faculdade de Ciências da Universidade de Lisboa, Portugal, September 2009.

## Languages

Mother tongue: Portuguese

Other languages:

- English: excellent level of speaking, reading and writing.
- Spanish: good level of speaking and reading, medium level of writing.