Curriculum vitae

1. Personal data

Full Name
Sara Teresa Neves da Silva

Work Address
Instituto de Tecnologia Quimica e Biologica
Universidade Nova de Lisboa
Av. da República - EAN
2780-157 Oeiras

Contacts
Work Phone: 214469668
Mobile Phone: 961137170
E-mail: tnssara@gmail.com

2. Academic degrees

2008
Degree: Licenciatura (5 years pre-Bologna) (**Biology)**
Degree granting institution: Universidade Lusófona de Humanidades e Tecnologias (ULHT)
Final grade: 16
Thesis title: "Characterization of RmNhaE, a New Na^+/H^+ Antiporter from *Rhodothermus marinus*".
Scientific area: Biological Sciences

2002
Degree: 12º ano
Degree granting institution: Colégio Valsassina (Portugal)
Final grade: 14
Area: Sciences

3. Previous activity and current status

January 2012 to present
PhD Student
Instituto de Tecnologia Química e Biológica
Industry and Medicine Applied Crystallography laboratory

May 2011 to December 2011
Research Grant (BI) student

Instituto de Biologia Experimental Tecnológica

January 2009 to January 2011
Research Grant (BI) student (PTDC/BIA-PRO/67105/2006)
Instituto de Investigação Científica Tropical

October 2007 to June 2008
Undergraduate Student (5th year)
Instituto de Tecnologia Química e Biológica (ITQB) / Instituto de Investigação Científica Tropical (IICT)

---

4. Area of scientific activity

Biochemistry, Structural Biology.

---

5. Present research interests

Domains of specialization

- Bacterial growth under aerobic conditions
- Cloning and heterologous expression of membrane and soluble proteins
- Preparation, isolation and solubilization of the membrane fraction of bacteria
- Proteomic analysis using denaturing and native gel electrophoresis and second dimension electrophoresis
- Western Blotting
- Enzymatic activity analysis by fluorescence spectroscopy and in-gel activity
- Protein and DNA sequence analysis using bioinformatics tools
- Protein structure analysis
- UV-visible and atomic absorption spectrometry
- Analysis of catalytic activity using oxygen electrode and spectrophotometer
- DNA and RNA extraction and cDNA synthesis
- PCR, colony PCR
- Analysis of protein structure by limited proteolysis
- Protein crystallization
- Protein purification by chromatographic techniques
- Analysis of protein stability by Thermofluor
- Protein structure determination by X-ray crystallography
- Protein structure determination by negative-staining and cryo-electron microscopy
- Macromolecule analysis by small-angle X-ray scattering (SAXS)

Research interests

- Eukaryotic proteins structure determination by a combination of X-ray crystallography and other techniques (electron microscopy, SAXS, analytical ultracentrifugation, SEC/MALLS…).
- RuvBL1 and RuvBL2
- Drug discovery, by determination of target protein-drug complex structure.
- Cancer, chromatin remodeling, DNA damage repair and transcriptional regulation.
- Centriole biogenesis.

Other professional interests/activities

Participation in events, courses and training periods

- Participation in several meetings during bachelor years (2004-2008).
- International Workshop on Protein Folding Diseases - from metabolic disorders to neurodegeneration (ITQB, Oeiras, 2009).
- Pathway Analysis in Proteomics (PathProt II) (IGC, Oeiras 2009).
- 8th short course of the Portuguese Biophysical Society – Systems Biology (Santarém 2009).
- 16th European Bioenergetics Conference (Warsaw, 17-22 July 2010).
- XVII National Congress of Biochemistry (Porto, 15-17 December 2010).
- Interbio symposium "Frontiers in Protein Research" (ITQB, Oeiras, 5-7 May 2011).
- Modern Methods of Structure Elucidation (Instituto Superior Técnico, Lisboa, 14-18 November 2011).
- International school of crystallography, 45th course: Present and future methods for biomolecular crystallography (2012), Erice.
- **Two week internship at the Research Complex at Harwell, Oxford, for the high-throughput cloning, expression and purification of c-MYC constructs (2012).**
- 3 week Bioentrepreneurship course, as part of PhD programme (2013).
- 3rd ITQB PhD Student Meeting (2013)
- 1st and 2nd Meetings of Synchrotron Radiation Users from Portugal and ESRF-Day (2013 and 2014, the last with a panel communication).
- International School on Biological Crystallization (Granada, 2013).
- BIOCRYS course, for training in the determination of the crystallographic structure of macromolecules (ITQB, Oeiras, 2014).
- Scientific writing course, as part of PhD program (2014).
- Four months internship at the Centro Nacional de Biotecnología de Madrid, for data collection, processing and refinement, for determination of the structure of RuvBL2 by negative-staining electron microscopy (2014-2015).
- One-week internship at the Central European Institute of Technology (CEITEC), in Brno, for data collection of RuvBL2 from Titan Krios, for structure determination by cryo-EM (2015).

Event organization

- Member of the organization of the International Conference "Conservation and Animal Welfare" (ULHT, 2006).

- Member of the organizing committee of the 5th ITQB PhD Students' Meeting (ITQB, Oeiras, 2014).

- Member of the organizing committee of the second Workshop on Pontin and Reptin (ITQB, Oeiras, 2014).

- Provided support in the organization of BIOCRYS (ITQB, Oeiras, 2014).

- Presentation and promotion of scientific activities with the young detainees at Centro Educativo Padre António Oliveira, in Caxias.

6. Experience as scientific advisor

- Summer practical course to high school students (Programa Ciência Viva) – "Study of plants

respiratory chain" (IICT Oeiras, 2008).

- Summer practical course to high school students (Programa Ciência Viva) - "Study of the Supercomplexes of the respiratory chain of *Bacillus subtilis*" (IICT Oeiras, 2009).

- Supervision of foreign high-school student, during a summer internship (2012).

- Supervision of undergraduate student for Bachelor's project on the expression of two mutants of RuvBL2 (2013).

- Supervision of an undergraduate student, under the BRIDGE-1 project, for the expression and purification of two RuvBL2 homologs from Xenopus and Caenorhabditis (2014-2015).

- One hour classes on electron microscopy for masters students at ITQB (2015 and 2017).

7. Participation in R&D projects

From January 2012 to present

PhD Student, financed by FCT with the scholarship SFRH/BD/78706/2011.

Instituto de Tecnologia Química e Biológica
Industry and Medicine Applied Crystallography Laboratory, with a project entitled "Structural and functional insights into chromatin remodelling – the dodecameric RuvBL1/2 molecular machine".

Work financed by FCT with the project PTDC/BBB-BEP/1724/2012.

From May 2011 to December 2011

BI Grant Scientist

Instituto de Biologia Experimental Tecnológica
Collaboration with Merck Pharmaceutical company for discovery of new drugs/determination of protein-drug 3D structure.

From 3 August 2010 to 5 October 2010

BI Grant Scientist

Hohenheim Universität, Stuttgart
Study of *Neisseria meningitidis* Na^+/H^+ antiporters.

From January 2009 to January 2011

BI Grant Scientist

Instituto de Investigação Científica Tropical, Oeiras
PTDC/BIA-PRO/67105/2006

"Identification and characterization of the bacterial aerobic respiratory chain supercomplexes from *Escherichia coli* and *Bacillus subtilis*"

June 2008 to January 2009

Undergraduate Student

Instituto de Investigação Científica Tropical, Oeiras
PTDC/BIA-PRO/67105/2006
"Identification and characterization of the bacterial aerobic respiratory chain supercomplexes from *Escherichia coli* and *Bacillus subtilis*"

7. Awards and grants

2012 – Prémio de investigação básica Pfizer, pelo trabalho "BLD10/CEP135 is a microtubule-associated protein that controls the formation of the flagellum central microtubule pair".

8. Peer-reviewed publications

Nava Zaarur, Xiaobin Xu, Patrick Lestienne, Anatoli B Meriin, Mark McComb, Catherine E Costello, Gary P Newnam, Rakhee Ganti, Nina V Romanova, Maruda Shanmugasundaram, Sara TN Silva, Tiago M Bandeiras, Pedro M Matias, Kirill S Lobachev, Igor K Lednev, Yury O Chernoff, Michael Y Sherman (**2015**) RuvbL1 and RuvbL2 enhance aggresome formation and disaggregate amyloid fibrils. EMBO J **34**(18): 2363-82

Zita Carvalho-Santos, Pedro Machado, Inês Alvarez-Martins, Susana M Gouveia, Swadhin C Jana, Paulo Duarte, Tiago Amado, Pedro Branco, Micael C Freitas, Sara TN Silva, Claude Antony, Tiago M Bandeiras, Mónica Bettencourt-Dias (**2012**) BLD10/CEP135 is a microtubule-associated protein that controls the formation of the flagellum central microtubule pair. Developmental Cell **23**(2): 412-424

Pedro M F Sousa, Marco A M Videira, Thomas Vorburger, Sara T N Silva, James W Moir, Julia Steuber, Ana M P Melo (**2012**) The novel NhaE-type Na(+)/H (+) antiporter of the pathogenic bacterium Neisseria meningitidis. Archives of Microbiology **195**(3): 211-217

Pedro M.F. Sousa, Sara T.N. Silva, Brian L. Hood, Nuno Charro, João N. Carita, Fátima Vaz, Deborah Penque, Thomas P. Conrads, Ana M.P. Melo (**2011**) Supramolecular organization of the aerobic respiratory chain of *Escherichia coli*. Biochimie **93**(3): 418-425

9. Communications in scientific meetings

2016

Panel - Sara T.N. Silva, Pedro M. Matias, Tiago M. Bandeiras (2016) "Structure of human RuvB-Like 2 provides a mechanism for coupling between ATP binding and mechanical action". At the Ciência2016 meeting in Lisbon.

Panel - Sara T.N. Silva, Pedro M. Matias, Tiago M. Bandeiras (2016) "Structure of human RuvB-Like 2 provides a mechanism for coupling between ATP binding and mechanical action". At the 5th Meeting of Synchrotron Radiation Users from Portugal, in Lisbon.

Oral – "Study of a molecular machine: human RuvBL2" at the 2nd PCISBIO day, ITQB, Oeiras (11 July 2016).

2015

Panel - Sara T.N. Silva, Tiago M. Bandeiras, Rocío Arranz, Josué Goméz-Blanco, Carlos Óscar Sorzano, José L. Carrascosa, José-Maria Carazo, Pedro M. Matias (2015) "Oligomerization states of the human helicase RuvBL2 by negative-staining electron microscopy". At Instruct Biennial meeting, Florence.

Oral – "Study of a molecular machine: human RuvBL2" at the 6th ITQB PhD students' meeting, ITQB, Oeiras.

Oral – "Structural studies of human AAA+ ATPase RuvBL2" at the MICROSCOPY AT THE FRONTIERS OF SCIENCE 2015 congress, Porto.

2014

Oral – "Crystallization and preliminary diffraction studies of human RuvBL2", at the second workshop on Pontin and Reptin, ITQB, Oeiras.

Panel - Sara Silva, Tiago Bandeiras, Pedro Matias (2014) "Studies on the stability and oligomerization states of the helicases RuvBL1 and RuvBL2". At the 3rd Meeting of Synchrotron Radiation Users from Portugal and ESRF-Day.

Panel - Sara Silva, Tiago Bandeiras, Pedro Matias (2014) "Crystallization and preliminary diffraction studies of human RuvBL2". At BIOCRYS course, ITQB, Oeiras.

2013

Panel - Sara Silva, Tiago Bandeiras, Pedro Matias (2013) "Expression, purification and crystallization of Reptin – an optimization process." At the course of the International School on Biological Crystallization, in Granada.

Panel - Sara Silva, Tiago Bandeiras, Pedro Matias (2013) "Crystallization and preliminary diffraction studies of human RuvBL2". At the first workshop on Pontin and Reptin, in Bordeaux.

Panel - Sara Silva, Tiago Bandeiras, Pedro Matias (2013) "DNA binding modulation of RuvBL1 and RuvBL2 oligomerization states". At the 4th ITQB PhD students' meeting, ITQB, Oeiras.

Panel - Sara Silva, Tiago Bandeiras, Pedro Matias (2013) "Expression, purification and crystallization of Reptin – an optimization process." At the 2nd Meeting of Synchrotron Radiation Users from Portugal and ESRF-Day.

Panel - Sara Silva, Tiago Bandeiras, Pedro Matias (2013) "Expression, purification and crystallization of Reptin – an optimization process." At the 9th European Biophysics Congress.

2012

Panel - Sara Silva, Tiago Bandeiras, Pedro Matias (2013) "Expression, purification and crystallization of Reptin." International school of crystallography, 45th course: Present and future methods for biomolecular crystallography (2012), Erice.

2010

Panel - Sara T.N. Silva, Pedro M.F. Sousa, Fátima Vaz, Patrícia Gomes-Alves, Deborah Penque, Ana M.P. Melo (2010) "Characterization of the supramolecular structure of *Bacillus subtilis* aerobic respiratory chain" at the XVII National Congress of Biochemistry, 15th – 17th of December, Porto, Portugal.

Panel - Sousa P.M.F., Silva S.T.N., Carita J.N., Hood B.L., Charro N., Vaz F., Penque D., Conrads T.P., Melo A.M.P. (2010) "Supramolecular organizations in the aerobic respiratory chain of *Escherichia coli*" at the XVII National Congress of Biochemistry, 15th – 17th of December, Porto, Portugal.

Panel - Sara T.N. Silva, Pedro M.F. Sousa, Fátima Vaz, Patrícia Gomes-Alves, Deborah Penque, Ana M.P. Melo (2010) "Characterization of the supramolecular structure of *Bacillus subtilis* aerobic respiratory chain" at the 16th European Bioenergetics Conference (EBEC) 17th – 22nd July, Warsaw, Poland. Biochim. et Biophys Acta 1797, S1, p. 116.

Panel - Sousa P.M.F., Silva S.T.N., Carita J.N., Santos F.A.S., Melo A.M.P. (2010) "Supramolecular organization of the aerobic respiratory chain of *Escherichia coli*" (EBEC) 17th – 22nd July, Warsaw, Poland. Biochim. et Biophys Acta 1797, S1, p. 117.

2009

Panel - Pedro M. F. Sousa, Sara T. N. Silva, Levi R. Bolacha, João N. Carita, Miguel Teixeira and Ana M. P. Melo (2009) "The aerobic respiratory chain of *Escherichia coli* harbors a NADH and Succinate Oxidase Supercomplex" at the Chemistry of Metals in Biological Systems Symposium, in Louvain-la-Neuve, Belgium.

2008

Panel - Ana M. P. Melo, Sara T. N. Silva, Lígia M. Saraiva and Miguel Teixeira (2008) "Evidence for the presence of a Na^+/H^+ antiporter subunit in *Rhodothermus marinus* complex I", at the European Bioenergetics Conference in Dublin, Ireland.

10. Language skills

Language	Reading	Writing	Conversation
Portuguese	Very Good	Very Good	Very Good
English	Very Good	Very Good	Very Good
French	Basic	Basic	Basic

Spanish	Basic	Basic	Basic