SARA FONSECA COSTA

Postdoctoral Researcher

I am a data scientist/bioinformatician at the University of Lausanne.

My research interests include aging, circadian clocks, genomics and transcriptomics. I'm working at the moment with single-cell transcriptomics data, in order to integrate this data type in the Bgee database. I use mainly R for data analysis and visualization.

EDUCATION

2013 | 2017

University of Fribourg
PhD Biochemistry — Fribourg, Switzerland

Thesis: Model based inference of photoperiod and age related changes in circadian oscillators.

Advisor & Co-advisors: Prof. Dr. Urs Albrecht, Dr. Jürgen Ripperger and Prof. Dr. Daniel Wegmann

Jan 2012 | Out 2012

University of Geneva
Master thesis — Geneva, Switzerland

Thesis: Study of an automatization model to analyse genetic diversity in human populations.

Advisors: Dr. José Nunes (UNIGE) and Prof. Dr. Miguel Rocha (UM)

2010 | 2012

University of Minho
M.S. in Bioinformatics — Braga, Portugal

2006 | 2010

Polytechnic Institute of Bragança
B.S. in Biotechnology Engineering — Bragança, Portugal

RESEARCH EXPERIENCE

Jul 2018 | current

Postdoctoral Researcher
University of Lausanne — Lausanne, Switzerland

- Data analysis and integration of single cell RNA-Seq data in Bgee database
- Maintenance and update of the Bgee pipeline (together with other Bgee members).

Sep 2017 | Dec 2017

Postdoctoral Researcher
Walter and Elisa Hall Institute / SIB — Lausanne, Switzerland

Advisor & Co-advisor: Prof. Dr. Terry Speed (WEHI) and Prof. Dr. Mauro Delorenzi (SIB)

- Improvement of data analysis of circadian and aging data using new statistical approaches.

CONTACT INFO

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+4121 692 4221

For more information, please contact me via email.

SKILLS

Experienced in molecular biology, biochemistry, genetics and functional genomics.

Experienced in statistical analysis.

Full experience with next generation sequencing data analysis.

Highly skilled in R, Bash, LaTeX

Knowledge of: Python, Perl, C++

*This resume was made with the R package **pagedown**.*

Last updated on 2020-10-21.

PROFESSIONAL EXPERIENCE

2009 | 2011

Student researcher
University of Porto - Department of Molecular Pahology and Immunology, Hospital Santo Antonio
Porto, Portugal
Molecular Biology and Bioinformatics (HLA OSAS)

Advisor: Prof. Dr. Berta Martins

TEACHING EXPERIENCE

2019 | 2020

Molecular evolution (Bachelor)
Teaching assistant — Lausanne, Switzerland

2018 | 2020

Molecular genetics methods (Master)
Teaching assistant — Lausanne, Switzerland

2018 | 2019

Data analysis (Bachelor)
Teaching assistant — Lausanne, Switzerland

2013 | 2017

TP's Biochemistry
Teaching assistant — Fribourg, Switzerland

2014 | 2015

Bioinformatics pratical Classes
Teaching assistant — Fribourg, Switzerland

2013 | 2015

Genotyping by Southern Blot Hybridization
Teaching assistant — Fribourg, Switzerland

ORGANISER

2020

Gene expression made useful easily: tools and database of Bgee
Organizing team — UNIL, Lausanne, Switzerland

2012

Bioinformatics Open Days 2012
Organizing Committee — UM, Braga, Portugal

PEER REVIEW PUBLICATIONS

2020

The Bgee suite: integrated curated expression atlas and comparative transcriptomics in animals
Nucleic Acids Research, https://doi.org/10.1093/nar/gkaa793
Frederic B Bastian, Julien Roux, Anne Niknejad, Aurélie Comte, Sara S Fonseca Costa, Tarcisio Mendes de Farias, Sébastien Moretti, Gilles Parmentier, Valentine Rech de Laval, Marta Rosikiewicz, Julien Wollbrett, Amina Echchiki, Angélique Escoriza, Walid H Gharib, Mar Gonzales-Porta, Yohan Jarosz, Balazs Laurenczy, Philippe Moret, Emilie Person, Patrick Roelli, Komal Sanjeev, Mathieu Seppey, Marc Robinson-Rechavi

Practical available:
https://github.com/SFonsecaCosta/Bgee

Info available:
http://hdl.handle.net/1822/33574

2020 **Single-cell transcriptomics allows novel insights into aging and circadian processes**
Briefings in Functional Genomics,
https://doi.org/10.1093/bfgp/elaa014
Sara S Fonseca Costa, Marc Robinson-Rechavi and Jürgen A Ripperger

2017 **Normalisation against Circadian and Age-Related Disturbances Enables Robust Detection of Gene Expression Changes in Liver of Aged Mice**
PloS one 12 (1), https://doi.org/10.1371/journal.pone.0169615
Sara S Fonseca Costa, Daniel Wegmann, Jürgen A Ripperger

2017 **Internal normalization of nascent RNA sequencing experiments to identify age-related changes of the mouse liver transcriptome**
Genomics and Computational Biology 3 (2),
https://doi.org/10.18547/gcb.2017.vol3.iss2.e34
Sara S Fonseca Costa and Jürgen A. Ripperger

2016 **REV-ERBα influences the stability and nuclear localization of the glucocorticoid receptor**
Journal of cell science 129 (21), https://doi.org/10.1242/jcs.190959
Takashi Okabe, Rohit Chavan, Sara S Fonseca Costa, Andrea Brenna, Jürgen A Ripperger, Urs Albrecht

2016 **Liver-derived ketone bodies are necessary for food anticipation**
Nature communications 7 (1), 1-10,
https://doi.org/10.1038/ncomms10580
Rohit Chavan, Céline Feillet, Sara S Fonseca Costa, James E Delorme, Takashi Okabe, Jürgen A Ripperger, Urs Albrecht

2015 **Impact of the circadian clock on the aging process**
Frontiers in neurology 6, 43,
https://doi.org/10.3389/fneur.2015.00043
Sara S Fonseca Costa and Jürgen A. Ripperger

BOOK CHAPITERS

2020 **Chromatin Immunoprecipitation (ChIP) from Mouse Liver Nuclei**
Springer US - DOI:10.1007/978-1-0716-0381-9
Sara S. Fonseca Costa and Jürgen A. Ripperger

OPEN SOURCE CONTRIBUTIONS

2019 **BgeeCall R Package**
Contribution
Julien Wollbrett[aut], Julien Roux[aut], Sara Fonseca Costa[ctb], Marc Robinson Rechavi[ctb], Frederic Bastian[aut]

https://www.bioconductor.org/packages/release/workflows/html/BgeeCall.html

CONFERENCE PRESENTATIONS

2019

Expression calls from RNA-seq using BgeeCall R package
Talk + poster presentation, Bioconductor conference - eurobioc2019
UCLouvain, Brussels, Belgium
Sara Fonseca Costa

2016

Internal normalization of nascent RNA sequencing experiments to identify age-related changes of the mouse liver transcriptome
Talk presentation, 2nd Challenges in Computational Biology: Gene Expression Data Analysis
Mainz, Germany
Sara S Fonseca Costa

LANGUAGE

- **Portuguese**
  Native
- **English**
  Fluente
- **French**
  Basic
- **Spanish**
  Basic