Andre FONSECA
Bioinformatician | Data Scientist

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I am a bioinformatician with solid expertise in bulk and single-cell transcriptome analysis, tumor immunology, machine learning, and data integration. Currently, I am working on tumor antigen discovery, T-cell cross-reactivity prediction, and single-cell TCR analysis. During my career, I was involved in training small teams of bioinformaticians and biomedical researchers. Furthermore, I am experienced in system administration and software development. As a professional, I would like to bring value and push forward the discovery of new products and treatments against cancer and other human diseases.

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🏛 SCIENTIFIC SKILLS

Cancer Biology	Pan-cancer analysis and Survival signature prediction - Paper: 1 , 2 , 3
T-cell and Tumor immunology	Cross-reactivity prediction, and Tumor immunoprofiling analysis - Paper: 4 , 6
Antigen discovery	Neoantigens and Tumor-associated antigens prioritization - Paper: 5 , 6
Single-cell and Bulk Transcriptomics	Cell annotation, TCR Repertoire, Gene expression profiling, and Splicing alternative analysis - Paper: 7 , Code: 1
Pipeline Development	Tumor antigen prediction, and Proteomics screening - Paper: 5 , 8 , Code: 2

>_ TECHNICAL SKILLS

Programming	Python, R, Shell-script, Perl, JavaScript and GO
Package development	R, Shiny, and Steamlit - Code: 1
Machine/Deep Learning	Scikit-learn, and TensorFlow - Code: 2
Transcriptomics	Seurat, DeSeq2, SUPPA2, Monocle3, Immunarch, GLIPH2, MIXCR - Code: 3
Database	MariaDB and MongoDB
Versioning and DevOps	Git, Travis, and CircleCI
OS and System Administration	Ubuntu Server, CentOS, and Slurm
Pipeline management	Snakemake, CWL, Docker, Docker Compose, and Kubernetes
Documentation	Mkdocs, LaTeX, Roxygen2, and pkgdown

🎓 EDUCATION

2020 - 2020	**Certificated in Data Science - Machine Learning**, Awari School
2016 - 2018	**Ph.D. in Bioinformatics**, Federal University of Rio Grande do Norte
2014 - 2016	**M.Sc. in Genetics and Molecular Biology**, Federal University of Pará
2009 - 2013	**B.Sc. in Biology**, Federal University of Rio Grande do Norte

💼 PROFESSIONAL EXPERIENCE

April 2021 — Present

Postdoctoral Researcher, UNIVERSITY OF HOUSTON, Texas
Project: Predicting T-cell cross-reactivity to mitigate off-target toxicity risk on immunotherapy

Cross-reactivity | Tumor immunology | TCR Repertoire | Antigen discovery | Single-cell Transcriptomics

September 2019 — April 2021

Postdoctoral Researcher, UNIVERISTY OF SAO PAULO, Sao Paulo
Project: Characterizing transcriptional regulation of the major histocompatibility complex (MHC) region across human populations and diseases

Immunogenetics | eQTL | Chromatin Regulation | Topological-associated Domains | Super-Enhancers

November 2018 — June 2019

Bioinformatics Assistant, DUNA BIOINFORMATICS, Rio Grande do Norte
Project: Pipeline development to prioritize tumor-associated antigens for vaccine design

Tumor immunology | R package development | Antigen discovery | Binding-affinity prediction | Population coverage

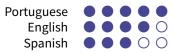|	
November 2017 April 2018	Visiting Researcher, UNIVERSITY OF CALIFORNIA - SAN DIEGO, California **Project:** Investigating chromosome instability and DNA repair genes in pan-cancer cohorts › Hired as **Tutoring Assistant** into "Bioinformatics Applications to Human Disease" class (MED263) at University of California - San Diego - Code: `1` `Genome Instability` `DNA Repair` `Bulk Transcriptomics` `Survival Analysis`

✚ SOFT SKILLS

› Passionate
› Problem-solving mind
› Team-player and collaborative person
› Curious and lifelong learner

📖 LANGUAGES

Portuguese ⬤ ⬤ ⬤ ⬤ ⬤
English ⬤ ⬤ ⬤ ⬤ ◯
Spanish ⬤ ⬤ ⬤ ◯ ◯

📘 PUBLICATIONS AND POSTERS

2022 Tarabini, R. F.; Rigo, M. M.; **Fonseca, A. F.**; Rubin, F., Bellé, R.; Kavraki, L. E.; Ferreto, T. C.; Antunes, D.A.; Souza, A. P. D. "Large-Scale Structure-Based Screening of Potential T Cell Cross-Reactivities Involving Peptide-Targets From BCG Vaccine and SARS-CoV-2". **Frontiers Immunology**

2021 ★**Fonseca, A. F.**; Antunes, D.A. "Crossdome: An R package to measure cross-reactivity risk on the sequence-space". **Center for Nuclear Receptors and Cell Signaling Symposium**

2020 ★Coelho, A. C. M. F. ; **Fonseca, A. F.** ; Martins, D. L. ; Cunha, L. M. ; Lins, P. B. R. ; De Souza, S. J. "neoANT-HILL: an integrated tool for identification of potential neoantigens". **BMC Medical Genomics**

2019 ★**Fonseca, A. L.**; Coelho, A. C. M. F.; De Souza, S. J. "A bioinformatics approach to cancer vaccines prioritization based on cancer-testis antigens in melanoma". **15th International Conference of the Brazilian Association for Bioinformatics and Computational Biology - X-Meeting**.

2017 ★**Fonseca, A. F.**; Silva, V.; Fonseca, M.; Silva, T. ; Coelho, A.; Kroll, J.; Souza, J.; Stransky, B.; Souza, G.; Souza, S. J. "Genome-wide identification of cancer/testis genes and their association with prognosis in a pan-cancer analysis". **Oncotarget**

2016 Putnam, C. D.; Srivatsan, A.; Nene, R. V.; Martinez, S. L.; Clotfelter, S. P.; Bell, S. N.; Somach, S. B.; Souza, J. S.; **Fonseca, A. L. F.**; Souza, S. J.; Kolodner, R. D. "A genetic network that suppresses genome rearrangements in Saccharomyces cerevisiae and contains defects in cancers". **Nature Communications**

2015 Kroll, J. E. ; **Fonseca, Andre L. F.**; Souza, S. J. "Alternative splicing and cancer - Post-genomic Approaches in Cancer and NanoMedicine". **River Publishers**

For more publications: Google Scholar