

Postdoctoral Position in Bioinformatics and Computational Immunology

The Antunes Lab at University of Houston (<https://dinlerantunes.com/lab>) is seeking candidates to fill one postdoctoral position. The topic of the research relates to the development of computational methods to support personalized cancer immunotherapies and vaccine development.

Cancer remains one of the most important challenges for healthcare, and T-cell based immunotherapy has provided a new promising path for cancer treatment. T-cell lymphocytes can circulate through the body and are capable of identifying and eliminating cancer cells. The recognition of a cancer cell depends on the specific interaction between the T-cell receptor (TCR), and class I Human Leucocyte Antigen (HLA) receptors. HLA receptors bind pieces of proteins (i.e., peptides) derived from intracellular space, and display them at the cell surface. This mechanism exposes intracellular content to the extracellular environment, making it accessible to cells from the immune system. In turn, it enables T-cells to survey the surface of virtually all other cells in our system, eliminating those displaying unusual or foreign peptides (e.g., cancerous or infected cells). In addition, this surveillance mechanism has been recently leveraged to develop a broad range of T-cell-based cancer immunotherapies, many of which are being currently validated in clinical trials. Modeling and uncovering the molecular features driving the specificity of the TCR/peptide-HLA interactions has the potential to directly impact the development of better and safer cancer therapies, in addition to applications across other biomedical fields (e.g., antiviral vaccine development, autoimmunity diagnostics and treatment, etc.). The overall goal of our research is to develop novel computational methods and pipelines for the modeling and analysis of peptide-HLAs and its recognition by TCRs. The individual recruited to fill this position will be using and expanding the capabilities of a modeling environment called [HLA-Arena](#). This individual will also be working closely with immunologists, molecular biologists and other professionals across the [Texas Medical Center](#), particularly with collaborators from the MD Anderson Cancer Center.

BACKGROUND: Applicants must hold a PhD in Biology, Biochemistry, Biomedicine, Bioinformatics, Biomedical Informatics, or a related field. Prior knowledge of immunology is not required, but it is desirable. Experience with Docker, Linux, and version control is also desirable. Applicants without formal computational training will be considered if they have familiarity with bioinformatics databases and tools, as well as at least one programming language (e.g., Python, R, Perl or bash scripting). Applicants with PhDs in Computer Sciences will be considered if they have expertise in computational biology. This position is particularly suited for candidates who want to follow a career in academia; the position can include formal training for obtaining and succeeding in an academic position, if the candidate so desires.

SALARY AND DURATION: Postdoctoral fellows are eligible for up to two years of support. The base salary for this position is \$52,704 a year, but this amount can be revised according to applicant's experience and [NIH stipend levels](#). All re-appointments are dependent upon a satisfactory progress review and continued funding.

Email: dinler@uh.edu • **Webpage:** <https://dinlerantunes.com/> • **Office:** SERC 3007
Address: Science and Engineering Research Center (SERC), Bldg 545,
3517 Cullen Boulevard, Houston, TX 77204-5056

ABOUT THE LAB: This is a brand new lab space inside the Center for Nuclear Receptor and Cell Signaling (CNRSC). New high-performance computers are being currently acquired, for exclusive use of researchers and students in this group. In addition, lab members will have access to shared facilities of the CNRCS, and core facilities of the Department of Biology and Biochemistry. These include the University of Houston Sequencing and Editing Core (UH-SNEC) and the Research Computing Data Core (RCDC). Our Department is part of the Gulf Coast Consortia for Quantitative Biomedical Sciences (GCC), which offers unparalleled networking and training opportunities, including fellowship programs through the Keck Center.

ABOUT THE UNIVERSITY OF HOUSTON: The University of Houston is an “R1” – highest research activity – institution according to the Carnegie’s top classification. Only 115 universities of America’s 4,700 institutions qualified for that prestigious designation. UH has also been ranked among the best in the United States in a number of categories, according to the U.S. News and World Report Best Colleges 2021 rankings. UH earned a top 50 ranking as a “Top Performer for Social Mobility,” and also landed on the lists for “Top Public Schools” and “Best Value Schools.” UH has also been ranked on the top 2 most diverse universities in the country, for campus ethnic diversity. An overview of UH facts and figures can be found here.

ABOUT THE TEXAS MEDICAL CENTER: The University of Houston is part of the Texas Medical Center (TMC). The TMC encompasses 59 institutions, including universities, hospitals, and research facilities. To advance common goals, 5 TMC Institutes were created. The TMC Clinical Research Institute, for instance, has the primary goal of simplifying collaborative research efforts to speed new therapies to market. The Institute is establishing and promoting formalized processes for (i) conducting multi-site clinical trials; (ii) sharing labs, equipment, data, biospecimens and other resources; and (iii) educating researchers and research assistants. Another interesting example is the TMC Innovation Institute, hosting programs to help startups working on the development of therapeutic, diagnostic, medical devices and digital health. These and other initiatives make the TMC a unique environment to perform multidisciplinary research, and to allow faster transition of new technologies and methods into future clinical trials. An even deeper connection is shared by 7 of the TMC institutions, which are also part of the Gulf Coast Consortia (GCC). The GCC focuses on building strong collaborative research groups and interdisciplinary training opportunities for PhD students and postdocs. It brings together the strengths of its member institutions to build interdisciplinary collaborative research teams and training programs in biological sciences at their intersection with the computational, chemical, mathematical, and physical sciences. Taken together, TMC and GCC offer unique opportunities for training and potential long-term collaboration with top researchers, as well as future job opportunities.

HOW TO APPLY: Interested applicants should contact Professor Dinler Antunes (dinler@uh.edu) and provide a CV and a statement (1-2 paragraphs) about their interest in the advertised position. Please include the names of at least three references in the CV. The position is available immediately.

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