Madrid, 2od August 2023

**PhD position offer on:**

**Molecular mechanisms of T lymphocyte activation and T-B cell cooperation during in the humoral response**

**We offer**

A 4-year predoctoral contract\* to join the laboratory of Prof. Balbino Alarcón at the Center for Molecular Biology (CBMSO) in Madrid, Spain aimed at investigating the earliest events in signal transduction by the T cell antigen receptor (TCR) and strategies to modulate its signaling in order to selectively inhibit T cell involvement in autoimmune diseases such as psoriasis, multiple sclerosis, rheumatoid arthritis or diabetes, while allowing the formation of a robust immune response against viral and microbial pathogens. In addition, the project aims at studying the molecular mechanisms of T cell help to B cell during the maturation of the humoral response that allows the generation of high affinity mature immunoglobulins of diagnostic and therapeutical interest. The laboratory has also an interest on exploring the relevance of the RAS-related GTPase R-RAS2 in human cancer. The estimated start date is in October-November 2023. \**Financed with grant PID2022-136745OB-I00 funded by MCIN/AEI/10.13039/501100011033*

For further information, please visit the following link and read the following articles:

-<https://www.cbm.uam.es/en/research/programs/interactions-with-the-environment/immune-system-development-and-function/signal-transduction-by-the-t-cell-antigen-receptor>

[Recreation of an antigen-driven germinal center in vitro by providing B cells with phagocytic antigen.](https://pubmed.ncbi.nlm.nih.gov/37081131/)Martínez-Riaño A, Delgado P, Tercero R, Barrero S, Mendoza P, Oeste CL, Abia D, Rodríguez-Bovolenta E, Turner M, **Alarcón B.**Commun Biol. 2023 Apr 20;6(1):437. doi: 10.1038/s42003-023-04807-0.

[Decreased breadth of the antibody response to the spike protein of SARS-CoV-2 after repeated vaccination.](https://pubmed.ncbi.nlm.nih.gov/37081876/)

Horndler L, Delgado P, Romero-Pinedo S, Quesada M, Balabanov I, Laguna-Goya R, Almendro-Vázquez P, Llamas MA, Fresno M, Paz-Artal E, van Santen HM, Álvarez-Fernández S, Olmo A, **Alarcón B.**Front Immunol. 2023 Apr 3;14:1157263. doi: 10.3389/fimmu.2023.1157263. eCollection 2023.

[Overexpression of wild type RRAS2, without oncogenic mutations, drives chronic lymphocytic leukemia.](https://pubmed.ncbi.nlm.nih.gov/35120522/)

Hortal AM, Oeste CL, Cifuentes C, Alcoceba M, Fernández-Pisonero I, Clavaín L, Tercero R, Mendoza P, Domínguez V, García-Flores M, Pintado B, Abia D, García-Macías C, Navarro-Bailón A, Bustelo XR, González M, **Alarcón B.**Mol Cancer. 2022 Feb 4;21(1):35. doi: 10.1186/s12943-022-01496-x.

[The TCR is an allosterically regulated macromolecular machinery changing its conformation while working.](https://pubmed.ncbi.nlm.nih.gov/31402501/)

Schamel WW, **Alarcon B**, Minguet S.Immunol Rev. 2019 Sep;291(1):8-25. doi: 10.1111/imr.12788.

[A window of opportunity for cooperativity in the T Cell Receptor.](https://pubmed.ncbi.nlm.nih.gov/29976994/)

Martin-Blanco N, Blanco R, Alda-Catalinas C, Bovolenta ER, Oeste CL, Palmer E, Schamel WW, Lythe G, Molina-París C, Castro M, **Alarcon B.**Nat Commun. 2018 Jul 5;9(1):2618. doi: 10.1038/s41467-018-05050-6.

[First-in-class inhibitor of the T cell receptor for the treatment of autoimmune diseases.](https://pubmed.ncbi.nlm.nih.gov/28003549/)

Borroto A, Reyes-Garau D, Jiménez MA, Carrasco E, Moreno B, Martínez-Pasamar S, Cortés JR, Perona A, Abia D, Blanco S, Fuentes M, Arellano I, Lobo J, Heidarieh H, Rueda J, Esteve P, Cibrián D, Martinez-Riaño A, Mendoza P, Prieto C, Calleja E, Oeste CL, Orfao A, Fresno M, Sánchez-Madrid F, Alcamí A, Bovolenta P, Martín P, Villoslada P, Morreale A, Messeguer A, **Alarcon B.**Sci Transl Med. 2016 Dec 21;8(370):370ra184. doi: 10.1126/scitranslmed.aaf2140.

**Requirements**

-Graduated in Biochemistry, Biology, Medicine, Pharmacy or related areas, with master studies already finalized.

-Candidates please send a CV and a motivation letter to Prof Balbino Alarcon ([balarcon@cbm.csic.es](mailto:balarcon@cbm.csic.es)) no later than the 15th of September 2023.