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Letter of Recommendation for Alejandro Sans García,

Dear Selection Committee,

I am writing this letter to give my strong recommendation for Alejandro Sanz García's application to your company. Alejandro is performing his master's thesis in my research group at ETH Zurich from September 2022 until May 2023. Alejandro worked on two main projects involving convergent B cell selection using single-cell immune repertoire sequencing experiments and machine-learning based vaccine design. The first of which involved extensive data analysis, interpretation, and visualization of feature-rich single-cell immune repertoire sequencing data containing both full-length, paired adaptive immune receptor sequences and single-cell transcriptomes. Alejandro played a crucial role in advancing this project and his results will be featured with a co-authorship in an upcoming manuscript. Additionally, Alejandro worked on using machine learning and artificial intelligence to design multivalent vaccination strategies against SARS-CoV-2. This primarily relied upon incorporating protein language models with recently published experimental data involving feature-rich yeast mutagenesis libraries (Taft Cell 2022). Alejandro was able to understand and integrate both experimental and computational immunological insight into the project and has played a crucial role in selecting candidate vaccine designs that we are currently in the process of experimentally validating.

I was especially impressed that Alejandro was able to master the computational biology aspects of his project, while also developing the necessary foundational understanding of immunology to generate his own research questions. The computational pipelines Alejandro developed are still being used by others in my group to answer questions about their projects. Ultimately, he was instrumental in moving forward our efforts in computational immunology, in particular to apply single-cell sequencing for B cell receptor repertoires for a number of applications such as vaccine profiling and antibody discovery.

Alejandro worked closely on these projects initially with Professor Alex Yermanos, UMC Utrecht (a.d.yermanos@umcutrecht.nl), but eventually became very independent. He showed proficiency in both computational organisation and execution and a deep knowledge of relevant literature in immunology, immune repertoires and machine learning. His scientific abilities were especially evident in that he was a very diligent and independent thinker. He was able to integrate information from several fields, thus allowing

him to form reasonable strategies to move the project forward. He also ensured that his work was reproducible by drafting detailed reports and protocols. His work will be featured as co-authorship on multiple publications across a diverse range of computational immunology. In all of our meetings he was always excellently prepared. Alejandro was also an excellent team member, as all of his colleagues in the lab speak very highly of him.

In summary, Alejandro is an exceptional and ambitious young scientist. He is a very enthusiastic and positive person. His creativity and flexibility will enable him to excel, especially in light of today's collaborative and interdisciplinary research environment in biological sciences.

Yours sincerely,

A handwritten signature in black ink, consisting of a stylized 'S' followed by a horizontal line and a small flourish.

Sai Reddy