April 30, 2014

Professor Human Immunology, ETH Zurich
Director Institute for Research in Biomedicine
Antonio Lanzavecchia, M.D.
Via Vincenzo Vela 6
CH-6500 Bellinzona, Switzerland

Dear Professor Lanzavecchia,

I am a recently completed Doctoral student at Vanderbilt University Medical Center in the research group of James Crowe and Jens Meiler. My thesis was focused on computer aided antibody design using the software suite ROSETTA. I worked at the interface of the wet- and dry-labs in which I carried my designs over to the wet-lab to characterize. To that end I gained proficiency in a wide range of computational techniques including molecular modeling, data mining, computer programming as well as experimental techniques including molecular cloning, expression, viral neutralization assays and biophysical characterization. The antibodies I designed were primarily against HIV and Influenza.

As a member of the Crowe laboratory, and an antibody designer, I'm well read in your work. The rational design of antibodies was a focus of my thesis, I'm highly interested in polyspecific and highly potent antibodies from rationale engineering. One aim of my research was developing a "multi-state design" algorithm for the programming suite ROSETTA. For this, you can design for multiple epitopes at once without compromising potency to any of the epitopes of interest. This is very similar to what your team in collaboration with Luca Varani accomplished by using rationale engineering to tune the specificity of antibodies to various DenV serotypes. This resembles my own work in which I fine tuned specificity of PG9 using ROSETTADESIGN. In contrast to your work, I used ROSETTA to select mutations that seemed beneficial to multiple HIV variants. I feel this type of computational design is exactly what your group needs in validating and engineering antibodies for cross-reactivity. You have shown that you are an expert on this subject such is your work with cross-pathogen HRSV and HMPV binder, and expanded breadth in Influenza group A and B. Please see my CV for additional details that echo much of the work you have done including high-throughput bioinformatic analysis.

I feel my expertise at the interface between computational antibody design, bioinformatics, HIV immunology and experimental characterization would be an invaluable asset to the Lanzavecchia group. If you would like, I would be happy to visit your lab in person, or to talk on the phone, I would also be happy to arrange for letters of reference to be sent. Please let me know if you have any questions or would like to schedule a meeting.

Thank you for your consideration,
Jordan R. Willis, Ph.D.