



Postdoctoral Fellow Position, Bacchetta Laboratory, Stanford University

The Bacchetta Laboratory has an opening for a highly motivated, dedicated, passionate and curiosity-driven postdoctoral fellow with background knowledge in immunology and a strong interest in translational research, gene and cell therapy as well as basic human immunology. The laboratory has developed a novel gene-therapy based Treg cell product – CD4^{LVFOXP3}. The CD4^{LVFOXP3} cells are made by conversion of conventional T cells to Treg like cells by lentiviral mediated expression of FOXP3. This cell product will be tested at the Stanford Pediatrics Hospital in a Phase I proof-of-principle First-Time-in-Humans clinical trial for a rare genetic immune regulatory disorder, called IPEX Syndrome, a prototype of autoimmune genetic disease (Passerini *et al.*, *Sci Transl Med* 2013. and Sato Y. *Clinical and Translational Immunology*, 2020). This clinical trial represents first in human clinical trial with genetically engineered Treg-like cells.

The postdoctoral candidate's primary focus will be:

- (1) Explore the use of this lentiviral-based CD4+ Treg-like cell product for different and more common autoimmune indications, such as Inflammatory Bowel Disease (IBD). We aim to study the still ill-defined role of Treg cells in pediatric IBD patients by examining the immune- gut mucosa interactions in 2D and 3D gut organoids using a broad range of cutting-edge molecular biology techniques, and in collaboration with world leaders in regenerative medicine at the Stem Cell Biology and Regenerative Medicine Institute in which the Bacchetta Lab is located. Organoids obtained from IBD patients will serve as a novel preclinical model to understand the safety and efficacy of the CD4^{LVFOXP3} Treg-like cells, including their ability to regulate adaptive immune responses in the gut and their role in gut mucosa healing and regeneration.
- (2) Participate in immune monitoring studies of IPEX patients treated with CD4^{LVFOXP3} Treg-like cells, assessing their *in vivo* survival, phenotypic and functional stability, and studying how they affect the patient immune system. These studies will generate unprecedented information on the role of regulatory T cells in shaping immune cell phenotype and on pharmacokinetics and pharmacodynamics of Treg cells *in vivo*.

This position is an excellent opportunity for a candidate who is interested in both translational research and state-of-the-art basic human immunology. This work will provide a unique experience that will be particularly valuable for trainees considering long-term careers in biomedical research and translational medicine. During the postdoctoral training the candidate will be encouraged to further develop his/her project beyond the original scope outlined, as well as develop skills in writing grants and designing projects and actively participate in internal and external international meetings. The candidate will join the Division of Pediatric Hematology, Oncology and Stem Cell Transplantation and Regenerative Medicine at Stanford University School of Medicine and work in close collaboration with the other members of the Bacchetta/Roncarolo Lab, the Immunology Division, the Pediatric Stem Cell Transplantation Unit and the Center for Definitive and Curative Medicine (CDCM).

Postdoctoral fellow responsibilities:

- Explore the role of gut Treg in organoids from healthy donors and IBD patients
- Use these organoid cultures as preclinical models for CD4^{LVFOXP3} therapy
- Write research manuscripts and contribute to writing grants to support research initiatives
- Participate in science communication efforts at meetings, conferences, and local retreats
- Share and collaborate with other members of the laboratory to meet the goals of the team

Required applicant qualifications:

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- PhD or MD in relevant biomedical field (e.g., immunology, cell biology, molecular biology)
 - Excellent oral and written communication skills
 - Ability to work independently as well as collaboratively with a team
 - Extensive laboratory experience in cell and molecular biology
 - Proven record of publication in reputable peer-reviewed journals

Additional desired (but not required) skills:

- Experience with flow cytometry and cell sorting
- Ability to process and culture primary human immune cells
- Expertise in gene modification using lentivirus and/or CRISPR/Cas9
- Knowledge pertaining handling mice experiments

Required Application Materials:

- An updated CV
- Complete contact information for three references
- A cover letter describing past research experience (1-2 pages)
- Career goals and a statement of future research interest (1-2 pages)

The position is currently open and the selected applicant could start immediately or when his or her availability permits. To apply, please submit application materials to Rosa Bacchetta (rosab@stanford.edu) and Michelle Narayan, Administrative Assistant (michelle.narayan@stanford.edu). For more information and to learn about the exciting translational research in the Bacchetta laboratory, please see the laboratory website at: <http://med.stanford.edu/bacchetalab.html>.

Stanford, March 14th 2022