Post-doctoral fellow **molecular biology/immunology**

ULB Center for Research in Immunology (U-CRI)

The ULB Center for Research in Immunology (U-CRI) (Belgium) brings together researchers from the ULB (Université Libre de Bruxelles) Faculties of Sciences, Medicine and Pharmacy. Its aim is to promote fundamental and translational immunology with research axis on molecular immunology, pre-clinical immunology, human and translational immunology (https://u-cri.ulb.be/). The team of David Vermijlen (https://u-cri.ulb.be/index.php?action=researchGroups&group=10) is looking for a post-doctoral fellow. This project is funded by WELBIO (Walloon Excellence in Life Sciences).

Job description

We offer a post-doctoral position embedded in the U-CRI at the Biopark Campus (rue Adrienne Bolland 8, 6041 Gosselies, Belgium) in the team of David Vermijlen where you will work together with motivated PhD students and a research technician. You will have the possibility to independently lead your research project, but with sufficient guidance and mentoring, and the possibility to learn a wide set of cutting-edge technologies.

Duration: 2 year full time, renewable.

Starting date: As soon as possible, till a suitable candidate is found

Project description:

γδ T cells are the 'third' type of lymphocytes, besides αβ T cells and B cells, that can rearrange gene segments at the DNA level in order to generate variable antigen receptors (γδ T cell receptor (TCR), αβ TCR, B cell receptor/antibodies).These three cell lineages have been conserved seemingly since the emergence of jawed vertebrates, more than 450 million years ago. A main difference with conventional αβ T cells is that γδ T cells use their TCR to recognize antigens in a fundamentally different way, i.e. they do not depend on classical MHC molecules. γδ T cells can have several roles, including protection against infections and tumors.

Based on past and recent findings generated by the 'David Vermijlen group' (U-CRI) regarding thymic development and function of γδ T cells (mainly in human), we hypothesize that:

(i) thymic development of γδ T cells in the human fetus follow unique molecular rules
(ii) γδ T cells are crucial mediators of anti-microbial immunity in early life
(iii) γδ T cells generated in the human fetus persist and play an important role in anti-cancer surveillance in human tissues in the adult

Within this research thematic, the post-doctoral fellow will focus on the understanding of **the molecular mechanisms** of our observations, especially regarding human γδ T cell development.

Profile

- Ph.D. in biology, bio-engineering sciences, biomedical sciences, pharmaceutical sciences, medical sciences or related disciplines
- Strong expertise in molecular biology/biochemistry (for example RNA-protein interactions, immunoprecipitation, CRISPR-Cas9,…)
- Experience in immunology is beneficial
- Good spoken and written English skills

Application

Enquiries and applications should be made to David Vermijlen at David.Vermijlen@ulb.be. Please email a CV, motivation letter, summary of past research and recommendation or contact details of two referees. Selection will start in November/December 2022 till a suitable candidate is found.

Selected publications

- Sánchez Sánchez, G., Papadopoulou, M., Azouz, A., Tafesse, Y., Mishra, A., Chan, J. K. Y., Fan, Y., Verdebout, I., Porco, S., Libert, F., Ginhoux, F., Vandekerckhove, B., Goriely, S., & Vermijlen, D. (2022). Identification of distinct functional thymic programming of fetal and pediatric human γδ thymocytes via single-cell analysis. *Nature communications*, 13(1), 5842. doi:10.1038/s41467-022-33488-2
- Papadopoulou, M., Sánchez Sánchez, G., & Vermijlen, D. (2020). Innate and adaptive γδ T cells: How, when, and why. *Immunological Reviews*. doi:10.1111/imr.12926
- Papadopoulou, M., Dimova, T., Shey, M., Briel, L., Veldtsman, H., Khomba, N., Africa, H., Steyn, M., Hanekom, W. W., Scriba, T. T., Nemes, E., & Vermijlen, D. (2020). Fetal public Vγ9Vδ2 T cells expand and gain potent cytotoxic functions early after birth. *PNAS*, 117(31), 18638-18648. doi:10.1073/pnas.1922595117
- Tieppo, P., Papadopoulou, M., Gatti, D., McGovern, N., Chan, J. K. Y., Gosselin, F., Goetgeluk, G., Weening, K., Ma, L., Dauby, N., Cogan, A., Donner, C., Ginhoux, F., Vandekerckhove, B., & Vermijlen, D. (2020). The human fetal thymus generates invariant effector γδ T cells. *The Journal of Experimental Medicine*, 217(3). doi:10.1084/jem.20190580
- Dimova, T., Brouwer, M., Gosselin, F., Tassignon, J., Leo, O., Donner, C., Marchant, A., & Vermijlen, D. (2015). Effector Vγ9Vδ2 T cells dominate the human fetal γδ T-cell repertoire. *PNAS*, 112(6), E556-E565. doi:10.1073/pnas.1412058112
- Vermijlen, D., Brouwer, M., Donner, C., Liesnard, C., Tackoen, M., Van Rysselberge, M., Twite, N., Goldman, M., Marchant, A., & Willems, F. (2010). Human cytomegalovirus elicits fetal γδ T cell responses in utero. *The Journal of Experimental Medicine*, 207(4), 807-821. doi:10.1084/jem.20090348