Institut Toulousain des Maladies
Infectieuses et Inflammatoires
INSERM UMR1291 – CNRS UMR5051 - Université Toulouse III

Team: "Sex Differences in Immunity"
Group leader : Jean-Charles Guéry

PhD Position in Immunology at INFINITY, Toulouse

Date de l'annonce : June 12th , 2021
Date de début de la thèse: 1er Septembre or October, 2021, à INFINITY, CHU Purpan Toulouse
Salaire: PhD student, 3 year contract

Project description : The incidence of systemic lupus erythematosus (SLE) and systemic sclerosis is markedly increased in women. Both sex hormones and X chromosomes might contribute to this sex bias. The dosage of X-linked genes is equilibrated between men and women due to the inactivation of one X chromosome (XCI) in female cells. However, XCI is incomplete, leading to increased expression of some X-linked genes, such as TLR7 (Souyris et al., Sci. Immunol. 2018). The objectives of this PhD project will be to investigate whether higher levels of TLR7 expression, arising from the escape of X-chromosome inactivation (XCI) are linked to increased risk of developing autoimmunity in experimental models of SLE. This will be achieved by exploring the relevance of TLR7 XCl escape to the pathophysiology of SLE and by assessing the functions of key human immune cell subsets implicated in disease development, in relationship to the dose of TLR7 (one copy or two copies) at single-cell resolution using state-of-the art technologies (RNA FISH, single-cell RNA seq) and news genetic mouse models recently developed in the lab.

We are looking for :

- creative and highly motivated Ph.D. students of all nationalities strongly committed to research
- applicants must have an excellent M.Sc. or equivalent degree with a strong background in immunology and/or physiopathology
- Experience in flow cytometry and in vivo models will be a plus.

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Recentes publications de l'équipe:

Blanquart E, Mandonnet A, Cenac C, Anesi N, Mercier P, Audouard C, Roga S, Serrano de Almeida G, Bevan C, Girard JP, Pelletier L, Laffont S, Guéry, JC. Targeting androgen-signaling in ILC2s protects from IL-33-driven lung inflammation, independently of KLRG1 . ***J Allergy Clin Immunol.*** 2021 (in press)
Blanquart E, Laffont S, Guéry JC. Sex hormone regulation of innate lymphoid cells ***Biomed. J***. 2021 (in press)
Youness A, Miquel CH, and Guéry JC. Escape from X chromosome inactivation and the female predominance in autoimmune diseases. ***International Journal of Molecular Sciences*** *2021* 23;22(3):1114. doi: 10.3390/ijms22031114.
Miquel CH, Youness A, Guéry JC. Prédominance féminine des maladies auto-immunes: les lymphocytes ont-ils un sexe ? ***Revue du rhumatisme*** 2021 88 :3-7.
Azar P,* Méjia JE,* Cénac C,* Shaiykova A, Youness A, Laffont S, Essat A, Izopet J, Passaes C, Muller-Trutwin M, Delobel P, Meyer L, and Guéry JC. TLR7 dosage polymorphism shapes interferogenesis and HIV-1 acute infection in women. ***JCI Insight*** 2020 5(12) :e136047.
Laffont S, and Guéry JC. Deconstructing the sex bias in allergy and autoimmunity: from sex hormones and beyond. ***Adv. Immunol.*** 2019 142:35-64.
Souyris M, Cenac C, Azar P, Daviaud D, Canivet A, Grunenwald S, Pienkowski C, Chaumeil J, Mejia JE, and Guéry JC. *TLR7* escapes from X chromosome inactivation in immune cells. ***Sci. Immunol.*** 2018 Jan 26;3(19). pii: eaap8855.
Laffont S, Blanquart E, Savignac M, Cenac C, Laverny G, Metzger D, Girard JP, Belz GT, Pelletier L, Seillet C, Guéry JC. Androgen signaling negatively controls group 2 innate lymphoid cells. ***J Exp Med.*** 2017 Jun 5;214(6):1581-1592.