Master Biologie Moléculaire et Cellulaire 'BMC',
Université Paris Cité - *UFR Sciences du Vivant*

Parcours : **Biologie et Développement Cellulaires 'BDC'**
http://www.master2bdc.fr/
Fiche de Projet de Stage de M2, 2022-2023

Unité INSERM ou CNRS ou Université : **Intitulé Equipe : Mécanismes et stratégies thérapeutiques des néphropathies chroniques** **ED d'appartenance : BioSPC** **Responsable de l'Equipe : F.Terzi**	**Responsable du Stage : Frank Bienaimé** **Contacts** Adresse : Institut Necker Enfant Malade U1151 160 rue de Vaugirard. Email : frank.bienaime@inserm.fr Tel : 0619409057

Titre du projet :

Deciphering primary cilia inflammatory signaling through its implication in innate immune response to bacteria.

Résumé du Projet de Stage (en 300 mots maximum, mots clés en gras)

Primary cilia are antennae like structure protruding at the cell surface of most mammalian cells. These exquisitely compartmentalized organelles are both sensors of the extra-cellular milieu and signaling platforms. Deregulation of cilia signaling is associated with severe conditions including developmental defects, cancer and genetic kidney diseases. Scarce evidence has linked germinal and somatic mutations in ciliary genes to the recruitment of inflammatory cells including macrophages and neutrophils, but the underlying mechanisms involved remain unclear. Stemming from the idea that pathogens have been a major driving force sculpting innate immune response machinery, we have recently discovered that primary cilia bind a subset of **bacteria** and respond to them by eliciting a specific **fibro-inflammatory program**. The aim of the proposed MASTER2 work is to use mainly *in vitro* systems to decipher the molecular mechanisms driving (1) adhesion of bacteria to primary cilia and (2) its inflammatory transcriptional output. This project requires a highly motivated student, who is willing to develop skills not only in bacteria and cell culture, qPCR, western blotting, immunofluorescence and live imaging but also in experimental design and results interpretations.

Publications de l'équipe relatives au projet de stage (max 5)

Quatredeniers M, **Bienaimé F**, Ferri G, Isnard P, Porée E, Billot K, Birgy E, Coccarelli S, Silbermann F, Braeg S, Nguyen-Khuo T, Salomon R, Gubler MC, Khuen EW, Saunier S, Viau A. « The renal inflammatory network of nephronophthisis». **Hum Mol Genet. 2022**.

Viau A, Baaziz M, Aka A, Mazloum M, Nguyen C, Kuehn EW, Terzi F, Bienaimé F. «Tubular STAT3 limits renal inflammation in autosomal dominant polycystic kidney disease». **J Am Soc Nephrol. 2020**.

Viau* A, **Bienaimé F***, Knoll M, Lukas K, Yakulov TA, Kretz O, Helmstädter M, Reichardt W, Braeg S, Aschman T, Annette Merkle A, Dietmar Pfeifer D, Verónica I. Dumit VI, Gubler MC, Nitschke R, Huber TB, Terzi F, Dengjel J, Grahammer F, Busch H, Börries M, Triantafyllopoulou A, Walz G, Kuehn EW. «A ciliopathy complex interacts with LKB1 to regulate inflammation». **EMBO J. 2018**. (IF 11,2) ***AV and FB contributed equally to this work**