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SCIENCES DE LA VIE, SANTE, AGRONOMIE, ENVIRONNEMENT

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**PhD supervisor :** Pr M. ANDRé (MCU-PH, HDR), mandre@chu-clermontferrand.fr

**PhD co-supervisor :** Dr E. BILLARD (MCU), elisabeth.billard@uca.fr

**Adaptive immune response to Crohn’s disease associated adherent invasive E. coli**

Crohn's disease (CD) is an aberrant immune response to unidentified intestinal antigens. In 21 to 63% of patients, the ileal mucosa is colonized by invasive adherent E. coli (AIEC) that are thought to contribute to abnormal T cell activation and systemic antibody responses in CD patients. The project is divided into 3 axes:

(1) T cell activation in lymph nodes will be studied in mice after intragastric administration of AIEC or non AIEC bacteria, as well as the effector response at the level of the mucosa and the production of antibodies (mucosal IgA, systemic IgG).

(2) The characterization the AIEC status of CD patients is long and costly. There are no AIEC molecular markers, but our preliminary work suggests that colonized individuals have anti-E. coli antibodies on which a diagnostic test could be based. We will search for a serological signature in AIEC+ versus AIEC- patients from our clinical laboratory studies.

(3) The role of immunodominant antigens (identified in part 2 or in the literature) in the virulence of AIEC (implantation in the mucosa, inflammation, B and T cell activation, etc.) will be studied by infecting mice with isogenic mutants.

Sevrin et al. Adaptation of adherent-invasive E. coli to gut environment: Impact on flagellum expression and bacterial colonization ability. Gut Microbes, 2018.

*Agus et al. Western diet induces a shift in microbiota composition enhancing susceptibility to Adherent-Invasive E. coli infection and intestinal inflammation. Sci Rep, 2016.*