About us

The UMR U1071 Inserm/Université Clermont Auvergne/USC 2018 INRA, M2iSH (Microbe, Intestine, Inflammation and Host Susceptibility) is interested in the study of infectious track in the etiology of acute and chronic inflammatory bowel diseases and more recently colorectal cancer.

This unit (composed of one team) consists of about 40 people, including 14 academic-researchers of “Université d’Auvergne” belonging to 3 components (IUT, Faculty of Medicine and Faculty of Pharmacy) and one CR2 Inserm researcher. The teaching hospital of Clermont-Ferrand, France, is also fully involved in this Unit with the Gastroenterology, Digestive Surgery and Internal Medicine clinical departments. The presence in our laboratory of young physicians performing PhD program allows the development of translational research projects. Our research Unit has been obtained Inserm label in 2012 and is also "Unit Under Contract" of INRA (USC-2018) since 2005.

History

Pr. Arlette Darfeuille-Michaud has created in 1994 and led a research group named "Intestinal Bacterial Pathogenesis" in the bacteriology laboratory of Medicine and Pharmacy Faculties EA3844 successively headed by Pr. J Cluzel, J. Sirot and C. Forestier. This research group was interested in infectious track in chronic inflammatory bowel diseases (IBD), including Crohn's disease (CD) and ulcerative colitis, which represent a real public health problem in industrialized countries. Showing for the first time in 1998 that the ileal mucosa of CD patients was abnormally colonized by Escherichia coli, our research group was quickly recognized internationally in the field of micro-organisms’ role in the etiology of CD. Our work has been the source of the discovery in 1999 of a new pathovar which we designated AIEC for "Adherent-Invasive E. coli," a new group of pathogenic E. coli associated with CD. In 2004 a new study found a prevalence of 35% of patients harboring these bacteria in a French cohort. These results were confirmed by several teams around the world in different cohorts, and our research team has been pioneer in the discovery of these AIEC strains colonizing the intestinal mucosa of CD patients. This work has allowed us to obtain the label JE2526 Young Team entitled "Evolution of pathogenic bacteria and host genetic susceptibility" in 2008.
The 2008-2011 periods was a step towards Inserm labeling. In patients with ileal CD, we have shown overexpression of CEACAM5 and CEACAM6 molecules. CEACAM6 acts as a receptor for type 1 pili expressed by AIEC pathogens that colonize the ileal mucosa of CD patients by interacting with exposed mannose residues on the glycoprotein CEACAM6. This work is the subject of a patent that has led to several cooperation agreements with industrial partners to develop new therapeutic strategies targeting this interaction. During this period, we also showed the key role played by autophagy process in controlling the proliferation of AIEC bacteria in the intestinal epithelial cells or macrophages. In addition, patients with IBD are at high risk of developing colorectal cancer (CRC). Thus, in parallel with our studies on infectious track in CD, we have analyzed whether such a track exists in the CRC in collaboration with physicians from “Surgery and Digestive Oncology” department of teaching hospital in Clermont-Ferrand.