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The general objective of our research is to better understand the role of microbiota, in particular some pathobiont bacteria (e.g., *E. coli*) in the etiology of chronic intestinal diseases, such as Crohn's disease (CD). Our research group is the first to report that the ileal mucosa of CD patients is abnormally colonized by adherent-invasive *E. coli* (AIEC), which can invade and replicate inside host cells, inducing inflammation. We have shown that upon AIEC infection, host cells induce autophagy as a key defense mechanism to restrain AIEC intracellular replication. However, AIEC can subvert autophagy by up-regulating the levels of miRNAs 30c and 130a, which target and inhibit expression of ATG5 and ATG16L1, respectively, key proteins required for autophagy activation. This in turn leads to increases in AIEC intracellular replication and AIEC-induced inflammation (Nguyen *et al*., Gastroenterology 2014. PMID: 24148619).

Recently, we showed that exosomes, extracellular vesicles of 30-100 nm implicating in cell-to-cell communication, are new mediators of host-AIEC interaction with their capacity to activate innate immune responses and to subvert the control of AIEC replication by host cells (Carriere *et al*., Inflamm Bowel Dis. 2016. PMID: 26595556). Mechanistically, upon AIEC infection, host cells secrete exosomes that can transfer miR-30c and miR-130a to recipient cells, thereby inhibiting autophagy in the later. This consequently leads to AIEC abnormal replication in host cells (Larabi *et al*., Gut microbes 2020. PMID: 32583714).

The on-going research is focusing on (i) the analysis of mRNA, miRNA and protein composition of the exosomes secreted by AIEC-infected cells and their functional effects, together with the underlying mechanism, in recipient cells, and (ii) establishing a serum-derived exosomal miRNA signature to predict AIEC colonization in CD. In summary, exosomes and their cargos are important mediators in host-AIEC interaction, and the strategy targeting them could have important clinical applications.