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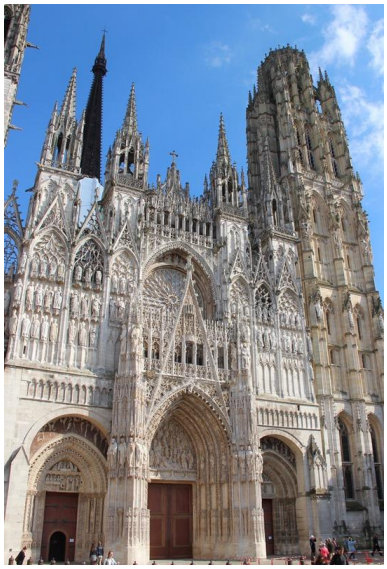

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Role of Paneth cells during infection of neonatal mice by *Cryptosporidium parvum*

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Cryptosporidium parvum is a zoonotic apicomplexan parasite responsible for a diarrheal disease named cryptosporidiosis. This protozoan parasite is found worldwide and is transmitted by contaminated water. The immature intestinal immune system in very young animals and children under 5 places them at high risk of developing severe cryptosporidiosis. Paneth cells (PC) are specialized intestinal epithelial cells located at the base of intestinal crypts producing antimicrobial peptides (AMPs) that develop and mature after birth. We and others have already described in vitro that antimicrobial peptides such as CRAMP and CCL20 can alter the viability of sporozoites of C. *parvum* (1).

We therefore wondered whether PCs and the AMPs that they produce can participate in the protective innate immune response against the parasite. By using a mouse model of neonatal cryptosporidiosis, we investigated the role of Paneth cells in the innate immune response against C. *parvum*. We first compared the susceptibility to C. *parvum* of mice genetically modified to be depleted of PCs (Sox9flox/flox-vil-Cre mice) and observed an increased level of infection when PCs are absent, associated with a reduced expression of AMPs. We also determined the effect of *Cryptosporidium parvum* infection on PC development and activity. By immunofluorescence, we observed on intestinal sections that C. *parvum* infection decreases the number of granule-positive-PCs and lysozyme-positive-PCs in neonatal mice. Altogether, these first results clearly demonstrate that PCs are important contributors of the innate protective immune response in mice and that lyzozyme, already described to be efficient in vitro on C. *parvum* sporozoite viability, may be involved in this effect.

(1) Guesdon W, Auray G, Pezier T, Bussière FI, Drouet F, Le Vern Y, Marquis M, Potiron L, Rabot S, Bruneau A, Werts C, Laurent F, Lacroix-Lamandé S. CCL20 Displays Antimicrobial Activity Against *Cryptosporidium parvum*, but Its Expression Is Reduced During Infection in the Intestine of Neonatal Mice. J Infect Dis. 2015 .