

# Human microbiota-associated IL-10<sup>-/-</sup> mice: a valuable enterocolitis model to dissect the interactions of *Campylobacter jejuni* with host immunity and gut microbiota

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Secondary abiotic (SAB) IL-10<sup>-/-</sup> mice constitute a valuable *Campylobacter jejuni*-induced enterocolitis model. Given that the host-specific gut microbiota plays a key role in susceptibility of the vertebrate host towards or resistance against enteropathogenic infection, we surveyed immunopathological sequelae of *C. jejuni* infection in human microbiota-associated (hma) and SAB IL-10<sup>-/-</sup> mice. Following oral challenge, *C. jejuni* readily colonized the gastrointestinal tract of hma and SAB mice, but with lower numbers in the former versus the latter. Whereas hma mice were clinically less severely compromised, both, macroscopic and microscopic inflammatory sequelae of *C. jejuni* infection including histopathological and apoptotic cell responses in the colon of IL-10<sup>-/-</sup> mice were comparably pronounced in the presence and absence of a human gut microbiota at day 6 post-infection. Furthermore, *C. jejuni* infection of hma and SAB mice resulted in similarly enhanced immune cell responses in the colon and in differential pro-inflammatory mediator secretion in the intestinal tract which also held true for extra-intestinal including systemic compartments. Notably, *C. jejuni* infection of hma mice was associated with distinct gut microbiota shifts. In conclusion, hma IL-10<sup>-/-</sup> mice represent a reliable *C. jejuni*-induced enterocolitis model to dissect the interactions of the enteropathogen, vertebrate host immunity and human gut microbiota.

## Keywords

*Campylobacter jejuni*, enteropathogenic infection, acute campylobacteriosis model, microbiota-depleted mice, secondary abiotic IL-10<sup>-/-</sup> mice, human gut microbiota associated IL-10<sup>-/-</sup> mice, host pathogen interaction, gut microbiota shifts

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## Professional Status of the Speaker

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