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P04.08 | *Helicobacter pylori* increases matrix metalloproteinase-10 expression via ETS-1

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Infection with *H. pylori* increases the expression and activity of several matrix-metalloproteinases (MMPs). We have previously shown that *H. pylori* induces MMP-10 expression in gastric cell lines and in the gastric mucosa. MMP-10 modulation by *H. pylori* occurs via EGFR activation, in a process that involves Src, ERK1/2 and JNK pathways. Expression of MMPs may be regulated by several transcription factors, including those of the ETS family, namely ETS-1. In addition, EGFR is involved in the upregulation of MMPs by ETS family members. Therefore, the aim of this study was to evaluate the involvement of ETS-1 in *H. pylori*-mediated MMP-10 expression in gastric epithelial cells. A significant increase in ETS-1 mRNA levels was observed upon infection of AGS cells with *H. pylori* 60190 and with *H. pylori* 26695. An increase in ETS-1 protein levels after infection with both strains was also observed, being this effect more pronounced with *H. pylori* 26695. Silencing of ETS-1 expression with a specific siRNA led to a significant decrease in *H. pylori*-mediated MMP-10 mRNA levels. Inhibition of EGFR with a pharmacological inhibitor abrogated *H. pylori*-induced ETS-1 as well as MMP-10 expression. Reporter gene assays with constructs of MMP-10 promoter containing ETS-1-predicted binding sites, showed higher luciferase activity upon *H. pylori* infection and EGF treatment. In conclusion, expression of the ETS-1 transcription factor is increased by *H. pylori*. ETS-1 upregulation induced by the infection involves EGFR and modulates MMP-10 expression.

P04.09 | *Helicobacter pylori* strains from ulcer and non-ulcer differ in binding ability to mucins

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Background: Adhesion to mucins within the mucus layer and to membrane bound mucins present on the surface epithelial cells is a key step in the interaction of *H. pylori* and its host.
Aim: To investigate the level and mechanisms of binding of non-ulcer dyspepsia (NUD) strains versus peptic ulcer disease (PUD) strains to human gastric mucins.
Methods: Binding assays were performed at pH 2, pH 4, and pH 7, using mucins isolated from human gastric tumour, healthy human gastric tissue and rhesus monkey gastric tissue, to provide an array of differentially glycosylated mucins that the bacteria could potentially bind to. *H. pylori* strains were isolated from paediatric patients with NUD (n = 9) or PUD (n = 10). Most of the NUD strains were negative for *cagA*, *babA* and *homB* while most of the PUD strains were positive for the three genes.
Results: We found that both NUD and PUD *H. pylori* strains bound to human and monkey mucins. Binding of the *H. pylori* strains isolated from PUD patients was higher compared to the NUD strains at all pHs ($p < 0.0001$), with an increased binding ability at pH 2 and 4, and lower binding at pH 7.
Conclusion: The results point to a pH dependent binding that increases in an acidic environment, a mechanism which is not yet explained. Currently we are investigating how binding is affected by removal of *cagA*, *babA* and *homB*, using isogenic mutants of the strains isolated from the NUD and PUD patients.

P04.10 | *Helicobacter pylori* Type IV secretion system activates alternative NFkB signaling pathway

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The Type IV secretion system (T4SS) of *Helicobacter pylori* plays an essential role in gastric carcinogenesis by delivering the oncogenic protein CagA into gastric epithelial cells and thus activating inflammatory signaling pathways involved in the development of cancer. Interestingly, *H. pylori* T4SS can directly activate signaling cascades, such as canonical NF-κB, independently of CagA, suggesting other components of the T4SS to be important in the de-regulation of host signaling. The NF-κB signaling pathway comprises a second alternative pathway, which has been linked to chronic inflammation and carcinogenesis in different tissues. In this study, we sought to investigate whether *H. pylori* activated alternative NF-κB pathway in gastric epithelial cells using cell culture models in vitro. Importantly, we analysed human tissue samples as well as gastric tissue of *H. pylori*-infected mice and we specifically