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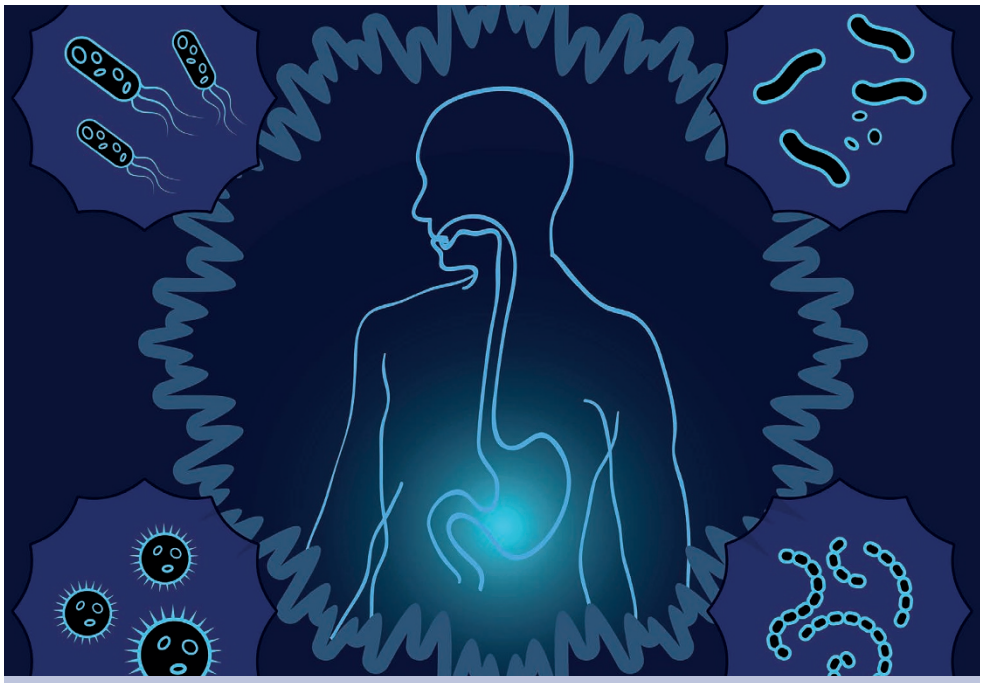

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SPONDYLOARTHROPATHIES

E. coli links IBD to spondyloarthritis

Spondyloarthritis (SpA) is a common extraintestinal manifestation in patients with inflammatory bowel diseases (IBD), but the mechanisms underlying this association have not yet been clarified. In a new study, Viladomiu and colleagues found that IgA-coated *Escherichia Coli* are enriched in patients with Crohn's disease-associated SpA (CD-SpA) as compared with patients with CD only. "Our microbial findings also correlate with patient-reported Bath ankylosing spondylitis disease activity index [scores]," says Randy Longman, corresponding author of the study. "These findings may allow us to develop diagnostic tools to stratify patients with symptoms as well as identify patients at risk," he continues.

> "IgA-coated *Escherichia Coli* are enriched in patients with Crohn's disease-associated spondyloarthritis"

To investigate the role of specific microbial communities in the modulation of host immunity, Viladomiu and colleagues took advantage of a novel technique called IgA-seq, which couples the sorting of IgA-coated microbiota (bacteria recognized by the intestinal immune system) with ribosomal RNA gene sequencing. Using this approach, the researchers found that the abundance of *E. coli* in the IgA^+ fraction of faecal samples from patients with CD-SpA was increased compared with that from patients with CD only.

Further genetic analyses revealed that *E. coli* enriched in patients with CD-SpA were the adherent-invasive *E. coli* (AIEC) pathotype. Compared with non-AIEC control *E. coli* from patients with CD only, CD-SpA-derived AIEC were able to attach to the epithelium and increase the number of IL-17-producing $CD4^+$ type 17 helper T (T_H17) cells when transferred into germ-free mice.

Viladomiu and colleagues also found that IL-17 production in both mucosal $CD4^+$ T cells and serum from patients with CD-SpA was increased compared with that from patients with CD alone. Finally, the investigators demonstrated that in the K/B×N mouse model of inflammatory arthritis, CD-SpA-derived AIEC increased ankle thickness as compared with non-AIEC CD-derived control.

These findings suggest that AIEC mediates T_H17 systemic immunity, which in turn leads to CD-SpA. "While these data represent very exciting findings in a subset of patients with CD-associated peripheral SpA, further work is needed to evaluate these findings in axial, HLA-B27-associated disease as well as ulcerative colitis-associated SpA," concludes Longman.

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ORIGINAL ARTICLE Viladomiu, M. *et al.* IgA-coated E. coli enriched in Crohn's disease spondyloarthritis promote T_H17-dependent inflammation. *Sci. Transl. Med.* http://dx.doi.org/10.1126/scitranslmed.aaf9655 (2017)