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## SUPPLEMENTARY METHODS

*Skin and mucosal swabs*

Oral mucosal and perianal skin swabs were collected to identify *Candida* species colonization. Oral swabs were collected using a single swab from both buccal mucosae and the dorsal and ventral surfaces of the tongue. Swabs were cultured on CHROMagar™ Candida (Beckton Dickinson Denmark, Herlev, Denmark) at 35-37°C for three days. Identification was performed using classical methods (morphology on CHROMagar™ and thermotolerance at 43 °C), matrix assisted laser desorption/ionization - time-of-flight mass spectrometry (MALDI-TOF MS, Bruker, Bremen, Germany) and, if needed, ITS sequencing (ITS 4 and ITS5). Colonization was defined as being culture positive without having clinical symptoms.

Swabs were collected from the nasal vestibule, retroauricular skin, umbilicus, and perineum to identify *S. aureus* colonization. Swabs were cultured on 5% blood agar and on CHROMagar™ at 35-37°C for 24 hours. Identification of *S. aureus* was confirmed using MALDI-TOF MS.

Of note, we updated the study protocol mid-study, therefore, we only collected samples for *S. aureus* colonization from a subset of patients.

*Fecal samples*

Patients received a home collection kit for fecal sampling to be mailed in for fecal calprotectin (FCP) testing. FCP is a cytosolic protein found primarily in neutrophils (1). It may serve as a surrogate marker of gut inflammation (2), and has widely been introduced as a marker to detect preclinical (and clinical) IBD disease activity (3). Further, some patients with psoriasis have asymptomatic elevated levels of FCP (4). There is no gold standard for measuring FCP. We used the EliA Calprotectin 2 assay (fluoro-enzyme immunoassay). This method has a reference change value of 150%, meaning that variation between samples below this threshold may be due to test variation. An FCP ≥50 µg/g was considered elevated.

*TruCulture®*

Blood samples were collected in 9 mL Lithium Heparin tubes and immediately transferred to the laboratory at the Department of Clinical Immunology, Copenhagen University Hospital –

Rigshospitalet. One mL of whole blood was then transferred to each of five TruCulture® tubes (Myriad RBM) (5). The tubes are used to mimic the immune response to: (i) gram-negative bacteria (stimulation with lipopolysaccharide (LPS) from *Escherichia coli O111:B4* that activates toll-like receptor (TLR)-4)), (ii) viral single-stranded RNA (stimulation with Resiquimod 848 (R848) that activates TLR-7/8), (iii) viral double-stranded RNA (stimulation with polyinosinic:polycytidylic acid (poly I:C) that activates TLR-3), (iv) T-cell stimulation (with anti-CD3/CD28), and (v) null (a control containing media without stimuli). In each tube, tumor necrosis factor (TNF)-α, interferon (IFN)-α, IFN-γ, interleukin (IL)-1β, IL-6, IL-8, IL-10, IL-12p40, and IL-17A concentrations were measured. A detailed description of the method is found elsewhere (6).

## REFERENCES

(1) Ayling RM, Kok K. Fecal Calprotectin. Adv Clin Chem 2018;87:161–190. https://doi.org/10.1016/bs.acc.2018.07.005.

(2) Østgård RD, Deleuran BW, Dam MY, Hansen IT, Jurik AG, Glerup H. Faecal calprotectin detects subclinical bowel inflammation and may predict treatment response in spondyloarthritis. Scand J Rheumatol 2018;47:48–55. https://doi.org/10.1080/03009742.2017.1299216.

(3) Maaser C, Sturm A, Vavricka SR, Kucharzik T, Fiorino G, Annese V, et al. ECCO-ESGAR Guideline for Diagnostic Assessment in IBD Part 1: Initial diagnosis, monitoring of known IBD, detection of complications. J Crohns Colitis 2019;13:144-164K. https://doi.org/10.1093/ecco-jcc/jjy113.

(4) Adarsh MB, Dogra S, Vaiphei K, Vaishnavi C, Sinha SK, Sharma A. Evaluation of subclinical gut inflammation using faecal calprotectin levels and colonic mucosal biopsy in patients with psoriasis and psoriatic arthritis. British Journal of Dermatology 2019;181:401–402. https://doi.org/10.1111/bjd.17745.

(5) Duffy D, Rouilly V, Libri V, Hasan M, Beitz B, David M, et al. Functional analysis via standardized whole-blood stimulation systems defines the boundaries of a healthy immune response to complex stimuli. Immunity 2014;40:436–450. https://doi.org/10.1016/j.immuni.2014.03.002.

(6) Aasvang EK, Pitter S, Hansen CP, Storkholm JH, Krohn PS, Burgdorf SK, et al. Preoperative TruCulture® whole blood cytokine response predicts post-operative inflammation in pancreaticoduodenectomy patients—A pilot cohort study. Scand J Immunol 2020;92:e12930. https://doi.org/10.1111/sji.12930.