Besides toxins that contribute to carcinogenesis by introducing DSBs and genomic instability, toxins? have been reported that promote carcinogenesis by inducing resistance to cell death signalling and by promoting proliferative signalling.Another H. pylori virulence factor, cytotoxin-associated gene A (CagA), which depends on the type IV pilus cell-surface adhesion CagL for its host cell targeting, interacts with the c-Met receptor to activate epithelial proliferation, as shown in human gastric organoids.Similar as the H. pylori outer membrane protein OipA, VacA activates the EGFR receptor that triggers PI3K-Akt signalling, and inactivates glycogen synthase kinase 3?.E-cadherin is involved in the formation of intercellular adhesion junctions in the intestinal epithelium and is involved in cellular signalling, proliferation and differentiation via activation of the ?-catenin/Wnt and NF-??An example of such a toxin is the Bacteroides fragilis (B. fragilis) toxin (BFT) that binds to intestinal epithelial cell receptors and stimulates cell proliferation by cleavage of the tumour suppressor protein E-cadherin.BFT induced acute and chronic colitis in C57BL/six mice, and colon tumours in the multiple intestinal neoplasia (Apc Min/+) mouse model for human colon carcinoma.These mouse experiments are further substantiated by epidemiology, indicating that infections with enterotoxigenic variants of B. fragilis, as opposed to non-toxigenic variants, are more prevalent in people with colorectal cancers.In addition to BFT, multiple biologically plausible mechanisms have been reported that explain how the vacuolating cytotoxin A (VacA) of H. pylori enhances gastric cancer risk.These toxins are generally secreted by pathogenic bacteria that favour an intracellular host cell life as part of their infectious cycle and thus directly benefit from host cell survival.As a result, ?-catenin degradation is abolished, which promotes Tcf/LEF-controlled transcription that promotes cell growth and transformation.Phosphorylated and unphosphorylated CagA can also interact with a variety of host proteins involved in the MEK, ERK, NF-??This is the same mouse model where H. pylori triggers a pro-carcinogenic multi-step inflammatory cascade that requires IL-17R, NF-??More specifically, the enterotoxigenic variant is present in only 10-20% of the healthy population, whereas 40% of CRC patients present enterotoxigenic B. fragilis in their faeces.and STAT3 signalling in colonic epithelial cells.and ?-catenin pathways that are all involved .in host cell proliferation and cancer formation.signalling pathways