developing fatal colorectal cancer. Aspirin seems to have immunostimulatory and tumoricidal properties in the colon[1 2] thus accounting for the protection. It is these properties that may also make low dose aspirin useful in the chemoprevention of colorectal cancer in high risk patients.[3] This is supported by the data of Manzano *et al.* Pre-neoplastic ulcerative colitis is associated with T lymphocyte immunosuppression and this may permit immunologically unchallenged malignant degeneration in a chronically inflamed mucosa. Aspirin may therefore be useful in the chemoprevention of colorectal cancer by augmenting the immune system thus destroying early tumours.

This principle also applies in the oesophagus as there are several similarities between the carcinogenesis of colorectal and oesophageal cancer. Chronic inflammation may be a pre-neoplastic lesion in both organs[4] while Barrett's oesophagus is also associated with immunosuppression.[5] NSAIDs may thus be useful in the chemoprevention of both colorectal and oesophageal cancer[6] in patients with pre-neoplastic disease. I agree with Choi and Zelig that longterm studies of low dose NSAID prophylaxis are warranted in patients receiving surveillance.

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Reply

EDITOR,—In our study (*Gut* 1994; **35:** 955–60), we have found that T lymphocytes from ulcerative colitis patients exhibit a deficient interleukin 2 conditioned proliferation pathway. This functional T lymphocyte abnormality is not connected to the activity of the disease, as it is also seen in asymptomatic patients. The cause and the pathogenic signification of this T lymphocyte deficiency remain elusive.

It seems that T lymphocytes play an important part in the surveillance function of the immune system against the growth and dissemination of tumours.[1] A potential association between the impaired T lymphocyte function found in ulcerative colitis patients and their enhanced incidence of colorectal tumours might be a certain hypothesis. But, it has not been shown yet.

Aspirin has an antiprostaglandin effect. It has been shown that prostaglandin E_2 may suppress the function of some immune cells including T lymphocytes.[2] However, the effect of the use of aspirin upon T lymphocyte function in patients with ulcerative colitis is unknown.

Despite the encouraging promise of aspirin as an agent for preventing colon cancer, further studies are required for indicating its widespread antitumour prophylactic use in ulcerative colitis.

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Acid and gastric metaplasia in the duodenum

EDITOR,—I am writing with reference to the letter to the editor (Savarino *et al Gut* 1994; **35:** 1151) and the reply concerning the paper by Noach *et al* (*Gut* 1993; **34:** 1510–4). In this paper they support the concept that gastric metaplasia of the duodenum is a response to acid hypersecretion and may be a defence mechanism.[1–3] An alternative concept is that it is a pathological change resulting in a loss of mucosal resistance to acid and pepsin. The small study that we reported comparing light and electron microscopy appearances of the duodenal mucosa in healed duodenal ulcer patients after one year's maintenance treatment with either cimetidine or sucralfate showed little change in the presence of gastric metaplasia and of *Helicobacter pylori* in 64% of the cimetidine group, and an appreciable reduction or absence of both in 73% of the sucralfate group.[4 5] If gastric metaplasia were a response to acid the reverse would be expected, with a reduction in the group receiving cimetidine. Over the next two years the relapse rates were 69% and 18% respectively.

Gastric metaplasia of the duodenal mucosa is almost invariably found accompanying duodenal ulceration. In the absence of gastric metaplasia *H pylori* cannot survive in the duodenum. Opportunistic colonisation of the metaplastic mucosa by *H pylori* may be an additional factor either in the initial formation of an ulcer or in delayed healing or relapse.

It is of interest that Noach *et al* reported no reduction in the extent and prevalence of gastric metaplasia after 12 months of eradication of *H pylori*. This means that these patients could be at risk of recolonisation and possible recurrence of duodenal ulceration. This emphasises the need for a treatment that will restore normal duodenal mucosa. Treatment with longterm sucralfate is one possibility, but alternatively there may be dietary factors that can achieve the same effect and thereby restore normal mucosal resistance.[6]

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Reply

EDITOR,—We thank Dr Tovey for his comments on our study. We are aware of his findings and results of other studies that the duodenal mucosa does not return to normal after treatment with cimetidine.[1] In agreement with this, we found no reduction of gastric metaplasia during chronic use of H_2 receptor antagonists. Acid suppression during treatment with these agents is comparatively weak, however, and does not exclude a causal relation between acid production and gastric metaplasia. Our finding that gastric metaplasia is virtually absent in patients receiving omeprazole and after highly selective vagotomy lends further support to the concept that gastric metaplasia is related to acid secretion.

As we did not study the grade of duodenal inflammation after eradication of *H pylori*, we have no data to support the theory that gastric metaplasia primarily is a pathological change of the duodenal mucosa with secondary loss of resistance to acid and pepsin. From other studies, however, it is known that signs of gastritis gradually disappear within a year after eradication of *H pylori*.[2] Theoretically, the persistence of gastric metaplasia may render patients at risk for recolonisation. Overwhelming evidence exists, however, that duodenal ulceration does not recur after eradication of *H pylori* whether or not gastric metaplasia persists.[3] We would therefore prefer the use of anti-*H pylori* regimens rather than longterm maintenance treatments.

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Pathogenesis of bacterial colitis

EDITOR,—The leading article on the pathophysiology of bacterial colitis was timely and informative (*Gut* 1994; **35:** 872–4). Some aspects of this fascinating topic may, however, warrant additional discussion.

As the authors pointed out, the cytotoxic toxins of *Shigella dysenteriae* type 1 and *Escherichia coli* O157:H7 are structurally