

BARRETT OESOPHAGUS ORIGIN OF BARRETT OESOPHAGUS

Controversy surrounds the origin of Barrett oesophagus as well as which component of Barrett epithelium progresses to cancer. The mucosa in Barrett oesophagus is typically described as 'intestinal metaplasia' with structures called 'crypts', which resemble crypts in the intestine. Now, Stuart McDonald and colleagues have published findings in the journal *Gut* that go against this dogma and report that Barrett glands resemble pyloric-type gastric glands, rather than intestinal crypts.

Barrett oesophagus is composed of a variety of cell lineages. Even in the 'specialized epithelium', multiple cell lineages have been described, including cells containing MUC1, MUC5AC or MUC6 (which are characteristic of gastric epithelium) and goblet cells (with MUC2 and MUC3—seen in intestinal epithelium). Therefore, Barrett glands show evidence of both gastric and intestinal differentiation.

McDonald and co-workers investigated the gene expression and proliferative compartments of Barrett glands and found multiple similarities with pyloric-type gastric glands. First, proliferation predominantly occurs in the neck of the glands, reducing at the surface and the base. Second, cell migration is bidirectional. Third, mucin distribution mirrors that in pyloric glands (notably, this distribution is maintained in dysplasia). Fourth, the stem cell zone is present within the neck of Barrett glands. Furthermore, Barrett glands display a common stem cell origin. An additional point noted by the authors is that although Barrett glands display a pyloric-type organization, the stem cells within them show dual MUC2 and MUC5AC differentiation.

"Specialized gastric glands resemble pyloric glands showing partial intestinalization," explains McDonald. "We propose that Barrett glands are maintained by stem cells with both gastric and intestinal differentiation capacity." The researchers hypothesize that specialized epithelium progresses to intestinal metaplasia over time.

"Any unifying proposal for the origin and development of Barrett oesophagus should explain their resemblance to pyloric glands," conclude the authors of this study.

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Original article Lavery, D. L. *et al.* The stem cell organisation, and the proliferative and gene expression profile of Barrett's epithelium, replicates pyloric-type gastric glands. *Gut* doi:10.1136/gutjnl-2013-306508