gastrin or carbachol is added (4). When this cell-type is observed in a perfusion chamber, it is seen to respond to gastrin by an elevation of [Ca²⁺], again showing that it has a gastrin receptor (4) (perfusion would remove any intermediate transmitter). It may be that at least some of the in situ hybridization results seen by Mezey and Palkovits (1) result from the presence of ECL cells rather than immune cells. The figures in their study do not exclude this possibility.

We conclude that parietal cells have muscarinic receptors and that ECL cells have gastrin receptors. A key problem with this report (1) is that it does not show evidence of messenger RNA for receptors in cells known to express those receptors.

**Fig. 1.** Dark-field micrographs show the distribution of silver grains after in situ hybridization on the rat stomach with different oligonucleotides. M. mucosa, L. lamina propria. Scale bar = 100µm. (A) Hybridization with an oligonucleotide complementary to nucleotides 583 to 632 of the rat histidine decarboxylase. The mucosal grains correspond to the location of basal parts of gastric glands. In addition, grains are seen in the lamina propria. Some nonspecifically labeled cells in the mucosa are labeled with arrows. (B) Hybridization with a 50-nucleotide oligomer complementary to *S. aureus* chloramphenicol acetyltransferase. There are no grains in the mucosa, but the lamina propria contains grains similar to those in (A). Arrows indicate some nonspecifically labeled cells. (C) Hybridization with a 50-mer oligonucleotide complementary to nucleotides 13 to 62 of the human H2 receptor. A large number of silver grains are seen in the lamina propria. In the mucosa, the density of reactive cells is lower. (D) A 50-mer oligonucleotide complementary to the same part of the human H2 receptor in sense orientation. The distribution of the grains is similar to that in (C). (A) and (B) are from adjacent sections, as are (C) and (D).

The regulation of gastric acid secretion has been investigated extensively. Acetylcholine, gastrin, and histamine are the most important regulatory factors (1), although the relative importance of these agents is not clear. Histamine is synthesized by a specific enzyme, L-histidine decarboxylase (HDC). Immunochemical evidence strongly suggests that both histamine (2, 3) and HDC (4) are located in ECL cells in the basal parts of gastric glands. HDC was recently cloned (5), and oligonucleotide probes were used to detect its messenger RNA in rat brain in tuberomammillary neurons (6, 7), which are known to contain histamine (8). When we applied these highly specific oligonucleotide probes to sections of rat stomach, we found that both HDC probes labeled not only the basal parts of the gastric glands but also several macrophage-like cells in the lamina propria under the mucosa and a few similar cells in the area of gastric glands (Fig. 1A). Hybridization was carried out (6); as a control probe, we used *Staphylococcus aureus* chlorampheni-

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Response: We would like to thank our colleagues for their valuable comments about our report (1). Scott et al. conclude from their data that "parietal cells have muscarinic receptors and that ECL cells have gastrin receptors." They state that a key problem with our report was that it did not show "evidence of messenger RNA for receptors in cells known
Action of antiulcer drugs

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