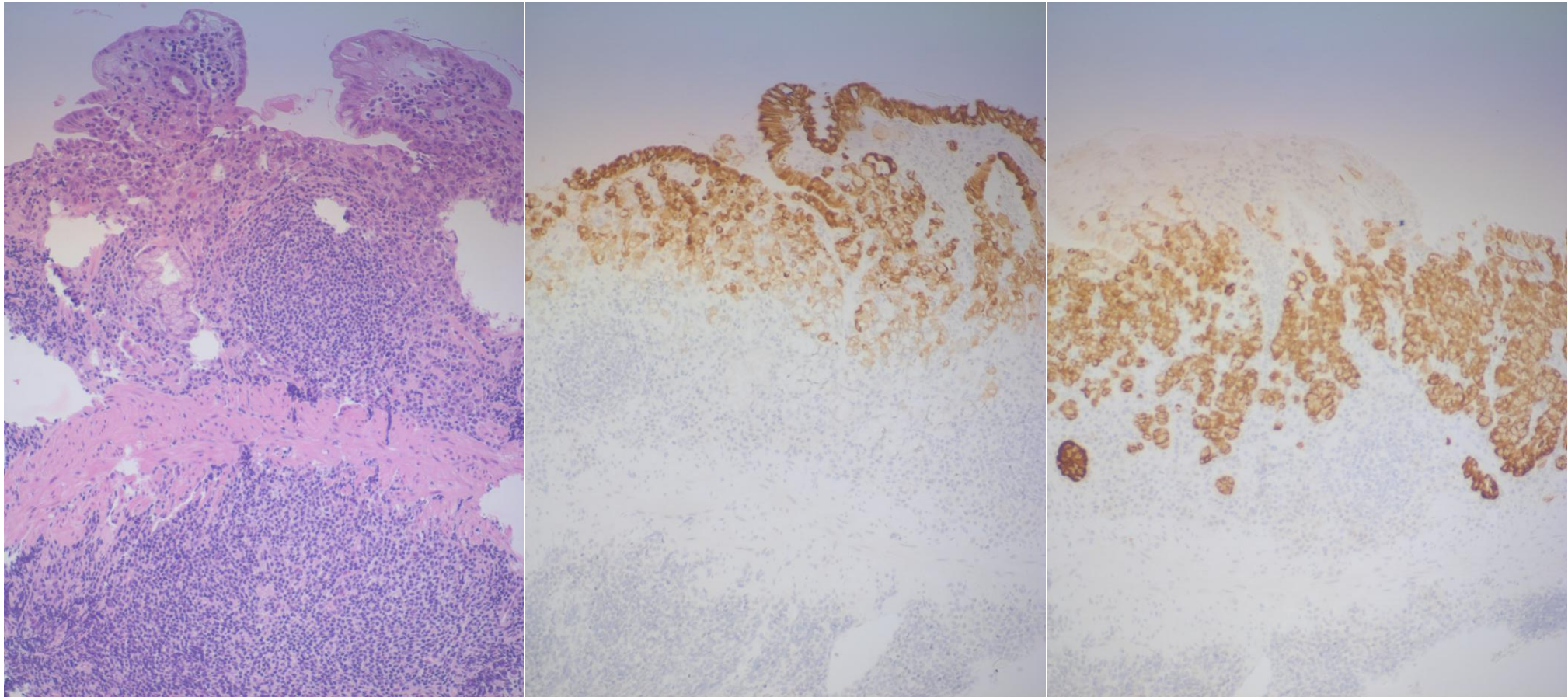


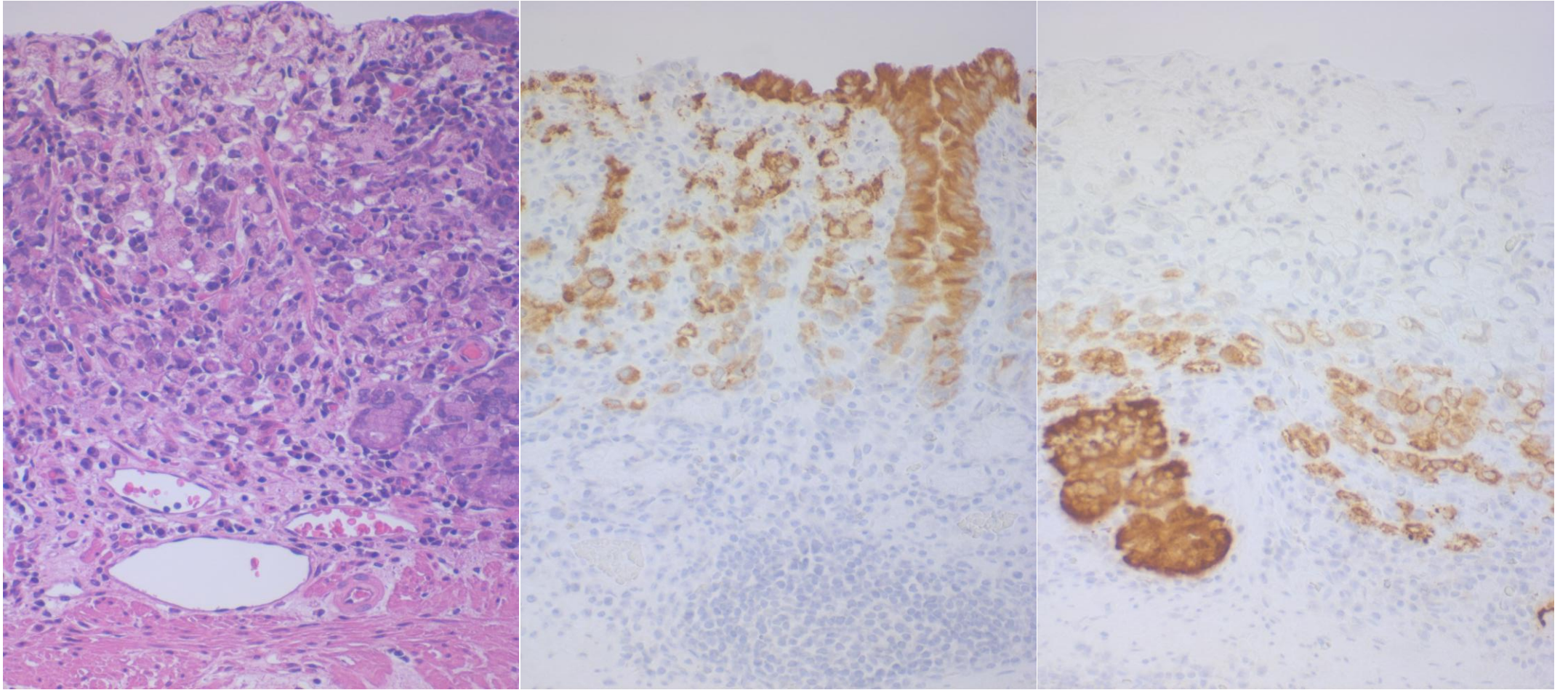
Intramucosal zonal differentiation of signet ring cell carcinoma

Functional and phenotypic expression of human gastric cancer cells can be visualized by mucin histochemistry and immunohistochemistry. In particular, a peculiar zonal (lamellar or layered) differentiation pattern is evident in early intramucosal signet ring cell carcinoma. The signet ring cells located at the bottom of the mucosa differentiate toward the pyloric gland cells expressing pyloric gland-type mucin (Concanavalin A paradoxical staining type III and MUC6) and lysozyme, while those located in the upper layer of the mucosa show differentiation toward the foveolar cells (MUC5AC and CEA). Representative examples are demonstrated herein.

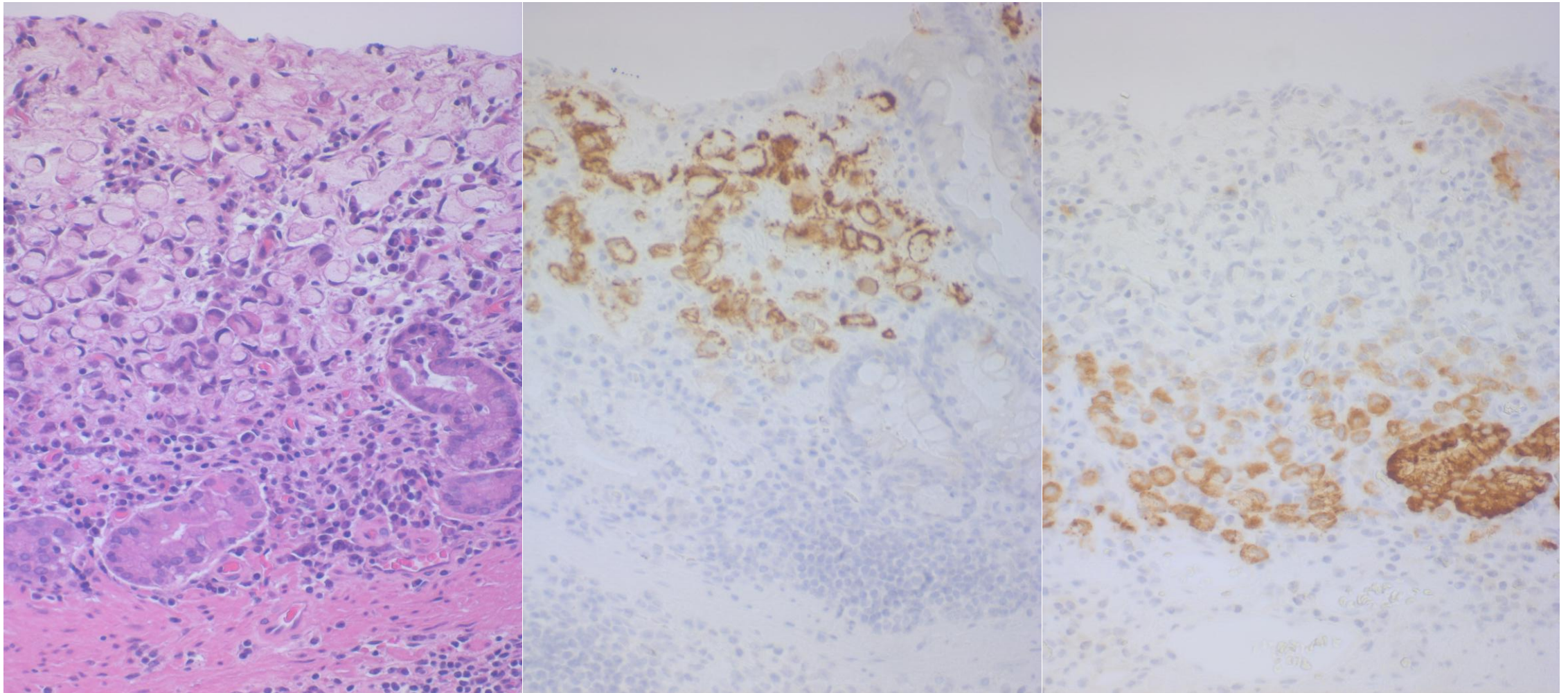
Ref.: Tsutsumi Y. Differentiation of gastric cancer cells: analysis using immunohistochemistry and mucin histochemistry. Digest Dis Pathol (eds, Watanabe S, Wolff M, Sommers SC), Springer, Berlin, Heidelberg. 1988; pp. 1-49.
doi: 10.1007/978-3-662-11562-6_1



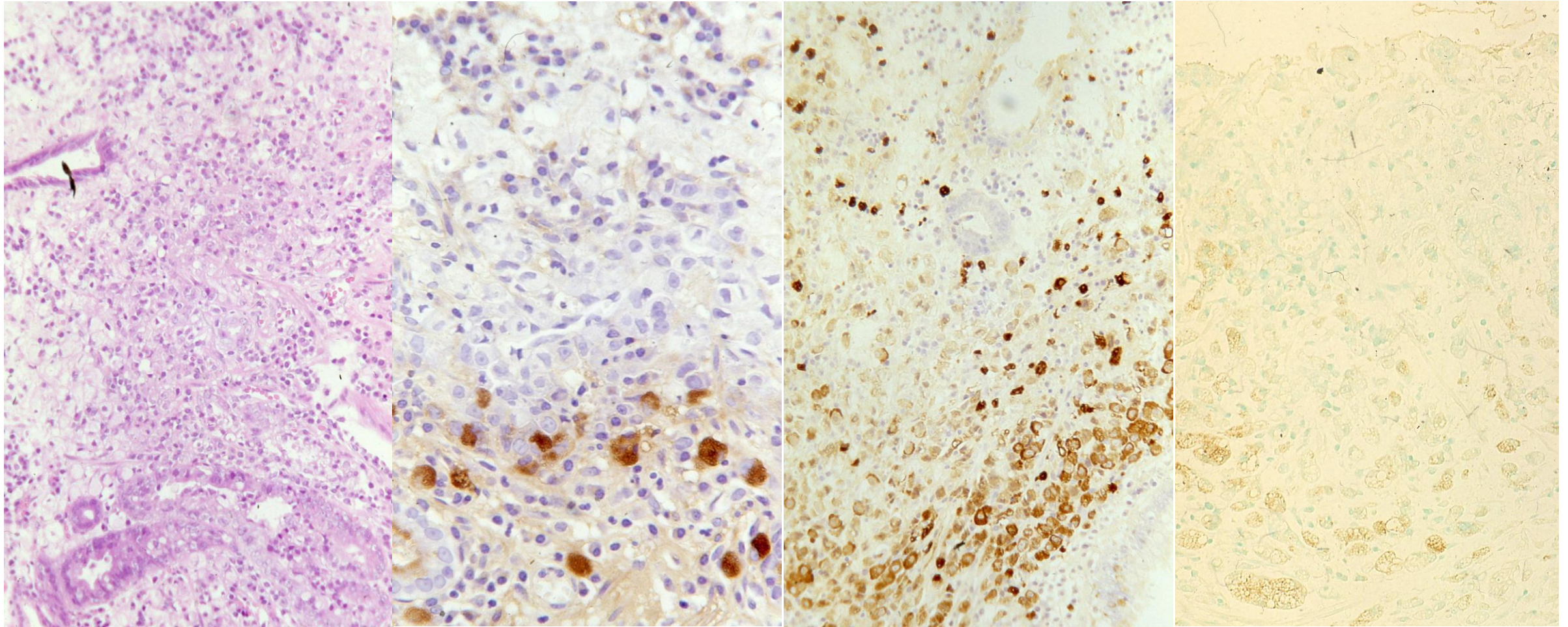
Zonal differentiation of intramucosal signet ring cell carcinoma (with lymphoid follicle formation) (another 49 y-o male patient). The signet ring cells in the upper part of the mucosa express MUC5AC (foveolar cell mucin), while those in the bottom part express MUC6 (pyloric gland mucin). Left: H&E, center: MUC5AC and right: MUC6



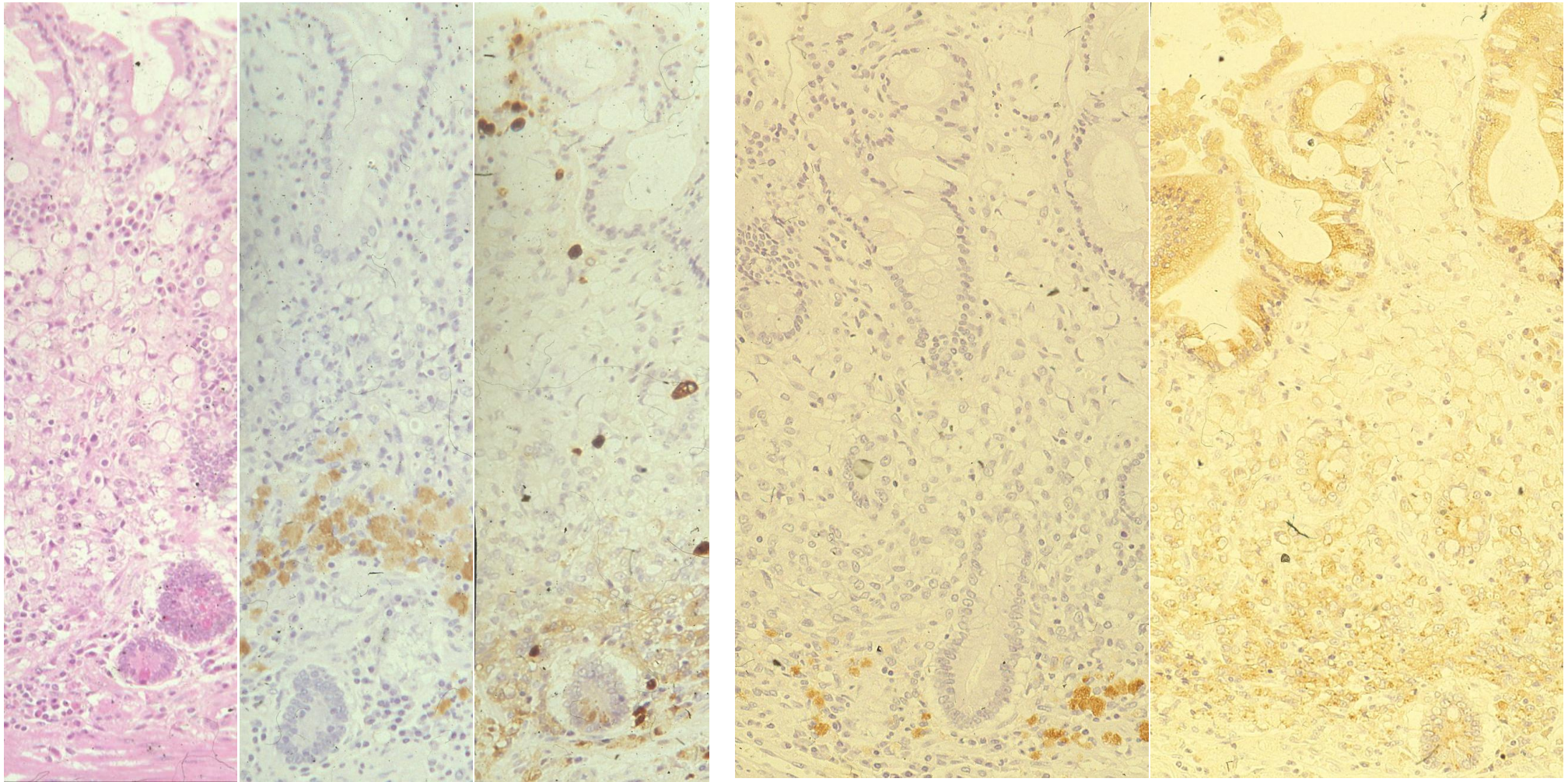
Zonal differentiation of intramucosal signet ring cell carcinoma (49 y-o male patient). The signet ring cells in the upper part of the mucosa express MUC5AC (foveolar cell mucin), while those in the bottom part express MUC6 (pyloric gland mucin). Left: H&E, center: MUC5AC and right: MUC6



Zonal differentiation of intramucosal signet ring cell carcinoma (another 49 y-o male patient). The signet ring cells in the upper part of the mucosa express MUC5AC (foveolar cell mucin), while those in the bottom part express MUC6 (pyloric gland mucin). Left: H&E, center: MUC5AC and right: MUC6



Zonal differentiation of intramucosal signet ring cell carcinoma (left: H&E). The signet ring cells located in the bottom part express paradoxical Con A mucin (pyloric gland mucin: left), lysozyme (center) and pepsinogen II (right)

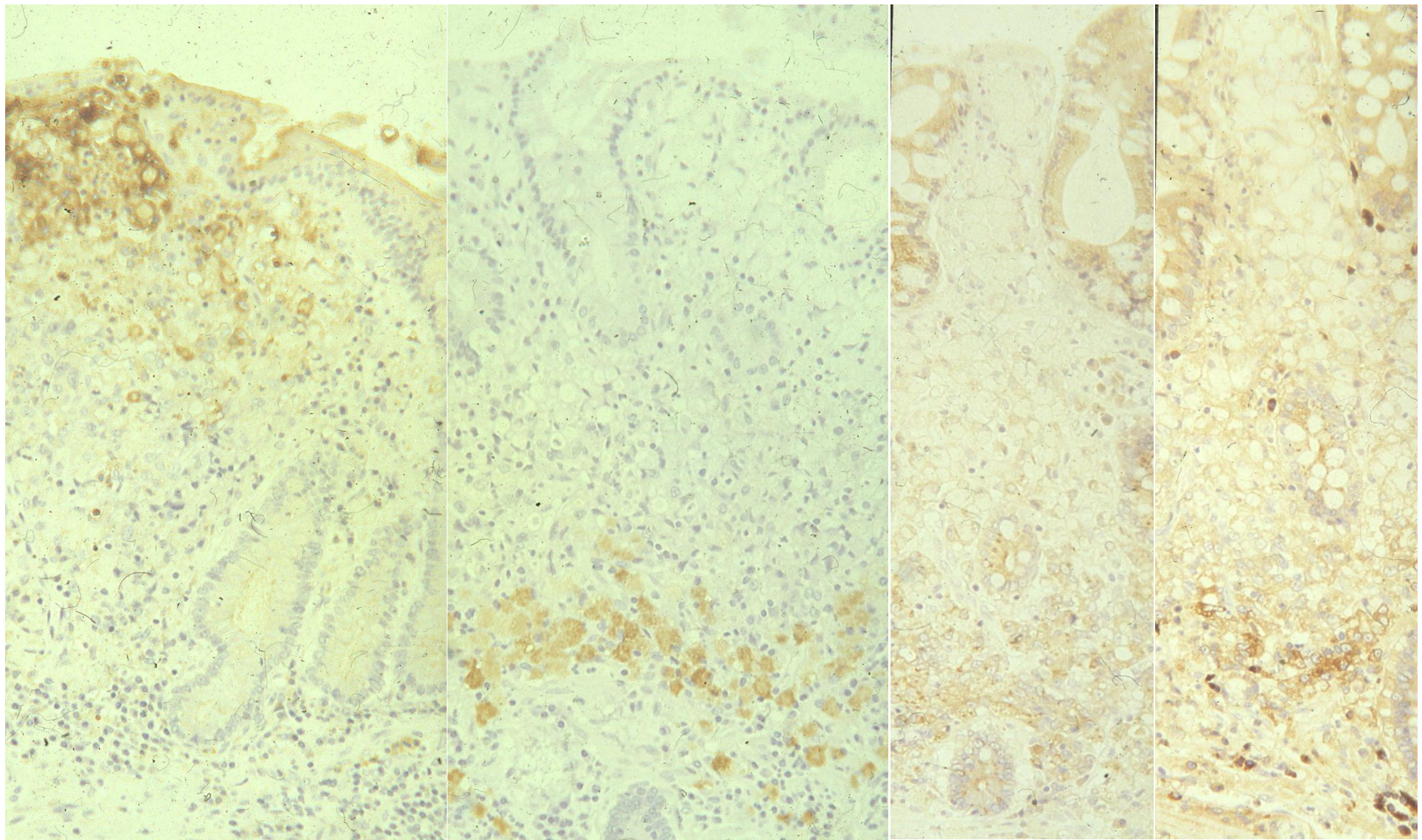


Zonal differentiation of intramucosal signet ring cell carcinoma.

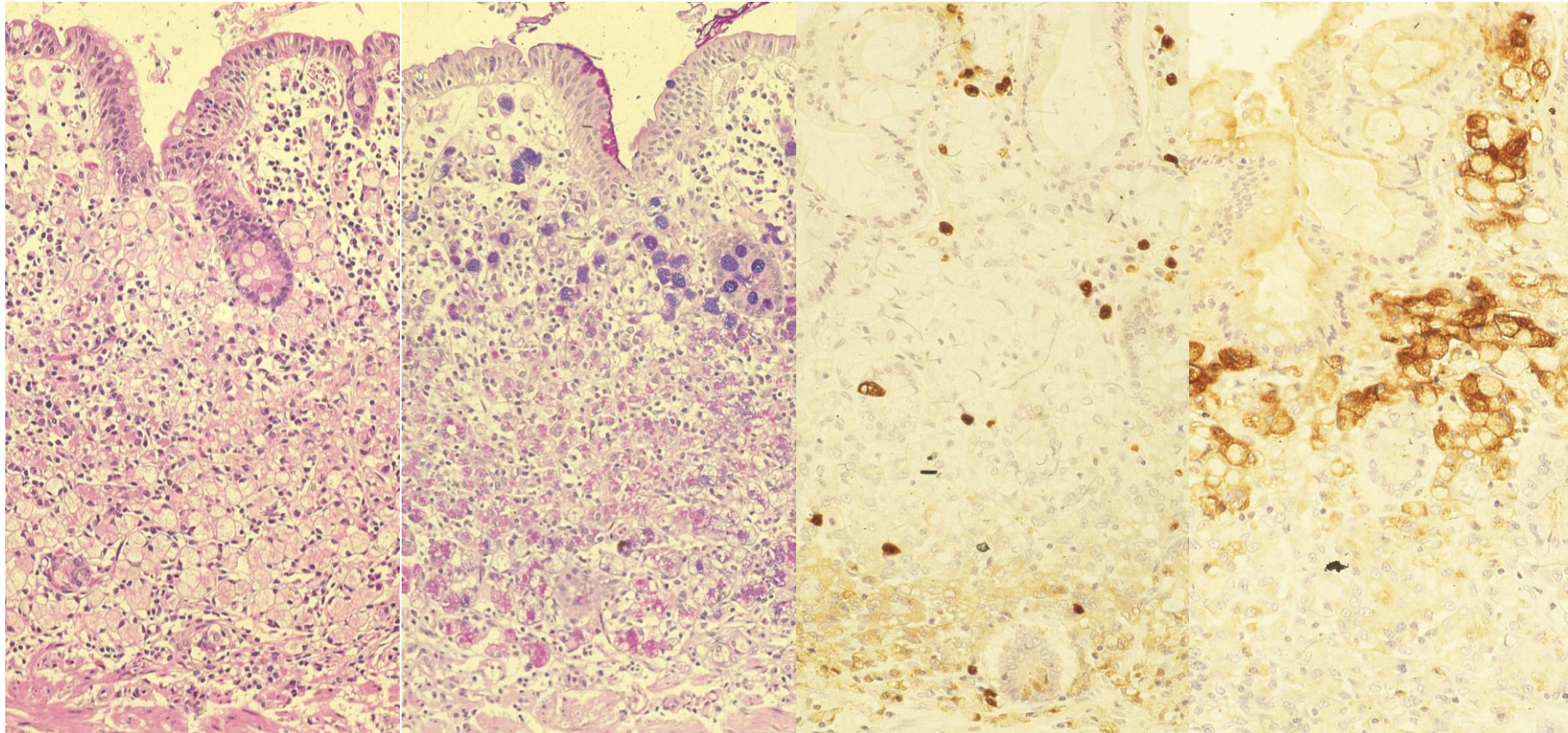
Left panels (H&E/paradoxical Con A mucin/lysozyme).

Right panels (paradoxical Con A mucin/secretory component)

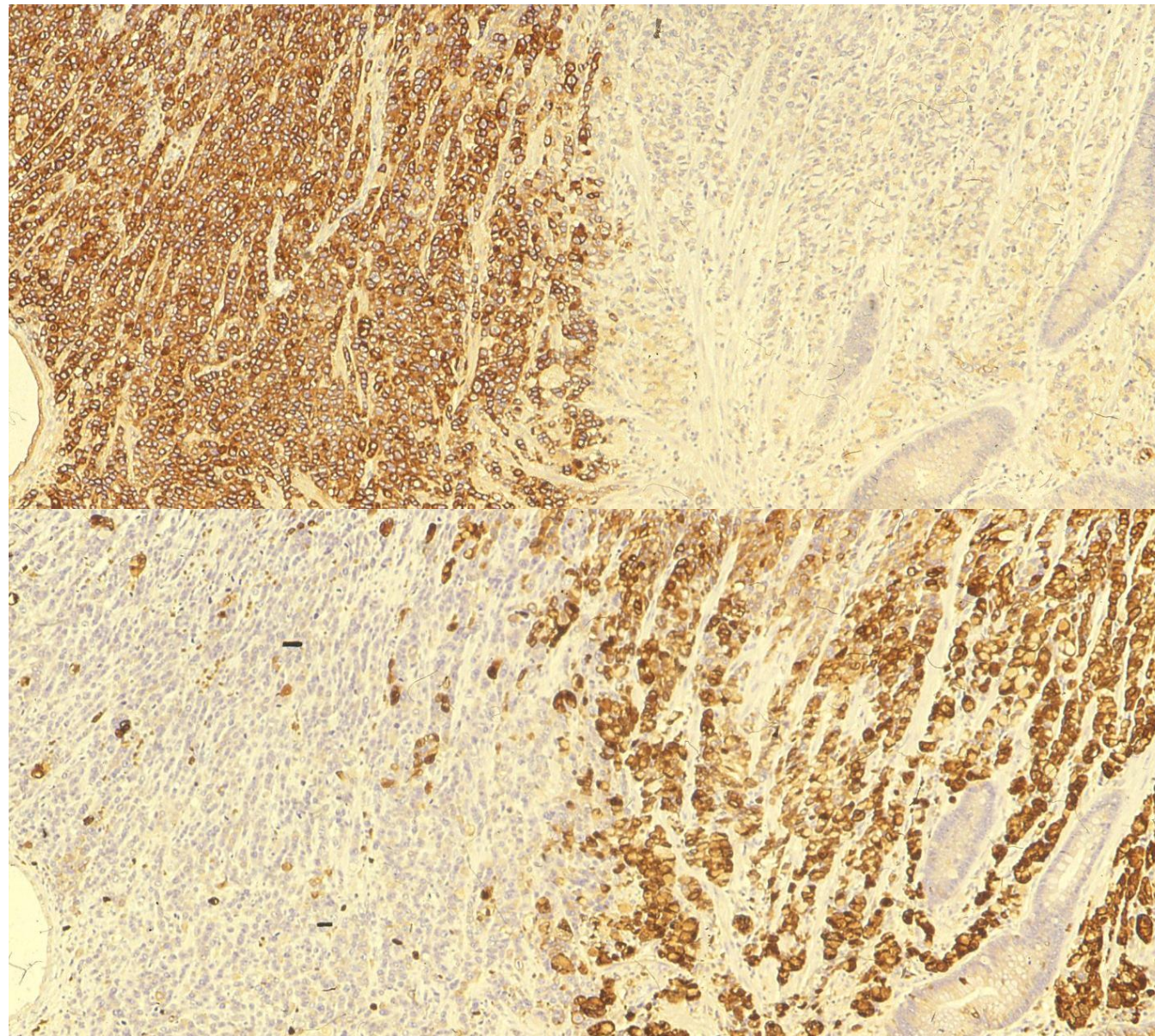
The signet ring cells located in the bottom part express paradoxical Con A mucin (pyloric gland mucin), lysozyme and secretory component.



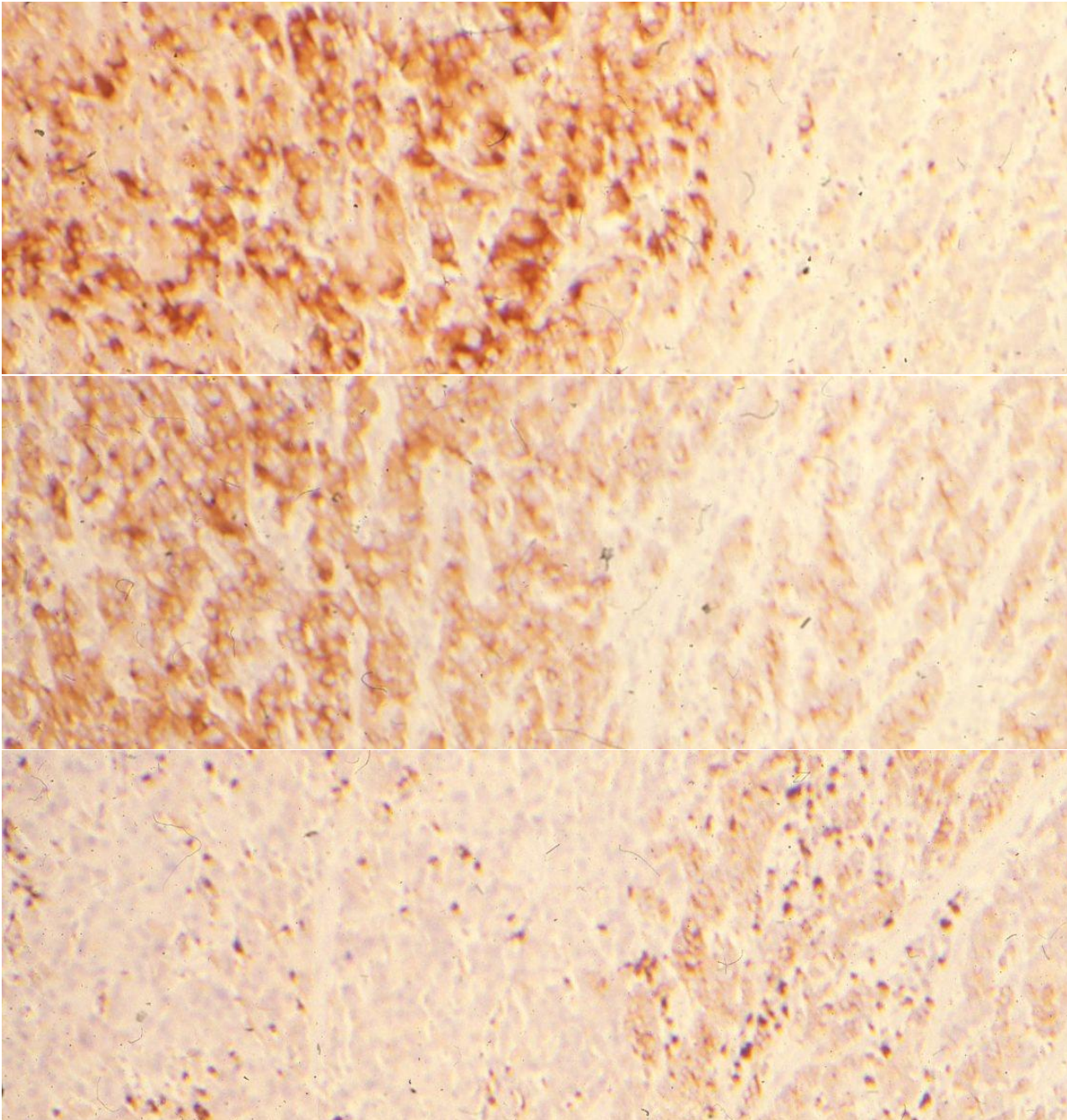
Zonal differentiation of intramucosal signet ring cell carcinoma. The signet ring cells located in the upper part express CEA, while those in the bottom part express paradoxical Con A mucin, secretory component and IgA. Secretory IgA is secreted by the cancer cells. From left to right: CEA/paradoxical Con A mucin/secretory component/IgA



Zonal differentiation of intramucosal signet ring cell carcinoma. The signet ring cells located in the bottom part express PAS-positive neutral mucin and lysozyme, while those in the upper part express alcianophilic mucin and CEA. From left to right: H&E/AB-PAS/lysozyme/CEA



Advanced gastric carcinoma, poorly differentiated type. The cancer cells expressing CEA (top panel) and those expressing lysozyme (bottom panel) are reciprocal. Top: CEA, bottom: lysozyme



Advanced gastric carcinoma, poorly differentiated type. The cancer cells expressing CEA (top panel) and those expressing secretory component (mid-panel) are in sharp contrast to those expressing lysozyme (bottom panel). Top: CEA, middle: SC, bottom: lysozyme (Lysozyme is also expressed in neutrophils and macrophages).