

Endocrine granule constituent (EGC) expression in rectal carcinoid tumors

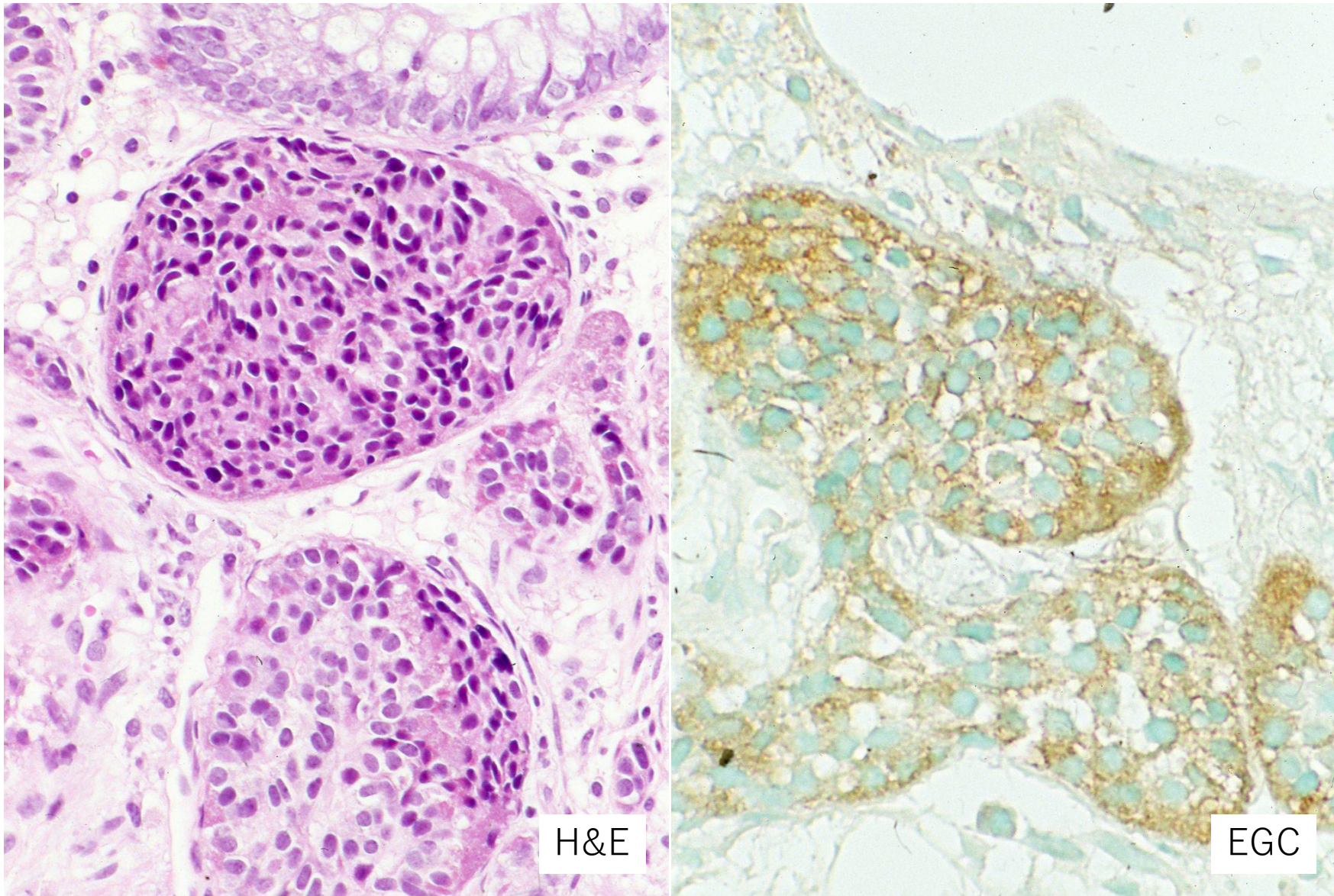
It is known that rectal carcinoids are often negative for Grimelius' argyrophilia and chromogranin A (CGA). In contrast, endocrine granule constituent (EGC), an independent marker against neuroendocrine granules of substance P-positive carcinoid tumor origin, is consistently expressed in rectal carcinoid tumor. Other markers positive in most rectal carcinoids include neuron-specific enolase (NSE), cytokeratin and prostatic acid phosphatase (PAP). In normal rectal mucosa, EGC-positive neuroendocrine (NE) cells are argyrophilic and CGA-immunoreactive in sharp contrast to the neoplastic counterpart. Normal rectal NE cells positive for serotonin (5-HT), glicentin (GLI) and PYY express EGC, while NE cells with bovine pancreatic polypeptide (BPP) and somatostatin (SS) are negative for EGC. However, BPP and SS immunoreactivities can be demonstrated in EGC-positive rectal carcinoid tumor cells.

Ref.: Kamoshida S, et al. Immunohistochemical studies on rectal carcinoid tumors with special reference to the usefulness of a new neuroendocrine marker, endocrine granule constituent(EGC). Byori-tpo-Rinsho 1988; 6(2): 221-228 (in Japanese with English abstract)

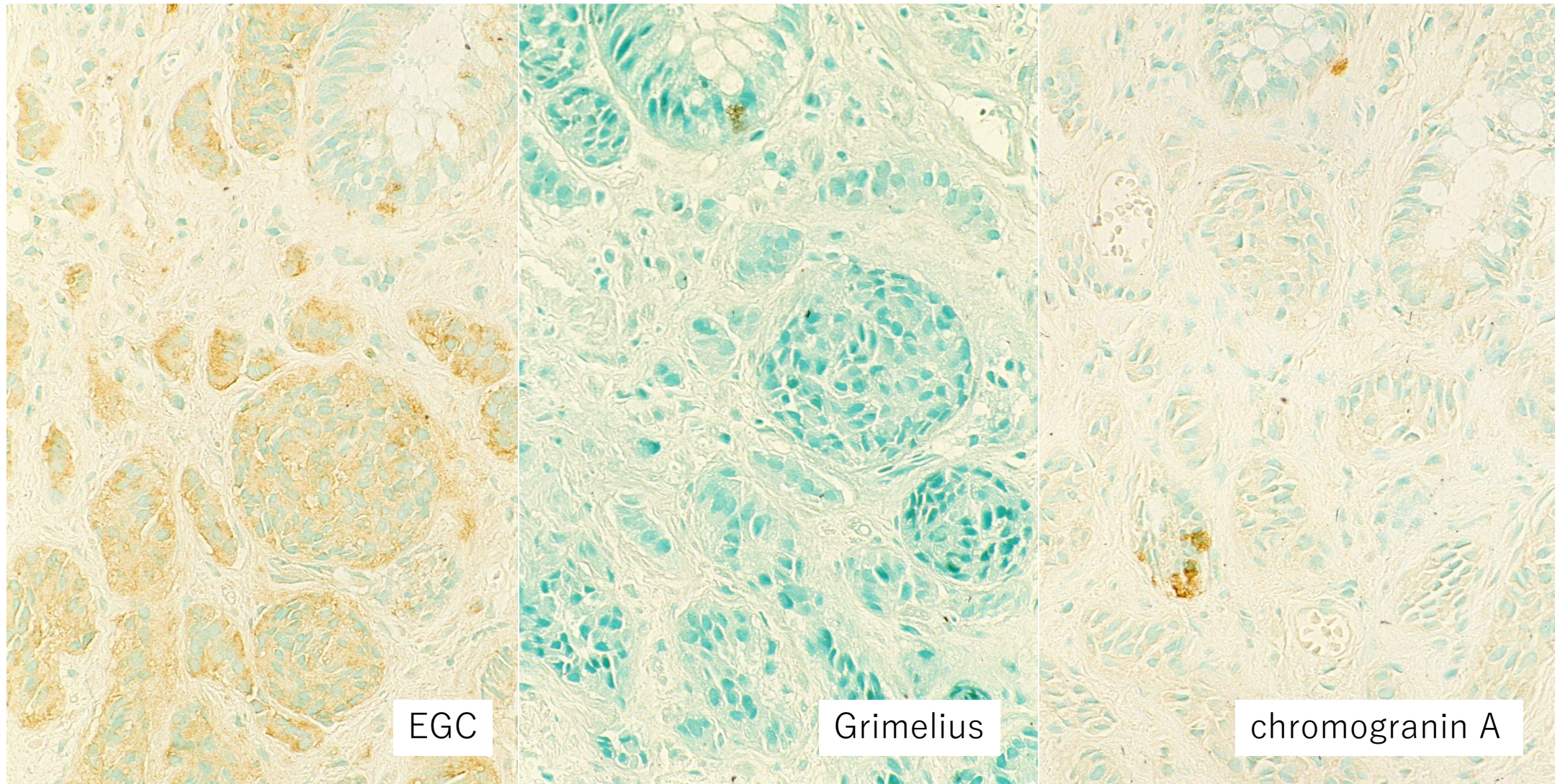
Immunohistochemical findings in 11 rectal carcinoid tumors analyzed

Age/sex	Size	Grim	F-M	EGC	NSE	ker	PAcP	CGA	5HT	GLI	PYY	BPP	SS	HCG α	HCG β
50F	7 mm	+++	+++	+++	+++	+++	-	+++	+++	-	(+)	-	-	+++	-
37M	4 mm	(+)	(+)	+++	+++	+++	++	(+)	+	-	+	+	+	(+)	-
44M	5 mm	-	-	+++	+++	+++	+++	-	-	++	(+)	+	+	-	-
48M	8 mm	-	-	++	+++	+++	++	-	-	++	++	++	-	+	-
55M	5 mm	-	-	++	+++	+++	+	-	-	-	+	++	(+)	-	-
67M	3 mm	-	-	+++	+++	+++	+++	-	-	++	-	++	-	-	-
74M	8 mm	(+)	-	+++	+++	+++	+++	(+)	+	++	(+)	++	+	+	-
69M	3 mm	(+)	(+)	++	++	++	++	(+)	(+)	++	++	++	-	-	-
54M	8 mm	-	-	++	+++	+++	++	-	-	(+)	-	++	+	+	-
62F	7 mm	+++	(+)	+++	+++	+++	+++	(+)	(+)	+++	+++	+++	++	++	-
54M	6 mm	(+)	-	+++	+++	+++	-	-	-	-	(+)	+	(+)	(+)	-
Total positive		6	4	11	11	11	9	5	5	7	9	10	7	7	0

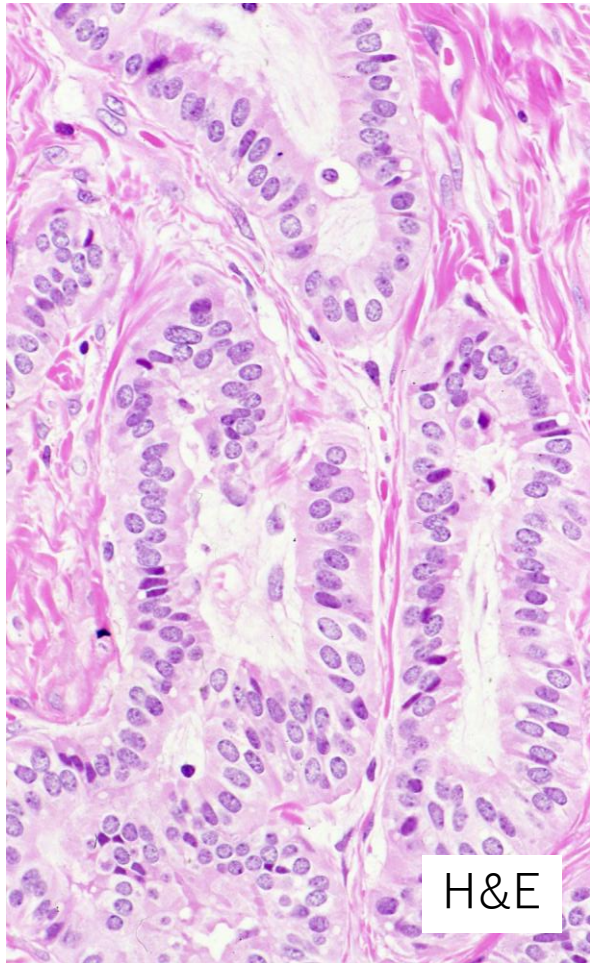
+++ : >50% positive, ++ : 5-50% positive, + : <5% positive, (+) : only a few cells positive, - : negative
 Grim: Grimelius' argyrophilia, F-M: Fontana-Masson's argentaffinity, EGC: endocrine granule constituent (detected with commercial rabbit antiserum from Milab Scientific), NSE: neuron-specific enolase, ker: cytokeratin (detected by KL-1 monoclonal), PAcP: prostatic acid phosphatase, CGA: chromogranin A, 5HT: serotonin, GLI: glicentin (enteroglucagon), PYY (peptide YY), BPP: bovine pancreatic polypeptide, SS: somatostatin, HCG α /HCG β : alpha/beta subunit of human chorionic gonadotropin



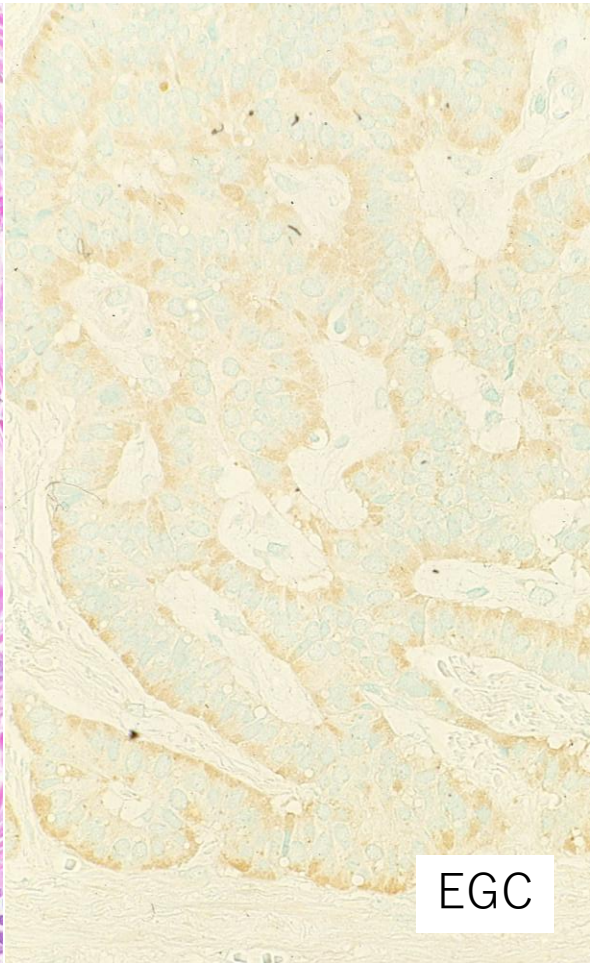
Rectal carcinoid tumor expressing EGC. The rectal carcinoid tumor (left: H&E) consistently expresses EGC immunoreactivity. Granular cytoplasmic positivity is discerned (right).



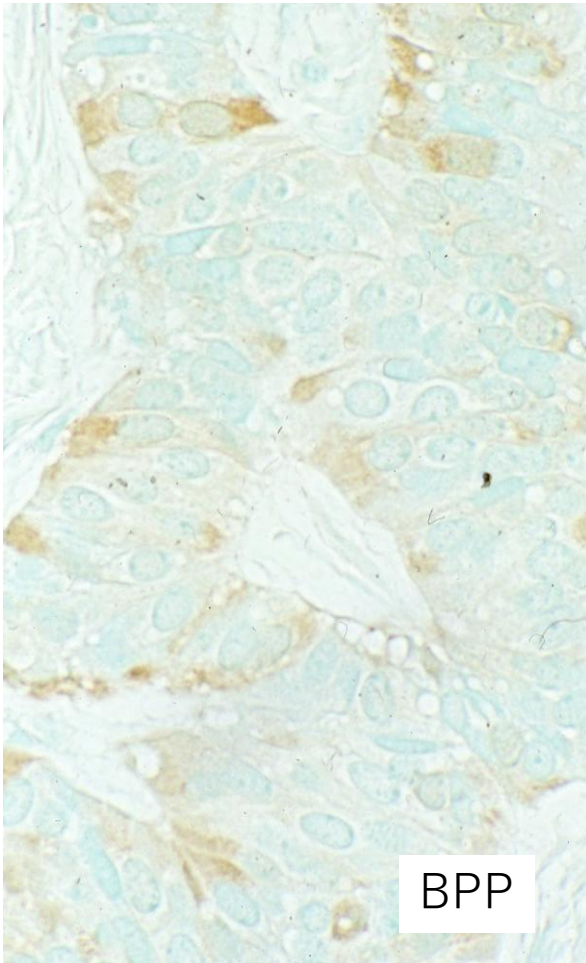
Rectal carcinoid tumor expressing EGC. The rectal carcinoid tumor consistently expresses EGC immunoreactivity. Granular cytoplasmic positivity is discerned (left). Grimelius argyrophilia is negative (center). Chromogranin A is only focally expressed (right).



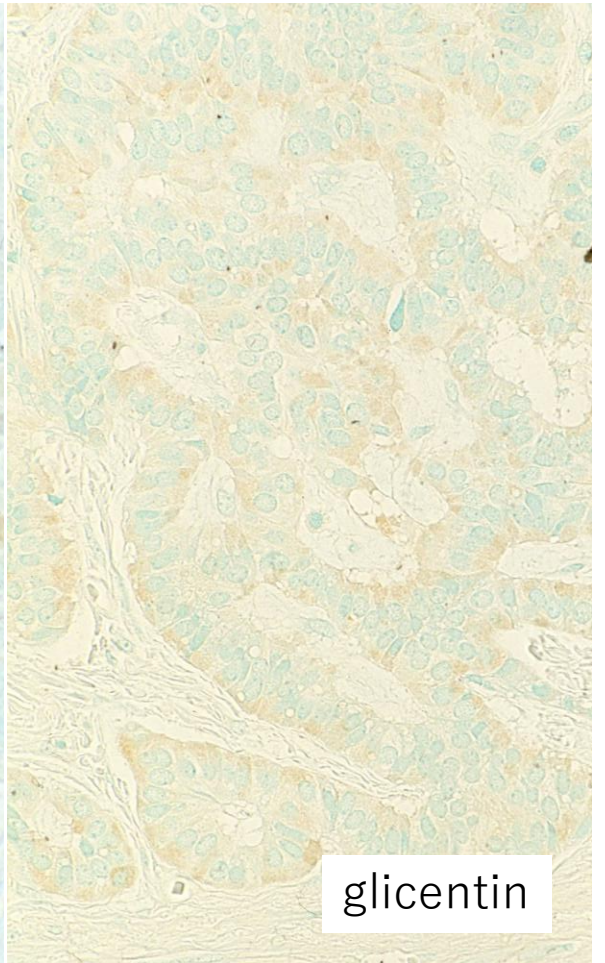
H&E



EGC

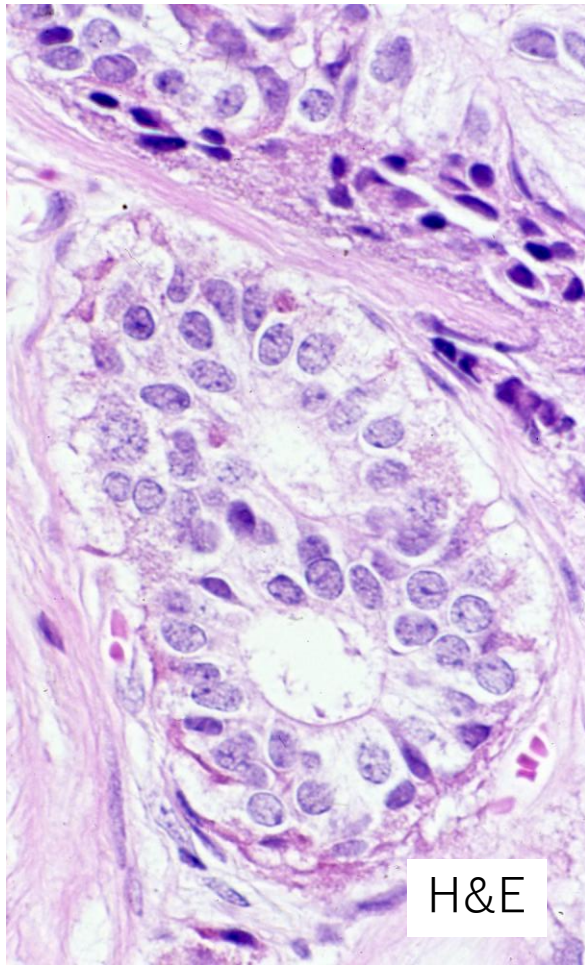


BPP

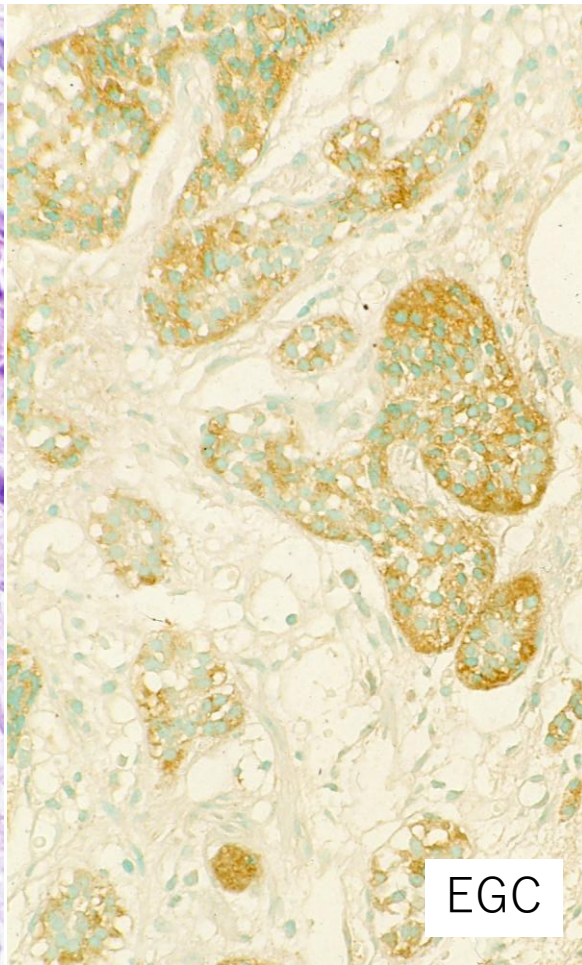


glicentin

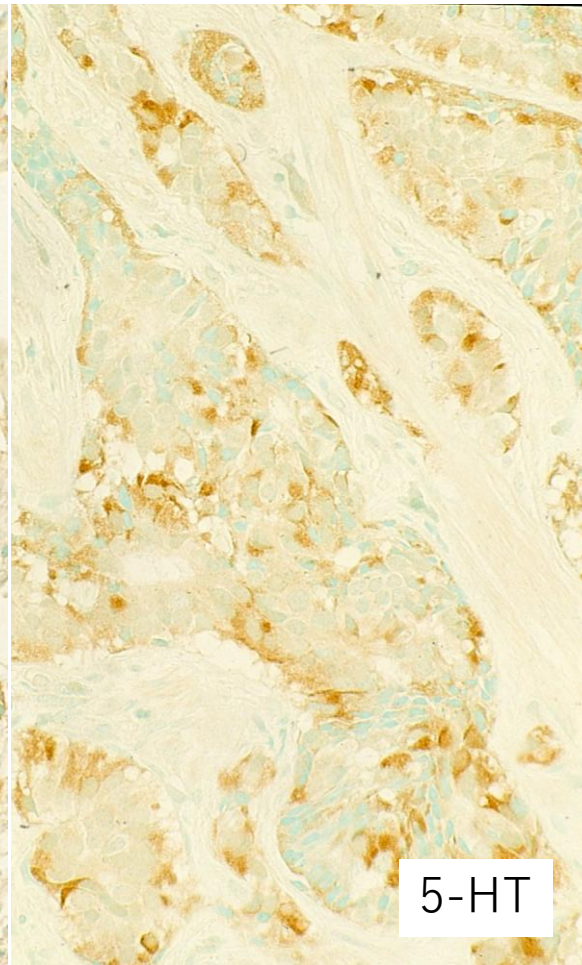
Rectal carcinoid tumor expressing EGC. The rectal carcinoid tumor consistently expresses EGC immunoreactivity. Granular cytoplasmic positivity is discerned. The carcinoid tumor cells are also immunoreactive for bovine pancreatic polypeptide (BPP) and glicentin (GLI).



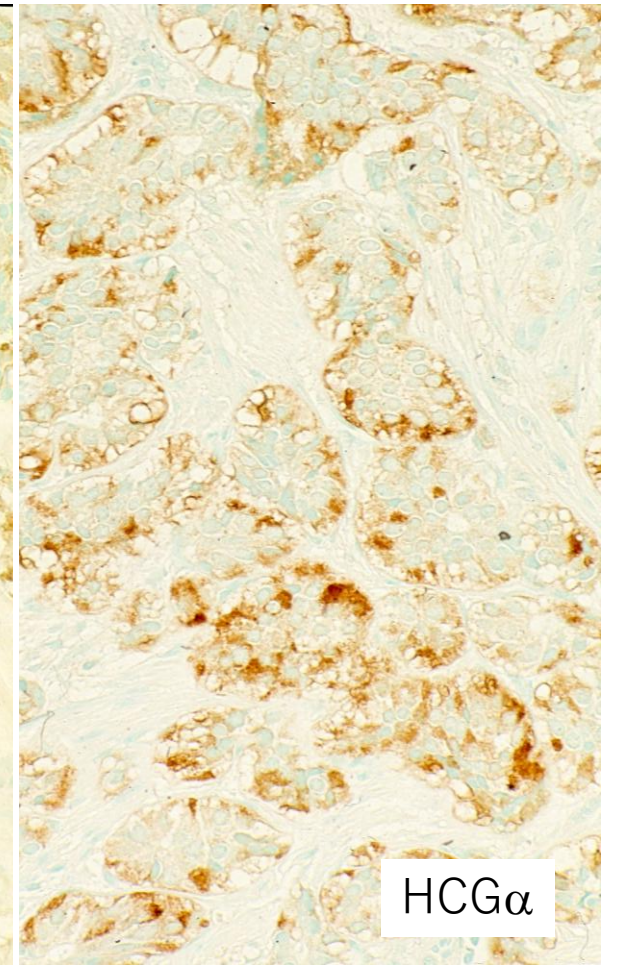
H&E



EGC

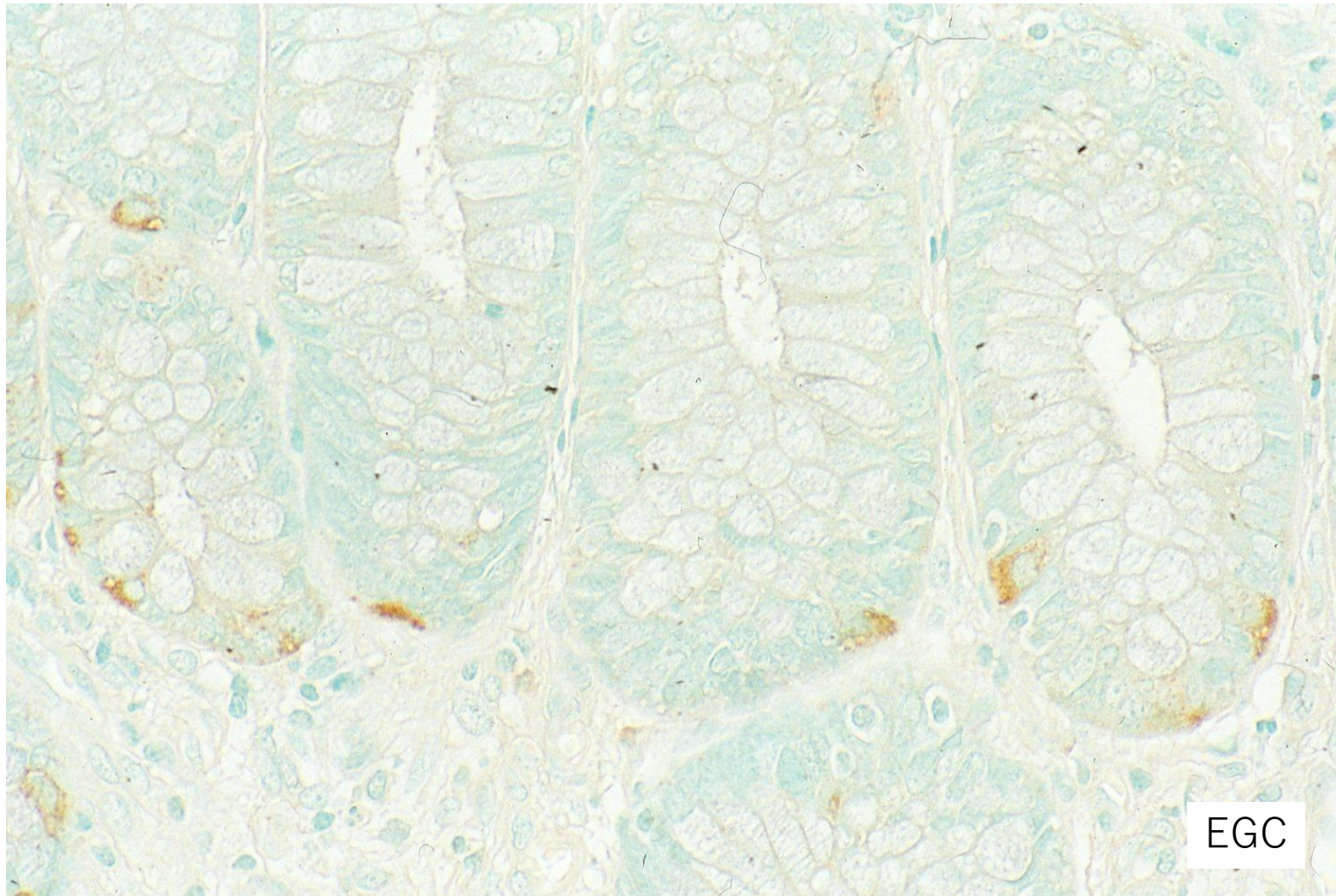


5-HT

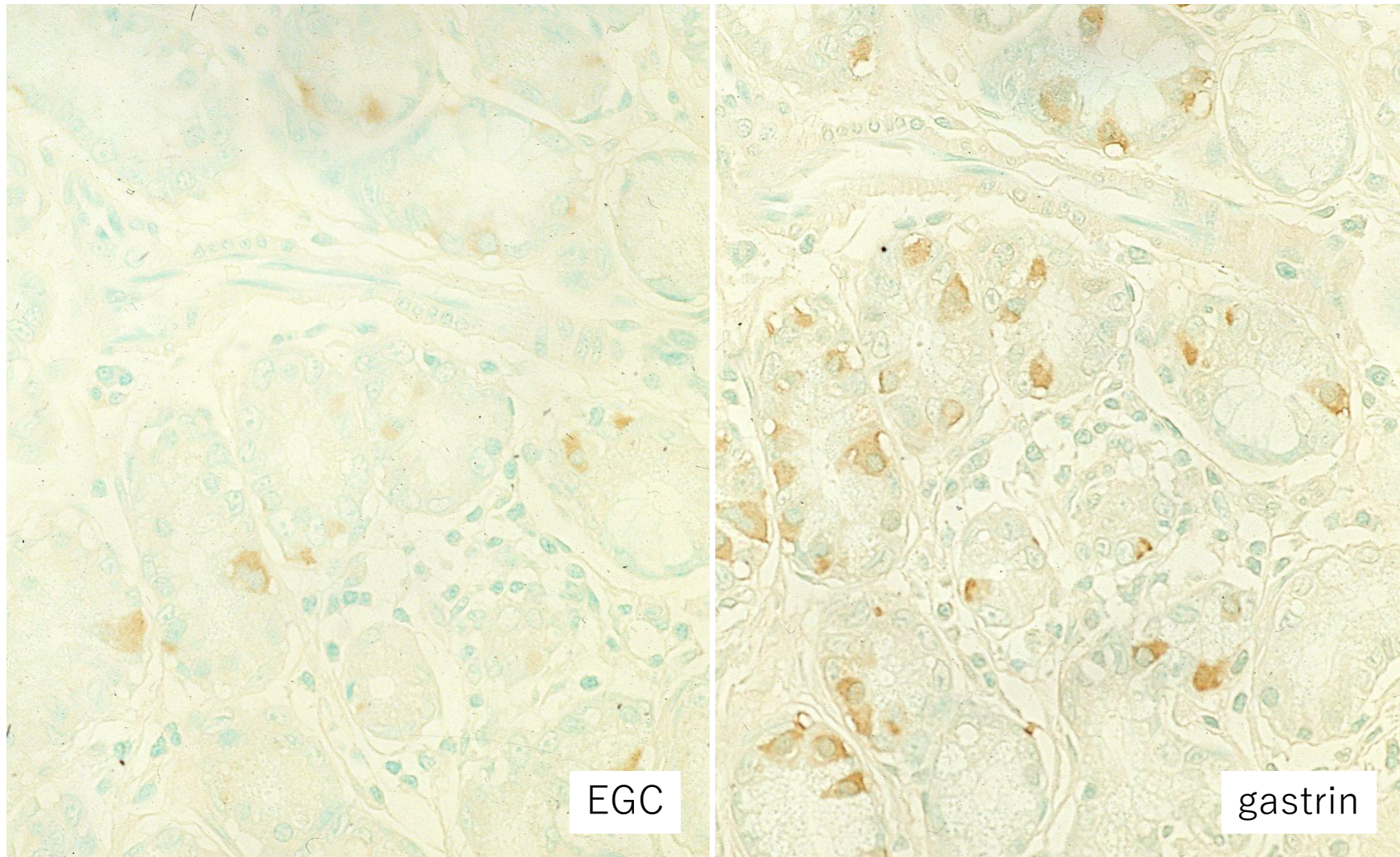


HCGα

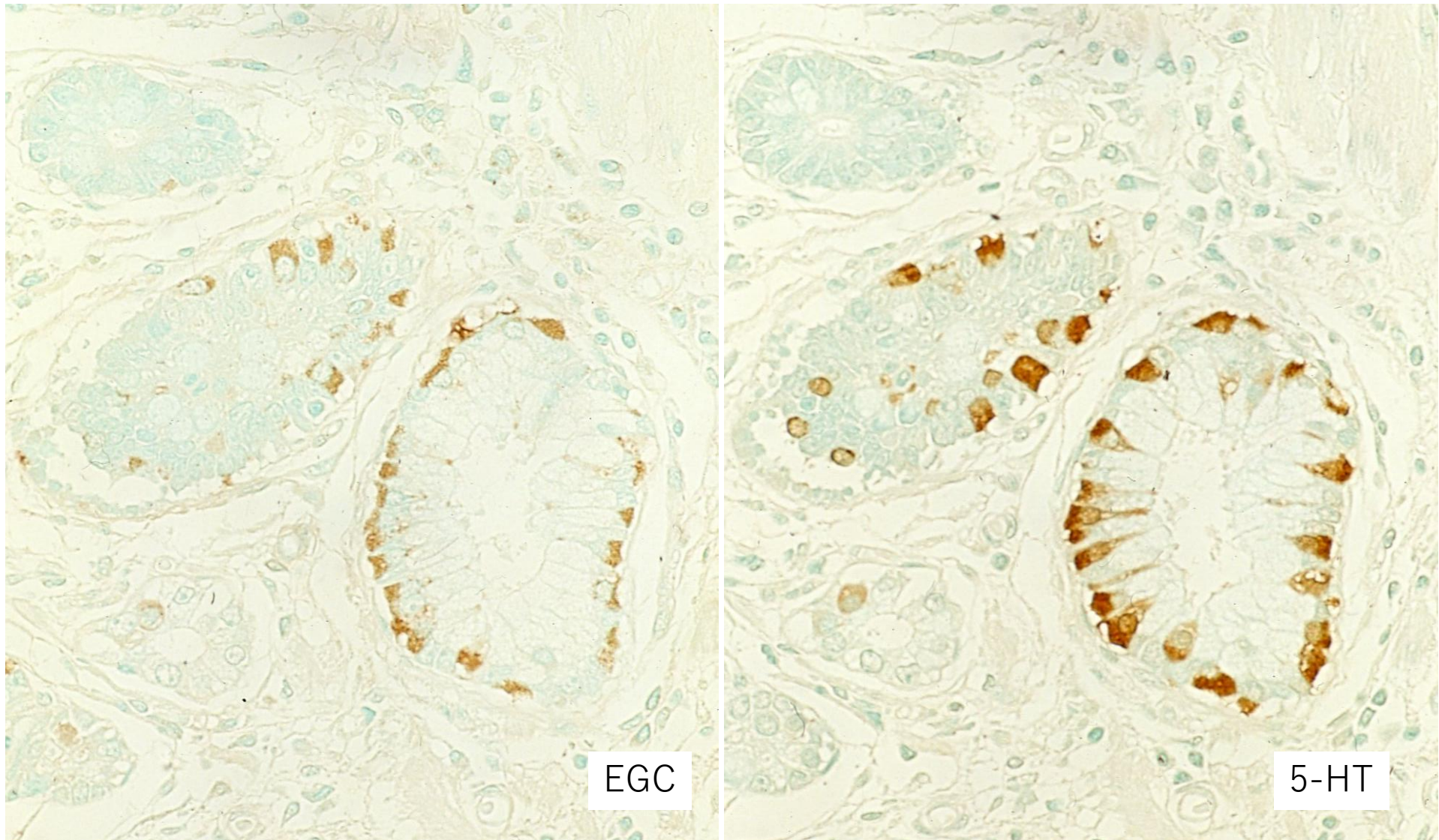
Rectal carcinoid tumor expressing EGC. This argyrophilic rectal carcinoid tumor expresses EGC, as well as immunoreactivities of serotonin (5-HT) and the alpha-subunit of HCG (HCGα).



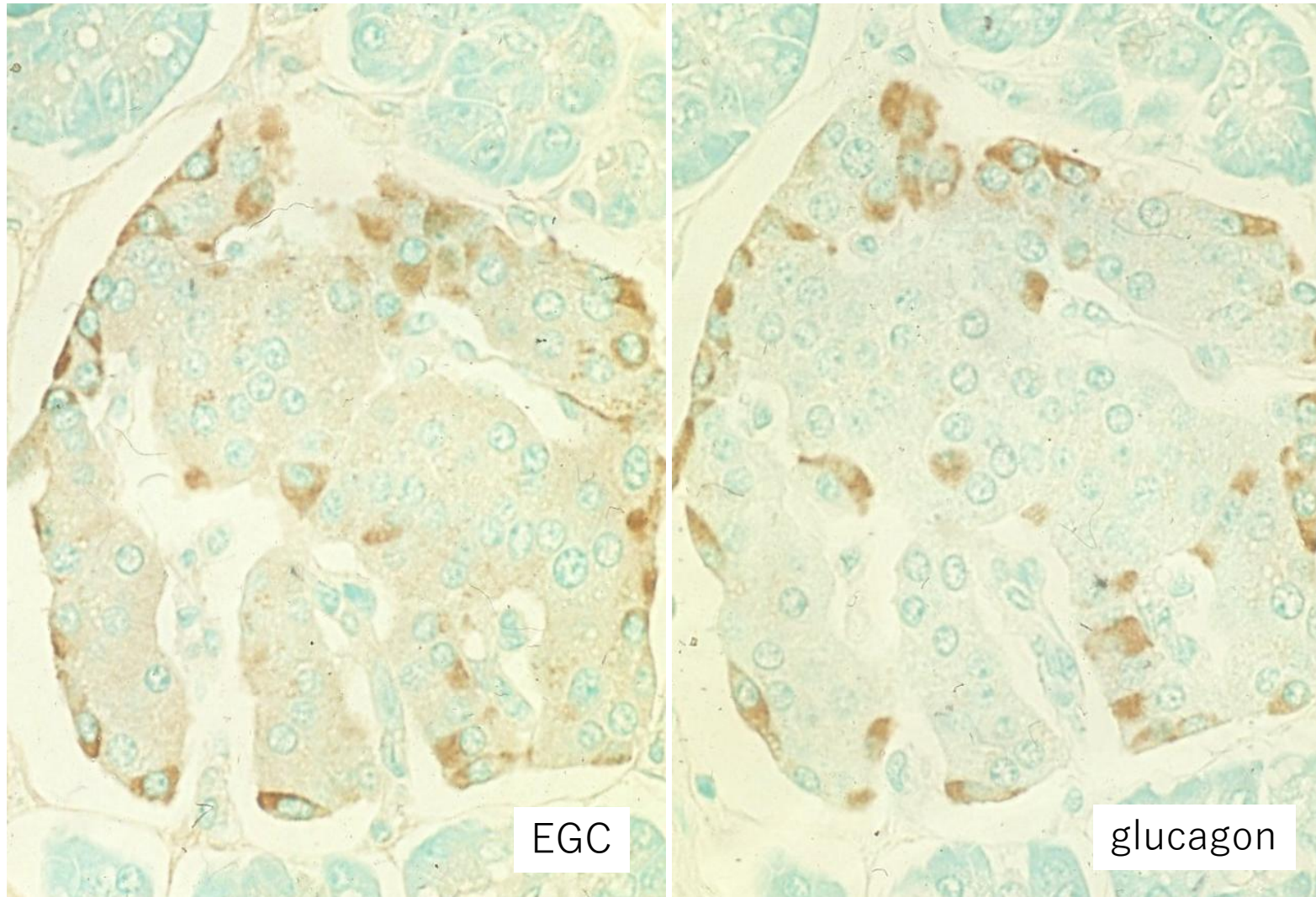
Normal rectal mucosa with EGC-immunoreactive neuroendocrine (NE) cells. Serial section analysis discloses that NE cells immunoreactive for serotonin (5-HT), glicentin (GLI) and PYY may express EGC.



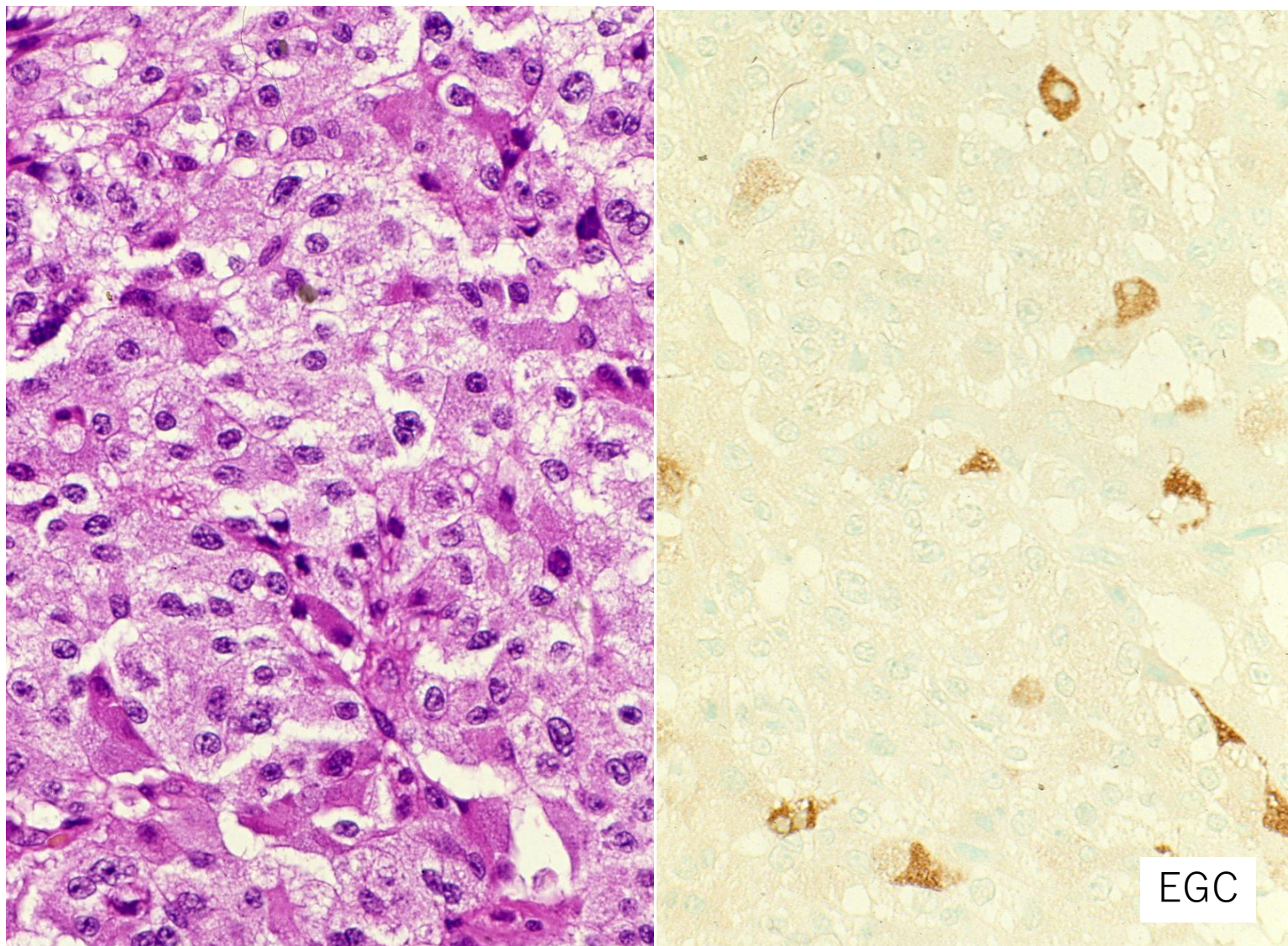
Normal gastric antral mucosa contains EGC-immunoreactive neuroendocrine cells. Serial section analysis discloses that part of gastrin cells are immunoreactive for EGC.



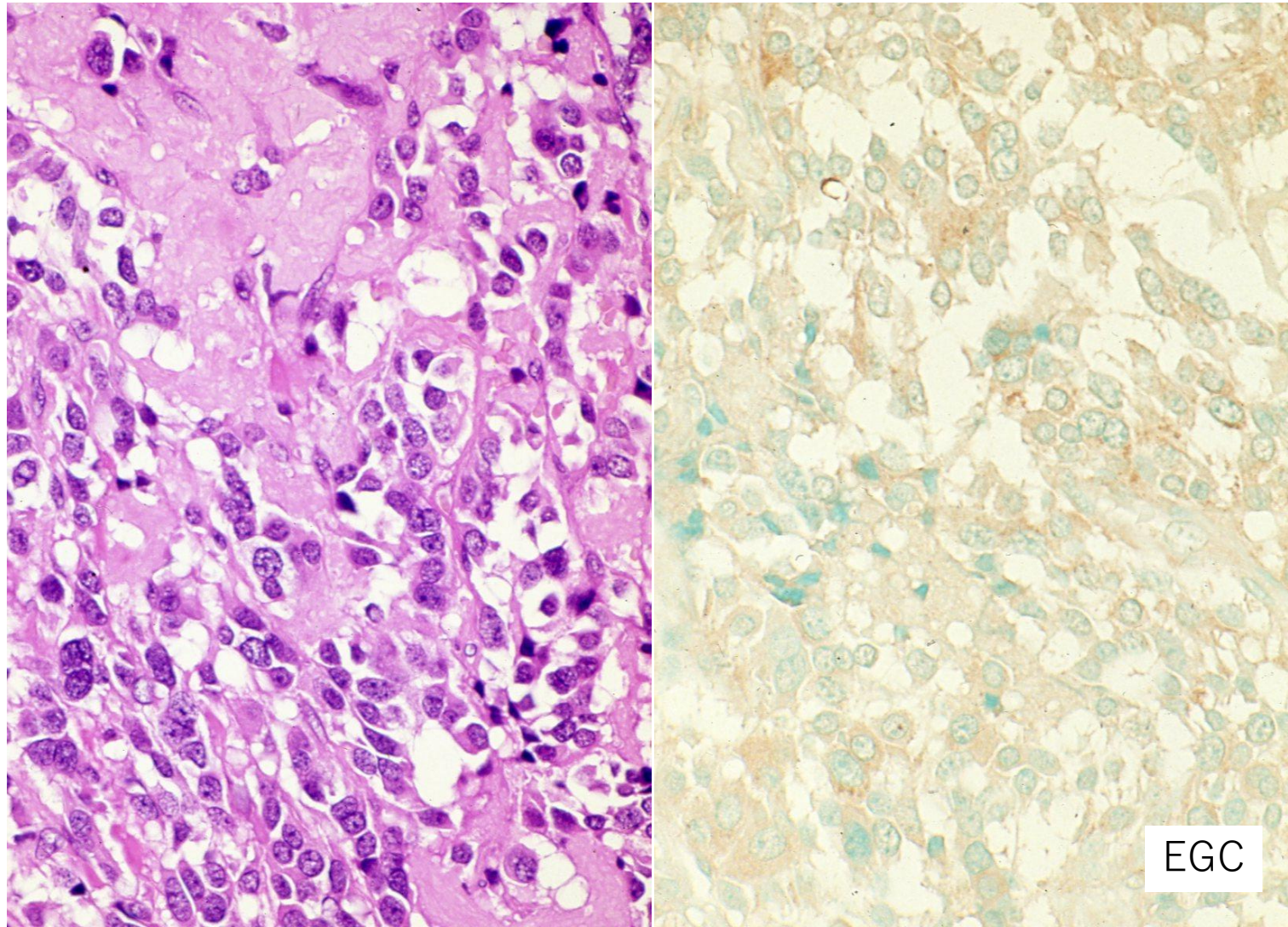
Intestinal metaplasia of the gastric mucosa contains EGC-immunoreactive neuroendocrine cells (left). Serial section analysis discloses that serotonin (5-HT)-positive cells (right) are immunoreactive for EGC.



Normal pancreatic islet contains EGC-immunoreactive neuroendocrine cells. Serial section analysis discloses that EGC-positive cells (left) correspond to glucagon-immunoreactive cells (right).



Bronchial carcinoid tumor (left: H&E) focally expresses EGC (right).



Medullary thyroid carcinoma with amyloid deposition (left: H&E) are immunoreactive for ECGC (right).