



### PRODUCT FOCUS -- Tools for the Diagnosis of Gallbladder/Bile Duct Cancer

**Gallbladder Cancer and Bile Duct Cancer Awareness Month, February 2025** - Gallbladder cancer and bile duct cancer (cholangiocarcinoma) are relatively rare forms of cancer with an estimated 12,350 cases of both types combined diagnosed in 2024, according to the National Cancer Institute (NCI). Further, the NCI estimated that about 4,530 people would die from these cancers in 2024. In recent years, incremental improvements in survival rates for biliary tract cancers have been achieved by molecularly targeted treatments. (*American Cancer Society*)

**On November 20, 2024**, the U.S. Food and Drug Administration granted accelerated approval to the drug zanidatamab (Ziihera®) to treat advanced and metastatic bile duct cancer (cholangiocarcinoma) and other biliary tract cancers. Zanidatamab targets HER2, which is found at abnormally high levels not only in a subset of biliary tract cancers but also in some breast cancers, lung cancers, and stomach cancers, among other types. (*Memorial Sloan Kettering Cancer Center*)

Zeta Corporation offers recombinant RABMono™ (Rabbit Monoclonal) and MonoMAb™ (Mouse Monoclonal) recombinant IVD antibodies researched and developed for the anatomic pathology market for Immunohistochemistry. Zeta is incorporating highly sensitive technology to develop many of these primary antibodies that are target-validated and characterized for IHC on FFPE tissue sections. Zeta provides 400+ IVD antibodies for cancer screening and diagnosis.

#### Cytokeratin-7 (ZR428)

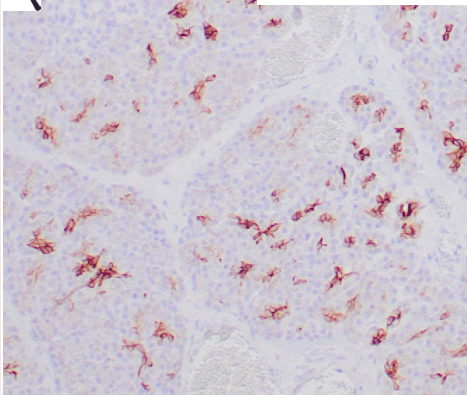
Recombinant. Recognizes Cytokeratin-7, an intermediate filament protein (IFP) of 55kDa, and is highly specific to- and shows no cross-reaction with- other IFPs. CK7 is a basic cytokeratin, which is found in most glandular and transitional epithelia but not in the stratified squamous epithelia. CK7 is expressed in the epithelial cells of ovary, lung, and breast but not of colon, prostate, or gastrointestinal tract. Zeta's antibody to (CK7) is highly useful in distinguishing ovarian carcinomas (CK7+) from colon carcinomas (CK7-). ([more](#))

**Species:** Rabbit Monoclonal

**Cat#:** [Z2784](#)

**IHC:** Ovarian carcinoma stained with ZR428. Note the cytoplasmic staining of tumor cells.

 IVD; RUO(EU)



#### MUC-6 (clone ZR437)

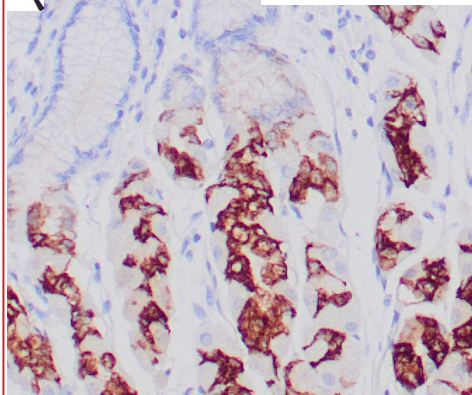
Recombinant. Mucin 6 (MUC-6), is a secreted glycoprotein that plays an essential role in epithelial cyto-protection in the GI tract. MUC-6 expression is highest in the stomach and gallbladder, with lower expression in the terminal ileum and right colon. In gastric cancer, MUC-6 has an altered expression. In normal stomach, it is associated with Lewis type 2. Also expressed in gastric metaplasia, duodenum and pancreas and is a secretory mucin in the deeper mucosal folds of human gallbladder, and its expression is altered with increasing degrees of inflammation. ([more](#))

**Species:** Rabbit Monoclonal

**Cat#:** [Z2793](#)

**IHC:** Gastric mucosa stained with ZR437. Note cytoplasmic staining of glandular cells.

 IVD; RUO(EU)



#### Her-2/neu (clone ZR5)

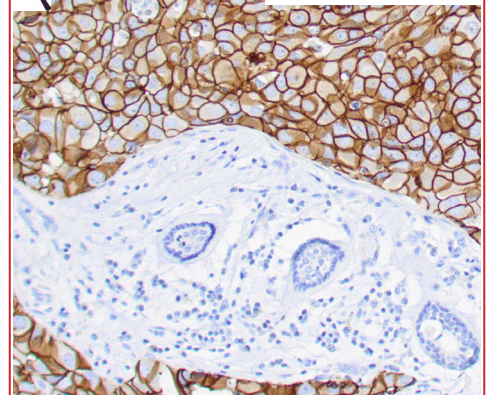
Recombinant. Recognizes Her-2/Neu (Human EGF receptor 2), a transmembrane growth factor receptor that regulates cell growth and survival that is routinely assessed in all primary invasive breast cancer and metastatic/recurrent breast cancer to inform eligibility for anti-HER2 directed targeted therapy. HER-2/Neu is an oncogenic driver with negative prognostic impact in breast cancer. HER-2/Neu testing identifies tumors that may respond to anti-HER2 directed targeted therapy. ([more](#))

**Species:** Rabbit Monoclonal

**Cat#:** [Z2025](#)

**IHC:** Breast infiltrating ductal carcinoma stained with ZR5. Note the strong membrane staining (3+) of carcinoma cells.

 ASR; RUO(EU)



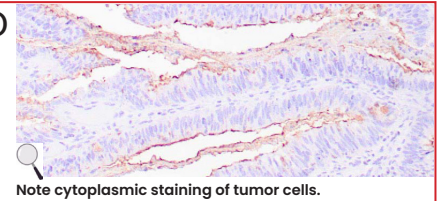
## CA 19-9 (mouse monoclonal, clone 121SLE)

Recombinant. Recognizes CA19-9, a carbohydrate epitope expressed on a high MW (>400kDa) mucin glycoprotein. In normal tissues, CA19-9 or sialyl Lewis a (Le-a) antigen is present in ductal epithelium of the breast, kidney, salivary gland, and sweat glands. CA19-9's expression is greatly enhanced in serum as well as in the majority of tumor cells in gastrointestinal (GI) carcinomas, including adenocarcinomas of the stomach, intestine... [\(more\)](#)

IHC: Human colon carcinoma stained with 121SLE

Cat#: [Z2072](#)

IVD



Note cytoplasmic staining of tumor cells.

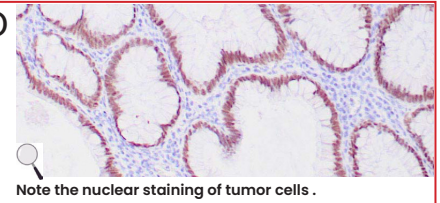
## CDX2 (rabbit monoclonal, clone ZR215)

Recombinant. CDX2 is a fairly specific marker of GI origin for adenocarcinomas, but also stains selected adenocarcinomas of other sites and can use to determine origin of metastatic adenocarcinoma as part of panel. CDX2 can distinguish primary and secondary colorectal adenocarcinomas and primary bladder adenocarcinoma from colorectal carcinoma extending / metastatic to bladder. CDX2 can also distinguish mucinous bronchioloalveolar... [\(more\)](#)

IHC: Human colon adenocarcinoma stained with ZR215

Cat#: [Z2494](#)

IVD



Note the nuclear staining of tumor cells.

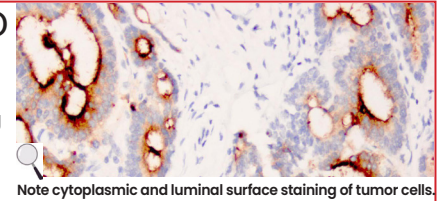
## CEA-M (mouse monoclonal, clone CEA31)

High affinity for CEA (Carcinoembryonic Antigen); no detectable reactivity to nonspecific cross-reacting antigen (NCA), biliary glycoprotein (BGP) and human polymorphonuclear leucocytes. CEA is not found in benign glands, stroma, or malignant prostatic cells. CEA31 is useful in detecting early foci of gastric carcinoma and in distinguishing pulmonary adenocarcinomas (60-70% are CEA+) from pleural mesotheliomas (rarely or weakly CEA+). [\(more\)](#)

IHC: Human colon carcinoma stained with CEA31

Cat#: [Z2052](#)

IVD



Note cytoplasmic and luminal surface staining of tumor cells.

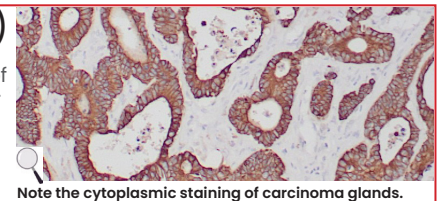
## Cytokeratin-20 (rabbit monoclonal, clone ZR429) IVD; RUO(EU)

Recombinant. Recognizes 46kDa Cytokeratin-20 (CK-20), abundantly expressed in goblet cells and enterocytes of the gastrointestinal tract. CK-20 is a useful marker of pancreatic and colorectal cancer. CK-20 is expressed under normal, hyperplastic and neoplastic conditions and has been detected in adenocarcinomas of the colon, stomach and biliary tract whereas breast carcinomas are generally non-reactive. [\(more\)](#)

IHC: Human colon carcinoma stained with ZR429

Cat#: [Z2785](#)

IVD



Note the cytoplasmic staining of carcinoma glands.

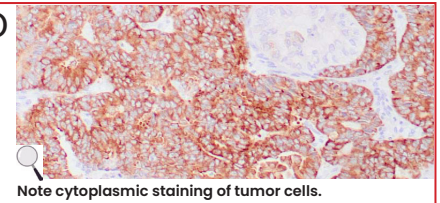
## IMP-3 (rabbit monoclonal, clone EP286)

Recombinant. IMP-3 can be used to distinguish between pancreatic ductal adenocarcinoma from chronic sclerosing pancreatitis. IMP-3 expression has also been found in renal cell carcinoma, adenocarcinoma of the uterine cervix, endometrial carcinoma, adenocarcinoma of the esophagus, melanoma, Merkel cell carcinoma, urothelial carcinoma, neuroendocrine carcinoma of the lung, adenocarcinoma of the pancreas, and triple negative breast cancer. [\(more\)](#)

IHC: Human pancreatic ductal adenocarcinoma with EP286

Cat#: [Z2284](#)

IVD



Note cytoplasmic staining of tumor cells.

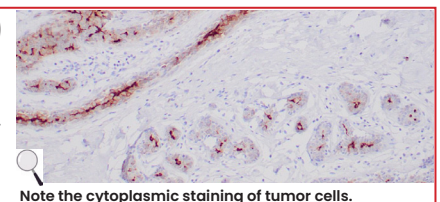
## MUC-1 (rabbit monoclonal, clone ZR435) IVD; RUO(EU)

Recombinant. MUC-1 is a large cell surface mucin glycoprotein expressed by most glandular and ductal epithelial cells and some hematopoietic cell lineages. It is over-expressed abundantly in >90% of breast carcinomas and metastases. The major expressed form of MUC-1 uses all seven exons and is a type I transmembrane protein with a large extracellular tandem repeat domain. Alterations in glycosylation have been shown in epithelial cancer cells. [\(more\)](#)

IHC: Human cholangiocarcinoma stained with ZR435

Cat#: [Z2791](#)

IVD



Note the cytoplasmic staining of tumor cells.

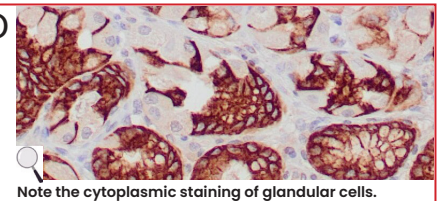
## MUC-5AC (mouse monoclonal, clone ZM148)

Recombinant. Mucin-5AC, is a glycoprotein family member of secreted gel-forming mucins that is expressed in several cancer types. MUC-5AC expression in cancer cells may actively contribute to tumor aggressiveness. Studies have shown that MUC-5AC is also expressed in several cancer types suggesting a potential utility for the distinction of tumor types and subtypes. Aberrant MUC-5AC expression has been found in intraductal papillary mucinous ... [\(more\)](#)

IHC: Human gastric mucosa stained with ZM148

Cat#: [Z2461](#)

IVD



Note the cytoplasmic staining of glandular cells.

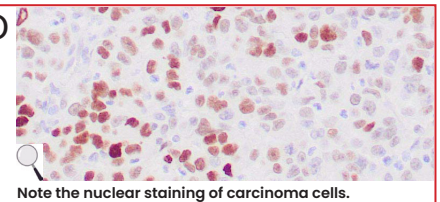
## p53 (rabbit monoclonal, clone ZR153)

Recombinant. Reacts with the mutant as well as the wild form of p53 protein - a tumor suppressor gene expressed in a wide variety of tissue types. Positive nuclear staining with the p53 antibody has been reported to be a negative prognostic factor in breast carcinoma, lung carcinoma, colorectal, and urothelial carcinoma. Anti-p53 positivity has also been used to differentiate uterine serous carcinoma from endometrioid carcinoma as well as to detect ... [\(more\)](#)

IHC: Human colon carcinoma infiltrating fat stained with ZR153

Cat#: [Z2466](#)

IVD



Note the nuclear staining of carcinoma cells.