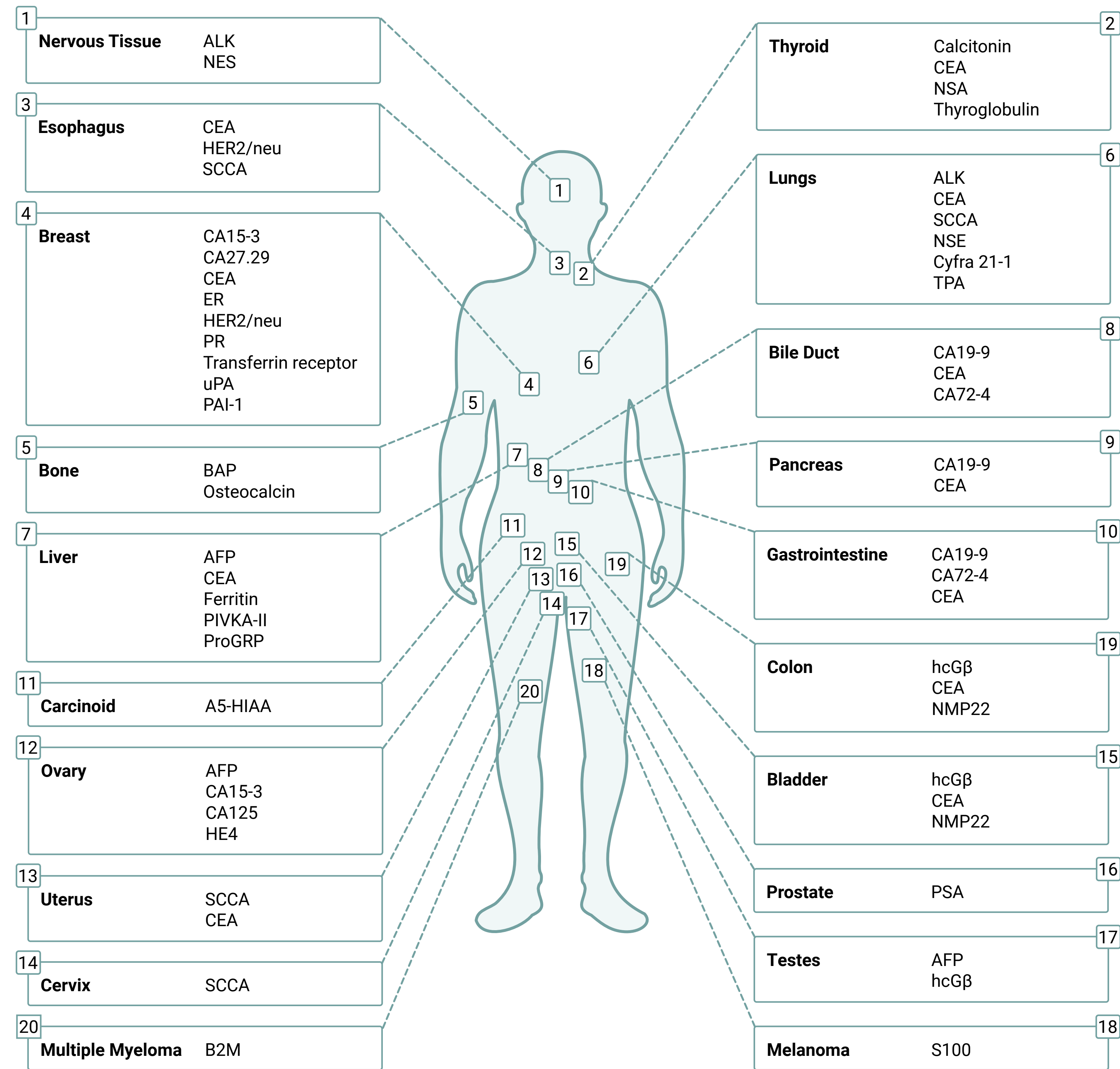


# Biomarkers in tumor diagnostics

Tumor markers represent a subset of biomarkers that are indicative for cancerous growth. Most of these marker are being produced by both normal cells and tumor cells. However, the levels at which they are present in bodily fluids like urine, saliva, or blood are typically significantly higher in patients with various malignancies.

There are various tumor markers being used that can be classified based on their function, the way they are detected, or the kind of sample in which they are measured. A perfect tumor marker is highly specific and differentiates reliably between healthy individuals and cancer patients. It can be a universal tumor marker or specific for one particular malignancy. It should enable early detection of early stage tumors while distinguishing tumor stages and providing prognostic value for outcome and potential recurrence. Lastly, it should be easily measurable with established techniques to follow any changes during the course of a treatment.



Marker	Gene	Gene ID	Uniprot	Acute Lymphoblastic Leukemia	Acute Myelogenous Leukemia	Bile Duct Cancer	Bone Cancer	Breast Cancer	Cholangiocarcinoma	Carcinoid	Cutaneous Melanoma	Cutaneous Melanoma	Chronic Lymphocytic Leukemia	Colorectal Cancer	Cancer Stem Cell	Esophageal Cancer	Gastrointestinal Cancer	Germ Cell Tumor	Liver Cancer	Lung Cancer	Lymphoma	Mucosal Melanoma	Multiple Myeloma	Neuroendocrine Tumor	Nervous Tissue Cancer	Prostate Cancer	Skin Cancer	Testicular Cancer	Thyroid Cancer	Bladder Cancer	Uterine Cancer	
<b>Oncofetal Antigens</b>	Alpha-fetoprotein	AFP	174																													
	Carcinoembryonic antigen (CEA)	CEACAM5	1048																													
	Carcinoembryonic antigen (CEA)	CEACAM6	4680																													
	Carcinoembryonic antigen (CEA)	CEACAM1	634																													
	Carcinoembryonic antigen (CEA)	CEACAM7	1087																													
<b>Tumor-associated Antigens</b>	5-HIAA	-	-																													
	CA15-3	MUC1	4582																													
	CA19-9	-	-																													
	CA27.29	MUC1	4582																													
	CA72-4	-	-																													
	CA125	MUC16	94025																													
<b>Hormones &amp; Receptors</b>	Beta-human chorionic gonadotropin (hCGβ)	CGA, CGB	1081/ 1082																													
	Calcitonin	CALC1	796																													
	Chromogranin A (CgA)	CHGA	1113																													
	EGFR mutation analysis	EGFR	1956																													
	Estrogen receptor (ER)	ESR1	2099																													
	Estrogen receptor (ER)	ESR2	2100																													
	HER2/neu	ERBB2	2064																													
	Osteocalcin	BGLAP	632																													
	Progesterone receptoor (PR)	PGR	5241																													
	transferrin receptor	TFRC	7037																													
	transthyretin	TTR	7276																													
<b>DDR</b>	Breast cancer type 1 susceptibility protein	BRCA1	672																													
	Breast cancer type 2 susceptibility protein	BRCA2	675																													
<b>Enzymes &amp; Modulators</b>	Anaplastic lymphoma kinase	ALK	238																													
	Alkaline phosphatase (BAP)	ALPL	249																													
	BCR-ABL fusion gene	BCR/ABL1	613/25																													
	BRAF V600E	BRAF	673																													
	KIT	KIT	3815																													
	KRAS mutation analysis	KRAS	3845																													
	Prostate-specific antigen	PSA	354																													
	Lactate dehydrogenase	LDHA	3939																													
	Lactate dehydrogenase	LDHB	3945																													
	Lactate dehydrogenase	LDHC	3948																													
	Neuron specific enolase (NSE)	ENO2	2026																													
	Nuclear matrix protein 22 (NMP22)	NUMA1	4926																													
	plasminogen activator inhibitor (PAI-1)	SERPINE1	5054																													
	SCCA	SERPINB3	6317																													
	SCCA2	SERPINB4	6318																													
	Urokinase plasminogen activator (uPA)	PLAU	5328																													
<b>Serum &amp; Tissue Proteins</b>	Apolipoprotein A1	APOA1	335																													
	Beta-2-microglobulin	B2M	567																													
	Cytokeratin fragments 21-1 (Cyfra 21-1)	KRT19	3880																													
	Epididymal secretory protein E4 (HE4)	WAP5	10406																													
	Ferritin	FTL, FTH1	2495/ 2512																													
	Fibrinogen	-	-																													
	Fibrin D-dimer	-	-																													
	S100	S100A1	6271																													
	Tissue polypeptide antigen (TPA)	-	-																													
	Thyroglobulin	TG	7038																													
<b>Cancer Stem Cells</b>	Aldehyde dehydrogenase	ALDH1A1	216																													
	CD20	MS4A1	931																													
	CD24	CD24	100133941																													
	CD44	CD44	960																													
	CD133	PROM1	8842																													
	Nestin	NES	10763																													
<b>Peptide</b>	ProGRP	GRP	2922																													

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