

- Hormones
- Cardiac Markers
- Cancer Markers
- Human Proteins
- Enzymes & Related Biochemicals
- Sera, Plasma, & Infectious Agents

1-Acid Glycoprotein (orosomuroid)

1-Acid Glycoprotein (orosomuroid) belongs to the 1-globulin family of human plasma proteins and contains approximately 42% carbohydrate. Normal levels in human serum are 55-140 mg/dl. Although the biological significance of this glycoprotein is unclear, 1-acid glycoprotein acts as an acute phase protein that is elevated in human serum in cases of trauma, inflammation, rheumatoid arthritis, and some malignancies, and is decreased in cases of inflammatory syndrome.

<u>Catalog Number</u>	<u>Purity (SDS-PAGE)</u>	<u>Immunological Identity</u>
A1614	98%	Homogeneous by IEP against antisera to whole human serum. Identity confirmed using antisera to 1-Acid Glycoprotein.
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Source:	Human Plasma	
Form:	Lyophilized from Distilled Water	
Protein/Content:	Determined by $A_{280}^{1\%} = 8.93$ prior to lyophilization	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	

Intended Use: For Research Use Only. Not for use in diagnostic procedures. Precaution: Although source materials have been tested for certain diseases, no test can absolutely assure the absence of all infectious agents. Therefore, these products should be handled as potentially biohazardous.

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Albumin

Human Albumin is one of the few plasma proteins that is not a glycoprotein. Normal levels in human serum are approximately 5000 mg/dl, but this represents only approximately 40% of the albumin present in the body. The remainder is found in the extravascular space of tissues, where albumin functions as a transport protein and assists in the distribution, metabolism, or regulation of many marginally-soluble substances such as lipids, free fatty acids, bilirubin, Ca²⁺, tryptophan, various steroid hormones, and many drugs.

Albumin has substantial value in physicochemical and immunochemical applications. Its stabilizing and growth supplement properties make albumin ideal for use in cell culture and other commercial applications in which expensive reagents, such as hormones, enzymes, and antibodies, require stabilization and/or dilution to maintain their functional integrity for long periods of time.

Albumin Antigen

Catalog Number	Purity (Electrophoresis)
A0213	95%

Note: Custom lots can be prepared at 99% purity.

Source:	Human Plasma or Serum
Form:	Lyophilized powder
Protein/Content:	Protein versus dry weight reported as assayed
Storage:	2-8°C short term -10°C to -25°C long term
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

Albumin Antibodies

	Catalog Number	Purification Method
Goat anti Albumin	GA029	Immunoaffinity chromatography
Monoclonal to Albumin	MA027	Protein A chromatography

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α -1-Antichymotrypsin (ACT)

α -1-Antichymotrypsin (ACT) belongs to the α -1-globulin family of human plasma proteins and functions as a specific inhibitor of chymotrypsin and other related serine proteases. Normal levels in human serum are 25-40 mg/dl. ACT is an acute phase protein found in hepatocytes and macrophages, and in epithelial, endothelial, and mast cells.

ACT is a major component of the amyloid deposits associated with Alzheimer's disease, and elevated serum levels of ACT are found in various inflammatory conditions, Crohn's disease, ulcerative colitis, and burn injuries. In addition, the association of ACT and prostate specific antigen is being investigated in the diagnosis of prostate cancer (see page 32).

ACT Antigen

Catalog Number	Purity (SDS-PAGE)	Protein	Form
A1814	95%	Determined prior to lyophilization	Lyophilized from 20 mM Tris 150 mM Sodium Chloride, pH 7.4 \pm 0.1
A1824	95%	0.5 mg/ml	20 mM Tris, 150 mM Sodium Chloride, pH 7.4 \pm 0.1

Source: Human Plasma
 Protein/Content: Determined by $A_{280}^{1\%} = 6.0$
 Activity: Reported as assayed by Bovine Chymotrypsin Inhibition Assay

Storage
 A1814: 2-8°C short term
 -10°C to -25°C long term
 A1824: Below -20°C

Biohazard: At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

ACT Antibodies

	Catalog Number	Purification Method
Monoclonal to clipped ACT	MP067	Protein A chromatography

The above antibody is specific for a clipped form of ACT that is generated upon reaction with certain serine proteases such as cathepsin G, chymotrypsin, and PSA.

In addition, antibodies to PSA-ACT are listed on the PSA page in the Cancer Markers section of our On-Line Product Guide.

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Antithrombin III

Antithrombin III is a serum protease inhibitor that inhibits the blood coagulation protease thrombin and is an important regulator of hemostasis. Normal serum levels are approximately 24 mg/dl. Clinical conditions associated with AT-III include an inherited AT-III deficiency that is associated with a lifelong susceptibility to venous thromboembolism and a "low activity" AT-III that has been detected in patients with liver disease and in thrombotic patients. Furthermore, elevations of the thrombin-antithrombin-III complex have been detected in patients with deep vein thrombosis and in patients with septicemia associated with consumption coagulopathy.

	Catalog Number	Purity (SDS-PAGE)
	A2814	95%
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Source:	Human Plasma	
Form:	Lyophilized from 20 mM Tris, pH 8.0 ± 0.1	
Protein/Content:	Determined by $A_{280}^{1\%} = 7.0$ prior to lyophilization	
Activity:	Reported as assayed by Bovine Thrombin Inhibition Assay	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	

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1-Antitrypsin

1-Antitrypsin belongs to the 1-globulin family of human plasma proteins and functions as an inhibitor of a broad spectrum of serine proteases such as trypsin, plasmin, and thrombin. 1-Antitrypsin is an acute phase protein with normal serum levels of 2-4 mg/ml.

Elevated serum levels of 1-antitrypsin are seen after surgery, during acute inflammatory episodes, in cancer, and in pregnancy. In addition, individuals with a congenital deficiency of 1-antitrypsin are predisposed to pulmonary emphysema and liver disease.

	Catalog Number	Purity (SDS-PAGE)
	A1714	95%
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Source:	Human Plasma	
Form:	Lyophilized from 20 mM Sodium Phosphate, 150 mM Sodium Chloride, pH 6.5 ± 0.1	
Protein/Content:	Determined by $A_{280}^{1\%} = 5.3$ prior to lyophilization	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	

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Apolipoproteins and Lipoprotein(a)

Lipoproteins belong to both the α - and β -globulin family of human plasma proteins and function as carrier molecules for phospholipids, neutral lipids, cholesterol, and cholesterol esters. The major classifications of lipoproteins are, in order of decreasing protein content, high density lipoproteins (HDL), low density lipoproteins (LDL), very low density lipoproteins (VLDL), and chylomicrons. Apolipoproteins, the structural components of these lipoprotein transport molecules, are being studied in artery disease for their possible role in the formation and reduction of atherosclerotic plaques.

Apolipoprotein A-I (Apo A-I), approximately 70% of the HDL plasma fraction, is a cofactor for lecithin cholesterol acyltransferase (LCAT), the enzyme responsible for most plasma cholesterol esterification. In addition, Apo A-I is thought to assist in the transport of cholesterol from bodily tissues to the liver for excretion. Because HDL levels, and therefore Apo A-I levels, are inversely proportional to coronary artery disease susceptibility, Apo A-I is being studied in the development of atherosclerosis as it may help reduce the build-up of cholesterol and plaque in the arteries.

Apolipoprotein A-II (Apo A-II) comprises approximately 20% of the HDL plasma fraction and, although its physiological function is not clearly understood, is known to displace Apo A-I from HDL particles.

Apolipoprotein B-100 (Apo B-100), the primary protein component of the LDL and VLDL plasma fractions, is involved in the transport of triglycerides and their conversion to chylomicrons in mucosal cells.

Apolipoprotein C-I (Apo C-I), **Apo C-II**, and **Apo C-III** comprise 30-40% of the VLDL plasma fraction and approximately 5% of the HDL fraction. Apo C-I functions as a cofactor for LCAT. Elevated serum levels of Apo C-I are associated with Types I, III, IV, and V Hyperlipoproteinemia. Decreased serum levels of Apo C-II, a cofactor for lipoprotein lipase (LPL), have been associated with Hypoalphalipoproteinemia, Nephrotic Syndrome, and Tangier Disease, while elevated serum levels are often present in Types I, III, IV, and V Hyperlipoproteinemia. Apo C-III, a cofactor for sphingomyelinase, is an inhibitor of LPL and may activate LCAT. Individuals with a combined hereditary deficiency of both Apo A-I and Apo C-III are predisposed to coronary heart disease.

Apolipoprotein E (Apo E), present in small amounts compared to Apo A-I, Apo A-II, and Apo B-100, is detectable in all lipoprotein fractions. Apo E is involved in the metabolism of triglyceride-rich lipoproteins, mediates the uptake of chylomicrons and VLDL by the liver, and binds heparin, a mechanism that may be important in the attachment of lipoproteins to endothelium.

Apolipoprotein H (Apo H) is a component of the HDLs, VLDLs, and chylomicrons. While little is known of its physiological function, Apo H may act with Apo C-II in the activation of LPL and may be involved in the metabolism of triglyceride-rich lipoproteins.

Lipoprotein(a) [Lp(a)], synthesized in the liver, is a separate classification of lipoprotein and is structurally similar to the LDLs with respect to lipid composition and Apo B-100 content. Lp(a) consists of Apo B-100 linked by a disulfide bridge to Apo(a), a glycoprotein containing approximately 30% carbohydrate. Serum levels of Lp(a) have been linked to increased risk for atherosclerotic cardiovascular disease.

Product	Catalog Number	Purity	Product	Catalog Number	Purity
Apo A-I	A0924	95%	Apo C-III	A2214	95%
Apo A-II	A1024	98%	Apo E	A2324	95%
Apo B-100	A1124	95%	Apo H	A3524	95%
Apo C-I	A2014	95%	Lp(a)	L1524	95%
Apo C-II	A2114	95%			

Source: Human Plasma
 Biohazard: At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

Note: Please inquire for more detailed information regarding the presentation of these products.

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C-Reactive Protein (CRP)

C-Reactive Protein (CRP) belongs to the β -globulin family of human plasma proteins and derives its name from its ability to precipitate a group C polysaccharide of pneumococcus in the presence of Ca^{2+} . Although its physiological function is unknown, serum levels of CRP are elevated in a wide variety of acute and chronic inflammatory conditions. These conditions include most bacterial and some viral infections, rheumatic fever, rheumatoid arthritis, and many collagen diseases. CRP serum levels are also valuable in the detection and evaluation of tissue injury, acute myocardial infarction, transplant rejection, and several malignant disorders.

CRP Antigen

Catalog Number	Purity (SDS-PAGE)	Protein
C0125	99%	2.0 mg/ml
C0124	95%	2.0 mg/ml
C0123	80%	2.0 mg/ml

Source:	Human Plasma
Form:	20 mM Tris, 280 mM Sodium Chloride, 5mM Calcium Chloride, 0.1% Sodium Azide, pH 8.0 \pm 0.1 <i>Custom buffers and sterile filtration available upon request.</i>
Protein/Content:	Determined by $A_{280}^{1\%} = 17.0$ and/or nephelometry
Storage:	2-8°C Do Not Freeze
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

CRP Antibodies

	Catalog Number	Description
Goat anti CRP	GC015	IgG Fraction

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Elastase

Elastase is a serine protease that hydrolyzes amides and esters. Elastase breaks down elastin, the specific protein of elastic fibers, and also digests other proteins, such as fibrin, collagen, hemoglobin, albumin, and proteoglycan. Elevated serum levels of elastase are associated with pulmonary emphysema and rheumatoid arthritis.

<u>Catalog Number</u>	<u>Purity (SDS-PAGE)</u>	<u>Activity</u>
E0214	95%	Reported as assayed
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Source:	Human Neutrophil from Whole Blood	
Form:	Lyophilized powder; essentially salt-free	
Protein/Content:	Determined by $A_{280}^{1\%} = 9.85$ prior to lyophilization	
Unit Definition:	One unit hydrolyzes 1 μ mole of MeO-Suc-Ala-Ala-Pro-Val-pNA per minute at pH 8.0 and 25°C.	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	

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Ferritin

Ferritin is a water-soluble, iron storage protein found in most animal cells. Its spherical structure is composed of 24 subunits and contains a 7-nm internal cavity with a ferric oxyhydroxide crystalline core that is capable of storing approximately 4500 iron atoms. Iron passes in and out of the ferritin cavity through 0.7-1.0 nm pores in the outer shell. Up to 25 ferritin isoforms are thought to exist, composed of various combinations of the two primary subunits: heart and liver. Ferritin rich in the heart subunit is found in heart muscle, red blood cells, lymphocytes, and monocytes, while that rich in the liver subunit is found in the liver, spleen, and placenta. Human serum is composed of mostly ferritin from the liver and spleen and, therefore, is high in the liver subunit ferritin. Because the heart subunit is required for iron uptake into the crystalline core, serum ferritin contains very little iron: approximately 0.06 µg iron per mg protein, whereas liver and spleen tissue contains 0.2 µg iron per mg protein.

Ferritin is the body's primary iron source for hemoglobin synthesis; only hemoglobin itself accounts for more of the body's total iron content. When serum iron levels decrease below normal levels, ferritin readily releases its iron stores for use. Serum levels of ferritin are known to closely parallel tissue ferritin levels and are, therefore, indicative of body iron content. As such, clinical tests for ferritin serum levels are used to detect and manage iron-related disorders, such as iron deficiency anemia and iron overload. In addition, high levels of serum ferritin have been associated with malignant disease and tissue damage.

Ferritin Antigen

Catalog Number	Source	Purity (SDS-PAGE)	Protein
F0324	Human Liver	98%	1.0 - 5.0 mg/ml
F0424	Human Spleen	98%	2.0 mg/ml

Form:	10 mM Tris, 150 mM Sodium Chloride, 0.1% Sodium Azide, pH 8.0 ± 0.1
Ferritin/Protein Content:	Determined by Abbott IMx (WHO 1st IS 80/602) and by Lowry (BSA standard)
Storage:	2-8°C Do Not Freeze
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

Ferritin Antibodies

	Catalog Number	Purification Method
Goat anti Ferritin	GF039	Immunoaffinity chromatography
Goat anti Ferritin	GF035	Ion-exchange chromatography
Rabbit anti Ferritin	RF039	Immunoaffinity chromatography
Rabbit anti Ferritin	RF035	Ion-exchange chromatography
Monoclonal to Ferritin	MF035	Ion-exchange chromatography

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Immunoglobulin A (IgA)

Immunoglobulin A (IgA), along with IgD, IgE, and IgM, make up approximately 20% of the total gamma globulin in the body, with IgG accounting for the other 80%. Each class of antibody gets its designation from the heavy and light peptide chains that make up the antibody structure.

IgA is secreted by the subepithelial regions of the gastrointestinal and respiratory tracts as part of the body's immune response. Present in seromucous secretions exposed to the external environment (saliva, tears, etc), IgA provides an early antibacterial and antiviral defense. Clinically, levels of IgA can be quantitated by several methods, including nephelometry, immunoelectrophoresis, and electroimmunodiffusion.

IgA Antigen

	Catalog Number	Purity (SDS-PAGE)	Form
IgA	I2224	95%	20 mM Tris, 100 mM Sodium Chloride, 0.1% Sodium Azide, pH 8.0 ± 0.1
IgA ₁ , Lambda	I0124	95%	10 mM Sodium Phosphate, 150 mM Sodium Chloride, 0.1% Sodium Azide, pH 7.4 ± 0.1

Note for Catalog Number I0124: Myeloma IgA preparations are often heterogeneous with respect to their heavy chains; some preparations may contain different polymeric forms.

Source

I2224: Human Plasma
I0124: Human Myeloma Plasma
Protein/Content: Determined by $A_{280}^{1\%} = 13.5$

Immunological

Identity: Single arc by IEP against antisera to whole human serum and/or antisera to human IgA

Storage: 2-8°C short term
-10°C to -25°C long term

Biohazard: At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

IgA Antibodies

	Catalog Number	Description
Goat anti IgA	GI223	Gamma Fraction

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Immunoglobulin E (IgE)

Immunoglobulin E (IgE), along with IgA, IgD, and IgM, make up approximately 20% of the total gamma globulin in the body, with IgG accounting for the other 80%. Each class of antibody gets its designation from the heavy and light peptide chains that make up the antibody structure.

Serum levels of IgE are elevated in individuals with multiple myeloma conditions and severe allergic reactions. As such, assays for IgE serum levels are useful in monitoring the treatment these disorders.

IgE Antigen

	<u>Catalog Number</u>	<u>Purity</u>	<u>Form</u>
IgE Myeloma	I0224	99% (SDS-PAGE)	10 mM Sodium Phosphate, 100 mM Sodium Chloride, 0.1% Sodium Azide, pH 8.0 ± 0.1
IgE Kappa, Myeloma	I0223	Neat plasma or serum	Neat plasma/serum that may contain one or more of the following: 0.1% Sodium Azide, 0.01% Thimerosal, 0.01% Benzamidine, 0.1% EACA
IgE Lambda, Myeloma	I3323	Neat plasma or serum	Neat plasma/serum that may contain one or more of the following: 0.1% Sodium Azide, 0.01% Thimerosal, 0.01% Benzamidine, 0.1% EACA
IgE Polyclonal	I0323	Neat plasma or serum	Neat plasma or serum

Note: Catalog Number I0224 is purified from a pool of I0223 and I3323.

Source:	Human Serum or Plasma
Protein/Content:	Determined by Lowry and/or Radial Immunodiffusion
Activity	
I0224 & I0323:	Reported as assayed by Hybritech Tandem E IgE or Abbott IMx IgE assay (WHO 2nd IRP 75/502)
I0223 & I3323:	Reported as determined
Storage:	2-8°C short term -10°C to -25°C long term
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

IgE Antibodies

	<u>Catalog Number</u>	<u>Purification Method</u>
Monoclonal to IgE	MI025	Ion-exchange chromatography

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Immunoglobulin G (IgG)

- Intact IgG
- IgG Fc Fragment

Immunoglobulin G (IgG) is one of the five classes of immunoglobulins that make up the human antibody response and accounts for approximately 80% of the total gamma globulin in the body; IgA, IgD, IgE, and IgM comprise the remaining 20%. Each class of antibody gets its designation from the heavy and light peptide chains that make up the antibody structure.

Serum levels of IgG are elevated in many disease states, such as cirrhosis of the liver, hepatitis, and multiple myeloma conditions. As such, assays for IgG serum levels are useful in monitoring the treatment these disorders.

IgG Antigen

	<u>Catalog Number</u>	<u>Immunological Identity/Purity</u>
IgG, Intact	I1424	95% (SDS-PAGE)
IgG, Fc Fragment	I2724	Single arc by IEP against antisera to whole human serum

Source: Human Plasma
 Form: 20 mM Sodium Phosphate, 150 mM Sodium Chloride, 0.1% Sodium Azide, pH 7.4 ± 0.1

Protein/Content
 I1424: Determined by $A_{280}^{1\%} = 13.5$
 I2724: Determined by $A_{280}^{1\%} = 14.0$

Storage: 2-8°C short term
 -10°C to -25°C long term

Biohazard: At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

IgG Antibodies

	<u>Catalog Number</u>	<u>Description/Purification Method</u>
Goat anti IgG, H & L Chain	GI149	Antisera
Goat anti IgG, Fc Fragment	GI279 GI273	Immunoaffinity chromatography Gamma Fraction

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Immunoglobulin M (IgM)

Immunoglobulin M (IgM), along with IgA, IgD, and IgE, make up approximately 20% of the total gamma globulin in the body, with IgG accounting for the other 80%. Each class of antibody gets its designation from the heavy and light peptide chains that make up the antibody structure.

IgM is the first immunoglobulin produced during the immune response and the first antibody produced in neonates. Serum levels of IgM are associated with certain autoimmune diseases, and abnormally low levels may indicate the presence of Wiskott-Aldrich Syndrome, an inherited immunodeficiency disorder.

IgM Antigen

	<u>Catalog Number</u>	<u>Immunological Identity</u>
	I1124	Single arc by IEP against antisera to whole human serum
Source:	Human Plasma	
Form:	50 mM Tris, 200 mM Sodium Chloride, 0.1% Sodium Azide, pH 8.0 ± 0.1	
Protein/Content:	Determined by $A_{280}^{1\%} = 13.3$	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	

IgM Antibodies

	<u>Catalog Number</u>	<u>Description</u>
Goat anti IgM	GI113	Gamma Fraction

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Keratin, Epidermal

Keratin makes up the skin and hair of mammals, acting as a protective shield. "Soft" keratin of the epidermis contains little sulfur as opposed to "hard" keratin of the hair, which is rich in sulfur and, thus, contains many disulfide bonds.

Scripps Laboratories' keratin preparation is composed of three major peptides of molecular weight 56,000 - 67,000. Its characteristics include insolubility in aqueous solutions, resistance to proteolytic enzymes and resistance to hydrolysis.

Keratin has proven useful in the identification of certain tumor types and in the production of protein hydrolyzates.

	Catalog Number	Purity (SDS-PAGE)
	K0124	90%
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Source:	Human Epidermis	
Form:	50 mM Tris, 8 M Urea, 100 mM β -Mercaptoethanol, 0.1% Sodium Azide, pH 8.4 \pm 0.1	
Protein/Content:	Determined by a modified Lowry Protein Assay	
Storage:	2-8°C Do Not Freeze	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1 and Hepatitis B. Other tests can be performed as needed.	

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2-Macroglobulin (A2M)

2-Macroglobulin (A2M) belongs to the 2-globulin family of human plasma proteins and functions as an inhibitor of proteases of all classes. 2-Macroglobulin is also involved in the fibrinolytic system and in the transport of zinc. Furthermore, A2M is known to promote the growth of mammalian cells in culture and stimulate the regeneration of lymphocytes in irradiated mice.

Elevated serum levels of 2-macroglobulin are associated with liver cirrhosis, nephrotic syndrome, diabetes, and severe burn cases. In addition, the association of A2M and prostate specific antigen is being investigated in the diagnosis of prostate cancer.

A2M Antigen

	Catalog Number	Purity (SDS-PAGE)
	M0614	95%
Source:	Human Plasma	
Form:	Lyophilized from 5 mM Potassium Phosphate, pH 6.5, containing glycine at a ratio of 1:1 (w/w) as a stabilizer	
Protein/Content:	Determined by $A_{280}^{1\%} = 9.1$ prior to lyophilization	
Activity:	Reported as assayed by Trypsin Inhibition Assay (assuming a 1:1 molar ratio)	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	

A2M Antibodies

Antibodies to PSA-A2M are listed on the PSA page in the Cancer Markers section of our On-Line Product Guide.

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- Hormones
- Cardiac Markers
- Cancer Markers
- Human Proteins
- Enzymes & Related Biochemicals
- Sera, Plasma, & Infectious Agents

1-Microglobulin

1-Microglobulin is a low molecular weight, single polypeptide chain glycoprotein that is filtered and catabolized in the kidney.

Often used in the study of renal disorder, increased urine levels of 1-microglobulin are indicative of renal tubular dysfunction. In addition, lymphocytic cells and organs, such as the thymus, lymph nodes, and spleen, stain intensely for 1-microglobulin, making this polypeptide useful in the study of cellular and humoral immunity.

	Catalog Number	Purity (SDS-PAGE)
	M0814	95%
	M0813	40%
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Source:	Human Urine from patients with chronic renal tubular proteinuria	
Form:	Lyophilized from 20 mM Ammonium Bicarbonate; may contain traces of buffer salts	
Protein/Content:	Determined by $A_{280}^{1\%} = 15.8$ and/or by Lowry prior to lyophilization	
Immunological Identity:	Confirmed by radial immunodiffusion	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	

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β₂-Microglobulin

β₂-Microglobulin belongs to the β-globulin family of human plasma proteins and is the light chain subunit of the class I histocompatibility leukocyte antigen (HLA) complex, which is found on the cell surface of all nucleated cells and is involved in the regulation and rejection of transplanted tissues.

Because of its low molecular weight (approximately 11,800 Da), β₂-microglobulin is excreted in the urine, where increased levels are detectable in conditions of catabolic dysfunction of the proximal renal tubules and in inflammatory disorders. In addition, increased plasma levels of β₂-microglobulin may be associated with multiple myeloma, nasopharyngeal carcinoma, and HIV-1 disease progression.

β₂-Microglobulin Antigen

	Catalog Number	Purity (SDS-PAGE)
	M0114	95%
	M0113	40%

Source:	Human Urine from patients with chronic renal tubular proteinuria
Form:	Lyophilized from 20 mM Ammonium Bicarbonate; may contain traces of buffer salts
Protein/Content:	Determined by $A_{280}^{1\%} = 16.5$ and/or by Lowry prior to lyophilization
Immunological Identity:	Confirmed by radial immunodiffusion
Storage:	2-8°C short term -10°C to -25°C long term
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

β₂-Microglobulin Antibodies

	Catalog Number	Purification Method
Monoclonal to β ₂ -Microglobulin	MM017	Protein A chromatography

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Plasminogen

Plasminogen is a 791-amino acid glycoprotein (approximately 90,000 MW) and is the zymogen of the serine protease plasmin. Plasmin has substrate specificity similar to that of trypsin (see catalog number T0614, page 56), but its primary target is fibrin, making it the key enzyme in fibrinolysis, the dissolution of blood clots. Fibrinolysis begins with the conversion of plasminogen to plasmin by tissue plasminogen activator enzymes, such as urokinase and streptokinase, or by thrombin; plasmin then dissolves blood clots by dissociating the clot's fibrin matrix.

Two inherited forms of plasminogen deficiency are known: hypoplasminogenemia, in which plasminogen is severely reduced or absent, and dysplasminogenemia, in which an abnormal, inactive form of plasminogen is produced. Although these inherited forms of plasminogen deficiency are associated with thrombosis, these afflictions are rare and are not often the cause of the thrombosis.

	<u>Catalog Number</u>	<u>Purity (SDS-PAGE)</u>	<u>Activity</u>
	P1424	95%	Reported as assayed
Source:	Human Plasma		
Form:	50 mM Potassium Phosphate, 10% Glycerol, pH 7.4 ± 0.1		
Protein/Content:	Determined by $A_{280}^{1\%} = 17.1$		
Unit Definition:	One unit hydrolyzes 1 μmole of N-Tosyl-L-Arginine Ester (TAME) in 30 minutes at pH 8.0 and 37°C after activation by streptokinase.		
Storage:	-10°C to -25°C		
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.		

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Retinol Binding Protein (RBP)

Retinol Binding Protein (RBP), a single-chain polypeptide glycoprotein, belongs to the α_2 -globulin family of human plasma proteins and is the primary plasma transport protein for retinol (vitamin A₁). RBP binds retinol in a 1:1 stoichiometry, serving not only to solubilize retinol but also to protect it from oxidation. Once in circulation, the RBP-retinol complex binds to one molecule of transthyretin (prealbumin), a plasma thyroxine-binding protein. This complex then delivers retinol to specific receptors of the retina, skin, gonads, lungs, salivary glands, and other tissues.

Immunoassays for serum levels of RBP are useful in the detection of liver disease, protein-calorie malnutrition, and vitamin A deficiencies. In addition, because vitamin A is important in the maintenance of differentiation and rate of proliferation of epithelial tissue, the determination of RBP serum levels have been shown to be important in the mediation of antitumor effects.

	Catalog Number	Purity (SDS-PAGE)
	R1114	98%
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Source:	Human Urine from patients with chronic renal tubular proteinuria	
Form:	Lyophilized from 20 mM Ammonium Bicarbonate; may contain traces of buffer salts	
Protein/Content:	Determined by $A_{280}^{1\%} = 19.4$ and/or by Lowry prior to lyophilization	
Immunological Identity:	Confirmed by radial immunodiffusion	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	

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Sex Hormone Binding Globulin (SHBG)

Sex Hormone Binding Globulin (SHBG), or Testosterone-estradiol Binding Globulin (TeBG), is a dimeric plasma glycoprotein with high affinity for the gonadal steroids, testosterone, and estradiol. SHBG enhances the exchange of these steroids in central tissues. Because only free steroids can act biologically, it is often necessary to account for SHBG-bound steroids. Estrogens have the effect of increasing SHBG serum concentrations and androgens decrease the serum concentrations of SHBG. This phenomenon is helpful in studying sex- and age-related biological changes.

Other conditions in which SHBG serum levels are monitored are hypergonadism in men and hyperandrogeny in women. In addition, decreases in serum SHBG are seen in thyroid insufficiency, while increased levels are noted in thyrotoxicosis.

Catalog Number	Purity (SDS-PAGE)	Characterization
S1725	95%	This material has been treated to remove dihydrotestosterone. Levels of hCG, hFSH, hGH, hLH, hPRL, hTSH, dihydrotestosterone, testosterone, estradiol, and other steroids are reported.
S1724	95%	Not characterized

Source: Human Serum
 Form: 20 mM Tris-HCl, 10% Glycerol, pH 7.4 ± 0.1
 Protein/Content: Determined by RIA and/or by Lowry
 Storage: Below -20°C
 Biohazard: At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

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Thyroglobulin

Thyroglobulin is a large globular glycoprotein (approximately 660,000 MW) produced by follicular cells of the thyroid gland. Post-transcriptional iodination and proteolysis of thyroglobulin produces the two iodine containing hormones of the thyroid, triiodothyronine and thyroxine. The rate of synthesis of thyroglobulin in the thyroid is regulated by follicle stimulating hormone of the anterior pituitary gland.

Serum levels of thyroglobulin are useful in the follow-up of differentiated thyroid carcinoma, Graves disease, and several other physiological and pathophysiological conditions.

	Catalog Number	Purity (PAGE)
	T0714	96%
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Source:	Human Thyroid Glands	
Form:	Lyophilized from 20 mM Ammonium Bicarbonate; may contain traces of buffer salts	
Protein/Content:	Determined by $A_{280}^{1\%} = 10.4$ and/or by Lowry prior to lyophilization	
Immunological Identity:	Confirmed by radial immunodiffusion	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	
<i>Please inquire about Thyroglobulin purified from Bovine Thyroid Glands, Catalog Number: T5014</i>		

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Thyroxine Binding Globulin (TBG)

Thyroxine Binding Globulin (TBG) is a 58,000 MW single-chain polypeptide glycoprotein and belongs to the γ -globulin family of human plasma proteins. TBG is significant in the regulation of plasma levels of the thyroid hormones, functioning as the primary plasma transport protein for thyroxine. TBG also transports triiodothyronine, but its binding affinity is approximately 10% of that for thyroxine. Other proteins bind thyroid hormones in the plasma, such as transthyretin (prealbumin) and albumin, but TBG is the principal carrier.

Evaluations of serum TBG are useful in the determination of thyroid function: Under hyper-thyroid conditions TBG is more saturated with thyroid hormones, while under hypo-thyroid conditions, TBG is less saturated.

	Catalog Number	Purity (SDS-PAGE)
	T0424	98%
	T0414	98%
	T0413	40%

Source: Human Plasma or Serum

Form

T0424: 10 mM Tris-HCl, 10 mM Potassium Phosphate, 140 mM Sodium Chloride, 0.1% Sodium Azide, pH 8.0

T0414 & T0413: Lyophilized from 20 mM Ammonium Bicarbonate; may contain traces of buffer salts

Protein/Content: Determined by $A_{280}^{1\%} = 9.0$ and/or by Lowry prior to lyophilization

Immunological Identity: Confirmed by radial immunodiffusion

Storage: 2-8°C short term
-10°C to -25°C long term

Biohazard: At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

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Trypsin

Trypsin is an endopeptidase secreted by the pancreas to aid in the digestion of foods. Because trypsin is highly proteolytic, the pancreas produces an inactive form of this enzyme, trypsinogen, and secretes it into the small intestine where enterokinase cleaves the N-terminal hexapeptide, thus activating trypsin. Trypsin specifically cleaves peptide linkages at the carboxyl group of either lysine or arginine, and its optimal pH for activity is between pH 8 - 9. Trypsin is most effective on partially-digested proteins and digests some proteins that cannot be digested by pepsin, such as protamines and histones. The products of trypsin digestion are amino acids and various polypeptides.

A rare, hereditary trypsinogen deficiency has been reported and results in the significant impairment of protein digestion. Symptoms include severe growth inhibition, hypoproteinemia, edema, and diarrhea. Evaluation of pancreatic enzymes in such cases reveals a complete absence of trypsinogen. In addition, increased serum levels of trypsin are found in individuals with cystic fibrosis.

	<u>Catalog Number</u> T0614	<u>Purity (SDS-PAGE)</u> 95%	<u>Activity</u> Reported as assayed
Source:	Human Pancreas		
Form:	Lyophilized powder; essentially salt-free		
Protein/Content:	Determined by $A_{280}^{1\%} = 14.5$ and/or by Lowry prior to lyophilization		
Unit Definition:	One unit hydrolyzes 1 μ mole of N-benzyl-DL-Arg-pNA per minute in 200 mM Tris-HCl, 20 mM Calcium Chloride, pH 7.8, at 25°C.		
Storage:	2-8°C short term -10°C to -25°C long term		
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.		

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