

# Endocrine Disorders

Reagents for Assay Development

ISO Certified

# Endocrine Disorders

The endocrine system is a network of glands that produce and release hormones which regulate mood, growth and development, tissue function, metabolism, as well as sexual function and reproductive processes.

The eight major glands that make up the human endocrine system are the hypothalamus, pancreas, pituitary, thyroid, parathyroids, adrenals, pineal body, and the reproductive glands, (which include the ovaries and testes). The pancreas, which is mainly associated with the digestive system, is also part of this hormone-secreting system. Overall, although the endocrine glands are the body's main hormone producers, some non-endocrine organs — such as the brain, heart, lungs, kidneys, liver, thymus, skin, and placenta — also produce and release hormones.

Endocrine disorders are diseases that specifically relate to the endocrine glands and they are generally grouped into two categories:

- Disease that results from producing too much or too little hormone, leading to a hormone imbalance
- Disease that results from the development of a lesion (such as a nodule or tumor) in the endocrine system which may or may not affect hormone levels

Common endocrine disorders include diabetes, acromegaly (overproduction of growth hormone), Addison's disease (decreased production of hormones by the adrenal glands), Cushing's syndrome (high cortisol levels for extended periods of time), hyperthyroidism (overactive thyroid), hypothyroidism (underactive thyroid), and prolactinoma (overproduction

of prolactin by the pituitary gland). These disorders often have widespread symptoms, affect multiple parts of the body, and can range from mild to very severe. Treatments depend on the specific disorder but often requires the use of synthetic hormones.

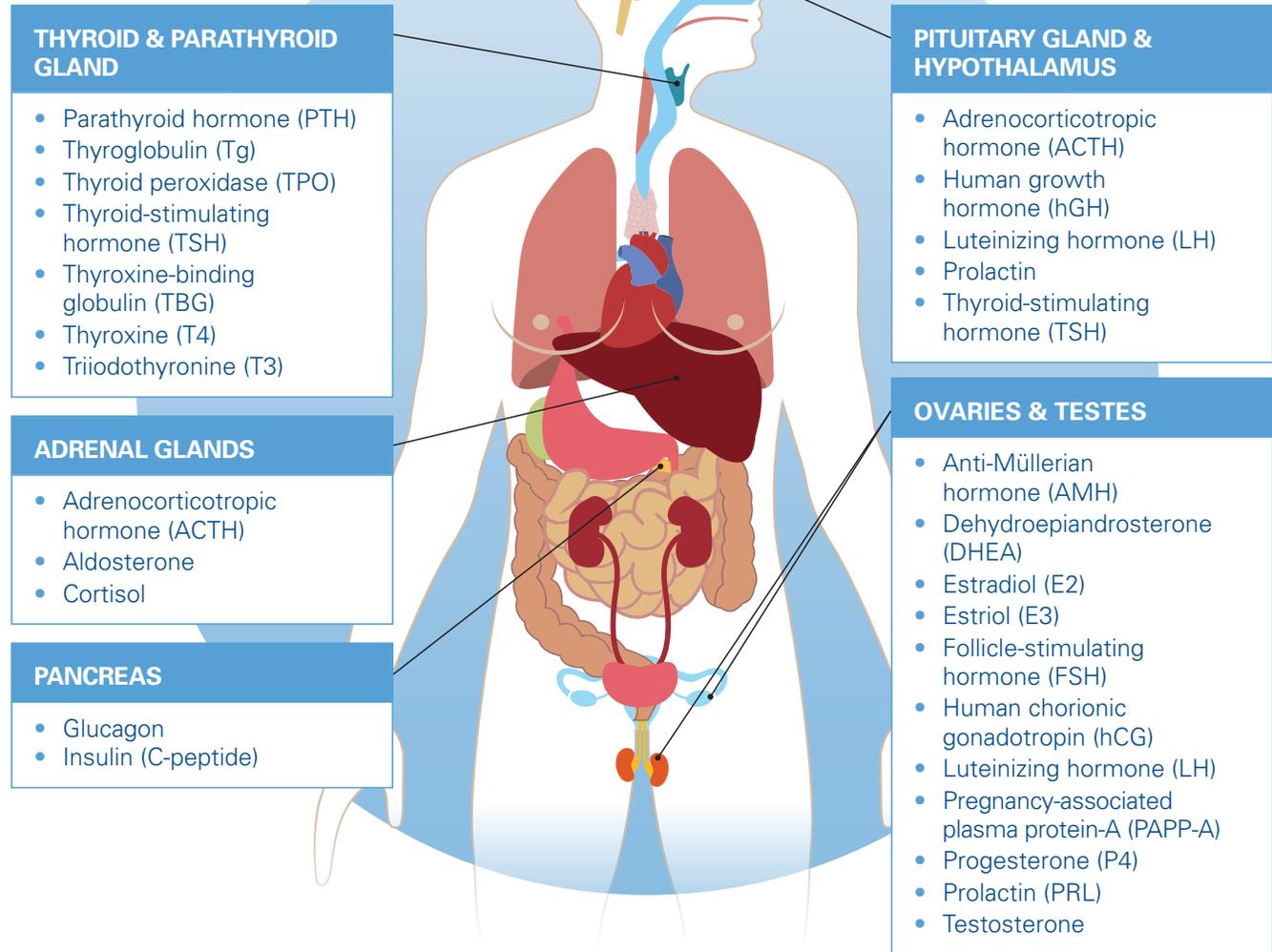
Diagnosis for endocrine disorders is usually made using blood, urine or saliva tests that measure hormone levels. There is no single ideal method for assessment as each have their advantages and disadvantages. Serum-based assays provide a direct measurement of circulating hormones but are generally unable to distinguish the protein-bound, inactive form of the hormone from its free and biologically active form. Serum testing is ideal for peptide hormones such as FSH, LH, prolactin, fasting insulin, and thyroid hormones, including reverse T3, as well as thyroid antibodies. Serum tests can also be used to measure sex hormone binding globulin (SHBG) and, less commonly, cortisol binding globulin (CBG).

In contrast, urine assays measure unbound hormone, reflecting the bioavailable levels. A 24-hour urine collection is the preferred method for assessing physiological hormone levels because it provides a comprehensive picture as opposed to a single time point analysis. Saliva testing has also gained in popularity and has the advantage of being noninvasive as well as being accessible to practitioners such as chiropractors, and acupuncturists who may be practicing in regions where they are not licensed to order blood tests or draw blood. Saliva collection also allows for multiple collections over a period of a day or month, which can help elucidate abnormal hormonal patterns, such as a shortened luteal phase.

New diagnostic testing looks at the genetic basis for the endocrine disease. A variety of endocrine disorders are caused by gene variations which are now well understood in terms of their molecular basis and mode of inheritance. The recent advances in molecular testing and genomics have uncovered that genes play a far more important role in the pathogenesis of endocrine disease than previously appreciated. Overall, through the earlier detection of genetic carriers and/or through diagnosing the exact subtype of the disease, earlier and more targeted intervention and treatments are possible.



# ENDOCRINE GLANDS & THEIR HORMONES



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# Company Overview



*Meridian Life Science, Inc.* is a leading large scale manufacturer of:

- Antibodies
- Viral antigens
- Recombinant proteins
- PCR enzymes
- Nucleotides
- Critical assay reagents

Meridian has been providing innovative life science solutions and building trusted partnerships for over 40 years. Meridian's focus is to offer products and services that help to advance the development of diagnostic assays and vaccine development.

- Commercial scale manufacturing of antigens and antibodies with protein purification expertise
- Full line of immunoassay reagents, including antigens, antibodies and blockers
- Large scale production of reagents for molecular assays
- Technical support with assay development experience
- Dedicated R&D and manufacturing teams
- Robust and mature Quality System

ISO certified



## Extensive Capabilities and Services

### Immunodiagnosics

- Antigens & Antibodies
- Recombinant Proteins
- Blocking Reagents

### Molecular Diagnostics

- Nucleotides
- Enzymes
- qPCR/PCR Reagents
- NGS Reagents

### Contract Services

- Antigens & Antibodies
- Cell & Viral Banking
- PCR/qPCR Assay Development



## Global Presence

### MERIDIAN BIOSCIENCE, INC.

Parent Company | Founded in 1977 | Nasdaq: VIVO  
Headquartered in Cincinnati, OH | 650+ Employees | Presence in 70+ Countries.

### North America

#### MEMPHIS, TN

Viral Antigens  
Recombinant Proteins  
*In Vitro* Antibodies  
PCR Reagents

#### BILLERICA, MA

Magellan, Leadcare

#### BOCA RATON, FL

*In Vivo* Antibodies

#### QUEBEC, CANADA

GenePOC, Molecular Diagnostics

### EMEA

#### LONDON, UK

PCR Manufacturing & Sales  
PCR /qPCR Molecular Reagents

#### LUCKENWALDE, GERMANY

Large Scale Nucleotides  
PCR Enzymes  
Manufacturing

#### PARIS, FRANCE

EU Diagnostics Sales & Admin

#### WATERLOO, BELGIUM

EU Diagnostics Sales & Admin

#### MILAN, ITALY

EU Diagnostics Sales & Admin

#### MODI'IN, ISRAEL

BreathID® Breath Test Systems

### Asia Pacific

#### SYDNEY, AUSTRALIA

Warehouse & Sales

#### BEIJING, CHINA

Wholly Owned  
Subsidiary



## Adrenocorticotrophic hormone (ACTH)

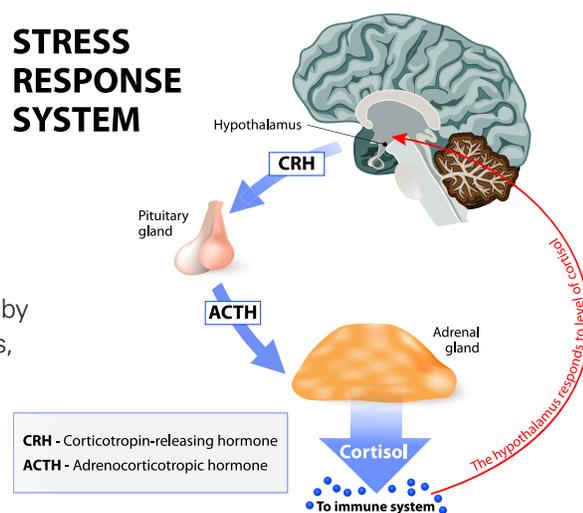
ACTH is a hormone secreted by the pituitary gland and is often produced in response to biological stress. Its principal effect is increased production and release of cortisol by the cortex of the adrenal gland. ACTH also plays a role in circadian rhythm in many organisms.

Deficiency of ACTH leads to a reduction in the secretion of adrenal hormones (e.g. adrenaline, aldosterone and cortisol), resulting in secondary adrenal insufficiency (hypoadrenalism), the manifestations of which are clinically indistinguishable from those of glucocorticoid deficiency. Symptoms include weight loss, lack of appetite, muscle weakness, nausea and vomiting, and low blood pressure (hypotension). ACTH deficiency can either be congenital or acquired, and several genetic mutations have been linked to this disease.

In contrast, chronically elevated ACTH levels occur in primary adrenal insufficiency in which damage to the adrenal glands prevents them from producing the hormones in adequate amounts. An example is Addison's disease which can be caused by autoimmune disorders or infections, such as TB or HIV, and tumors. Another disorder, Cushing's disease, can be caused by medication or by a pituitary tumor and leads to an excess of cortisol (hypercortisolism).

Quantitative plasma ACTH assays are useful in the differential diagnosis of pituitary Cushing's disease, Addison's disease, autonomous ACTH producing pituitary tumors (e.g. Nelson's syndrome), hypopituitarism with ACTH deficiency and ectopic ACTH syndrome. Hypopituitarism with ACTH deficiency, which is secondary adrenocortical insufficiency, is characterized by low plasma ACTH and cortisol concentrations, and a subnormal, but usually distinct adrenal response to stimulation with synthetic ACTH (Cortrosyn).

### STRESS RESPONSE SYSTEM



### Reagents for Immunoassay Development

- |                |                                                                                                                                                                                                              |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>E54056M</b> | <b>MAb to ACTH C-Terminal</b> <ul style="list-style-type: none"><li>• Reacts with human and rat C-terminal ACTH</li></ul>                                                                                    |
| <b>E54057M</b> | <b>MAb to ACTH N-Terminal</b> <ul style="list-style-type: none"><li>• Specific for Synacthen (1-24 ACTH)</li><li>• Reacts with ACTH (a.a. 1–17) and has no cross-reactivity with CLIP (ACTH 17-39)</li></ul> |

Suitable for use in  
ELISA & IHC

# Aldosterone

Aldosterone is a steroid hormone produced by the adrenal cortex that plays an important role in cardiac health and can be a cause of endocrine hypertension. It is essential for sodium conservation in the kidney, salivary glands, sweat glands and colon, and is involved in the homeostatic regulation of blood pressure, plasma sodium (Na<sup>+</sup>), and potassium (K<sup>+</sup>) levels.

Aldosterone is closely linked to two other hormones, renin and angiotensin, and together these are the renin-angiotensin-aldosterone system. This system is activated when the body experiences a decrease in blood flow to the kidneys, such as after a drop in blood pressure, or a significant drop in blood volume after a hemorrhage or serious injury.

Primary aldosteronism (Conn syndrome) is caused by the overproduction of aldosterone by the adrenal glands, usually from a benign tumor or a genetic disorder (familial hyperaldosteronism). The high aldosterone level increases reabsorption of sodium and loss of potassium by the kidneys, often resulting in an electrolyte imbalance. Secondary aldosteronism, which is more common than primary aldosteronism, is caused by anything that leads to excess aldosterone, other than a disorder of the adrenal glands. It could be caused by any condition that decreases blood flow to the kidneys, decreases blood pressure, or lowers sodium levels. Secondary aldosteronism may be seen with congestive heart failure, cirrhosis of the liver, kidney disease and toxemia of pregnancy (pre-eclampsia).

Low aldosterone (hypoaldosteronism) usually occurs as part of adrenal insufficiency. It causes dehydration, low blood pressure, a low blood sodium level, and a high potassium level. When infants lack an enzyme needed to make cortisol, a condition called congenital adrenal hyperplasia, they may not be able to produce enough aldosterone.

Aldosterone and renin tests are generally ordered together to evaluate whether the adrenal glands are producing appropriate amounts of aldosterone and to distinguish between the potential causes of excess or deficiency. Typically they are quantitative plasma or serum assays that are based on competitive EIA principles.

## Reagents for Immunoassay Development

<b>E30451M</b>	<b>MAB to Aldosterone</b> <ul style="list-style-type: none"><li>• Cross-reactivity: Androstenedione (&lt;0.01%), Corticosterone (&lt;0.01%), &amp; Desoxycorticosterone (&lt;0.01%)</li></ul>	Suitable for use in ELISA
<b>E01293R</b>	<b>PAb to Aldosterone</b> <ul style="list-style-type: none"><li>• Cross-reactivity: Androstenedione (&lt;1%), Corticosterone (&lt;1%), DHEA (&lt;1%) &amp; Desoxycorticosterone (&lt;1%)</li><li>• Produced in Rabbit</li></ul>	Suitable for use in ELISA & IHC



## Anti-Müllerian Hormone (AMH)

Anti-Müllerian Hormone (AMH) is a glycoprotein hormone structurally related to inhibin and activin and is part of the transforming growth factor beta superfamily. It is expressed by granulosa cells of the ovary during a female's reproductive years and plays a key role in growth differentiation and folliculogenesis. Specifically, AMH expression inhibits primordial follicle recruitment and decreases the sensitivity of follicles for the FSH-dependent selection. Besides its functional role in the ovary, AMH serum levels also serve as a biomarker for ovarian reserve.

AMH is a dimeric glycoprotein molecule that consists of two identical subunits linked by sulfide bridges. Each subunit contains a pro-region (pro-AMH or N-terminal) and a C-terminal domain (also called the "mature" region) which is cleaved at monobasic sites between the two domains. After cleavage, the pro-region (110-kDa) and C-terminal (25 kDa) homodimers remain associated in a noncovalent complex that bind to AMH Receptor II to activate signaling.

AMH is considered an extremely sensitive marker of ovarian function and ovarian aging. It is useful to assess conditions such as polycystic ovary syndrome and premature ovarian failure. AMH is also a predictor for ovarian response in *in vitro* fertilization (IVF). Overall, a higher level of AMH in normal, healthy women aged 30-44 has a positive correlation with natural fertility for spontaneous conception. Diagnostic tests that measure AMH levels in serum or plasma are usually quantitative sandwich-ELISA that use antibodies directed against epitopes in the stable pro-region and mature region.



### Anti-Müllerian Hormone (AMH) Protein Structure

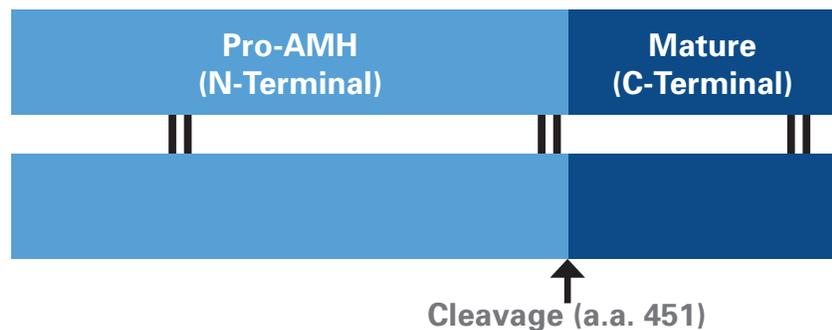
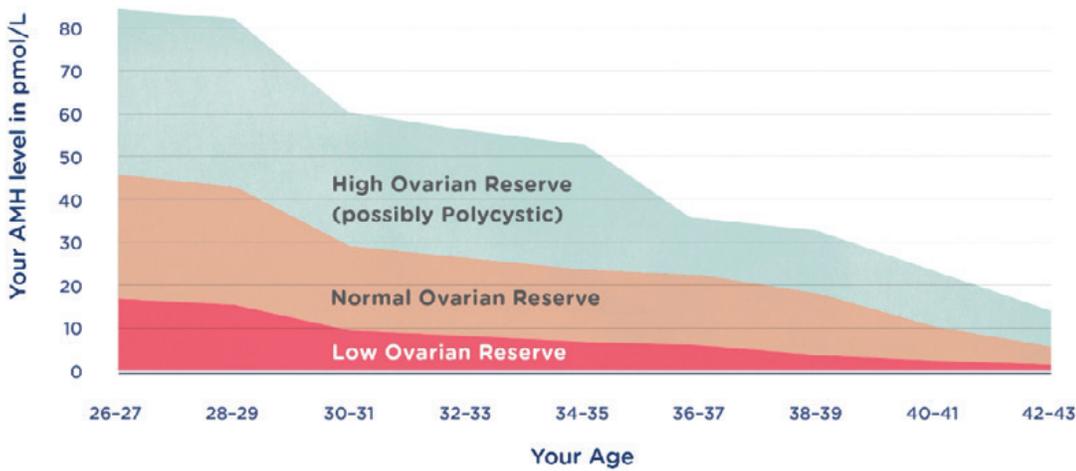


Figure based from C. Heule, W. Salzburger, and A. Böhn, *Genetics*. 196: 579–591 (2014)

## AMH levels can predict Ovarian Reserve



## Reagents for Immunoassay Development

PAIR	<b>E01349M</b>	<b>MAB to AMH</b> • Capture Antibody	Suitable for use in ELISA & CLIA
	<b>E01350M</b>	<b>MAB to AMH</b> • Detection Antibody	
	<b>R01713</b>	<b>AMH Recombinant</b> • Represents the full AMH sequence (MW 60 kDa) • Recombinant, ( <i>E. coli</i> ) • >90% pure (SDS-PAGE) • Control Antigen for MAb pair E01349M and E01350M	
PAIR	<b>E01347M</b>	<b>MAB to AMH</b> • Capture Antibody	Suitable for use in ELISA, CLIA & LF
	<b>E01348M</b>	<b>MAB to AMH</b> • Detection Antibody	
	<b>R01712</b>	<b>AMH Recombinant</b> • Contains a His-tag • Partial AMH sequence (MW ~32kDa) • Recombinant, ( <i>E. coli</i> ) • Control Antigen for MAb pair E01347M and E01348M	

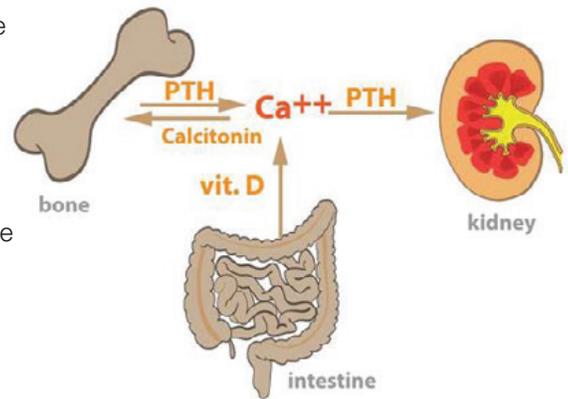


# Calcitonin

Calcitonin is a polypeptide hormone that is produced by the C-cells of the thyroid gland and it acts to reduce blood calcium and phosphate levels, opposing the effects of Parathyroid Hormone (PTH).

Calcium is an essential structural component of the skeleton and plays a key role in muscle contraction, blood coagulation, enzyme activity, neural excitability, secondary messengers, hormone release, and membrane permeability. Three major hormones (PTH, vitamin D, and calcitonin) interact to maintain a constant concentration of calcium in the body.

Calcitonin is measured using quantitative sandwich immunoassays that employ MAbs for the recognition of intact and mature calcitonin. High levels of calcitonin identify patients with nodular thyroid diseases and diagnose medullary thyroid cancers which originate from the C-cells of the thyroid gland. Medullary tumors are the third most common of all thyroid cancers.



## Reagents for Immunoassay Development

PAIR	<b>E01357M</b>	<b>MAB to Calcitonin</b> <ul style="list-style-type: none"><li>• Produced in Cell Culture</li><li>• Capture Antibody</li></ul>	Suitable for use in CLIA, ELISA & RIA
	<b>E01356M</b>	<b>MAB to Calcitonin</b> <ul style="list-style-type: none"><li>• Produced in Cell Culture</li><li>• Detection Antibody</li></ul>	

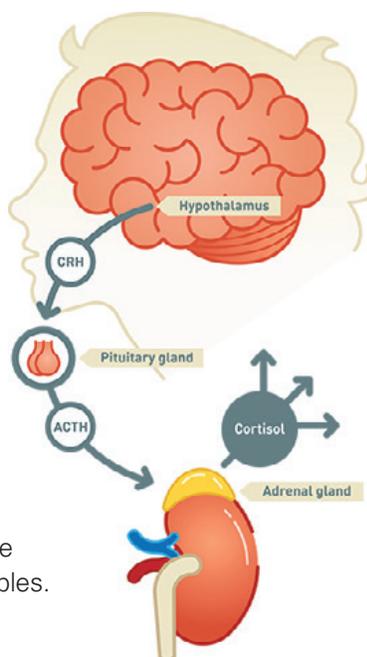
# Cortisol

Cortisol is the primary glucocorticoid secreted by the adrenal gland in response to ACTH stimulation, stress, or low blood-glucose concentration. It functions to increase blood sugar through gluconeogenesis, to suppress the immune system, and to aid in the metabolism of fat, protein, and carbohydrates. It also decreases bone formation. It is secreted in a diurnal pattern with levels rising in the early morning, peaking around 8 am, and flattening in the evening.

The production of too much cortisol can cause Cushing's syndrome which, if left untreated, can lead to serious health problems such as heart attack, stroke, blood clots and Type 2 diabetes. The most common cause of Cushing's syndrome is the long-term, high-dose use of the cortisol-like glucocorticoids which are used to treat other medical conditions like asthma, rheumatoid arthritis, and lupus. The second most common cause is pituitary tumors or a tumor on the adrenal gland itself.

Too little cortisol can be caused by Addison's disease (also called primary adrenal insufficiency), a condition in which your adrenal glands do not function well due to autoimmune disorders, tumors, or infections like tuberculosis or HIV.

Cortisol disorders are generally diagnosed using competitive quantitative immunoassays from urine, saliva, or blood samples.



## Reagents for Immunoassay Development

<b>E01332M</b>	<p><b>MAB to Cortisol</b></p> <ul style="list-style-type: none"> <li>• Cross-reactivity: Prednisolone (5.6%), 11-Deoxycortisol (0.9%), Corticosterone (0.6%), 11-Deoxycorticosterone (&lt;0.1%), Progesterone (&lt;0.1%), 17-Hydroxyprogesterone (&lt;0.1%), Testosterone, Estradiol &amp; Estriol (&lt;0.1%), Danazol (&lt;0.01%)</li> <li>• Produced in Cell Culture</li> </ul>	Suitable for use in Competitive ELISA
<b>E86322M</b>	<p><b>MAB to Cortisol</b></p> <ul style="list-style-type: none"> <li>• Recognizes cortisol-BSA conjugate and free cortisol</li> <li>• No cross-reactivity with BSA</li> <li>• Cross-reactivity: Corticosterone (20%)</li> </ul>	
<b>E86322M</b>	<p><b>MAB to Cortisol</b></p> <ul style="list-style-type: none"> <li>• Recognizes cortisol-BSA conjugate and free cortisol</li> <li>• No cross-reactivity with BSA</li> <li>• Cross-reactivity: Corticosterone (49%)</li> </ul>	
<b>A82601P</b>	<p><b>Cortisol Antigen (Synthetic), HRP Conjugated</b></p> <ul style="list-style-type: none"> <li>• Cortisol linked with HRP at the 3 CMO-position</li> <li>• Buffer: Tris with protein stabilizers (pH 7.0)</li> </ul>	Suitable for use in ELISA



## Dehydroepiandrosterone (DHEA)

Dehydroepiandrosterone (DHEA) is one of the most abundant circulating steroids and is produced in the adrenal glands, the gonads, and the brain, where it functions as a metabolic intermediate in the biosynthesis of the androgen and estrogen sex steroids. Its production is controlled by ACTH and the majority of DHEA is secreted as 3-sulfoconjugate dehydroepiandrosterone sulfate (DHEAS). In the circulation, DHEA and DHEAS are mainly bound to albumin, with a small amount bound to sex hormone-binding globulin (SHBG).

Elevated DHEA/DHEAS levels caused by androgen-producing adrenal tumors can cause symptoms of hyperandrogenism in women. Men are usually asymptomatic, however peripheral conversion of androgens to estrogens can occasionally produce mild estrogen excess. In small children, excessive DHEA/DHEAS levels can be due to congenital adrenal hyperplasia (CAH) caused by 3 beta-hydroxysteroid dehydrogenase deficiency, 21-hydroxylase deficiency (the most common form of CAH) or 11 beta-hydroxylase deficiency.

Serum DHEAS diagnostic assays are used to help evaluate adrenal gland function, to detect adrenal tumors or cancers, and to help determine the cause of masculine physical characteristics (virilization) in girls and women or early puberty in boys. The test may also be used with other hormone tests to rule out certain diseases of the testes or ovaries.

### Reagents for Immunoassay Development

#### E01236M

#### MAb to DHEA

- Reacts with DHEA and DHEAS
- Cross-reactivity: Cholesterol (<1%), Progesterone (<1%), Hydrocortisone (<1%), Estradiol (<1%) and Vitamin D3 (<1%)
- HPLC purified

Suitable for use in  
ELISA



## Estradiol (E2)

Estradiol, also known as E2 or 17 $\beta$ -estradiol, is an estrogen steroid hormone and the major female sex hormone. It is involved in the regulation of female reproductive cycles and it is responsible for the development of female secondary sexual characteristics.

Estradiol is predominately produced within the follicles of the ovaries and upon menopause in women, production of estrogens by the ovaries stops and estradiol levels decrease to very low levels. Low levels of estradiol can lead to loss of bone mass and fertility challenges in both sexes, premature menopause, depression and premature skin aging. Abnormally high levels of estradiol can result in early puberty in both sexes, development of breast tissue in males (gynecomastia), and may drive ovarian, breast and endometrial cancer.

Testing for Estradiol is useful to diagnose cases of infertility, abnormal menses, and to monitor follicular development during assisted reproduction protocols. Typically, a quantitative serum test is sufficient to make a differential diagnosis and subsequent treatment plan.

### Reagents for Immunoassay Development

<b>MAS04-267</b>	<b>MAb to Estradiol</b> <ul style="list-style-type: none"><li>• Cross-reactivity: Estriol (2.3%), Estrone (0.17%), Testosterone (0.01%), Androstenedione (&lt;0.005%), Cortisone (&lt;0.005%), Cortisol (&lt;0.005%), Progesterone (&lt;0.005%), Corticosterone (&lt;0.005%)</li></ul>	Suitable for use in Competitive ELISA
<b>E86022M</b>	<b>MAb to 17-beta-Estradiol</b> <ul style="list-style-type: none"><li>• Reacts with 17-beta-Estradiol-BSA conjugate and free Estradiol</li><li>• No cross-reactivity with BSA</li></ul>	
<b>A82604P</b>	<b>Estradiol Antigen, HRP conjugated</b> <ul style="list-style-type: none"><li>• Buffer: 0.05 M Tris, pH 7.0 containing protein stabilizers</li></ul>	Suitable for use in ELISA





## Estriol (E3)

Estriol (E3) is one of three major estrogens, the others being estradiol (E2) and estrone. Its levels are only detectable during pregnancy where it is synthesized in very high quantities by the placenta (levels increase 100-fold during pregnancy). Its role is to ensure a quiescent uterus during prelabor and as such it can be used as a marker of fetal health and well-being.

During pregnancy, 90 to 95% of estriol in the maternal circulation is conjugated in the form of estriol glucuronide and estriol sulfate, and levels of unconjugated estriol are slightly less than those of unconjugated estradiol and similar to those of unconjugated estrone. If levels of unconjugated estriol (free estriol) are abnormally low in a pregnant woman, this may indicate chromosomal or a congenital anomaly like Down syndrome or Edward's syndrome. Estriol is included as part of the triple test and quadruple test for antenatal screening for fetal anomalies. However, because many pathological conditions in a pregnant woman can cause deviations in estriol levels, screening tests are often seen as less definitive of fetal-placental health than a nonstress test. Conditions which can create false positives and false negatives in estriol testing for fetal distress include pre-eclampsia, anemia, and impaired kidney function.

Estriol tests are usually a solid-phase competitive immunoassay that quantitatively measures unconjugated estriol in serum.

### Reagents for Immunoassay Development

<b>E01360M</b>	<b>MAB to Estriol (E3)</b> <ul style="list-style-type: none"> <li>Produced in Cell Culture</li> </ul>	Suitable for use in Competitive ELISA, CLIA & RIA
<b>E82353M</b>	<b>MAB to Estriol (E3)</b> <ul style="list-style-type: none"> <li>Cross-reactivity (at D50): Estriol-3-Sulfate (63%), Estriol-Beta-O-Glucuronide (3.4%)</li> <li>Cross-reactivity, less than 0.1%: 5-alpha-androst-1-ene-3-17-dione, 5-androsten-3-beta-ol-17-one, Androstendione, 4-cholesten-3-one, 5-cholesten-3-beta-ol, Cortisone, Corticosterone, Dexamethasone USP, Digoxin, 17-beta-estradiol, Estrone, Estrone-beta-o-glucuronide, Estrone-3-sulfate, Hydrocortisone, Isoandrosterone, Prednisolone, Prednisone, 5-alpha-pregnandione, 5-beta-pregnandione, 20-alpha-OH-progesterone, 17-alpha-OHprogesterone, 21-OH-progesterone, Reichstein's substance, Testosterone</li> </ul>	Suitable for use in ELISA
<b>A82605P</b>	<b>Estriol (E3) Antigen, HRP conjugated</b> <ul style="list-style-type: none"> <li>Estriol linked at the 6 position</li> <li>Buffer: Tris containing protein stabilizers</li> </ul>	

## Follicle-stimulating hormone (FSH)

Follicle-stimulating hormone (FSH) is a gonadotropin secreted by the anterior pituitary glands and regulates the activity of the gonads (e.g. ovaries and testes). Specifically, it operates in conjunction with luteinizing hormone (LH) to stimulate the development of graafian follicle in females, and promote the development of the tubules in the testes and the differentiation of sperm.

The production and secretion of FSH and LH are regulated by a balance of positive and negative feedback mechanisms involving the hypothalamic-pituitary axis, the reproductive organs, and the pituitary and sex steroid hormones.

In women, follicle stimulating hormone levels start to rise naturally around the menopausal period, reflecting a reduction in function of the ovaries and a decline of oestrogen and progesterone production. However, at any other time, an increase in FSH levels are a sign of malfunction in the ovary or testis. A wide variety of disorders are associated with high FSH including premature ovarian failure, gonadal dysgenesis, systemic lupus erythematosus, testicular failure and klinefelter syndrome. Low levels of FSH are also problematic and can lead to incomplete development at puberty for both men and women.

FSH is typically measured through a quantitative serum test. Only third generation FSH testing is sensitive enough (0.03 mIU/mL) to assess gonadal dysfunction in children 18 years and under.

### Reagents for Immunoassay Development

PAIR	<b>MAF02-264</b>	<b>MAb to FSH</b> <ul style="list-style-type: none"> <li>Reacts with intact FSH molecule</li> <li>Does not cross-react with other alpha hormones</li> <li>Capture Antibody</li> </ul>	Suitable for use in ELISA
	<b>MAF02-243</b>	<b>MAb to FSH</b> <ul style="list-style-type: none"> <li>&gt; 90% pure (SDS-PAGE)</li> <li>Detection Antibody</li> </ul>	
<b>H6F02-323</b>	<b>FSH &gt; 98%</b> <ul style="list-style-type: none"> <li>Activity: 6,217 IU/mg</li> <li>Contaminants: hTSH (0.13%), hLH (&lt;1%), hGH (0.0001%), PRL (0.0062%)</li> <li>Lyophilized</li> </ul>		
<b>E87701M</b>	<b>MAb to Human FSH (Intact)</b> <ul style="list-style-type: none"> <li>Recognizes the c1 epitope of intact FSH</li> <li>Not cross-reactive with FSH Beta</li> <li>Capture or Detection Antibody</li> </ul>	Suitable for use in ELISA & RIA	



# Glucagon

Glucagon is a peptide hormone produced by the alpha cells of the pancreas. Its primary function is to elevate the concentration of glucose in the blood by promoting gluconeogenesis and glycogenolysis. It also decreases fatty acid synthesis in adipose tissue and the liver, as well as promotes lipolysis in these tissues, causing them to release fatty acids into circulation where they can be catabolized to generate energy. Its effect is opposite to that of insulin, which lowers the extracellular glucose.

Glucagon belongs to the secretin family of hormones and together with insulin, it forms part of the feedback system that keeps blood glucose levels stable. Glucagon increases energy expenditure and is elevated under conditions of stress.

A glucagon diagnostic assay is primarily useful for detecting a glucagon-secreting tumor of the pancreas (glucagonomas). Glucagonoma tumor cells produce large amounts of glucagon, and these high levels create severe, painful, and life-threatening symptoms. About 5-10% of neuroendocrine tumors that develop in the pancreas are glucagonomas and 75% of the time these glucagonomas are malignant.

Glucagon diagnostic tests are typically quantitative two-site sandwich immunoassays and the performance between manufacturers can vary significantly due to antibody cross reactivity. It is important to select highly specific antibodies to glucagon in order to reduce the potential for cross-reactive binding to other circulating pro-glucagon derived peptides, such as glicentin. In addition, cross-reactivity can occur with different isoforms of glucagon, not all of which are biologically active. Some diagnostic assays remove the biologically inactive isoforms before measurement, while others do not.



## Reagents for Immunoassay Development

<b>D24460R</b>	<b>MAB to Glucagon-Like Peptide 1</b> <ul style="list-style-type: none"><li>• Specific for the C-terminal of GLP-1</li><li>• Does not cross-react against GLP2, GRPP, PYY, VIP, PHI, GIP, Glucagon or Oxyntomodulin</li><li>• Produced in Cell Culture and Lyophilized</li></ul>	Suitable for use in Dot Blot & IHC
<b>D01234G</b>	<b>PAb to Human Glucagon</b> <ul style="list-style-type: none"><li>• Specific for the N-terminal of human Glucagon</li><li>• Produced in Goat</li><li>• &gt;95% pure (Protein G purified)</li></ul>	Suitable for use in ELISA

## Human chorionic gonadotropin (hCG)

Human chorionic gonadotropin (hCG) is a heterodimeric glycoprotein with an alpha subunit identical to that of LH, FSH and TSH, and a unique beta-subunit. It is a hormone produced by cells of the fetal placenta and it maintains the function of the corpus luteum during the first 3 to 4 months of pregnancy.

hCG is secreted as soon as the trophoblast implants in the uterine wall and it is at its highest concentration between the 7th and 10th weeks of pregnancy. The urine of women in the first month of pregnancy contains enough hCG to be detected by ELISA. Total hCG is commonly used to confirm and monitor pregnancy, but it also has clinical utility in detecting miscarriages, preeclampsia, neoplasms, trophoblastic diseases, and risk calculations for Trisomy-21 and Trisomy-18.

Some cancerous tumors also produce beta-hCG and accordingly, free beta-hCG has some use as a tumor marker in gestational trophoblastic disease, certain testicular tumors, where the ratios of the free  $\beta$  subunit to intact hCG can be quite high. Free  $\beta$ -hCG may also have clinical utility in first-and second-trimester prenatal screening for Down syndrome and other chromosomal anomalies.

Qualitative blood tests based on lateral flow technology can detect hCG levels as low as 10 mIU/mL-100mIU/mL, depending on the brand. Each of these assays are based on the two-site sandwich enzyme immunoassay principles and are prone to possible false-positive results from heterophilic antibodies.

### Reagents for Immunoassay Development

PAIR	<b>MAF05-043</b>	<b>MAB to hCG beta</b> <ul style="list-style-type: none"><li>Recognizes the beta subunit of intact hCG</li><li>Does not cross-react with hCG alpha subunit</li></ul>	Suitable for use in ELISA
	<b>MAF05-627</b>	<b>MAB to hCG beta</b> <ul style="list-style-type: none"><li>Cross-reactivity: LH (0.5%)</li><li>Detection Antibody</li></ul>	
PAIR	<b>E86820M</b>	<b>MAB to hCG beta</b> <ul style="list-style-type: none"><li>Specifically recognizes the beta subunit of hCG</li><li>Does not cross-react with hLH, hTSH or hFSH</li><li>Capture Antibody</li></ul>	Suitable for use in ELISA & LF
	<b>E86308M</b>	<b>MAB to hCG beta</b> <ul style="list-style-type: none"><li>Specifically recognizes the beta subunit of hCG</li><li>Does not cross-react with hLH, hTSH and hFSH</li><li>Detection Antibody</li></ul>	



# Human chorionic gonadotropin (hCG) continued

## Reagents for Immunoassay Development continued

PAIR	<b>D01241G</b>   <b>PAb to Intact hCG</b> <ul style="list-style-type: none"><li>• Reacts with alpha subunit and beta subunit of the hCG molecule</li><li>• Produced in Goat</li><li>• &gt;98% pure (SDS-PAGE)</li><li>• Pairs with E01323M in a free beta-hCG sandwich immunoassay</li></ul>	Suitable for use in ELISA
	<b>E01323M</b>   <b>MAB to hCG beta</b> <ul style="list-style-type: none"><li>• Recognizes the free beta hCG subunit</li><li>• Does not cross-react with the alpha subunit</li><li>• Cross-reactivity: intact hCG (0.5%)</li><li>• Pairs with Catalog #D01241G in a free beta-hCG sandwich immunoassay</li></ul>	
<b>MAF05-023</b>   <b>MAB to hCG beta</b> <ul style="list-style-type: none"><li>• Recognizes the beta subunit of intact hCG</li><li>• Cross-reactivity: Free beta subunit (49.0%), Free alpha subunit (0%), LH (38.4%), FSH (3.7%), TSH (3.7%)</li></ul>		
<b>MKF05-148</b>   <b>MAB to hCG beta</b> <ul style="list-style-type: none"><li>• Not cross-reactive with LH, FSH or TSH</li></ul>		
<b>A01376H</b>   <b>hCG Native Antigen</b> <ul style="list-style-type: none"><li>• Sourced from human urine</li><li>• &gt; 98% pure (SDS-PAGE)</li><li>• Lyophilized from 50 mM Ammonium Bicarbonate</li></ul>		
<b>A01322H</b>   <b>hCG Native Antigen</b> <ul style="list-style-type: none"><li>• USP grade, Activity: 14,800 IU/mg (Bio-assay)</li><li>• Buffer: Sodium Chloride</li></ul>		



# Human growth hormone (hGH)

Human growth hormone (hGH), also known as somatotropin, is a peptide hormone that stimulates growth, cell reproduction, and cell regeneration and is essential for normal growth and development in children. In adults, growth hormone plays a role in regulating bone density, muscle mass, and glucose and lipid metabolism. It can also affect heart and kidney function.

Growth hormone is produced by the pituitary gland and is normally released into the bloodstream in pulses throughout the day and night. As a result, obtaining a single measurement of GH in blood is difficult to interpret and not clinically useful. GH stimulation and suppression tests are therefore often used to diagnose GH abnormalities.

Growth hormone deficiency (GHD) is a rare disorder characterized by the inadequate secretion of GH and it can result from congenital abnormalities or from damage to the pituitary gland caused by a head injury, brain tumor, or surgery or radiation treatment. Childhood-onset GHD results in growth retardation, short stature, and maturation delays. Adult-onset GHD is characterized by a number of variable symptoms including reduced energy levels, altered body composition, osteoporosis (reduced bone mineral density), reduced muscle strength, lipid abnormalities such as increased LDL cholesterol, insulin resistance, and impaired cardiac function. Excess GH is most often due to a GH-secreting pituitary tumor (usually benign) and can result in acromegaly (gigantism) in children. Among the most serious symptoms of acromegaly are type 2 diabetes, high blood pressure, increased risk of cardiovascular disease, and arthritis.

To determine hGH levels, dynamic tests are required for proper diagnosis. These tests are meant to stimulate the pituitary (via insulin, arginine, clonidine and l-dopa) to secrete GH allowing for the testing of blood samples at timed intervals. hGH assays are based on the two-site sandwich enzyme immunoassay principles using monoclonal antibodies or a combination of monoclonal and polyclonal antibodies. One challenge faced with hGH assays is that the normal composition of hGH in blood is actually mixture of different isoforms, present at constant relative proportions. The primary isoform is a 22 kD molecule and a 20 kD molecule, as well as hetero- and homodimers and multimers. Assay results can vary considerably depending on reactivity with various isoforms.

## Reagents for Immunoassay Development

PAIR	<b>MAF06-154</b>	<b>MAb to hGH</b> <ul style="list-style-type: none"><li>• Cross-reactive with Human Placental Lactogen (&lt;0.02%) and Human Prolactin (&lt;0.02%)</li><li>• Capture Antibody</li></ul>	Suitable for use in ELISA
	<b>MAF06-210</b>	<b>MAb to hGH</b> <ul style="list-style-type: none"><li>• Cross-reactive with Human Placental Lactogen (&lt;0.02%) and Human Prolactin (&lt;0.02%)</li><li>• Detection Antibody</li></ul>	
<b>A75714H</b>	<b>hGH Native Antigen</b> <ul style="list-style-type: none"><li>• Cross-reactivity: FSH (&lt;0.01%), LH (&lt;0.01%), TSH (&lt;0.01%) and Prolactin (&lt;0.01%)</li><li>• &gt;80% pure (SDS-PAGE)</li><li>• Lyophilized from 50 mM Ammonium Bicarbonate</li></ul>		



## Insulin (C-peptide)

C-peptide and the hormone insulin are created from a larger molecule called proinsulin and stored in the beta cells of the pancreas. Intact proinsulin undergoes enzymatic cleavage to become des-31,32-proinsulin and des-64,65-proinsulin and eventually, insulin and C-peptide (an inactive peptide chain).

Although insulin and C-peptide are secreted in equimolar amounts from beta-cells, C-peptide has a longer half-life and is present in peripheral blood in higher molar concentrations than insulin, making it less prone to marked fluctuations. The measurement of plasma insulin, C-peptide and proinsulin concentrations has been identified as the most useful test in identifying the cause of hypoglycaemia.

Type 1 and type 2 are the two most common types of diabetes and although both of the types are characterized by high blood glucose, the pathogenesis between the two differ. The insulin/C-peptide test is useful in order to differentiate insulin-dependent patients from non-insulin-dependent patients. Overall raised plasma insulin, C-peptide, and proinsulin concentrations in the presence of hypoglycemia can indicate endogenous hyperinsulinaemia which is often seen in people with early stage type 2 diabetes mellitus. In general, c-peptide is considered to be a reliable marker of residual beta-cell function and serum or urine C-peptide determinations, in conjunction with blood glucose and insulin levels, aid in the differential diagnosis of hypoglycemia.

Early assays for insulin, proinsulin, and C-peptide were competitive RIAs, however most commercial assays are now competitive (Insulin and C-peptide) or two-site enzyme immunoassays (total of intact proinsulin).



### Reagents for Immunoassay Development

#### **MHP18-601** | **Mab to C-peptide**

- Reacts with C-peptide of human proinsulin
- > 98% pure (sequential precipitation using caprylic acid and ammonium sulphate)

#### **E01336M** | **MAB to C-peptide**

- Does not cross-react with human, porcine or mouse/rat insulin
- Binds to free c-peptide and proinsulin with equal efficiency
- May be used as an immunosorbent in serum samples before measurement of insulin

Suitable for use in  
Competitive ELISA

## Luteinizing hormone (LH)

Luteinizing hormone (LH) is a gonadotropic hormone that is produced by the pituitary gland and operates in conjunction with FSH to drive puberty, menstruation and fertility. A surge in LH levels triggers ovulation and the development of the corpus luteum in females, and in males it causes the Leydig cells to release testosterone.

LH is composed of two noncovalently associated dissimilar amino acid chains, alpha and beta. The alpha chain is similar to that found in human thyroid-stimulating hormone (TSH), follicle-stimulating hormone (FSH), and human chorionic gonadotropin (hCG).

LH diagnostic assays are useful to evaluate fertility issues, the function of reproductive organs (ovaries or testicles), or to detect ovulation. In children it can also be useful to evaluate early or delayed sexual maturation. The most sensitive LH assays on the market are monoclonal antibody based competitive-ELISAs. However, lateral flow devices using antibody sandwich-based formats are widely used for at-home ovulation tracking.

### Reagents for Immunoassay Development

PAIR	<b>MAF07-226</b>	<b>MAb to LH</b> <ul style="list-style-type: none"> <li>• Cross-reactivity: hCG (&lt;0.01%), FSH (&gt;0.1%)</li> <li>• Capture Antibody</li> </ul>	Suitable for use in ELISA
	<b>MAF07-036</b>	<b>MAb to LH</b> <ul style="list-style-type: none"> <li>• &gt; 90% pure (SDS-PAGE)</li> <li>• Detection Antibody</li> </ul>	
PAIR	<b>MAF07-412</b>	<b>MAb to LH</b> <ul style="list-style-type: none"> <li>• Cross-reactivity: hCG (&lt;0.01%), FSH (&gt;0.1%)</li> <li>• Capture Antibody</li> </ul>	
	<b>MAF07-037</b>	<b>MAb to LH</b> <ul style="list-style-type: none"> <li>• &gt; 90% pure (SDS-PAGE)</li> <li>• Detection Antibody</li> </ul>	
	<b>A01687H</b>	<b>LH &gt; 98% pure</b> <ul style="list-style-type: none"> <li>• Sourced from human pituitary glands</li> <li>• Activity: 15,600 IU/mg</li> <li>• Contaminants (&lt;0.5% w/w): FSH (1 IU/mg), hGH (&lt;0.001 mg/mg), PRL (&lt;0.001 mg/mg), TSH (&lt;0.01 IU/mg)</li> <li>• Lyophilized from 50 mM Ammonium Bicarbonate</li> </ul>	Suitable as a Control or Calibrator for EIA Assays



## Parathyroid Hormone (PTH)

Parathyroid Hormone (PTH) is secreted by the parathyroid gland and plays an important role in bone remodeling. It also works together with Vitamin D to maintain healthy bones. PTH is secreted in response to low calcium levels as a 118 amino acid polypeptide that undergoes two successive cleavages to yield an 84 amino acid biologically active hormone. It has a very short half-life of less than five minutes and breaks down into various fragments of which the biological significance remains to be defined.

A PTH blood test is useful in the differential diagnosis of overactive parathyroid glands (hyperparathyroidism). Primary hyperparathyroidism is most often caused by a benign tumor in one or more of the parathyroid glands and patients with this condition have high PTH and calcium levels. Secondary hyperparathyroidism is often seen in patients with chronic renal failure (CRF). The kidneys fail to excrete sufficient phosphate, and the parathyroid gland secretes PTH in an effort to lower calcium levels to balance the calcium-phosphate ratio. Tertiary hyperparathyroidism occurs when CRF causes a severe imbalance in the calcium-phosphate ratio, leading to very high PTH production that results in hypercalcemia.

Current blood tests generally measure intact PTH by ELISA. Most assays use two antibodies in sequence, the first recognizing the N-terminal and the second the C-terminal.

### Reagents for Immunoassay Development

<b>E01306M</b>	<b>MAB to PTH (a.a. 1-34)</b> <ul style="list-style-type: none"><li>• Reacts with a.a. 1-34 of human PTH</li></ul>	Suitable for use in ELISA & RIA
<b>E24101M</b>	<b>MAB to PTH (a.a. 53-68)</b> <ul style="list-style-type: none"><li>• Specific for human PTH peptide a.a. 53-68</li><li>• Does not cross-react with Synthetic human PTH peptide (a.a. 1-10, a.a. 1-34 and a.a. 1-38)</li><li>• Lyophilized</li></ul>	Suitable for use in ELISA, IHC & Immunoluminetric
<b>E24150M</b>	<b>MAB to PTH (a.a. 53-84)</b> <ul style="list-style-type: none"><li>• Does not cross react with synthetic human PTH peptide (a.a. 1-10, a.a. 1-34 and a.a. 1-38)</li><li>• Produced in Cell Culture</li><li>• Lyophilized from 0.1 M Phosphate Buffered Saline, pH 7.4</li></ul>	Suitable for use in ELISA & IHC

# Pregnancy Associated Plasma Protein-A (PAPP-A)

Pregnancy associated plasma protein-A (PAPP-A) is as a glycoprotein found in the serum of pregnant women. It is produced by the placenta and circulates in the form of a heterotetramer complexed with eosinophil major basic protein (proMBP). Its main role in pregnancy is to prevent the recognition of the fetus by the maternal immune system. In non-pregnant individuals, PAPP-A can also be produced by several cell types and detected at much lower levels (and in the form of a homodimer). Studies have shown that it can also be used as a potential biomarker for plaque instability in cardiac disease.

In the first trimester of pregnancy, PAPP-A assays are used in conjunction with hCG or free beta hCG to screen for Down syndrome (Trisomy 21) and Edward's syndrome (Trisomy 18). A low PAPP-A level can also be associated with pregnancy complications such as fetal growth restriction, fetal demise, preterm birth, and pre-eclampsia in the third trimester. As a cardiac marker, high PAPP-A serum levels indicate a risk for acute coronary syndromes (unstable angina and acute myocardial infarction), as PAPP-A is expressed by unstable and ruptured coronary artery plaques, but not stable plaques.

Serum PAPP-A assays are based the two site sandwich immunoassay principles. For developing PAPP-A pregnancy diagnostics, antibodies that detect the heterotrimeric form (htPAPP-A/proMBP complex) must be used whereas antibodies that detect the homodimeric subunit dPAPP-A should be used for cardiac assays.

## Reagents for Immunoassay Development

PAIR	<b>E86101M</b>	<b>MAB to PAPP-A</b> <ul style="list-style-type: none"> <li>Recognizes human PAPP-A subunit of htPAPP-A</li> <li>Can detect htPAPP-A in sandwich immunoassay when paired with Catalog# E86114M</li> <li>Capture Antibody</li> </ul>	Suitable for use in ELISA
	<b>E86114M</b>	<b>MAB to PAPP-A (proMBP)</b> <ul style="list-style-type: none"> <li>Detection Antibody</li> </ul>	
PAIR	<b>E86141M</b>	<b>MAB to PAPP-A</b> <ul style="list-style-type: none"> <li>Recognizes human PAPP-A subunit of htPAPP-A</li> <li>Can detect htPAPP-A and dPAPP-a in sandwich immunoassay when paired with Catalog #E86901M</li> <li>Capture antibody</li> </ul>	
	<b>E86910M</b>	<b>MAB to PAPP-A</b> <ul style="list-style-type: none"> <li>Recognizes human PAPP-A subunit of htPAPP-A</li> <li>Detection antibody</li> </ul>	
	<b>A86864H</b>	<b>PAPP-A Native Antigen</b> <ul style="list-style-type: none"> <li>Represents a heterotetrameric complex consisting of PAPP-A and pro-MBP subunits</li> <li>Sourced from pooled human retroplacental blood</li> <li>Lyophilized from 10 mM Tris-HCl, 0.15 M Sodium Chloride, pH 7.5</li> </ul>	



## Progesterone (P4)

Progesterone (P4) belongs to a group of steroid hormones called the progestogens and it is the major progestogen in the body. Its main role is to maintain pregnancy and to regulate the female's menstrual cycle. Its levels increase sharply during the luteal phase of the menstrual cycle as it works to thicken the lining of the uterus to prepare it for a fertilized egg each month.

In the event that an egg does implant, progesterone's function is to maintain the uterine lining throughout the pregnancy and the levels increase from 9 to 32 weeks. If no fertilized egg implants, progesterone levels drop and menstruation begins. Progesterone is also necessary for breast development and breastfeeding and complements some effects of estrogen. In men it works with testosterone to help in sperm development.

Progesterone diagnostic assays are useful to help determine the cause of infertility, track ovulation, help diagnose an ectopic or failing pregnancy, monitor the health of a pregnancy, monitor progesterone replacement therapy, and help diagnose the cause of abnormal uterine bleeding.

A related progestogen steroid hormone is 17-Hydroxyprogesterone (17-OH P) which is synthesized from progesterone and 17-Hydroxypregnenolone. It functions as a precursor of cortisol in the adrenal glands or can be converted into androgenic and estrogenic hormones. Measurement of 17-OH P is used as an aid in the diagnosis and treatment of various disorders of the adrenal glands or the ovaries. It is also part of newborn screening in many countries used to detect congenital adrenal hyperplasia (CAH). Progesterone assays are usually quantitative and based on the competitive immunoassay format.

### Reagents for Immunoassay Development

<b>E82321M</b>	<b>MAB to Progesterone</b> Cross-reactivity: 1 µg cortisol = 5 ng      500 ng estriol < 5 ng 10 ng estradiol < 5 ng      20 ng testosterone < 5 ng
<b>E86222M</b>	<b>MAB to Progesterone</b> <ul style="list-style-type: none"><li>• Cross-reactive with 17-Hydroxyprogesterone (10%) and Deoxycorticosterone (1%)</li></ul>
<b>E86702M</b>	<b>MAB to Progesterone</b> <ul style="list-style-type: none"><li>• Cross-reactive with 17-Hydroxyprogesterone (1%) and Deoxycorticosterone (1%), 11-Hydroxyprogesterone (25%), Deoxycortisol (0.03%), 5-alpha-pregnane-3,20 dione (10.5%), Cortisol (0.002%), Corticosterone (0.01%)</li></ul>
<b>E86020M</b>	<b>MAB to 17-alpha-Hydroxyprogesterone</b> <ul style="list-style-type: none"><li>• Reacts with 17-alpha-hydroxyprogesterone-BSA conjugate and free 17-alpha-hydroxyprogesterone</li><li>• No cross-reactivity with BSA</li><li>• Cross-reactivity with Progesterone (7%) and Deoxycorticosterone (3%)</li></ul>
<b>A82606P</b>	<b>Progesterone 3-HRP Conjugate</b> <ul style="list-style-type: none"><li>• Progesterone antigen linked at the 3 position with HRP</li><li>• MW ~ 45 kDa</li><li>• Buffer: Tris, pH 7.6 containing protein stabilizers and 0.005% Thimerosal</li></ul>

Suitable for use in competitive ELISA



## Prolactin (PRL)

Prolactin (PRL) is a protein that is best known for its role in initiating and maintaining lactation in mammals. It is secreted by the anterior pituitary gland and controlled by the hypothalamus.

High levels of prolactin are normal during pregnancy and postpartum during breastfeeding, however consistently elevated levels (>30 ng/mL) in the absence of a pregnancy are indicative of hyperprolactinemia, the most common hypothalamic-pituitary disorder encountered in clinical endocrinology. Hyperprolactinemia caused by prolactin-secreting pituitary adenoma, primary hypothyroidism, renal insufficiency, polycystic ovarian disease, and ectopic tumors. It often results in galactorrhea (unexplained flow of breast milk), amenorrhea, and infertility in females, and in impotence and hypogonadism in males. Certain medications and some common stressors can also raise prolactin levels.

The biologically active form of prolactin is the 23-kDa monomeric polypeptide secreted by the pituitary gland; however, circulating prolactin exists in a number of additional forms. Big prolactin (60 kDa) and macroprolactin (150 kDa), which are present in serum in varying quantities, can cause apparent hyperprolactinemia, but they have no clinical importance because they exhibit little biological activity. Several studies have shown that prolactin two-site sandwich immunoassays are susceptible to interference from macroprolactin. Current best practice recommends that all sera with increased total prolactin concentrations be subfractionated by PEG precipitation to measure the bioactive monomeric prolactin concentration, a more clinically meaningful variable.

### Reagents for Immunoassay Development

PAIR	<b>MAF10-111</b>	<b>MAb to Prolactin</b> <ul style="list-style-type: none"><li>• Cross-reactivity: hGH (&lt;0.1%)</li><li>• Capture Antibody</li></ul>
	<b>MAF10-145</b>	<b>MAb to Prolactin</b> <ul style="list-style-type: none"><li>• Detection Antibody</li></ul>
PAIR	<b>E20122M</b>	<b>MAb to Human Prolactin</b> <ul style="list-style-type: none"><li>• Cross-reactivity: hCG-b, hCG, hLH, hFSH is (&lt;1%) &amp; Prolactin (100%)</li><li>• Capture or Detection Antibody</li></ul>
	<b>E20630M</b>	<b>MAb to Human Prolactin</b> <ul style="list-style-type: none"><li>• MW 23 kD</li><li>• Capture or Detection Antibody</li></ul>
	<b>A01274H</b>	<b>Human Prolactin, Recombinant</b> <ul style="list-style-type: none"><li>• Lyophilized</li></ul>

Suitable for use in ELISA



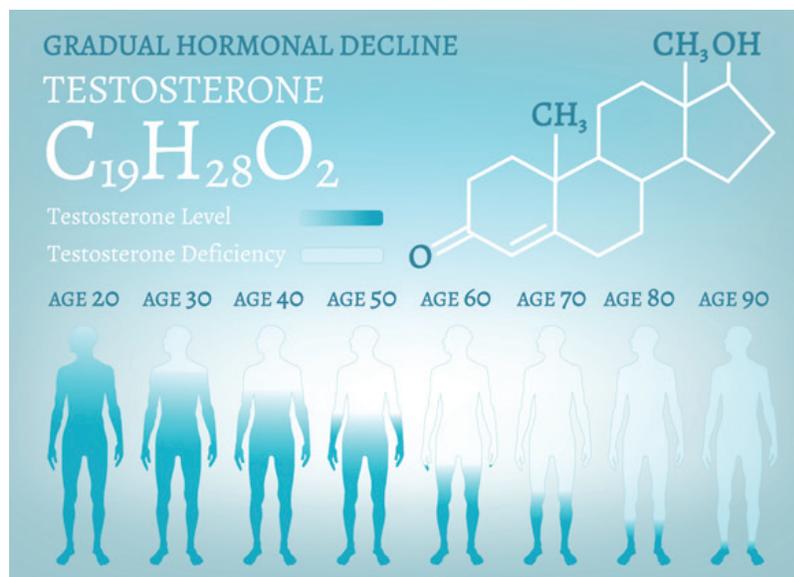
## Testosterone

Testosterone is the primary male sex hormone and an anabolic steroid. In male humans, it is secreted by the testes and it plays a key role in the development of male reproductive tissues, as well as promoting secondary sexual characteristics such as increased muscle and bone mass, and the growth of body hair.

In addition, testosterone is involved in health and well-being, and the prevention of osteoporosis. Testosterone is also important in women and it is produced by the ovaries and the adrenal glands. It is best known for its role in promoting a woman's sex drive or libido however, it is also important for bone strength and the development of lean muscle mass.

In males, a testosterone assay is used to detect hypogonadism, testicular failure, infertility, hypopituitarism and hyperprolactinemia. In females, it can be used to diagnose polycystic ovary syndrome, adrenal hyperplasia, infertility, hirsutism, amenorrhea, obesity and virilization. Typically, a test for total testosterone is used – this test measures testosterone that is bound to proteins in the blood (e.g., albumin and sex-hormone binding globulin [SHBG]) as well as testosterone that is not bound (free testosterone). About two-thirds of testosterone circulates in the blood bound to SHBG and slightly less than one-third bound to albumin. A small percent (less than 4%) circulates as free testosterone. Free testosterone plus the testosterone bound to albumin is the bioavailable testosterone, which can act on target tissues.

In many cases, the total testosterone test provides adequate information. However, in certain cases, for example when the level of SHBG is abnormal, a test for free or bioavailable testosterone may be performed as it may more accurately reflect the presence of a medical condition. Testosterone immunoassays are usually MAb-based competitive ELISAs.



## Reagents for Immunoassay Development

- E30412M** | **MAB to Testosterone**  
Cross-reactivity: Testosterone (100%), 11-beta-Hydroxy testosterone (3.3%), 17-alpha-Methyl Testosterone (<0.1%), 5-alpha DHT (0.8%), Estradiol (<0.1%), Progesterone (<0.1%)
- E82721M** | **MAB to Testosterone**
- Cross-reactive at D50 with 5-Androsten-3beta-ol-17-one (0.6%), 5-alpha-Androst-1-ene-3, 17-dione (0.5%), Androsterone (3.6%), 5-alpha-Dihydroxytestosterone (10%), Corticosterone (<0.7%), DHEA (1.2%)
  - Less than 0.1% cross-reactivity to 4-cholesten-3-one, 5-cholesten-3-beta-ol., Cholesterol, Cortisone, Deoxycorticosterone, Dexamethasone, 16-epiestriol, 17-alpha estradiol, 17-beta-estradiol, Estrone, Isoandrosterone, 5-alpha-pregnandione, Prednisolone, Prednisone, 17-alpha-OH-progesterone, 20-alpha-OH progesterone, 21-OH-progesterone, Progesterone, Reichstein's substance
- E86902M** | **MAB to Testosterone**
- Cross-reactivity with 11-beta-Hydroxy testosterone (3.3%), 17-alpha-Methyl Testosterone (<0.1%), 5-alpha DHT (0.8%), Estradiol (<0.1%), Progesterone (<0.1%)
- E45703M** | **MAB to Testosterone**
- Cross-reactive with 5-alpha-Dihydrotestosterone (6.6%)
- A01312B** | **Testosterone Synthetic Antigen, BSA Conjugated**
- Testosterone-3-BSA Conjugate
  - Labeling Ratio: 15:1
  - Concentration 10.0 mg/mL
  - Buffer: 10 mM Phosphate, pH 7.0 with 0.05% Sodium Azide
- Y82230P** | **Testosterone Synthetic Antigen, HRP Conjugated**
- Testosterone-3-HRP Conjugate
  - Buffer: 0.05 M Tris, pH 7.0 containing protein stabilizers (0.005% Thimerosal)

Suitable for use in  
Competitive ELISA



## Thyroglobulin (Tg)

Thyroglobulin (Tg) is a dimeric protein produced by the follicular cells of the thyroid and accounts for approximately half of the protein content of the thyroid gland. It is the precursor for the thyroid hormones T3 and T4 and each Tg molecule forms approximately 10 thyroid hormone molecules.

The major clinical use of a Tg diagnostic test is to monitor patients with well-differentiated thyroid cancers (particularly papillary or follicular thyroid cancer). The measurement of thyroglobulin, after thyroidectomy and ablation of the thyroid gland, is useful to determine metastasis. Tg assays can also be used to detect deficient Tg synthesis in infants with goitrous hypothyroidism, which is a preventable cause of mental retardation.

Tg serum levels are measured by two-site sandwich immunoassays. However, quantitative Tg serum assays are prone to interference from endogenous circulating autoantibodies (anti-Tg) and can cause inappropriately low Tg results in about 20% to 30% of patients. In suspected cases of interference, a confirmatory test detecting the presence of anti-Tg should be carried out.

### Reagents for Immunoassay Development

PAIR	<b>E01326M</b>	<b>MAb to Thyroglobulin</b> <ul style="list-style-type: none"><li>• Specifically recognizes human thyroglobulin</li><li>• Cross-reacts with bovine thyroglobulin.</li><li>• Does not interfere with anti-thyroglobulin autoantibodies</li><li>• Capture Antibody</li></ul>
	<b>E01325M</b>	<b>MAb to Thyroglobulin</b> <ul style="list-style-type: none"><li>• Specifically recognizes human thyroglobulin.</li><li>• Does not interfere with anti-thyroglobulin autoantibodies</li><li>• Detection Antibody</li></ul>
	<b>A86852H</b>	<b>Thyroglobulin Native Antigen</b> <ul style="list-style-type: none"><li>• Purified from human thyroid extract</li><li>• &gt;90% pure (SDS-PAGE)</li><li>• Lyophilized from 25 mM Tris-HCl, pH 8.0</li></ul>
	<b>H6T08-275</b>	<b>Thyroglobulin Native Antigen</b> <ul style="list-style-type: none"><li>• Purified from human thyroid extract</li><li>• Molecular weight 660 kDa (sub-unit Tg may be observed at 330 kDa)</li><li>• &gt;98% pure (SDS-PAGE)</li><li>• Lyophilized from 20 mM Ammonium Bicarbonate and may contain trace amounts of buffer salts</li></ul>

Suitable for use in ELISA



# Thyroid Peroxidase (TPO)

Thyroid Peroxidase, also known as Thyroperoxidase (TPO), is an enzyme involved in thyroid hormone synthesis, catalyzing the oxidation of iodide on tyrosine residues in thyroglobulin for the synthesis of triiodothyronine (T3) and thyroxine (T4). It is one of the most important thyroid gland antigens and along with thyroglobulin (Tg), it is targeted by the immune system in several autoimmune thyroid diseases.

Anti-TPO assays are useful in differentiating thyroid autoimmune disorders from non-autoimmune goiter or hypothyroidism. Anti-TPO antibodies are detectable in most autoimmune disorders including Hashimoto thyroiditis and Grave's disease and may also be found in patients with non-thyroid autoimmune diseases such as pernicious anemia, type I diabetes, or other disorders that activate the immune system. Many clinical endocrinologists use the TPO antibody test as a diagnostic tool in deciding whether to treat a patient with subclinical hypothyroidism, as the presence of TPO antibodies is associated with an increased risk of developing overt hypothyroidism.

## Reagents for Immunoassay Development

PAIR	<b>E01310M</b>	<b>MAB to TPO</b> <ul style="list-style-type: none"><li>Recognizes native and recombinant TPO</li><li>Also suitable for WB</li><li>Capture Antibody</li></ul>	
	<b>E01311M</b>	<b>MAB to TPO</b> <ul style="list-style-type: none"><li>Recognizes native and recombinant TPO</li><li>Also suitable for WB</li><li>Alternative Capture Antibody</li></ul>	
	<b>E01309M</b>	<b>MAB to TPO</b> <ul style="list-style-type: none"><li>Recognizes native and recombinant TPO</li><li>Detection Antibody</li></ul>	
	<b>H6T09-212</b>	<b>TPO Recombinant Antigen</b> <ul style="list-style-type: none"><li>Produced in Sf9 cells</li><li>&gt;96% pure (SDS-PAGE)</li><li>Buffer: 40 mM Tris-HCl, pH 7.6 containing 144 mM Sodium Chloride, 0.08 mM Potassium Iodide and 20% Glycerol</li></ul>	Suitable for use in ELISA & WB
	<b>A01309H</b>	<b>TPO Recombinant Antigen</b> <ul style="list-style-type: none"><li>Represents the soluble extracellular domain of human TPO (a.a. 19-846)</li><li>Produced in insect cells</li><li>&gt;95% pure (SDS-PAGE)</li><li>Lyophilized (from 20 mM Tris-HCl, pH 8.0 containing 250 mM Sodium Chloride, 0.1 mM Potassium Iodide and 5% D-Mannitol)</li></ul>	



# Thyroid-stimulating hormone (TSH)

Thyroid-stimulating hormone (TSH) is a pituitary hormone that regulates thyroid function in conjunction with thyrotropin releasing hormone (TRH). Specifically, TSH induces production of Thyroxine (T4) which is converted triiodothyronine (T3) and is responsible for stimulating the metabolism. TSH is secreted throughout life but reaches high levels during the periods of rapid growth and development, as well as in response to stress.

The release of TSH from the pituitary is regulated by the concentration of T3 and T4 in the blood. When T3 and T4 concentrations are low, the production of TSH is increased, and, conversely, when T3 and T4 concentrations are high, TSH production is decreased. Any imbalance in this negative feedback loop can be the indication of a thyroid disease, such as hyperthyroidism or hypothyroidism. The most common cause of hypo- and hyperthyroidism is autoimmune disease. In Hashimoto's disease, the immune system attacks the thyroid and causes hypothyroidism. Conversely, Grave's disease causes an overactive thyroid leading to hyperthyroidism.

TSH serum measurements are used as a first line screening assay for hypo- and hyperthyroidism. The capability of a TSH assay to distinguish between normal and subnormal concentrations is critical for this thyroid testing strategy. Quantification of TSH at a lower value of 0.01 mIU/L yields information that is useful to clinicians referring patients with subnormal TSH concentrations.



## Reagents for Immunoassay Development

PAIR	<b>E01317S</b>	<b>MAb to TSH beta</b> <ul style="list-style-type: none"> <li>• Specific for the TSH beta subunit</li> <li>• Produced in cell culture (original host animal was sheep)</li> <li>• Capture antibody</li> </ul>	Suitable for use in ELISA, WB & IHC
	<b>E01318S</b>	<b>MAb to TSH beta</b> <ul style="list-style-type: none"> <li>• Specific for the TSH beta subunit</li> <li>• Produced in cell culture (original host animal was sheep)</li> <li>• Detection Antibody</li> </ul>	
	<b>MAT04-003</b>	<b>MAb to TSH</b> <ul style="list-style-type: none"> <li>• Specific to intact TSH. Reacts with TSH through the alpha subunit/hinge region</li> <li>• Does not react with free beta subunit</li> <li>• Has limited reactivity to free alpha subunit</li> </ul>	Suitable for use in ELISA
	<b>MAT04-410</b>	<b>MAb to TSH</b> <ul style="list-style-type: none"> <li>• Cross-reactivity: FSH (0.7%), LH (0.5%), TSH alpha (1.5%)</li> </ul>	
	<b>D92409G</b>	<b>PAb to Human TSH beta</b> <ul style="list-style-type: none"> <li>• &lt;0.1% cross-reactivity with alpha hCG, LH, FSH, growth hormone, and prolactin</li> <li>• Produced in Goat</li> </ul>	
	<b>A75510H</b>	<b>TSH Native Antigen</b> <ul style="list-style-type: none"> <li>• Produced from human pituitary glands</li> <li>• &gt;95% pure (SDS-PAGE)</li> <li>• Contaminants: FSH (&lt; 0.02%), LH (&lt;0.05%), hGH (&lt;0.05%), Prolactin (&lt;0.05%)</li> <li>• Lyophilized from 50 mM Ammonium Bicarbonate</li> </ul>	

## Thyroxine-binding globulin (TBG)

Thyroxine-binding globulin (TBG) is a high-affinity serum binding protein for the thyroid hormones thyroxine (T4) and triiodothyronine (T3) and is one of three transport proteins (along with transthyretin and serum albumin) responsible for circulating these proteins in the bloodstream. Because TBG accounts for 76% of plasma protein thyroxine-binding activity, an increase or decrease in its circulating level alters the total concentrations of T4 and T3 in the blood, leading to potential confusion with true thyroid gland dysfunction.

TBG deficiency is a nonharmful condition that can either be acquired or genetically inherited. The only known complications associated with TBG are those that could result from erroneously administered treatment if TBG deficiency is misdiagnosed as another disorder.

Elevated TBG levels are associated with influences such as pregnancy, genetic predisposition, oral contraceptives, and estrogen therapy. TBG levels can decrease with androgenic or anabolic steroids, large doses of glucocorticoids, hypoproteinemic states, liver disease, nephrotic syndrome, and congenital TBG variants.

Measurement of TBG is useful in distinguishing quantitative TBG derangements from thyroid dysfunction. TBG assays are typically quantitative sandwich ELISAs.

### Reagents for Immunoassay Development

- |                  |                                                                                                                                                                        |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MAT03-439</b> | <b>MAb to TBG</b> <ul style="list-style-type: none"><li>• Affinity Constant: <math>1 \times 10^{10}</math></li></ul>                                                   |
| <b>MAT03-612</b> | <b>MAb to TBG</b> <ul style="list-style-type: none"><li>• &gt;90% pure (SDS-PAGE)</li></ul>                                                                            |
| <b>H6T03-275</b> | <b>Human TBG Antigen</b> <ul style="list-style-type: none"><li>• &gt;95% pure (SDS-PAGE)</li><li>• Buffer: 10 mM Phosphate Buffered Saline, pH 7.4 MW 60 kDa</li></ul> |

Suitable for use in ELISA



## Triiodothyronine (T3) And Thyroxine (T4)

Triiodothyronine (T3) and Thyroxine (T4) are hormones produced by the thyroid and are primarily responsible for regulating metabolism. They predominately circulate bound to a carrier protein (e.g. thyroid-binding globulin, prealbumin, and albumin), rendering them biologically inactive.

T4 is the major form of the hormone and is converted into active T3 by deiodinases (5'-deiodinase). Although circulating levels of T4 are much greater than T3 levels, 99% of T4 remains bound and inactive. Overall, T3 possess more biological activity than T4 (3-4 times more) and its effect are briefer due to its shorter half-life compared to T4.

T3 and T4 diagnostic assays complement the TSH assay, and are used to confirm a thyroid disorder or to monitor the effectiveness of treatment. Blood tests can measure total T4, free T4, total T3, or free T3. The total hormone concentration is dependent on the concentration of thyroid transport proteins, therefore any conditions that affect levels of thyroid binding proteins will affect the total (but not the free) T4 hormone levels. For example, estrogens and acute liver disease will increase thyroid binding, while androgens, steroids, chronic liver disease and severe illness can decrease it.

Overall, T3 levels are thought to be a more sensitive indicator of hyperthyroidism than total T4 and it is useful in monitoring both patients under treatment for hyperthyroidism, and in patients who have discontinued anti-thyroid drug therapy. It is especially valuable in distinguishing between euthyroid and hyperthyroid subjects. T3 levels are elevated in women who are pregnant, and in women receiving oral contraceptives or estrogen treatment. Total and free T3 and T4 serum levels are measured using competitive quantitative immunoassays.

### Reagents for Immunoassay Development

- |                  |                                                                                                                                                                                         |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>E86207M</b>   | <b>MAB to Triiodothyronine (T3)</b> <ul style="list-style-type: none"><li>• Reacts with both conjugate T3-BSA and free T3</li><li>• Cross-reactivity with Thyroxine is (0.1%)</li></ul> |
| <b>MAT01-121</b> | <b>MAB to Triiodothyronine (T3)</b> <ul style="list-style-type: none"><li>• Cross-reactivity: T4 (&lt;0.28%)</li></ul>                                                                  |
| <b>MAT01-237</b> | <b>MAB to Triiodothyronine (T3)</b> <ul style="list-style-type: none"><li>• Cross-reactivity: Triiodothyroacetic Acid (&lt;11%) Tetraiodothyroacetic Acid (&lt;0.30%)</li></ul>         |
| <b>MKT02-007</b> | <b>MAB to Thyroxine (T4)</b> <ul style="list-style-type: none"><li>• Cross-reactivity: T3 (&lt;1%), T2 (&lt;1%), rT3 (&lt;1%)</li></ul>                                                 |
| <b>MAT02-525</b> | <b>MAB to Thyroxine (T4)</b> <ul style="list-style-type: none"><li>• Cross-reactivity: T3 (1.0%), rT3 (1.4%)</li></ul>                                                                  |

Suitable for use in  
Competitive ELISA



# Next Generation Sequencing (NGS)

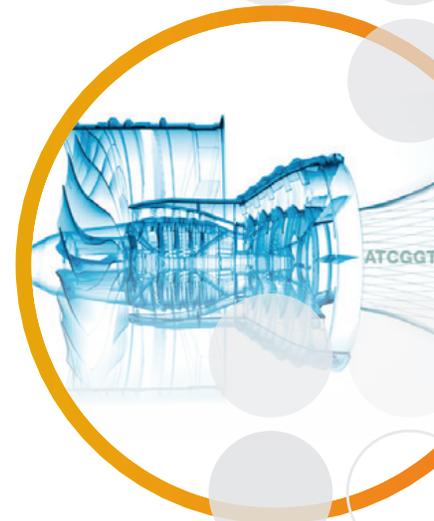
New DNA sequencing technology has become an important part of diagnosing endocrine disorders and fertility treatments. Instead of analyzing only one or two genes at a time, it is now possible to evaluate an entire range of disease-causing variants known within a single test.

In endocrinology, targeted next generation sequencing (NGS) now complements immunoassay testing and imaging studies. Identifying an exact genetic etiology improves the understanding of the disease, provides a clear explanation to families about the cause and guides decisions about screening, prevention and/or treatment. In addition, NGS has become a pre-implantation genetic testing technique used on embryos before implantation, as it can screen all 24 chromosomes for genetic abnormalities that can result in miscarriages or birth defects.

NGS is a term used to describe a DNA sequencing technology which has revolutionized genomic research and diagnostic testing. There are a number of different NGS platforms and different sequencing technologies that enable the entire human genome to be sequenced within a single day. Overall the benefits of NGS include:

- Sequencing of millions of DNA fragments simultaneously, allowing faster diagnosis.
- Analysis of both mitochondrial and chromosomal abnormalities at the same time (this is not possible with traditional methods).
- The evaluation of genetic conditions more completely, faster and at a lower cost

The success of NGS is dependent upon the precise and accurate processing of the input DNA. This requires high-quality library preparation, using a coordinated series of standard molecular biology reactions, whilst maintaining high yields during the intermediate purification steps.



# Next Generation Sequencing (NGS) continued

## NGS LIBRARY PREPARATION SOLUTIONS

Meridian JetSeq™ NGS Kits are designed to generate high-quality NGS libraries, even with limited amounts of starting material. The technology combines end-repair and A-tailing in one unique step, reducing the preparation time and minimizing variability caused by additional handling. The kits are suitable for sequencing on Illumina MiniSeq™, MiSeq™, NextSeq™ or HiSeq™ instruments.

**JetSeq Flex DNA Library Preparation Kit:** Ideal for conventional PCR amplified library preparations (targeted sequencing or whole genome sequencing)

- **Cat# BIO-68027 (96 reactions)**

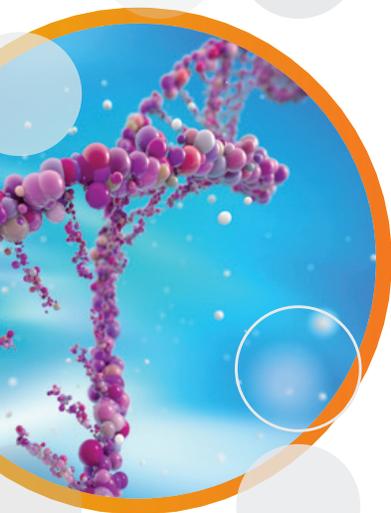
Contains all of the enzymes and buffers necessary for end-repair, A-tailing, ligation and PCR amplification in convenient master mix formulations. It offers a fast, streamlined workflow and flexibility where users are free to use adapters of their choice. JetSeq Flex also includes the polymerase and buffer components required for PCR amplification of the library prior to sequencing. JetSeq Flex is optimized for use with sequence adapters compatible with Illumina® instruments, allowing indexing of up to 96 samples.

**JetSeq ER and Ligation Kit:** Suitable for whole exome sequencing utilizing hybridization capture-based methods (PCR-free)

- **Cat# BIO-68026 (96 reactions)**

Contains all of the enzymes and buffers necessary for end-repair, A-tailing and ligation in convenient master mix formulations. It offers a fast, streamlined workflow and flexibility where users are free to use adapters of their choice.

Bringing high sensitivity, speed and efficiency to next generation sequencing (NGS).



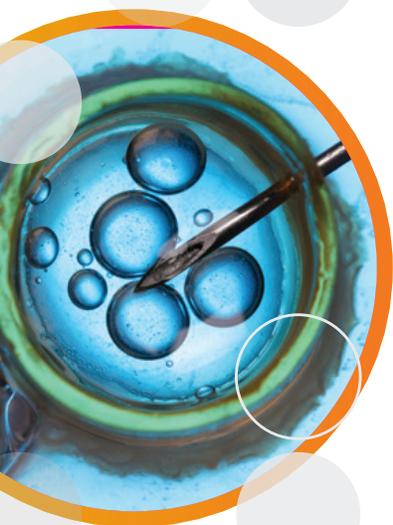
# Full product list

Specificity	Catalog #	Type	Host	Format	Isotype
<b>Adrenocorticotrophic hormone (ACTH)</b>					
ACTH C-Terminal	E54056M	MAb	Mouse	Purified	IgG1
ACTH N-Terminal	E54057M	MAb	Mouse	Purified	IgG1
<b>Aldosterone</b>					
Aldosterone	E30451M	MAb	Mouse	Purified	IgG1,l
Aldosterone	E01293R	PAb	Rabbit	Purified	N/A
<b>Anti Mullerian hormone (AMH)</b>					
AMH	E01347M	MAb	Mouse	Purified	IgG2a
AMH	E01348M	MAb	Mouse	Purified	IgG1
AMH	E01350M	MAb	Mouse	Purified	IgG2a
AMH	E01352M	MAb	Mouse	Purified	IgG1
AMH	E01353M	MAb	Mouse	Purified	IgG2b
AMH	E01354M	MAb	Mouse	Purified	IgG3
AMH	E01355M	MAb	Mouse	Purified	IgG3
AMH Recombinant	R01712	Ag	<i>E. coli</i>	Purified	N/A
AMH Recombinant	R01713	Ag	<i>E. coli</i>	Purified	N/A
<b>C-peptide</b>					
C-peptide	D24150R	PAb	Rabbit	Neat	N/A
C-peptide	E01336M	MAb	Mouse	Purified	IgG1,k
C-peptide (Proinsulin)	E86588M	MAb	Mouse	Purified	IgG1,k
C-Peptide (Proinsulin)	E86710M	MAb	Mouse	Purified	IgG1,k
C-peptide	MHP18-601	MAb	Mouse	Purified	IgG1
C-peptide	MHP18-6014	MAb	Mouse	Biotin	IgG1
C-peptide	MHP18-601CC	MAb	Mouse	Purified	IgG1
<b>Calcitonin</b>					
Calcitonin	E01356M	MAb	Mouse	Purified	IgG1
Calcitonin	E01357M	MAb	Mouse	Purified	IgG1
<b>Cortisol</b>					
Cortisol	A82601P	Ag	Synthetic	HRP	N/A
Cortisol	E01332M	MAb	Mouse	Purified	IgG2a
Cortisol	E45384M	MAb	Mouse	Purified	IgG2b
Cortisol	E82294M	MAb	Mouse	Purified	IgG
Cortisol	E86232M	MAb	Mouse	Purified	IgG3
Cortisol	E86322M	MAb	Mouse	Purified	IgG1
Cortisol	MAS01-501	MAb	Mouse	Purified	IgG1,k
<b>Dehydroepiandrosterone (DHEA)</b>					
DHEA	E01236M	MAb	Mouse	Purified	IgG2b
<b>Estradiol</b>					
Estradiol	A82604P	Ag	N/A	HRP	N/A
Estradiol	E01351M	MAb	Rat	Purified	IgG2a
Estradiol	MAS04-267	MAb	Mouse	Purified	IgG2a,k
Estradiol (E2)	E01358M	MAb	Mouse	Purified	IgG1
Estradiol (E2)	E01359M	MAb	Mouse	Purified	IgG1
Estradiol-17 beta	E86022M	MAb	Mouse	Purified	IgG1
Estradiol-17 beta-6	P01317R	PAb	Rabbit	Neat	N/A
<b>Estriol (E3)</b>					
Estriol	E01360M	MAb	Mouse	Purified	IgG1
Estriol	E82353M	MAb	Mouse	Purified	IgG
Estriol	E82910M	MAb	Mouse	Purified	IgG
Estriol-6	A82605P	Ag	N/A	HRP	N/A



## Full product list continued

Specificity	Catalog #	Type	Host	Format	Isotype
<b>Follicle-stimulating hormone (FSH)</b>					
Follicle-stimulating hormone (FSH) >98% Pure	A01283H	Ag	Human Urine	Purified	N/A
Follicle-stimulating hormone (FSH), beta	E45709M	MAB	Mouse	Purified	IgG1
Follicle-stimulating hormone (FSH-b), beta	E86123M	MAB	Mouse	Purified	IgG
Follicle-stimulating hormone (FSH) intact, C1 Epitope	E87701M	MAB	Mouse	Purified	IgG1
Follicle-stimulating hormone (FSH) >98% Pure	H6F02-323	Ag	Human Pituitary	Purified	N/A
Follicle-stimulating hormone (FSH)	MAF02-145	MAB	Mouse	Purified	IgG1,k
Follicle-stimulating hormone (FSH)	MAF02-155	MAB	Mouse	Purified	IgG1,k
Follicle-stimulating hormone (FSH)	MAF02-243	MAB	Mouse	Purified	IgG1,k
Follicle-stimulating hormone (FSH)	MAF02-264	MAB	Mouse	Purified	IgG2a,k
Follicle-stimulating hormone (FSH)	MAF02-275	MAB	Mouse	Purified	IgG
Follicle-stimulating hormone (FSH)	MCF02-011	MAB	Mouse	Purified	IgG1,k
Follicle-stimulating hormone (FSH)	R01716	Ag	CHO Cells	Purified	N/A
<b>Glucagon</b>					
Glucagon (N-Terminal)	D01234G	MAB	Goat	Purified	N/A
Glucagon-Like Peptide 1 (GLP1)	D24460R	MAB	Culture	Purified	IgG1
<b>Human Chorionic Gonadotropin (hCG)</b>					
Human Chorionic Gonadotropin (hCG-b) beta ≥98% Pure	A01278H	Ag	Human Pregnancy Urine	Purified	N/A
Human Chorionic Gonadotropin (hCG-a) alpha ≥98% Pure	A01280H	Ag	Human Pregnancy Urine	Purified	N/A
Human Chorionic Gonadotropin (hCG) >65% Pure	A01282H	Ag	Human Pregnancy Urine	Purified	N/A
Human Chorionic Gonadotropin (hCG) USP Grade	A01322H	Ag	Human Pregnancy Urine	Purified	N/A
Human Chorionic Gonadotropin (hCG-b) beta ≥98% Pure	A01376H	Ag	Human Urine	Purified	N/A
Human Chorionic Gonadotropin (hCG-a) alpha ≥95% Pure	A01377H	Ag	Human Urine	Purified	N/A
Human Chorionic Gonadotropin (hCG) ≥95% Pure	A01378H	Ag	Human Urine	Purified	N/A
Human Chorionic Gonadotropin (hCG) intact	D01241G	Pab	Goat	Aff.Pur.	N/A
Human Chorionic Gonadotropin (hCG-a) alpha	D92301G	Pab	Goat	Aff.Pur.	N/A
Human Chorionic Gonadotropin (hCG) Free beta	E01321M	MAB	Mouse	Purified	IgG1
Human Chorionic Gonadotropin (hCG) Free beta	E01323M	MAB	Mouse	Purified	IgG1
Human Chorionic Gonadotropin (hCG-b) beta	E01324M	MAB	Mouse	Purified	IgG1
Human Chorionic Gonadotropin (hCG-b) beta	E31586M	MAB	Mouse	Purified	IgG
Human Chorionic Gonadotropin (hCG) alpha	E86051M	MAB	Mouse	Purified	IgG
Human Chorionic Gonadotropin (hCG-a) alpha	E86082M	MAB	Mouse	Purified	IgG2b
Human Chorionic Gonadotropin (hCG-b) beta	E86308M	MAB	Mouse	Purified	IgG2a
Human Chorionic Gonadotropin (hCG-b) beta	E86820M	MAB	Mouse	Purified	IgG1
Human Chorionic Gonadotropin (hCG-a) alpha	E92102M	MAB	Mouse	Purified	IgG1
Human Chorionic Gonadotropin (hCG-b) beta	MAF05-019	MAB	Mouse	Purified	IgG1,k
Human Chorionic Gonadotropin (hCG-b) beta	MAF05-020	MAB	Mouse	Purified	IgG1,K
Human Chorionic Gonadotropin (hCG-b) beta	MAF05-023	MAB	Mouse	Purified	IgG1,k
Human Chorionic Gonadotropin (hCG-b) beta	MAF05-025	MAB	Mouse	Purified	IgG1,k
Human Chorionic Gonadotropin (hCG-b) beta	MAF05-043	MAB	Mouse	Purified	IgG1,k
Human Chorionic Gonadotropin (hCG) beta	MAF05-627	MAB	Mouse	Purified	IgG1,k
Human Chorionic Gonadotropin (hCG) beta	MKF05-148	MAB	Mouse	Purified	IgG



Specificity	Catalog #	Type	Host	Format	Isotype
<b>Human growth hormone (hGH)</b>					
Human growth hormone (hGH)	MAF06-154	MAb	Mouse	Purified	IgG1,k
Human growth hormone (hGH)	MAF06-210	MAb	Mouse	Purified	IgG1,k
Human growth hormone (hGH)	MAF06-212	MAb	Mouse	Purified	IgG1,k
Human growth hormone (hGH)	MAF06-610	MAb	Mouse	Purified	IgG1,k
Human growth hormone (hGH)	MCF06-610	MAb	Mouse	Purified	IgG1,k
Human growth hormone (hGH)	E45600M	MAb	Mouse	Purified	IgG1
Human growth hormone (hGH)	E86090M	MAb	Mouse	Purified	IgG1
Human growth hormone (hGH) ≥70% Pure	A75714H	Ag	Human Pituitary	Purified	N/A
Human growth hormone (hGH), Recombinant	A01307H	Ag	<i>E. coli</i>	Purified	N/A
<b>Luteinizing hormone (LH)</b>					
Luteinizing hormone (LH), Bovine	D01237R	PAb	Rabbit	Neat	N/A
Luteinizing hormone (LH)	D10295G	PAb	Goat	Neat	N/A
Luteinizing hormone (LH)	MAF07-036	MAb	Mouse	Purified	IgG2a,k
Luteinizing hormone (LH)	MAF07-037	MAb	Mouse	Purified	IgG1,k
Luteinizing hormone (LH)	MAF07-226	MAb	Mouse	Purified	IgG1,k
Luteinizing hormone (LH)	MAF07-412	MAb	Mouse	Purified	IgG1,k
Luteinizing hormone (LH) - beta	E92120M	MAb	Mouse	Purified	IgG1
Luteinizing hormone (LH) - beta	E92402M	MAb	Mouse	Purified	IgG1
Luteinizing hormone (LH) - beta	E86124M	MAb	Mouse	Purified	IgG
Luteinizing hormone (LH) ≥98% Pure	A01687H		Human	Purified	N/A
Luteinizing hormone (LH) Recombinant	R01715	Ag	Mammalian Cells	Purified	N/A
<b>Parathyroid Hormone (PTH)</b>					
Parathyroid Hormone (PTH) (a.a. 15-25)	E24170M	MAb	Mouse	Purified	IgG1
Parathyroid Hormone (PTH) (a.a. 53-68)	E24101M	MAb	Mouse	Purified	IgG1
Parathyroid Hormone (PTH) (a.a. 53-84)	E24150M	MAb	Mouse	Purified	IgG1
Parathyroid Hormone (PTH) (a.a. 1-34)	E01306M	MAb	Mouse	Purified	IgG2b
<b>Pregnancy associated plasma protein (PAPP-A)</b>					
Pregnancy associated plasma protein-A (PAPP-A)	A86864H	Ag	Retroplacental Blood	Purified	N/A
Pregnancy associated plasma protein-A (PAPP-A)	E01261M	MAb	Mouse	Purified	IgG2a
Pregnancy associated plasma protein-A (PAPP-A)	E01367M	MAb	Mouse	Purified	IgG2b
Pregnancy associated plasma protein-A (PAPP-A)	E01368M	MAb	Mouse	Purified	IgG2b
Pregnancy associated plasma protein-A (PAPP-A) proMBP subunit	E86114M	MAb	Mouse	Purified	IgG2b
Pregnancy associated plasma protein-A (PAPP-A)	E86141M	MAb	Mouse	Purified	IgG2a
Pregnancy associated plasma protein-A (PAPP-A) proMBP subunit	E86509M	MAb	Mouse	Purified	IgG2b
Pregnancy associated plasma protein-A (PAPP-A)	E86910M	MAb	Mouse	Purified	IgG2a
<b>Progesterone</b>					
Progesterone 3 – HRP Conjugate	A82606P	Ag	N/A	HRP	N/A
Progesterone	E82321M	MAb	Mouse	Purified	IgG1
Progesterone	E86222M	MAb	Mouse	Purified	IgG2b
Progesterone	E86702M	MAb	Mouse	Purified	IgG2b
17-alpha-Hydroxyprogesterone	E86020M	MAb	Mouse	Purified	IgG3



## Full product list continued

Specificity	Catalog #	Type	Host	Format	Isotype
<b>Prolactin</b>					
Prolactin, Recombinant	A01467H	Ag	<i>E. coli</i>	Purified	N/A
Prolactin, Recombinant	A01274H	Ag	<i>P. pastoris</i>	Purified	N/A
Prolactin	E20122M	MAB	Mouse	Purified	IgG1,k
Prolactin	E20630M	MAB	Mouse	Purified	IgG1,k
Prolactin	MAF10-111	MAB	Mouse	Purified	IgG1,k
Prolactin	MAF10-145	MAB	Mouse	Purified	IgG1,k
Prolactin	MAF10-216	MAB	Mouse	Purified	IgG2a,k
Prolactin	MAF10-245	MAB	Mouse	Purified	IgG1,k
Prolactin	MAF10-710	MAB	Mouse	Purified	IgG2a,k
<b>Testosterone</b>					
Testosterone	E45703M	MAB	Mouse	Purified	IgG1
Testosterone	Y82230P	Ag	Synthetic	HRP	N/A
Testosterone 3	E82721M	MAB	Mouse	Purified	IgG
Testosterone 3, BSA Conjugate	A01312B	Ag	Synthetic	N/A	N/A
Testosterone 19	R3S07-259	PAb	Rabbit	N/A	N/A
Testosterone	E86902M	MAB	Mouse	Purified	IgG2a
Testosterone	E30412M	MAB	Mouse	Purified	IgG1
<b>Thyroglobulin</b>					
Thyroglobulin	H6T08-747	Ag	Human	Purified	N/A
Thyroglobulin	E01326M	MAB	Mouse	Purified	IgG2a
Thyroglobulin	E01325M	MAB	Mouse	Purified	IgG2b
Thyroglobulin >90% Pure	A86852H	Ag	Human	Purified	N/A
<b>Thyroid Peroxidase (TPO)</b>					
Thyroid Peroxidase (TPO) (a.a. 19-846) Recombinant	A01309H	Ag	Insect Cells	Aff.Pur.	N/A
Thyroid Peroxidase (TPO)	E01309M	MAB	Mouse	Purified	IgG1
Thyroid Peroxidase (TPO)	E01310M	MAB	Mouse	Purified	IgG1
Thyroid Peroxidase (TPO)	E01311M	MAB	Mouse	Purified	IgG1
Thyroid Peroxidase (TPO)	E86415M	MAB	Mouse	Purified	IgG1
Thyroid peroxidase (TPO), Recombinant	H6T09-212	Ag	Sf9 cells	Purified	N/A
Thyroid peroxidase (TPO), Recombinant	R01683	Ag	HEK293 cells	Purified	N/A
<b>Thyroid-stimulating hormone (TSH)</b>					
Thyroid-stimulating hormone (TSH) - beta	D92409G	PAb	Goat	Aff.Pur.	N/A
Thyroid-stimulating hormone (TSH) - beta	D01253P	PAb	Goat	HRP	N/A
Thyroid-stimulating hormone (TSH) - beta	G5T04-766	PAb	Goat	Aff.Pur.	N/A
Thyroid-stimulating hormone (TSH) Intact	D01242G	PAb	Goat	Aff.Pur.	N/A
Thyroid-stimulating hormone (TSH)	E92183M	MAB	Mouse	Purified	IgG1
Thyroid Stimulating Hormone (TSH) - alpha	E20370M	MAB	Mouse	Purified	IgG1,k
Thyroid-stimulating hormone (TSH) 98% Pure	H6T04-323	Ag	Human Pituitary	Purified	N/A
Thyroid-stimulating hormone (TSH)	MAT04-001	MAB	Mouse	Purified	IgG1,k
Thyroid-stimulating hormone (TSH)	MCT04-001	MAB	Mouse	Purified	IgG1,k
Thyroid-stimulating hormone (TSH)	MAT04-003	MAB	Mouse	Purified	IgG1,k
Thyroid-stimulating hormone (TSH)	MAT04-005	MAB	Mouse	Purified	IgG1,k
Thyroid-stimulating hormone (TSH)	MAT04-006	MAB	Mouse	Purified	IgG1,k
Thyroid-stimulating hormone (TSH)	MAT04-127	MAB	Mouse	Purified	IgG1,k
Thyroid-stimulating hormone (TSH)	MAT04-252	MAB	Mouse	Purified	IgG1,k
Thyroid-stimulating hormone (TSH)	MAT04-410	MAB	Mouse	Purified	IgG1,k
Thyroid-stimulating hormone (TSH)	MDT04-005	MAB	Mouse	Purified	IgG1,k
Thyroid-stimulating hormone (TSH) - beta	E01317S	MAB	Sheep	Purified	N/A



Specificity	Catalog #	Type	Host	Format	Isotype
<b>Thyroid-stimulating hormone (TSH)</b>					
Thyroid-stimulating hormone (TSH) - beta	E01318S	MAb	Sheep	Purified	N/A
Thyroid-stimulating hormone (TSH) - beta	E01328M	MAb	Mouse	Purified	IgG1
Thyroid-stimulating hormone (TSH) Intact	E01327M	MAb	Mouse	Purified	IgG1
Thyroid-stimulating hormone (TSH) Intact	E86107M	MAb	Mouse	Purified	IgG1
<b>Thyroxine (T4)</b>					
Thyroxine (T4)	MAT02-011	MAb	Mouse	Purified	IgG1,k
Thyroxine (T4)	MAT02-525	MAb	Mouse	Purified	IgG1,k
Thyroxine (T4)	MAT02-641	MAb	Mouse	Purified	IgG1,k
Thyroxine (T4)	MCT02-011	MAb	Mouse	Purified	IgG1,k
Thyroxine (T4)	E45660M	MAb	Mouse	Purified	IgG2b
Thyroxine (T4)	MKT02-007	MAb	Mouse	Purified	IgG2b,k
Thyroxine (T4)	D10410R	PAb	Rabbit	N/A	N/A
Thyroxine (T4)	D10410S	PAb	Sheep	N/A	N/A
Thyroxine (T4)	E86206B	MAb	Mouse	Purified	IgG1
Thyroxine (T4)	E86206M	MAb	Mouse	Purified	IgG1
Thyroxine (T4)	E86260M	MAb	Mouse	Purified	IgG
<b>Thyroxine binding globulin (TBG)</b>					
Thyroxine-binding globulin (TBG)	H6T03-275	Ag	Human	Purified	N/A
Thyroxine-binding globulin (TBG)	MAT03-439	MAb	Mouse	Purified	IgG2a,k
Thyroxine-binding globulin (TBG)	MAT03-612	MAb	Mouse	Purified	IgG2a,k
<b>Triiodothyronine (T3)</b>					
Triiodothyronine (T3)	MAT01-237	MAb	Mouse	Purified	IgG1,k
Triiodothyronine (T3)	E20425M	MAb	Mouse	Purified	IgG2b
Triiodothyronine (T3)	E86207M	MAb	Mouse	Purified	IgG1
Triiodothyronine (T3)	MAT01-121	MAb	Mouse	Purified	IgG1,k





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