ANTIBODIES & ANTIGENS
PRODUCT OVERVIEW

Proven and Performing
OUR COMPANY

30 YEARS OF EXPERIENCE IN IVD (KITS AND INSTRUMENTATION)

DIAsource ImmunoAssays (formerly BioSource), an international diagnostics company (Belgium), develops, manufactures and markets clinical diagnostic products in the field of endocrinology and infectious diseases. Core products are RIA and ELISA technology and reagents for open ELISA automated analyzers as well as antibodies for use in in-vitro diagnostic assays with specific development and manufacturing programs for Vitamin D, Renin, Calcitonin and many others. We also provide selected instrumentation: we offer ELISA reader, washer and shaker, along with opened and closed fully automated ELISA platforms helping our customers to automate their tests. It is our ambition to use our 30 years of expertise in Antibody and Assay development to become a well-known company of diagnostic immunoassays and instrumentation for the IVD market.

MISSION

Our mission is to develop, manufacture and market a complete panel of quality immunoassays and instrumentation as accurate, reliable, diagnostic tools to detect and monitor endocrine disorders and infectious diseases. We are dedicated to provide highly reliable quality assays and instrumentation to deliver uncompromising support to our customers. We strive for meeting our customers needs through a long-term professional relationship and by representing a real added value. Our company is driven by commitment to quality of products and services.

PRODUCT RANGE

During the last 30 years, we have developed manual ELISA and RIA immunoassays for the diagnosis and monitoring of a wide variety of endocrine disorders. We constantly reworked and developed specific antibodies for use in our diagnostic assays and we offer these antibodies also to other diagnostic companies. Constantly looking for new technologies and applications, we put our expertise in the development of new antibodies (patent pending) and assays to measure 25OHD Total Vitamin D (D2+D3). We are strengthening our position in the diagnostic market by validating our ELISA assays on our open and closed automates. This innovation marks a turning point for our company, and makes of DIAsource, already renowned in the RIA market, a complete diagnostic provider. The interest in Vitamin D is rising rapidly. Since more than 10 years DIAsource manufactures immunoassays for 25OHD Vitamin D3 and 1,25 (OH)2 Vitamin D. In our assay development program, we are focusing specifically on new Vitamin D assays. We introduced a new Total Vitamin D (D2 + D3) RIA and ELISA assay, together with a Rat 25OHD Vit D ELISA kit for clinical research studies. The ELISA versions will also be made on our instruments.

COMMITMENT TO QUALITY

We believe that the quality of products and services finds its origin in scientific expertise, good organization of all operational activities and in well-structured decision processes. These principles are laid out in our ISO 13485:2003 quality manual. Through an integration of product quality in our development and manufacturing processes and a specific customer-oriented approach, we have directed our quality system to comply with the harmonized standard for quality systems within the context of the European Directive for In Vitro Diagnostics. Our internal quality management system is designed to pursue a continuous improvement of our customer service, our product quality and the efficiency of our operations. All our kits and instruments for in-vitro diagnostics (IVD) carry the CE mark and comply with IVD Directive requirements.

Eric Maes
Business Segment Manager ELISA, Instruments & Antibodies
DIAsource ImmunoAssays S.A.

Dr. Jozef Vangenechten
CEO
DIAsource ImmunoAssays S.A.
TO CONTACT US

Our people, our professional and experienced Customer Service and Technical Support teams are dedicated to ensure complete customer satisfaction. We take pride in providing helpful and accurate information in a 24-hour turnaround time.

Ordering: please see below and consult the “How to order” section for your local contact.

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DIAsource MONOCLONAL ANTIBODIES

The DIAsource Monoclonal Antibodies are produced in-house and purified using cutting-edge technologies. The use of these antibodies in DIAsource RIA and ELISA immunoassays for more than 30 years guarantees a high quality and lot-to-lot consistency, and uncompromising quality control. Throughout our own assays projects our R&D scientists have developed and selected the best matched pairs for sandwich assays, and the best antibody/conjugate pair for the competitive assays. A special focus has been put on sensitivity, selectivity and stability to ensure a long term supply of highly performing material.

The key features of our Monoclonal Antibodies line are:

- Large scale production in state of the art facilities
- Fully automated purification equipment
- Uncompromised quality control in DIAsource assays
- Excellent lot-to-lot consistency
- Constant stock and fast delivery

Manufactured under ISO 9001 - ISO13485

Experienced technical support dedicated to development projects and production troubleshooting

Our Monoclonal Antibodies product range covers the following areas:

- Bone Metabolism
- Fertility
- Cardiovascular diseases
- Cancer
- Thyroid Function
- Diabetes & Metabolism

Our Monoclonal Antibodies are available in the purified unconjugated, purified fragmented and purified biotin conjugate formats. Contact us for more information about the formats. DIAsource expertise in antibody development and production, along with our expertise in IVD immunoassay development, creates interesting synergies that can help IVD companies bring new assays to the market in a reliable and efficient way.

DIAsource MONOCLONAL ANTIBODIES...
**BONE METABOLISM**

Bones are continuously undergoing a dynamic process of resorption and absorption known as bone metabolism. Signaling pathways on which bone metabolism rely include the action of several hormones, including Osteocalcin, parathyroid hormone (PTH) and Vitamin D.

**Osteocalcin (OST)**

Osteocalcin or bone Gla protein (BGP) is the major non-collagen protein of the bone matrix. It has a molecular weight of 5800 Da and contains 49 amino-acids, including 3 residues of gamma carboxyl glutamic acid. Osteocalcin is synthesized in the bone by the osteoblasts. After production, it is partly incorporated in the bone matrix and the rest is found in the blood circulation. The exact physiological function of osteocalcin is still unclear. A large number of studies show that the circulating levels of osteocalcin reflect the rate of bone formation.

**Clinical application:**

The determination of the blood levels of osteocalcin is valuable for:

- The identification of women at risk of developing osteoporosis
- Monitoring bone metabolism during the perimenopause and postmenopause
- Monitoring bone metabolism during hormone replacement therapy and treatment of premenopausal women with LH-RH agonists
- Monitoring bone metabolism in patients with growth hormone deficiency, hypothyroidism, hyperthyroidism, chronic renal failure

**Aggrecan (PG)**

Aggrecan [PG] is the predominant proteoglycan species in articular cartilage. It is composed of a core protein of 210 kDa to which over 100 chondroitin sulfate chains, about 20-50 keratan sulfate chains and O-linked as well as N-linked oligosaccharides are covalently attached. The core protein contains three distinct globular domains (G1-G3).

**Antibodies:**

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<th>Isotype</th>
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<td>Mab</td>
<td>4D11 2A9*</td>
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<tr>
<td>5114612</td>
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<td>Purified Biotin Conjugated</td>
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<td>5114617</td>
<td></td>
<td></td>
<td>1R11 4A6 3B2*</td>
<td>IgG1</td>
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<td></td>
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<td>11 mL</td>
<td>Dilution buffer for 4113822 NA Liquid, ready to use</td>
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PARATHYROID HORMONE (PTH)

Human parathyroid hormone (PTH) is a major physiological regulator of phosphocalcic metabolism. PTH increases serum calcium concentrations by its actions on kidney (enhancing tubular Ca++ reabsorption and phosphate excretion) and bone (stimulating osteoclastic activity and bone resorption). It indirectly affects intestinal absorption of Ca++ by stimulating renal 1α-hydroxylation of 25 hydroxyvitamin D. The release of PTH is controlled in a negative feedback loop by the serum concentration of Ca++.

Clinical application:

The measurement of intact PTH is used to establish the diagnosis of primary hyperparathyroidism by demonstrating elevated serum levels of bioactive PTH. It allows documenting the occurrence of secondary hyperparathyroidism in patients with Vit D deficiency, intestinal malabsorption, or renal failure. In this last situation, the absence of interference with the inactive carboxy-terminal fragments is especially valuable. The specificity and high sensitivity of the assay also allows differentiating clearly low serum PTH levels in hypoparathyroidism or in tumor-induced hypercalcemia.

Antibodies:

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<th>Clone/Host</th>
<th>Isotype</th>
<th>Format</th>
<th>Application</th>
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Antigens & Conjugates:

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<td>11 mL</td>
<td>MAb HRP conjugate</td>
<td>-</td>
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VITAMIN D (25OH VITAMIN D)

Over the years DIAsource has built extensive experience in Vitamin D immunoassays development and Vitamin D chemistry. DIAsource offers all components to develop your own Vitamin D assay. The DIAsource Vitamin D raw materials portfolio is the most complete offering on the market. It includes Monoclonal and Polyclonal Antibodies against both forms of Vitamin D (D2 and D3), a large variety of high purity Antigens/Conjugates, and a collection of Release Solutions, to cover all the needs for the development of your Vitamin D assay. DIAsource raw materials have been successfully used in RIA, ELISA, CLIA and POCT assays, by DIAsource and by DIAsource partners.

Antibodies:

Based on proprietary Vitamin D haptenes, we have developed a line of mouse monoclonal and rabbit polyclonal antibodies directed towards 25OH Vitamin D2 and D3 and 1,25(OH)2 Vitamin D2 and D3.

Antigens:

We have developed a specific collection of Vitamin D analogues that pair with our antibodies and from other antibodies from the market. Depending on your specific application, you may want to use our carboxylic acid, amine, biotin or BSA functionalized antigens. Furthermore, we offer services tailored to your specific requirements.

Release solutions:

Displacing 25OH Vitamin D from its binding proteins (VDBP) is still a big challenge in Vitamin assay development. DIAsource offers a wide panel of unique displacement solutions that are compatible with most of the 25OH Vitamin D antibodies.

Raw materials:

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<td>Tail</td>
<td>Mouse</td>
<td>Purified, Unconjugated</td>
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<tr>
<td>5319716</td>
<td>Monoclonal Antibody against 25OH Vitamin D2/D3</td>
<td>1 mg</td>
<td>Monoclonal Antibody</td>
<td>Tail</td>
<td>Mouse</td>
<td>Purified, Unconjugated</td>
</tr>
<tr>
<td>5319726</td>
<td>Monoclonal Antibody against 25OH Vitamin D2/D3</td>
<td>1 mg</td>
<td>Monoclonal Antibody</td>
<td>Tail</td>
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<td>Vitamin D derivative - Carboxylic acid</td>
<td>100 µg/ mg</td>
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<td>Purified, Carboxylic acid (COOH)</td>
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<td>Vitamin D antigen - 3-carboxylic acid</td>
<td>1 kit</td>
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<td>3019701</td>
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<td>Screening kit</td>
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<td>3019702</td>
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<tr>
<td>5319716</td>
<td>Monoclonal Antibody against 1,25(OH)2 Vitamin D2/D3</td>
<td>1 mg</td>
<td>Monoclonal Antibody</td>
<td>Tail</td>
<td>Mouse</td>
<td>Purified, Unconjugated</td>
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<td>5319717</td>
<td>Monoclonal Antibody against 1,25(OH)2 Vitamin D2/D3</td>
<td>1 mg</td>
<td>Monoclonal Antibody</td>
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<td>5319727</td>
<td>Monoclonal Antibody against 1,25(OH)2 Vitamin D2/D3</td>
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<td>Mouse</td>
<td>Purified, Unconjugated</td>
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<td>1302602</td>
<td>1,25(OH)2 Vitamin D antigen - carboxylic acid</td>
<td>100 µg/ mg</td>
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<td>1,25(OH)2 Vitamin D antigen - BSA</td>
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<td>1302604</td>
<td>1,25(OH)2 Vitamin D antigen - amino</td>
<td>100 µg/ mg</td>
<td>Antigens/Conjugate</td>
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<td>1,25(OH)2 Vitamin D antigen - biotin</td>
<td>100 µg/ mg</td>
<td>Antigens/Conjugate</td>
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<td>NA</td>
<td>Purified, Biotin conjugate</td>
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</table>

* In 2009, DIAsource Immunoassays has patented Mouse Monoclonal Antibodies, based on a proprietary Vitamin D hapten, recognizing both 25OH Vitamin D3 and 1,25(OH)2 Vitamin D2. 1. Matching 25OH Vitamin D pairs – Tail. 2. Matching with 25OH Vitamin D antibodies – position-3, from the market. 3. Matching 1,25(OH)2 Vitamin D pairs.
CANCER MARKERS

Serum tumor markers is a term commonly used to refer to molecules that can be detected in a blood sample by immunochemical methods. Tumor markers are produced either by the tumor (cancer) itself or by the body in response to the presence of cancer or certain non-cancerous benign conditions.

ALPHA-FETOPROTEIN (AFP)

α-Fetoprotein (AFP) is a 70,000 Da MW oncofetal protein synthesized by liver parenchymal cells, yolk sac and gastrointestinal tract of human fetus. The peak of AFP concentration occurs between weeks 12 and 15 of gestation. After birth AFP concentration in plasma rapidly decreases to less than 5 IU/ml. AFP levels are elevated in the following clinical situation:

- Cancer
- Hepatocellular carcinoma
- Teratocarcinomas and embryonal cell carcinoma of testis and ovaries
- Yolk sac tumor
- Other cancers (less than 5 %)
- Viral diseases
- Acute hepatitis (usually < 100 IU/ml)
- Chronic active hepatitis (usually < 100 IU/ml)

The measurement of CT is used for:

- Diagnosis of medullary thyroid carcinoma (MTC)
- Follow-up of malignant tumors, to check the success of surgery and to monitor for recurrence
- Diagnosis of the preclinical cases of the familial forms of MTC (MEN II or Sipple syndrome) by the use of stimulation tests (calcium or pentagastrin)
- Study of the pathophysiology of the calcium-phosphate and bone metabolism

Antibodies:

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<td>3B1 1C10</td>
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<tr>
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Antigens & Conjugates:

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CALCITONIN (CT)

Calcitonin (CT) is a 32 amino-acid peptide hormone secreted by the parafollicular C-cells of the thyroid gland under serum calcium control. After acute administration this peptide acts as a potent hypocalcemic and hypophosphatemic hormone by increasing renal calcium clearance and reducing bone resorption. However its precise physiological role...

The measurement of CT is used for:

- Diagnosis of medullary thyroid carcinoma (MTC)
- Follow up of malignant tumors, to check the success of surgery and to monitor for recurrence
- Diagnosis of the preclinical cases of the familial forms of MTC (MEN II or Sipple syndrome) by the use of stimulation tests (calcium or pentagastrin)
- Study of the pathophysiology of the calcium-phosphate and bone metabolism
CARCINO EMBRYONIC ANTIGEN (CEA)

CEA is a 200,000 Daltons oncofetal glycoprotein expressed by normal tissues during the first six months of fetal life. Later on the expression of CEA by normal cells becomes largely repressed except in cancer tissues of various cell types, which may secrete large amounts of this oncofetal protein into the circulation. Widely accepted as a useful adjunct for monitoring the course of cancer diseases, CEA should not be regarded as a tumor-specific marker because it is still secreted in small amounts by certain normal tissues during adult life, with small serum level increases in case of benign diseases such as cirrhosis, hepatitis, inflammatory bowel diseases, renal failure and in heavy smokers. Therefore, the measurement of CEA serum concentration for diagnostic purposes must be considered with great care.

Clinical application:
• Monitoring of cancer diseases
• Diagnostic adjunct in cancer

CHORIONIC GONADOTROPIN HORMONE (FREE BETA-HCG)

The chorionic gonadotropic hormone is synthesised by the syncytiotrophoblast of the placenta all along the pregnancy and is released in the blood flow as soon as the 9th day following ovulation. The hCG has biologic characteristics similar to the LH. During pregnancy, this placental hormone stimulates the remaining corpus luteum that secretes oestrogen and progesterone for the first three months of the pregnancy.

Clinical application:
Diagnostic and monitoring test in pregnancy: hCG and its free subunits α and β appear in the serum and urine of pregnant women about 9 days following ovulation. The free β-hCG level then increases rapidly to reach a peak between the 8th and the 12th week.

Tumour marker test in trophoblastic tumours: hydatiform moles and choriocarcinomas may secrete large amounts of native hCG and its two free subunits α and β into the peripheral blood circulation.

Tumour marker test in non-trophoblastic cancers: 10 to 15 % of the breast, lung, and digestive tract cancers release hCG and/or either of its two constituent subunits α and β.

ADRENOCORTICOTROPIC HORMONE (ACTH)

Adrenocorticotropic hormone (ACTH or corticotropin) is a polypeptide hormone synthesised from POMC, pro-opiomelanocortin and secreted from corticotropes in the anterior lobe of the pituitary gland in response to the hormone corticotrophin-releasing hormone (CRH) released by the hypothalamus. It consists of 39 amino acids with a molecular weight of 4,540 Da. ACTH regulates steroid synthesis by the adrenal cortex. ACTH stimulates the secretion of cortisol from the adrenal glands. Cortisol and other glucocorticoids increase glucose production, inhibit protein synthesis and increase protein breakdown, stimulate lipolysis, and affect immunological and inflammatory responses. Too much ACTH can result in overproduction of cortisol which can cause Cushing’s syndrome.

Too much ACTH can be caused by benign pituitary adenoma. Other causes of Cushing’s syndrome include ectopic production of ACTH as encountered in some lung tumors and benign and malignant adrenal tumors. The most common cause of Cushing’s syndrome is exogenous ingestion of glucocorticoids.

ANGIOTENSIN I POLYCLONAL ANTIBODY

Angiotensin is a peptide hormone that causes vasoconstriction and an increase in blood pressure. It is part of the renin-angiotensin system, which is a major target for drugs that raise blood pressure. Angiotensin also stimulates the release of aldosterone, which also drives blood pressure up. Angiotensin I is formed by the action of renin on angiotensinogen. Therefore the measurement of Angiotensin I is also a measurement of the Plasma Renin Activity (PRA). Both terminologies are often used to design the same assay.

Angiotensin I is further converted into Angiotensin II and III, the low cross-reactivity of the Antibody for these two metabolites is therefore critical.
**RENIN**

Renin is a proteolytic acidic enzyme produced and secreted by the juxtaglomerular cells. It cleaves angiotensinogen into angiotensin I (inactive), which ultimately leads to the production of angiotensin II (active). Therefore, renin, which has a limiting effect on the production of angiotensin, is a key-factor in the regulation of arterial pressure and hydrosodic metabolism.

As most enzymes which act outside of the cells in which they are synthesized, renin exists in both inactive and active forms. Inactive renin (prorenin) which is found in plasma, amniotic fluid and in the kidney, can be activated in different ways (cryoactivation, acidification or partial proteolysis) which expose the active site of the enzyme. Inactive renin can account for up to 90% of the total renin in the circulation. However, it is the active renin which provides the medium through which biological activity takes place.

**ADIPONECTIN**

Adiponectin is a 30kDa protein which percentage in serum proteins is 0.01%. It is mainly synthesized by Adipocytes, but also muscle cells and hepatocytes have the ability to synthesize Adiponectin. Until now, IGF-I is the only known natural inducer of the synthesis. It consists of a Collagen-like N-terminal and a globular C-terminal domain. In vivo Adiponectin appears with different oligomers. Beside the trimer and ditrimer also high molecular multimers exist (1-3). Up to now two different receptors are known, both receptors are ubiquitary expressed, though the distribution in the tissues varies.

The Adiponectin Receptor 1 (AdipoR1) is especially in muscle- and AdipoR2 in liver tissue synthesized. The significance for the human organism is not clear until now. First studies show, that adiponectin correlates negatively with BMI and thus it could have relevance for the energy metabolism for example through the regulation of fatty acid oxidation. Beside the correlation with BMI, Adiponectin level is associated with the Insulin-Resistance and so also linked with Type II Diabetes.

Adiponectin is associated also with glucose- and lipometabolism. Furthermore it is involved in inflammatory processes and therewith it is of importance for appearance of atherosclerosis and arteriosclerosis. Thus the determination of Adiponectin level in plasma could serve to estimate the risk of coronary disease. Beside this Adiponectin influences further physiological processes as for example the angiogenesis.

**DIABETES AND METABOLISM**

Diabetes mellitus is a disorder of carbohydrate metabolism. It is a disease characterized by persistent hyperglycemia (high blood sugar levels). It is a metabolic disease that requires medical diagnosis, treatment and lifestyle changes. There are three main forms of diabetes: type 1, type 2 and gestational diabetes (or type 3, occurring during pregnancy), although these three “types” of diabetes are more accurately considered patterns of pancreatic failure rather than single diseases.

Type 1 is due to autoimmune destruction of the insulin-producing cells

Type 2 and gestational diabetes are due to insulin resistance by tissues

Obesity is a condition in which the natural energy reserve, stored in the fatty tissue of humans and mammals, is increased to a point where it is a risk factor for certain health conditions or increased mortality. Obesity develops from the interaction of individual biology and the environment. Excessive body weight has been shown to correlate with various diseases, particularly cardiovascular disease, diabetes mellitus type 2, sleep apnea, and osteoarthritis. Obesity is both an individual clinical condition and is increasingly viewed as a serious public health problem.
 INSULIN

Insulin, a polypeptide hormone with a molecular weight of 5800, is secreted by the beta cells of the islets of Langerhans from the pancreas. Insulin possesses a wide spectrum of biological actions. It stimulates cellular glucose uptake, glucose oxidation, glycogenesis, lipogenesis, proteogenesis and the formation of DNA and RNA. Insulin plays a key role in the regulation of plasma glucose levels (hepatic output inhibition, stimulation of peripheral glucose utilization).

The resulting hypoglycemic effects of insulin are counterbalanced by hormones with hyperglycemic effects (glucagon, growth hormone, cortisol, epinephrine). Insulin secretion is mainly controlled by the plasma glucose levels: hyperglycemia induces a prompt and important increase in circulating insulin levels.

Neural influences, as well as various metabolic and hormonal factors (amino acids, glucagon, gastrointestinal hormone) also participate to the control of insulin secretion. Type I (insulin dependent: “juvenile”) diabetes is due to a destruction of the beta cells, with a consequence of absolute lack of insulin.

In type II (non-insulin-dependent: “maturity onset”) diabetes, insulin resistance may play an important role, however after several years of evolution, beta-cells failure may occur, leading to a relative insulinaemia requiring, in some cases, insulin administration. Insulin resistance is associated with high circulation levels of the hormone.

The most common cause of insulin resistance is represented by obesity. Various endocrinopathies (acromegaly, Cushing syndrome) as well as rare cases of insulin receptor defects or cases with anti-insulin receptor antibodies are associated with glucose intolerance or even diabetes due to insulin resistance.

The determination of plasma insulin levels is an important parameter in the diagnosis of hypoglycemia. Insulin levels are high in cases of insulinoma (beta-cell tumor). Functional postprandial hypoglycemia may also be associated with inappropriate insulin release to carbohydrate intake.

Insulin levels are determined either in the fasting state or during dynamic test:

- **Stimulation test**: carbohydrate rich meal, oral glucose tolerance test (OGTT), arginin infusion, tolbutamide or other sulfonylureas administration.
- **Inhibition test**: fasting, somatostatine infusion.

Clinical application of insulin determination:

- Determination of the beta-cell reserve during glucose tolerance test or after a carbohydrate rich meal, as a guide for the instauration of insulin therapy
- Contribution to the diagnosis of insulin and non-insulin-dependent diabetes
- Characterisation and follow-up of states of glucose intolerance
- Diagnosis and study of cases of insulin resistance
- Diagnosis of insulinoma and other causes of hypoglycemia

Antibodies:

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**LEPTIN**

Leptin, the product of the ob gene, is a hormone secreted by adipocytes. Animals with mutations in the ob gene are obese, diabetic and have reduced activity. Administration of recombinant leptin to these animals decreases food intake and causes weight loss. In humans, this type of mutation has not been found. Human leptin cDNA encodes a 167 amino acid non-glycosylated protein including a 21 AA signal peptide, which is cleaved to give mature human leptin. The human receptor for leptin (OB-R) has been identified as a 1144 amino acid transmembrane glycoprotein. It is expressed in the choroid plexus and in the hypothalamus. Leptin is implicated in an increasing number of endocrine regulations including adiposity, satiety, energy homeostasis, puberty and fertility.

Antibodies:

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FERTILITY

In order to understand the causes of infertility and the role modern infertility treatment plays in assisting conception, it is useful to look at the natural process - a woman’s ovulatory cycle and the production of sperm in the male - and the hormones that play a major role in those processes. The gonadotropins are hormones that primarily affect the ovaries and the testes. They regulate the development and hormonesecreting functions of these organs and contribute to the production of sperm in the male and to the development and maturation of eggs (spermatozoa) in the female.

Three gonadotropins are essential to reproduction: human follicle stimulating hormone (hFSH), human luteinizing hormone (hLH) and human chorionic gonadotropin (hCG). FSH and LH are produced by the pituitary gland situated beneath the brain. Their secretion is controlled by another hormone, the gonadotropin releasing hormone (GnRH) produced by the hypothalamus. hCG is primarily produced by the placenta following successful implantation, and plays a role in maintaining pregnancy.

Androgen is the generic term for any natural or synthetic compound, usually a steroid hormone, that stimulates or controls the development and maintenance of masculine characteristics in vertebrates by binding to androgen receptors. This includes the activity of the accessory male sex organs and development of secondary sex characteristics. Androgens, which were first discovered in 1936, are also called androgenic hormones or testoids. Androgens are also the original anabolic steroids. They are also the precursor of all estrogens, the female sex hormones. The primary and best-known androgen is testosterone.

A subset of androgens, adrenal androgens, includes any of the 19-carbon steroids synthesized by the adrenal cortex, the outer portion of the adrenal gland (zonula reticularis - innermost region of the adrenal cortex), that function as weak steroids or steroid precursors, including dehydroepiandrosterone (DHEA), dehydroepiandrosterone sulfate (DHEA-S), and androstenedione.

**CHORIONIC GONADOTROPIN (HCG)**

hCG is a glycoprotein synthesised by the syncytiotrophoblast of the placenta throughout pregnancy. hCG-molecular weight 37.9 kDa - comprises two subunits. The hCG α subunit-molecular weight 14.9 Kda - is chemically similar to the α subunits of FSH, LH and TSH hormones. The hCG β subunit molecular weight 23.0 kDa - has a structure similar to that of the LH β subunit, differing by only a few epitopes. hCG has biological characteristics similar to LH.

During pregnancy, hCG stimulates the remaining corpus luteum and the placental tissue to secrete the various steroid hormones. In addition to its stimulating action on the luteal and placental tissue, hCG, by crossing the placenta, is essential to differentiate the genital tractus of the fetus, which occurs around the 7th week of pregnancy.

Clinical applications:
- Diagnostic and monitoring test in pregnancy/hCG and its free subunits α and β appear in the serum and urine of pregnant women about 9 days following ovulation. The hCG level then increases rapidly to reach a peak between the 8th and the 12th week.
- Tumour marker test in trophoblastic tumours
- Hydatidiform moles and choriocarcinomas may secrete large amounts of native hCG and its two free subunits α and β into the peripheral blood circulation.
- Tumour marker test in non-trophoblastic cancers: 10 to 15 % of the breast, lung, and digestive tract cancers release hCG and/or either of its two constitutive subunits α and β.

**ESTRADIOL (E2)**

17beta-estradiol (E2) is a C-18 steroid hormone (molecular weight 272.4 Da) produced mainly by the ovary and placenta, and in small amounts by adrenals and testes. Estradiol is in equilibrium with estrone, which can be converted to estriol by the liver and placenta.

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ESTRIOL (E3)

Estriol (also oestriol or E3) is one of the three main estrogens produced by the human body. Estriol is only produced in significant amounts during pregnancy as it is made by the placenta from 16-hydroxydehydroepiandrosterone sulfate (16-OH DHEAS), an androgen steroid made in the fetal liver and adrenal glands.

The human placenta produces pregnenolone and progesterone from circulating cholesterol. Pregnenolone is converted in the fetal adrenal gland into dehydroepiandrosterone (DHEA), a C19 steroid, then subsequently sulfonated to dehydroepiandrosterone sulfate (DHEAS). DHEAS is converted to 16-OH DHEAS in the fetal liver. The placenta converts 16-OH DHEAS to estriol, and is the predominant site of estriol synthesis.

Antibodies:

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FOLLICLE STIMULATING HORMONE (FSH)

The measurement of LH and FSH concentrations in serum is essential for investigating fertility and especially disorders of the hypothalamic/pituitary/gonadal axis. Both LH and FSH are secreted by the basophil cells of the anterior pituitary as a result of gonadotropin releasing hormone (GnRH) secretion from hypothalamic cells.

In adults, LH and FSH hormones control gonadal functions; mainly gametogenesis and steroid secretion. Circulating levels of FSH are controlled by a negative feedback effect on the hypothalamus by steroidal hormones and gonadal peptides.

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ILUTEINIZING HORMONE (LH)

Both LH and FSH are secreted by the basophil cells of the anterior pituitary as a result of gonadotropin releasing hormone (GnRH) secretion from hypothalamic cells. In adults, LH and FSH hormones control gonadal functions, mainly gametogenesis and steroid secretion.

Clinical applications:

The measurement of LH and FSH concentrations in serum is essential for investigating fertility and especially disorders of the hypothalamic/pituitary/gonadal axis.

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PLACENTAL LACTOGEN (HPL)

Human Placental Lactogen Protein (HPL) is a dimer of two polypeptide chains of equivalent weight (19,000) with lactogenic, luteotropic and growth activities. HPL, which is produced by trophoblastic cells of the normal placenta or by trophoblastic tumor tissue, has an amino acid composition quite similar to that of hGH, and to a lesser extent to that of prolactin. HPL becomes detectable in serum from about 6th week of pregnancy; later on HPL levels in serum increase progressively throughout pregnancy to reach a plateau of 2-10 µg/ml by the 34th week reflecting directly the growth of the placental tissue. Because of its short plasma half-life (± 20 minutes), HPL becomes undetectable in the serum 4 hours after delivery.

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* Matched pair
PROLACTIN (PRL)

Prolactin (PRL) is a polypeptide hormone (molecular weight 20,000 Da) secreted by the pituitary gland, which plays a key role in the development of the mammary gland, the production and secretion of milk, and control of male and female gonadal functions. Prolactin secretion is under hypothalamic control exerted directly by dopamine, several prolactin releasing factors (PRF) and perhaps VIP (vasoactive intestinal polypeptide) or a closely related peptide.

TRH also acts directly at the pituitary level to stimulate prolactin release but its physiological role in the control of prolactin secretion has not been established yet. Several neuroendocrine factors, involving serotonergic or noradrenergic pathways are also involved in the control of prolactin secretion.

The plasma concentration of prolactin increases in various physiological situations such as stress, pregnancy and lactation. Physiological levels fluctuate according to a nycthemeral rhythm, a significant rise being observed at night. Drugs with anti-dopamine activity (psychotropic agents) and ovulatory suppressants, increase prolactin secretion.

Clinical applications:

- **Prolactinoma**: circulating prolactin levels are elevated in patients with a prolactin secreting pituitary adenoma. Amenorrhea and impotence are characteristic clinical symptoms in such cases.

- **Other pituitary diseases**: increased prolactin levels are also observed in 5% to 20% of patients with acromegaly and when pituitary control by the hypothalamus is suppressed (pituitary stalk section). Decreased PRL levels may be observed in cases of complete destruction of the pituitary as in Sheehan's syndrome.

- **Galactorrhea and amenorrhea**: the measurement of the prolactin levels in serum is a useful test in the differential diagnosis of galactorrhea and amenorrhea.

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GROWTH FACTORS

The term growth factor refers to a naturally occurring protein capable of stimulating cellular proliferation and cellular differentiation. Growth factors are important for regulating a variety of cellular processes. Assessment of growth in stature is an essential part of the pediatric examination. Growth is an important index of physical and mental health and of the quality of the child’s psychological environment; chronic problems in any of these areas may be reflected in a decreased growth rate.

GROWTH HORMONE (HGH)

hGH is a polypeptide hormone (molecular weight 21,500 Da) produced by the acidophil cells of the anterior pituitary under the control of two main substances from the median eminence: Growth-hormone Releasing Factor (GRF) and an inhibitory agent, somatostatin. Dopaminergic, adrenergic and serotonergic neuroendocrine pathways also play an important role in the control of hGH secretion.

hGH hyposecretion is one of the various causes of small stature in children. Serum hGH measurement with a highly sensitive assay, especially following a provocative stimulus (absence of response), is an important way to establish this diagnosis because this group of patients can be treated by administration of hGH.

Serum hGH measurement is also an index of pituitary function when hypopituitarism (either idiopathic or due to tumour and surgery) is suspected. Serum hGH measurement, especially following a provocative inhibitory test (absence of response), is an important way to establish the diagnosis of hGH hypersecretion due to acidophilic pituitary tumour. This results in gigantism in children and acromegaly in adults. Both of these disorders may be treated by surgery or radiation.

Antibodies:

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* Matched pair

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**INSULIN GROWTH FACTOR BINDING PROTEIN–3 (IGFBP-3)**

IGFBP-3 is the most abundant IGF-binding protein, accounting for as much as 75% or more of the circulating IGF-binding capacity in healthy subjects. IGFBP-3 shares functional properties with IGFBP-5 in that both peptides are able to form high molecular weight ternary complexes of ~150 kDa with ALS and either IGF-I or –II.

However, IGFBP-5 circulates in much lower concentrations than IGFBP-3, and in healthy subjects the ternary complexes carry as much as 90% of IGFBP-3 but only about 50% of IGFBP-5. Originally, the IGFBPs were thought to serve as IGF-carrier proteins, stabilizing plasma IGF levels and controlling the egress of IGF from the circulation to the extra-vascular compartment.

Furthermore, it was assumed that IGFBP-complexed IGF was biologically more or less inactive, being deprived its ability to interact with the IGF-I receptor.

However, it soon became apparent that in some experimental settings the IGFBPs stimulated rather than inhibited IGF-I-mediated actions, and accordingly, the IGFBPs are now often referred to as modulators of IGF-I bioactivity. In addition, the majority of the IGFBPs, and in particular IGFBP-3, exerts IGF-I and IGF-I receptor independent effects, possible involving interactions with specific receptors located at the cell surface and intracellular.

For example, IGFBP-3 is nowadays considered to serve as an anticancer molecule, apparently protecting against several common cancers, and effects of IGFBP-3 on insulin signaling in cultured adipocytes have also been suggested. The turnover of the ternary complexes is very slow, and the plasma concentration of IGFBP-3 remains stable throughout the day, being unaffected by short-term nutritional changes.

Thus, the level of IGFBP-3 may be determined by one single measurement. GH is the primary regulator of IGFBP-3 as well as of IGF-I and ALS and therefore, the TSH is usually used in combination with other thyroid tests such as the T4/FT4 and T3/FT3.

**THYROID FUNCTION**

The thyroid gland, or simply the thyroid, is one of the largest endocrine glands in the body, and consists of two connected lobes. It is found in the neck, below the laryngeal prominence (Adam’s apple). The thyroid gland controls how quickly the body uses energy, makes proteins, and controls the body’s sensitivity to other hormones. It participates in these processes by producing thyroid hormones, the principal ones being thyroxine (T4) and triiodothyronine (T3), which is more active. These hormones regulate the growth and rate of function of many other systems in the body. T3 and T4 are synthesized from iodine and tyrosine. The thyroid also produces calcitonin, which plays a role in calcium homeostasis.

Hormonal output from the thyroid is regulated by thyroid-stimulating hormone (TSH) produced by the anterior pituitary, which itself is regulated by thyrotropin-releasing hormone (TRH) produced by the hypothalamus.

The thyroid may be affected by some frequent thyroid diseases. Hyperthyroidism occurs when the gland produces excessive amounts of thyroid hormones, the most common cause being Graves’ disease—an autoimmune disorder. In contrast, hypothyroidism is a state of insufficient thyroid hormone production.

Worldwide, the most common cause is iodine deficiency. Thyroid hormones are important for development, and hypothyroidism secondary to iodine deficiency remains the leading cause of preventable intellectual disability. In iodine-sufficient regions, the most common cause of hypothyroidism is Hashimoto’s thyroiditis—also an autoimmune disease. In addition, the thyroid gland may also develop several types of nodules and cancer.

**THYROID STIMULATING HORMONE (TSH)**

Measurement of pituitary production of TSH: normally, low levels (less than 5 units) of TSH are sufficient to keep the normal thyroid gland functioning properly.

When the thyroid gland becomes inefficient such as in early hyperthyroidism, the TSH becomes elevated even though the T4 /FT4 and T3/FT3 may still be within the “normal” range.

This rise in TSH represents the pituitary gland’s response to a drop in circulating thyroid hormone; it is usually the first indication of thyroid gland failure. Since TSH is normally low when the thyroid gland is functioning properly, the failure of TSH to rise when circulating thyroid hormones are low is an indication of impaired pituitary function.

The new “sensitive” TSH test will show very low levels of TSH when the thyroid is overactive (as a normal response of the pituitary to try to decrease thyroid stimulation). Interpretations of the TSH level depends upon the level of thyroid hormone, therefore, the TSH is usually used in combination with other thyroid tests such as the T4/FT4 and T3/FT3.

**Antibodies:**

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**Antigens & Conjugates:**

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**L-THYROXINE (T4)**

Levothyroxine (INN, USAN) or L-thyroxine is a synthetic thyroid hormone that is chemically identical to thyroxine (T4), which is naturally secreted by the follicular cells of the thyroid gland. It is used to treat thyroid hormone deficiency, and occasionally to prevent the recurrence of thyroid cancer. Like its naturally secreted counterpart, levothyroxine is a chiral compound in the L-form.

The related drug dextrothyroxine (D-thyroxine) was used in the past as a treatment for hypercholesterolemia (elevated cholesterol levels) but was withdrawn due to cardiac side effects.

It is on the World Health Organization’s List of Essential Medicines, a list of the most important medication needed in a basic health system.

**Antibodies:**

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**TRIODOOTHYRONINE (T3)**

Triiodothyronine, also known as T3, is a thyroid hormone. It affects almost every physiological process in the body, including growth and development, metabolism, body temperature, and heart rate.

Production of T3 and its prohormone thyroxine (T4) is activated by thyroid-stimulating hormone (TSH), which is released from the pituitary gland. This pathway is part of a closed-loop feedback process. Elevated concentrations of T3, and T4 in the blood plasma inhibit the production of TSH in the pituitary gland. As concentrations of these hormones decrease, the pituitary gland increases production of TSH, and by these processes, a feedback control system stabilizes the amount of thyroid hormones that are in the bloodstream.

T3 is the true hormone. Its effects on target tissues are roughly four times more potent than those of T4. Of the thyroid hormone that is produced, just about 20% is T3, whereas 80% is produced as T4. Roughly 85% of the circulating T3 is later formed in the liver and pituitary by removal of the iodine atom from the carbon atom number five of the outer ring of T4. In any case, the concentration of T3 in the human blood plasma is about one-fortieth that of T4. This is observed in fact because of the short half-life of T3, which is only 2.5 days. This compares with the half-life of T4, which is about 6.5 days.

**Antibodies:**

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CUSTOM DIAGNOSTIC LABORATORY SERVICES & SOLUTIONS

ISO 9001 AND ISO 13485 APPROVED

The scientists at DIAsource immunoAssays S.A have extensive experience in the development of antibodies and related enzymatic or radioactive assays. They can help you guide through each step in the process of purifying, fragmenting, coating and labeling antibodies. High level technicians can be consulted at any time to discuss other services like filling and freeze-drying. We can offer specific and technical suggestions to enhance the performance of your final product. All services are manufactured under strict ISO-9001 guidelines.

SERVICES AVAILABLE

Coating services
- Coating of polyethylene tubes individually capped: batch size from 30,000 up to 100,000 tubes with your antibodies according to your coating procedure.
- Primary coated tubes with anti-rabbit, anti-sheep or avidin-streptavidin for RIA/RIA applications.
- Primary microtiter plates with anti-rabbit, anti-sheep, or avidin-streptavidin for ELISA applications.

Filling services
- From solution preparation to filling, capping and labeling.

Freeze-drying services
- Freeze-dry from 0.25ml up to 15ml in glass vials.
- Full line of services from solution preparation to filling, capping and labeling.

LABORATORY SERVICES & CUSTOM DIAGNOSTIC

Coating of microtiter plates in sealed aluminum bags with your antibodies according to your coating procedure: batch size from 150 up to 900 microtiter plates.

Tailored 125I labeling
- Iodization and purification of your antigen (hapten, peptide, protein) either by gel filtration or HPLC.
- Tailored 125I labeling radioactive assays. They can help guide you through each step in the process of purifying, fragmenting, coating and labeling antibodies.

Mabs fragmentation
- From the antibodies you send us we can produce Fab2 fragments on a large scale.

Labeling Services
- Labeling of your antibody or antigen (hapten, peptide, protein) either by gel filtration or HPLC.

Antibody Purification
- Whatever antibody you send us we can purify it by proteinA, proteinG or caprylic acid precipitation and even by affinity chromatography.

G GENERAL CONDITIONS OF SALES

Article 1 – Application
Unless, there is an explicit deviation agreed upon in writing, the present general terms and conditions apply to every DIAsource offer as well as every contract that is formed on the basis of such an offer or an order confirmed by DIAsource.

The client waives explicitly and fully the application of its own general terms and conditions by virtue of its relationship with DIAsource. Contracts that have been concluded through the staff of representatives of DIAsource and that do not observe these general terms and conditions do not bind DIAsource.

Article 2 – Conclusion of the contract
An offer from DIAsource is only binding if it is accompanied by a period of acceptance and only if this period has not yet expired. A client’s order can only be considered accepted by DIAsource after DIAsource’s express written confirmation of that acceptance. As any order has its own specific characteristics and, therefore, the products ordered by one client cannot be redirected to another client, the client cannot cancel an order whether in full or in part. If the client would cancel an accepted order, it will still be obliged to pay the full price of the order.

DIAsource reserves the right (i) to refuse requests for customised orders, or requests for modifications of accepted orders, and/or (ii) to charge such modifications or customisations with a minimum of 25 EUR excl. VAT. Without prejudice to the third paragraph of this article 2, a administrative fee of 25 EUR excl. VAT will be charged by DIAsource for any order with a value of less than 500 EUR excl. VAT.

Article 3 – Price and related costs
Unless agreed otherwise in writing, all of DIAsource’s set prices apply to packaged products that are delivered Ex Works (in the sense of Incoterms 2010) to the registered seat of DIAsource. The following, on top of the stipulated price, are to be paid by the client, unless there is an explicit written deviation from this rule:
(i) All costs of insurance, security, loading, transport, and unpacking of the products.
(ii) All taxes and levies (including VAT and customs duties) related to the delivered products or the items mentioned under (i), including the taxes and levies that are applied or adopted after the conclusion of the contract.
(iii) All additional costs for DIAsource that have been incurred as a result of delays in the delivery or shipment that are detrimental to DIAsource.
(iv) Every cost that is charged for execution of payments must always be borne by the client itself.

Article 4 – Payment
Unless agreed upon otherwise, if DIAsource sends a pro forma invoice to the client, such pro forma invoice must be paid before the confirmed shipment date and if DIAsource does not send a pro forma invoice to the client, all invoices should be paid upon receipt. The payment of a liquor formal invoice may not be delayed or postponed for any reason whatsoever. Any late payment will be charged interest to the benefit of DIAsource immediately upon notification to that effect by DIAsource. An interest on late payment will be charged—ex officio and without notice—on the unpaid balance of all debts of the client to DIAsource at a rate of 12% per annum. The interest will be charged to the client’s account for the period that is necessary for the full payment of the invoice. On top of this, a compensation of 15% of the unpaid balance will be charged to cover the administrative costs associated with late payment and the administration of the claim. DIAsource will only be liable for (i) the decrease in value of the product, and, to the extent DIAsource can be held liable for it, and (ii) the additional damage suffered by the client as a result of the late payment. This indemnity and all interest will be limited in any event to the price paid by the client for the relevant product. The client must conform strictly with the directives regarding the good distribution practices (GDP) applicable to medical devices marked “CE”.

The client must use the products in a professional way and in accordance with the instructions of DIAsource. The client must inform DIAsource immediately of any dysfunction or any alteration of the properties and/or performance of the product he has bought from DIAsource. If the products are needed by the client to a third party outside of Belgium, the client must provide all documents and necessary instructions to that third party in the language(s) of the country of destination. DIAsource must only accept external goods to the extent that they are free of any personal responsibility and obligations against DIAsource to any third party through a sale, a capital contribution, a donation or any other transaction, including the sale or contribution of a division (“bedrijfstak” / “branche d’activité”) of a company or a business as a whole (“algemeneverkoop” / “universale”), or a merger, spin-off, splitting or other corporate restructuring without the prior written consent of DIAsource.

Article 5 – Reservation of ownership – transfer of risk
The ownership of every sold product only passes to the client after the client has fully paid the price and related costs for this product, as well as the late interest and compensation that would be due by virtue of late payment of this price. Before full payment is made, and unless explicitly agreed otherwise in writing, the client may not resell the product, encumber it with securities, or transfer it or attach it to an immovable property in any way, in that time span, the client will conserve the product safely and in good condition, it will also conserve it in such a way that it can be identified individually, with a legible and visible mark on it, explicitly confirming that it is property of DIAsource. The risk of loss, destruction, or damage to the product falls or caused by force majeure will nevertheless pass to the client as soon as the product is delivered to the client.

Article 6 – Delivery Period
Every agreed upon delivery term is only binding to be considered indicative. Not observing this term does not entitle the client to any remedy, unless the parties agree explicitly in writing that the delivery term is binding in that event, not observing the delivery term can only give way to indemnification for the damage that is actual, proven, and established in such a way that both parties are able to submit observations, or to the termination of the sale, any of which can only be sought at the earliest 1 month from the date of a notice demanding delivery.

Article 7 – Hardship
(i) Beyond the will of DIAsource, unforeseen circumstances (e.g., strike, accidents, weather conditions, material defects, etc.) materialize in the procurement-, production-, distribution- or any other necessary type of process that make the delivery or timely delivery or the performance of any other obligation impossible (or strongly impede this), then DIAsource, depending on the nature of the circumstances, has the right to terminate the contract or suspend the performance of all of its obligations. DIAsource will not incur any liability if this occurs.

Article 8 – Complaints
Complaints regarding visible defects or non-conformity are only admissible if the product has not been used yet, and, if the complaint is in writing and is sent to the commercial services department of DIAsource in Louvain-la-Neuve no later than 3 working days from the date of delivery. After that, the products will完全没有 be considered accepted. Following the complaint are mistakenly anonymous, complaints, claims related to results dating more than a year before the termination. The complaints must be supported by a written statement (e.g., reimbursement, error in following the protocol, etc.), claims related to facts that are not within the competence of DIAsource, claims relating to a failure to provide information by the client, claims related to a subjective nature of the said claim.

Article 9 – Liability/Security
DIAsource will only be liable for hidden defects if the client notifies DIAsource thereof by registered letter within 7 business days after such hidden defects are discovered by the client. This term is to be considered a term unable to be suspended or resented (“la loi de prescription” / “vervaltermijn”). In that event, the client will not be entitled to claim the dissolution of the sale of the relevant product, and DIAsource will only be liable for (i) the decrease in value of the product, and, to the extent DIAsource can be held liable for it, and (ii) the additional damage suffered by the client as a result of the hidden defect.

The client must use the products in a professional way and in accordance with the instructions of DIAsource. The client must inform DIAsource immediately of any dysfunction or any alteration of the properties and/or performance of the product he has bought from DIAsource. If the products are needed by the client to a third party outside of Belgium, the client must provide all documents and necessary instructions to that third party in the language(s) of the country of destination. DIAsource must only accept external goods to the extent that they are free of any personal responsibility and obligations against DIAsource to any third party through a sale, a capital contribution, a donation or any other transaction, including the sale or contribution of a division (“bedrijfstak” / “branche d’activité”) of a company or a business as a whole (“algemeneverkoop” / “universale”), or a merger, spin-off, splitting or other corporate restructuring without the prior written consent of DIAsource.

Article 10 – Noting in case of insolvency of the client
In case the client is declared bankrupt, or in case any other insolvency or insolvency-like procedure is initiated in respect of the client, the client will become once a party (through a sale, a capital contribution, a donation or any other transaction, including the sale or contribution of a division (“bedrijfstak” / “branche d’activité”) of a company or a business as a whole (“algemeneverkoop” / “universale”), or a merger, spin-off, splitting or other corporate restructuring without the prior written consent of DIAsource).

Article 12 – Applicable law and competent court
Belgian law applies to all agreements to which the present general terms and conditions apply, but with the exclusion of the application of Belgian private international law and the Convention on the International Sale of Goods of Vienna dated 11 April 1980 (except for the Convention on the Limitation Period in the International Sale of Goods of 16 June 1986, whose application remains). The courts of Woluwé-Saint-Pierre, Belgium are exclusively competent to hear all disputes arising out of or in connection with contracts concluded by DIAsource including the pre-contractual dispute to which the present general terms and conditions apply.

Article 13 – Discrepancies between language versions
The present general terms and conditions have been drafted in Dutch, English, French and Spanish. In case of discrepancies between the different language versions, the French version will prevail.
IMMUNOASSAYS
- Auto-Immunity
- Biogenic Amines
- Bone Metabolism
- Cancer Markers
- Cardiovascular & Salt Balance
- Diabetes & Metabolism
- Fertility
- Gastrointestinal Metabolism
- Growth Factors
- Immunology Markers
- Infectious Diseases
- Thyroid Function

INSTRUMENTS
- Automated System for ELISA & RIA
- Automated Processor for DOT Technology “Auto-Immunity”
- ELISA Instruments

ANTIBODIES
- Bone Metabolism
- Cancer Markers
- Cardiovascular & Salt Balance
- Diabetes & Metabolism
- Fertility
- Growth Factors
- Thyroid Function

MANUFACTURED BY:
DIAsource ImmunoAssays® S.A.
rue du Bosquet 2 - BE 1348 Louvain-la-Neuve - Belgium
Tel.: +32 (0)10 84 99 11 - Fax: +32 (0)10 88 99 90
info@diasource.be - customer.service@diasource.be

DISTRIBUTED BY:

FOR MORE INFORMATION:
www.diasource-diagnostics.com
www.freevitamind.org