Thyroid peroxidase (TPO) represents one of the main autoantigenic targets in autoimmune thyroid disease of humans. Its identity with the formerly so-called 'microsomal antigen' has been shown several years ago. As an integral membrane glycoprotein it is restricted to the apical plasma membrane of the follicular epithelial cells and comprises two identical subunits of approx. 100 kDa molecular weight. The hemoprotein TPO plays a key role in thyroid hormone biosynthesis by catalyzing both the iodination of tyrosyl residues and the coupling of iodotyrosyl residues in thyroglobulin (TG) to form precursors of the thyroid hormones T4 and T3.

TPO is produced in the baculovirus/insect cell expression system as a truncated soluble TPO molecule, which consists of the epitope-bearing extracytoplasmic domain. The recombinant production of an engineered TPO antigen eliminates the purity problems of the classical microsomal antigen preparations, which are inevitably contaminated with thyroglobulin, one of the other major thyroid autoantigens.

TPO antibodies, the hallmark of human autoimmune thyroid disease, are of IgG class. TPO antibodies occur with a prevalence of about 90% in patients with Hashimoto thyroiditis and in patients with Graves' disease at a lower prevalence of 70-95%.

Thyroglobulin (TG) is a large globular dimeric glycoprotein with a total molecular weight of 660 kDa, which occupies a key precursor role in the biosynthesis of the thyroid hormones. Approximately 75% of the total protein content of the thyroid follicle consist of TG.

DIARECT produces native human thyroglobulin.

TG autoantibodies of IgG type have a prevalence of 80-85% in patients with Hashimoto thyroiditis and also a lower prevalence of 30-80% in patients with Graves' disease.