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(54) **ANTI-THYROID HORMONE (T4) RECOMBINANT ANTIBODY OR ANTIGEN BINDING FRAGMENT**

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(57) **ABSTRACT**

The present invention relates to the fields of antibodies, antigen binding fragments and immunodiagnostics. Specifically, the invention relates to a recombinant anti-body or antigen binding fragment for binding thyroid hormone T4 (thyroxine) and halogenated bisphenol A. Also, the present invention relates to an isolated nucleic acid molecule comprising a nucleotide sequence that encodes the recombinant antibody or antigen binding fragment of the present invention, as well as an ex-pression vector and host cell comprising the nucleic acid molecule of the present invention. Still, the present invention relates to a method of producing a recombi-nant antibody or antigen binding fragment for binding T4 thyroid hormone and hal-ogenated bisphenol A, a test kit and an immunoassay comprising the recombinant antibody or antigen binding fragment of the present invention, and a method for determining T4 thyroid hormone and/or halogenated bisphenol A levels in a sam-ple of a subject. Still further, the present invention relates to a method of treating a sample, e.g. an immunoaffinity-based sample preparation method for enrich-ment of the halogenated bisphenol A from a sample.

Specification includes a Sequence Listing.

T4 Fab nucleotide sequences

A. Light chain

GATATTGTTCTCAACCAGTCTCCAGCAATCATGTCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAATTCCAGCT
CAAGTGTAAGTTACATGCACTGGTACCAGCATAAGCCAGGATCCTCCCCCCGACTCCTGATTTATGACACATCCAACCT
GGCTTCTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGATCTGGGACCTCTTACTCTCTCACAATCAGCCGAATGGAGGC
TGAAGATGCTGCCACTTATTACTGCCAGCAAAGGAGTAGTTACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAAAT
AACCCGGGCTGATGCTGCACCAACTGTATCCATCTTCCCACCATCCAGTGAGCAGTTAACATCTGGAGGTGCCTCAGTC
GTGTGCTTCTTGAACAACTTCTACCCCAAAGACATCAATGTCAAGTGGAAGATTGATGGCAGTGAACGACAAAATGGC
GTCCTGAACAGTTGGACTGATCAGGACAGCAAAGACAGCACCTACAGCATGAGCAGCACCCTCACGCTCACCAAGGA
CGAGTATGAACGACATAACAGCTATACCTGTGAGGCCACTCACAAGACATCAACTTCACCCATTGTCAAGAGCTTCAA
CAGGAATGAGTGT **(SEQ ID NO: 1)**

OR

GATATTGTTCTCAACCAGTCTCCAGCAATCATGTCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAATTCCAGCT
CAAGTGTAAGTTACATGCACTGGTACCAGCATAAGCCAGGATCCTCCCCCCGACTCCTGATTTATGACACATCCAACCT
GGCTTCTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGATCTGGGACCTCTTACTCTCTCACAATCAGCCGAATGGAGGC
TGAAGATGCTGCCACTTATTACTGCCAGCAAAGGAGTAGTNNNCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAAA
TAACCCGGGCTGATGCTGCACCAACTGTATCCATCTTCCCACCATCCAGTGAGCAGTTAACATCTGGAGGTGCCTCAGT
CGTGTGCTTCTTGAACAACTTCTACCCCAAAGACATCAATGTCAAGTGGAAGATTGATGGCAGTGAACGACAAAATGG
CGTCCTGAACAGTTGGACTGATCAGGACAGCAAAGACAGCACCTACAGCATGAGCAGCACCCTCACGCTCACCAAGG
ACGAGTATGAACGACATAACAGCTATACCTGTGAGGCCACTCACAAGACATCAACTTCACCCATTGTCAAGAGCTTCA
ACAGGAATGAGTGT **(SEQ ID NO: 7)**