

Horseradish Peroxidase Oligonucleotides – HRP Oligonucleotides

Description

One of the most sensitive methods to identify microorganisms is *in-situ* hybridization (ISH) using HRP-labelled oligonucleotides.

Horseradish peroxidase (HRP) is a 44 kDa hemoprotein isolated from horseradish plants. It catalyses the oxidation of many substrates in the presence of H₂O₂, resulting in an enrichment of oxidized forms of these substrates:



Substrates of choice are colorless / non-fluorescent in their reduced form but colored / fluorescent in the oxidized form.

Highest sensitivity is achieved by using a fluorescent substrate system called TSA (tyramide signal amplification). The use of fluorochrome coupled tyramide as substrate leads to fluorochrome deposition in cells when HRP—and consequently the oligonucleotide target sequence—is present. This system is also known as CARD (catalysed reporter deposition). Sensitivity of CARD is up to 20 fold higher than standard FISH (fluorescence *in-situ* hybridization) systems.

Advantages

- extremely high sensitivity
- no special equipment needed - immunology standard analysis techniques can be used
- can be used in fluorescence microscopy and flow cytometry
- high flexibility of assay design (direct-labelled fluorophore probes or probes in combination with TSA system, anti-HRP antibodies)

Applications

- CARD / FISH
- ISH
- Immunoblotting / Immunosorbent assays
- Cytology
- Histology

Fields of Research

- identification of bacteria in water samples
- detection and identification of bacterial contaminants in drinking water (rRNA targeted HRP probes)
- detection and identification of rRNA or mRNA in cells and tissues

Product offering

- Oligonucleotides up to 25 bases
- purification of conjugate with PAGE
- all conjugates MS-controlled
- delivery in guaranteed amounts
- highest enzyme activity of HRP reagent used

synthesis scale	0,02 µmol	0,04 µmol	0,2 µmol	1,0 µmol
guaranteed amount	1 OD	2 OD	4 OD	10 OD

For other lengths please contact services.oligos@thermo.com

Literature

- Pernthaler A *et al.* (2002): Fluorescence In Situ Hybridization and Catalyzed Reporter deposition for the Identification of Marine Bacteria. *Applied and Environmental Microbiology*, **68**, pp.3094-3101
- Baudart J *et al.* (2002): Rapid and Sensitive Enumeration of Viable Diluted Cells of Members of the Family *Enterobacteriaceae* in Freshwater and Drinking Water. *Applied and Environmental Microbiology*, **68**, pp.5057-5063
- Sekar, R *et al.*, (2003) An improved protocol for quantification of freshwater Actinobacteria by Fluorescence In-Situ Hybridization. *Applied and Environmental Microbiology*, **69**, pp. 2928-2935
- Sekar, R *et al.*, (2004) Flow Sorting of Marine Bacterioplankton after Fluorescence In-Situ Hybridization. *Applied and Environmental Microbiology*, **70**, pp. 6210-6219

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