

# NEUROMICS



## 5-hydroxymethyluridine (5-HmdU)

## Data Sheet

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<b>Catalog Number:</b>	GT19005	<b>Host:</b>	Goat
<b>Product Type:</b>	Whole Serum Antibody	<b>Species Reactivity:</b>	Human
<b>Immunogen Sequence:</b>	5-Hydroxymethyl-2'-deoxyuridine (5-HmdU) conjugate.	<b>Format:</b>	Liquid-whole serum. 0.09% Sodium Azide as a preservative.
<b>Applications:</b>	ELISA: >1:1,000  Dilutions listed as a recommendation. Optimal dilution should be determined by investigator.		
<b>Storage:</b>	Maintain at +2-8°C for 3 months or at -20°C for longer periods. Stable for 1 year. <i>Avoid repeated freeze-thaw cycles.</i>		
<b>References:</b>	Lis, A.W., McLaughlin, R.K. and McLaughlin, D.I. Studies on 5-hydroxyuridine (isobarbituridine): X. Isolation and tentative identification of 5-hydroxymethyluridine from ribosomal RNA. <i>Physiol Chem Phys.</i> 1975;7(6):565-70.		

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### Application Notes

#### Description/Data:

5-Hydroxymethyl-2'-deoxyuridine (5-HmdU) is formed from thymidine during the oxidation of DNA by ionizing radiation or reactive oxygen species (ROS) that are formed from inflammatory response. This causes genetic mutations, altered gene expression and chromosomal instability that have generally been implicated with aging, cancers and autoimmune diseases. Systemic oxidative stress levels, as evidenced by DNA damage products in the blood and urine, appear to be associated with a risk of various cancers, including that of the breast, lung and colorectal cancers. Cigarette smoke contains numerous chemical carcinogens and other compounds that generate reactive oxygen species that can damage DNA directly or indirectly via inflammatory processes. 5-HmdU is one of the major oxidized DNA bases that is significantly elevated in the white blood cells of women diagnosed with breast cancer, which may be a result of diminished DNA repair. Individuals with BRCA1 and BRCA2 mutations may be at increased risk for cancer due to deficiencies in the repair of DNA lesions caused by ROS. Additionally, antibody titers recognizing 5-HmdU have also been found to be significantly elevated in women with breast, color and rectal cancers. Therefore, oxidative DNA damage is therefore an attractive marker of disease risk as it takes into account not only the exposure to and production of oxidants, but also the cells' DNA repair ability.

Note: The presence of 5-HmdU in DNA stimulates the production of specific IgM-class auto-antibodies. This antibody is designed to measure presence of 5-HmdU in serum.

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[www.neuromics.com](http://www.neuromics.com)

Neuromics Antibodies • 5325 West 74<sup>th</sup> Street, Suite 8 • Edina, MN 55439  
phone 866-350-1500 • fax 612-677-3976 • e-mail: [pshuster@neuromics.com](mailto:pshuster@neuromics.com)