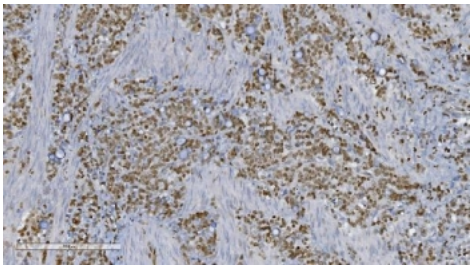
Aryl hydrocarbon Receptor Antibody / AHR (R30876)

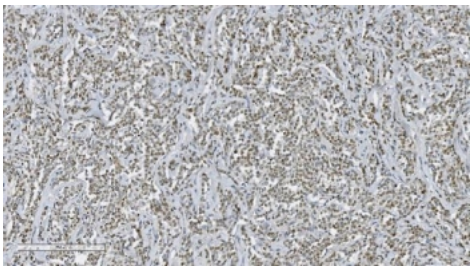
Catalog No.	Formulation	Size
R30876	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

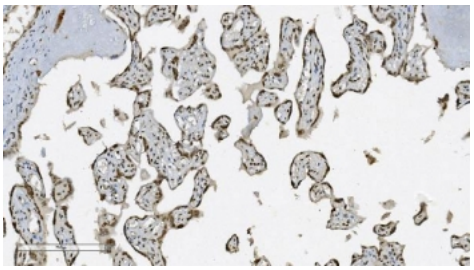
Availability	1-3 business days
Species Reactivity	Human, Mouse, Rat
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	P35869
RRID	AB_3751818
Localization	Cytoplasmic, nuclear
Applications	Western blot: 0.5-1ug/ml Immunohistochemistry (FFPE): 2-5ug/ml Immunofluorescence: 5ug/ml Flow cytometry: 1-3ug/million cells
Limitations	This Aryl hydrocarbon Receptor antibody is available for research use only.



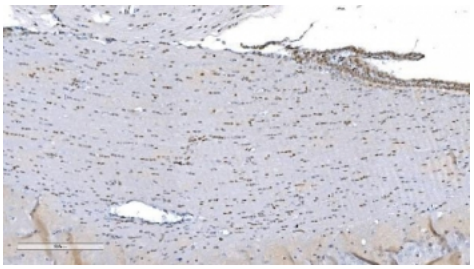
Aryl Hydrocarbon Receptor Antibody Gastric Cancer IHC. Immunohistochemical staining of FFPE human gastric cancer tissue demonstrates AHR expression using an Aryl Hydrocarbon Receptor antibody. AHR, also known as an Environmental Sensor Protein, is a ligand activated transcription factor that integrates signals from xenobiotics, dietary metabolites, and inflammatory pathways to regulate gene expression and cellular homeostasis. Predominantly nuclear and cytoplasmic staining is observed throughout malignant cells, consistent with active AHR signaling and its emerging role in tumor progression and metabolic adaptation. Heat induced epitope retrieval was performed by boiling tissue sections in pH 8 EDTA buffer for 20 minutes followed by cooling prior to staining. These findings support the utility of AHR Antibody for studies of cancer biology, toxicology, and transcriptional regulation.



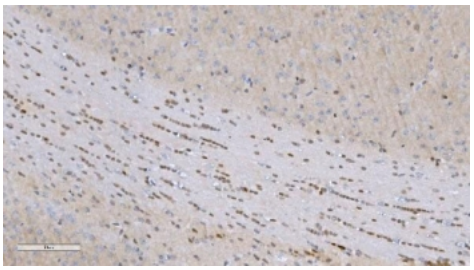
Aryl Hydrocarbon Receptor Antibody Lymphadenoma IHC. Immunohistochemical staining of FFPE human lymphadenoma tissue demonstrates AHR expression using an Aryl Hydrocarbon Receptor antibody. AHR, also known as an Environmental Sensor Protein, is a ligand activated transcription factor that regulates immune cell differentiation, inflammatory signaling, and cellular responses to endogenous and environmental ligands. Diffuse nuclear and cytoplasmic staining is observed throughout the lymphoid tumor cells, consistent with the established role of AHR in modulating immune homeostasis and hematopoietic cell function. Heat induced epitope retrieval was performed by boiling tissue sections in pH 8 EDTA buffer for 20 minutes followed by cooling prior to staining. These results support the utility of AHR Antibody for studies of immunology, lymphoid malignancies, and signal transduction pathways.



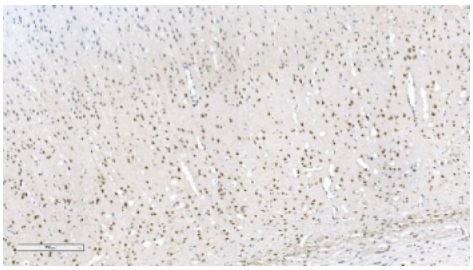
Aryl Hydrocarbon Receptor Antibody Placenta IHC. Immunohistochemical staining of FFPE human placental tissue demonstrates AHR expression using an Aryl Hydrocarbon Receptor antibody. AHR, also known as an Environmental Sensor Protein, is a ligand activated transcription factor that regulates xenobiotic metabolism, immune tolerance, and developmental signaling pathways. Prominent nuclear and cytoplasmic staining is observed in trophoblastic cells lining the chorionic villi, consistent with the established role of AHR in placental development and maintenance of the maternal fetal interface. Heat induced epitope retrieval was performed by boiling tissue sections in pH 8 EDTA buffer for 20 minutes followed by cooling prior to staining. These results support the utility of AHR Antibody for studies of reproductive biology, developmental signaling, and environmental response mechanisms.



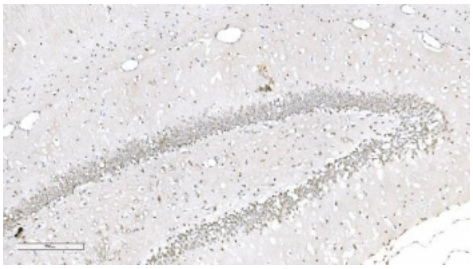
Aryl Hydrocarbon Receptor Antibody Mouse Brain IHC. Immunohistochemical staining of FFPE mouse brain tissue demonstrates AHR expression using an Aryl Hydrocarbon Receptor antibody. AHR, also known as an Environmental Sensor Protein, is a ligand activated transcription factor that integrates signals from dietary metabolites, microbiota derived compounds, and environmental ligands to regulate neurodevelopment and immune homeostasis. Scattered nuclear and cytoplasmic staining is observed in neuronal and glial populations, with increased reactivity in cells adjacent to the ventricular surface, consistent with the emerging role of AHR in central nervous system function and neuroinflammatory signaling. Heat induced epitope retrieval was performed by boiling tissue sections in pH 8 EDTA buffer for 20 minutes followed by cooling prior to staining. These results support the utility of AHR Antibody for studies of neurobiology, environmental sensing, and transcriptional regulation.



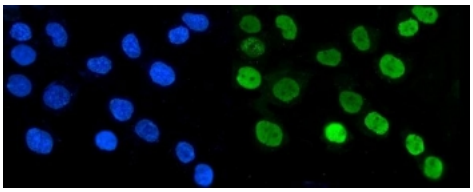
Aryl Hydrocarbon Receptor Antibody Cerebellum IHC. Immunohistochemical staining of FFPE mouse brain tissue demonstrates AHR expression using an Aryl Hydrocarbon Receptor antibody. AHR, also known as an Environmental Sensor Protein, is a ligand activated transcription factor that regulates responses to endogenous metabolites and environmental stimuli. Distinct nuclear staining is observed in linear arrays of cells within the cerebellar white matter and adjacent neuronal layers, consistent with the expression of AHR in specialized neural and glial populations involved in maintaining central nervous system homeostasis. Heat induced epitope retrieval was performed by boiling tissue sections in pH 8 EDTA buffer for 20 minutes followed by cooling prior to staining. These findings support the utility of AHR Antibody for investigations of neurodevelopment, neuroinflammation, and transcriptional responses to environmental cues.



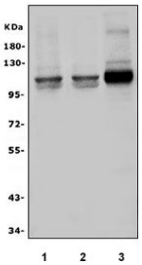
Aryl Hydrocarbon Receptor Antibody Rat Brain IHC. Immunohistochemical staining of FFPE rat brain tissue demonstrates AHR expression using an Aryl Hydrocarbon Receptor antibody. AHR, also known as an Environmental Sensor Protein, is a ligand activated transcription factor that integrates signals from endogenous metabolites, dietary compounds, and environmental toxicants to regulate gene expression and immune responses. Widespread nuclear staining is observed throughout neuronal populations and scattered glial cells, reflecting the role of AHR in maintaining neural homeostasis and modulating neuroinflammatory pathways. Heat induced epitope retrieval was performed by boiling tissue sections in pH 8 EDTA buffer for 20 minutes followed by cooling prior to staining. These results support the utility of AHR Antibody for studies of neurobiology, transcriptional regulation, and environmental sensing mechanisms.



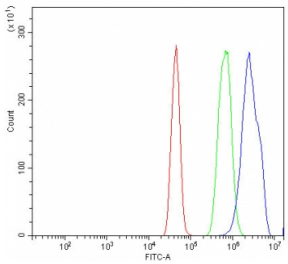
Aryl Hydrocarbon Receptor Antibody Hippocampus IHC. Immunohistochemical staining of FFPE rat brain tissue demonstrates AHR expression using an Aryl Hydrocarbon Receptor antibody. AHR, also known as an Environmental Sensor Protein, is a ligand activated transcription factor that regulates xenobiotic responses, immune signaling, and neuronal homeostasis. Prominent nuclear staining is observed within densely packed neuronal layers of the hippocampal formation, while scattered positive cells are present throughout the surrounding parenchyma. This distribution is consistent with emerging roles for AHR in neurodevelopment, synaptic plasticity, and responses to endogenous metabolic cues. Heat induced epitope retrieval was performed by boiling tissue sections in pH 8 EDTA buffer for 20 minutes followed by cooling prior to staining. These findings support the utility of AHR Antibody for studies of neurobiology, environmental sensing, and transcriptional regulation.



Aryl Hydrocarbon Receptor Antibody A431 Cells IF. Immunofluorescent staining of FFPE human A431 cells demonstrates AHR expression using an Aryl Hydrocarbon Receptor antibody (green). AHR, also known as an Environmental Sensor Protein, is a ligand activated transcription factor that translocates to the nucleus following activation by endogenous metabolites and xenobiotic ligands. Strong nuclear fluorescence is observed, consistent with the role of AHR in regulating transcriptional responses and cellular adaptation to environmental stimuli. DAPI nuclear stain identifies cell nuclei (blue). Heat induced epitope retrieval was performed by steaming sections in pH 6 citrate buffer for 20 minutes prior to staining. These results support the utility of AHR Antibody for studies of toxicology, signal transduction, and transcriptional regulation.



Aryl Hydrocarbon Receptor Antibody Human Cell Lines WB. Western blot analysis of AHR expression using an Aryl Hydrocarbon Receptor antibody. Lane 1: human HeLa cell lysate. Lane 2: human PC-3 cell lysate. Lane 3: human Caco-2 cell lysate. AHR, also known as an Environmental Sensor Protein, is a ligand activated transcription factor that regulates xenobiotic metabolism and cellular responses to endogenous and environmental ligands. A prominent band is detected at approximately 95 kDa in all three cell lines, corresponding to the expected molecular weight of full length AHR. Stronger expression is observed in Caco-2 cells, consistent with the important role of AHR in intestinal barrier function and metabolic signaling. These results support the utility of AHR Antibody for studies of toxicology, immune regulation, and signal transduction.



Aryl Hydrocarbon Receptor Antibody A431 Cells FACS. Flow cytometric analysis of human A431 cells was performed using an Aryl Hydrocarbon Receptor antibody at 1 ug per million cells following blocking with goat sera. AHR, also known as an Environmental Sensor Protein, is a ligand activated transcription factor that mediates cellular responses to xenobiotics, microbial metabolites, and endogenous signaling molecules. Red histogram: cells alone. Green histogram: isotype control. Blue histogram: Aryl Hydrocarbon Receptor antibody. The pronounced rightward shift of the AHR antibody signal relative to the controls demonstrates specific detection of endogenous AHR expression in A431 cells. These results support the utility of AHR Antibody for studies of toxicology, immune regulation, environmental sensing, and signal transduction pathways.

Description

Aryl Hydrocarbon Receptor antibody detects the AHR protein, a ligand-activated transcription factor belonging to the basic helix-loop-helix Per-ARNT-Sim (bHLH-PAS) family. The UniProt recommended name is Aryl hydrocarbon receptor (AHR). This cytoplasmic receptor mediates the cellular response to environmental toxins, xenobiotics, and endogenous metabolites, playing an essential role in detoxification, immune regulation, and development.

Functionally, Aryl Hydrocarbon Receptor antibody identifies an 848-amino-acid cytoplasmic protein that remains inactive when bound to chaperones such as HSP90, XAP2, and p23. Upon ligand binding, AHR translocates to the nucleus, where it dimerizes with the Aryl hydrocarbon receptor nuclear translocator (ARNT). This complex binds to xenobiotic response elements (XREs) in target gene promoters, activating transcription of detoxification enzymes such as CYP1A1, CYP1A2, and CYP1B1.

The AHR gene is located on chromosome 7p21.1 and is broadly expressed across multiple tissues, including liver, lung, thymus, and skin. AHR serves as a molecular sensor that integrates environmental and metabolic signals. Its canonical pathway involves regulation of phase I and phase II xenobiotic-metabolizing enzymes, supporting the detoxification of aromatic hydrocarbons and halogenated compounds. Noncanonical AHR signaling also influences immune cell differentiation, circadian rhythm, and stem cell function.

Physiologically, AHR modulates differentiation of regulatory T cells and Th17 cells, linking environmental cues to immune homeostasis. Endogenous ligands, including tryptophan metabolites such as kynurenine and FICZ, activate AHR signaling in immune and barrier tissues. Beyond immune regulation, AHR plays developmental roles in vasculature formation, epidermal barrier function, and liver morphogenesis. Its expression in intestinal and pulmonary epithelia supports adaptive responses to microbial metabolites and xenobiotic exposure.

Dysregulated AHR signaling contributes to diverse pathologies. Persistent activation by environmental toxins like dioxins (e.g., TCDD) leads to toxic responses and carcinogenesis, while insufficient AHR signaling impairs mucosal immunity and epithelial regeneration. In cancer biology, AHR acts context-dependently as either an oncogene or tumor suppressor, influencing cell cycle control, invasion, and immune evasion. In metabolic and neuroimmune systems, AHR coordinates detoxification with inflammatory and oxidative stress responses.

Aryl Hydrocarbon Receptor antibody is widely used in toxicology, immunology, and molecular signaling research. It is suitable for western blotting, immunohistochemistry, and immunofluorescence to detect AHR localization and activation states. This antibody supports studies of xenobiotic metabolism, transcriptional regulation, and ligand-dependent signaling. In translational research, AHR detection aids in understanding how environmental exposures and endogenous ligands shape immunity and cancer biology.

Structurally, AHR contains an N-terminal bHLH DNA-binding region, tandem PAS domains for ligand and ARNT interaction, and a C-terminal transactivation domain. Ligand binding triggers conformational rearrangement and nuclear translocation. NSJ Bioreagents provides Aryl Hydrocarbon Receptor antibody reagents validated for use in environmental

toxicology, immune modulation, and transcriptional pathway research.

Visit our AHR Antibody page to discover additional antibodies against this Environmental Sensor Protein, including reagents for studies of xenobiotic metabolism, immune regulation, and transcriptional signaling.

Application Notes

The stated application concentrations are suggested starting amounts. Titration of the Aryl hydrocarbon Receptor antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

Amino acids 832-848 (HPSEARPFPDLTSSGFL-human) were used as the immunogen for this Aryl hydrocarbon Receptor antibody.

Storage

After reconstitution, the Aryl hydrocarbon Receptor antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

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