abcam

ab29

Anti-PCNA antibody [PC10]

Anti-PCNA antibody [PC10] (ab29) is a mouse monoclonal antibody detecting PCNA in **Western Blot, Flow Cytometry (Intra), IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- Over 730 publications
- Trusted since 1998

Lab Essentials

Key facts

Isotype	IgG2a
Host species	Mouse
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.02% Sodium azide Constituents: PBS, 6.97% L-Arginine
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	PC10
Purification technique	Affinity purification
Light chain type	kappa
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Rat
Dilution info	1/10000 - 1/30000
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Expected

Species	Human
Dilution info	1/10000 - 1/30000
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Mouse
Dilution info	1/10000 - 1/30000
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Predicted

Species	Chicken, Cow, Pigeon, Pig, Drosophila melanogaster, Monkey, Zebrafish, Thornback ray, Dogfish, Catshark
Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	1 µg/mL
Notes	-

Species	Rat
Dilution info	1 µg/mL
Notes	-

Species	Human

Dilution info	1 µg/mL
Notes	-

Predicted

Species	Chicken, Cow, Pigeon, Pig, Drosophila melanogaster, Monkey, Zebrafish, Thornback ray, Dogfish, Catshark
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1-5 µg/mL
Notes	Methanol fixation recommended

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Rat
Dilution info	-
Notes	Methanol fixation recommended

Species	Chicken
Dilution info	-
Notes	-

Species	Cow
Dilution info	-

Notes	-

Species	Pigeon
Dilution info	-
Notes	-

Species	Pig
Dilution info	-
Notes	-

Species	Drosophila melanogaster
Dilution info	-
Notes	-

Species	Monkey
Dilution info	-
Notes	-

Species	Zebrafish
Dilution info	-
Notes	-

Species	Thornback ray
Dilution info	-
Notes	-

Species	Dogfish
Dilution info	-
Notes	-

Species	Catshark
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1 µg for 10^6 Cells
Notes	ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

Not recommended

Species	Mouse
Dilution info	-
Notes	ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

Species	Rat
Dilution info	-
Notes	ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

Species	Chicken
Dilution info	-
Notes	-

Species	Cow
Dilution info	-
Notes	-

Species	Pigeon
Dilution info	-
Notes	-

Species	Pig
Dilution info	-
Notes	-

Species	Drosophila melanogaster
Dilution info	-
Notes	-

Species	Monkey
Dilution info	-
Notes	-

Species	Zebrafish
Dilution info	-
Notes	-

Species	Thornback ray
Dilution info	-
Notes	-

Species	Dogfish
Dilution info	-
Notes	-

Species	Catshark
Dilution info	-
Notes	-

Target data

See full target information PCNA

Function	Confers DNA tethering and processivity to DNA polymerases and other proteins (PubMed:24695737, PubMed:24939902, PubMed:35585232). Auxiliary protein of DNA polymerase delta and epsilon, is involved in the control of DNA replication by increasing the polymerases' processivity during elongation of the leading strand (PubMed:35585232). Induces a robust stimulatory effect on the 3'-5' exonuclease and 3'-phosphodiesterase, but not apurinic-apyrimidinic (AP) endonuclease, APEX2 activities. Has to be loaded onto DNA in order to be able to stimulate APEX2. Plays a key role in DNA damage response (DDR) by being conveniently positioned at the replication fork to coordinate DNA replication with DNA repair and DNA damage tolerance pathways (PubMed:24939902). Acts as a loading platform to recruit DDR proteins that allow completion of DNA replication after DNA damage and promote postreplication repair: monoubiquitinated PCNA leads to recruitment of translesion (TLS) polymerases, while 'Lys-63'-linked polyubiquitination of PCNA is involved in error-free pathway and employs recombination mechanisms to synthesize across the lesion (PubMed:24695737).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Product Specifications
Anti-PCNA antibody [PC10] (ab29) is a mouse monoclonal antibody and is validated for use in Flow Cyt (Intra), ICC/IF, IHC-P, WB in human, mouse, rat samples.
Anti-PCNA antibody [PC10] (ab29) specifically detects PCNA (UniProt ID: P12004; Molecular weight: 29kDa) and is sold in 100 µg selling sizes.

Quality and Validation
Abcam's high quality validation processes ensure Anti-PCNA antibody [PC10] (ab29) has high sensitivity and specificity.
Anti-PCNA antibody [PC10] (ab29) has been cited over 736 times in peer reviewed journals and is trusted by the scientific community.
Anti-PCNA antibody [PC10] (ab29) has 72 independent reviews from customers.

Related Products
Conjugation-ready, carrier free format available for antibody clone PC10 - ab167078.
Antibody clone PC10 is also available pre-conjugated to a variety of labels for your convenience - Alexa Fluor® 488, HRP, Alexa Fluor® 647, PE (ab201672, ab201673, ab201674, ab233658).

Want a custom formulation?
This antibody clone is manufactured by Abcam. If you require a custom buffer formulation or conjugation for your experiments, please contact orders@abcam.com

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	PCNA or Proliferating Cell Nuclear Antigen functions as a sliding clamp for DNA polymerases during DNA replication. This important role enables it to coordinate the orderly duplication of the genome by increasing the processivity of DNA

	polymerase δ. PCNA weighs approximately 29 kDa and forms a homotrimeric ring structure. It is expressed in the nucleus of cells often found abundantly in proliferating cells. Aside from its main name some people also refer to it as PC10.
Biological function summary	This protein serves a core function in cell cycle regulation and DNA repair. PCNA acts as a scaffold for the assembly of numerous proteins involved in DNA processing forming part of the replication fork complex. It interacts with cyclins and cyclin-dependent kinases (CDKs) linking DNA synthesis to cell cycle progression. Furthermore PCNA partners with proteins involved in DNA mismatch repair base excision repair and nucleotide excision repair.
Pathways	PCNA is integral in the DNA replication and repair pathways. It closely associates with the p21 protein which regulates the cell cycle by inhibiting cyclin-CDK complexes upon DNA damage. PCNA also plays a part in the ubiquitin-proteasome pathway where its modification by ubiquitin impacts how cells respond to DNA damage. This modification recruits specific proteins for DNA repair highlighting its central role in maintaining genomic stability.
Associated diseases and disorders	PCNA is linked to cancer and autoimmune diseases. Its overexpression is common in various cancers reflecting its role in cell proliferation and the cell cycle. PCNA antibodies are sometimes found in the serum of patients with systemic lupus erythematosus (SLE) a connection also related to alterations in the p21 protein pathway. The interaction between PCNA and disease-specific proteins emphasizes its importance in both cell proliferation and immune system disorders.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

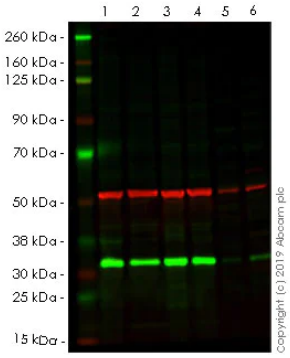
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:

14 product images



Western blot - Anti-PCNA antibody [PC10] (ab29)

PCNA Western blot staining using mouse Anti-PCNA antibody

Merged signal (red and green). Green - ab29 observed at 32 kDa. Red - loading control, ab52866, observed at 50 kDa.
All samples were subjected to SDS-PAGE. The membrane was blocked with 3% NF Milk. ab29 and ab52866(Rabbit anti alpha Tubulin loading control) were incubated overnight at 4°C at 1 ug/mL and 1/20000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preabsorbed ab216772 and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preabsorbed ab216777 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-PCNA antibody [PC10] (ab29) at 1 µg/mL

Lane 1:
HeLa at 20 µg

Lane 2:
PC12 at 20 µg

Lane 3:
SV40LT-SMC at 20 µg

Lane 4:
NIH 3T3 at 20 µg

Lane 5:
Rat liver at 20 µg

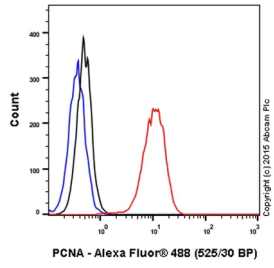
Lane 6:
Rat heart at 20 µg

Secondary

All lanes:
Western blot - Goat anti-Mouse IgG H&L (IRDye® 800CW) preadsorbed (ab216772) at 1/20000 dilution

Performed under reducing conditions.

Predicted band size: 29 kDa

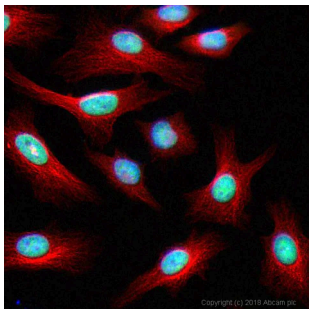


Flow Cytometry (Intracellular) - Anti-PCNA antibody [PC10] (ab29)

PCNA Flow Cytometry (Intracellular) staining using mouse Anti-PCNA antibody

Overlay histogram showing HeLa cells stained with ab29 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween 20 for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab29, 0.1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-mouse IgG (H&L) (ab150113) at 1/2000 dilution for 30

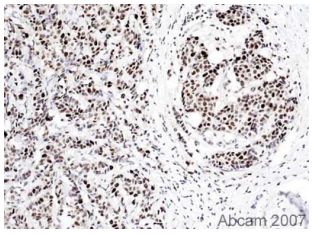
min at 22°C. Isotype control antibody (black line) was mouse IgG2a [ICIGG2A] (ab91361, 0.1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line) was also used as a control.
Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter.



Immunocytochemistry/ Immunofluorescence - Anti-PCNA antibody [PC10] (ab29)

PCNA Immunocytochemistry/ Immunofluorescence staining using mouse Anti-PCNA antibody

ab29 stained in HeLa cells. Cells were fixed with 100% methanol (5 min) at room temperature and incubated with PBS containing 10% goat serum, 0.3 M glycine, 1% BSA and 0.1% triton for 1h at room temperature to permeabilise the cells and block non-specific protein-protein interactions. The cells were then incubated with the antibody ab29 at 5 µg/ml and ab6046 (Rabbit polyclonal to beta tubulin - Loading Control) at 1/1000 dilution overnight at +4°C. The secondary antibodies were ab150117 (pseudo-colored red) and ab150080 (colored green) used at 1 µg/ml for 1 hour at room temperature. DAPI was used to stain the cell nuclei (colored blue) at a concentration of 1.43 µM for 1hour at room temperature.

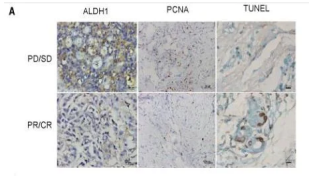


This image is courtesy of Carl Hobbs, King's College London, United Kingdom

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PCNA antibody [PC10] (ab29)

PCNA Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-PCNA antibody

Mouse monoclonal [PC10] to PCNA - Proliferation Marker (ab29) used in immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections; 1/6000 for 2h at RT) on human tissue sections (Paget's disease of the nipple). Antigen retrieval step: Heat mediated. Blocking step: 1% BSA for 10 mins at RT. Incubation time: Secondary Antibody: Biotin conjugated goat anti mouse Igs (1/200).



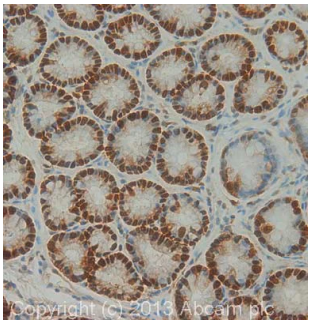
Gong, C. et al PLoS One. 2010 Dec 20;5(12):e15630. doi: 10.1371/journal.pone.0015630 Reproduced under the Creative Commons license http://creativecommons.org/licenses/by/4.0/

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PCNA antibody [PC10] (ab29)

Aldehyde dehydrogenase (ALDH1) expression correlates with clinical outcome of breast cancer patients
(A) Immunohistochemical staining shows tumors with poor clinical response (progressive or stable disease, PD/SD) to neo-adjuvant chemotherapy express high ALDH1 (>20% positive cancer cells) in pre-chemotherapy samples, and tumors with partal response (PR) express low ALDH1 (≤20% positive cancer cells). High proliferating cell nuclear antigen (PCNA)(>25% positive cancer cells) and poor apoptosis are observed in tumors with PD/SD after neo-adjuvant chemotherapy. Representative images of ALDH1 (×200), PCNA (×200) and Terminal deoxynucleotidyl transferase (TdT)-mediated dUTP labeling (TUNEL,×400).

PCNA is detected using ab29 at 1/100 dilution.

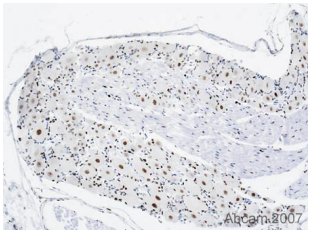
(From Figure 1A of Gong et al)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PCNA antibody [PC10] (ab29)

PCNA Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-PCNA antibody

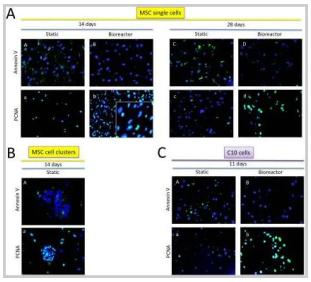
IHC image of PCNA staining in rat large intestine formalin fixed paraffin embedded tissue section, performed on a Leica Bond system using the standard protocol F. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab29, 0.025µg/ml, for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX. For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.



This image is courtesy of Carl Hobbs, King's College London, United Kingdom

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PCNA antibody [PC10] (ab29)

Immunohistochemistical staining (Formaldehyde/PFA-fixed paraffin-embedded sections) for PCNA antibody [PC10] - Proliferation Marker (ab29) on Rat Tissue sections (adult spinal cord DRG). Antigen retrieval step: Heat mediated. Blocking step: 1% BSA for 10 mins at RT. Primary Antibody used at 1/6000 for 2 minutes at RT. Secondary Antibody: Biotin labelled goat anti mouse Igs (1/200).



Crabbe et al PLoS One. 2015 May 11;10(5):e0126846. doi: 10.1371/journal.pone.0126846. eCollection 2015 Reproduced under the Creative Commons license http://creativecommons.org/licenses/by/4.0/

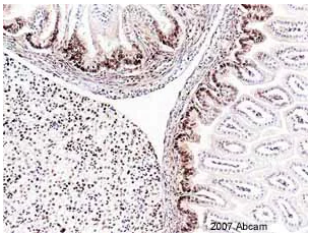
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PCNA antibody [PC10] (ab29)

Annexin V and PCNA staining of decellularized lung scaffolds recellularized with (A) MSCs in static versus bioreactor conditions for 14 (panels A, B for annexin V, and a, b for PCNA) and 28 days (panels C, D for annexin V, and c, d for PCNA) (single cells), (B) MSC cell clusters in static conditions at 14 days (panel A for annexin V, and a for PCNA), (C) C10 cells in static (panel A for annexin V, a for PCNA) versus bioreactor (panel B for annexin V, b for PCNA) conditions for 11 days.
An inset in Fig 4Ab with higher magnification is shown to demonstrate that a majority of the cells stained positive for PCNA. Cell nuclei are labeled in blue; marker of interest is labeled in green. Magnifications are 400x. Overlap of cell nucleus and marker of interest can generate green or white color. For each condition, images are representative of the entire lung.

MSCs = Bone marrow-derived mouse mesenchymal stromal (stem) cells.

PCNA is detected using ab29 at 1/1000 dilution.

(From Figure 4 of Crabbe et al)

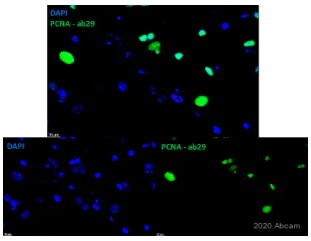


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PCNA antibody [PC10] (ab29)

PCNA Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-PCNA antibody

This image is courtesy of a customer review submitted by Carl Hobbs (King's College London, United Kingdom)

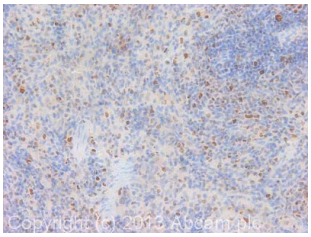
ab29 at 1/6000 staining mouse embryo (day 17) liver and gut tissue sections by IHC-P. The tissue was formaldehyde fixed and a heat mediated antigen retrieval step in Tris buffer was performed. The tissue was blocked before incubation with the antibody for 2 hours. A biotinylated goat polyclonal antibody was used as the secondary.



This image is courtesy of an anonymous customer review

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PCNA antibody [PC10] (ab29)

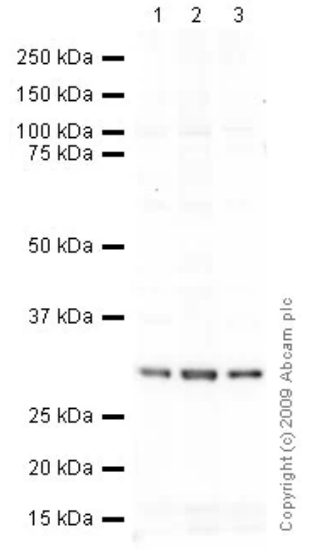
Immunohistochemistry analysis (Formalin/PFA-fixed paraffin-embedded sections) of paraformaldehyde-fixed mouse brain tissue. Stained with ab29 at 1/10000 dilution. Secondary antibody used was ab150109 at 1/250 dilution. Blocking was done with 5% serum for 1 hour at 21°C. The sample was incubated with the primary antibody and 5% Normal Donkey Serum for 19 hours at 4°C. Antigen retrieval method was heat mediated, Tris/EDTA.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PCNA antibody [PC10] (ab29)

PCNA Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-PCNA antibody

IHC image of PCNA staining in rat spleen formalin fixed paraffin embedded tissue section, performed on a Leica Bond system using the standard protocol F. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab29, 1/30,000 dilution for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX. For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.



Western blot - Anti-PCNA antibody [PC10] (ab29)

All lanes:
Western blot - Anti-PCNA antibody [PC10] (ab29) at 5 µg/mL

Lane 1:
HeLa (Human epithelial carcinoma cell line) Whole Cell Lysate at 10 µg

Lane 2:
HEK293 (Human embryonic kidney cell line) Whole Cell Lysate at 10 µg

Lane 3:
A431 (Human epithelial carcinoma cell line) Whole Cell Lysate at 10 µg

Secondary

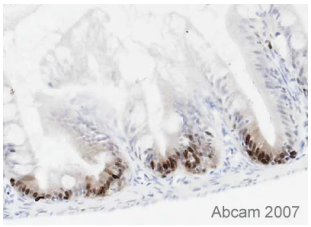
All lanes:
Goat polyclonal to Mouse IgG - H&L - Pre-Adsorbed (HRP) at 1/3000 dilution

Performed under reducing conditions.

Predicted band size: 29 kDa

Observed band size: 29 kDa

Exposure time: 4min

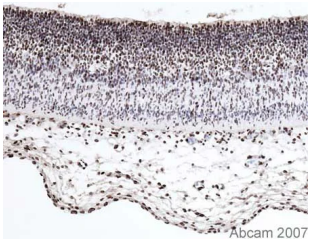


This image is courtesy of Carl Hobbs, King's College London, United Kingdom

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PCNA antibody [PC10] (ab29)

PCNA Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-PCNA antibody

Mouse monoclonal [PC10] to PCNA - Proliferation Marker (ab29) used in immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections;1/6000 for 2h at RT) on intestine of adult zebrafish). Antigen retrieval step: Heat mediated. Blocking step: 1% BSA for 10 mins at RT. Incubation time: Secondary Antibody: Biotin conjugated goat anti mouse Igs (1/200). NB: The crypt nuclei on this image of zebrafish intestine, are positive for the PCNA/PC10 clone conforming to accepted localisation data for PCNA in other species.



This image is courtesy of Carl Hobbs, King's College London, United Kingdom

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PCNA antibody [PC10] (ab29)

PCNA Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-PCNA antibody

Mouse monoclonal [PC10] to PCNA - Proliferation Marker (ab29) used in immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections; 1/6000 for 2h at RT) on E6 developing chick brain). Antigen retrieval step: Heat mediated. Blocking step: 1% BSA for 10 mins at RT. Incubation time: Secondary Antibody: Biotin conjugated goat anti mouse Igs (1/200). NB: This image shows developing brain/overlying skin.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.