

Analyte Specific Reagent.

Analytical and performance characteristics are not established.

SPECIFICITY

Cyclin A2 is a 432 amino-acid long protein of 48 kDa that shares with other cyclins a homologous region of about 100 residues, known as the cyclin box, from residue 208 to 306, and a destruction box (D-box) from residue 47 to residue 57.

The cell cycle control system is based on two key families of proteins: cyclins and cyclin-dependent protein kinases (CDKs). Cyclins are characterized by their rapid accumulation and degradation during the cell cycle phases and are so called as they undergo a cycle of synthesis and degradation during each division cycle. Contrary to cyclins, CDK levels are relatively constant during the cell cycle.

Cyclins control CDKs activation by forming a cyclin-CDK complex able to phosphorylate selected proteins on serines and threonines, which induces downstream processes (1). Kinase activity of the cyclin-CDK complex is terminated by cyclin degradation via the ubiquitin-dependent proteolysis pathway.

In mammalian cells, there are two main classes of cyclins: mitotic cyclins (cyclin A and B, the first isolated) and G1 cyclins (cyclin D and E). Cyclin D-CDK4 and cyclin D-CDK6 complexes regulate the passage from G0 to G1. Cyclin E-CDK2 complex is important for G1 progression and G1 to S transition. Cyclin A can activate two different CDKs: CDK2 for the G1-S phase transition and CDK1 (also called CDC2) for the G2-M transition. Finally, cyclin B-CDK1 regulates mitosis (2, 3). Thus, although cyclin B is the main cyclin for the mitosis, cyclin A is needed for progression through early mitosis (4).

In humans, there are two A-type cyclins – an embryonic-specific cyclin A1 and a somatic cyclin A2. Cyclin A1 is only expressed in meiosis and very early embryos, whereas cyclin A2 is present in proliferating somatic cells (5). Cyclin A-CDK2 and cyclin E-CDK2 complexes initiate DNA replication by first assembling a replication complex (RC) on chromatin during G1 phase. RC, composed of the loading factor (cdc6), the origin recognition complex (ORC) and the minichromosome maintenance (MCM) complex, is bound to the DNA replication origins. RC elements phosphorylation by cyclin A-CDK2 fires DNA replication (3, 6). Furthermore, cyclin A-CDK2 complex, present during all the S phase, inhibits the assembly of new RC and thereby replication by maintaining the MCM complex phosphorylated until cyclin A is abruptly degraded in the early phase of mitosis (before metaphase), as the phosphorylated MCM complex cannot bind to DNA (7). It has been shown that cyclin A- and cyclin E-CDK complexes shuttle between nucleus and cytoplasm and they have been

implicated as regulator of centrosome replication (8). A recent study shows that cyclin A expression correlates with phosphorylated H2AX (9).

The monoclonal antibody (mAb) 11B2G3 recognizes the human cyclin A2 (10 – 12).

REAGENT

IOTest Anti-Cyclin A2-PE
Conjugated Antibody
PN B15092 - 1 mL - Liquid

Clone	11B2G3
Isotype	IgG1, Mouse
Immunogen	Purified cyclin A2 (from HeLa cells)
Hybridoma Source	ND Ascites fluid or supernatant of in vitro cultured hybridoma cells.
Purification	Affinity chromatography
Conjugation	R Phycoerythrin (PE)
Molar Ratio	PE / Ig : 0.5 - 1.5
Fluorescence	Excites at 488 nm Emits at 575 nm

REAGENT CONTENTS

This antibody is provided in phosphate-buffered saline, containing 0.1% sodium azide and 2 mg/mL bovine serum albumin. Concentration: See lot specific Certificate of Analysis at www.beckmancoulter.com.

STATEMENTS OF WARNING

1. This reagent contains 0.1% sodium azide. Sodium azide under acid conditions yields hydrazoic acid, an extremely toxic compound. Azide compounds should be flushed with running water while being discarded. These precautions are recommended to avoid deposits in metal piping in which explosive conditions can develop. If skin or eye contact occurs, wash excessively with water.
2. Specimens, samples and all material coming in contact with them should be considered potentially infectious and disposed of with proper precautions.
3. Never pipet by mouth and avoid contact of samples with skin and mucous membranes.
4. Do not use antibody beyond the expiration date on the label.
5. Do not expose reagents to strong light during storage or incubation.
6. Avoid microbial contamination of reagents or incorrect results might occur.
7. Use good laboratory practices when handling this reagent.
8. Any change in the physical appearance of the reagents may indicate deterioration and the reagent should not be used.

STORAGE AND HANDLING CONDITIONS AND STABILITY

This reagent is stable up to the expiration date when stored at 2 – 8°C. Do not freeze. No reconstitution is necessary. This monoclonal antibody may be used directly from the vial. Bring reagent to 18 – 25°C prior to use.

SELECTED RESEARCH REFERENCES

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IOTest Anti-Cyclin A2-PE

PN B15092 – 1 mL – Liquid – Clone 11B2G3

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