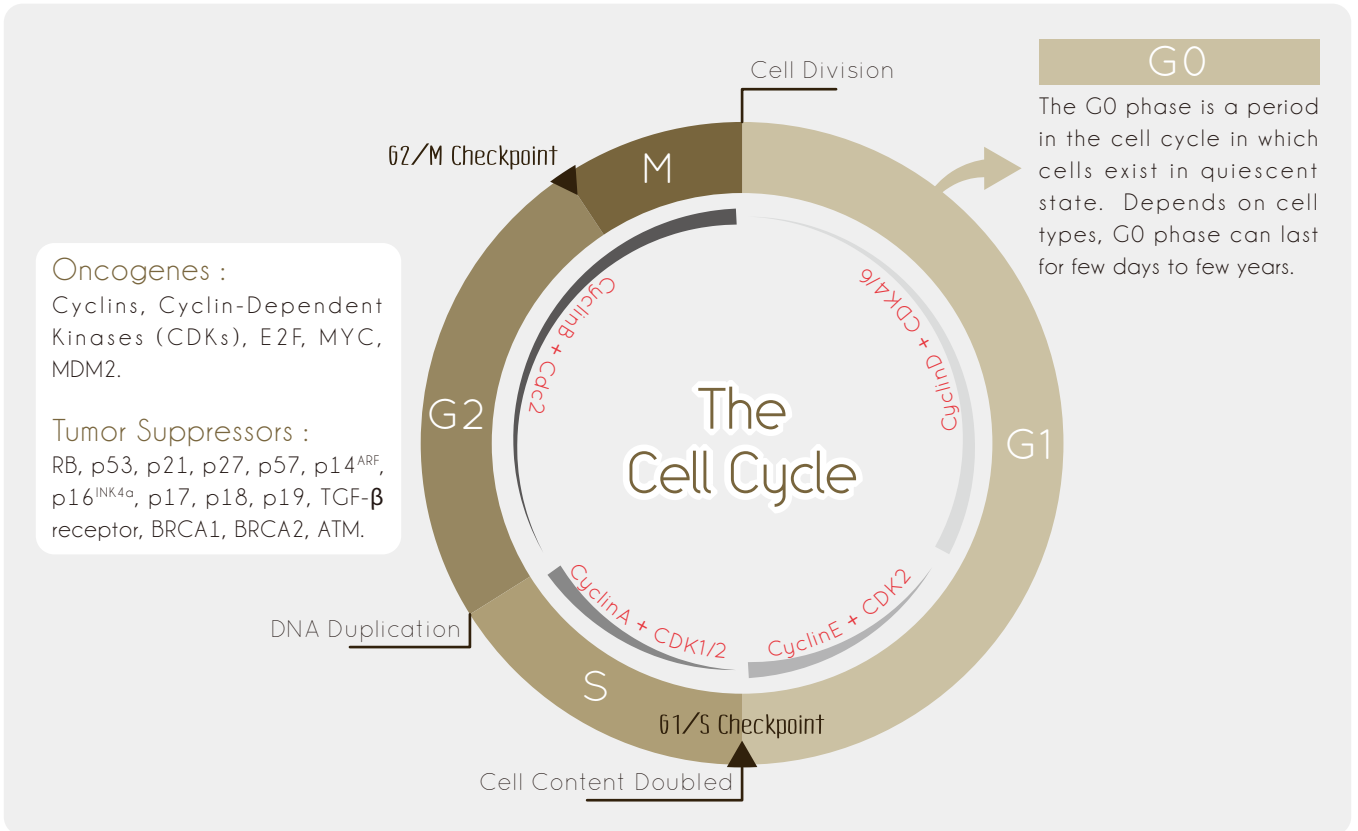


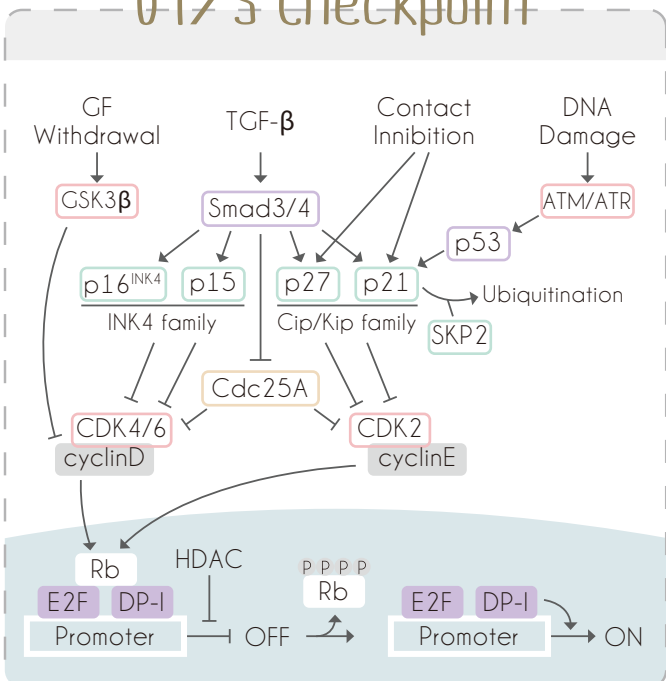


# The Cell Cycle

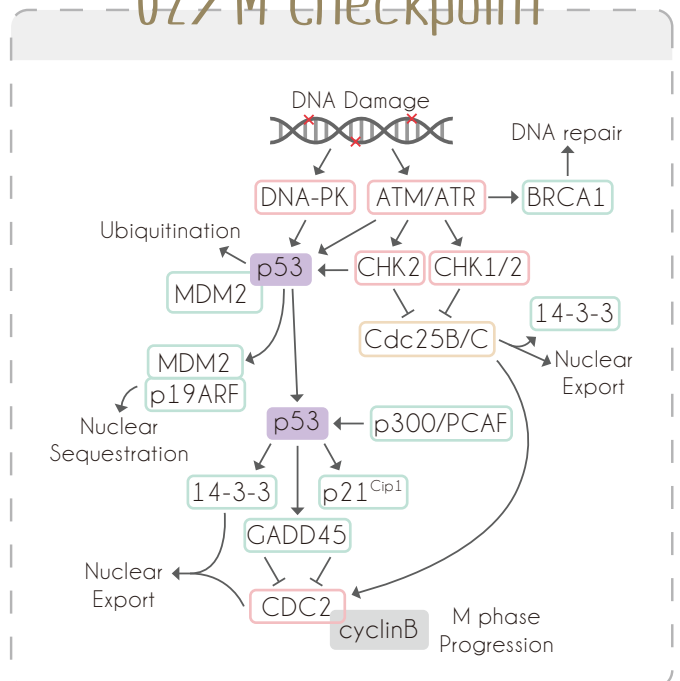
Antibody • Duo • ELISA kit



## G1/S Checkpoint



## G2/M Checkpoint



# Common Methods for Mammalian Cell Cycle Synchronization

Cell Cycle Stage Blocked	Method	Proposed mechanism of action
G0/G1	Serum Starvation	Growth restriction
G1	Lovastatin Mimosine	Inhibition of HMG-CoA reductase Inhibit Thymidine, nucleotide biosynthesis
G1/S	Thymidine Aphidicolin Hydroxyurea	Feedback inhibition of DNA replication Inhibition of DNA polymerases Inhibition of ribonucleotide reductase
G2/M	Colchicine/Colcemide Nocodazole	Inhibition of microtubule polymerization Inhibition of microtubule polymerization

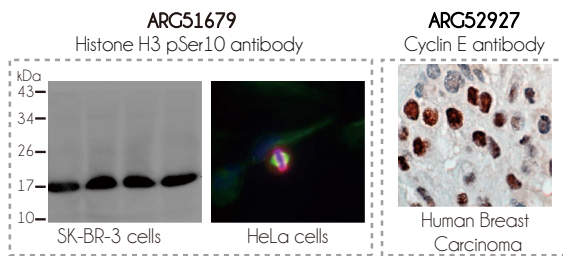
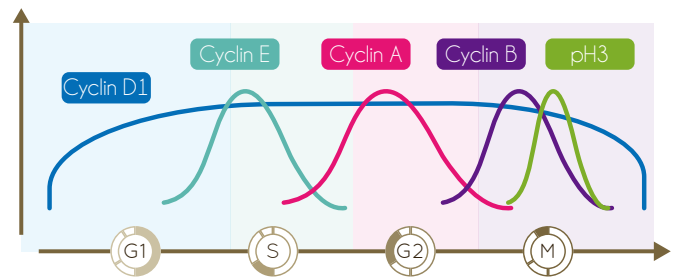
## ARG30139 Cell Cycle Marker Antibody Panel (Cyclin B1, Cyclin E)

The cell cycle is controlled by numerous mechanisms ensuring correct cell division. Cell division consists of two consecutive processes, mainly characterized by DNA replication (S phase), proceeding after G1 interphase; and segregation of replicated chromosomes into two separate cells (M phase), following G2 phase. Cyclin E is upregulated during G1/S progression whereas Cyclin A and Cyclin B are expressed highly during G2/M progression. Phosphorylated Histone H3 is a distinct marker for Mitosis and often used in determining cells undergoing M-phase in a proliferating populations. arigo's Cell Cycle Marker Panel provides a useful tool as markers for cells undergoing different phases in cell cycle.

Hans and Dimitrov (2001) Oncogene 24: 3021-3027

Vermeulen et al. (2003) Cell Prolif 36:131-149

Rahman et al. (2010) Cell Cycle 9: 22-27



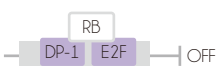
Component cat no.	Component Name	Clonality	Applications	Reactivity	Package
ARG52927	Cyclin E antibody	Rabbit pAb	IHC	H	250 µl
ARG62456	Cyclin B1 antibody	Mouse mAb	ICC/IF, FACS, WB, IHC	H	250 µl
ARG51679	Histone pSer10 antibody	Rabbit pAb	ICC/IF, IHC, WB	H,M,R	50 µl
ARG65350	Mouse IgG antibody (HRP)	Goat pAb	ELISA, IHC, WB	M	50 µl
ARG65351	Rabbit IgG antibody (HRP)	Goat pAb	ELISA, IHC, WB	Rb	50 µl

## ARG30046 Phospho-RB Antibody Duo (Total, pSer807)

The Retinoblastoma protein (Rb), encoded by the RB1 gene, is a critical regulator of cell cycle progression and has an important role in numerous aspects of biology, including DNA damage response, apoptosis, senescence and differentiation. Rb is an important regulator of the cell cycle that acts predominantly by binding to and inhibiting the gene transactivation by E2F transcription factors, which would otherwise induce the expression of genes that enhance cell cycle progression. The biological function of Rb is critically regulated by protein phosphorylation. Hypophosphorylated Rb interacts with E2F, thereby acting as the biologically active form of Rb. Conversely, hyperphosphorylated Rb is unable to bind E2F proteins, thereby allowing E2F to promote cell cycle progression.

Component cat no.	Component Name	Clonality	Applications	Reactivity	Package
ARG51103	Rb antibody	Rabbit pAb	WB, IHC	H,M,R	50 µl
ARG51632	Rb pSer807 antibody	Rabbit pAb	WB, IHC	H,M,R	50 µl

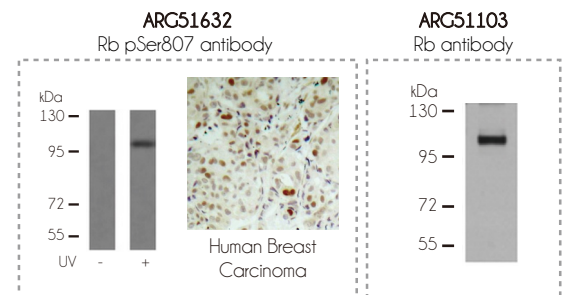
RB Hypophosphorylation:



RB Hyperphosphorylation:



Cyclin E, Cyclin A, c-MYC, PCNA  
→ S phase progression

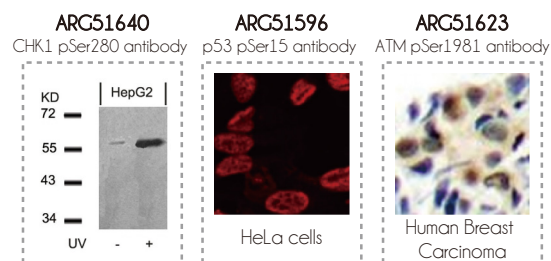


## ARG30141 DNA Damage Response Antibody Panel

DNA damage signaling cascades are complex that require the actions of various proteins. When single or double DNA strand break occurs (SSB or DSB), MRN contributes to the recruitment and activation of the apical DDR kinase ATM, while RPA recruits the ATR kinase via its partner protein, ATRIP. Activated ATM/ATR will then phosphorylate a few target proteins, including p53, Histone H2A, and Chk1/Chk2, triggering downstream signaling pathway to halt cell cycle progression.

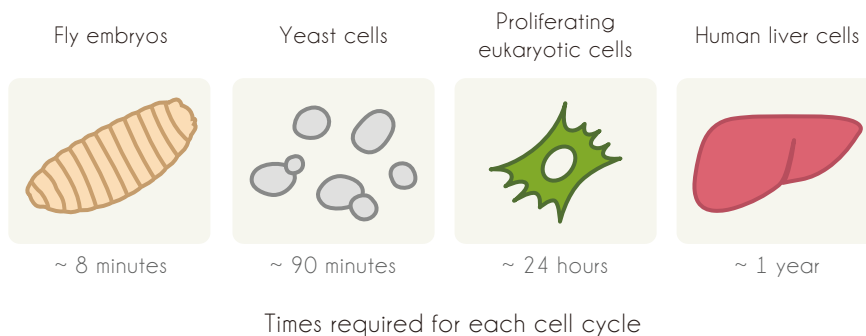
This antibody panel investigates the response of DNA damage. Activation of ATM by autophosphorylation on Ser1981 occurs in response to DNA double strand breaks. Chk1 and Chk2, downstream protein kinases of ATM/ATR, play important role in DNA damage checkpoint control, embryonic development and tumor suppression. Chk1 is phosphorylated at Ser280 and Ser296 upon DNA damage. The amino-terminal domain of Chk2 contains a series of seven serine or threonine residues, where Thr68 and Ser516 in this region became phosphorylated by ATM/ATR. Downstream target, gamma-H2AX, is phosphorylated at serine139 in responsive to DNA DSB. Phosphorylation of another downstream target p53 on serine 15 and 37 residues inhibit its interaction with Mdm2.

Component cat no.	Component Name	Clonality	Applications	Reactivity	Package
ARG51623	ATM pSer1981 antibody	Rabbit pAb	WB, IHC	H, M	50 µl
ARG51752	Histone H2A pSer139 antibody	Rabbit pAb	WB, ICC/IF	H	50 µl
ARG51596	p53 pSer15 antibody	Rabbit pAb	WB, IHC, ICC/IF	H	50 µl
ARG51600	p53 pSer37 antibody	Rabbit pAb	WB, ICC/IF	H, M, R	50 µl
ARG51640	Chk1 pSer280 antibody	Rabbit pAb	WB	H	50 µl
ARG51646	Chk2 pSer516 antibody	Rabbit pAb	WB	H	50 µl



### Do you know?

The duration of cell cycle varies from organism to organism and from cell to cell. The greatest variation occurs in the duration of G1 phase. Cells that stay at G0 phase do not normally divide unless given an appropriate stimulus. Some highly specialized cells, named the terminally differentiated cells, have lost their ability to divide until they die (eg. muscle cells, nerve cells, RBCs).

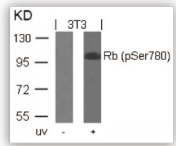
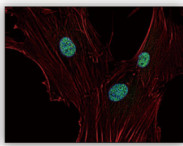
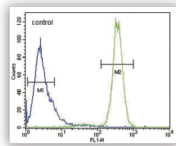
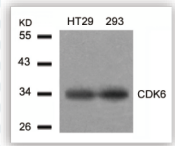
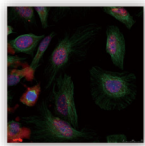
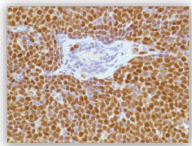


Catalog No.	Product Name	Clonality	Applications	Reactivity
ARG52473	14-3-3 beta antibody	Rabbit pAb	ICC/IF, IHC, IP, WB	H, M, R
ARG63881	14-3-3 sigma / Stratifin antibody	Goat pAb	WB, IHC	H
ARG51169	14-3-3 zeta antibody	Rabbit pAb	WB, IHC	H, M, R
ARG20074	Akt (pan) antibody	Rabbit pAb	WB, IP, IHC	H, M, R, Bo
ARG51558	Akt pSer473 antibody	Rabbit pAb	ICC/IF, IHC, WB	H, M, R
ARG51559	Akt pThr308 antibody	Rabbit pAb	WB, IHC, ICC/IF	H, M, R
ARG54456	ATM antibody	Goat pAb	WB, IP	H, M
ARG51623	ATM pSer1981 antibody	Rabbit pAb	WB, IHC	H, M
ARG54457	ATR antibody	Rabbit pAb	WB	H, M
ARG51635	CDC2 pThr161 antibody	Rabbit pAb	WB, IHC	H, M, R
ARG51731	CDC2 pTyr15 antibody	Rabbit pAb	WB	H, M, R
ARG62431	CDC25A antibody [DCS-120]	Mouse mAb	WB, IP	R, H
ARG51638	CDC25A pSer76 antibody	Rabbit pAb	WB, IHC	H, M, R
ARG54731	CDC25A pThr507 antibody	Rabbit pAb	WB, IHC, ICC/IF	H
ARG52239	CDK1 (pTyr15) antibody	Rabbit pAb	WB	H, Frog
ARG62960	CDK1 antibody [POH-1]	Mouse mAb	ICC/IF, IHC, IP, WB	Bo, H, Pri
ARG62434	CDK2 antibody [2B6]	Mouse mAb	FACS, IHC, WB, IP	H, M, R
ARG51634	CDK2 pThr160 antibody	Rabbit pAb	WB, IHC	H, M, R
ARG54063	CDK4 antibody [3F9-B12-C8]	Mouse mAb	WB	H, M, R
ARG51386	CDK6 antibody	Rabbit pAb	WB, IHC	H, M
ARG54733	Chk1 antibody [2G1D5]	Mouse mAb	WB	H, M
ARG51640	Chk1 pSer280 antibody	Rabbit pAb	WB	H

Catalog No.	Product Name	Clonality	Applications	Reactivity
ARG54652	Chk2 antibody	Rabbit pAb	ELISA, WB, ICC/IF	H, M, R
ARG51034	c-Myc antibody	Rabbit pAb	WB, IHC	H, M, R <b>D</b>
ARG62456	Cyclin B1 antibody [V152]	Mouse mAb	ICC/IF, FACS, WB, IHC	H <b>D</b>
ARG51827	Cyclin B1 pSer147 antibody	Rabbit pAb	WB, IHC, ICC/IF	H
ARG52923	Cyclin D1 antibody [SP4]	Rabbit mAb	ICC/IF, IHC, WB	H, M
ARG70003	Cyclin E Antibody	Rabbit pAb	ELISA, ICC/IF, IHC, IP, WB	H, M, R
ARG62474	E2F1 antibody [KH20]	Mouse mAb	WB, IP, IHC, GSA	H, R, Frog, M
ARG51002	GSK3 beta antibody	Rabbit pAb	ICC/IF, IHC, WB	H, M, R
ARG51506	GSK3 beta pSer9 antibody	Rabbit pAb	WB, IHC, ICC/IF	H, M, R
ARG62580	INK4c antibody [18P118 (DCS-118)]	Mouse mAb	ICC/IF, IHC, IP, WB, ELISA	H
ARG63914	KIP1 / CDKN1B antibody	Goat pAb	WB, IHC	H
ARG51392	MDM2 antibody	Rabbit pAb	WB, IHC, ICC/IF	H, M, R
ARG51834	MDM2 pSer166 antibody	Rabbit pAb	WB, IHC, ICC/IF	H
ARG51785	Myc pSer62 antibody	Rabbit pAb	ICC/IF	H, M, R <b>D</b>
ARG51538	Myc pThr58 antibody	Rabbit pAb	IHC, WB	H, M, R <b>D</b>
ARG54677	p19 INK4d antibody	Rabbit pAb	WB, IHC, FACS, ELISA	H, M
ARG63080	p21 antibody [WA-1]	Mouse mAb	WB, IHC, ICC/IF, ELISA	H, Pri
ARG10519	p53 antibody [Pab1801]	Mouse mAb	ChIP, ELISA, FACS, ICC/IF, IHC, IP, RIA, WB	H, M, R
ARG51596	p53 pSer15 antibody	Rabbit pAb	WB, IHC, ICC/IF	H <b>D</b>
ARG51599	p53 pSer33 antibody	Rabbit pAb	WB, ICC/IF	H <b>D</b>
ARG52383	p53 pSer392 antibody	Rabbit pAb	WB	R
ARG51601	p53 pSer46 antibody	Rabbit pAb	WB, ICC/IF	H <b>D</b>
ARG62582	p57 Kip2 antibody [KP39]	Mouse mAb	IHC, IP, WB	H, M, R
ARG51103	Rb antibody	Rabbit pAb	WB, IHC	H, M, R <b>D</b>
ARG51633	Rb pSer780 antibody	Rabbit pAb	WB, IHC, ICC/IF	H, M, R
ARG51631	Rb pSer795 antibody	Rabbit pAb	WB, IHC, ICC/IF	H, M, R
ARG51632	Rb pSer807 antibody	Rabbit pAb	WB, IHC	H, M, R <b>D</b>
ARG53570	SMAD3 antibody	Rabbit pAb	ChIP, ICC/IF, IHC, IP, WB	H, M, R
ARG20516	Smad4 antibody	Rabbit pAb	WB	H, M, R

Species Reactivity : H- Human; M- Mouse; R- Rat; Pri- Primate; Bo- Bovine

**D** Duo/Panel also available

<p><b>ARG51633</b> Rb pSer780 antibody</p> 	<p><b>ARG63080</b> p21 antibody [WA-1]</p>  <p>Human primary fibroblasts</p>	<p><b>ARG54677</b> p19 INK4d antibody</p> 	<p><b>ARG51386</b> CDK6 antibody</p> 	<p><b>ARG51834</b> MDM2 pSer166 antibody</p>  <p>Methanol-fixed HeLa cells</p>	<p><b>ARG52923</b> Cyclin D1 antibody [SP4]</p>  <p>Human Mantle Cell Lymphoma</p>
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