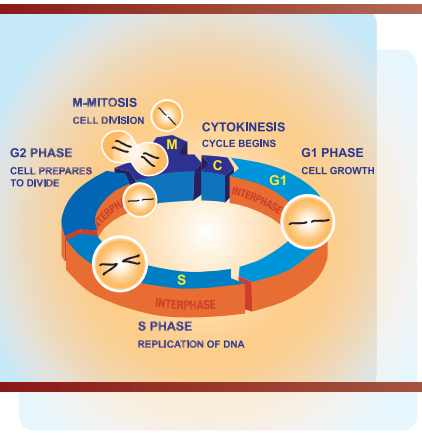


Enzo® Life Sciences

CELL CYCLE

MITOSIS, CDKS & CELL CYCLE SIGNALING

Nuclear-ID™ Cell Cycle Analysis Kits

- Provides DNA content information in live, permeabilized or fixed cells
- Easy staining protocol, simply to analyze by flow cytometry
- Validated using a wide range of cell densities

The kits provide a convenient approach for studying the induction and inhibition of cell cycle progression by flow cytometry. They are suitable for determining the percentage of cells in a given sample that are in G_0/G_1, S and G_2/M phases, as well as in the sub-G_1 phase.

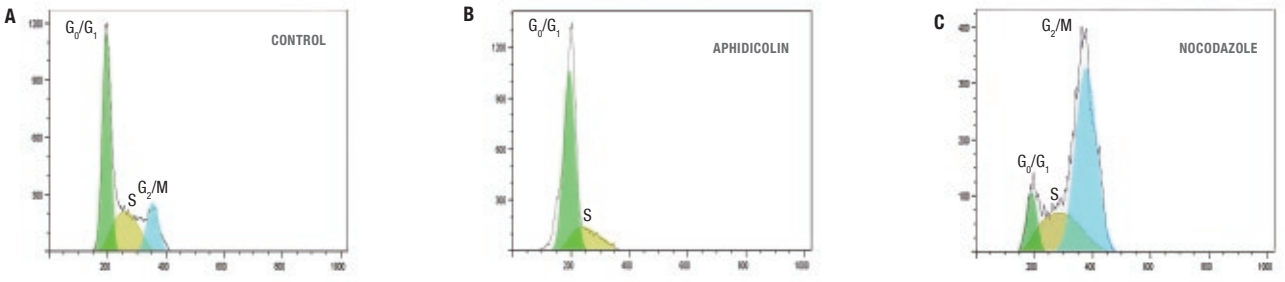


FIGURE: Histograms of live Jurkat cells stained with Nuclear-ID™ green dye showing DNA content distribution. **(A)** Control cells. **(B)** Cells blocked in G_1/S phase by treatment with Aphidicoline. **(C)** Treatment with Nocodazole shifts cell population to G_2/M phase.

Product	Prod. No.	Size
Nuclear-ID™ green cell cycle kit	ENZ-51014-100	100 Reactions
Nuclear-ID™ red cell cycle kit (GFP-Certified™)	ENZ-51008-100	100 Reactions

Includes Cell Synchronization Reagents (Pages 2/3) and CDK-Inhibitors (Pages 4/5)

Cell Synchronization Reagents

Cell-cycle Phase Arrest	Reagent	Cellular Targets/Mechanism	Pod. Nr.	Literature
G_0 to G_1	**β-Lapachone**	DNA topoisomerase I inhibitor	BML-GR308	[39]
	Cyclopamine	Sonic hedgehog pathway	BML-GR334	[38]
	Cyclosporin A	Calcineurin inhibitor	BML-A195	[1], [6]
	FK506	Calcineurin inhibitor	ALX-380-008	[2]
	Quercetin	Cyclin-dependent kinase inhibitor	ALX-385-001	[49]
G_1	**Apicidin**	Histone deacetylase inhibitor	BML-GR340	[55]
	L-744,832	Ras farnesyltransferase inhibitor	BML-G242	[40]
	Mevastatin (compactin)	HMG-CoA reductase	BML-G233	[3], [4], [5]
	Rapamycin	Indirectly on p70S6K and p34cdc2	BML-A275	[6], [7]
	Tunicamycin	Protein glycosylation inhibitor	BML-CC104	[33]
	Wortmannin	PI-3 kinase and indirectly on p70S6K	BML-ST415	[8]
Late G_1/S	**Aphidicolin**	DNA pol α,δ inhibitor	BML-CC101	[34], [35]
	DRB	RNA polI II inhibitor	BML-EI231	[9]
	L-Mimosine	eIF5-A inhibitor	BML-CC102	[37]
	RK-682	Tyrosine phosphatases	BML-PR112	[41]
G_1/S and G_2/M	**PDMP**	Glucosylceramide synthase inhibitor	BML-SL210	[10]
G_1 and G_2/M	**Δ^{12}-PGJ$_2$**	Unknown	BML-PG047	[11]
	Prostaglandin A2	Unknown	BML-PG002	[11]
S	**KN-62**	CaM kinase II inhibition	BML-EI230	[12]
	Methotrexate	Dihydrofolate reductase inhibitor	ALX-440-045	[36]
	Resveratrol	Various; SIRT1 activator	BML-FR104	[42]
G_1 and G_2	**Aclacinomycin A**	Proteasome inhibitor	BML-AW8655	[52]
	Cycloheximide	Inhibits translation	ALX-380-269	[13]
	Flavopiridol	Cyclin-dependent kinase inhibitor	ALX-430-161	[50]
	Lactacystin	Proteasome inhibitor	BML-PI104	[14]
	Leptomycin B	Nuclear export	ALX-380-100	[43]
	Olomoucine	Cyclin-dependent kinase inhibitor	ALX-350-013	[31], [32]
	Radicicol	Inhibits Src kinase and HSP90	BML-EI285	[51]
G_1 and G_2 (continued)	**K-252a**	Ser/Thr kinase inhibitor	BML-EI152	[15]
	Staurosporine	Ser/Thr kinase inhibitor	BML-EI156	[6], [17]
	Trichostatin A	Histone deacetylation inhibitor	BML-GR309	[18]
G_2/M	**Calyculin A**	PP-1 and PP-2A phosphatase inhibitor	BML-EI192	[20]
	Deguelin	Cell proliferation	ALX-350-118	[57]
	Etoposide (VP-16)	Topoisomerase II inhibitor	BML-GR307	[19]
	Geldanamycin	Tyrosine kinase and HSP-90 inhibitor	BML-EI280	[44]
	Genistein	Tyrosine kinase inhibitor	ALX-350-006	[22]
	Herbimycin A	Tyrosine kinase inhibitor	BML-EI227	[24]
	ICRF-193	Topoisomerase II inhibitor	BML-GR332	[45]
	Mitomycin C	DNA damage	BML-GR311	[21]
	NSC-95397	Cdc25	BML-EI309	[46]
	Okadaic acid	PP-1 and PP-2A phosphatase inhibitor	ALX-350-003	[20]
	RO-3306	CDK1	ALX-270-463	[58]
	SKF 96365	Unknown	BML-CA230	[23]
	Tryprostatin A	Tyrosine kinase inhibitor	ALX-308-090	[56]
G_1/S, M	**ALLN**	Cyclin degradation	BML-P120	[25]
M	**Colcemid**	Microtubule depolymerization	ALX-430-033	[59]
	Colchicine	Microtubule depolymerization	ALX-380-033	[26]
	Cytochalasin B	Actin depolymerization	BML-T108	[30]
	Ilimaquinone	Golgi	BML-G435	[29]
	Jasplakinolide	Actin polymerization and stabilization	ALX-350-275	[53]
	Monastrol	Kinesin Eg5 inhibitor	BML-GR322	[54]
	Nocodazole	Microtubule depolymerization	BML-T101	[28]
	Pironetin	Microtubule depolymerization	BML-T127	[47]
	Taxol	Microtubule stabilization	BML-T104	[28]
	TN-16	Microtubule depolymerization	BML-T120	[48]
	Vinblastine	Microtubule depolymerization	ALX-350-257	[27]
	Vincristine	Microtubule depolymerization	BML-T117	[27]

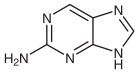
2-Aminopurine (2-AP)

BML-CC100-0100 100 mg

BML-CC100-0500 500 mg

A purine analog that can override multiple cell cycle checkpoints. May be used to override drug-induced cell cycle blocks. It is a selective protein kinase inhibitor that can inhibit p58 PITSLREβ1, a p34cdc2-related protein kinase, *in vivo*.

LIT: [1] 2-Aminopurine overrides multiple cell cycle checkpoints in BHK cells: P.R. Andreassen & R.L. Margolis, PNAS **15,** 2272 (1992) ▪ **[2]** 2-Aminopurine overrides a late telophase delay created by ectopic expression of the PITSLRE beta 1 protein kinase: J. Xiang et al.; Biochem. Biophys. Res. Commun. **199,** 1167 (1994)



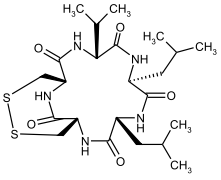
Malformin C

ALX-380-318-MC25 0.25 mg

ALX-380-318-M001 1 mg

Inhibitor of bleomycin-induced G_2 arrest. Has antibacterial, antimalarial and antitrypanosomal activity. Induces root curvature and malformation in plants and enhances fibrinolytic activity in plants.

LIT: [60] Fungal malformins inhibit bleomycin-induced G2 checkpoint in Jurkat cells: K. Hagimori, et al.; Biol. Pharm. Bull. **30,** 1379 (2007) ▪ **[61]** Total synthesis of malformin C, an inhibitor of bleomycin-induced G2 arrest: Y. Kojima, et al.; J. Antibiot. 61, 297 (2008)



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CDK-Inhibitors

Product	Prod. No.	Size	Inhibits
AG-490	BML-EI272-0010 BML-EI272-0050	10 mg 50 mg	CDK2
AG-494	BML-EI228-0010 BML-EI228-0050	10 mg 50 mg	CDK2
Aloisine	ALX-270-386-M001	1 mg	DCK1
Aloisine A	ALX-270-385-M001	1 mg	CDK1, CDK2, CDK5
Alsterpaullone	ALX-270-275-M001 ALX-270-275-M005	1 mg 5 mg	CDK1, CDK2, CDK5
3-Amino-1*H*-pyrazolo[3,4-*b*]quinoxaline	ALX-270-387-M001 ALX-270-387-M005	1 mg 5 mg	CDK1, CDK5
Aminopurvalanol A	ALX-270-249-M001 ALX-270-249-M005	1 mg 5 mg	CDK1; CDK2, CDK5
Arcyriaflavin A	ALX-350-375-M001	1 mg	CDK4
3-ATA	ALX-350-273-M001 ALX-350-273-M005	1 mg 5 mg	CDK4
Benfluorene	ALX-270-388-M001 ALX-270-388-M005	1 mg 5 mg	CDK1
BML-259	BML-EI344-0005 BML-EI344-0025	5 mg 25 mg	CDK2, CDK5
Bohemine	ALX-270-390-M001 ALX-270-390-M005	1 mg 5 mg	CDK1
Bohemine, 2-Hydroxy-	ALX-270-395-M001 ALX-270-395-M005	1 mg 5 mg	CDK1, CDK2
Borrelidin	ALX-380-102-MC05 ALX-380-102-M001	0.5 mg 1 mg	
2-Bromo-12,13-dihydro-5*H*-indolo[2,3-*a*]pyrrolo [3,4-*c*]carbazole-5,7(6*H*)-dione	ALX-270-403-M001	1 mg	CDK4
Butyrolactone I	BML-CC210-0200	200 µg	CDK1, CDK2, CDK5
CGP 74514A	ALX-270-391-M001 ALX-270-391-M005 ALX-270-391-M025	1 mg 5 mg 25 mg	CDK1
CDK1/2 Inhibitor III	ALX-270-442-M001	1 mg	CDK1, CDK2
3-(2-Chloro-3-indolylmethylene)-1,3-dihydroindol-2-one	ALX-270-392-M001 ALX-270-392-M005	1 mg 5 mg	CDK1, CDK5
Compound 52	ALX-270-248-M001	1 mg	CDK1
CVT-313	ALX-270-393-M001	1 mg	CDK2
9-Cyanopaullone	ALX-270-282-M001	1 mg	CDK1, CDK5
Cyclin-dependent Kinase 2 Inhibitor	ALX-153-012-M001 ALX-153-012-M005	1 mg 5 mg	CDK2
Cyclin-dependent Kinase 2 Inhibitory Peptide I	ALX-153-041-C500	500 µg	CDK2
Cyclin-dependent Kinase 2 Inhibitory Peptide II	ALX-153-042-C500	500 µg	CDK2
Debromohymenialdisine	ALX-350-290-C100	100 µg	
6-Dimethylaminopurine	ALX-480-050-M100	100 mg	
Elbfluorene	ALX-270-389-M001 ALX-270-389-M005	1 mg 5 mg	CDK1

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Product	Prod. No.	Size	Inhibits
Fascaplysin	ALX-270-300-M001 ALX-270-300-M005	1 mg 5 mg	CDK4
Flavopiridol	ALX-430-161-M005 ALX-430-161-M025	5 mg 25 mg	CDK1, CDK2, CDK4
10Z-Hymenialdisine	ALX-350-289-C500 ALX-350-289-M001	500 µg 1 mg	CDK1, CDK2, CDK5
Hymenidin	ALX-350-291-M001	1 mg	CDK5
Indirubin	ALX-270-361-M001 ALX-270-361-M005	1 mg 5 mg	
Indirubin-3'-monoxime	BML-CC207-0001 BML-CC207-0005	1 mg 5 mg	CDK1, CDK2, CDK5
Indirubin-5-sulfonic acid . sodium salt	ALX-270-296-M001 ALX-270-296-M005	1 mg 5 mg	
5-Iodo-indirubin-3'-monoxime	ALX-270-424-M001	1 mg	CDK1, CDK5
N-6-(Δ^2-Isopentenyl)-adenine	ALX-350-034-M100	100 mg	
Kenpaullone	BML-EI310-0001 BML-EI310-0005	1 mg 5 mg	CDK1, CDK2, CDK5
NU2058	ALX-270-394-M005 ALX-270-394-M025	5 mg 25 mg	CDK1, CDK2
NU6102	ALX-270-419-M001 ALX-270-419-M005	1 mg 5 mg	CDK1, CDK2
NU6140	ALX-270-441-M005	5 mg	CDK2
Olomoucine (high purity)	ALX-350-013-M005 ALX-350-013-M025	5 mg 25 mg	
Olomoucine II	ALX-270-396-M001 ALX-270-396-M005	1 mg 5 mg	CDK1
Olomoucine, Iso-	ALX-350-090-M005 ALX-350-090-M025	5 mg 25 mg	
Olomoucine, N^9-Isopropyl-	ALX-270-397-M001 ALX-270-397-M005	1 mg 5 mg	
Olomoucine, Dimethylamino-	ALX-350-054-M005	5 mg	
PNU 112455A . HCl	ALX-270-398-M001 ALX-270-398-M005	1 mg 5 mg	CDK2, CDK5
Purvalanol A	ALX-270-246-M001 ALX-270-246-M005	1 mg 5 mg	CDK1
RO-3306	ALX-270-463-M001 ALX-270-463-M005	1 mg 5 mg	CDK1
(R)-Roscovitine	BML-CC205-0001 BML-CC205-0005	1 mg 5 mg	CDK1, CDK2, CDK5
(S)-Roscovitine	ALX-350-293-M001	1 mg	CDK1
Scytonemin	ALX-350-376-M001	1 mg	CDK1
Staurosporine	ALX-380-014-C100 ALX-380-014-C250 ALX-380-014-M001 ALX-380-014-M005	100 µg 250 µg 1 mg 5 mg	
SU 9516	ALX-270-400-M005 ALX-270-400-M025	5 mg 25 mg	CDK1, CDK2
UCN-01	ALX-380-222-MC25 ALX-380-222-M001	0.25 mg 1 mg	

CDK Proteins / Antibodies

Recombinant Enzymes and Peptides

Product	Prod. No.	Size
CDK1/Cyclin B (human), (rec.)	BML-SE128-0100	100 U
CDK1/Cyclin B (human), (rec.)	BML-SE295-0010	10 µg
CDK2/Cyclin A (human), (rec.)	BML-SE296-0010	10 µg
CDK2/Cyclin E (human), (rec.) (GST-tag)	BML-SE269-0010	10 µg
CDK5/p25 (human), (rec.)	BML-SE471-0005 BML-SE471-0020	5 µg 20 µg
p34cdc2/Cyclin B (starfish *Marthasterias glacialis*) (purified)	ALX-202-036-R050	50 µl
PSTAIRE Peptide	BML-P402-0001	1 mg

Antibodies

[pTyr[15]]cdc2, pAb

BML-SA537-0100 100 µl

From rabbit. **IMMUNOGEN:** Synthetic peptide corresponding to a portion of rat cdc2 phosphorylated at Tyr51. **SPECIFICITY:** Recognizes human, mouse, rat and Xenopus cdc2 phosphorylated at Tyr15. **APPLICATION:** WB.

Cdc37, mAb (C1)

ALX-804-176-R100 100 µl

CLONE: C1. **ISOTYPE:** Mouse IgG2. **IMMUNOGEN:** Recombinant mouse Cdc37. **SPECIFICITY:** Recognizes human, mouse, rat and hamster Cdc37. Detects a band of ~50kDa by Western blot. **APPLICATION:** IHC, IP, WB.

CDK1, mAb (17)

BML-SA119-0100 100 µg

CLONE: 17. **ISOTYPE:** Mouse IgG2. **SPECIFICITY:** Recognizes human, mouse and Xenopus C-terminal epitope of CDK1. **APPLICATION:** ELISA, IHC, WB.

CDK1, pAb

BML-SA208-0100 100 µl

From rabbit. **IMMUNOGEN:** Synthetic peptide corresponding to a portion of C-terminal human CDK1 (cyclin-dependent kinase 1; cdc2). **SPECIFICITY:** Recognizes human, rat and mouse CDK1. Does not cross-react with other CDKs. **APPLICATION:** ELISA, IP, WB.

CDK2, pAb

BML-SA193-0100 100 µl

From rabbit. **IMMUNOGEN:** Synthetic peptide corresponding to a portion of C-terminal human CDK2 (cyclin-dependent kinase 2). **SPECIFICITY:** Recognizes human and mouse CDK2. Does not cross-react with CDK1. **APPLICATION:** IP, WB.

CDK2 (human), pAb

ALX-210-705-R100 100 µl

From rabbit. **IMMUNOGEN:** Synthetic peptide corresponding to the C-terminal 12 aa of human CDK2. **SPECIFICITY:** Recognizes human CDK2. **APPLICATION:** IP, WB.

LIT: Isolation of the human cdk2 gene that encodes the cyclin A- and adenovirus E1A-associated p33 kinase: L. H. Tsai, et al.; Nature **353,** 174 (1991) ▪ Subunit rearrangement of the cyclin-dependent kinases is associated with cellular transformation: Y. Xiong, et al.; Genes Dev. **7,** 1572 (1993) ▪ **For a comprehensive bibliography please visit our website.**

Cyclin D1, mAb (DCS-6)

ALX-804-001-C100 100 µg

CLONE: DCS-6. **ISOTYPE:** Mouse IgG2. **IMMUNOGEN:** Recombinant human cyclin D1. **SPECIFICITY:** Recognizes human, mouse and rat cyclin D1. Does not cross-react with cyclins D2 or D3. **APPLICATION:** FC, ICC, IHC, IP, WB.

LIT: Amplification and overexpression of cyclin D1 in breast cancer detected by immunohistochemical staining: C. Gillett, et al.; Cancer Res. **54,** 1812 (1994) ▪ Cyclin D1 protein oscillates and is essential for cell cycle progression in human tumour cell lines: J. Lukas, et al.; Oncogene **9,** 707 (1994) ▪ **For a comprehensive bibliography please visit our website.**

Cyclin D1, mAb (CD1.1)

ALX-804-539-C100 100 µg

CLONE: CD1.1. **ISOTYPE:** Mouse IgG1. **IMMUNOGEN:** Human cyclin D1. **SPECIFICITY:** Recognizes human and rat cyclin D1. **APPLICATION:** ELISA, IHC, IP, WB.

LIT: Structure of Bcl-1 and IgH-CDR3 rearrangements as clonal markers in mantle cell lymphomas: C. Pott, et al.; Leukemia **12,** 1630 (1998) ▪ Disruption of the p16/cyclin D1/retinoblastoma protein pathway in the majority of human hepatocellular carcinomas: H. Azechi, et al.; Oncology **60,** 346 (2001) ▪ **For a comprehensive bibliography please visit our website.**

Cyclin D1, mAb (DCS-11)

BML-SA261-0100 100 µg

CLONE: DCS-11. **ISOTYPE:** Mouse IgG2. **IMMUNOGEN:** Recombinant human cyclin D1. **SPECIFICITY:** Recognizes human, rat and mouse cyclin D1. **APPLICATION:** IP.

Cyclin D2, mAb (blocking) (DCS-3.1)

BML-SA262-0100 100 µg

CLONE: DCS-3.1. **ISOTYPE:** Mouse IgG2. **IMMUNOGEN:** Recombinant human cyclin D2. **SPECIFICITY:** Recognizes human, rat and mouse cyclin D2. Neutralizes the activity of cyclin D2 *in vivo*. **APPLICATION:** IP, WB.

Cyclin D2, mAb (DCS-5.2)

BML-SA263-0100 100 µg

CLONE: DCS-5.2. **ISOTYPE:** Mouse IgG2. **IMMUNOGEN:** Recombinant human cyclin D2. **SPECIFICITY:** Recognizes human, rat and mouse cyclin D2. **APPLICATION:** IP, WB.

Cyclin D3, mAb (DCS-28.1)

BML-SA265-0100 100 µg

CLONE: DCS-28.1. **ISOTYPE:** Mouse IgG1. **IMMUNOGEN:** Recombinant human cyclin D3. **SPECIFICITY:** Recognizes human cyclin D3. **APPLICATION:** IHC, IP.

Cyclin E, pAb

BML-SA423-0500 500 µg

From rabbit. **IMMUNOGEN:** Synthetic peptide corresponding to a portion of C-terminal human cyclin E. **SPECIFICITY:** Recognizes human and mouse cyclin E. **APPLICATION:** ICC, IHC, IP, WB.

CDK4, mAb (35.1)

BML-SA273-0100 100 µg

CLONE: 35.1. **ISOTYPE:** Mouse IgG1. **IMMUNOGEN:** Recombinant human cyclin-dependent kinase 4 (CDK4). **SPECIFICITY:** Recognizes human, rat and mouse CDK4. **APPLICATION:** IP, WB.

Inhibitors of Mitotic Kinesin Eg5

During cell division, the bipolar organization of mitotic spindles is essential for proper segregation of chromosomes. Inhibition of mitotic-spindle formation is an interesting target in cancer chemotherapy. However, so far used anti-mitotic agents target microtubule stability (e.g. tubulin) during cancer treatment (e.g. taxanes) and cause serious side effects, such as neurotoxicity. Furthermore, the development of resistance against these anti-mitotic agents restrict their use. A new alternative approach to attack mitotic-spindle formation and causing mitotic arrest is to inhibit the mitotic motors, the kinesins, that interact with microtubules. Their inhibition leads to cell-cycle arrest and apoptosis, without interfering with other microtubule dependent processes. The mitotic kinesin Eg5 (also called kinesin-5 or kinesin spindle protein [KSP]) plays an important role in the early stages of mitosis. The recent discovery of small molecules that inhibit human Eg5 by binding to its catalytic motor domain leading to mitotic arrest has attracted more interest in Eg5 as a potential anticancer drug target.

LIT: Kinesin superfamily proteins and their various functions and dynamics: N. Hirokawa & R. Takemura; Exp. Cell Res. **301,** 50 (2004) ▪ Kinesin: walking, crawling or sliding along?: A. Yildiz & P. R. Selvin; Trends Cell Biol. **15,** 112 (2005) ▪ Inhibitors of Mitotic Kinesins: Next-Generation Antimitotics: V. Sarli & A. Giannis; ChemMedChem. **1,** 293 (2006) ▪ A standardized kinesin nomenclature: C. J. Lawrence, et al.; J. Cell Biol. **167,** 19 (2004)

Dimethylenastron

ALX-270-438-M001 — 1 mg

Potent, cell permeable non-tubulin-interacting mitosis inhibitor. Blocks mitosis (IC_{50}=200nM) by binding to the mitotic kinesin Eg5.

LIT: Development and biological evaluation of potent and specific inhibitors of mitotic Kinesin Eg5: M. Gartner, et al.; ChemBioChem. **6,** 1173 (2005) ▪ Synthesis and biological evaluation of new tetrahydro-beta-carbolines as inhibitors of the mitotic kinesin Eg5: N. Sunder-Plassmann, et al.; Bioorg. Med. Chem. **13,** 6094 (2005) ▪ Inhibitors of kinesin Eg5: antiproliferative activity of monastrol analogues against human glioblastoma cells: C. Muller, et al.; Cancer Chemother. Pharmacol. **59,** 157 (2007)

Monastrol

BML-GR322-0005 — 5 mg

BML-GR322-0025 — 25 mg

Anti-mitotic agent. Unlike most anti-mitotic agents that act on tubulin, monastrol acts via a novel mechanism that causes mitotic spindles to form "monasters" (ring shaped spindles). It does this by inhibiting kinesin Eg5.

LIT: Small molecule inhibitor of mitotic spindle bipolarity identified in a phenotype-based screen: T. U. Mayer, et al.; Science **286,** 971 (1999) ▪ **For a comprehensive bibliography please visit our website.**

Trans-24

ALX-270-439-M001 — 1 mg

Potent, cell permeable non-tubulin-interacting mitosis inhibitor. Blocks mitosis (IC_{50}=650nM) by binding to the mitotic kinesin Eg5.

LIT: Synthesis and biological evaluation of new tetrahydro-beta-carbolines as inhibitors of the mitotic kinesin Eg5: N. Sunder-Plassmann, et al.; Bioorg. Med. Chem. **13,** 6094 (2005)

S-Trityl-L-cysteine

ALX-105-011-M100 — 100 mg

ALX-105-011-M500 — 500 mg

Potent, cell permeable cysteine thioether displaying anti-mitotic and anti-tumor properties. Inhibits mitosis by blocking basal and microtubule-activated ATPase activities of the mitotic kinesin Eg5 (IC_{50}=1µM and 140nm). Induces mitotic arrest in HeLa cells (IC_{50}=700nM) and inhibits the growth of NCI tumor cell line panel (GI_{50}=1.31µM).

LIT: In vitro screening for inhibitors of the human mitotic kinesin Eg5 with antimitotic and antitumor activities: S. DeBonis, et al.; Mol. Cancer Ther. **3,** 1079 (2004) ▪ S-trityl-l-cysteine is a reversible, tight-binding inhibitor of the human kinesin eg5 that specifically blocks mitotic progression: D. A. Skoufias, et al.; J. Biol. Chem. **281,** 17559 (2006)

trans-HR22C16

ALX-270-373-M001 — 1 mg

Cell permeable non-tubulin-interacting mitosis inhibitor. Blocks mitosis (IC_{50}=800nM) by binding to the mitotic kinesin Eg5.

LIT: HR22C16: A Potent Small-Molecule Probe for the Dynamics of Cell Division: S. Hotha, et al.; Angew. Chem. Int. Ed. Engl. **42,** 2379 (2003) ▪ **For a comprehensive bibliography please visit our website.**

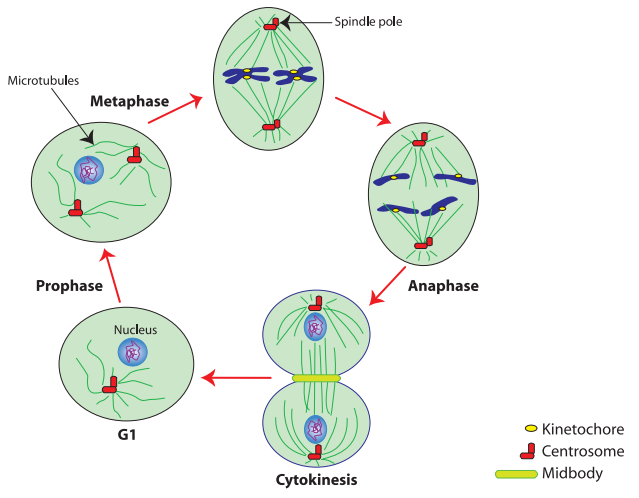


FIGURE1: Subcellular components involved in the phases of cell division.

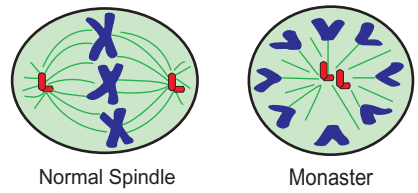
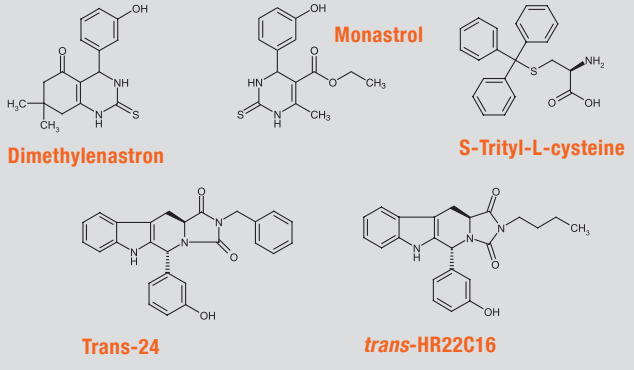


FIGURE 2. Model of a normal bipolar spindle and a monaster.



Polo-like Kinase

Polo-like Kinases play critical roles throughout mitosis. PLK localizes to the mitotic spindle and microinjection of PLK into quiescent NIH 3T3 cells induces them to enter mitosis. PLK1 is elevated in many types of cancer and when depleted by siRNA, cell proliferation is inhibited and viability decreased.

LIT: Malignant transformation of mammalian cells initiated by constitutive expression of the polo-like kinase: R. Smith et al.; Biochem. Biophys. Res. Commun. **234,** 397 (1997) ▪ Polo-like kinase (Plk)1 depletion induces apoptosis in cancer cells: X. Liu et al.; PNAS **100,** 5789 (2003)

PLK1 (human), (rec.)

BML-SE466-0005	5 µg
BML-SE466-0020	20 µg

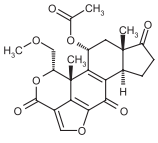
Active PLK1 expressed in insect cells, full length with N-terminal His-tag.

Wortmannin

BML-ST415-0001	1 mg
BML-ST415-0005	5 mg
BML-ST415-0020	20 mg

A fungal metabolite widely used to inhibit PI3-Kinase, which Inhibits polo-like kinase (PLK) in *in vitro* kinase assays (IC_{50}=24nM) and in intact cells.

LIT: Wortmannin, a widely used phosphoinositide 3-kinase inhibitor, also potently inhibits mammalian polo-like kinase: Y. Liu et al.; Chem. Biol. **12,** 99 (2005)



Aurora Kinase

Aurora kinases control chromatid segregation and their expression is elevated in many human cancers making them targets of interest for anti-cancer therapeutics. Phosphorylation of serine 10 of histone H3 by aurora kinase B generates the double histone H3 modification tri-methylated K9/phosphorylated S10 (H3K9me3/S10ph), important for chromosome condensation during mitosis and epigenetic silencing of genes during differentiation.

Aurora A (human), (rec.)

BML-SE406-0010	10µg

Human recombinant aurora kinase A (aa 2-403) fused at the N-terminus to a His-tag.

Aurora Kinase B (human), (rec.)

BML-SE358-0010	10 µg

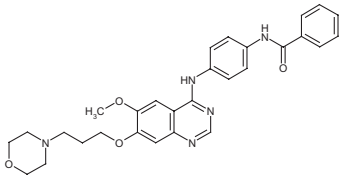
Full-length human recombinant aurora kinase B fused at the N-terminus to a GST-tag.

ZM-447439

BML-EI373-0001	1 mg
BML-EI373-0010	10 mg

A substituted quinazoline derivative that inhibits aurora A, B, and C (IC_{50}=1000, 50 and 250nM respectively).

LIT: Aurora B couples chromosome alignment with anaphase by targeting BubR1, Mad2, and Cenp-E to kinetochores: C. Ditchfield et al.; J. Cell Biol. **161,** 267 (2003)



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