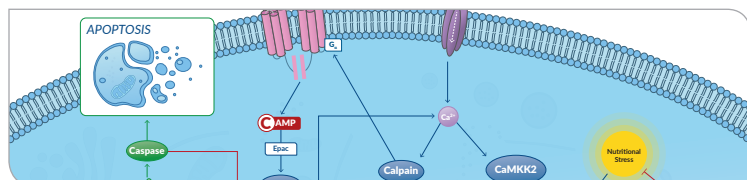


# Autophagy and Apoptosis

Autophagy and apoptosis regulate cell survival and death in response to particular stress signals. Cell fate decisions are conferred through the complex crosstalk of a core regulatory signaling network involving cytoplasmic calcium, AMP-activated protein kinase, p53, Bcl-2, and caspases. Cayman offers many different chemical modulators of this pathway to analyze the dynamics of autophagy and apoptosis in cells.



Autophagy-Apoptosis  
Crosstalk wall chart **INSIDE!**

## Autophagy Detection

Item No.	Product Name
600140	Autophagy/Cytotoxicity Dual Staining Kit
14338	Acridine Orange

## Apoptosis Detection

Item No.	Product Name
601280	Multi-Parameter Apoptosis Assay Kit
21426	Tetramethylrhodamine ethyl ester (perchlorate)

[View apoptosis assay kit recommendations at www.caymanchem.com/apoptosis](http://www.caymanchem.com/apoptosis)

## AMPK Activators

Item No.	Product Name	Summary
11900	A-769662	A direct activator of AMPK
10010241	AICAR	A selective activator of AMPK
21220	Oleuropein	Induces autophagy by activating AMPK

[View additional AMPK activators online at www.caymanchem.com](http://www.caymanchem.com)

## mTOR Pathway Inhibitors

Item No.	Product Name	Summary
11967	Dorsomorphin	A reversible AMPK inhibitor ( $K_i = 109$ nM) that downregulates the Akt/mTOR pathway to induce autophagy in U251 human glioma cells
13346	Rapamycin	Inhibits the mTOR pathway by interacting with FKBP12 to form a complex that directly binds to mTORC1
10997	Torin 1	A selective mTORC1 and mTORC2 inhibitor ( $IC_{50}$ s = 2 and 10 nM, respectively)
14185	Torin 2	A selective mTOR inhibitor ( $EC_{50} = 0.3$ nM) with more than 800-fold selectivity for mTOR over PI3K ( $EC_{50} = 200$ nM) and improved bioavailability compared to Torin 1

[View additional mTOR pathway inhibitors online at www.caymanchem.com](http://www.caymanchem.com)

## ULK Inhibitors

Item No.	Product Name	Summary
19905	MRT68921	An inhibitor of ULK1 and ULK2 ( $IC_{50}$ s = 2.9 and 1.1 nM, respectively) that blocks autophagy
18477	SBI-0206965	An inhibitor of ULK1 and ULK2 ( $IC_{50}$ s = 108 and 711 nM, respectively); suppresses autophagy induced by mTOR inhibition

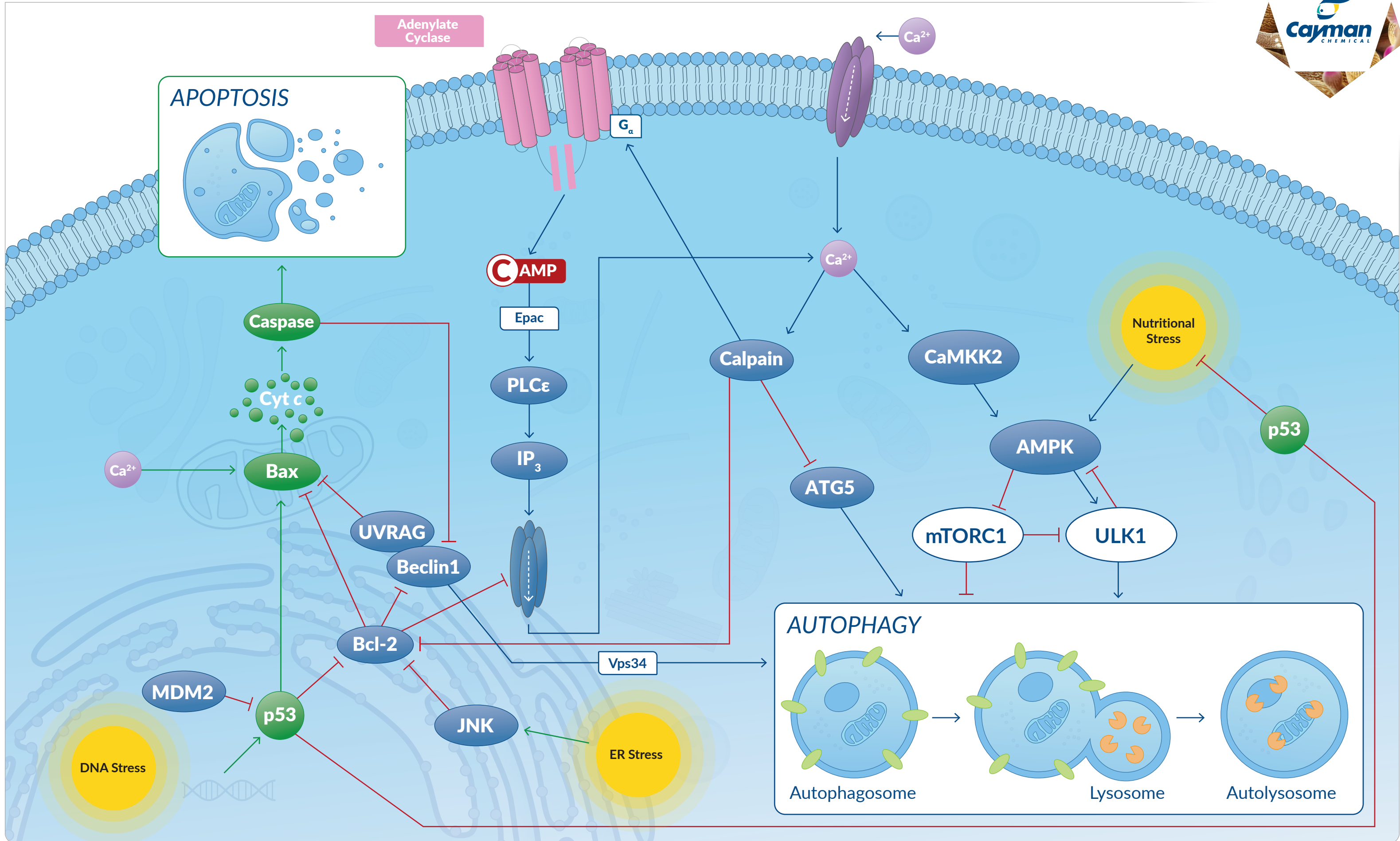
[View additional ULK inhibitors online at www.caymanchem.com](http://www.caymanchem.com)

## Autophagic Flux Inhibitors

Item No.	Product Name	Summary
11038	Bafilomycin $A_1$	A selective, reversible inhibitor of V-ATPases ( $IC_{50}$ s = 4-400 nM); inhibits autophagy by preventing vacuolar acidification necessary for autophagosome maturation
14194	Chloroquine (phosphate)	A widely used autophagy inhibitor that can prevent autophagosome fusion with lysosomes and inhibit lysosomal acidification

[View additional ATPase inhibitors online at www.caymanchem.com](http://www.caymanchem.com)

# AUTOPHAGY-APOPTOSIS CROSSTALK



## PI3K/Vps34 Inhibitors

Item No.	Product Name	Summary
70920	LY294002	A selective PI3K inhibitor ( $IC_{50} = 1.4 \mu\text{M}$ )
13242	3-Methyladenine	Selectively inhibits PI3K activity, inhibiting the initial phase of the autophagic process
16979	SAR405	Selectively inhibits Vps34 ( $IC_{50} = 1.2 \text{ nM}$ ), blocking autophagosome formation
17769	Spautin-1	Promotes the degradation of the Vps34 PI3K complex by inhibiting USP10 and USP13 ( $IC_{50}$ s = 0.58 and 0.69 $\mu\text{M}$ , respectively)
17392	Vps34-IN1	A potent inhibitor of Vps34 ( $IC_{50} = 25 \text{ nM}$ <i>in vitro</i> )
10010591	Wortmannin	A potent, cell-permeable, and irreversible inhibitor of PI3K ( $IC_{50} = 1\text{-}10 \text{ nM}$ )

## MDM2-p53 Modulators

Item No.	Product Name	Summary
18585	(-)-Nutlin-3	Inhibits MDM2-p53 binding ( $IC_{50} = 90 \text{ nM}$ ), inducing the expression of p53-regulated genes
13326	Pifithrin- $\alpha$	An inactivator of p53 that blocks p53-dependent transcriptional activation and apoptosis
21532	RG7388	A selective MDM2 inhibitor that blocks the binding of MDM2 to p53 ( $IC_{50} = 30 \text{ nM}$ ), activating the p53 pathway
10006426	RITA	Binds to p53 ( $K_d = 1.5 \text{ nM}$ ) and prevents interaction with HDM-2 resulting in p53 activation

View over 20 MDM2-p53 inhibitors online at [www.caymanchem.com](http://www.caymanchem.com)

## Bcl-2 Family Inhibitors

Item No.	Product Name	Summary
16233	ABT-199	A selective Bcl-2 inhibitor ( $K_i < 0.010 \text{ nM}$ )
11314	Chelerythrine (chloride)	Inhibits Bcl-xL function ( $IC_{50} = 1.5 \mu\text{M}$ ) by displacing Bax binding, inducing apoptosis
21478	WEHI-539	A selective inhibitor of Bcl-xL ( $IC_{50} = 1.1 \text{ nM}$ )

View additional Bcl-2 inhibitors online at [www.caymanchem.com](http://www.caymanchem.com)

## Bax Modulators

Item No.	Product Name	Summary
14128	Fludarabine	Triggers apoptosis through increasing Bax and decreasing Bid, XIAP, and survivin expression
15559	Mdivi 1	Prevents apoptosis by inhibiting mitochondrial outer membrane permeabilization <i>in vivo</i> and blocking Bid-activated Bax/Bak-dependent cytochrome c release from mitochondria <i>in vitro</i>
19230	Nimbolide	Upregulates the pro-apoptotic proteins Bax, caspase-3, and PARP

View additional Bax modulators online at [www.caymanchem.com](http://www.caymanchem.com)

## Caspase Inhibitors

Item No.	Product Name	Summary
15260	Q-VD-OPH	A broad-spectrum caspase inhibitor, preventing apoptosis when used at 10 $\mu\text{M}$ ; more effective and less cytotoxic than Z-VAD-FMK
14463	Z-VAD(OMe)-FMK	A cell-permeable, competitive, and irreversible inhibitor of all caspases, preventing apoptosis at 10-50 $\mu\text{M}$

## Simplify Screening and Hit-Seeking

### Autophagy-Focused Screening Library

Item No. 23537

- Contains >150 autophagy-associated compounds in two 96-well plates
- Includes a variety of inhibitors and inducers of autophagy

