

# Apoptosis Signaling Pathways

Apoptosis is programmed cell death, and abnormal apoptosis can lead to the development of diseases such as cancer, neurological disorders and autoimmune diseases<sup>[1]</sup>. Two main apoptosis pathways:

## **Intrinsic Pathway**

The intrinsic pathway, also known as the Bcl-2 regulatory or mitochondrial pathway (Figure 1), is regulated by Bcl-2 family proteins, including pro-apoptotic proteins (Bid, Bax, Bak) and anti-apoptotic proteins (Bcl-2, Bcl-xL)<sup>[2]</sup>.

## **Extrinsic Pathway**

The extrinsic pathway, also known as the death receptor (DR) pathway (Figure 1), is activated by binding death ligands to death receptors on the plasma membrane, including FasL, TNF- $\alpha$  and TRAIL. DR, Fas-associated protein with a novel death domain (FADD), and associated apoptotic signaling molecule (caspase-8) form the death-inducing signaling complex, resulting in the activation of caspase cascades effectors (caspase-3, caspase-6 and caspase-7)<sup>[2]</sup>.

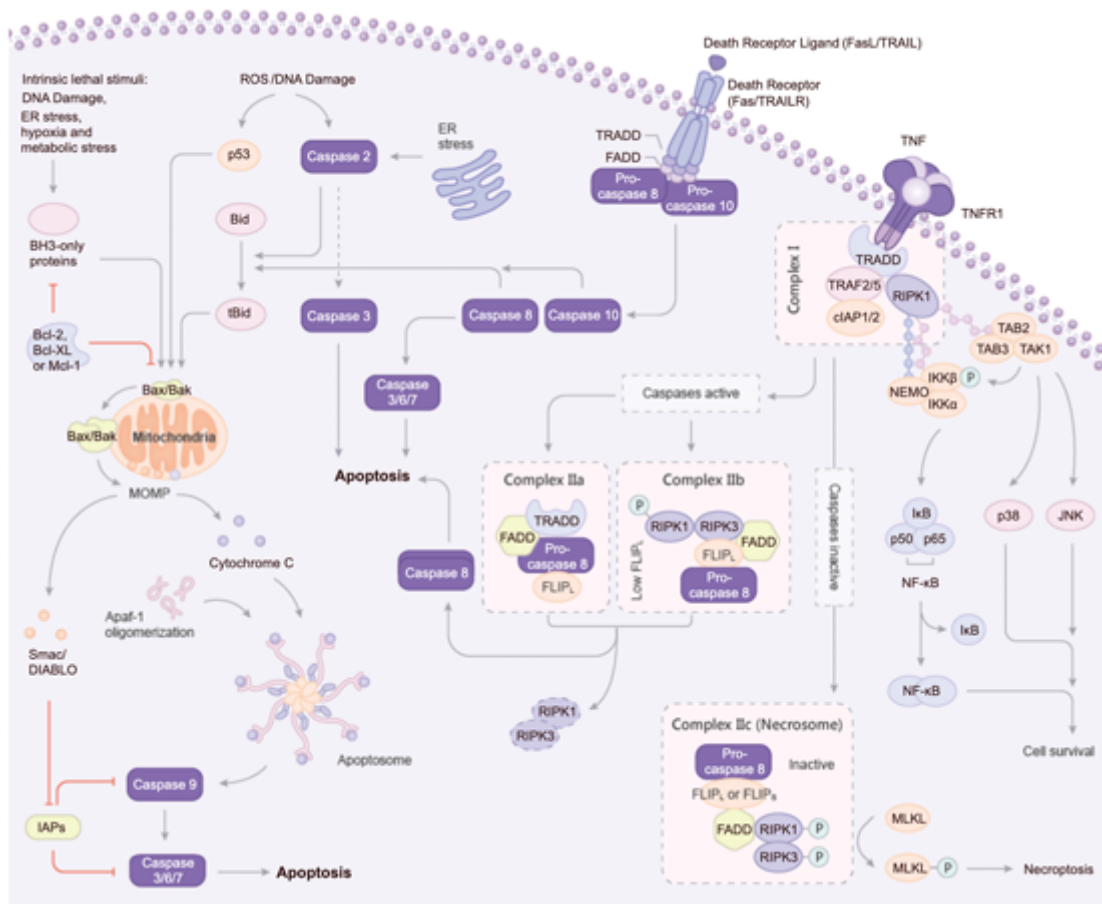


Figure 1. Apoptosis Signaling Pathways

## Hot MCE Products

### Antibodies

#### Bak Antibody (YA592)

Unconjugated Rabbit monoclonal antibody of about 23 kDa, targeting Bak. It can be used for WB, ICC/IF, IHC-P, IP, and FC assays with tag free, in the background of human and mouse.

#### Bcl-XL Antibody

Unconjugated Rabbit monoclonal antibody of about 26 kDa, targeting Bcl-XL. It can be used for WB, ICC/IF, IHC-P, FC and IP assays with tag free, in the background of human.

#### Bcl2 Antibody

Unconjugated Rabbit monoclonal antibody of about 26 kDa, targeting Bcl2. It can be used for WB, IHC-P assays with tag free, in the background of human and mouse.

#### Caspase-8 Antibody

Unconjugated Rabbit monoclonal antibody of about 55 kDa, targeting Caspase-8. It can be used for WB, ICC/IF and IHC-P assays with tag free, in the background of human.

#### Caspase-3 Antibody

Unconjugated Rabbit monoclonal antibody of about 32 kDa, targeting Caspase-3. It can be used

for WB, ICC/IF, IHC-P, IP and FC assays with tag free, in the background of human.

### **Cleaved- Caspase 3 Antibody**

Unconjugated Rabbit monoclonal antibody of about 32 kDa, targeting Cleaved-Caspase 3 p12. It can be used for WB and ICC/IF assays with tag free, in the background of human, mouse and rats.

### **Recombinant Proteins**

#### **BID**

A pro-apoptotic member of the Bcl-2 family, was initially discovered through binding to pro-apoptotic Bax and anti-apoptotic Bcl-2.

#### **Fas Ligand**

A ligand to TNFRSF6/FAS/CD95, transduces the apoptotic signal to regulate cytotoxic T-cell-mediated apoptosis, natural killer cell-mediated apoptosis and in T-cell development.

#### **TNF-alpha/TNFSF2**

A potent pro-inflammatory cytokine.

### **Inhibitors**

#### **LY294002**

A broad-spectrum inhibitor of PI3K with IC<sub>50</sub> values of 0.5 μM, 0.57 μM, and 0.97 μM for PI3Kα, PI3Kδ and PI3Kβ, respectively.

#### **CCCP**

An oxidative phosphorylation (OXPHOS) uncoupler.

#### **MG-132**

A potent proteasome and calpain inhibitor with IC<sub>50</sub> values of 100 nM and 1.2 μM, respectively.

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### **References:**

[1] *Toxicol Pathol.* 2007;35(4):495-516.

[2] *Adv Protein Chem Struct Biol.* 2021;125:73-120.