RP101 Inhibition of Chemoresistance and Metastasis

RP101 is the first small molecule known to bind to the heat shock protein Hsp27 and to modulate its effect. Hsp27 is known to control the following cellular key functions:

- Resistance against treatment with cytotoxic drugs
- Development of metastases
- Prevention of apoptosis
Figure: Modulation of apoptotic pathways by Hsp27. At the mitochondrial level, Hsp27, through Bid inhibits the mitochondrial release of pro-apoptotic proteins. At the postmitochondrial level, Hsp27 binds to cytochrome c resulting in the inhibition of apoptosome formation and thereby prevention of caspase activation and apoptosis. Hsp27 can also interact with and inhibit Daxx apoptotic pathway. Interaction of Hsp27 and Pro-caspase-3 has been described as well.
TNF
TUMOR NECROSIS FACTOR

TNFR
TUMOR NECROSIS FACTOR RECEPTOR SUPERFAMILY

FADD
ASSOCIATED VIA DEATH DOMAIN

RIP
REV-INTERACTING PROTEIN

Smac
SECOND MITOCHONDRIA-DERIVED ACTIVATOR OF CASPASE

Cyt c
CYTOCHROME C, SOMATIC

Apoptotic Protease Activating Factor 1
Apoptosis-Related Cysteine Protease

Caspase 3

Caspase 8

Caspase 9

Bax
BCL2-ASSOCIATED X PROTEIN

Bad
BCL2 ANTAGONIST OF CELL DEATH

Bid
BH3-INTERACTING DOMAIN DEATH AGONIST