

One of cancer's hallmarks is its resistance to apoptosis or cell death for most, if not all, cancer types. All cell types go through apoptosis as it is programmed in latent form. Once this signal is triggered for apoptosis, the natural process occurs which leads to the cell becoming shriveled up and engulfed by neighboring cells. Cancer cells can avoid this predestined path by the bcl-2 oncogene, one of many key signaling pathways. This suppresses apoptosis by inhibiting pro-apoptotic proteins such as BAK and BAX. With this in mind, how will new drugs be able to bring back a cancer cell's ability to go through apoptosis without putting the patient through critical treatment?

Additionally, another hallmark of cancer is its potential to limitlessly replicate. Most, if not all, mammalian cells carry an automated system that limits their multiplication within the body. Tumors prove to disrupt the automated system with its expansive growth and vast cellular population. Through the signaling pathways such as the PI3 kinase–AKT/PKB pathway which transmits antiapoptotic survival signals and the SOS-Ras-Raf-MAP kinase which allows for exogenous growth stimulation. With this in mind, is it possible to therapeutically reverse a cancer cell's ability to grow limitlessly, and would this be the same among different tumor types?