

Programmed cell death

Programmed [cell death](#) (or PCD) is the death of a cell in any form, mediated by an intracellular program.

PCD is carried out in a regulated process, which usually confers advantage during an organism's life cycle. For example, the differentiation of fingers and toes in a developing human embryo occurs because of cells between the fingers apoptosis; the result is that the digits are separate. PCD serves fundamental functions during both plant and multicellular animal tissue development. Apoptosis and autophagy are both forms of programmed cell death, but necrosis was long seen as a non-physiological process that occurs as a result of infection or injury.

Necrosis is the death of a cell caused by external factors such as trauma or infection and occurs in several different forms. Recently a form of programmed necrosis, called necroptosis, has been recognized as an alternate form of programmed cell death. It is hypothesized that necroptosis can serve as a cell-death backup to apoptosis when the apoptosis signaling is blocked by endogenous or exogenous factors such as viruses or mutations. Most recently, other types of regulated necrosis have been discovered as well, which share several signaling events with necroptosis and apoptosis.

Inhibitor of [apoptosis](#) are a group of [proteins](#) that mainly act on the intrinsic pathway that block [programmed cell death](#), which can oftentimes lead to [cancer](#) or other effects for the cell if mutated or improperly regulated.

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