

1 Introduction

1.1 Terminology of cell death

Cell death can occur by either of two distinct^{1,2} mechanisms, necrosis or apoptosis. In addition, certain chemical compounds and cells are said to be cytotoxic to the cell, that is, to cause its death.

Someone new to the field might ask, what's the difference between these terms? To clear up any possible confusion, we start with some basic definitions.

Necrosis and apoptosis

The two mechanisms of cell death may briefly be defined:

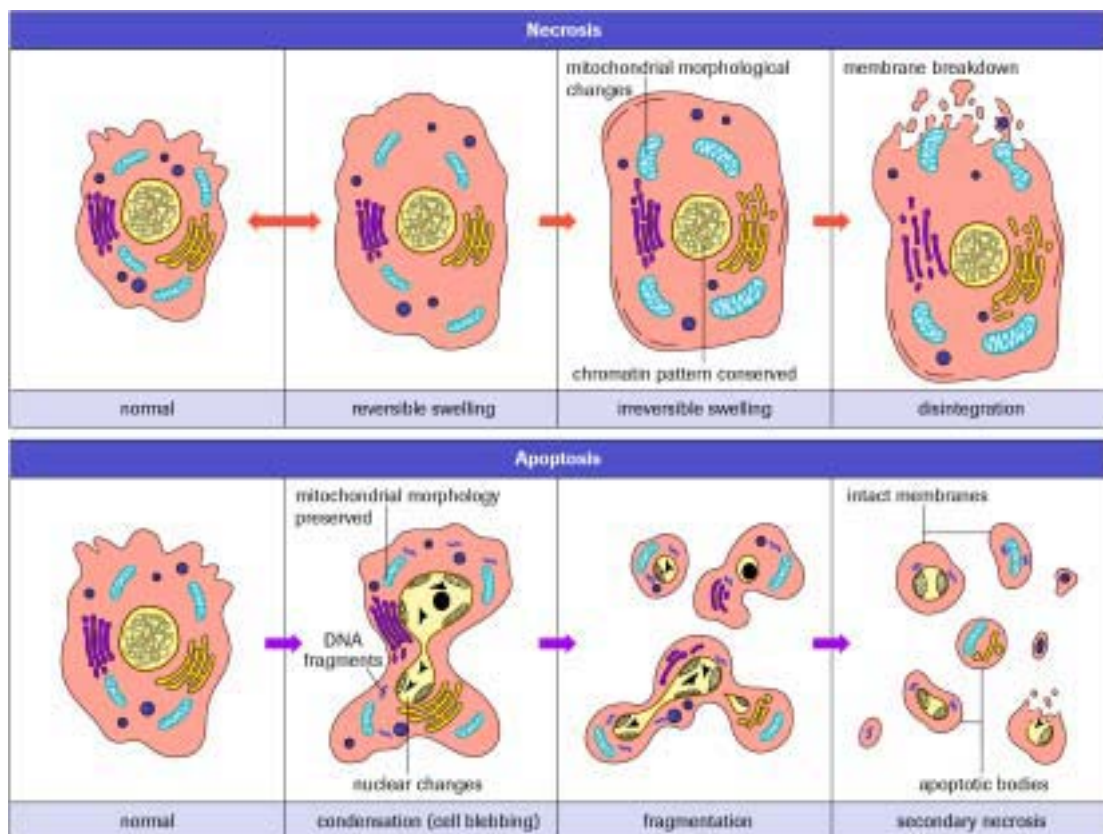
Necrosis ("accidental" cell death) is the pathological process which occurs when cells are exposed to a serious physical or chemical insult.

Apoptosis ("normal" or "programmed" cell death) is the physiological process by which unwanted or useless cells are eliminated during development and other normal biological processes.

Cytotoxicity

Cytotoxicity is the cell-killing property of a chemical compound (such as a food, cosmetic, or pharmaceutical) or a mediator cell (cytotoxic T cell). In contrast to necrosis and apoptosis, the term cytotoxicity does not indicate a specific cellular death mechanism.

For example, cell-mediated cytotoxicity (that is, cell death mediated by either cytotoxic T lymphocytes [CTL] or natural killer [NK] cells) combines some aspects of both necrosis and apoptosis^{3,4}.



▲ Figure 1: Illustration of the morphological features of necrosis and apoptosis.