picmonic

Cellular Adaptation



PLAY PICMONIC

Hypertrophy

Hiker-trophy

Hypertrophy is described as an increased size of cells. An example of this condition is cardiac hypertrophy.

Increased Size of Cells

Up-arrow Size of Cell-phone

The increased size in hypertrophy occurs due to increased structural proteins and organelles. The increase in stress leads to an increase in cell size.

Atrophy

@-trophy

Atrophy is described as a decreased size of cells. The cause of this cell type is disuse, decreased blood supply, or decreased hormone stimulation. One of the samples of this is the cytoskeleton degradation via ubiquitin-proteasome.

Decreased Size of Cells

Down-arrow Size of Cell-phone

The decreased size in atrophy occurs due to a decrease in protein synthesis and/or the number of cells due to apoptosis. The decrease in stress leads to a decrease in cell size.

Hyperplasia

Hiker-plates

Hyperplasia is described as an increased number of cells. An example of this is endometrial hyperplasia, which may advance to dysplasia and cancer.

Increased Number of Cells

Up-arrow Number of Cell-phones

An increased number of cells in hyperplasia occurs due to excessive stimulation of the proliferation of stem cells and differentiated cells.

Metaplasia

Metal-plates

Metaplasia is described as the conversion of a cell into another type of cell. An example of this is the malignant transformation in Barrett's esophagus.

Conversion into Another Type of Cell

Conversion into Another Type of Cell-phone

This conversion occurs due to a change in stress on the cell, resulting in a change in a cell type called metaplastic cells. The metaplastic cells can handle the new stress better than the previous cell type.
dr>

Dysplasia

Disc-plates

Dysplasia is described as a precancerous cell. An example of this case is the cervical intraepithelial neoplasia. It is a type of dysplasia that can lead to cervical cancer.
dbr>



Precancerous Cell

Pre-Tumor-guy Cell-phone

Dysplasia is not considered a true adaptive response like hypertrophy and other cellular adaptations. Dysplasia is reversible if the inciting stress is alleviated, and it can be irreversible or continue to progress if the stress remains.