# Intermediate filament

Intermediate filaments are a family of proteins that are responsible for maintaining the structural integrity of the cell. They are less dynamic compared to microfilaments and microtubules. Different types of intermediate filaments are found in various cell types, including keratins in epithelial cells, vimentin in connective tissue cells, and neurofilaments in nerve cells.

Intermediate filaments (IFs) are cytoskeleton components found in the cells of many animal species.

They are composed of a family of related proteins sharing common structural and sequence features. Initially designated 'intermediate' because their average diameter (10 nm) is between those of narrower microfilaments (actin) and wider myosin filaments found in muscle cells, the diameter of Intermediate filaments is now commonly compared to actin microfilaments (7 nm) and microtubules (25 nm).

Most types of intermediate filaments are cytoplasmic, but one type, the lamins, are nuclear.

There are four proteins classed as type III IF proteins, which may form homo- or heteropolymeric proteins.

Desmin IFs are structural components of the sarcomeres in muscle cells.

GFAP (glial fibrillary acidic protein) is found in astrocytes and other glia.

Peripherin found in peripheral neurons.

Vimentin, the most widely distributed of all IF proteins, can be found in fibroblasts, leukocytes, and blood vessel endothelial cells. They support the cellular membranes, keep some organelles in a fixed place within the cytoplasm, and transmit membrane receptor signals to the nucleus.

The class IV intermediate filament genes all share two unique introns not found in other intermediate filament gene sequences, suggesting a common evolutionary origin from one primitive class IV gene. Finally, class V corresponds to intermediate filaments of the nuclear cytoskeleton, the nuclear lamins.

Glial fibrillary acidic protein is an intermediate filament (IF) protein that is expressed by numerous cell types of the central nervous system (CNS) including astrocytes, and ependymal cells.