

Cellular Pathology of Alzheimer Disease

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Editorial

The pathology of Alzheimer's disease largely remains a mystery awaiting new methods to make breakthrough discoveries. Where so much of today's work focuses on the brain as a whole, much of disease takes place on a cellular level. Seemingly innocent molecular changes alter the biochemistry and metabolism of individual pathways. Steps involving amplification can perpetuate these abnormalities to signal catastrophe to the individual cell. As individual cells shift away from homeostasis, the entire tissue or organ may change in its functional capacity.

So what are these small cellular changes, and are they always the culprit in disease? Not necessarily. The cell is a highly dynamic microenvironment, filled with many organelles that serve to further compartmentalize the biological reactions of life. Often times, metabolic shifts may serve as a method of cellular protection and a way to survive in the face of stress. In order to understand the pathophysiology of AD, we need to examine changes on the cellular level and ask ourselves what may serve as a stimulus for these changes. Are these changes really the cause of the disease? Or are they the cell's compensation against a much more powerful force?