

LifeSensors's Diagnostics and Therapeutics: Neurodegeneration

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Neurodegeneration refers to the progressive atrophy and loss of function of neurons, which is present in neurodegenerative diseases such as Alzheimer's disease and Parkinson's disease.

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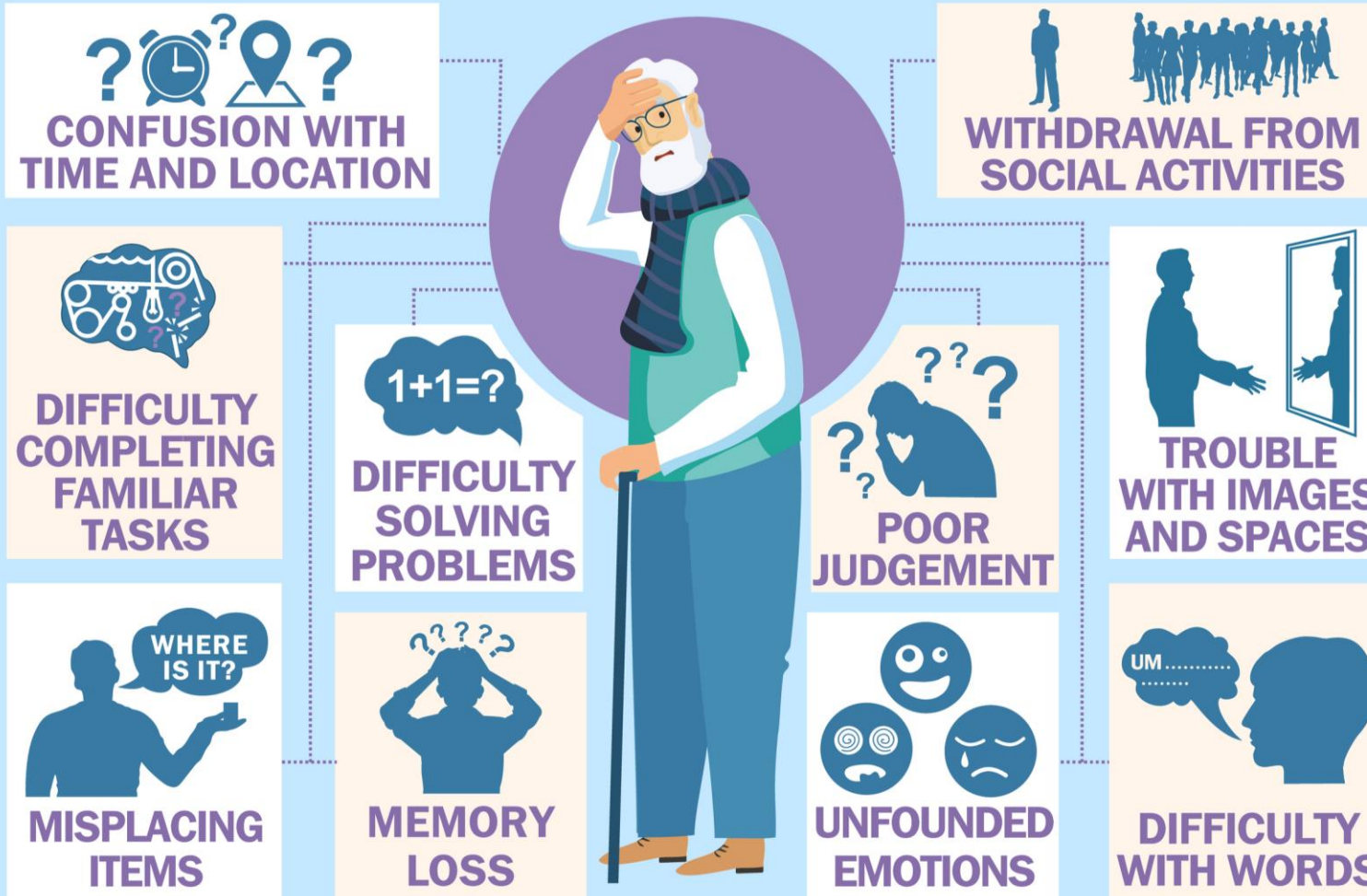
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Alzheimer's Symptoms



Stages of Parkinson's Disease

Stage 1: Develop mild symptoms but able to go about day-to-day life

Stage 2: Symptoms such as tremors and stiffness begin to worsen, may develop poor posture or have trouble walking

Stage 3: Movement begins to slow down, loss of balance



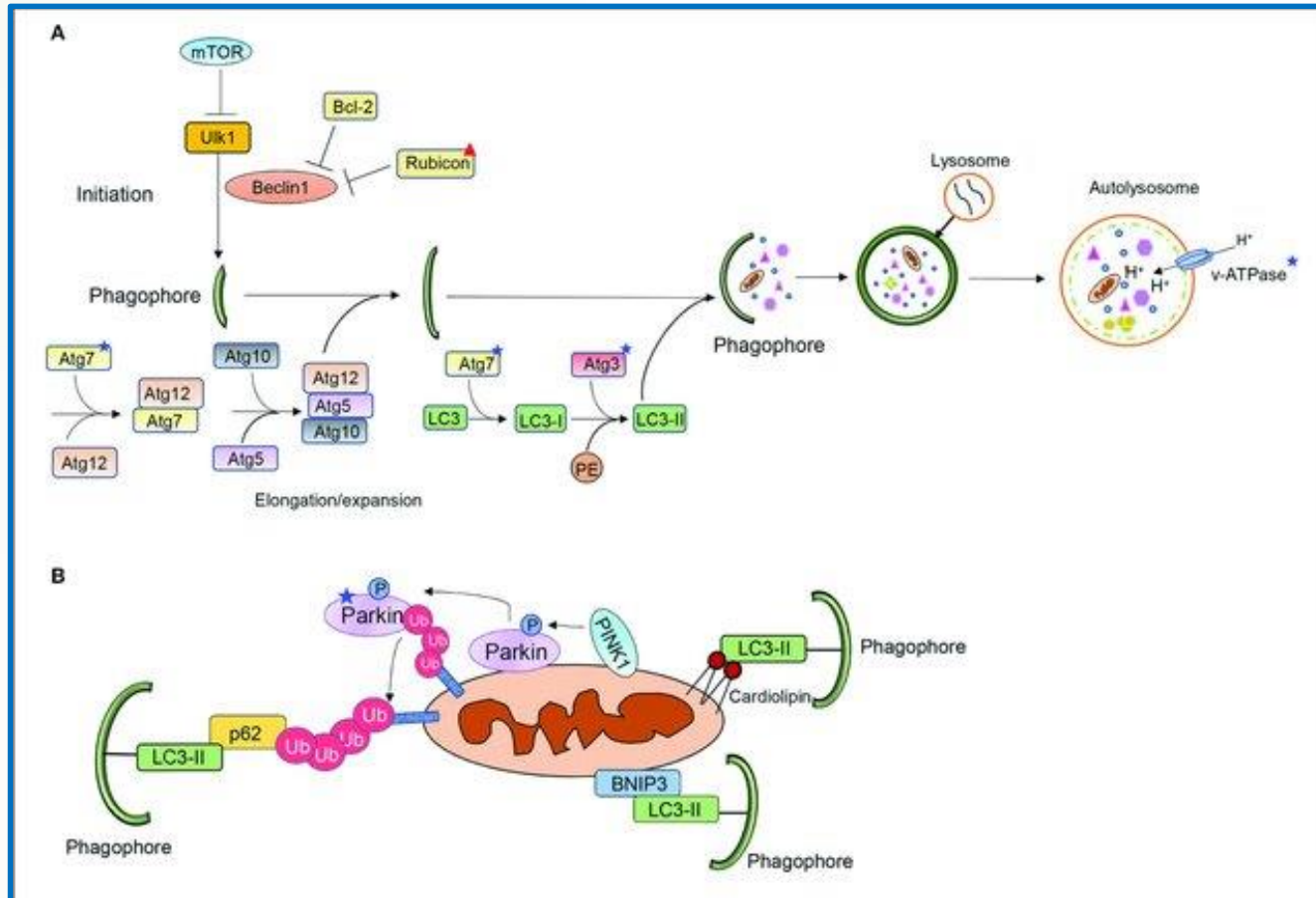
Stage 4: Symptoms are severe and cause significant issues with day-to-day living, unable to live alone and will need care

Stage 5: Walking or standing may be impossible at this point, people at this stage are often confined to a wheelchair or bed

verywell

Parkin gene (*PRKN*) mutation in brain results into Parkinson's disease. Its enzyme parkin E3 ligase doesn't target ubiquitin(s) that transports damaged proteins to UPS degradation. Damaged proteins aggregates brain structures causing Parkinson's disease

Degradation Pathways to identify dysfunctional cellular components



(A) Autophagy-Lysosomal Pathway (ALS). ALS degrades larger cellular Components.

(B) Ubiquitin Proteasome System (UPS). UPS degrades individual proteins and aggregates.

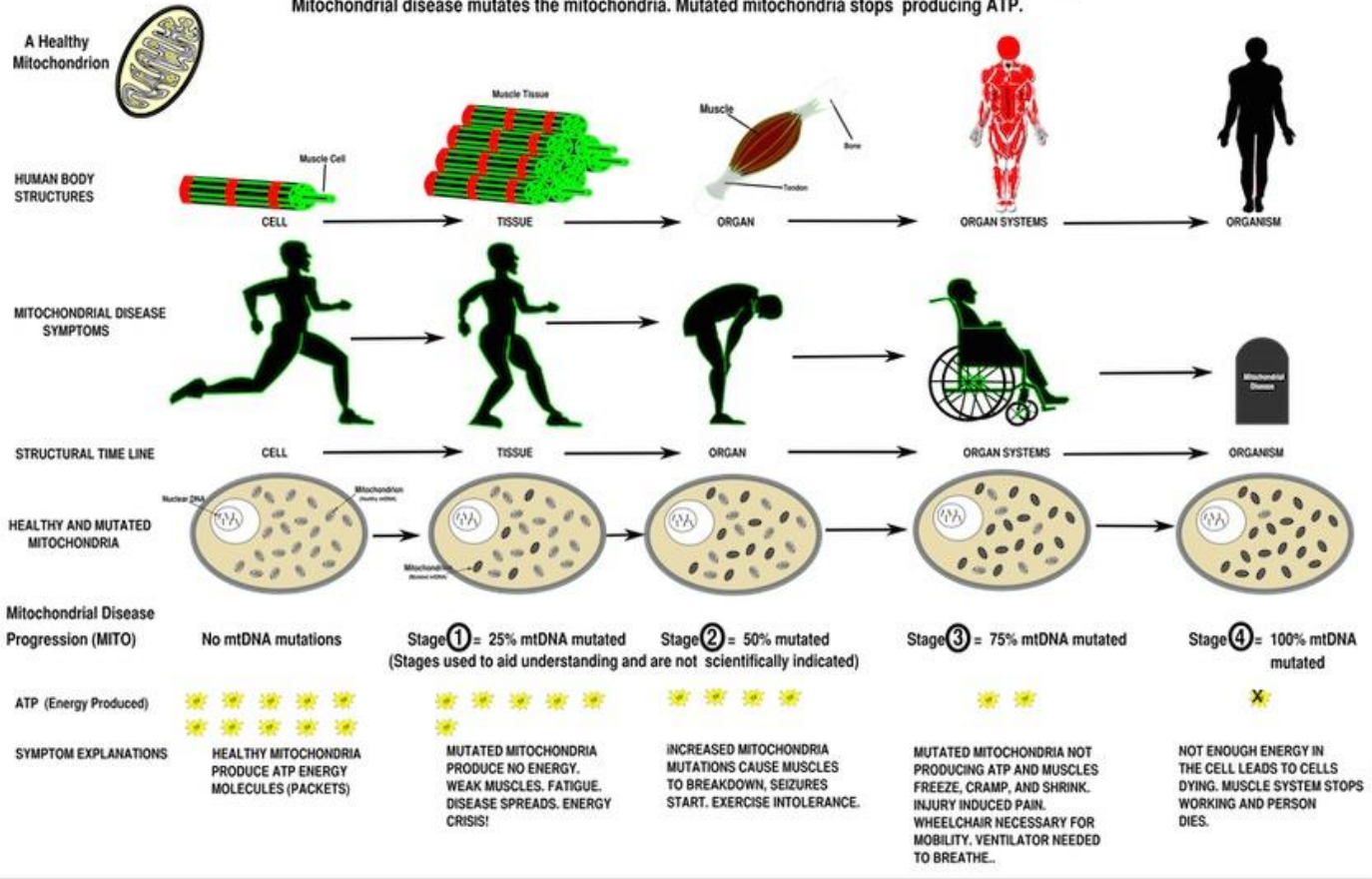
In UPS, ubiquitin is a key Player. The ubiquitin ubiquitinates a dysfunctional Protein. Parkin E3 ligase gets phosphorylated by PINK1 and transports ubiquitin chains to UPS degradation system.

Parkin E3 ligase helps to ubiquitinate mitochondrial proteins in mitophagy or mitochondrial diseases.

Liang WJ and Gustafsson AB (2020) The aging heart: mitophagy at The center of rejuvenation. *Frontiers in Cardiovas. Med.* Vol.7

How Mitochondrial Disease Effects The Human Body

The muscles contract (for movement). This requires a lot of energy The Mitochondria takes oxygen and sugar and produces ATP energy that allows the muscles to act. Mitochondrial disease mutates the mitochondria. Mutated mitochondria stops producing ATP.



Mitochondrial diseases include a group of neuromuscular disease symptoms usually involve muscle contractions that are weak or spontaneous. Mitochondrial diseases are progressive and can cause death.

www.celebratewomentoday.com/raise-awareness-of-mitochondrial-disease

