

Sophia Pribus
 Shivang Bhaskar
 Prati bha Bhalla
 Zahra Vasi

ALZHEIMER'S



Don't end up like me!

WHAT IS ALZHEIMER'S?

Alzheimer's Disease is a neurodegenerative disease which generally presents later in life.



Sounds pretty bad. But how can I avoid it?



Well, to begin, you must exercise, eat well, and check your cardiovascular health regularly!

0 - 30 YEARS

THE CAUSES

Early Stages of Alzheimer's
 - Mild
 - Severe

Alzheimer's progresses through three stages



But how does cell death occur?

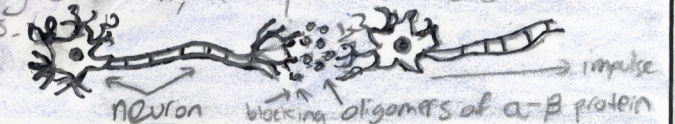
Early, Mild, and Severe. The disease is caused by cell death or neurodegeneration.

During the first stage, amyloid-beta and tau proteins form plaques, oligomers, and tangles in the parts of the brain involving learning, thinking, and memorizing.

Earliest Alzheimer's

Amyloid-Beta Plaques

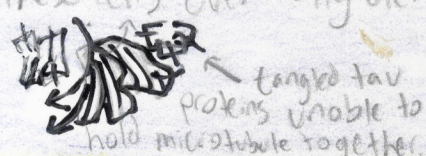
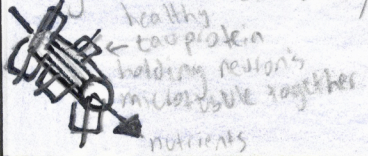
Amyloid-Beta proteins are found in the brain, and are the main components of the plaque that is deposited between dying brain cells. They are mainly responsible for the disruption of communication between neurons. Small pieces of the protein, known as oligomers, are actually more damaging to brain cells. They block cell-to-cell signaling in the brain, which hinders normal sensory stimuli, and prevents the creation of new memories.



Earliest Alzheimer's

Tau Fibrils & Tangles

Tangles are caused by tau proteins, and are found within nerve cells. Tangles destroy cell transport systems by twisting into strands, causing key material channels to disintegrate. Tau degradation disrupts the normal input of nutrients into the cell, and does not allow cells to output signals. As a result, these cells eventually die.



Earliest Alzheimer's

Wow, so these proteins are responsible for all this Alzheimer's nonsense? What happens next?



Yes, Alzheimer's is essentially an auto-immune disease, where the body attacks its own brain! The proteins we just explored are the molecular roots of the disease. When comparing the brain of a healthy individual and a patient with Alzheimer's, you can clearly see the difference in brain matter. We just covered the early stage, so let's observe the mid stage!

Early Stage recap: May start up to 20 years before diagnosis. Plaque and tangles form in the brain.

Moderate / Mild

SYMPTOMS

In mild Alzheimer's, the brain usually has a significant amount of plaque and tangle. The signs and symptoms begin to be much more noticeable, especially by observers. Confusion, poor memory, and mood swings are common.



Oh, so you can start to see the symptoms!



Moderate / Mild

It is best to treat Alzheimer's as early as possible, to halt the progression of the disease. We should all be aware of the signs!

Typical conversation:



Always be aware of confusion, lack of awareness, trouble with memorization, and mood swings!

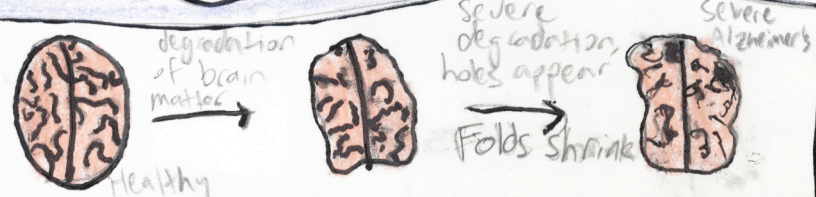
Moderate / Mild

But that's not the worst of it. Alzheimer's final stage is intense and progresses quickly. The brain has shrunk dramatically, and the cortex is severely damaged.



So the brain matter is destroyed beyond repair?

Yes, at this point there is little we can do to help patients. They must be hospitalized ASAP.



severe

SYMPTOMS

At this point, the symptoms reach their peak. Patients lose the ability to recognize family and friends, express emotions, and even communicate.



These are the classic symptoms of Alzheimer's where memory is severely slanted.

severe

TREATMENT

Is there any way to recover from this disease?

Not yet, which is what makes it so scary. The best way to "treat" Alzheimer's is to follow a strict regimen of self-care, which can slow down the progression. Exercise, physical therapy, and cognitive enhancing medications are all used to combat the advancement of Alzheimer's.

Treatment of Alzheimer's is based upon strengthening the mind as much as possible.

severe

Right now, there is a heavy amount of research being done into a possible cure or prevention of Alzheimer's. In the future, Alzheimer's may be avoidable through early diagnosis and medication.

Alzheimer's Recap:	
Symptoms	- Memory loss (mid-severe)
	- Loss of communication skills
	- Mood swings
Cause	- Build-up of amyloid-beta protein
	- Tangled tau proteins
	- Plaque of alpha-beta proteins
	- Disrupt cell communication (oligomers)
	- Neuron channels are slanted
Treatment (no cure)	- Death
	- Confusion
	- Physical activity
	- Therapy
	- Medication