

Brain Proteins



Hi, I am Danny.

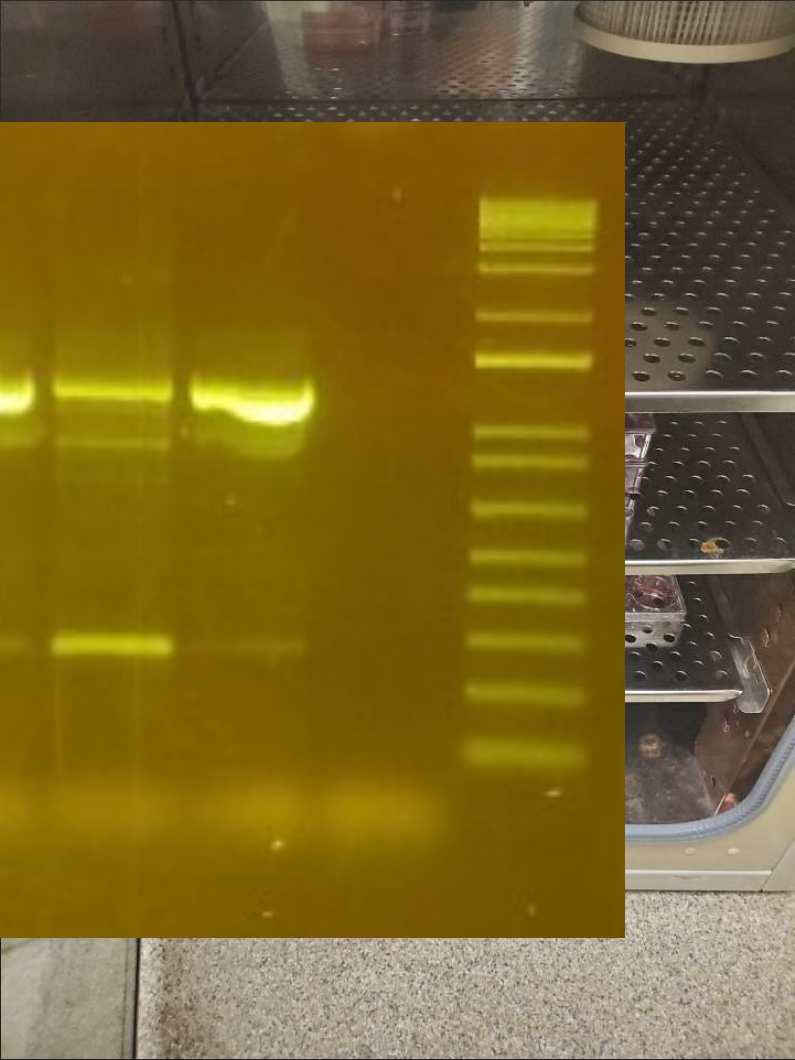
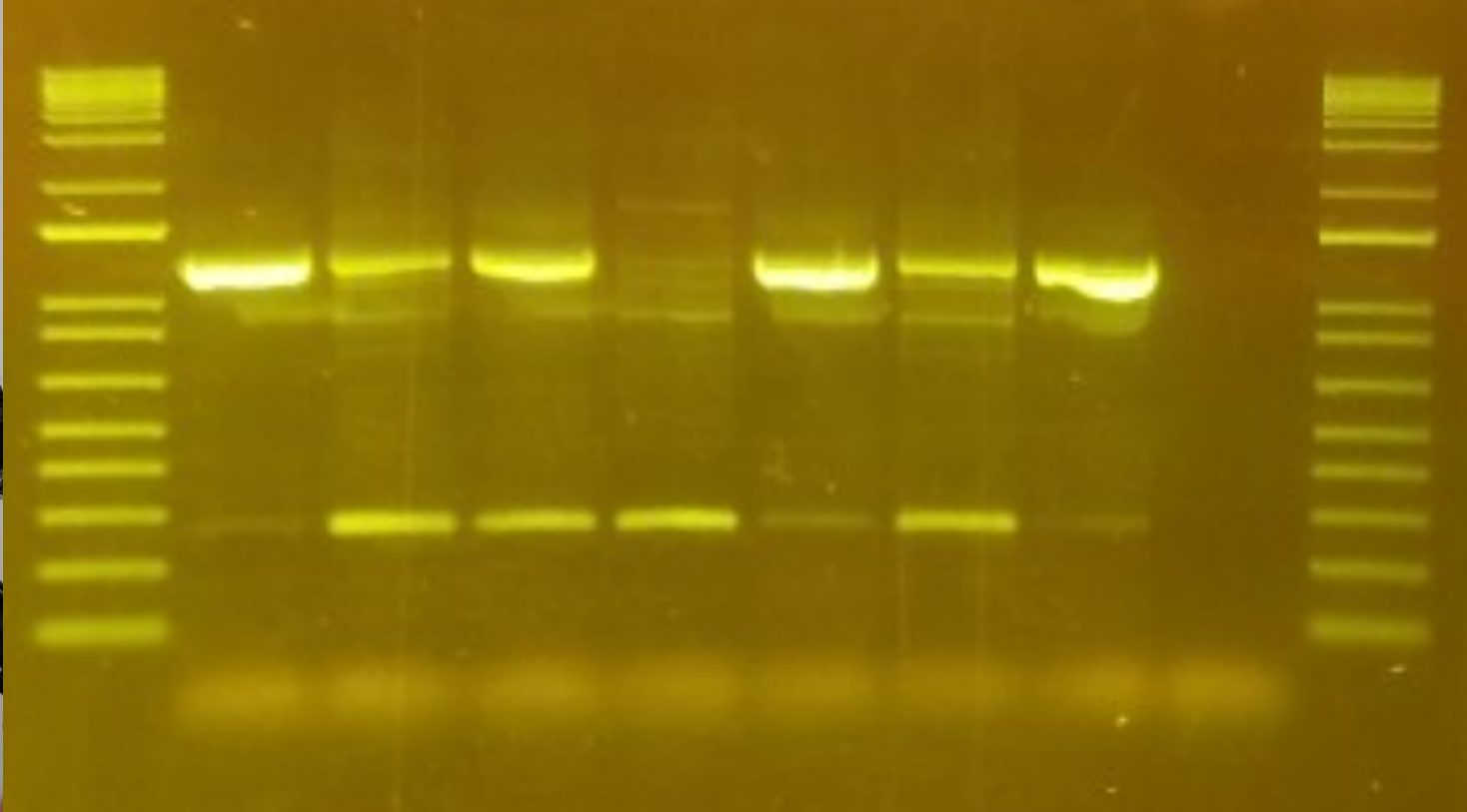
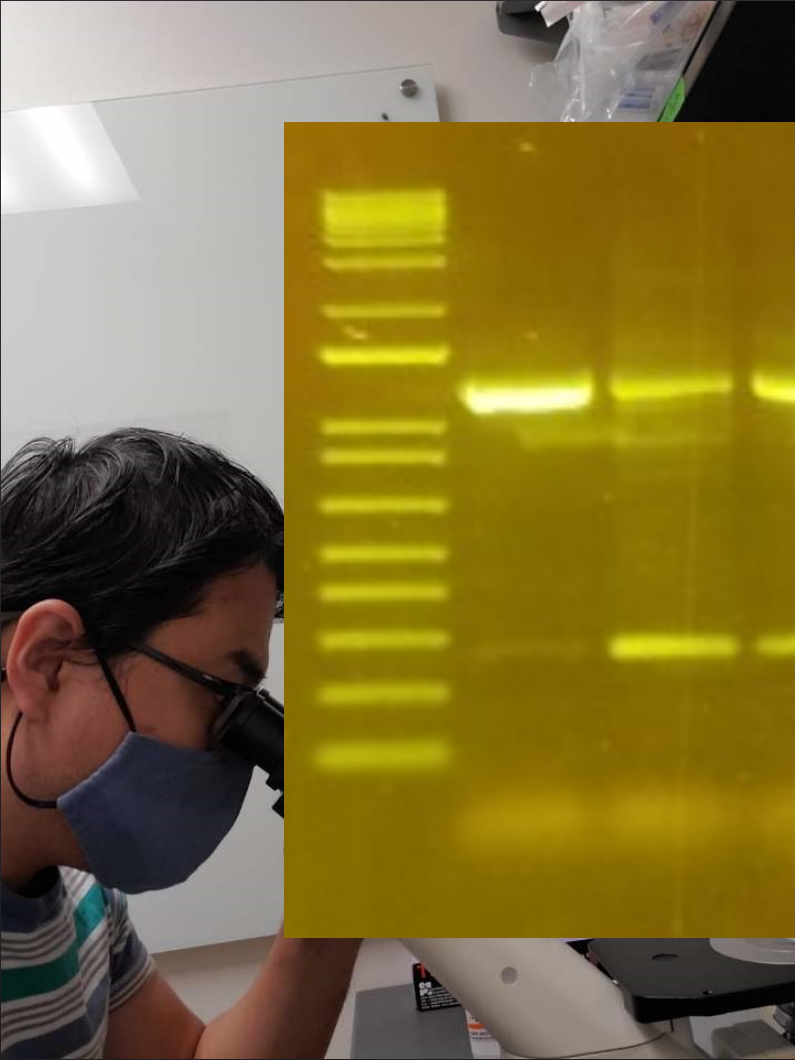
- ◆ I study cells.
- ◆ Very close to getting my Ph.D.
- ◆ Hobbies: basketball, traveling



How did I get involved in biology research?

- ◆ Always been curious how human body works and what causes different disease.
- ◆ Particularly interested in diseases of the brain and how it affects our behavior and thoughts.



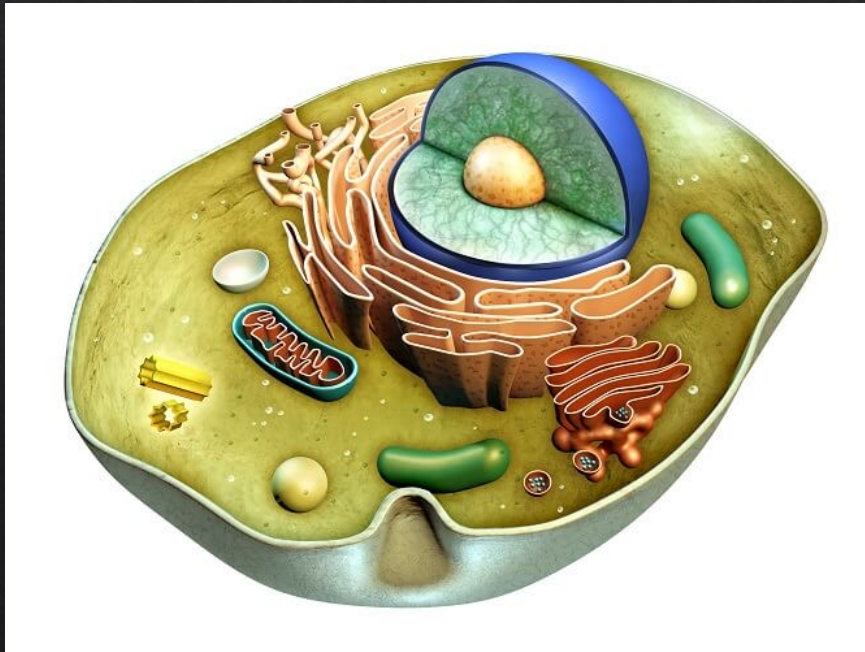


You can make cool stuff with Lego blocks

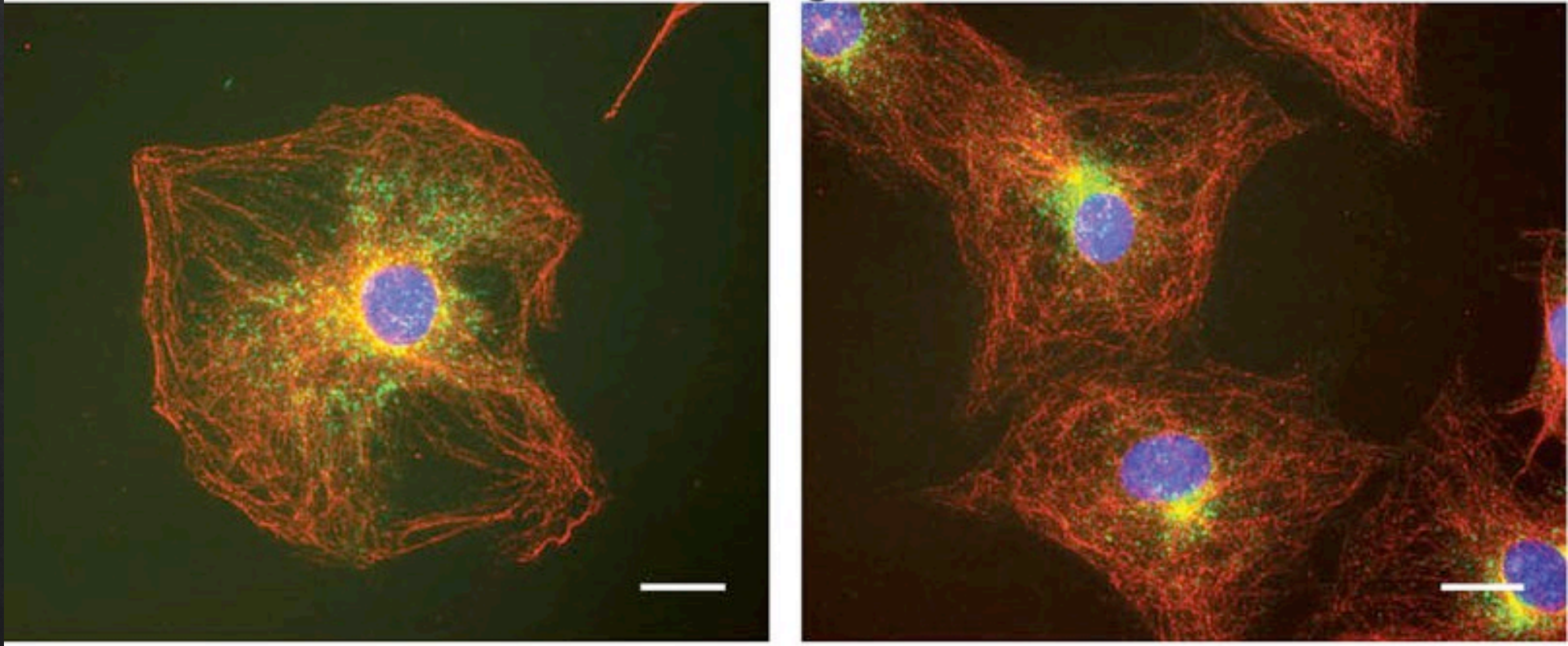


Cells are the basic unit of life.

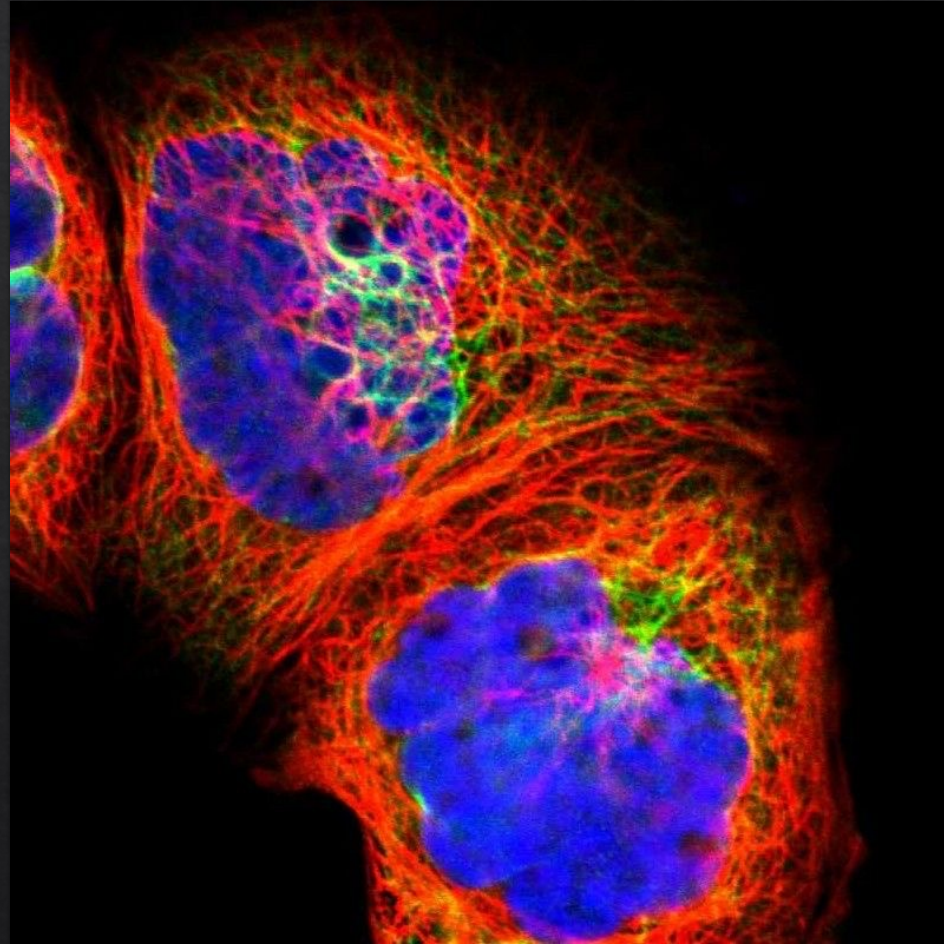
- ◇ Individual cells → brain
- ◇ Why cells and brains?



I study cells and proteins.

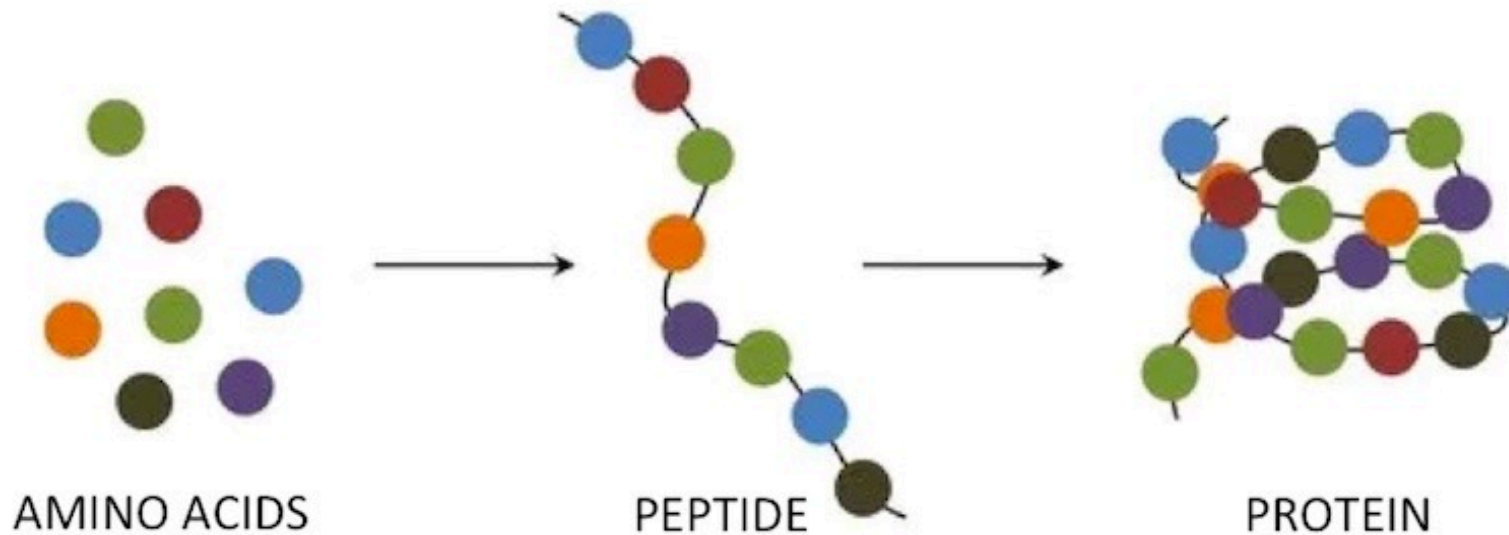


Scientists can stain different parts of the cell



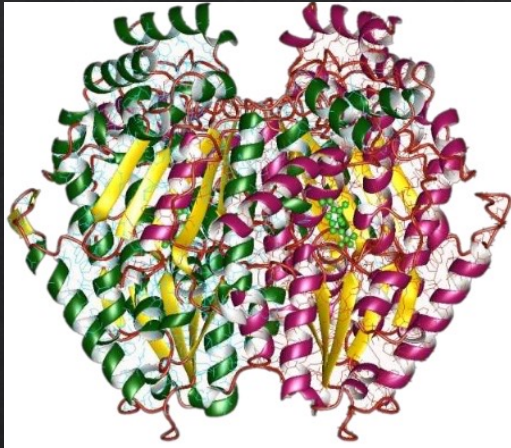
What are proteins?

HOW YOUR BODY USES AMINO ACIDS
AS BUILDING BLOCKS

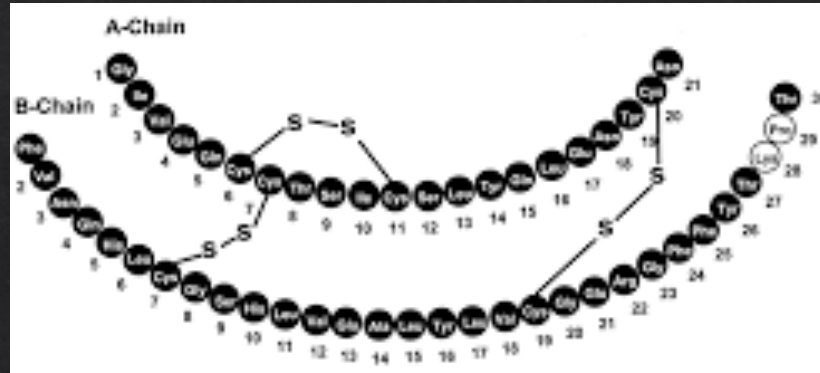


- ◇ Proteins are used for making enzymes, and other structures in cells.
- ◇ Proteins have to be folded in order to function (even in muscles!).

What are proteins?



Enzymes

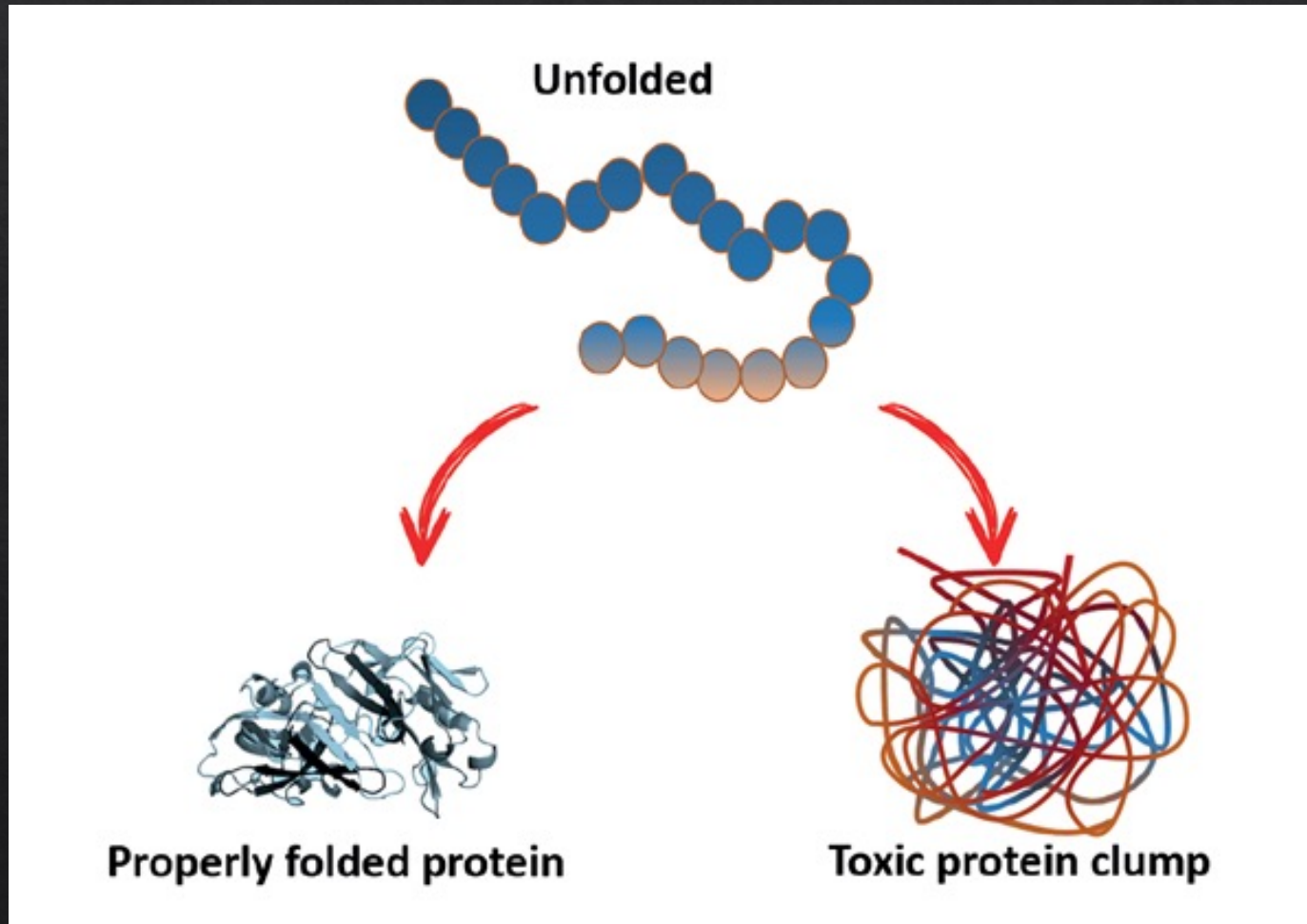


Hormones



Muscles

What are proteins?



- ◇ If they are not folded in normal way, they tend to form aggregates/plaques.
- ◇ These wrongly folded proteins cause many diseases.

Parkinson's Disease

Blank facial expression

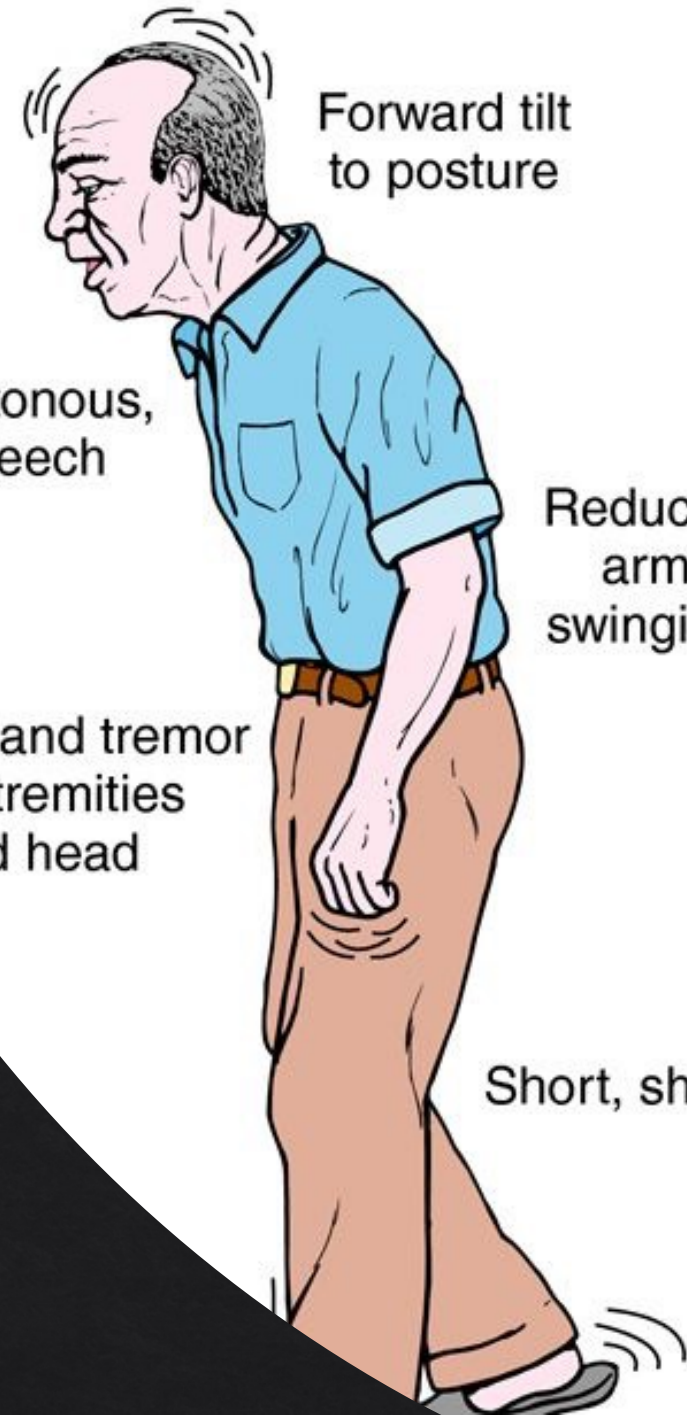
Forward tilt to posture

Slow, monotonous, slurred speech

Reduced arm swinging

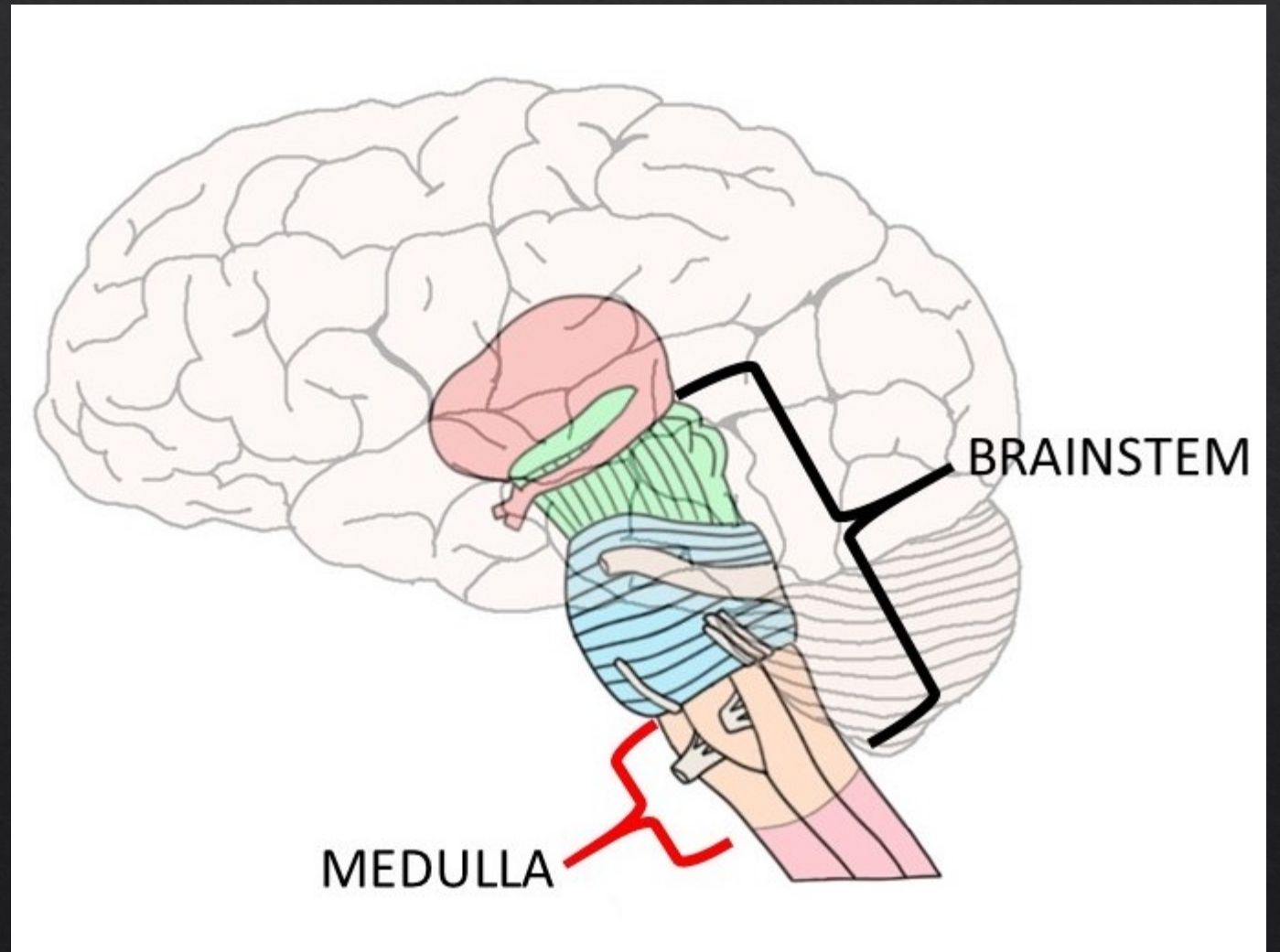
Rigidity and tremor of extremities and head

Short, shuffling gait





Brain in Parkinson's Disease



Brain in Parkinson's Disease



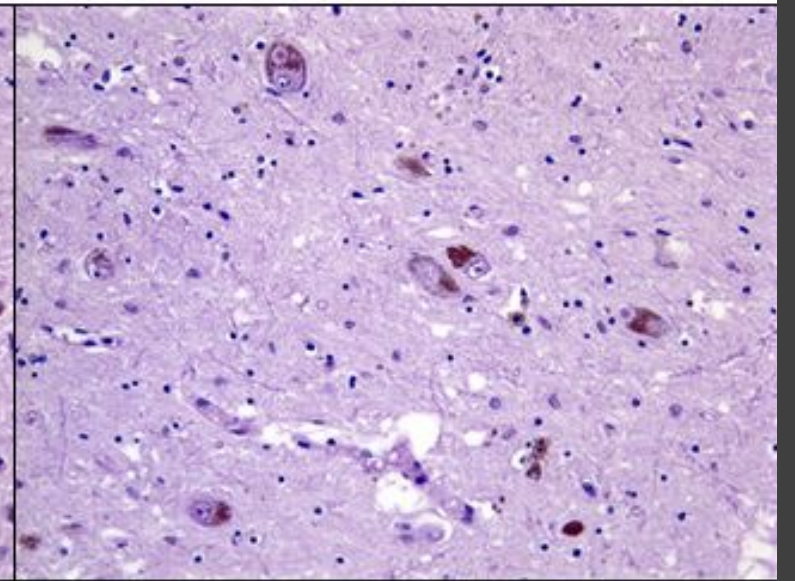
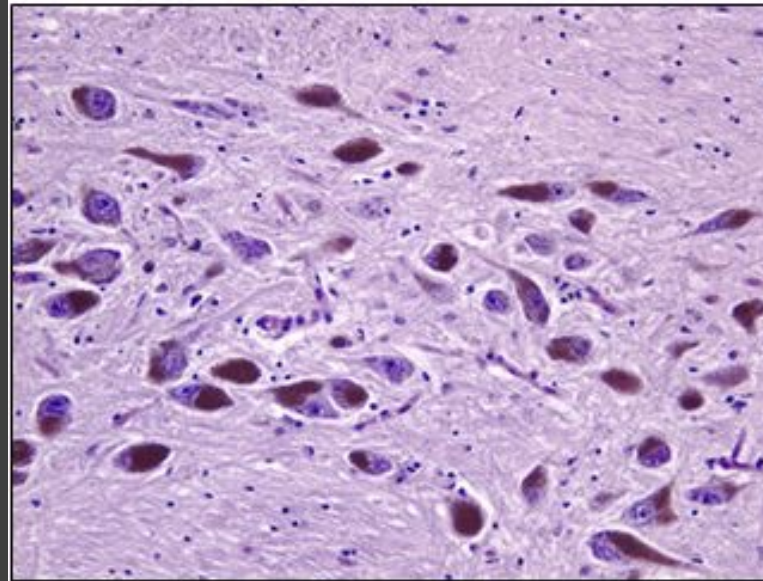
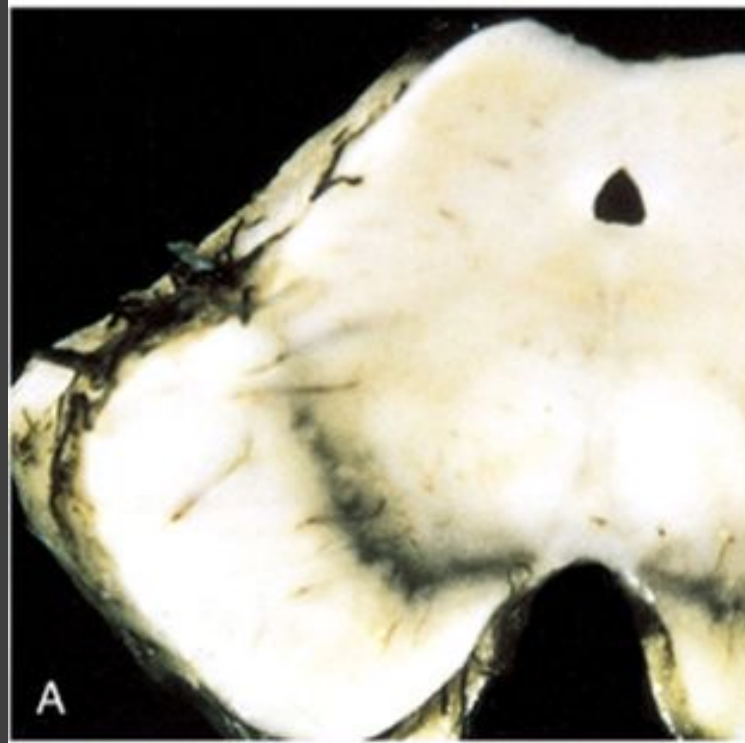
Normal midbrain



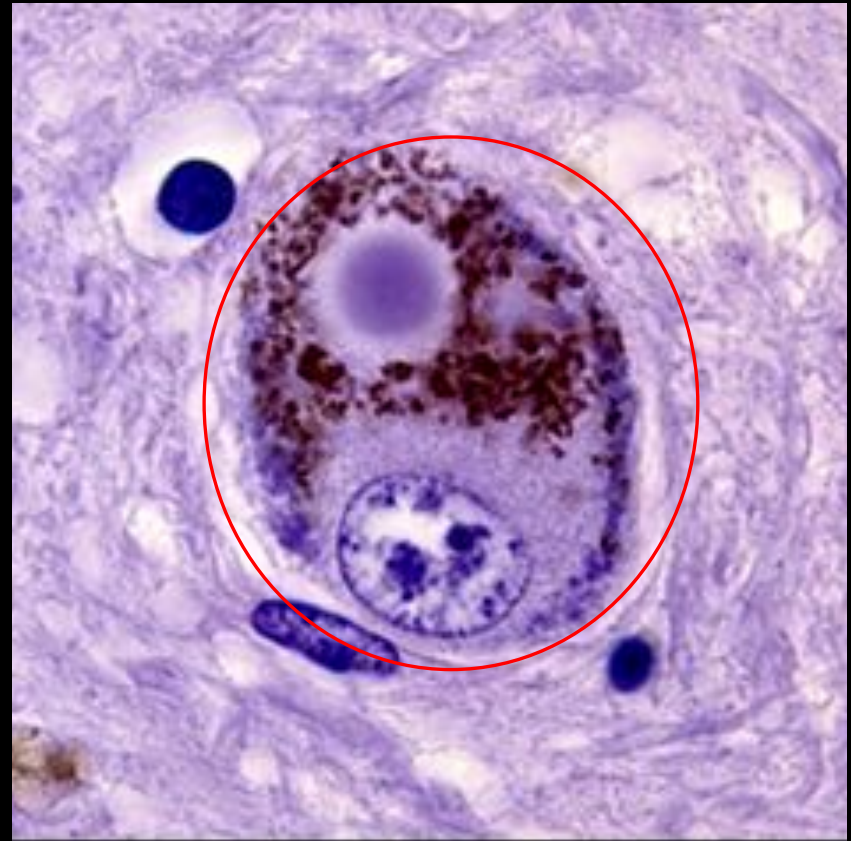
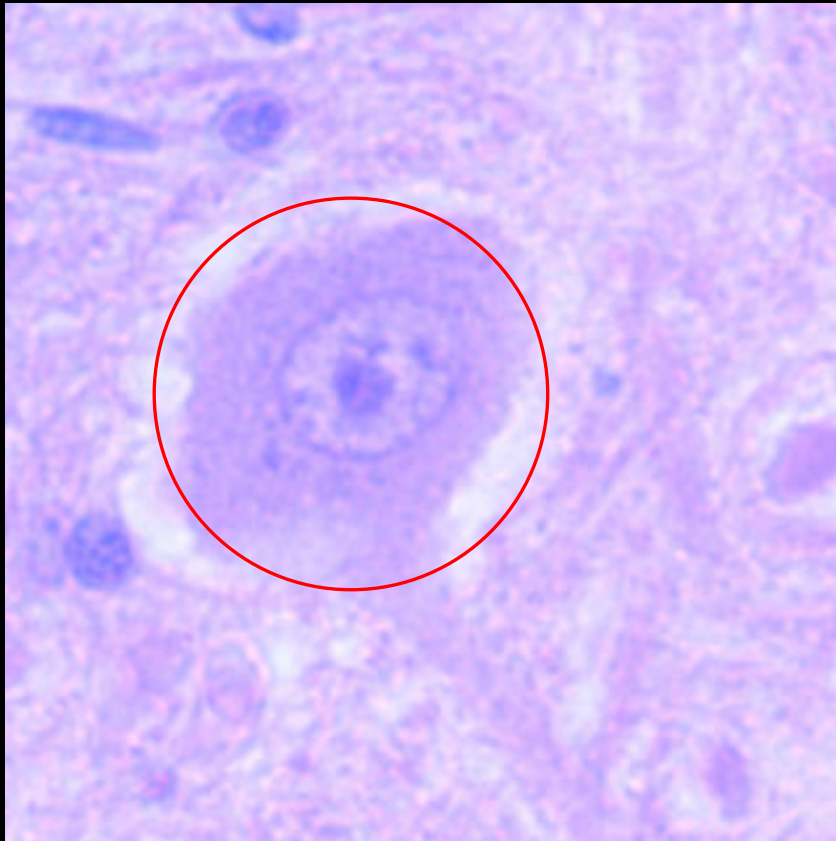
Parkinson's midbrain

Brain in Parkinson's Disease

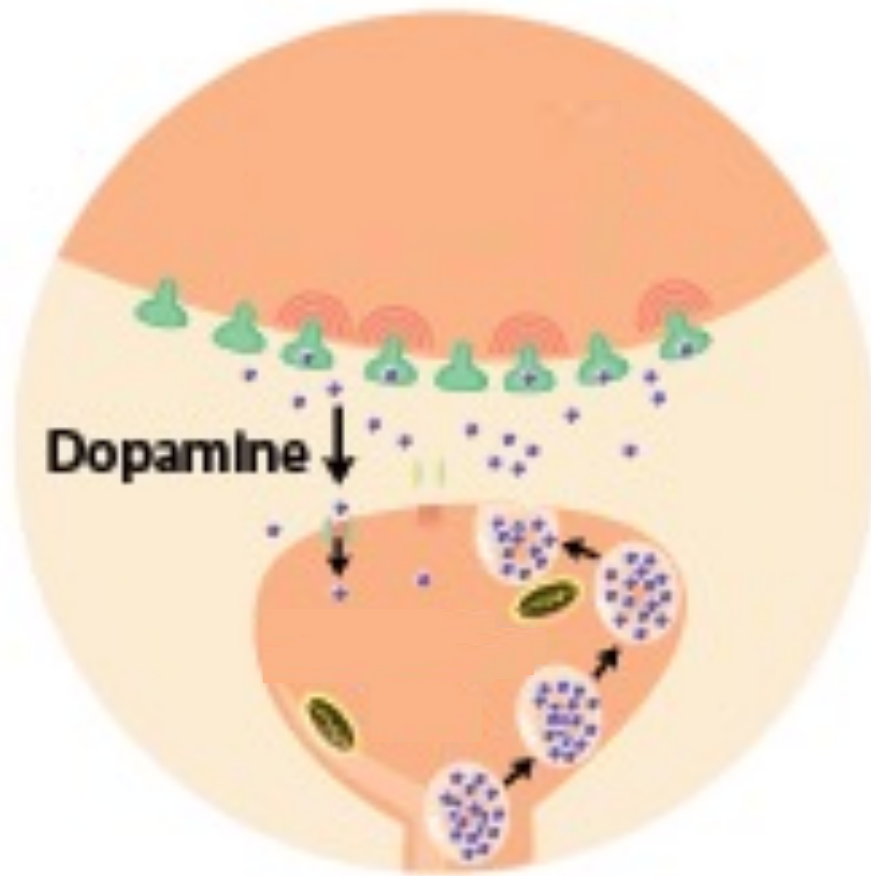
- ◆ Dark pigmentation (color) is lost in Parkinson's Disease patient.



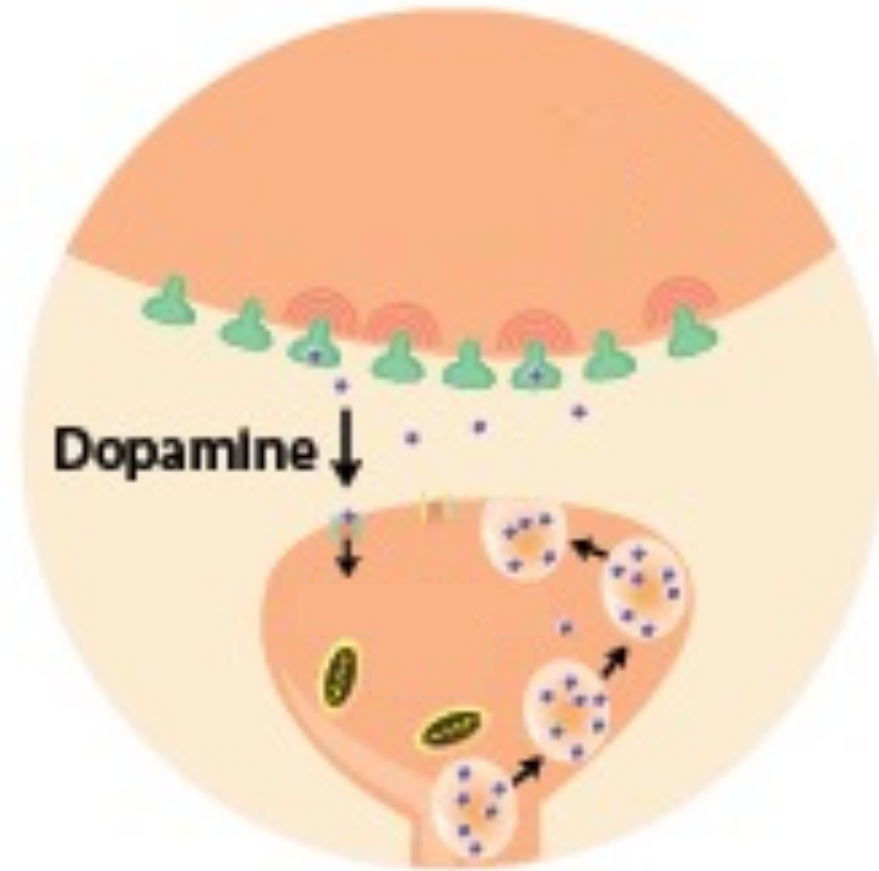
Brain in Parkinson's Disease: Closer look



Dopamine: an important brain hormone

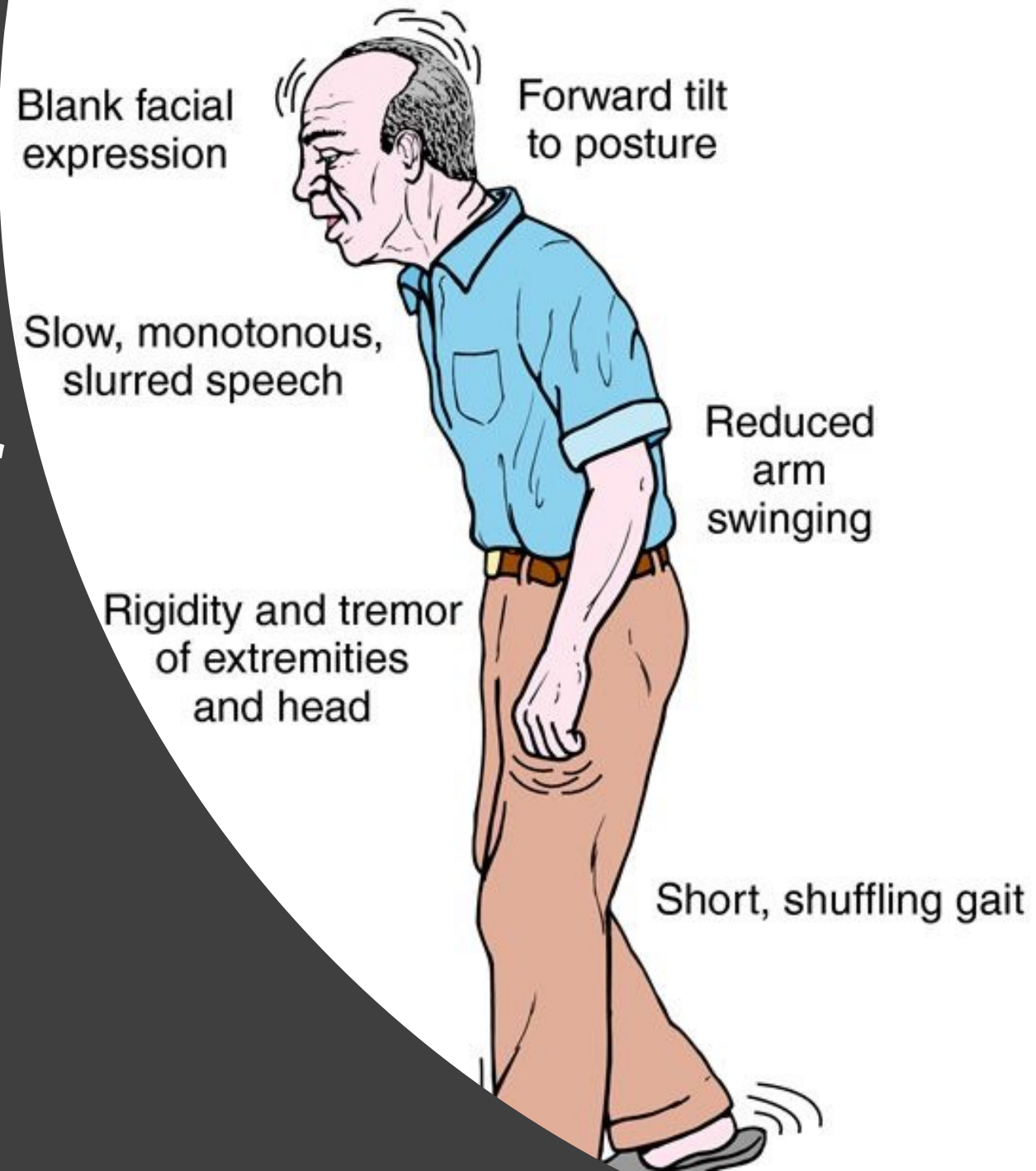


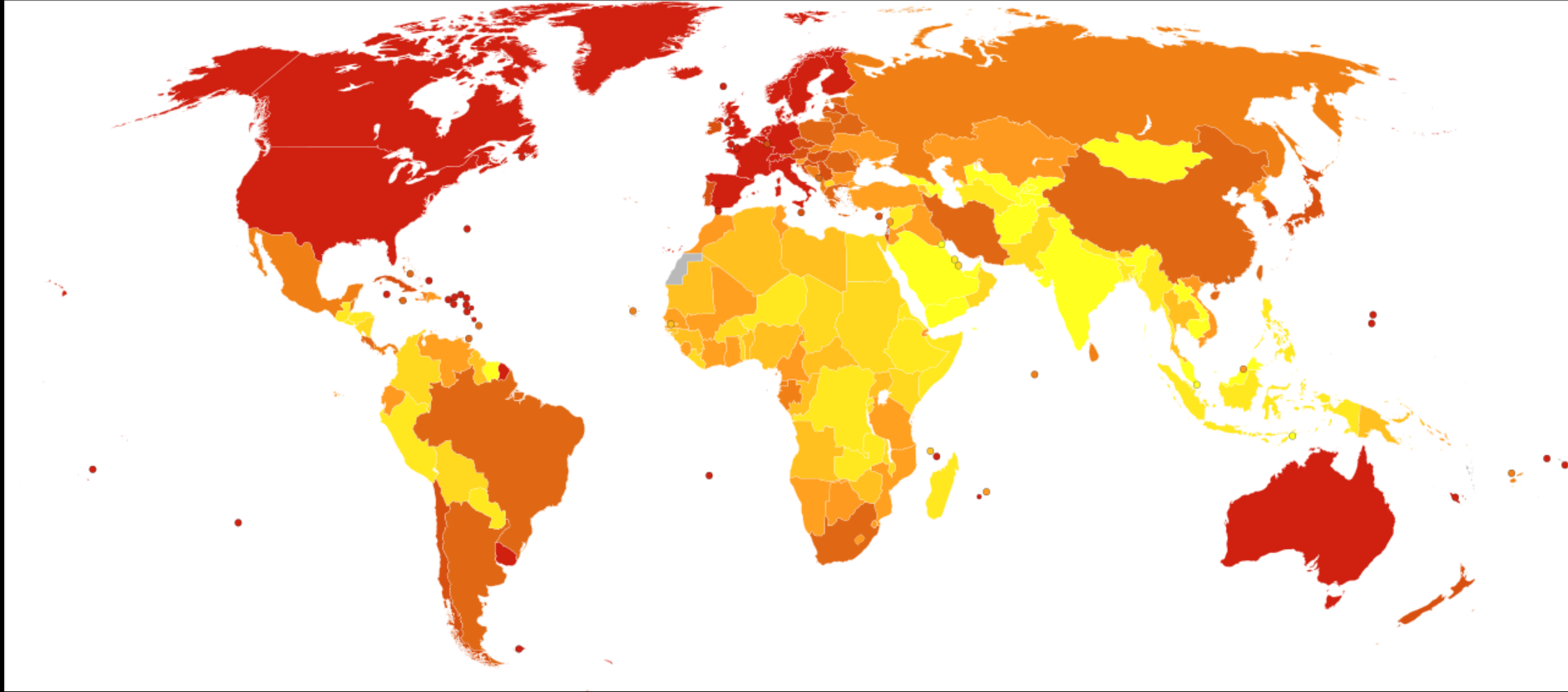
Healthy Patient



Parkinson's Patient

Common symptoms of Parkinson's Disease



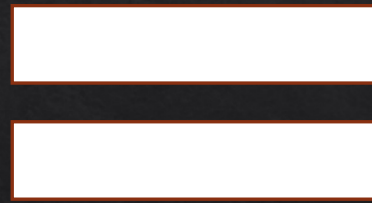
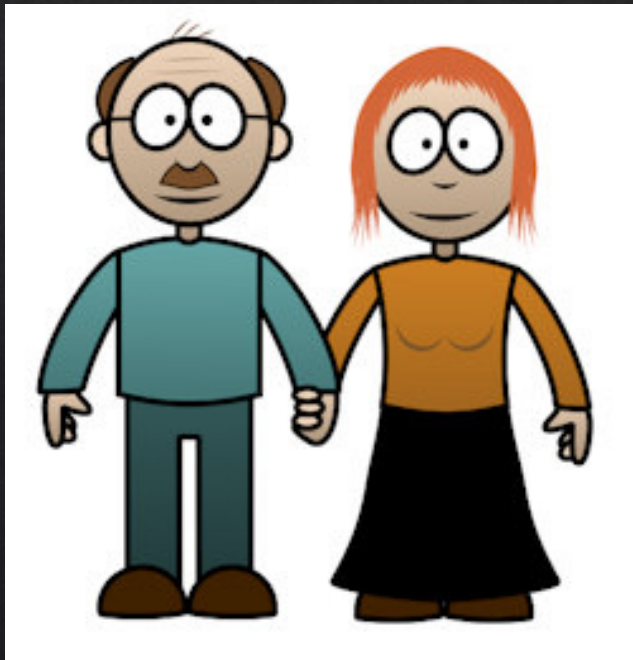


Numbers

- ◇ 2-3 per 1000
- ◇ 1,000,000 in US (what else has 1 million people?)
- ◇ 10 per 100,000 at age 50
- ◇ 200 per 100,000 at age 80
- ◇ Men > Women

What causes Parkinson's Disease?

- ◆ A parent or sibling with Parkinson's disease is thought to nearly double your risk of developing the disease.



RISK X 2

How to test for PD?

- ◇ There is no definitive test to diagnose Parkinson's disease (No blood test)
- ◇ Diagnosis is based on symptoms and often require second opinion of a neurologist.
- ◇ Because the symptoms are similar to other neurodegenerative disease, it is often misdiagnosed.



Possible prevention

- ◆ Caffeine
- ◆ Mental and aerobic exercises
- ◆ Vitamin C and D

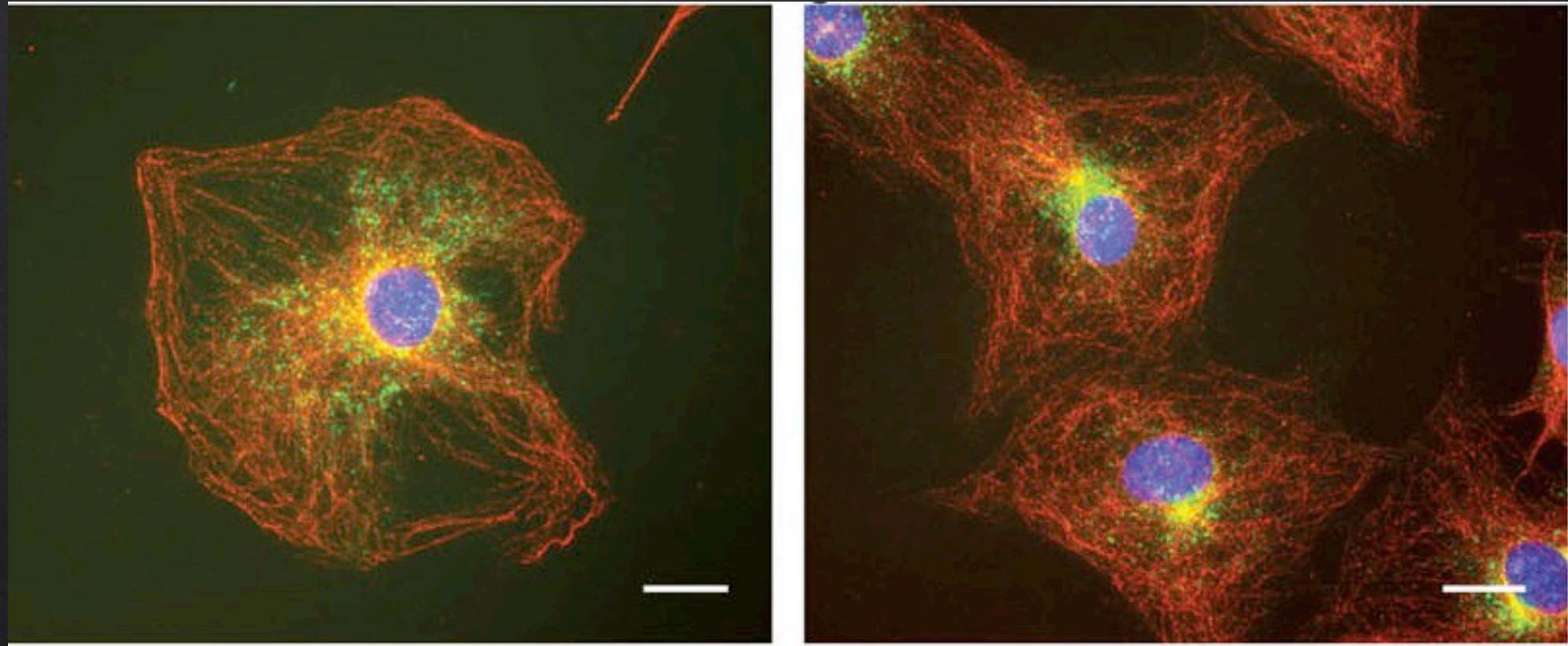


Treatment for Parkinson's Disease

- ◆ Most drugs for treating PD increases dopamine.
- ◆ L-Dopa or Levodopa



My research: cellular stress and brain cells



When will the cure come out?

My research: cellular stress and brain cells

