

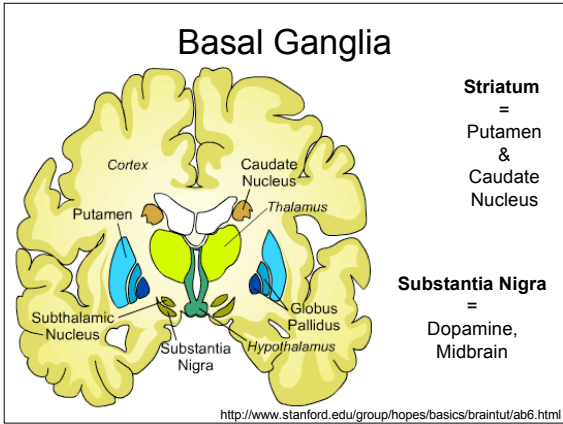
Parkinson's Disease

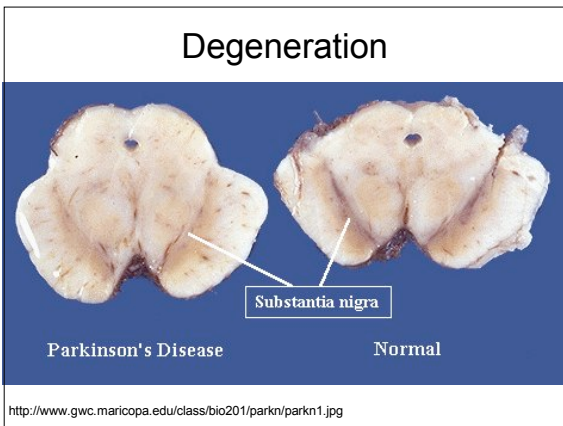
A short primer

Klaus Libertus

- Symptoms**
- Tremor at rest
 - Shaking hands, "pill-rolling" movement
 - Decreases during voluntary movement, increases with stress
 - Rigidity
 - Increased tone in all muscles
 - Difficulty moving
 - Slow movements (bradykinesia)
 - Few movements (hypokinesia)
 - Lack of facial expression
 - Frozen faces, mask-like faces, no emotions

- Parkinson's Disease**
- Progressive degeneration of cells in the Substantia Nigra
 - Dopaminergic cells projecting to Striatum
 - Cells in Substantia Nigra first malfunction, then die
 - Potential cause for cell death: Lewy Bodies
 - --> amount of dopamine produced in the brain decreases
 - Chronic disease
 - Symptoms continue
 - Progressive disease
 - Gets worst over time
 - Mostly affects old people
 - Not heritable? Seems to have external cause!
 - Increase with industrialization. Herbicides?





Treatment

- L-Dopa
 - Increase amount of available dopamine
 - Eventually becomes ineffective
- Electrical stimulation of Basal Ganglia
 - Temporary relief
- Stem cell implants
 - Helps, mainly with young patients

Models for Parkinson's

- MPTP
 - Toxic drug induces Parkinson's like symptoms
 - Destruction of neurons in substantia nigra (p.c.)
 - Effective only in Primates
- Rodent Models
 - Toxins that target substantia nigra
 - A new model has just been developed at Duke

MPTP vs Parkinson's

- | | |
|---|---|
| <ul style="list-style-type: none">• MPTP<ul style="list-style-type: none">– Induced by drug– Quick, sudden onset of symptoms– Effect of drug is short lasting– In the real world, affected only special populations (drug users) | <ul style="list-style-type: none">• Parkinson's<ul style="list-style-type: none">– Natural onset– Degeneration is slow– Cell death progresses– Gets worst over time– Comorbid with other diseases– Affects old people with additional health issues. |
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