

# Clinical Trials: What You Should Know

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# What is a clinical trial?

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Research Studies to evaluate the potential beneficial effects and safety of a medication or medical device in human subjects.



# How do I find clinical trials

- ClinicalTrials.gov
- Fox Trial Finder  
<https://www.michaeljfox.org/trial-finder>
- Parkinson's Foundation  
<https://www.parkinson.org/Understanding-Parkinsons/Treatment/Clinical-Trials>
- Your local Movement Disorders Center

# Phases of clinical trials

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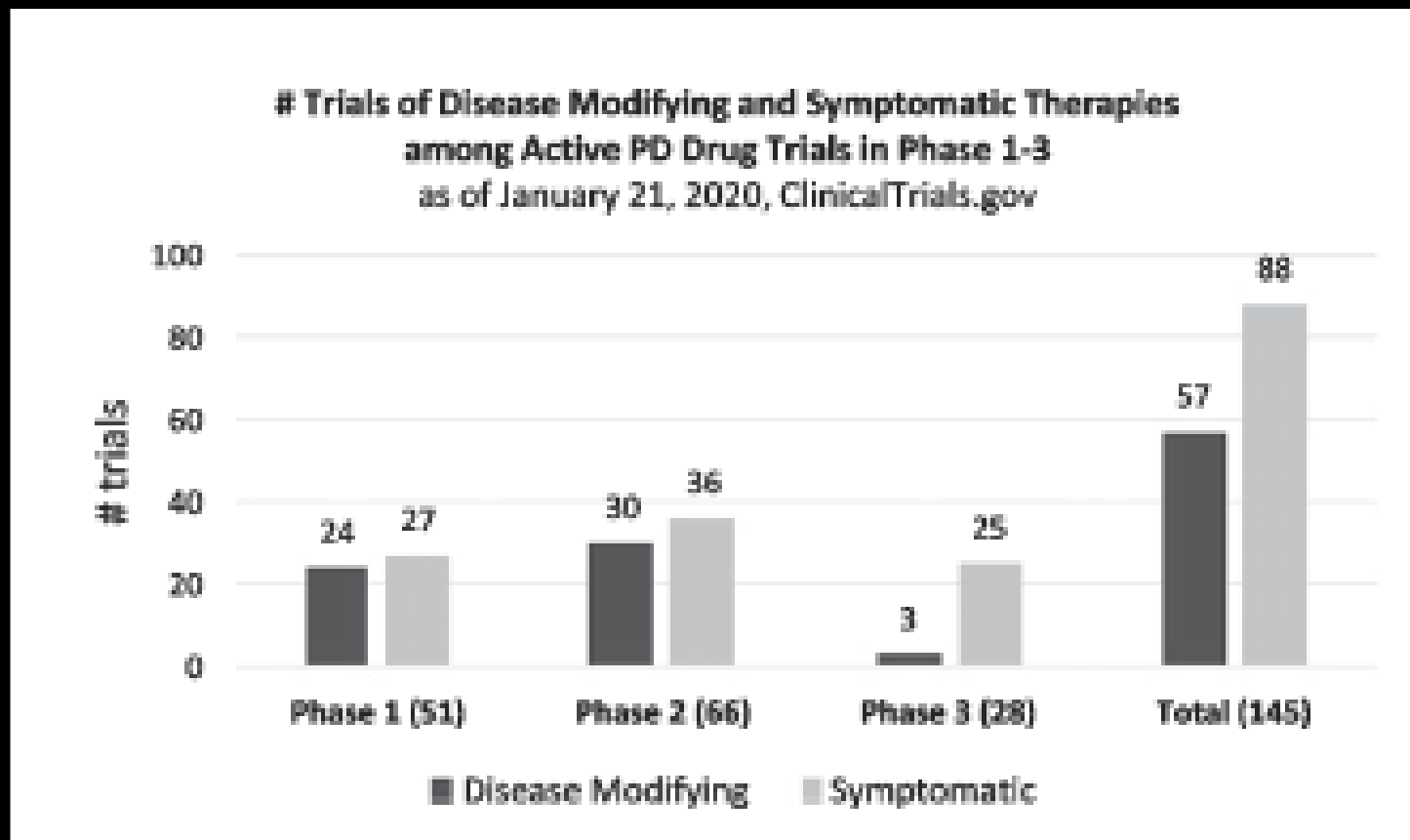
- **Preclinical:** Testing in animals or model systems
- **Phase I:** Goal is to evaluate safety and find appropriate doses
  - small study of healthy volunteers or people with PD
  - Months long
  - 70% success rate
- **Phase II:** Goal is to evaluate efficacy and side effects
  - Larger study, months to years long
  - Case series or small randomized study
  - 33% success rate
- **Phase III:** Pivotal trial to prove effectiveness and determine side effects
  - Randomized, controlled and multicenter
  - May last more than a year
  - Several hundred+ patients
  - 25-30% success rate
- **Phase IV:** After market approval study to look at other aspects of the treatment, and long-term effects

# Active Clinical Trials Today

- 145 Trials for PD
  - 51 Phase I (35%)
  - 66 Phase II (46%)
  - 28 Phase III (19%)

57 Trials on disease modification (39%)

88 Trials on therapeutic relief (61%)



# Why participate in clinical trials

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- Will help improve the treatment options for people like you
- May increase your own understanding of your disease
- Access to leading healthcare professionals



# Categories of Clinical Trials for PD



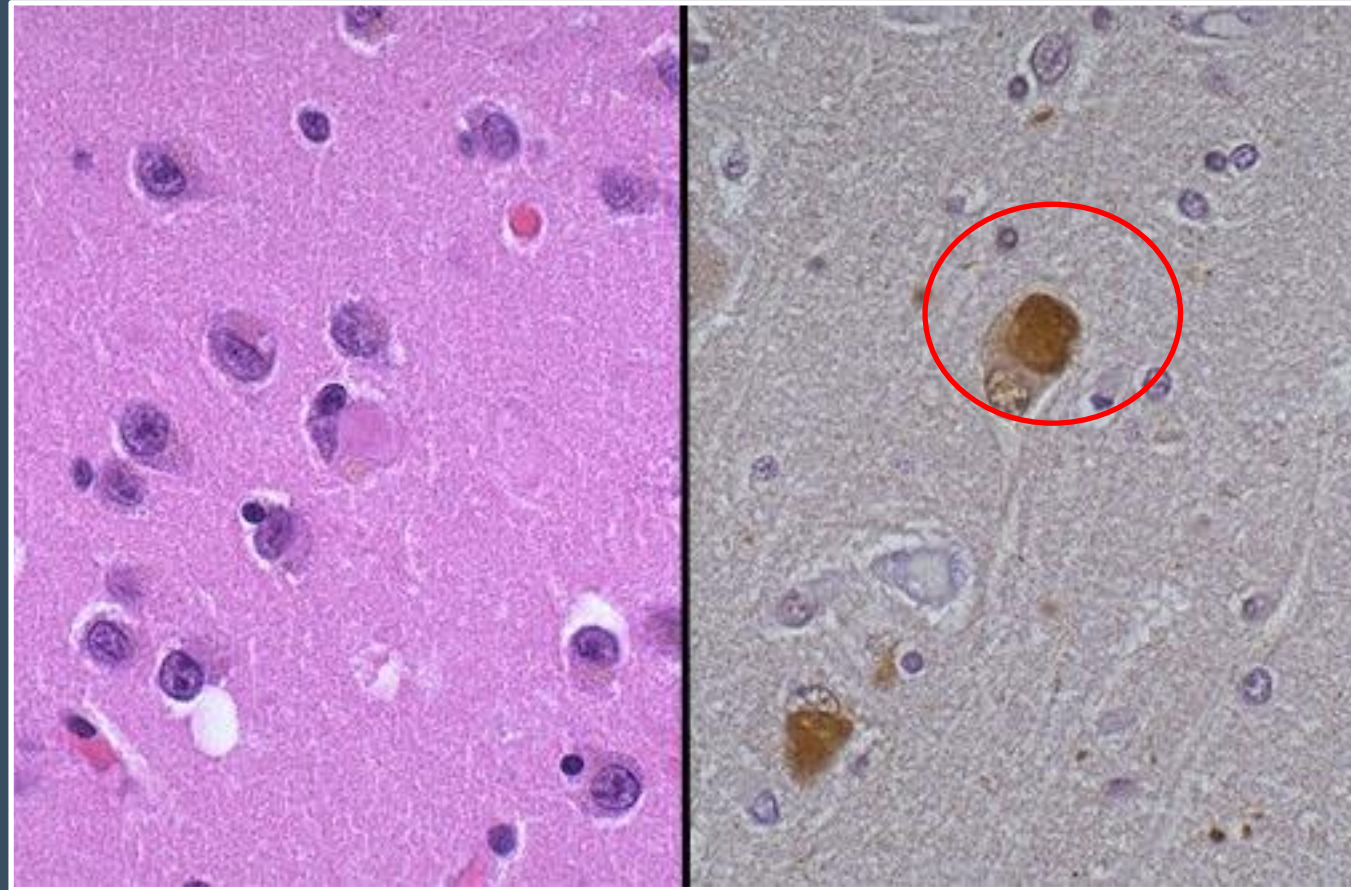


# Early Stage / Drug Naive studies

- Generally, treatments that are targeting disease modification
- Current approaches involve:
  - Antibodies
  - Vaccines
  - Specific chemotherapeutic agents (esp Protein Kinase Inhibitors)
  - Nerve growth factors
  - Gene Therapy
  - Antioxidants

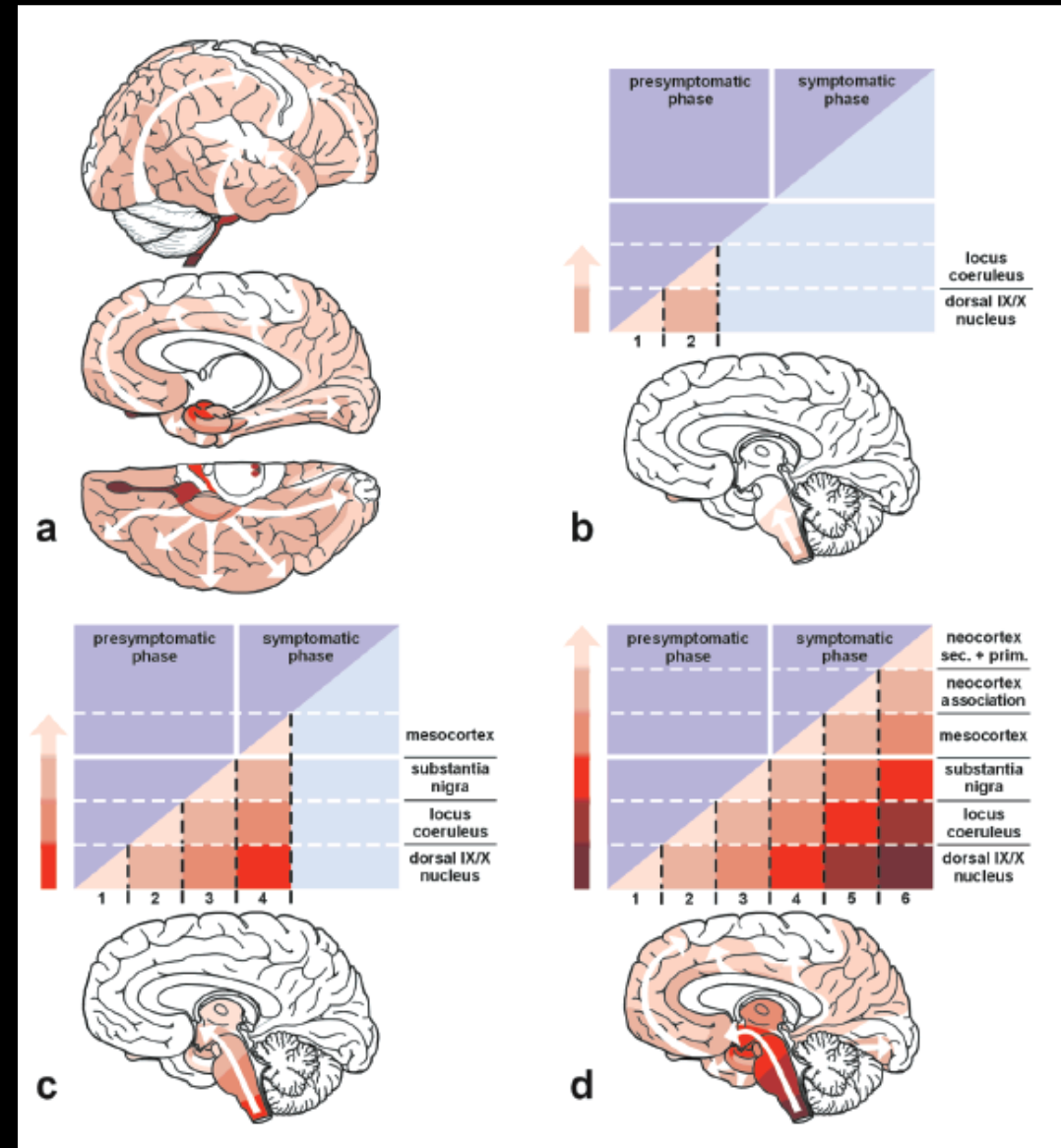


# Lewy bodies form in the brain



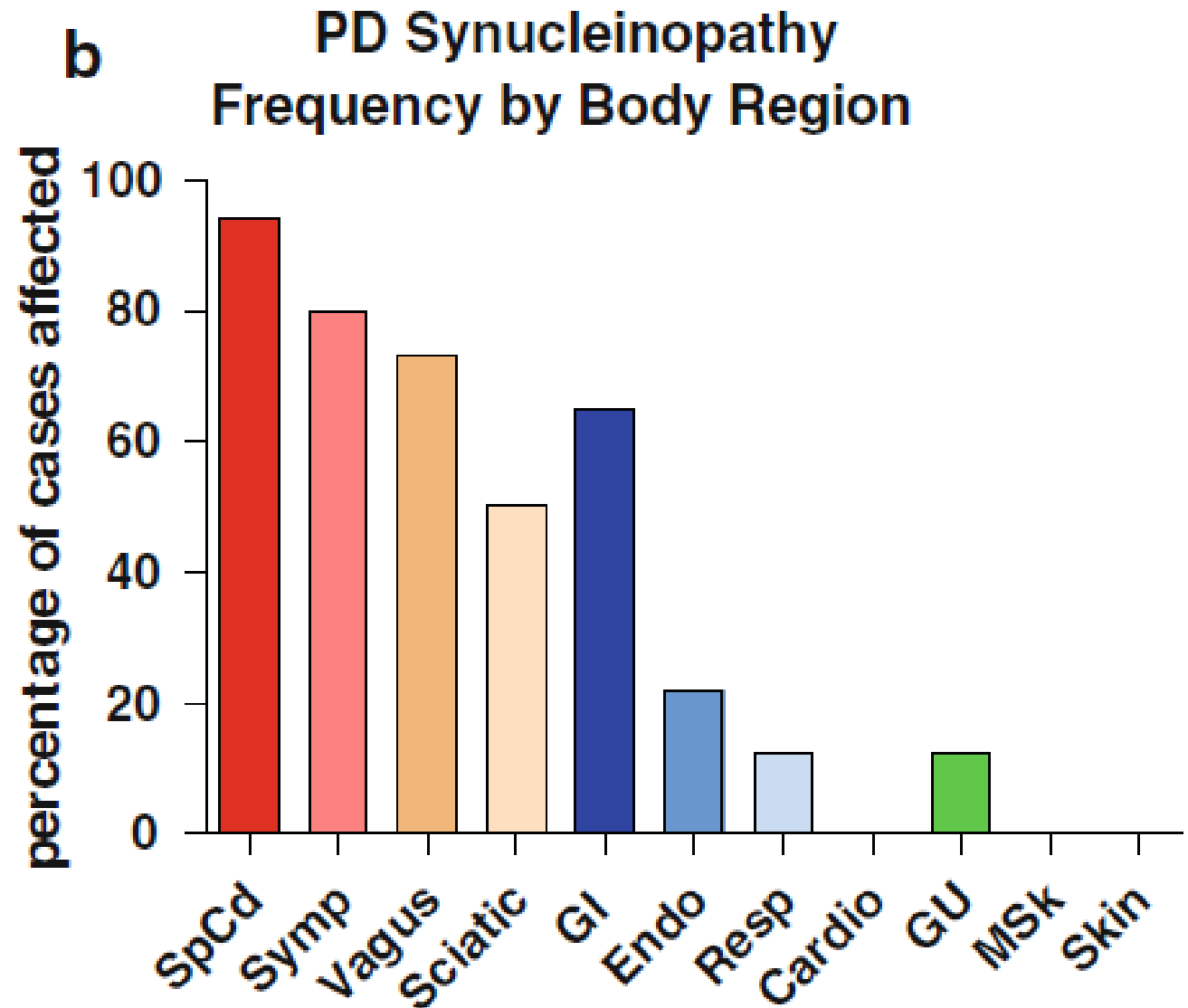
# $\alpha$ -synuclein spreads in the Brain

- Braak H, Del Tredici K, Bratzke H, et al: Staging of the intracerebral inclusion body pathology associated with idiopathic Parkinson's disease (preclinical and clinical stages). **J Neurol** 249 Suppl 3:III/1-5, 2002

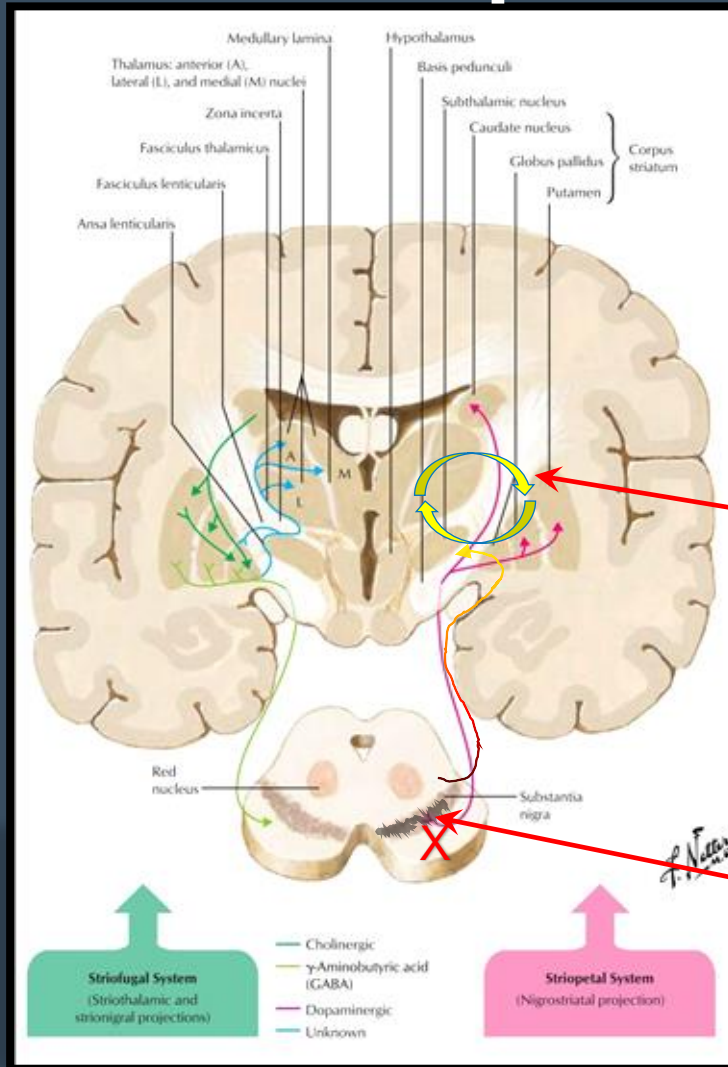


# $\alpha$ -synuclein also spreads in the body

- 1. Beach TG, Adler CH, Lue L, et al. Unified staging system for Lewy body disorders: correlation with nigrostriatal degeneration, cognitive impairment and motor dysfunction. *Acta neuropathologica*. Jun 2009;117(6):613-634.
- 2. Beach TG, Adler CH, Sue LI, et al. Multi-organ distribution of phosphorylated alpha-synuclein histopathology in subjects with Lewy body disorders. *Acta neuropathologica*. Jun 2010;119(6):689-702.



# It takes 70% dopamine loss



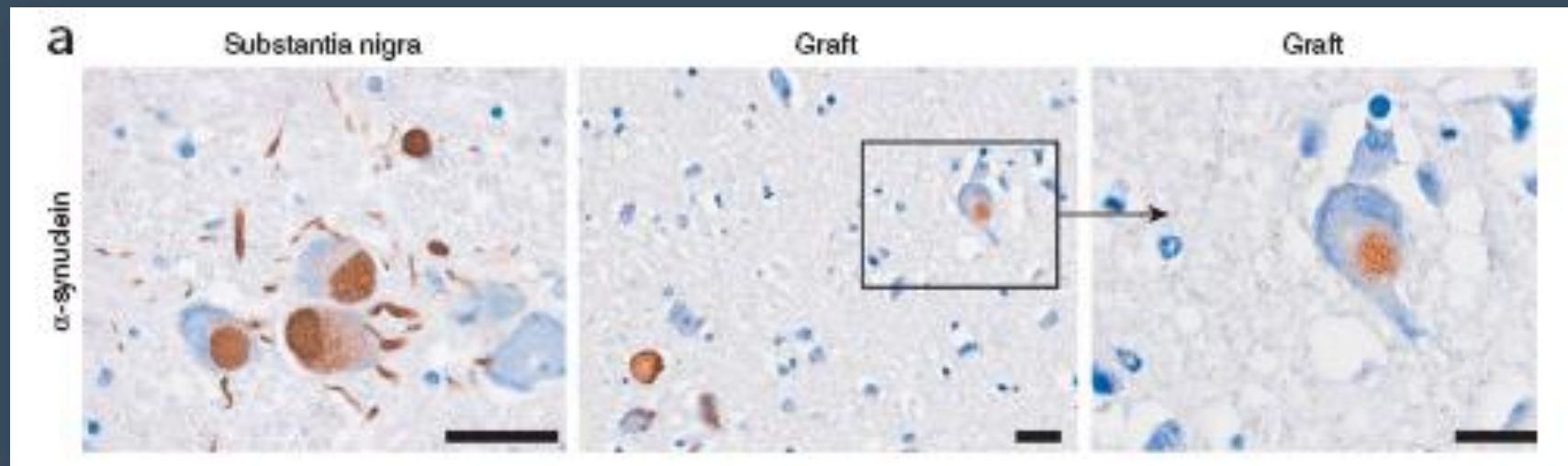
Striatum

Dopamine cells  
in Substantia  
Nigra

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# New findings in stem-cell transplant

Transplanted tissue can also develop  
Lewy bodies (Hallmark of PD).



1. Li JY, Englund E, Holton JL, et al: Lewy bodies in grafted neurons in subjects with Parkinson's disease suggest host-to-graft disease propagation. **Nat Med 14:501-503, 2008**
2. Kordower JH, Chu Y, Hauser RA, et al: Lewy body-like pathology in long-term embryonic nigral transplants in Parkinson's disease. **Nat Med 14:504-506, 2008**

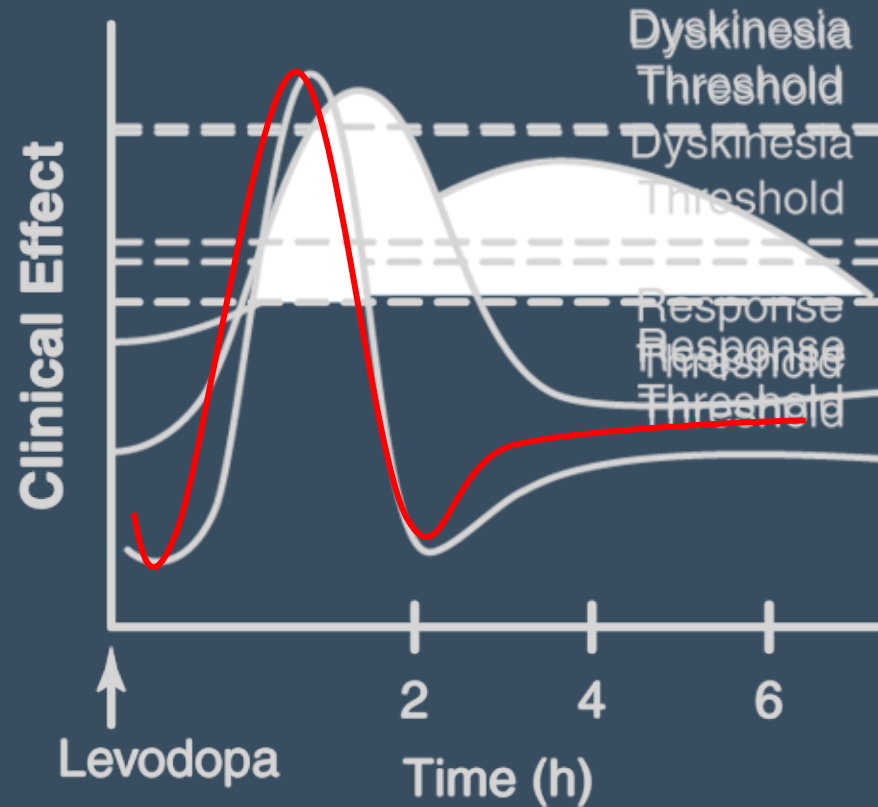
# Therapeutic studies

- Treatments aimed to directly relieve specific symptoms
- May be divided into treatment of:
  - motor
  - Non-motor symptoms



# Therapeutic Window of Levodopa

Abstract  
Obeso et al. PD



Obeso et al. Neurology 2000;55(11 Suppl 4):S13-20.



# Non-motor studies

- ~ 1/3 of all current therapeutic trials

Including:

- Neurogenic Orthostatic Hypotension
- Impulse Control Disorder
- Pain
- Dementia
- Psychosis
- Constipation
- Drooling
- Sleepiness

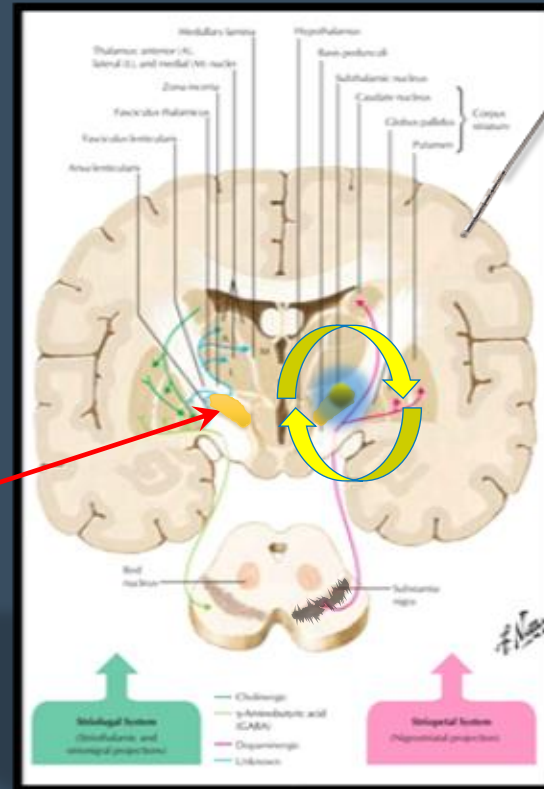


# Device / technology studies

- Deep Brain Stimulation technologies are rapidly evolving
- Other new approaches such as focused ultrasound
- Other devices such as smart watches are being studied to provide more objective support for new therapies

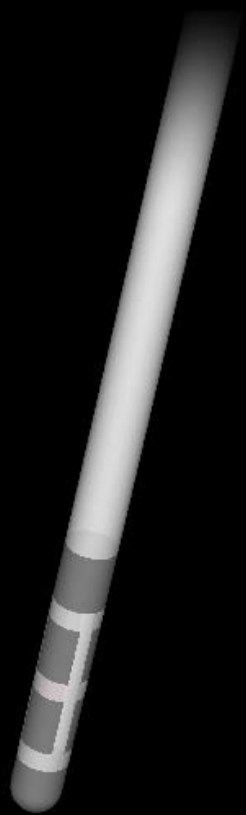
# A Broken Circuit puts the break on movement in Parkinson's Disease

Subthalamic Nucleus (STN)

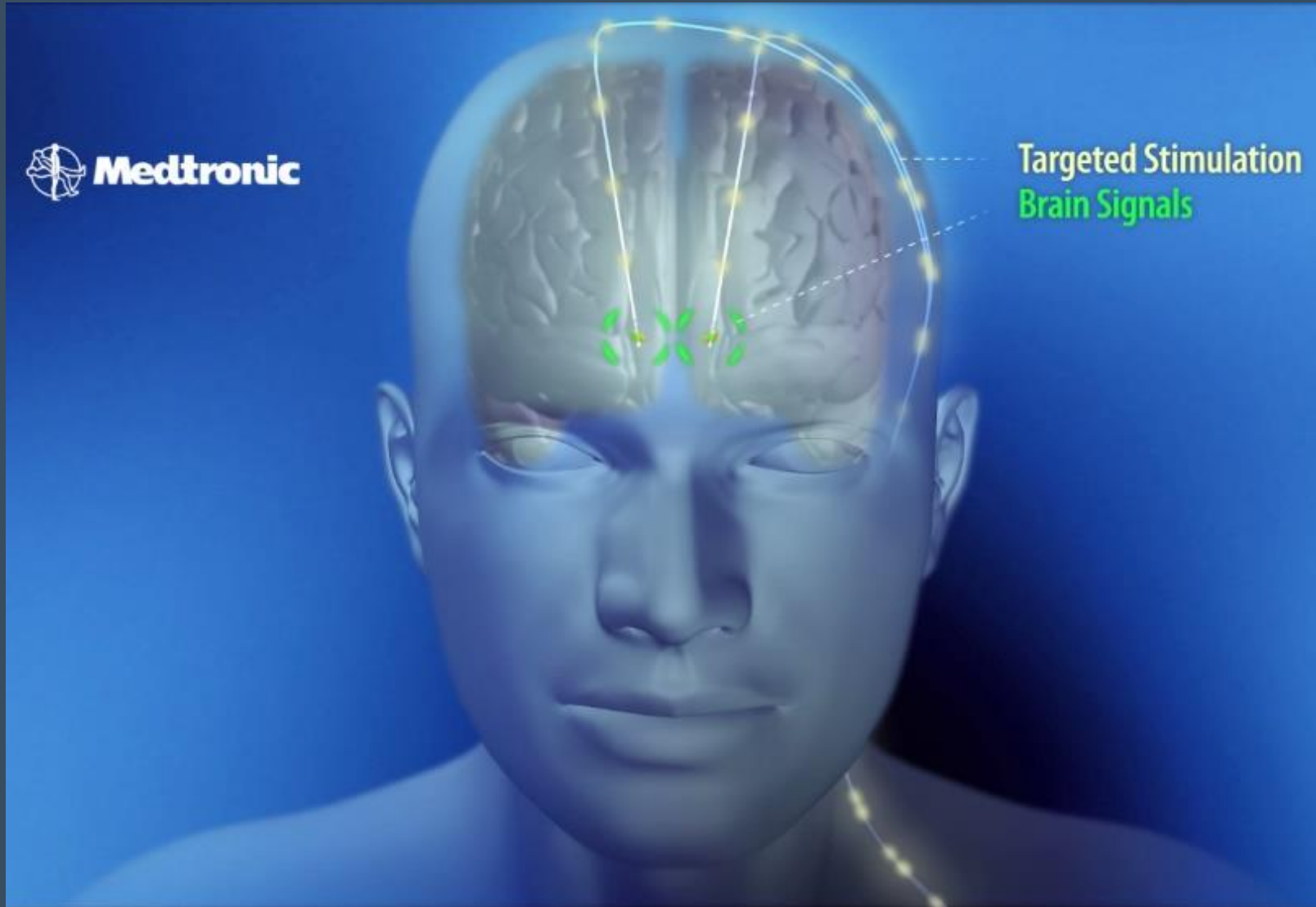


Basal Ganglia Circuit

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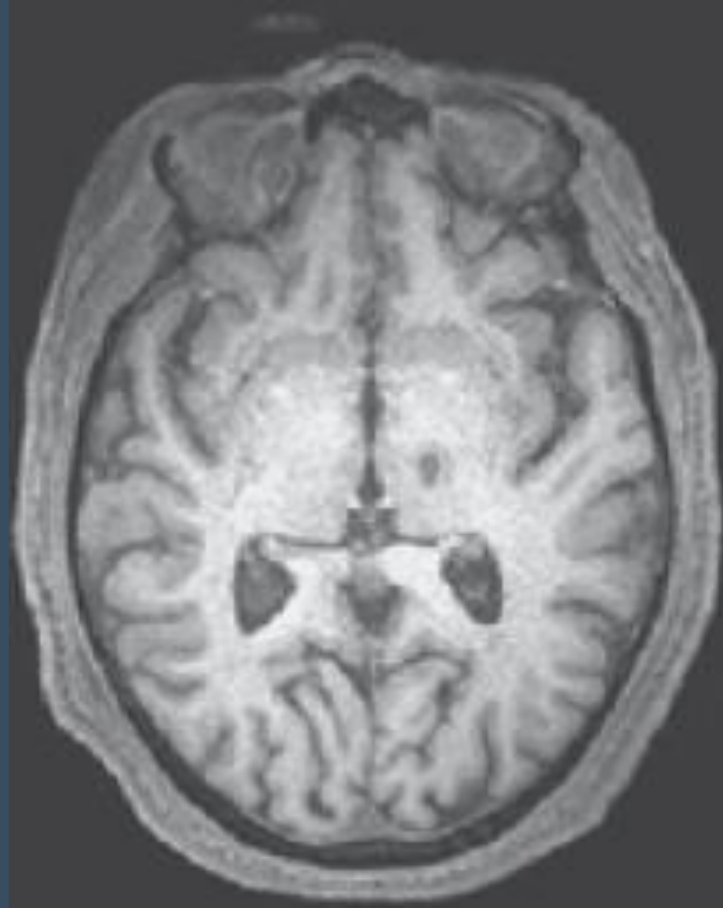


# Closed-Loop Stimulation



# Focused Ultrasound

- Ultrasound is used under MRI guidance to create a thermal lesion in the brain



# How can I help?

- Enroll in trials
  - People with PD and Healthy controls are needed for some studies
- Be represented – participate in trials ensures that new studies work for people with similar symptoms, background and genetics as you.
- Support Clinical Research
- Advocate for change





**Every life deserves world class care.**