Overview of Parkinson’s Disease Research at the University of Colorado

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The Past...

- 1967: Margaret Hoehn co-authors “Parkinsonism: onset, Progression and mortality.”

<table>
<thead>
<tr>
<th>Hoehn &amp; Yahr stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No visible symptoms of Parkinson’s disease</td>
</tr>
<tr>
<td>1</td>
<td>Parkinson’s disease symptoms just on one side of the body</td>
</tr>
<tr>
<td>2</td>
<td>Parkinson’s disease symptoms on both sides of the body and no difficulty walking</td>
</tr>
<tr>
<td>3</td>
<td>Parkinson’s disease symptoms on both sides of the body and minimal difficulty walking</td>
</tr>
<tr>
<td>4</td>
<td>Parkinson’s disease symptoms on both sides of the body and moderate difficulty walking</td>
</tr>
<tr>
<td>5</td>
<td>Parkinson’s disease symptoms on both sides of the body and unable to walk</td>
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</tbody>
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The Past...

The Past...

• UCD under Dr. Maureen Leehey:

• 2nd highest enrolling site in:
  – Zydis/selegiline in PD study
  – Parkinson Study Group study of rasagiline in PD

• Engaged in neuroprotective treatment trials in PD:
  – Parkinson Study Group study of CEP-1347 in early PD
  – Parkinson Study Group study of CoQ10 in early PD
  – NIH NET-PD studies of 4 potential neuroprotective agents and pioglitazone in early PD
The Past...

- Enrolled 12 of 40 patients into AAV2-GAD2 gene therapy study for advanced PD
- Parkinson Study Group study PROGENI of genetics of PD
The Past...

- Pioneering work in FXTAS—a genetic cause of parkinsonism
- Development of MDS revised UPDRS scale
- Sarizotan and tozadenant (SYN115) for the treatment of L-dopa-induced dyskinesia in PD
- Pramipexole/Mirapex for restless legs syndrome
- Rotigotine/Neupro in advanced PD
- Rasagiline for fatigue in PD
- Long-acting formulation of levodopa (IPX-066)
- Pico-tesla magnetic field therapy for PD
- Acupuncture for fatigue in PD
- And many more...
The Present...
Clinical trials in PD at UCD

• Neuroprotection in early, untreated PD
  – Exercise
  – Phenylbutyrate

• Combination therapy (rasagiline and pramipexole) for treatment of early PD
Clinical trials in PD at UCD

- Long acting amantadine for treatment of L-dope-induced dyskinesias
- Myobloc for the treatment of troublesome drooling
- Transcranial magnetic stimulation for the treatment of cognitive impairment in PD
Clinical research in PD at UCD

• Improvement of ability to interpret DaT SPECT scans
• Development of imaging biomarkers in PD
  – Functional MRI
  – Diffusion Tensor Imaging (DTI)
  – Magnetoencephalography (MEG)
Basic research in PD at UCD

• Dr. Gidon Felsen in the Departments of Physiology and Biophysics studies the effect of dopamine depletion on biases in direction of movement

[odor A] < [odor B]  [odor A] > [odor B]

Neural recordings from basal ganglia in behaving mice

Firing rate (spikes/s)

Time from movement onset (s)
Research at CU Boulder

- Dr. Tor Wager in the Departments of Psychology and Neuroscience studies the placebo effect in PD and its affect on learning

Learning from reward
Clinical Research...

• ...means research involving people as participants
• ...is necessary to prove the safety and efficacy of new treatments for people
• ...can improve our understanding of PD
• ...can lead to better diagnostic tests and treatments
Why Participate?

• All of your current treatments came through clinical trials
• People in clinical trials have better outcomes
  – Close observation by expert clinicians
  – Placebo effect
• 90% of clinical trials do not finish on time
  – This means delays in advances, more expensive research, more expensive treatments
• It is a unique gift that you can give to the PD community
Research Resources

University of Colorado Movement Disorders Center
www.ucdenvermovement.org

researchmatch

www.parkinson.org

Learn about Parkinson's clinical trials

PDtrials

www.pdtrials.org

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