18F-FPCIT Binding Reductions in PD
H&Y Stage I

Sham surgery
FDOPA / PET
Normal
Preop. Postop.
Fetal mesencephalic cell implant
Preop. Postop.

Fetal Dopamine Cell Transplant
FDOPA/PET: SPM Analysis (p<0.001)
Parkinson's Disease
H&Y I

\( ^{18} \text{F}-\text{FP CIT} \) \( ^{18} \text{F}-\text{FDG} \)

PD related Metabolic Network: Voxel Analysis

Cerebellum
PU / GP
Parietal

(z = -30mm)
(y = -10mm)
(z = 54mm)

PC1 (20.7% VAF) from analysis of 20 PD and 20 Controls

Network Activity Discriminates PD and Controls

Subject Score (PDRP)

p < 0.0001
Levodopa Infusion

* p = 0.01

Implantation: Two year Follow-up

preoperative  1 yr postop  2 yr postop
MRI-PET Fusion Image
Pallidotomy

18 F-FDG/PET
63 yrs man rt. pallidotomy
Pre Post

mg/100g/min
14.9
Task Subtractions

<table>
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<th>Structure</th>
<th>52 mm</th>
<th>40 mm</th>
<th>8 mm</th>
<th>-36 mm</th>
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<td>Sensorimotor</td>
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<td>Superior Parietal</td>
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<td>Lateral cerebellum</td>
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Effect of GPi stimulation on motor task

Activation ON > Activation OFF

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<td>Med Cerebellum</td>
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Threshold p=0.01 (within motor activation mask)
Effect on Brain Glucose Metabolism

(p < 0.001)