

# PPMI Imaging Core

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# Technical site visits

## Completed

Northwestern  
IND- New Haven  
Johns Hopkins  
Federico II - Naples  
Parkinson's Institute- Sunnyvale  
Univ Pennsylvania  
Univ Rochester  
APDC- Sun City, Az  
Baylor  
Univ Alabama-Birmingham  
Boston University  
Portland  
Innsbruck  
Marburg  
Tübingen  
Univ Washington  
Tampa  
Emory Univ  
San Diego  
Cleveland Clinic

## Pending

London

# PPMI Imaging Studies In-house at IND

- 78 SPECT DAT studies
- 19 DTI MRI
- 54 Structural MRI
  
- 6 potential PD subjects with normal DAT (SWEDD rate about 13%)
- 1 potential HC subject with abnormal DAT



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# DaTSCAN SPECT Imaging



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PD

SWEDD



HC

HC excluded



# Quantitative Analysis

1. Core lab reconstruction from raw projection data, including attenuation correction based on phantoms from site visit
2. Spatial normalization of image creates consistent orientation
3. Apply standard volume of interest template on caudate, putamen, occipital regions
4. Extract count densities and calculate Striatal Binding Ratios (SBR)



# Equilibrium Binding Ratio

Striatal Binding Ratios (SBR)

= Specific striatal binding/occipital reference region

=  $\frac{\text{Total striatal count density} - \text{Occip count density}}{\text{Occip reference count density}}$

= Total striatal density/Occip count density – 1

= Binding Potential (BPnd)

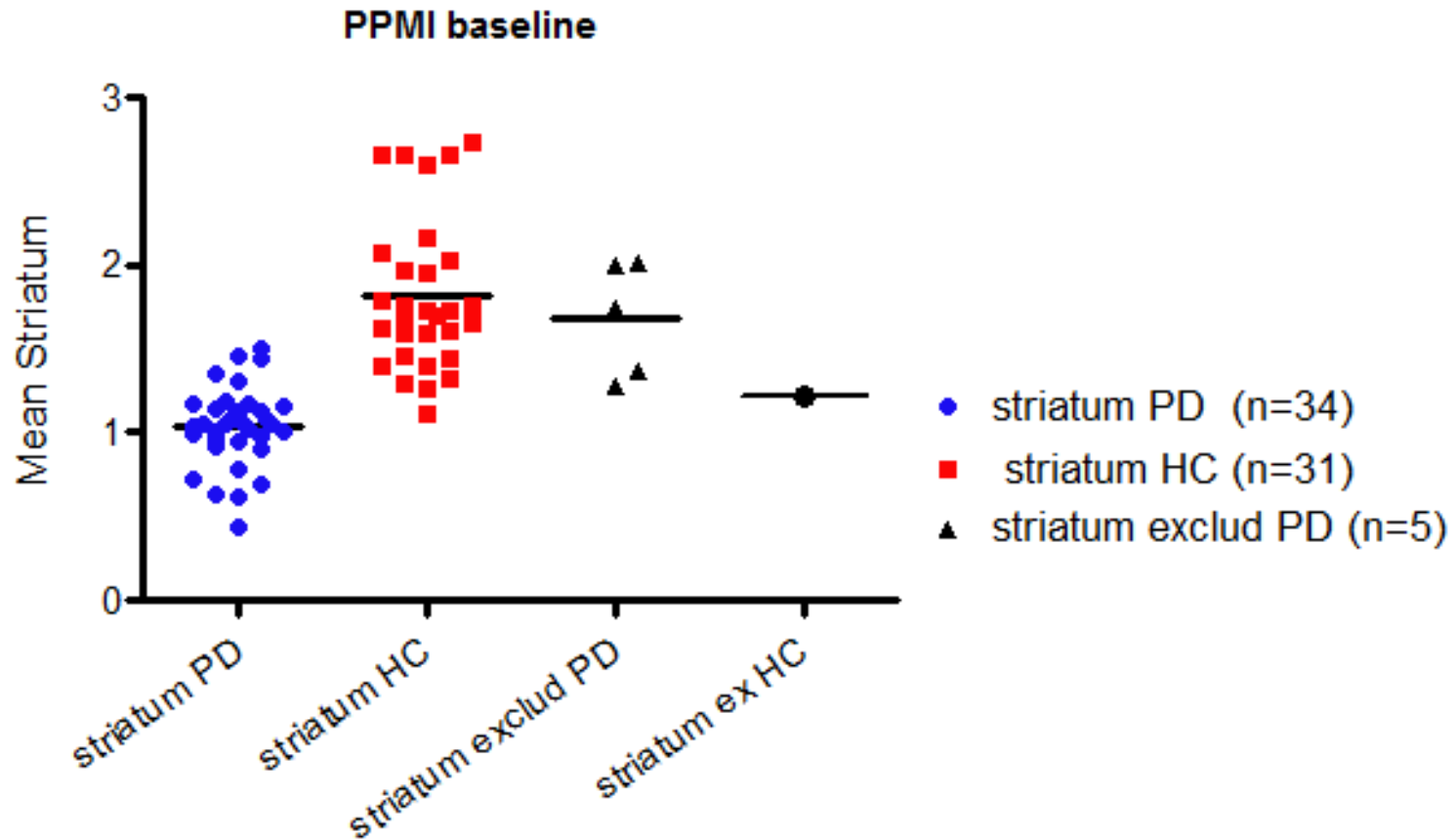


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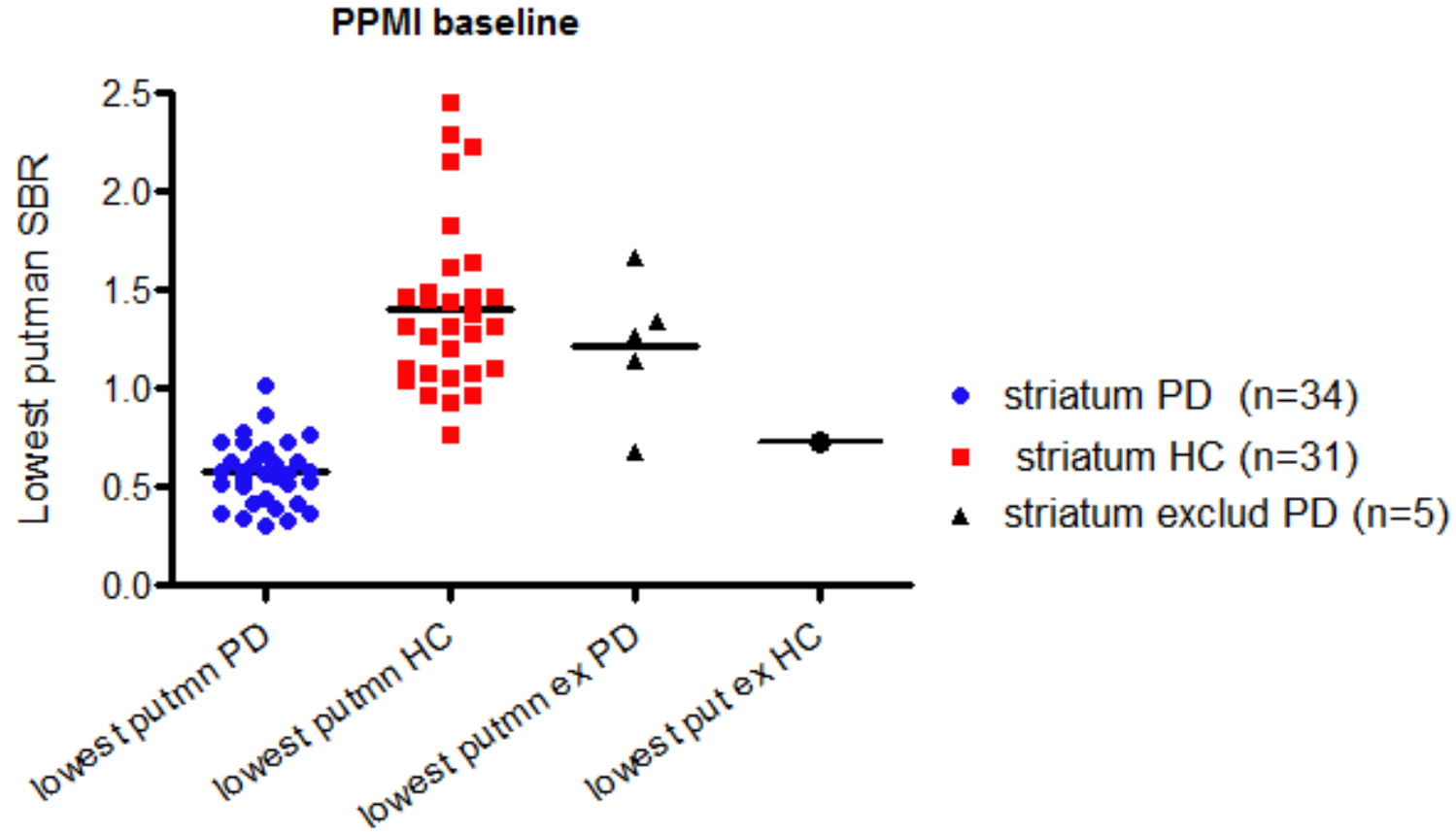
# Mean Striatal Binding Ratio (SBR)



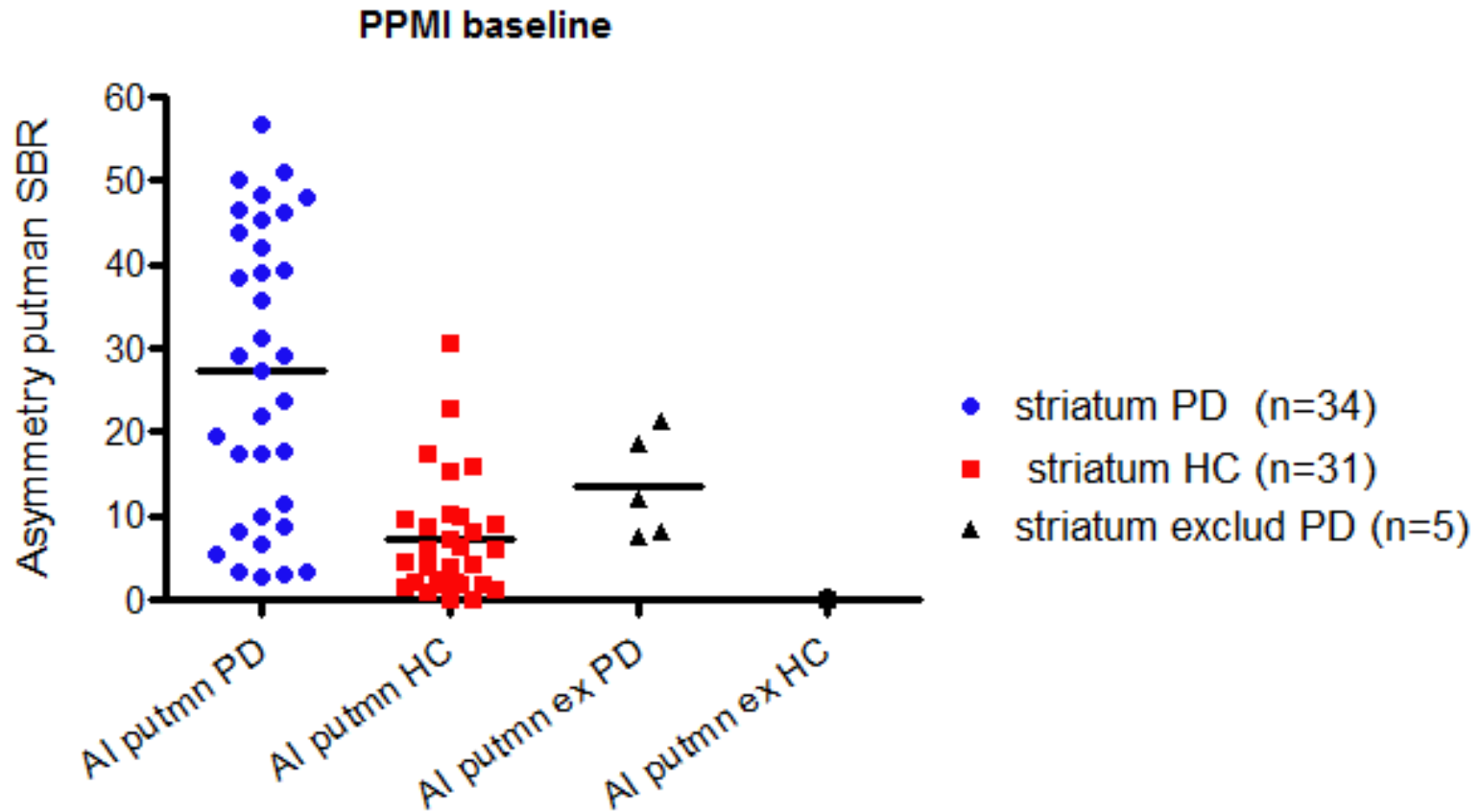
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# SBR Lowest Putamen



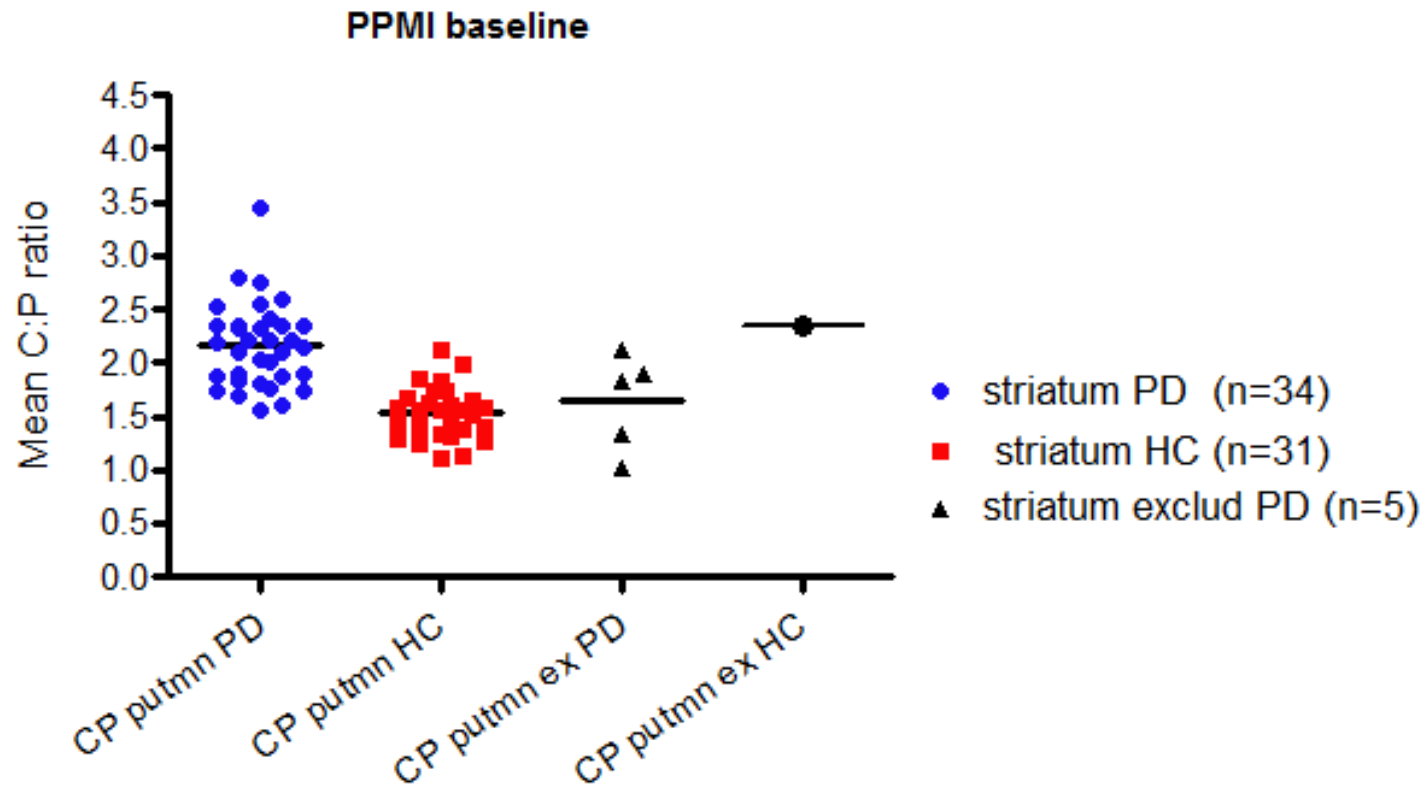
# SBR Putamenal Asymmetry



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# SBR Ratio Caudate:Putamen



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# Conclusions

- Initial quantitation consistent with literature SBR values suggesting good between-site standardization of SPECT
- SWEDDs rate about as expected (12-15%) in de novo PD, SBR outcomes more similar to controls, but limited data
- First longitudinal data expected shortly



# DTI Update

# Future directions/challenges

- Radiotracer availability
- Phantom correction of data-to reduce variance
- Additional imaging biomarkers- e.g. resting state MR, novel scintigraphic targets

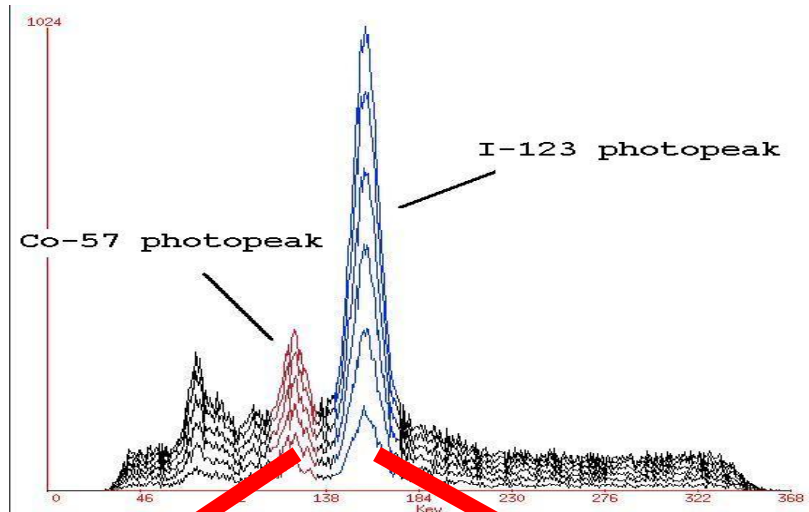


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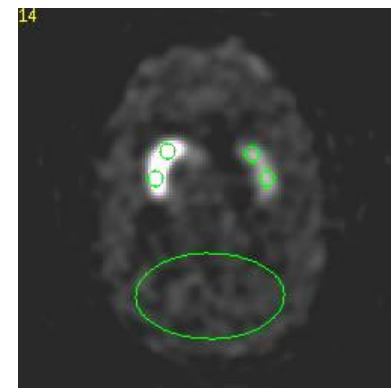
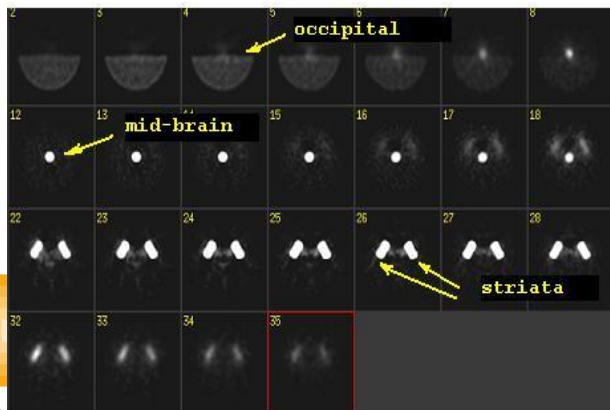
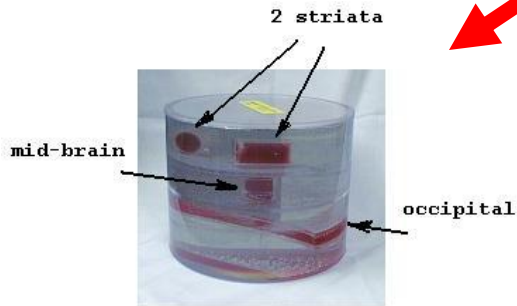
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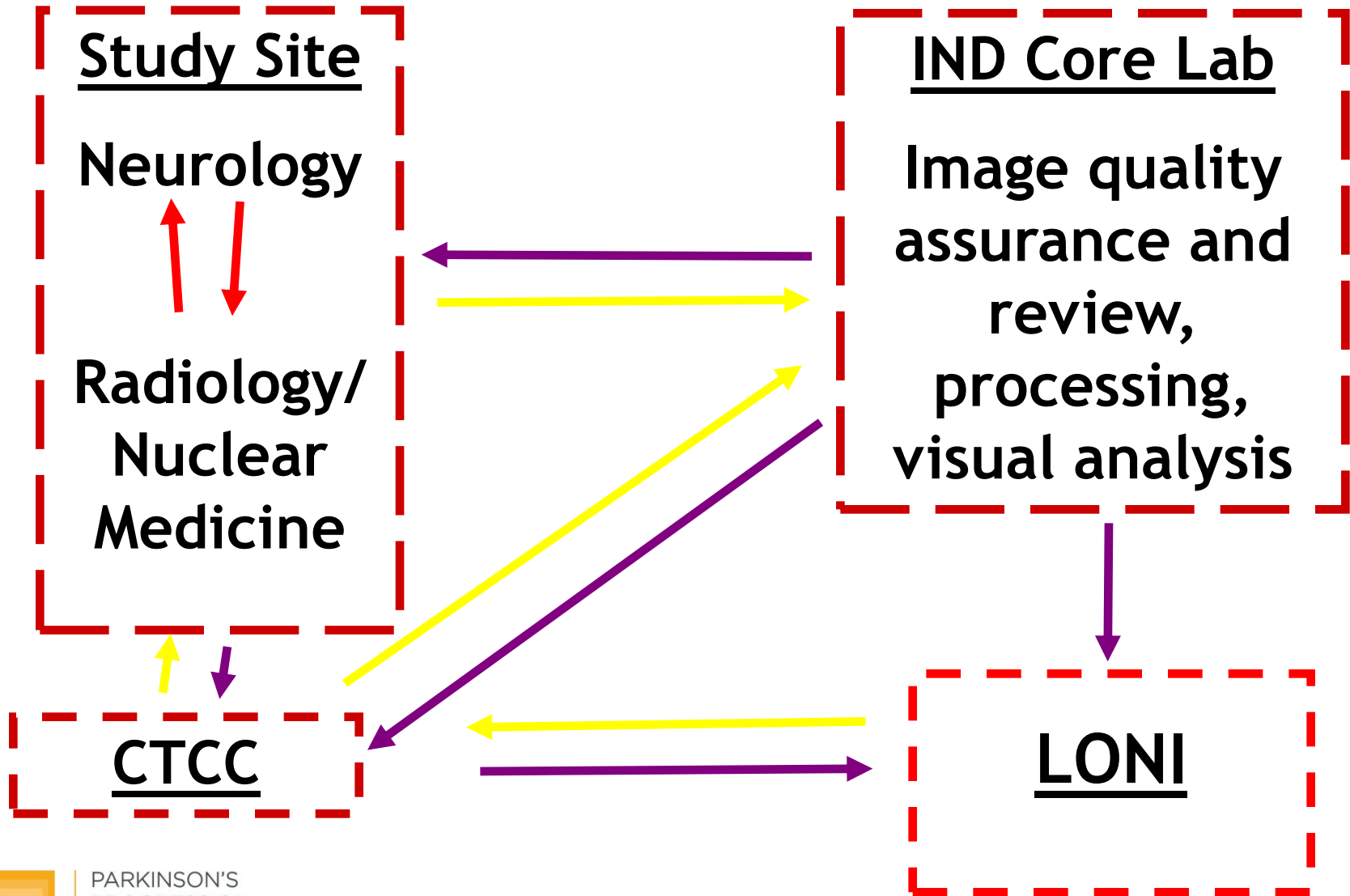


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# Imaging Data and Information Flow



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