QIBA SPECT BIOMARKER COMMITTEE: Quantitative / Image Analysis Task Force

8 March 2016

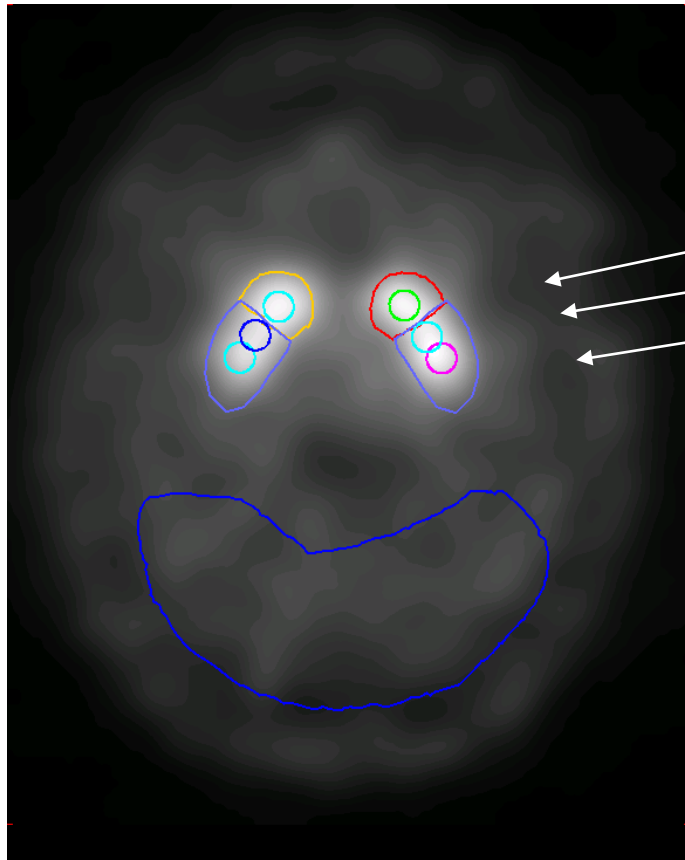# Agenda

1. Profile Development/Writing
2. Timelines
3. AOB

Definition of Measurands

- **Striatial binding ratio**
- Ratio of putamen to caudate
- Asymmetry of caudate and putamen
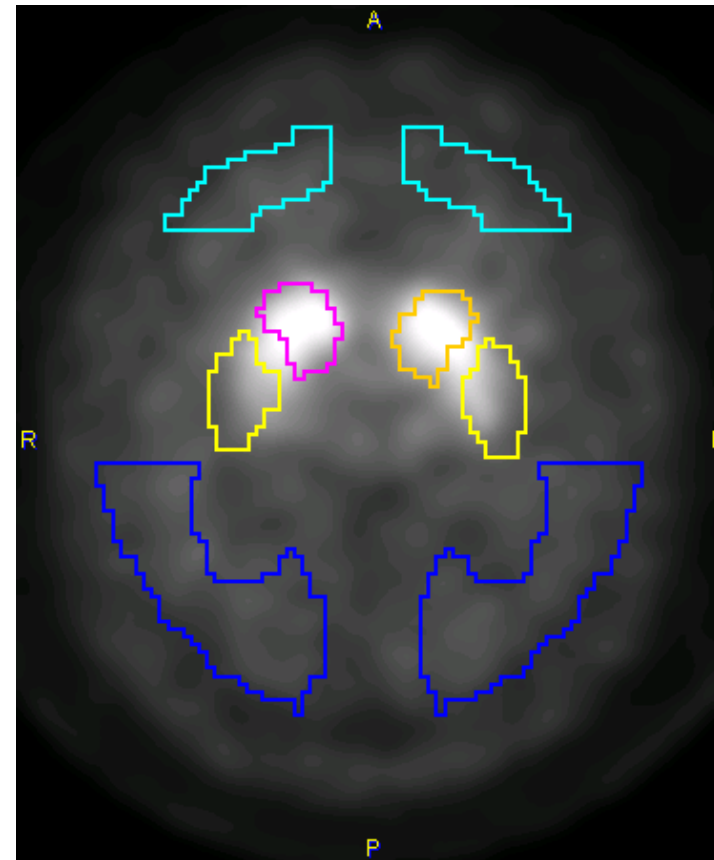- % injected dose/gram tissue

Volume of Interest Strategies

A

B

Caudate
Ant putamen
Post putamen

DAT Analyses: Small ROI Approach

- On spatial normalized SPECT image volumes the transaxial slice with the highest striatal uptake is identified and the 8 hottest striatal slices around it were averaged in to generate a single slice image.

- Regions of interest (ROI) were then place on the of left and right caudate, the left and right putamen, and the occipital cortex (reference tissue).

- Count densities for each region were extracted and used to calculate specific binding ratios (SBRs) for each of the striatal regions. SBR is calculated as (target region/reference region)-1.

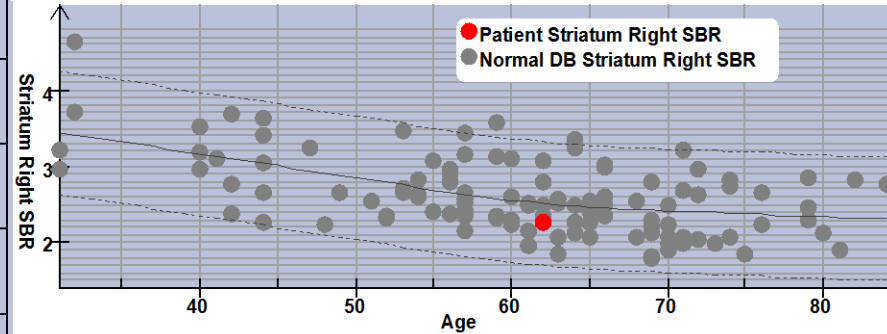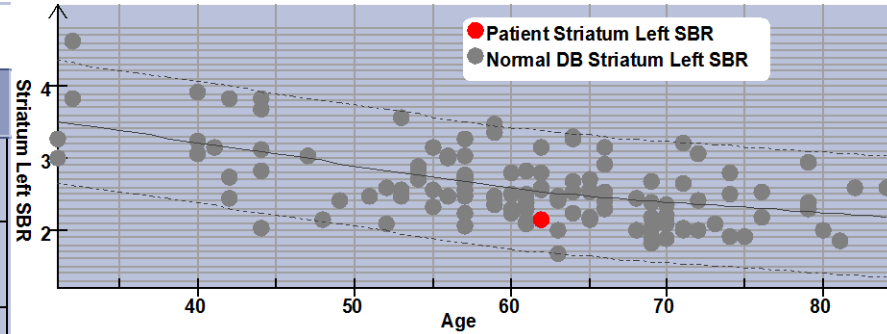# Commercial VOI Software: Large VOI approach

- GEHC DATQuant
- MIM
- HERMES
- Others

Strategy: Spatial normalization to SPECT template and placement of

VOIs sampling from most of right and left caudate and putamen to obtain SBRs

Example of Commercial Software Reporting

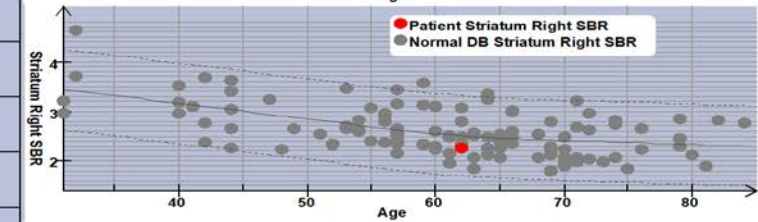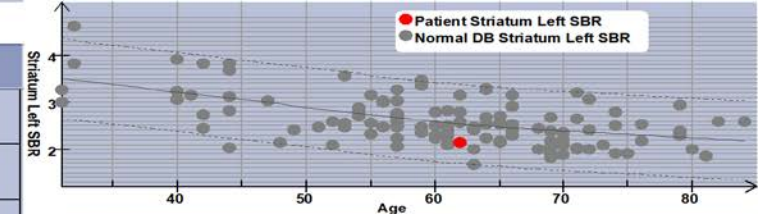Normal DB mismatch - Corrections : Attenuation correction   (Chang attenuation correction)

	Measured	Mean (±1 SD)	Deviation	Z-Score
Striatum Right SBR	+2.26	+2.51 (±0.40)	-10%	-0.61
Striatum Left SBR	+2.15	+2.54 (±0.42)	-15%	-0.90
Putamen Right SBR	+2.15	+2.43 (±0.39)	-11%	-0.71
Putamen Left SBR	+2.04	+2.42 (±0.41)	-16%	-0.92
Caudatus Right SBR	+2.53	+2.71 (±0.48)	-7%	-0.37
Caudatus Left SBR	+2.37	+2.76 (±0.50)	-14%	-0.78
Striatum Asymmetry	+0.03	+0.03 (±0.02)	-0%	-0.01
Putamen Asymmetry	+0.03	+0.03 (±0.03)	-2%	-0.02
Caudatus Asymmetry	+0.05	+0.05 (±0.04)	-3%	-0.03

GEHC DaTQUANT

Profile section assignments (first draft/next iteration/last check before public review)

- Executive Summary: Mozley/Seibyl/whole committee
- 3.1-3.2 (Pre-delivery, Installation) Device manufacturers/Cella
- 3.3 (Periodic QA) Dickson/Zimmerman, et al.
- 3.4 -3.5 (Subject selection, Subject Handling) Mozley/Seibyl
- 3.6 (Acquisition) Dewaraja
- 3.7 (Reconstruction) Frey/Dewaraja
- 3.8 (Image QA) Dickson/Zimmerman
- 3.9 (Image Distribution) ?Klein/Pierre
- **3.10 (Image Analysis) Miyaoka/Seibyl**
- 3.11 (Image Interpretation) Seibyl, et al.

Wrap-up

Review action Items

Any other business