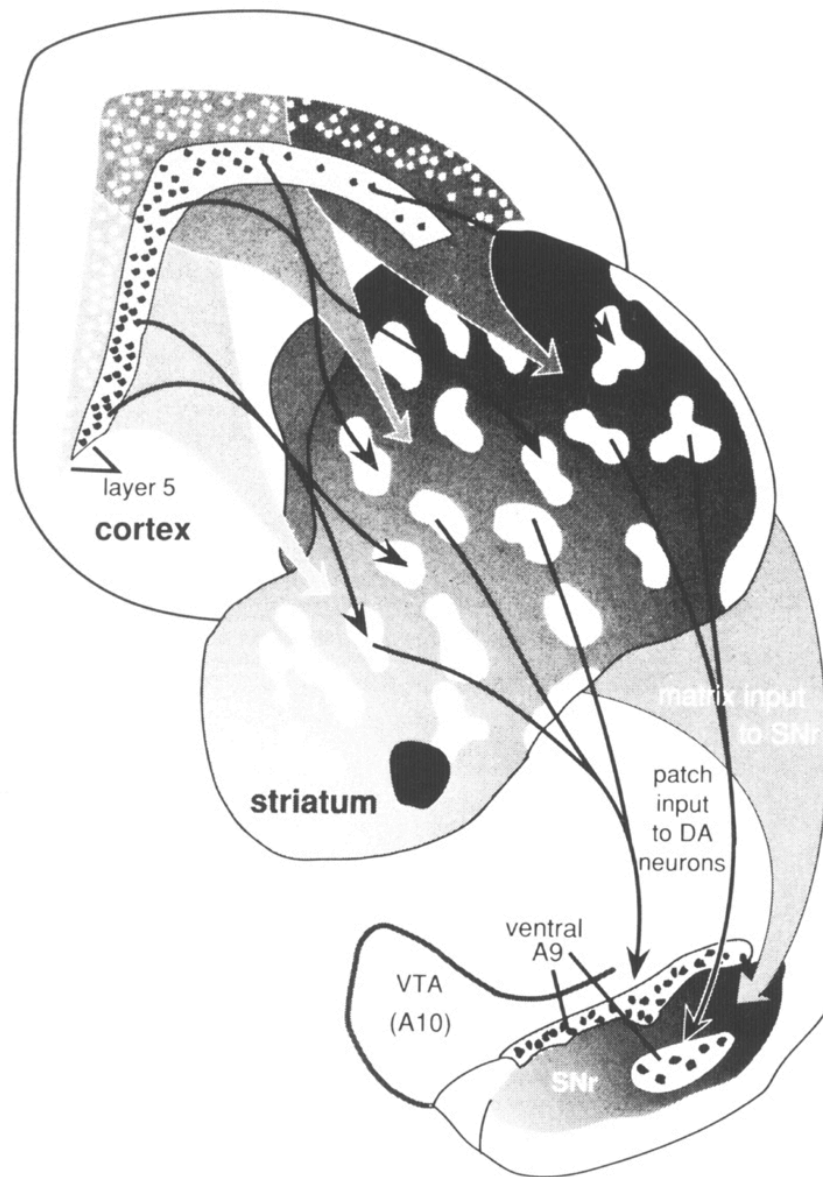
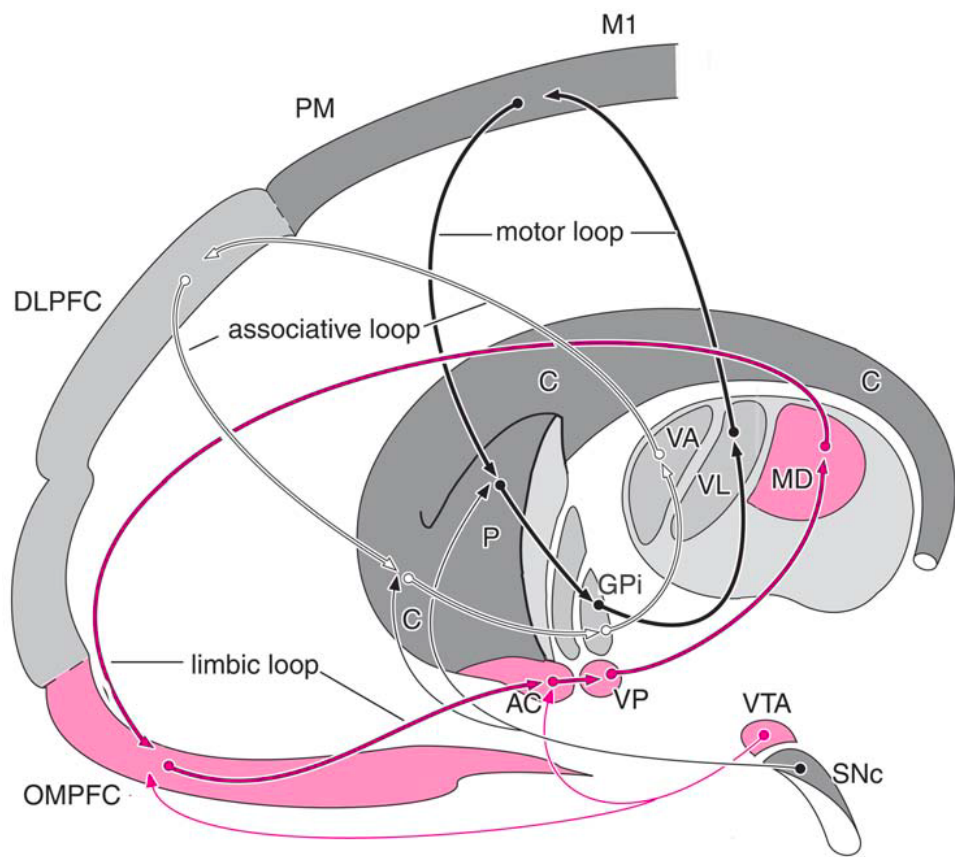


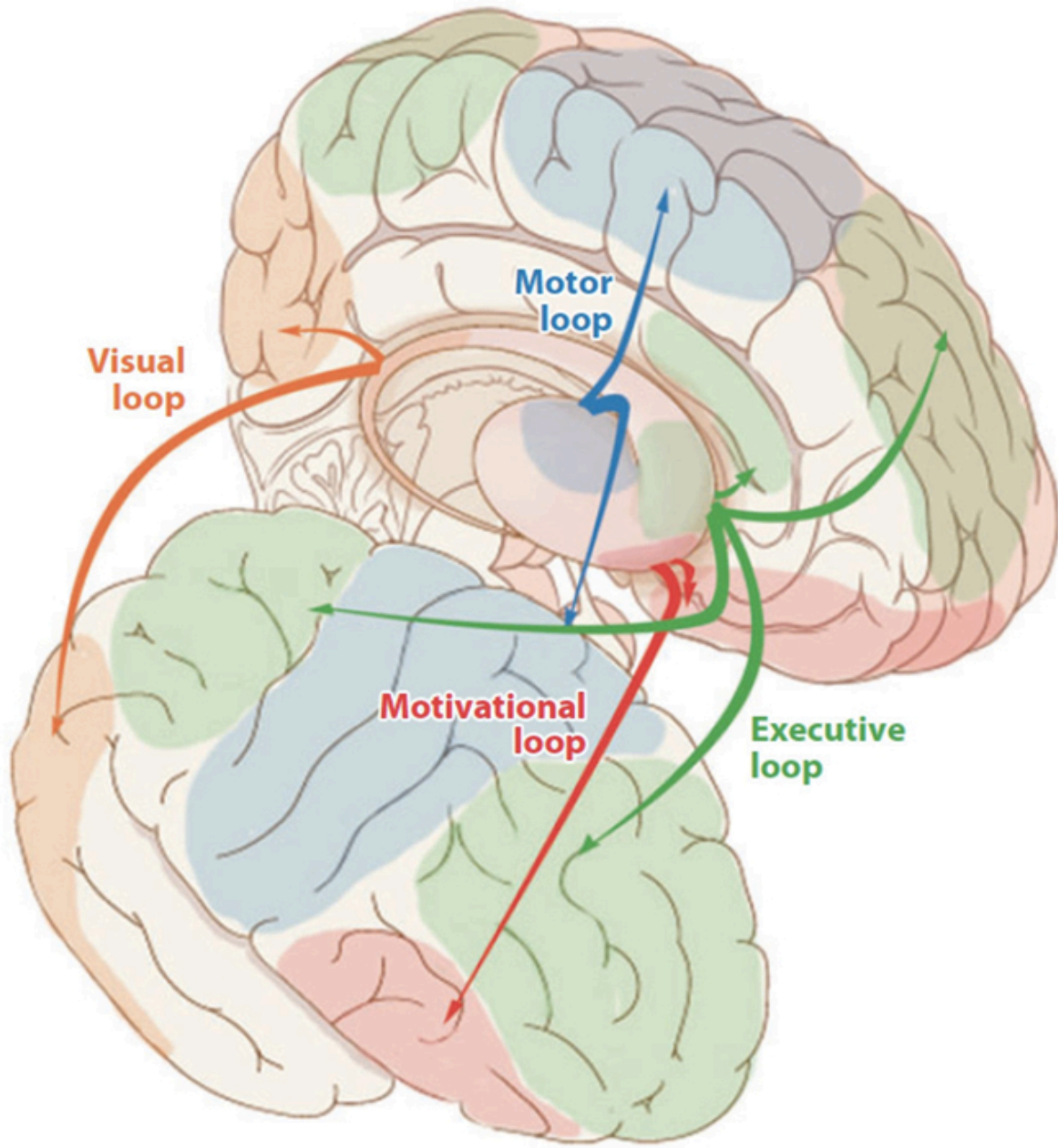
Corticostriatal Tractography



Virtual Neuroanatomy
Lecture Date: 09/30/2014

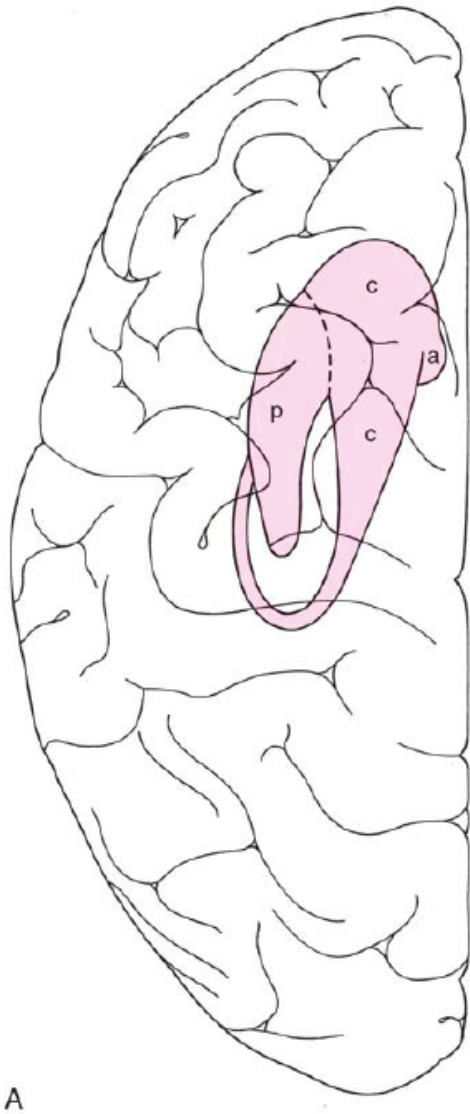
Correction from last class

While part of the corticostriatal system projects via the internal capsule (projections to medial striatum) a vast majority of the fibers traverse through the external capsule.

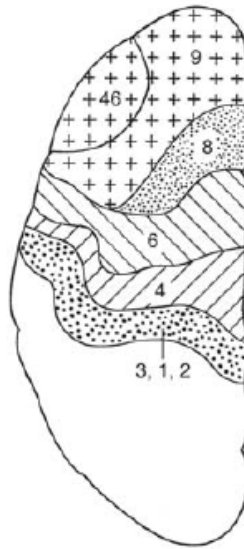


Major Loops

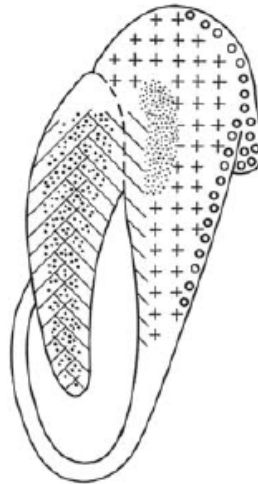
Medial-lateral Topography



B



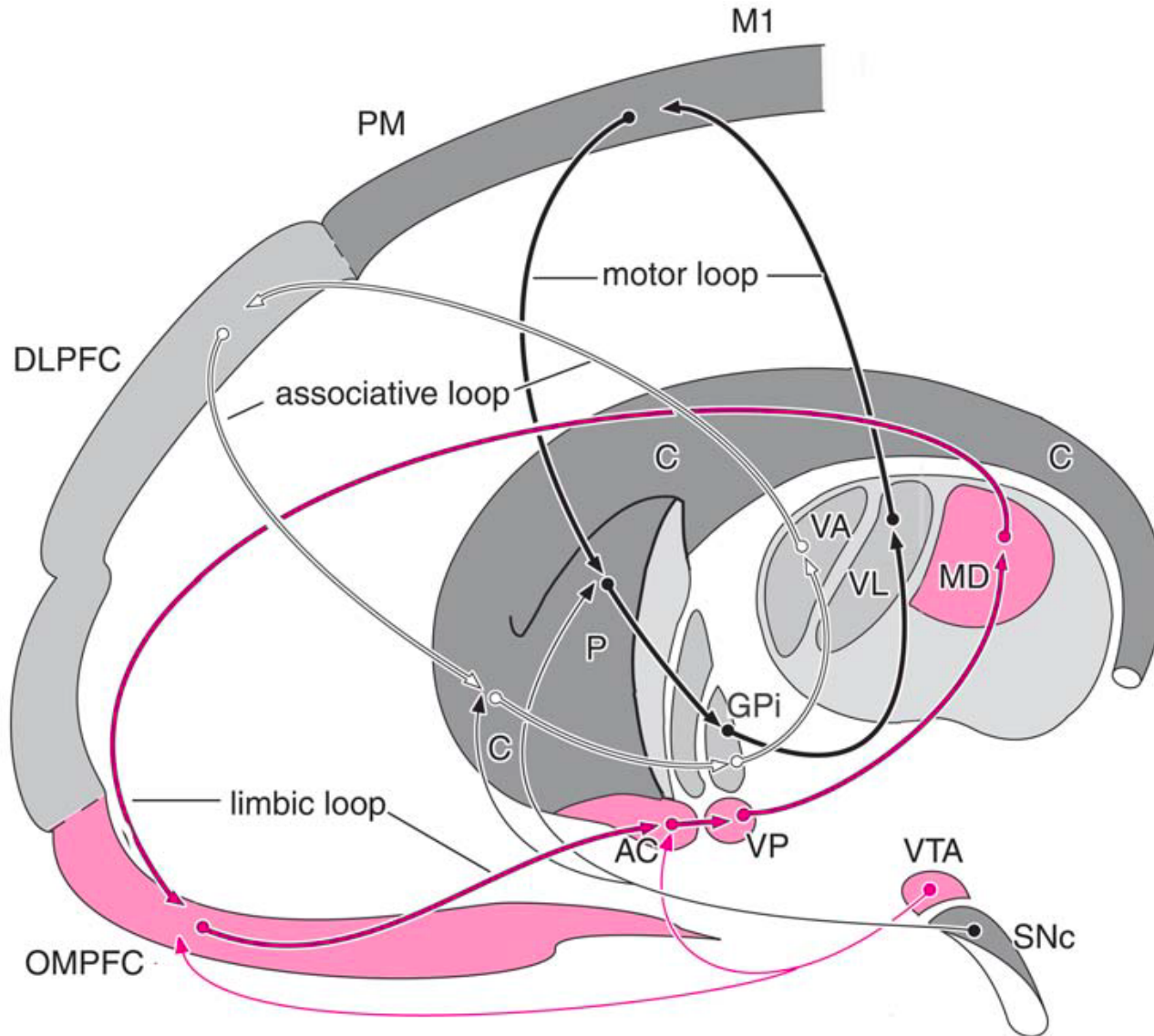
C



Traditional view of the topographical organization of the systems is:

1. Putamen: Sensorimotor
2. Head of Caudate: vmPFC, OFC
3. Body of Caudate: DLPFC
4. Tail of Caudate: PPC, Occipital

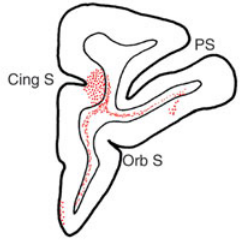
Rostral-Caudal Topography



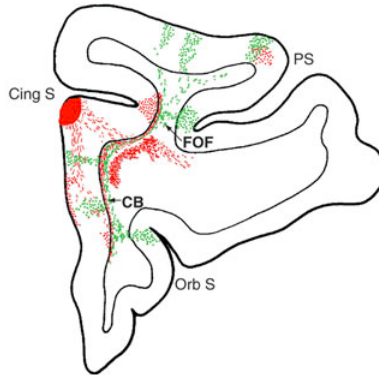
(from Nieuwenhuys, Voogd, & van Huijzen 2008)

Cingulate Projections

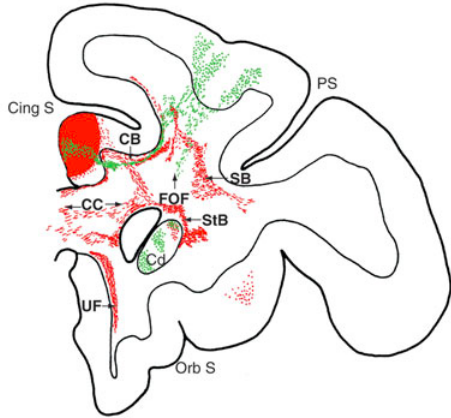
20



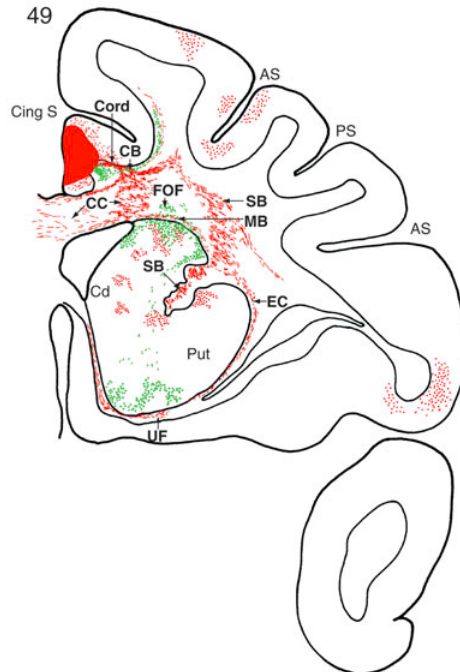
31



41



49



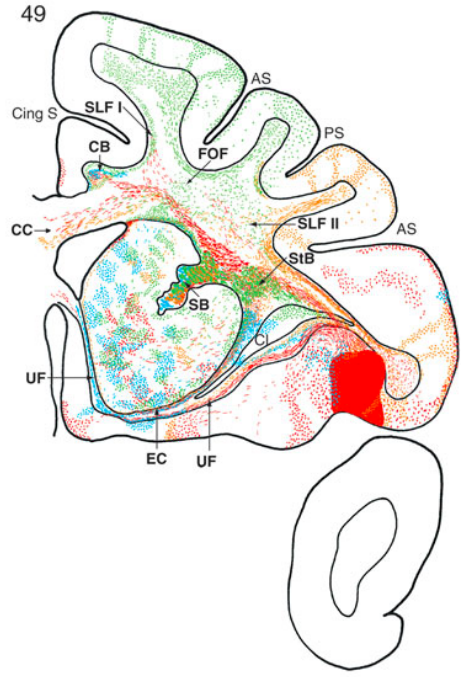
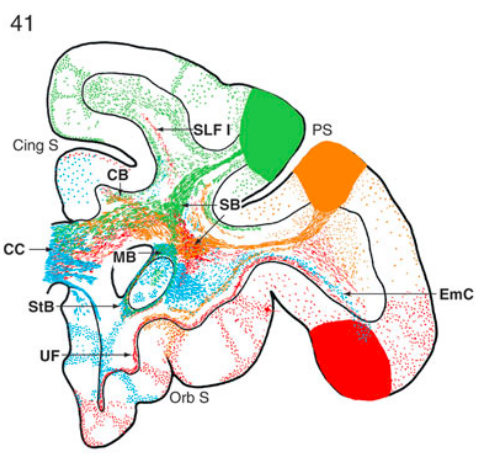
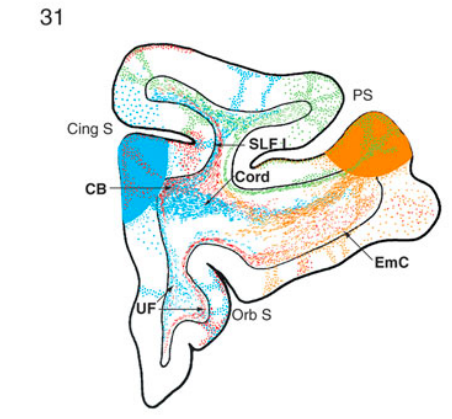
CASE

22 ■
23 ■

(Coronal View)

(from Schmahmann & Pandya)

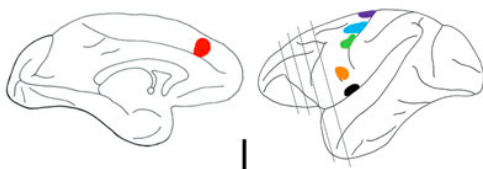
Rostral Prefrontal Projections



(Coronal View)

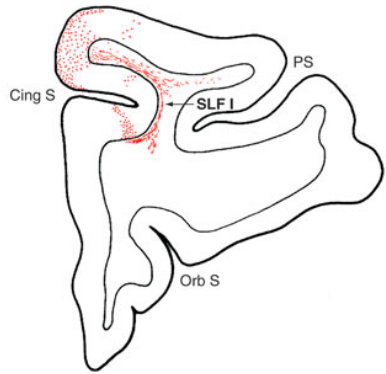
(from Schmahmann & Pandya) ⁷

Caudal Prefrontal Projections

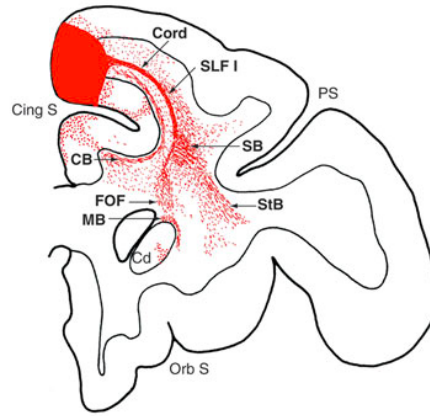


- CASE
- 24 ■
 - 25 ■
 - 26 ■
 - 27 ■
 - 28 ■
 - 29 ■

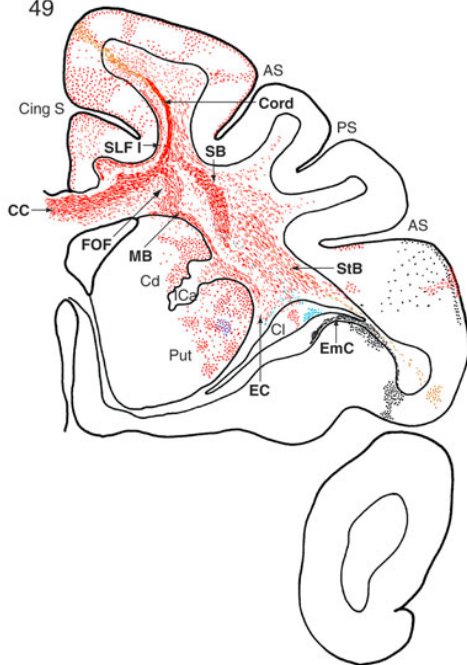
31



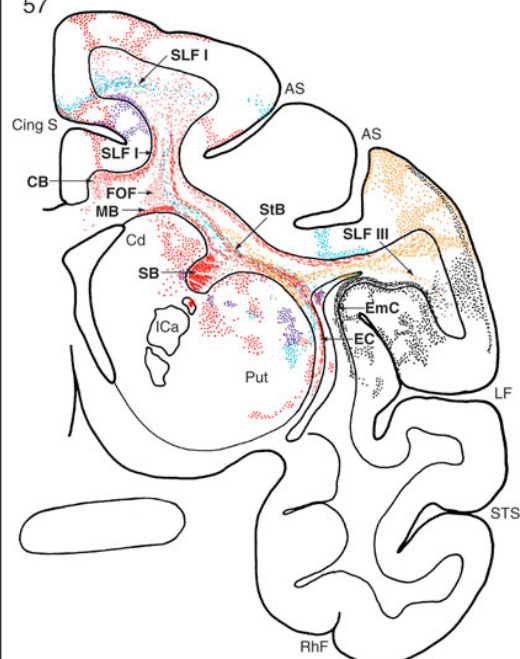
41



49



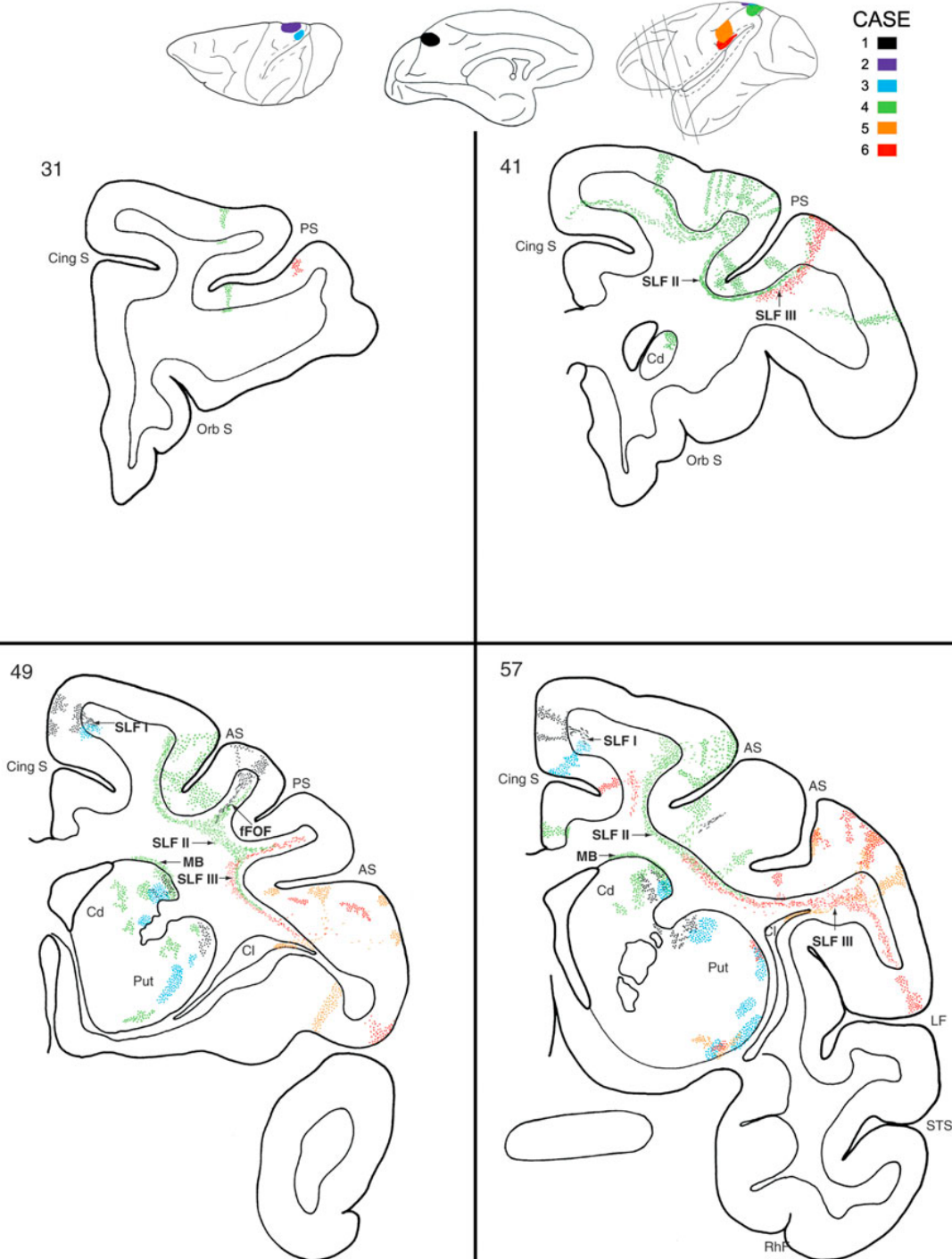
57



(Coronal View)

(from Schmahmann & Pandya)

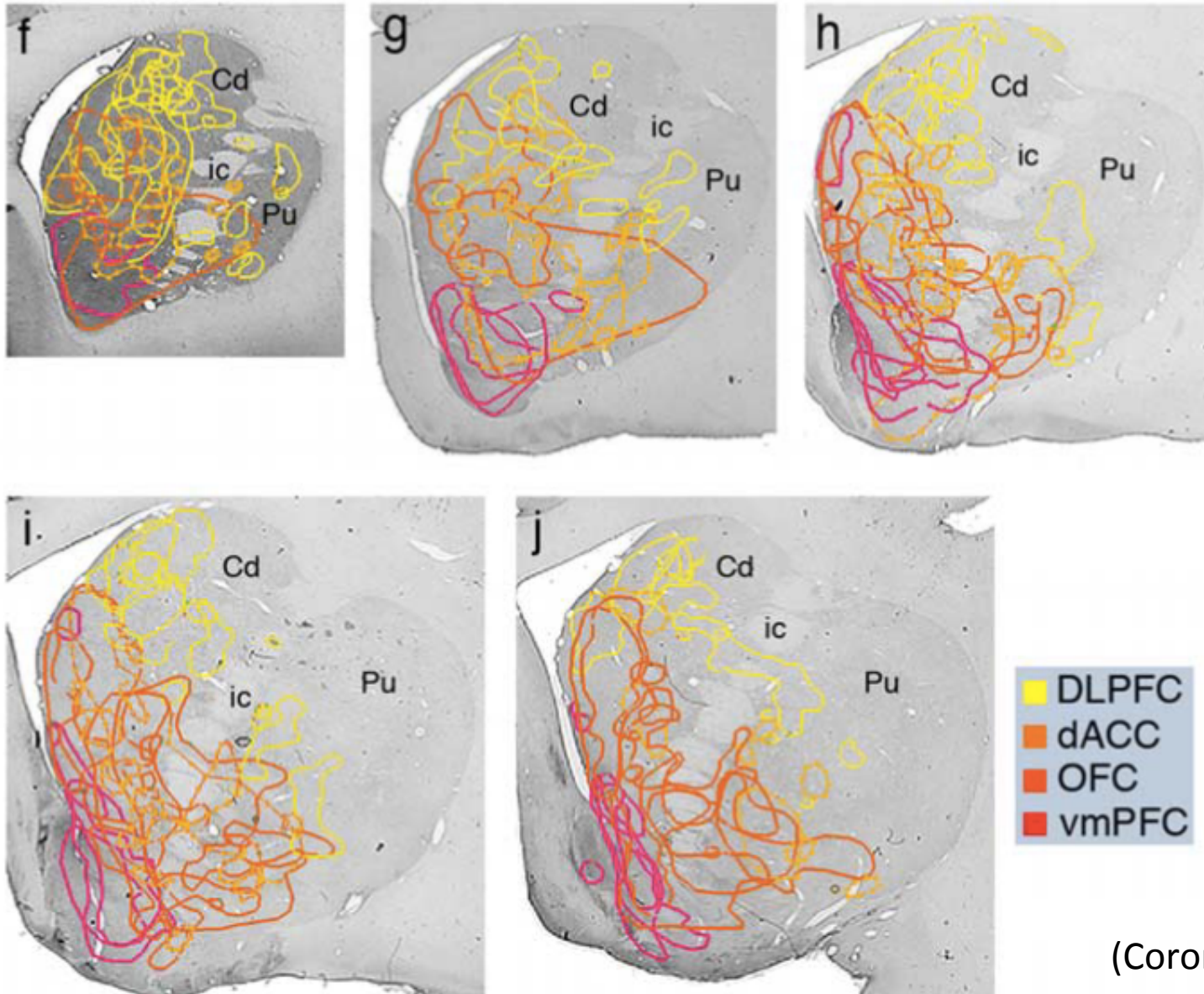
Rostral Parietal Projections



(Coronal View)

(from Schmahmann & Pandya) ⁹

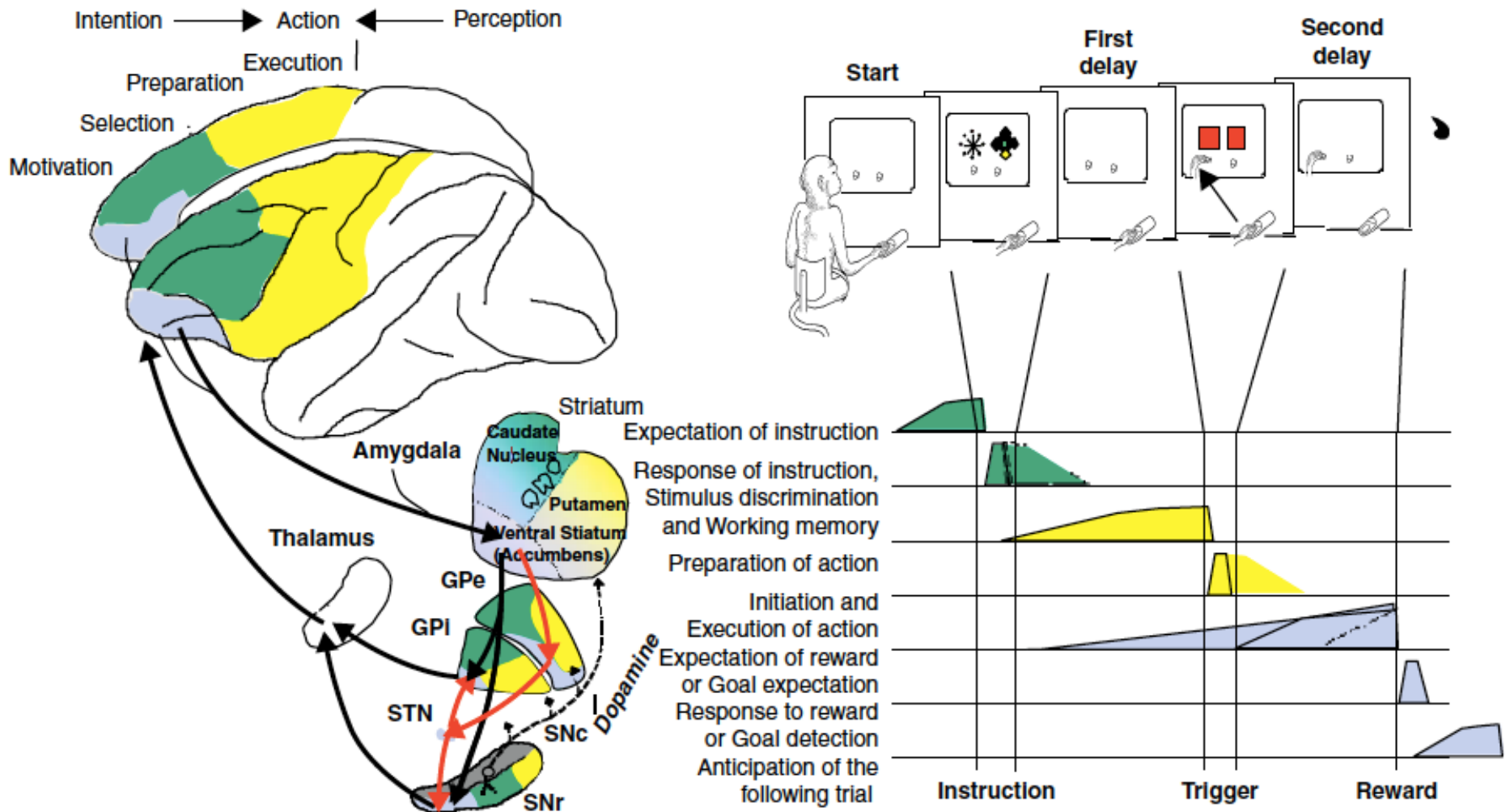
Orbitofrontal Projections



(Coronal View)

(from Haber et al. 2006)

Putting it together

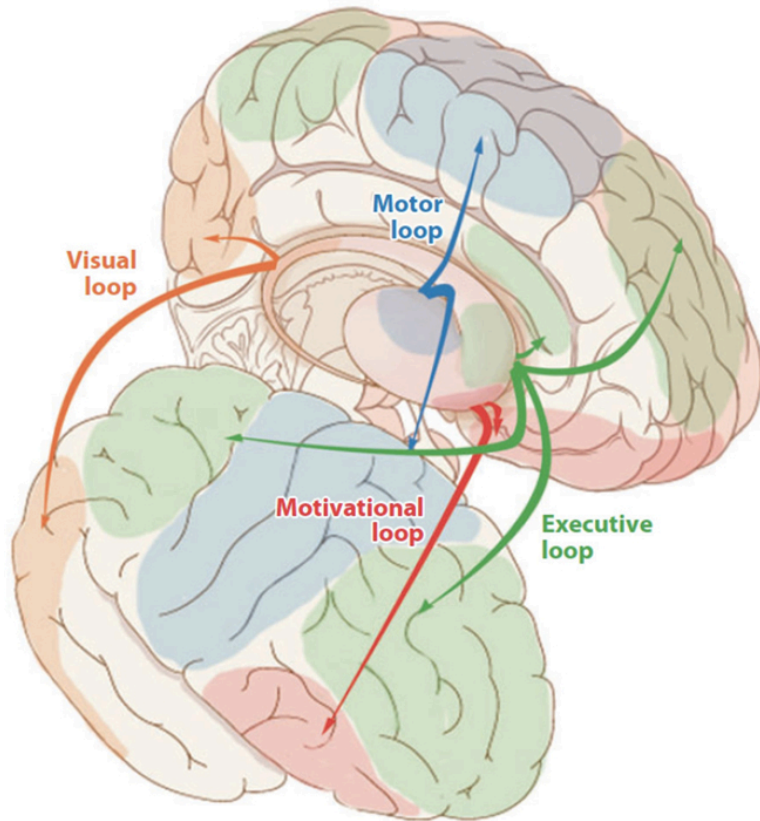


(Coronal View)

(from Tremblay, 2009)

Major Loops

Goal: Show the maps from these major corticostriatal systems.



1. OFC & vmPFC
2. Prefrontal cortex
3. Cingulate/medial prefrontal cortex
4. Primary motor (e.g., precentral gyrus) and primary somatosensory (e.g., postcentral gyrus)

- Use a priori region of interest masks from the AAL atlas. Merge ROIs as necessary.
- No more than 10,000 streamlines per system.