

Lecture 8

The auditory pathway

- Auditory nerve
- Cochlear nuclei
- Superior olivary nucleus
- Inferior colliculus
- Medial geniculate nucleus of the thalamus
- Primary auditory cortex

Primary visual cortex forms a retinotopic map

- Retinotopic map in macaque C1 using radioactive trace (Tootel et al., 1988)

MRI can recover retinotopic maps

- Retinotopic map in Human V1-V3 using functional MRI (Sereno et al., 1995)
- Left visual field is represented in the right hemisphere and vice versa
- Top visual field is represented in the bottom hemisphere and vice versa

Other maps in primary visual cortex

- Ocular dominance map
- Orientation map
- Spatial Frequency
 - Size

- Wavelength
 - Color
- Temporal frequency
 - How fast
- Direction

Single neurons reflect their position in maps
Many dimensions are coded at each position

- Layer 4: input layer
 - Segregated by eye
- Hypercolumn
- Blobs: columns selective by color
 - Low spatial frequency: big things
- Orientation columns surround blobs

Maps are organized both globally and locally