# Lateral Geniculate Nucleus

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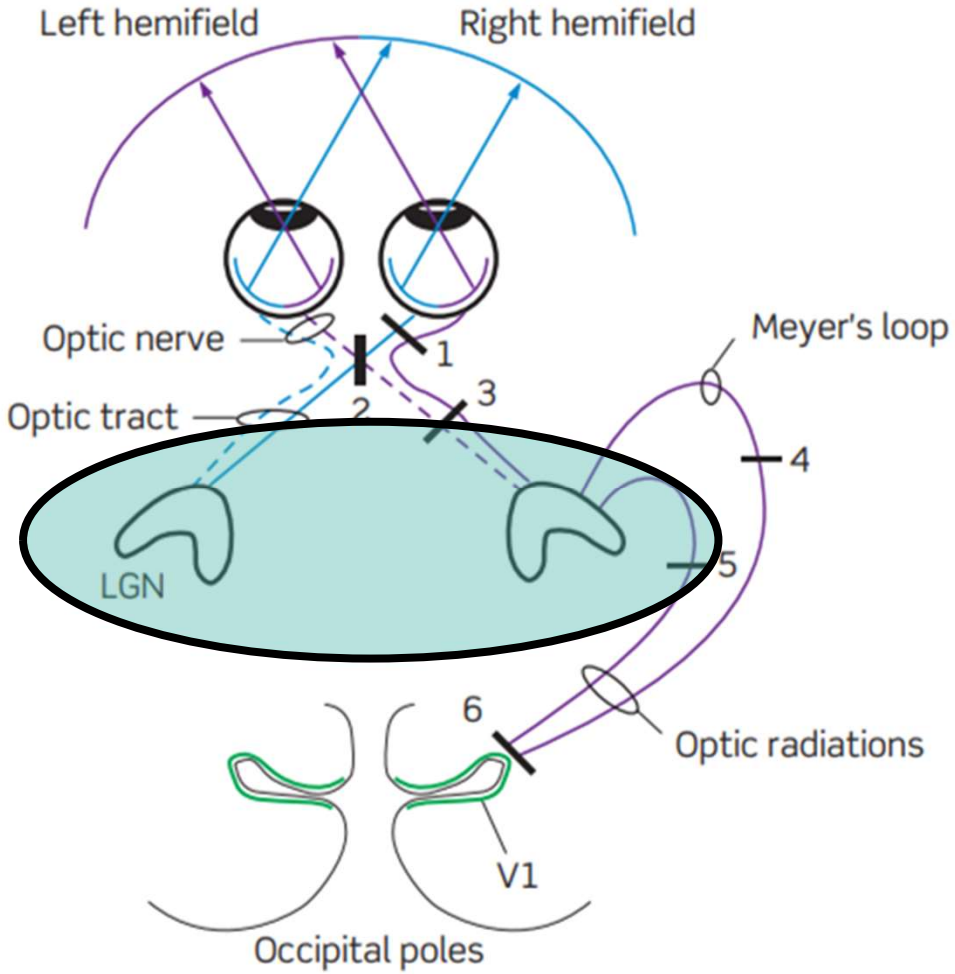
# Lateral Geniculate Nucleus

Projection at the end of the optic tract

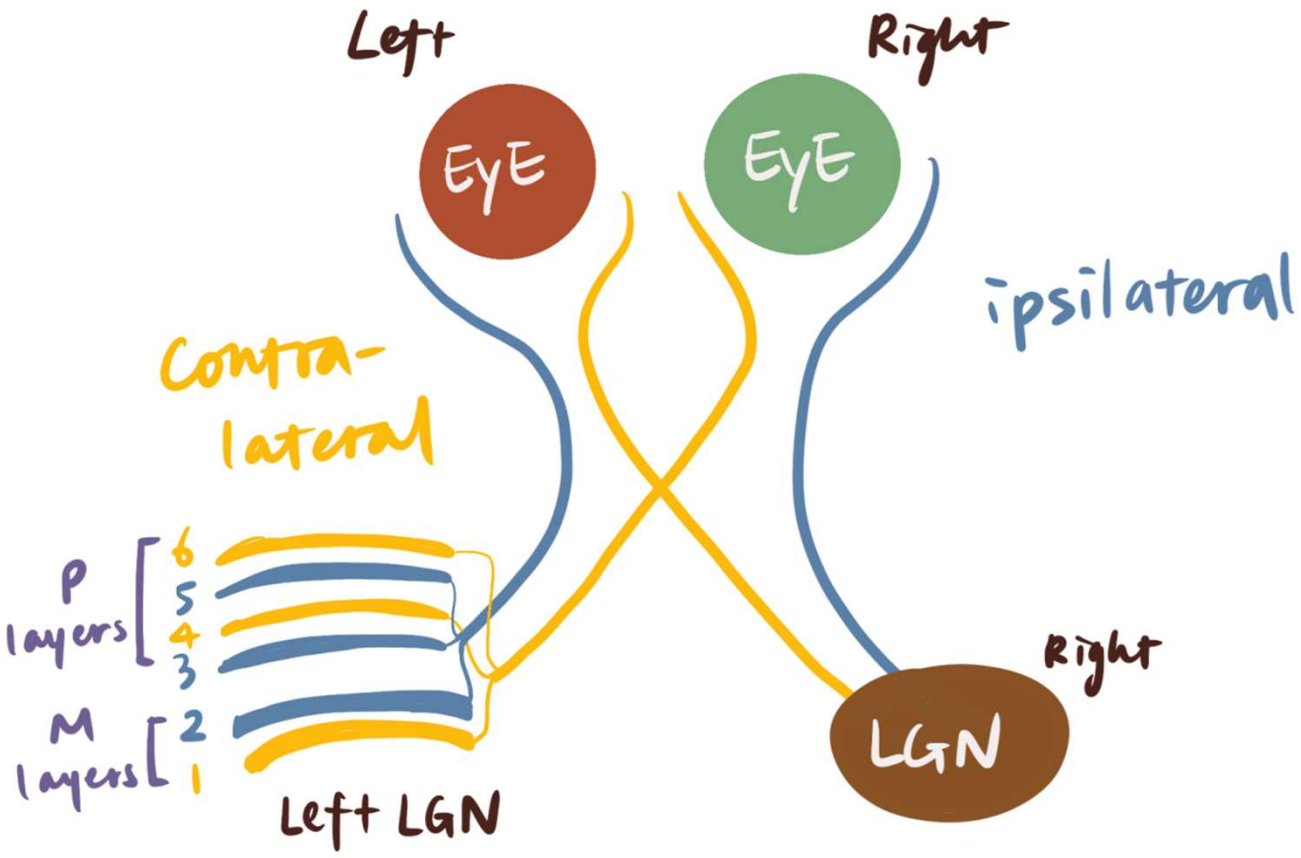
**Relay center** in the Thalamus

- Connects **optic nerve to primary visual cortex (V1)**

We have two LGNs (left and right)



# LGN
## Graphic overview



# M, P, K Cells

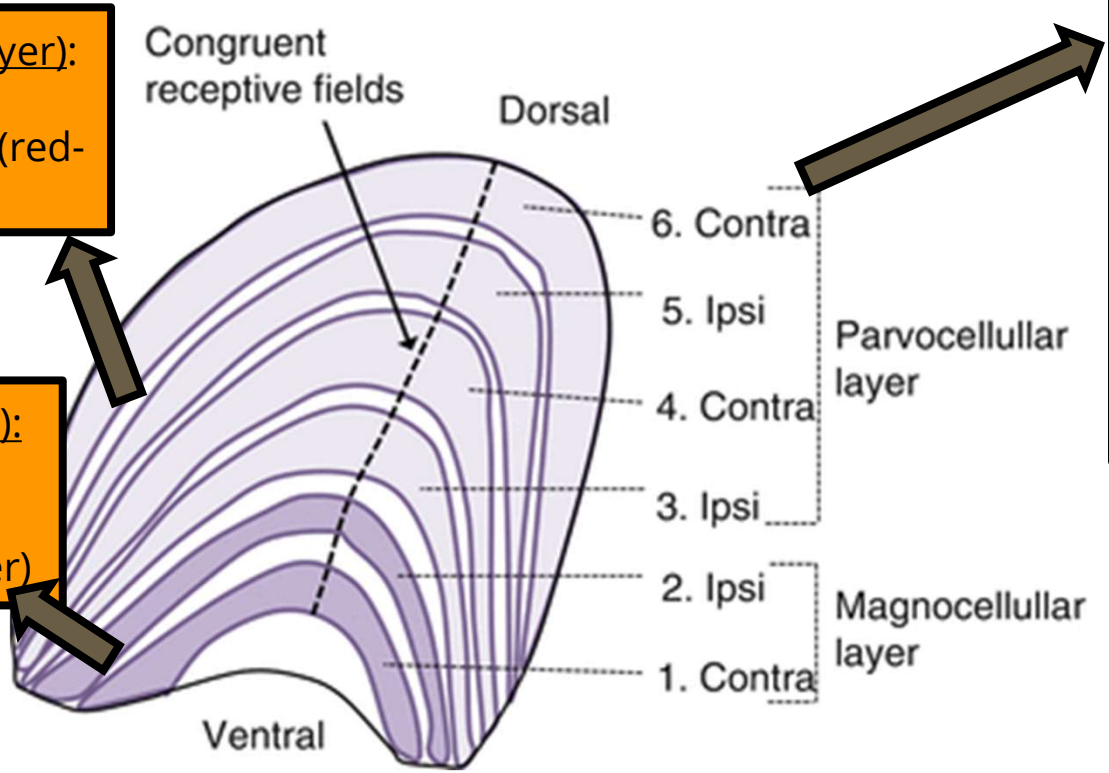
| Type | Size | Type of Info | Location | Response |
|---|---|---|---|---|
| M (Magnocellular) | Large | Rods; perception of movement, depth, small differences in brightness | Layers 1 and 2 | Rapid and Transient |
| P (Parvocellular) | Small | Cones; red-green colour, perception of shape/ form | Layers 3 to 6 | Slow and sustained |
| K (Koniocellular) | Very small cell bodies | Blue colour | Between M and P layers | |

Source: Wikipedia

# Six Layers of LGN

Layer 3-6 (P layer): Input from P ganglion cells (red-green colour)

Layer 1-2 (M layer): Input from M ganglion cells (motion and flicker)




E.g. Left LGN:

3 layers receive input from the left eye (ipsi)

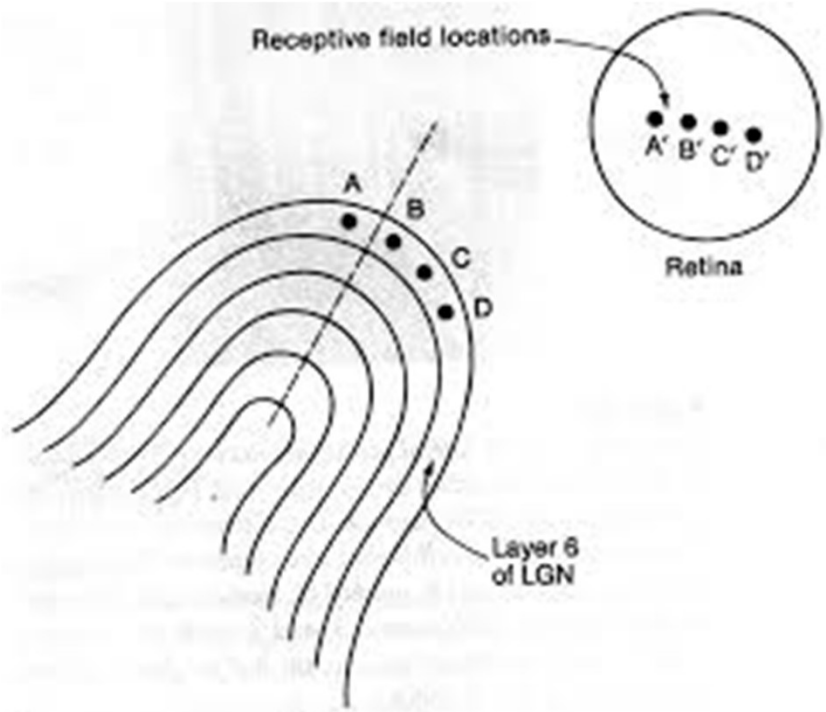
3 layers receive input from the right eye (contra)

# Retinotopic Mapping

**Adjacency** in ganglion cells preserved in LGN cells

LGN has **6 half-maps of the world**, one in each layer

Provides **temporal and spatial** decorrelation (distinguishing) of signals



# New Findings on LGN

Presence of **K-cells** found primarily between M and P layers

- Information relayed from short-wave cones (blue colour)
- Hypothesised to play a role in blindsight

90% of input to the LGN comes **from the cortex and brainstem**

- LGN could be **filtering** what types of information the brain wants