1. Retina gives a feed forward input, Higher cortical area supplies feedback input, and TRN provides recurrent input. (p138)

They are categorized this way because when studying sensory system it’s important to identify direction of information flow.

2. It is defined by the fraction of times when a spike from a RGC cell induce a spike in the LGN cell it synapse onto. Sleep/arousal state modulate this efficiency, same goes for attention state. (p143) This efficiency never reach 100% because 100% will mean that LGN cell is not doing any processing of the input signal.

3. No, all visual information ultimately come from Retina. However LGN can contain information about previous visual stimulus due to cortical feedback that is not contained in Retina.

4. This is to make it possible to selectively modulate or compute different features of visual input. For example is the animal finding an object of a certain color, it could be possible for cortical input to increase response of color sensitive LGN neuron thus facilitate this task.

5. That means LGN neuron is more sensitive at low contrast and less sensitive at high contrast. This is a way to “Normalize” the input in order to utilize the full dynamic range of a neuron and reduce the impact of noise to the transmission of information.

6. Non lagged cell receive direct excitatory synapitic connection to a LGN neuron. Lagged cell not only receive an excitatory synapse from RGC, it also receive synapse from an inhibitory interneuron which receive excitatory input from the same RGC. Based on the graph on slide page 10, non-lagged cell make encode information about the transition of a stimuli and lagged cell encode base line level.

7. Different specie face different challenge, some may require faster but simpler visual processing, so some of those processing is better moved to earlier stages. Some may require finer processing of visual information so processing is moved to later areas to prevent information loss.