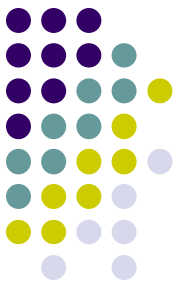


For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



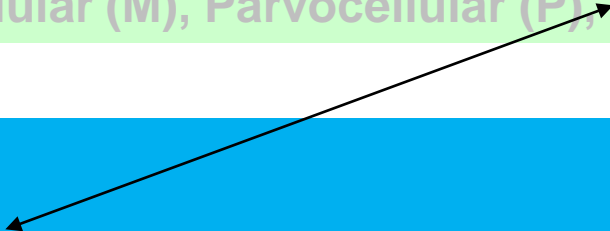
Q

For each attribute, assign the correct **RNFL** fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



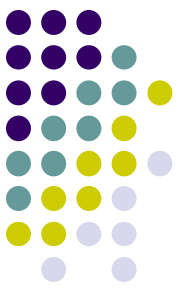
But first:

What does RNFL stand for?



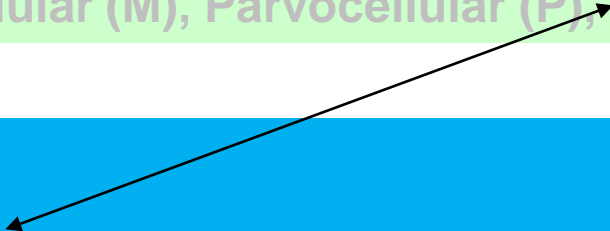
A

For each attribute, assign the correct **RNFL** fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



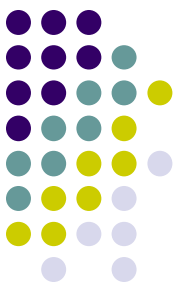
But first:

What does RNFL stand for?
Retinal nerve fiber layer



Q

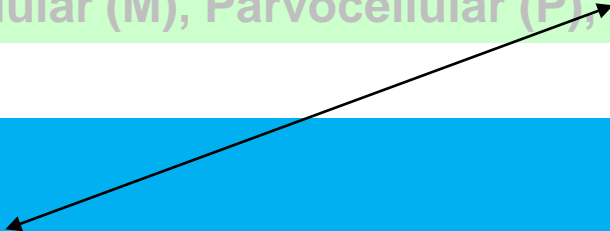
For each attribute, assign the correct **RNFL** fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



But first:

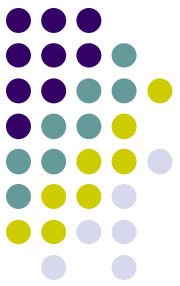
What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?



A

For each attribute, assign the correct **RNFL** fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



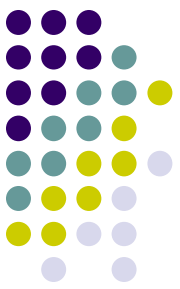
But first:

What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

Q

For each attribute, assign the correct **RNFL** fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



But first:

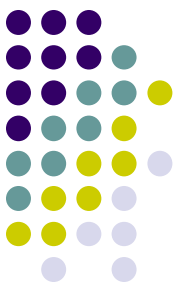
What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

What portion of the ganglion cell constitutes the 'fibers' in RNFL?

A

For each attribute, assign the correct **RNFL** fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



But first:

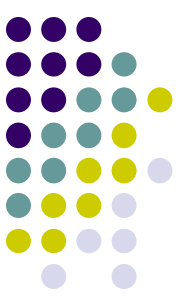
What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

Q

For each attribute, assign the correct **RNFL** fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



But first:

What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

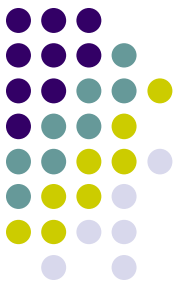
What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

Ganglion cells synapse primarily with what type of retinal cell?

A

For each attribute, assign the correct fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

RNFL



But first:

What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

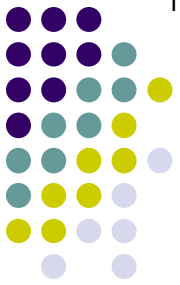
What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

Ganglion cells synapse primarily with what type of retinal cell?
Bipolar cells

Q

For each attribute, assign the correct fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

RNFL



But first:

What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

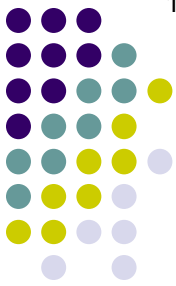
Ganglion cells synapse primarily with what type of retinal cell?
Bipolar cells

Where do the ganglion cells synapse next?

Q/A

For each attribute, assign the correct fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

RNFL



But first:

What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

Ganglion cells synapse primarily with what type of retinal cell?
Bipolar cells

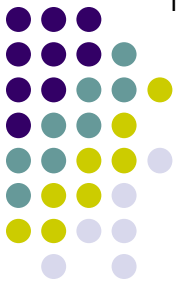
Where do the ganglion cells synapse next?
Most do so at the

three words

A

For each attribute, assign the correct fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

RNFL



But first:

What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

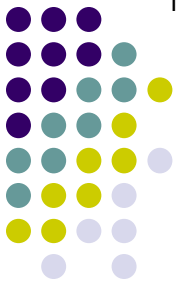
Ganglion cells synapse primarily with what type of retinal cell?
Bipolar cells

Where do the ganglion cells synapse next?
Most do so at the lateral geniculate nucleus (LGN)

Q/A

For each attribute, assign the correct fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

RNFL



But first:

What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

Ganglion cells synapse primarily with what type of retinal cell?
Bipolar cells

Where do the ganglion cells synapse next?
Most do so at the lateral geniculate nucleus (LGN) ; most of the rest
are involved in the [three words] and synapse in the

[two words]

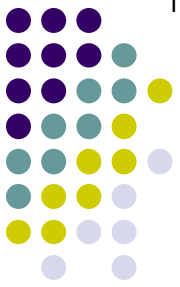
located in the

[two diff words]

A

For each attribute, assign the correct fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

RNFL



But first:

What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

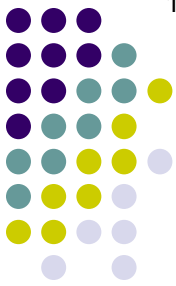
What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

Ganglion cells synapse primarily with what type of retinal cell?
Bipolar cells

Where do the ganglion cells synapse next?
Most do so at the lateral geniculate nucleus (LGN) ; most of the rest are involved in the pupillary light reflex and synapse in the pretectal nuclei located in the dorsal midbrain

Q/A

For each attribute, assign the correct fiber type
Magnocellular (M), Parvocellular (P), **RNFL**, Koniocellular (K)



But first:

What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

Ganglion cells synapse primarily with what type of retinal cell?
Bipolar cells

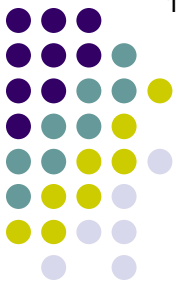
Where do the ganglion cells synapse next?
Most do so at the lateral geniculate nucleus (LGN) ; most of the rest are involved in the pupillary light reflex and synapse in the pretectal nuclei located in the dorsal midbrain ; the remaining few are involved in circadian rhythms and synapse in the

one word

A

For each attribute, assign the correct fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

RNFL



But first:

What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

Ganglion cells synapse primarily with what type of retinal cell?
Bipolar cells

Where do the ganglion cells synapse next?
Most do so at the lateral geniculate nucleus (LGN) ; most of the rest are involved in the pupillary light reflex and synapse in the pretectal nuclei located in the dorsal midbrain ; the remaining few are involved in circadian rhythms and synapse in the hypothalamus

To CNS

Ganglion-cell axons

But first:

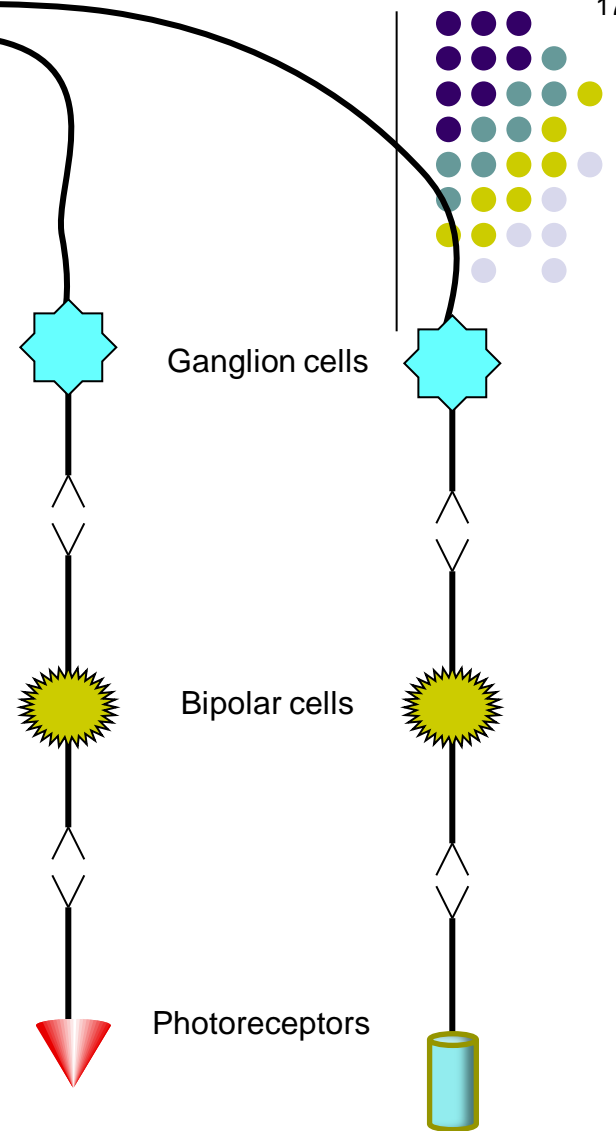
What does RNFL stand for?
Retinal nerve fiber layer

What type of cells gives rise to the retinal nerve fibers?
Ganglion cells

What portion of the ganglion cell constitutes the 'fibers' in RNFL?
The axon

Ganglion cells synapse primarily with what type of retinal cell?
Bipolar cells

Where do the ganglion cells synapse next?
Most do so at the lateral geniculate nucleus (LGN) ; most of the rest are involved in the pupillary light reflex and synapse in the pretectal nuclei located in the dorsal midbrain ; the remaining few are involved in circadian rhythms and synapse in the hypothalamus

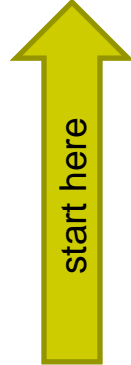


The *photoreceptors, bipolar and ganglion cells* comprise what is known as the **vertical retinal pathway**. This pathway is vertical in the sense that it is the direct path from photic stimulation to the CNS.

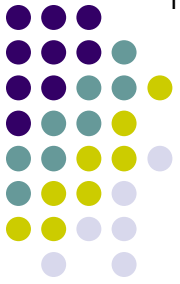
Q

*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

- Motion sensitive:



At last: For each attribute, identify the RNFL fiber type to which it applies



A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

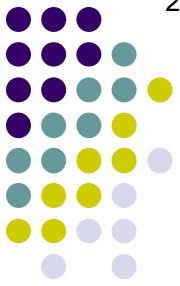
- Motion sensitive: M



Q

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

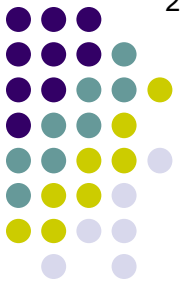
- Motion sensitive: **M**
- Small VF:



A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

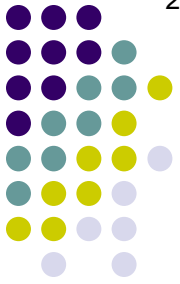
- Motion sensitive: **M**
- Small VF: **P**



Q

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

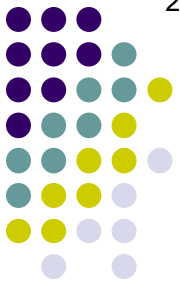
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers:



A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

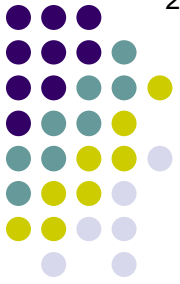
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**



Q

*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

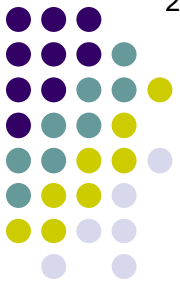
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers:



A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

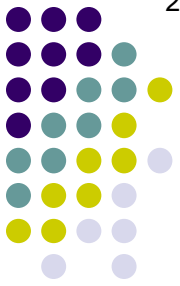
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**



Q

*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

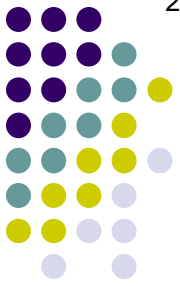
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive:



A

*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

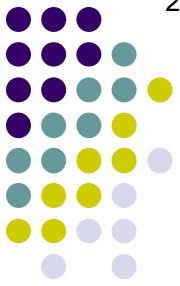
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**



Q

*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

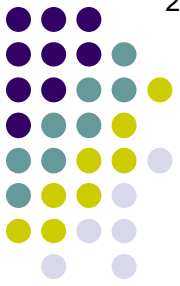
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light:



A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

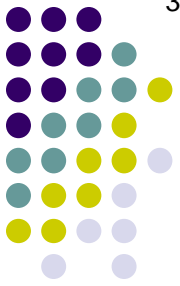
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light: **M**



Q

*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

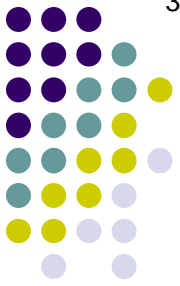
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light: **M**
- 'Fine detail' fibers:



A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

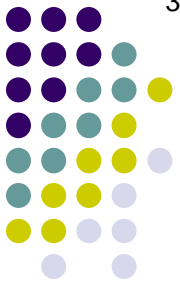
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light: **M**
- 'Fine detail' fibers: **P**



Q

*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

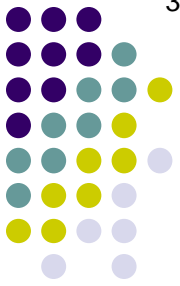
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light: **M**
- 'Fine detail' fibers: **P**
- Highly redundant, much overlap of VF:

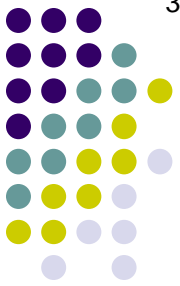


A

*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light: **M**
- 'Fine detail' fibers: **P**
- Highly redundant, much overlap of VF: **P**



**Q**

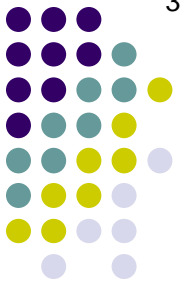
*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

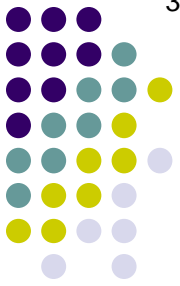
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light: **M**
- 'Fine detail' fibers: **P**
- Highly redundant, much overlap of VF: **P**
- Largest diameter:

A

*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light: **M**
- 'Fine detail' fibers: **P**
- Highly redundant, much overlap of VF: **P**
- Largest diameter: **M**





Q

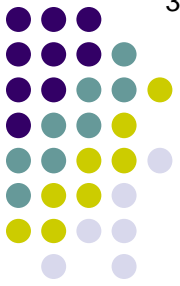
*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

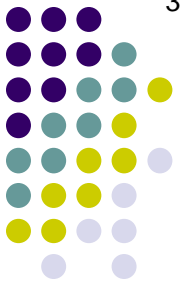
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light: **M**
- 'Fine detail' fibers: **P**
- Highly redundant, much overlap of VF: **P**
- Largest diameter: **M**
- Smallest diameter:

A

*For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)*

- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light: **M**
- 'Fine detail' fibers: **P**
- Highly redundant, much overlap of VF: **P**
- Largest diameter: **M**
- Smallest diameter: **K**

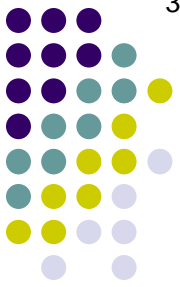




Q

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

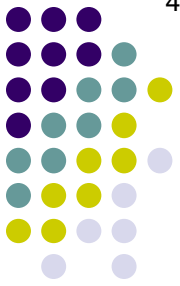
- Motion sensitive: M
- Small VF: P
- 80-90% of fibers: P
- ~10% of fibers: Both M and K
- Blue/yellow sensitive: K
- Sensitive in dim light: M
- 'Fine detail' fibers: P
- Highly redundant, much overlap of VF: P
- Largest diameter: M
- Smallest diameter: K
- Basis of *FDT testing* to detect early glaucoma:



A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

- Motion sensitive: M
- Small VF: P
- 80-90% of fibers: P
- ~10% of fibers: Both M and K
- Blue/yellow sensitive: K
- Sensitive in dim light: M
- 'Fine detail' fibers: P
- Highly redundant, much overlap of VF: P
- Largest diameter: M
- Smallest diameter: K
- Basis of *FDT testing* to detect early glaucoma: M

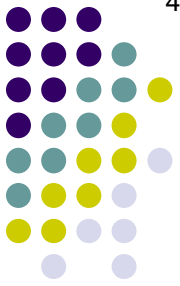


Q

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

- Motion sensitive: M
- Small VF: P
- 80-90% of fibers: P
- ~10% of fibers: Both *M* and *K*
- **Blue/yellow** sensitive: K
- Sensitive in dim light: M
- 'Fine detail' fibers: P
- Highly redundant, much overlap of VF: P
- Largest diameter: M
- Smallest diameter: K
- Basis of **FDT** testing to detect early glaucoma: M

What does FDT stand for in this context?



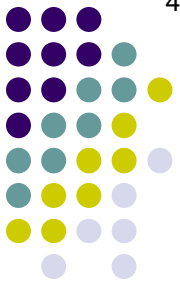
A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

- Motion sensitive: M
- Small VF: P
- 80-90% of fibers: P
- ~10% of fibers: Both *M* and *K*
- **Blue/yellow** sensitive: K
- Sensitive in dim light: M
- 'Fine detail' fibers: P
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What does FDT stand for in this context?

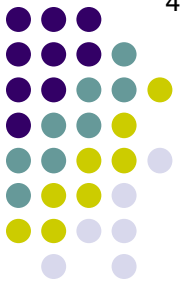
Frequency-doubling technology



Q

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

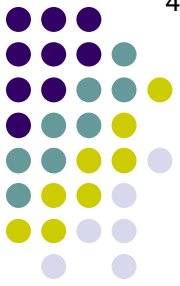
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- 'Fine detail' fibers: P
- Highly redundant, much overlap of VF: P
- Largest diameter: M
- Smallest diameter: K
- Basis of *FDT testing* to detect early glaucoma: M
- Mainly red/green sensitive:



A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

- Motion sensitive: M
- Small VF: P
- 80-90% of fibers: P
- ~10% of fibers: Both M and K
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- Largest diameter: M
- Smallest diameter: K
- Basis of *FDT testing* to detect early glaucoma: M
- Mainly red/green sensitive: P



Q

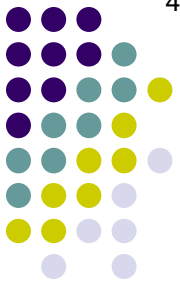
For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

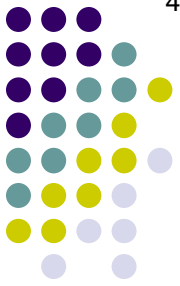
- Motion sensitive: **M**
- Small VF: **P**
- 80-90% of fibers: **P**
- ~10% of fibers: **Both M and K**
- **Blue/yellow** sensitive: **K**
- Sensitive in dim light: **M**
- 'Fine detail' fibers: **P**
- Highly redundant, much overlap of VF: **P**
- Largest diameter: **M**
- Smallest diameter: **K**
- Basis of *FDT testing* to detect early glaucoma: **M**
- Mainly **red/green** sensitive: **P**
- Basis of *SWAP testing* to detect early glaucoma:

A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

- Motion sensitive: M
- Small VF: P
- 80-90% of fibers: P
- ~10% of fibers: Both M and K
- Blue/yellow sensitive: K
- Sensitive in dim light: M
- 'Fine detail' fibers: P
- Highly redundant, much overlap of VF: P
- Largest diameter: M
- Smallest diameter: K
- Basis of *FDT testing* to detect early glaucoma: M
- Mainly red/green sensitive: P
- Basis of *SWAP testing* to detect early glaucoma: K



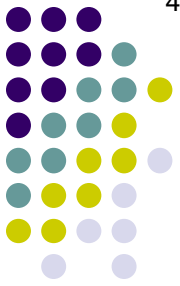


Q

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- **Blue/yellow** sensitive: K
- Sensitive in dim light: M
- 'Fine detail' fibers: P
- Highly redundant, much overlap of VF: P
- Largest diameter: M
- Smallest diameter: K
- Basis of *FDT testing* to detect early glaucoma: M
- Mainly **red/green** sensitive: P
- Basis of **SWAP** testing to detect early glaucoma: K

What does SWAP stand for in this context?



A

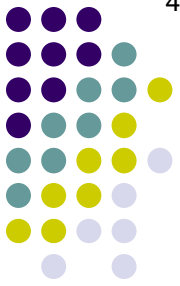
For each attribute, assign the correct RNFL fiber type
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- Sensitive in dim light: M
- 'Fine detail' fibers: P
- Highly redundant, much overlap of VF: P
- Largest diameter: M
- Smallest diameter: K
- Basis of *FDT testing* to detect early glaucoma: M
- Mainly **red/green** sensitive: P
- Basis of **SWAP** testing to detect early glaucoma: K

What does SWAP stand for in this context?

Short-wavelength automated perimetry

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



- **Motion sensitive: M**

- Small VF: P

- 80-90% of fibers: P

- ~10% of fibers: both M and K

- Best motion sensitive: K

- Sensitive to flicker: M

- 'Fine detail' fibers: P

- Highly redundant, much overlap of VF: P

- **Largest diameter: M**

- Smallest diameter: K

- Basis of *FDT testing* to detect early glaucoma: M

- Mainly red/green sensitive: P

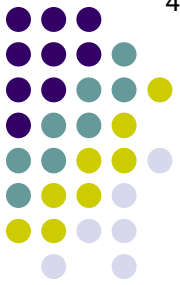
- Basis of *SWAP testing* to detect early glaucoma: K

Magnocellular
 sensitive to
 motion

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

- Motion sensitive: M
- **Small VF: P**
- **80-90% of fibers: P**
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- Sensitive in dim light: M
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- Largest diameter: M
- Smallest diameter: K
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- Mainly **red/green** sensitive: P
- Basis of *SWAP testing* to detect early glaucoma: K

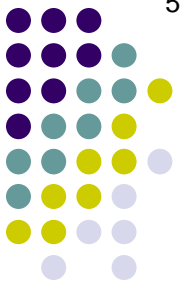
P arvocellular
 etite
 lentiful



For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

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- ~10% of fibers: Both *M* and *K*
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- Largest diameter: M
- Smallest diameter: K
- Basis of *FDT testing* to detect early glaucoma: M
- Mainly **red/green** sensitive: P
- Basis of *SWAP testing* to detect early glaucoma: K

Koniocellular
 colors **blue** and **yellow**



Q

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



Why do we need special tests to detect early glaucoma? Why doesn't SAP pick up early glaucoma? (And what does SAP stand for anyway?)

- Basis of *FDT testing* **to detect early glaucoma**: M
- Mainly **red/green** sensitive: P
- Basis of *SWAP testing* **to detect early glaucoma**: K

A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



Why do we need special tests to detect early glaucoma? Why doesn't SAP pick up early glaucoma? (And what does SAP stand for anyway?)

SAP is *standard automated* (or *achromatic*) *perimetry*. This is the typical Humphrey or Octopus visual field: The stimulus is white, and is presented against a white background (thus SAP is sometimes referred to as *white-on-white* or *WOW* visual field testing).

The primary RNFL subpopulation involved in WOW visual field responses are the *P* cells. As noted previously, *P* cells have overlapping visual fields, and therefore they 'cover' for one another when one dies. As a result, a significant proportion of the *P* cell population—perhaps as high as 50%—must die before VF defects will be picked up by SAP. Obviously, it is suboptimal that so many cells have to die before VF evidence of glaucoma is found.

- Basis of *FDT testing* **to detect early glaucoma**: M
- Mainly **red/green** sensitive: P
- Basis of *SWAP testing* **to detect early glaucoma**: K

A

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



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On the other hand, *M* cells and *K* cells have minimal VF overlap. Thus, VF technologies that are preferentially sensitive to loss of these subpopulations have the potential to detect glaucomatous VF loss at a much earlier stage—a definite boon to glaucoma diagnosis.

- Basis of *FDT testing* **to detect early glaucoma: M**
- Mainly **red/green** sensitive: P
- Basis of *SWAP testing* **to detect early glaucoma: K**

No question—proceed when ready



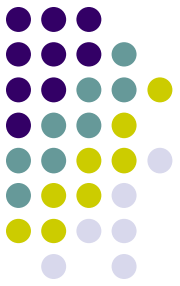
For each attribute, assign the correct RNFL fiber type
Magnocellular (M). Parvocellular (P). Koniocellular (K)

Frequency doubling technology is unfamiliar to many ophthalmologists, but it's an easy and convenient screening technology for visual field loss. It is based on an optical illusion in which a sinusoidal grating—ie, an image composed of black and white stripes—is flashed on a screen, followed by a second image in which the locations of the dark and white stripes are reversed. These two images are alternated over and over. At relatively slow alteration speeds, an observer sees what you would expect—they simply see the light and dark areas reversing position over and over. However, as the alteration speed is increased, there comes a point where the observer reports that the number of stripes s/he sees has *doubled*. This is the 'frequency doubling phenomenon.'

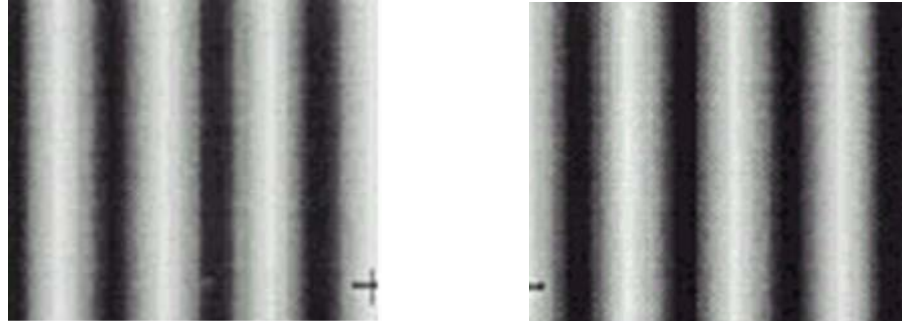
- Basis of ***FDT testing to detect early glaucoma: M***
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- Basis of *SWAP testing to detect early glaucoma: K*

No question—proceed when ready

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)

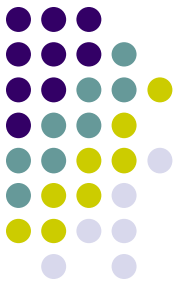


*Rapid (~20Hz) alternating
between these...*

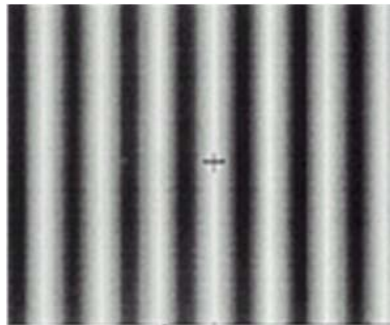
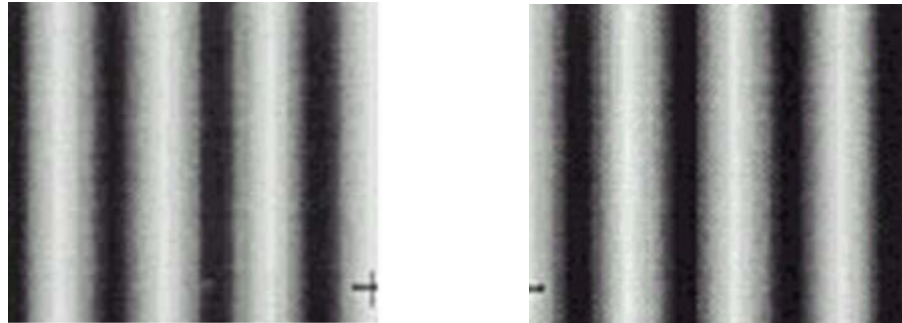


Frequency-doubling technology

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



*Rapid (~20Hz) alternating
between these...*



...yields this visual experience

Frequency-doubling technology



For each attribute, assign the correct RNFL fiber type
Macrocellular (M). Parvocellular (P). Koniocellular (K)

Frequency doubling technology is unfamiliar to many ophthalmologists, but it's an easy and convenient screening technology for visual field loss. It is based on an optical illusion in which a sinusoidal grating—ie, an image composed of black and white stripes—is flashed on a screen, followed by a second image in which the locations of the dark and white stripes are reversed. These two images are alternated over and over. At relatively slow alteration speeds, an observer sees what you would expect—they simply see the light and dark areas reversing position over and over. However, as the alteration speed is increased, there comes a point where the observer reports that the number of stripes s/he sees has *doubled*. This is the 'frequency doubling phenomenon.' In the early 1990s, researchers found that pts with early glaucomatous optic neuropathy experience the frequency doubling phenomenon at a different image-alteration rate than do nonglaucomatous pts, and FDT as a tool for the diagnosis and management of glaucoma was born.

- Basis of ***FDT testing to detect early glaucoma: M***
- Mainly red/green sensitive: P
- Basis of *SWAP testing to detect early glaucoma: K*

No question—proceed when ready



For each attribute, assign the correct RNFL fiber type
Macrocellular (M). Parvocellular (P). Koniocellular (K)

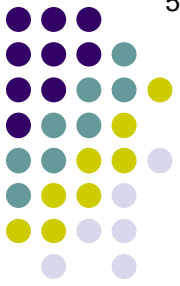
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FDT has several advantages over standard automated perimetry, including being relatively unaffected by the test-taker's refractive error, or by the presence of cataracts.

- Basis of ***FDT testing to detect early glaucoma: M***
- Mainly red/green sensitive: P
- Basis of *SWAP testing to detect early glaucoma: K*

No question—proceed when ready

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



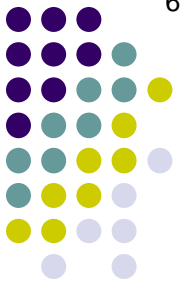
- Motion sensitive: M
- Small VF: P
- 80-90% of fibers: P
- ~10% of fibers: Both *M* and *K*
- **Blue/yellow** sensitive: K
- Sensitive in dim light: M
- ‘Fine detail’ fibers: P
- Highly redundant, much overlap of VF: P

To preferentially activate the koniocellular fibers, short-wavelength automated perimetry employs a blue stimulus (recall that blue light has a short wavelength—hence the name) against a yellow background.

- Mainly **red/green** sensitive: P
- Basis of **SWAP testing to detect early glaucoma: K**

No question—proceed when ready

For each attribute, assign the correct RNFL fiber type
Magnocellular (M), Parvocellular (P), Koniocellular (K)



- Motion sensitive: M
- Small VF: P
- 80-90% of fibers: P
- ~10% of fibers: Both *M* and *K*
- **Blue/yellow** sensitive: K
- Sensitive in dim light: M
- ‘Fine detail’ fibers: P
- Highly redundant, much overlap of VF: P

To preferentially activate the koniocellular fibers, short-wavelength automated perimetry employs a blue stimulus (recall that blue light has a short wavelength—hence the name) against a yellow background. Research indicates that pts with SWAP VF loss are at risk for the development of SAP (WOW) VF loss.

- Mainly **red/green** sensitive: P
- Basis of **SWAP testing to detect early glaucoma: K**

No question—proceed when ready