

OUR EYES &  
HOW WE SEE

UNDERSTAND MORE ABOUT  
**OUR EYES &  
HOW WE SEE**



Tomorrow's Eye Care, Today<sup>®</sup>



Singapore National  
Eye Centre

SingHealth

# Our Eyes & How We See

The eye is our visual gateway to the world. Within it, an array of delicate components labour away to give us the miracle of sight. Here's how they all come together. Light enters the eye and traverses the cornea (the "window" of our eye). It passes through the pupil (the "blinds") to the lens (the "projector"), which focuses the light onto the retina (the "screen"). Finally, the image is changed into electric impulses and transported to the brain for interpretation - all in milliseconds.

## LENS

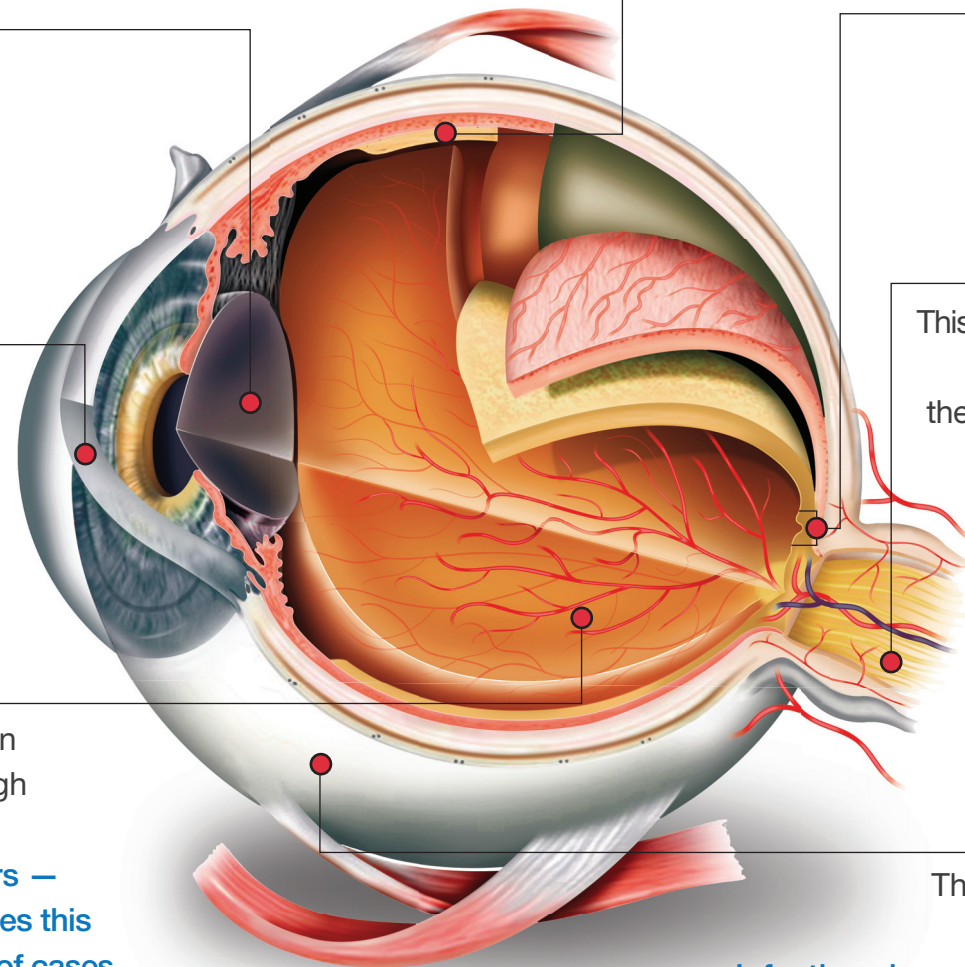
Located just behind the pupil, the lens helps us focus from near to far objects by changing its shape. As a person ages, this becomes more difficult. **Our lenses become cloudy as we age, resulting in cataracts.**

## CORNEA

The cornea is the transparent window located at the front of the eye. Five layers of tissue provide a barrier against infection. Most importantly, it admits and bends light into the eye. **Cornea problems include refractive errors, infections, injuries and loss of clarity.**

## VITREOUS

This gel-like fluid in the middle of the eye helps maintain the eye's shape and absorb shock. Light passes through the transparent vitreous on its way to the retina. **The vitreous deteriorates with age, resulting in floaters — spots that appear to float in the field of vision. Sometimes this may also lead to retina tear or detachment in a minority of cases.**



## RETINA

Light is transmitted from this layer of sensitive tissue to the brain. **Diseases here can affect your central vision and cause sight loss. The three main retinal diseases are age-related macular degeneration, diabetic retinopathy and retinal detachment.**

## MACULA

The centre of the retina is the macula. It enables us to see colours and details in the centre of our vision such as the print on this page. **When it's damaged, we can't see fine details. Symptoms include impaired central vision and distorted images.**

## OPTIC NERVE

This is the nerve that carries visual information from the retina to the brain via electrical impulses. **In the population, about 2% have glaucoma. Glaucoma affects the optic nerve because of pressure that builds up in the eye. This compresses the optic nerve and causes cell death.**

## CONJUNCTIVA

This layer keeps the eye moist and covers the inner eyelid. **Infections here are known as "Pink Eye" or conjunctivitis. They can be infective or allergic.**

## DID YOU KNOW?

### 6/6 VISION

Have you ever wondered why perfect vision is referred to as 6/6 vision? The first number represents the distance (in metres) from which your eye can see objects clearly; the second number refers to the distance from which a "normal" eye can see the same object with equal clarity. So 6/6 means perfect vision. The larger the bottom number gets, the worse the vision. For example, 6/18 vision means you can only see at 6m what a normal healthy eye can see at 18m. In many countries, 6/60 is the yardstick for legal blindness.

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## How different parts of the eye can be affected by common diseases

### Conjunctiva

- Conjunctivitis can be:
  - Inflammatory  
(e.g. allergic conjunctivitis)
  - Infective  
(e.g. viral, bacterial sore eyes, etc.)
- Pterygium (fleshy growth)

### Cornea

- Corneal scars
- Corneal ulcers

### Lens

- Cataract

### Vitreous

- Posterior vitreous detachment
- Vitreous haemorrhage

### Retina

- Age-related macular degeneration
- Diabetic retinopathy
- Retinal tears and detachments

### Optic Nerve

- Glaucoma
- Optic neuropathy

## Singapore National Eye Centre

- Multi-expert approach to treatment of complex eye conditions
- Quality assurance programme backed by 100% clinical audit of outcomes
- Pursues high impact research leading to treatment strategies
- Regional referral centre for complex cases
- Comprehensive subspecialties to treat a wide spectrum of eye conditions:
  - General Cataract & Comprehensive Ophthalmology
  - Cataract
  - Corneal & External Eye Disease
  - Glaucoma
  - Medical & Surgical Retina
  - Neuro-ophthalmology
  - Ocular Inflammation & Immunology
  - Oculoplastic & Aesthetic Eyeplastic
  - Paediatric Ophthalmology & Adult Strabismus
  - Refractive Surgery

# LOCATION MAP



## Legend



MRT Station



Taxi Stand



East West Line



North East Line



Shuttle Bus Service  
Mon to Fri ( 8.00am - 7.00pm )  
Sat ( 8.00am - 2.00pm )



Opp Outram Park Stn

Bus No. 33, 63, 75, 121,  
122, 174, 174e, 851, 970



Outram Park Stn Exit F

Bus No. 61, 124, 143, 147,  
147e, 166, 197, 961, 961C



Outram Park Stn/Outram Rd

Bus No. 33, 63, 75, 121, 122, 174,  
174e, 534, 535, 549, 761, 851, 970

This patient information leaflet is a general guide to help patients understand specific eye conditions, treatment or tests. The information does not replace the need for individual advice from an ophthalmologist. Please consult with your ophthalmologist about your specific eye condition and/or concerns.

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## Singapore National Eye Centre

11 Third Hospital Avenue, Singapore 168751

Appointments: (65) 6227 7266 Fax: (65) 6226 1884

Email: [appointments@sneec.com.sg](mailto:appointments@sneec.com.sg)

Website: [www.sneec.com.sg](http://www.sneec.com.sg)



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