

Appendix (5)




1

Goals

- **Identify the structure and function of human eyes.**
--> Sclera, cornea, pupil, iris, lens, macula, retina, optic disk, optic nerve
- **Distinguish the symptoms of four common eye diseases.**
(Glaucoma, Floaters, Macular Degeneration & Cataract)
- **Evaluate and compare the causes and treatments of the four eye diseases.** (Glaucoma, Floaters, Macular Degeneration & Cataract)

2

KWL Chart



What I already know (K)	What I want to know (W)	What I have learned (L)
5 senses of human:	3 facts you want to know more about eyes:	Name 3 eyes structure and their corresponding function s:
3 facts you know about eyes:		1. _____ 2. _____ 3. _____
		3 eye diseases you learnt:

3


Recap

4

Sensitivity is very Important in Natural World

Living things can detect changes in the environment and produce responses. This ability is important for their survival.


- To prevent being prey or any other source of danger
- Predator use their sense to prey
- Recognition
- Mate
- Communication



5

Sensitivity in animals

- **Bats** can give out sound and detect the echoes of the sound reflected from nearby objects. In this way, they can locate the positions of surrounding objects when flying, even in dark
- A change in the environment is called a **stimulus** (plural: stimuli)
- The ability to detect a stimuli is known as **sense**



6

In our daily life, how do we sense our environment?

7

Ruler Drop Test

Distance in Cm.	Reaction Time in Seconds	Nerves
1	0.0	Fastest
2	0.06	Fastest
3	0.08	Fastest
4	0.09	Fastest
5	0.10	Fastest
6	0.11	Fastest
7	0.12	Fastest
8	0.13	Above Average
9	0.14	Above Average
10	0.14	Above Average
11	0.15	Above Average
12	0.16	Above Average
13	0.16	Above Average
14	0.17	Above Average
15	0.18	Above Average
16	0.18	Average
17	0.19	Average
18	0.19	Average
19	0.20	Average
20	0.20	Average
21	0.21	Below Average
22	0.21	Below Average
23	0.22	Below Average

The scores on this chart are for 16 to 25 year olds.

8

Procedure for Ruler Drop Test

1. A 45 cm ruler will be given to each group
2. 2 students form a group
3. Student A drops the ruler while student B fetches the dropping ruler
4. Each students has three trials
5. After three trial, then changes to student B drops the ruler while student A fetches the dropping ruler

9

In our human, we have 5 sense to detect different stimuli

10

How about other animals? Our 5 senses

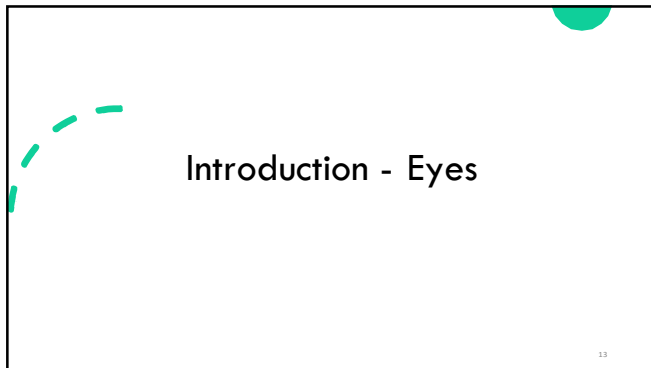
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Sensory Organ in Different Organisms

- Fish:** barbels (whiskers) for feeling, sensors for detecting muscle movement
- Grasshopper:** ear of a grasshopper
- Snake:** sensors for detecting heat
- Human:** Hearing, Sight, Smell, Touch, Taste

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12



13

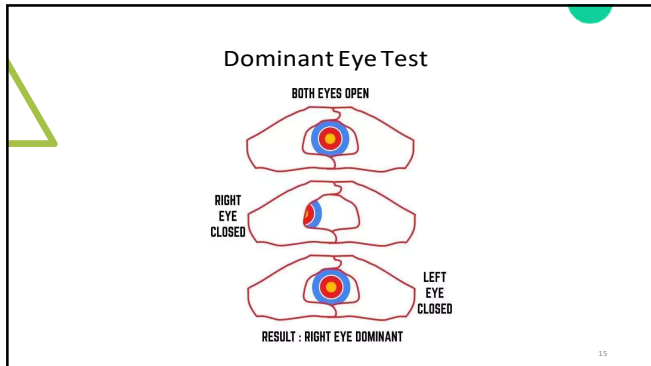
Small Assignment

- 5 students in a group
- Each group of students need to another method to determine your dominant eye
- Students are required to make a PowerPoint in showing the method and its corresponding procedures in determining our dominant eye.
- Deadline: Next Monday (First Draft)

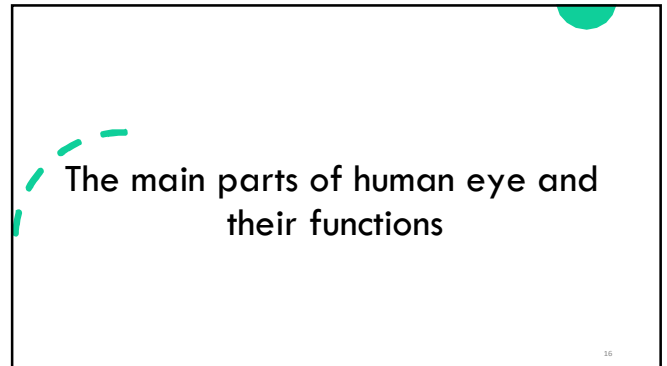
Jacky	Nicolau	Loke	Jacky	Sernang
Ruby	Lee	Ogo	Sam	Nicole
Matthew	Sam	Jeffrey	Justin	Eric
Meredith	Ringo	Laughing	Yanmei	Mary
Samantha	Sharon	Crystal	Teresa	Henry
				Teacher's desk

Group 1: [Red]
 Group 2: [Green]
 Group 3: [Blue]
 Group 4: [Purple]
 Group 5: [Yellow]

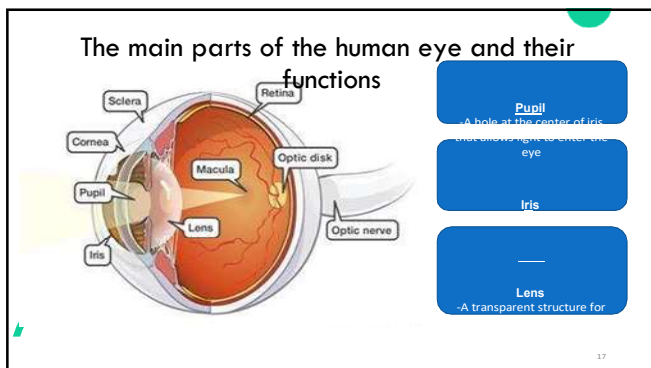
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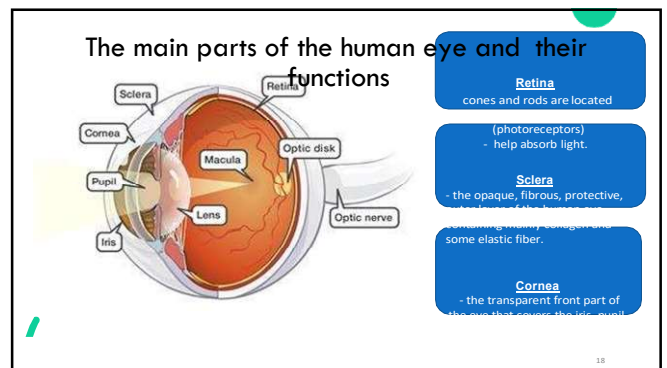
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18

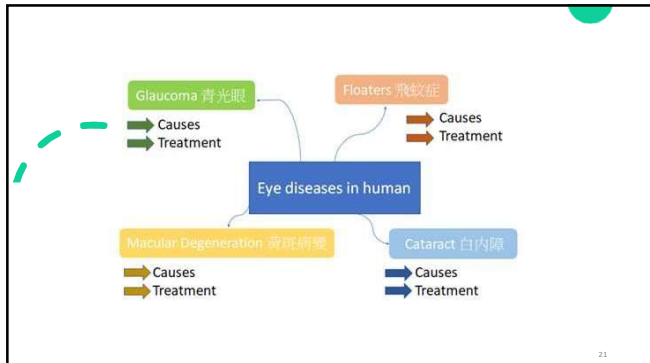
The main parts of the human eye and their functions

- Optic nerve**
Interpretation
- Macula (Yellow Spot)**
Contains light-sensitive cells
- Optic disk (Blind Spot)**
-A point on the retina where the optic nerve leaves the eye

19

App (Eye Anatomy Pro)

20



Causes of Glaucoma

- Fail to **balance** between the amount of **internal fluid** produced and the amount that drains away.
- Poor Blood Flow**
- Optic Nerve Damage**

22

Causes of Floaters

- Age-related** eye changes
- Inflammation** in the back of the eye
- Bleeding** in the eye
- Torn retina**
- Eye surgeries and eye medications** (recovery by itself)

23

Causes of Cataract

- Age-related** eye change
- Family history and genetics**
- Excessive exposure to UV rays**
- Eye injury**

24

Causes of Macular Degeneration

1. **Age-related** eye change
2. **Family history and genetics**
3. **Race:** more common in Caucasians
4. Having **cardiovascular disease**
5. Being **overweight**
6. **Smoking**

The diagram shows a cross-section of the eye. The top part is labeled 'Macular Degeneration'. Below it are three circular diagrams: 'Normal' (clear macula), 'Wet Macular Degeneration' (fluid leakage), and 'Dry Macular Degeneration' (drusen deposits).

25

Activities (2)

"Enter the special world"

26

"Enter the special world"

- Each group receives the symptom sheets of **four eye diseases** and **one random special-made glasses**.

```

    graph LR
      A[Get the symptom sheets] --> B[Pick one special-made glasses]
      B --> C[Discussion with your groupmates  
[Discussion time: 5mins]]
      C --> D[Fill in the Worksheet]
      D --> E[Presentation  
[Duration: 1 mins]]
  
```

27

The image shows four pairs of glasses: 1. A pair with solid black lenses. 2. A pair with clear lenses and a clear frame. 3. A pair with clear lenses and a black frame. 4. A pair with clear lenses and a clear frame, but with black spots on the lenses.

28

TIME'S UP

Time's up for discussion
Now is Presentation!


29

Activities (2) - Answer and Summary

Symptoms in each diseases (list one symptoms on the handout):

- **Glaucoma:** Intense eye pain, a red eye, blurred vision
- **Floater:** Small shape in your vision, dark specks or knobby
- **Cataract:** Clouded, blurred or dim vision, Sensitives to light and glare
- **Macular Degeneration:** a distortion of straight lines in your field of vision, a reduction in central vision

30




Treatment of eye diseases

31

Treatment of Glaucoma


- Eye drops**
- Laser treatment**
- Surgery (Trabeculectomy)**
--> Removing part of the eye-drainage tubes
--> Increase the outflow of fluid from the eye
--> Lower the eye pressure



32

Treatment of Floaters


- Move your eyes around**
--> Shift the fluid around
--> Better vision
- Surgery (Vitrectomy)**
--> Remove the vitreous
--> Replace with a salt solution



33

Treatment of Cataract

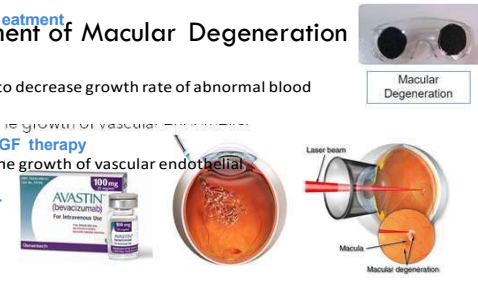
- Using **sunglasses** to decrease glare
- Magnifying lenses** for close work and reading fine print
- Cataract surgery**
--> Remove the clouded lens
--> Replace it with a clear artificial lens



34

Treatment of Macular Degeneration

- Drugs** to decrease growth rate of abnormal blood vessels
--> Block the growth of vascular endothelial
- Anti-VEGF therapy**
--> Block the growth of vascular endothelial
- Laser Treatment**



35

Eye Protection

THE 20-20-20 RULE
To reduce the effects of digital eye strain:
Take a break for 20 seconds... and look at something 20 feet away... every 20 minutes.

GOOD JOB GOOD JOB

Be sun safe.
Wear sunglasses with UV protection lenses.

Best Foods For Your Eyes

CORRECT SITTING POSTURE




36

4/12/2020

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3 facts you know about eyes: _____	_____	3 eye diseases you learnt: _____
_____	_____	_____



37

POST-TEST



38

THANK YOU!



39