Vision Science and Optometry: Eye Wonder
Welcome everyone

Firstly I would like to acknowledge the Bedegal people that are the Traditional Custodians of this land where we are today. I would also like to pay my respects to the Elders both past and present, and extend that respect to other Aboriginal and Torres Strait Islanders who are present here today.

Our plan for today
1. **Introduction**: what we do in vision science and optometry, and inside ‘eye’ information

2. **Interactive activities**: please look around the various displays on each bench, ask questions, and enjoy the wonder of eyes!

3. ‘Eye Closing’ session: any questions, comments and thank you
Optometry and Vision Science @ UNSW

• only Optometry and Vision Science School in NSW (undergraduate and postgraduate)
• UNSW Optometry Clinic run by students and staff
What do optometrists do?

- Provide comprehensive vision examinations
- Detect, diagnose and manage problems with eye (and general) health
- Refer patients to other health professionals as needed
- Prescribe certain therapeutics & co-manage eye diseases
What else can optometrists do?

- Prescribe, supply & repair spectacles
- Prescribe & supply contact lenses, solutions
- Advise & manage areas of special vision needs (e.g. low vision, colour vision)
- ‘Kids vision’: analyse & treat eye co-ordination problems (paediatric & vision therapy)
- Myopia management (e.g. orthokeratology)
Optometry and Vision Science @ UNSW

B VisSci / M ClinOptom @ UNSW*
HSC Direct Entry (ATAR ~98.00)

B VisSci / M ClinOptom @ UNSW*
HSC Direct Entry (ATAR ~96.00)

[* varies each year]

https://www.optometry.unsw.edu.au/future/admission-requirements
How to get into Optometry @ UNSW?

B VisSci / M ClinOptom @ UNSW
HSC Direct Entry (ATAR*)

*ATAR (Australian Tertiary Admission Rank)
(or equivalent) 98.00+

Admission requirements
https://www.optometry.unsw.edu.au/future/admission-requirements

No UMAT (Undergraduate Medicine & Health Sciences Admissions Test)
What is Vision Science all about?

understanding how we see the world (sensory processes); using vision and imaging related technologies to ‘repair’ or improve vision
B VisSci / B Sc (VisSci) possibilities?

Ophthalmic industry

• Business management-related options, practice managers
• Optical lens and contact lens design and manufacturing e.g. multifocal lenses, ‘bifocal contact lenses’

Public health and vision rehabilitation, education (Guide Dogs, MD Foundation)

Low vision mobility and orientation

Biomedical imaging

Vision research (e.g. bionic eye - UNSW)

Academic/research & teaching (Honours + PhD pathway)
What about the Clinical Optometry?

Combines experience in specialty eye clinics, eye therapeutics, research projects, ethics & professional development, business studies + more
Where do our M Clin Optom students end up?

Clinical practice / locum ~80% (corporate optometry vs independent; city vs rural)

Academic/Research ~5%

Overseas ~3%

Industry/Govt ~5% (contact lens companies, ergonomics, lighting, road safety, vision standards, eye safety, advocacy etc)

Other roles ~3% (dispensing roles or out of profession)
Eye Parts and Functions
Describing the Human Eye

• Human eye = a simple lens system
• Outer cornea & sclera = ‘tough container’
• Cornea and lens = transparent, focussing
• Iris/pupil = control light levels inside
• Eye muscles = ‘dance ‘ together to keep images on the right spot of the retina (both eyes together)
• Retina = neural ‘screen’ light ➔ signal ➔ optic nerve (axons) ➔ brain visual cortex
Human eye showing main structures: average size?
Where do tears come from?

Flow of Tears

1. Lacrimal Gland
2. Lacrimal ducts
3. Lacrimal Canal
4. Nasolacrimal duct
5. Nasal cavity
How do eyes move?

https://aclandanatomy.com/content/4010614
Inside the eye – the retina

Blind spot

Inside the eye – the retina

Blind spot

Number of receptors/mm²

Visual angle (degrees from fovea)

Rods

Cones

Fovea

Blind spot

Superior perifovea

Superior parafovea

Central zone

Inferior parafovea

Inferior perifovea

1 mm

3 mm

6 mm
How do we see the world? Pathways from eye ➔ brain
Central *versus* peripheral vision

Peripheral Vision
(motion)

Foveal Vision
(focus)
Retina

Visual pathways

Visual Pathway

1. Cones
2. Bipolar neurons
3. Ganglion cell’s axon forms the optic nerve
4. Optic nerve to the Optic Chiasm
5. Optic tract
6. Lateral geniculate nuclei of the thalamus
7. Optic Radiations
8. Primary visual areas of the occipital lobes
What happens when things go wrong?
Matching examples?
Seeing the world through different eyes?

[Images of various animal eyes and visual systems]
Optometry @ UNSW: please visit our Clinic (https://www.optometry.unsw.edu.au/appointment) and for more news, updates, stories ....... https://www.facebook.com/UNSWOptom/
Thank you – any questions?

You are very welcome to visit our clinic https://www.optometry.unsw.edu.au/clinic