

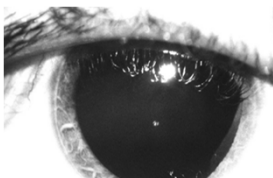
3 months

Shaking eyes

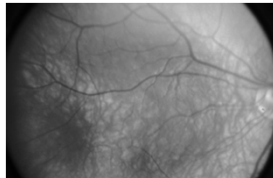
Not seeing well

Unusual pupil

“Family eyes”

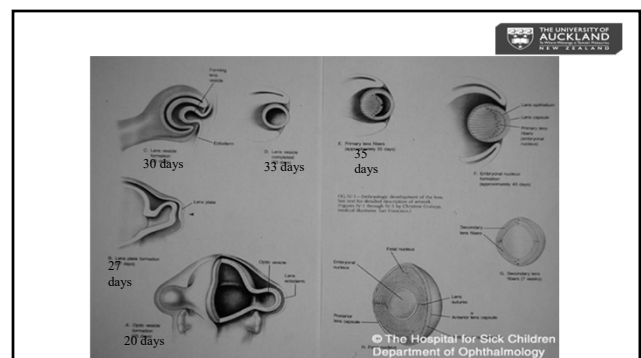


The image shows a close-up of a child's eye with a large, dark, irregularly shaped pupil, characteristic of a cataract. The surrounding sclera and eyelid are visible.



The image is a fundus photograph showing the interior of the eye, including the retina and optic disc. The view is obscured by a large, dark, irregularly shaped area, likely the cataract, which is preventing a clear view of the fundus.

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PAX6

A) PAX6 Mutation database

CTE
Whole gene deletion
Indel
Regulatory regions
Missense
Splice site
Frameshift
Nonsense

B) Aniridia phenotype

CTE
Unknown
Missense
Regulatory regions
Whole gene deletion
PTC

C) Non-aniridia phenotypes

PTC
Missense

Cunha *et al*
Genes 2019

The Central Dogma

Genes: source code

transcription (pre-mRNA)

mRNA: bases

translation

unfolded protein: nucleotides

folding & modification

Folded Protein:

binding

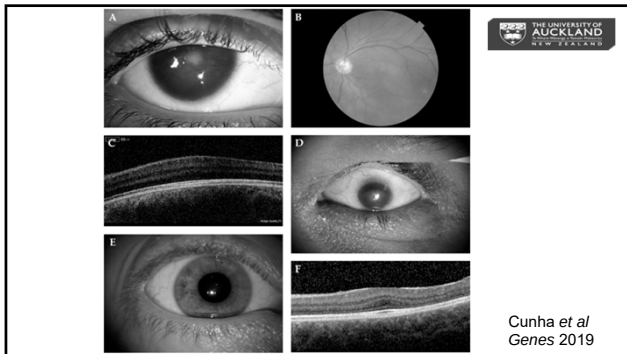
Cell factory

The Central Dogma

Nonsense mediated decay

Ma, Grigg, Jamieson
Hum Gen 2019

Pan-ocular disorder



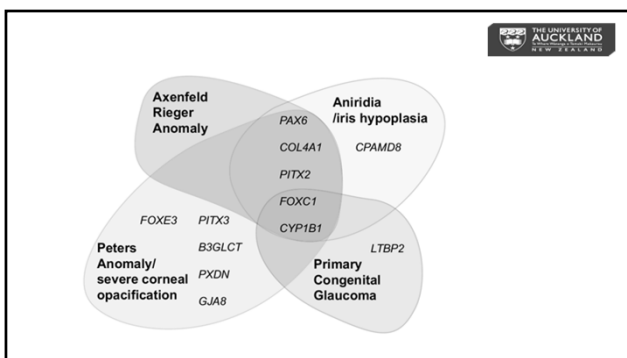
Syndrome until proven otherwise

WAGR

- Aniridia
- Wilms tumour
- Growth retardation

Gillespie

- Aniridia
- Intellectual disability
- Cerebellar ataxia



Treatment

Prevention

- Maximise Vision
- Refractive
- Amblyopia

Keratopathy

- Glaucoma
- Cataract

Gene Directed

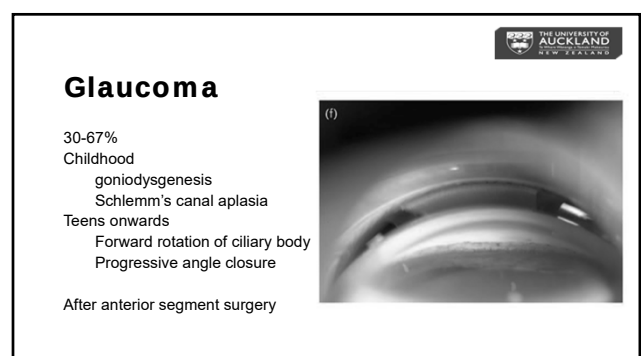
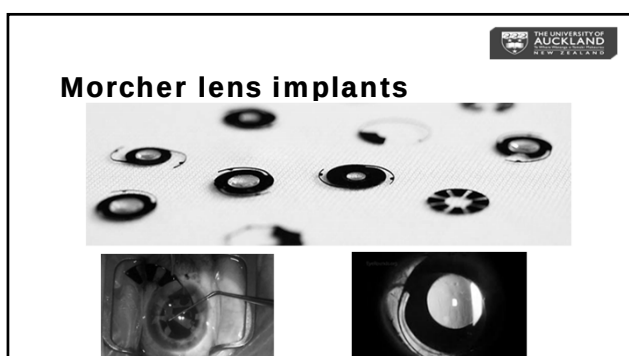
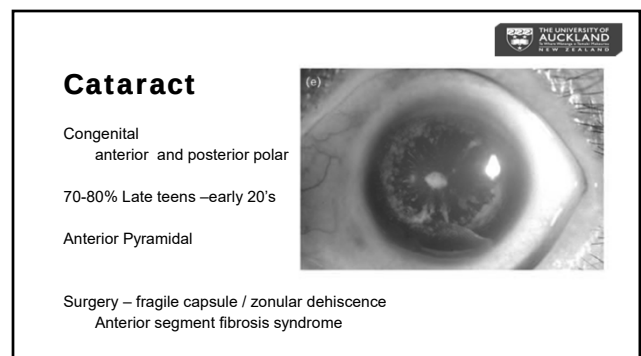
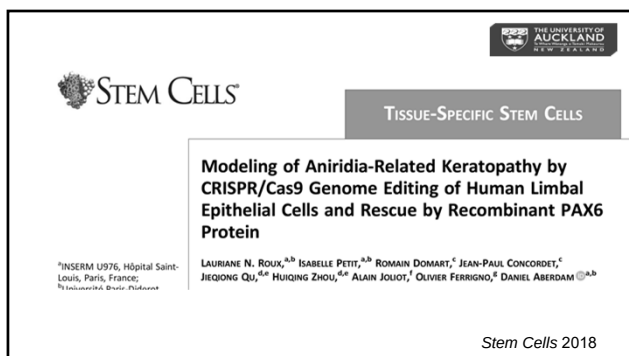
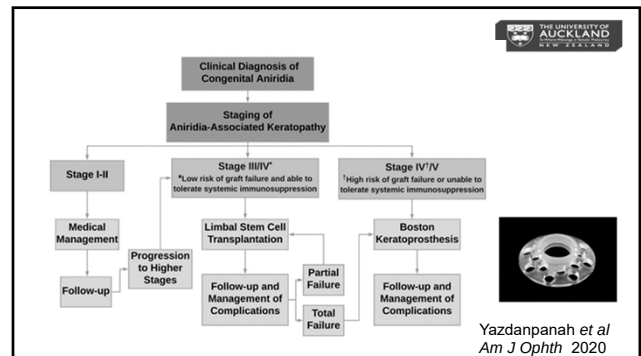
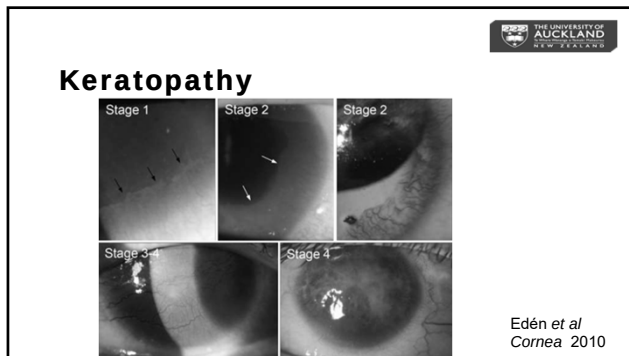
Prenatal diagnosis

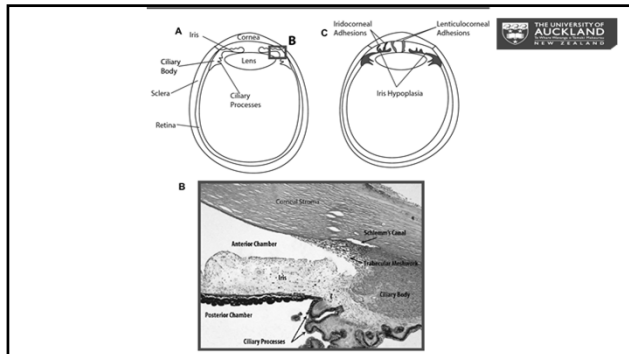
Maximise vision

Refractive correction

Photochromic / Tinted glasses

Occlusion therapy for amblyopia





Glaucoma Treatment

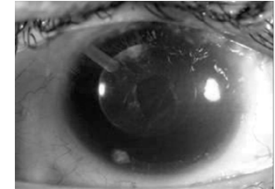
Congenital - Goniosurgeries

Topical drops

Trabeculectomy
success 0-80%

Shunts / Tubes –success 66-100%

Cyclodestruction

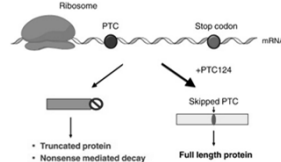


Translational read through inducing drugs (TRIDS)

For nonsense mutations

Anterior segment disorders
Retinal dystrophies

RP2
REP1
MERTK
USH1B



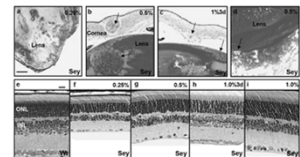
Ataluren (PTC124)

Mouse model of aniridia

inhibited disease progression
reversed corneal and lens opacity
improved retinal development

Suggests post natal tissue plasticity

STAR Clinical Trial Phase 2 NCT02647359
Feb2016- Feb2022



Aniridia

Pan-Ocular disorder
Exclude syndromic
Early diagnosis - family planning
Maximise vision
Regular Screening
Emerging therapies

