

J. Prigorsky - Changes in Gene Regulation During Evolution
of the Multigene Lens Crystallins

opta (A new f(x) may develop from a gene duplication
because the duplicate is able to mutate more)

Gene sharing... a new f(x) may develop from the
same protein w/o any D/S in sequence

Lens

- eyes have originated in diff. times
- is a cellular structure
- do not contain nuclei
 - ∴ no protein turnover
 - ~~some~~
 - some metabolism
- only epithelial cells... completely closed system
- many cell junctions
- 90% of proteins are crystallins
 - smooth gradient of refractive index
 - v. little light scatter

Despite specialized f(x) of the lens...

- there is a great deal of variation w/in
and between species in protein components

σ = argmosucc. lyase

ϵ = LDHB

γ = enolase

= GST

What unifies all these proteins?

① suggests it might be due to tz factors

- any gene that can be expressed at high enough levels in the eye & can bend light right can become crystallins

αA & αB

- small heat shock proteins
- related to each other

αB ..

- overexpressed in many diseases (in other tissue)

- molecular chaperone (i.e. can protect itself & other proteins from denaturation)

- also can autophosphorylate

4.5 kb of 5' αB - transgene w/ lacZ expressed in many diff. tissues

What might unify all crystallins?

PAX-6 may be involved in eye development in many many eyes