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Heteroplastic Lens Grafts Related to Factors Inhibiting Lens Regeneration in *Triturus*.*

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In 18 cases the presumptive lens-forming ectoderm over the optic vesicles of embryos in the early tail-bud stage (similar to Harrison stages 22 to 25) was exchanged between *Amblystoma punctatum* and *Triturus torosus*. The heteroplastic grafts developed normally into large lenses which were observed in a few cases as long as 98 days after operation. At approximately 70 days post-operative, the heteroplastic lenses were excised in some cases, and the larval hosts were killed about 3 weeks later. When the Triturus lens was removed from the Amblystoma eye the result was the same as that which follows lensectomy in the normal Amblystoma eye[1]—a failure of the dorsal rim of the iris to regenerate a lens. When the Amblystoma lens was excised from the Triturus eye, the latter regenerated a lens from the dorsal iris just as it normally does following lensectomy. Therefore, the Amblystoma lens from the early stages of development has the same inhibiting effect on regeneration as does the normal Triturus lens,[2] but its presence for a long time leaves no permanent inhibiting effect upon the Triturus iris.

In 34 cases the lenses of the same two species were exchanged between larvae about 17 mm in length, a period in development not long after the feeding stage. The exchanged lenses survive and grow well for a long time. If they are removed after 70 days the Amblystoma eye again fails to regenerate a lens and the Triturus eye immediately regenerates a lens from the dorsal rim of the iris.

In 14 cases the lenses of young adult *Amblystoma punctatum* eyes were implanted in the lensectomized eyes of adult *Triturus viridescens*. If the Amblystoma lens survives it inhibits regeneration of a lens from the dorsal iris of the Triturus eye. If a cataract condition in the lens becomes extensive it loses its inhibiting capacity even though there may be much normal lens tissue still present. Therefore, throughout life the Amblystoma lens possesses the same factors as the Triturus lens[3] for inhibiting the release of lens regeneration.

In 60 cases the whole or part of the lens of the tadpole eye of *Rana clamitans* was implanted in the lensectomized eye of adult *Triturus viridescens*. In the presence of considerable amount of Rana lens tissue the Triturus eye regenerated a new lens from the dorsal rim of the iris at the same rate which it does after lensectomy.[4] Rana lens therefore does not appear to possess the inhibiting factor.

In 4 cases wax spheres of the same size as the normal lens were placed in lensectomized adult *Triturus viridescens* eyes. They also failed to inhibit lens regeneration. Therefore, mechanical factors associated with lens size do not seem to be important as an inhibiting agent.

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2 Dinnean, F. L., *J. Exp. Zool.*, 1942, **90**, 461.

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4 Stone, L. S., and Chace, R. R., *Anat. Rec.*, 1941, **79**, 333.