

Retinopathy Core

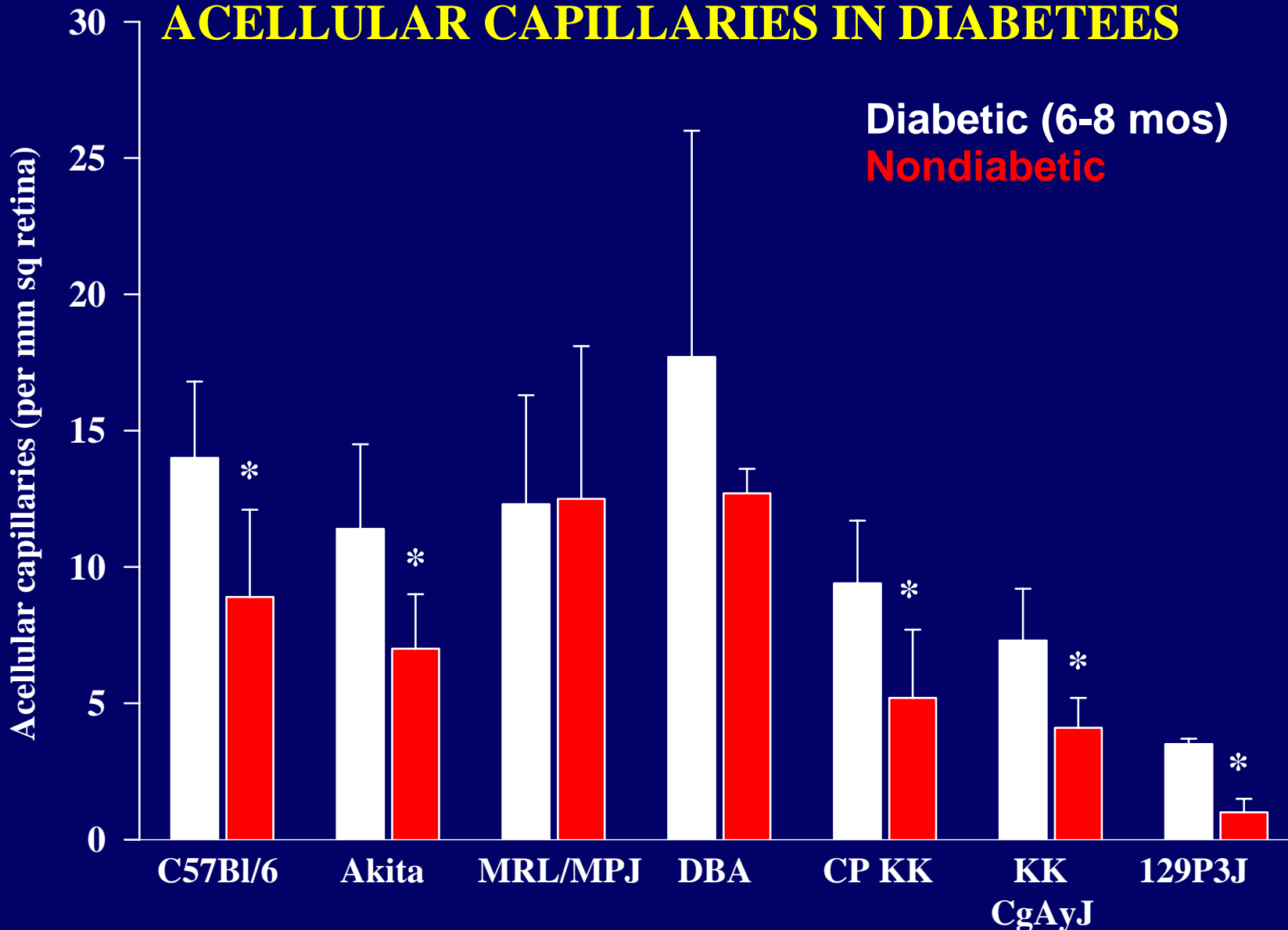
Vascular lesions

Capillary degeneration

Neovascularization; not seen

Neurodegeneration

STRAIN DIFFERENCES IN DEVELOPMENT OF RETINAL ACELLULAR CAPILLARIES IN DIABETEES



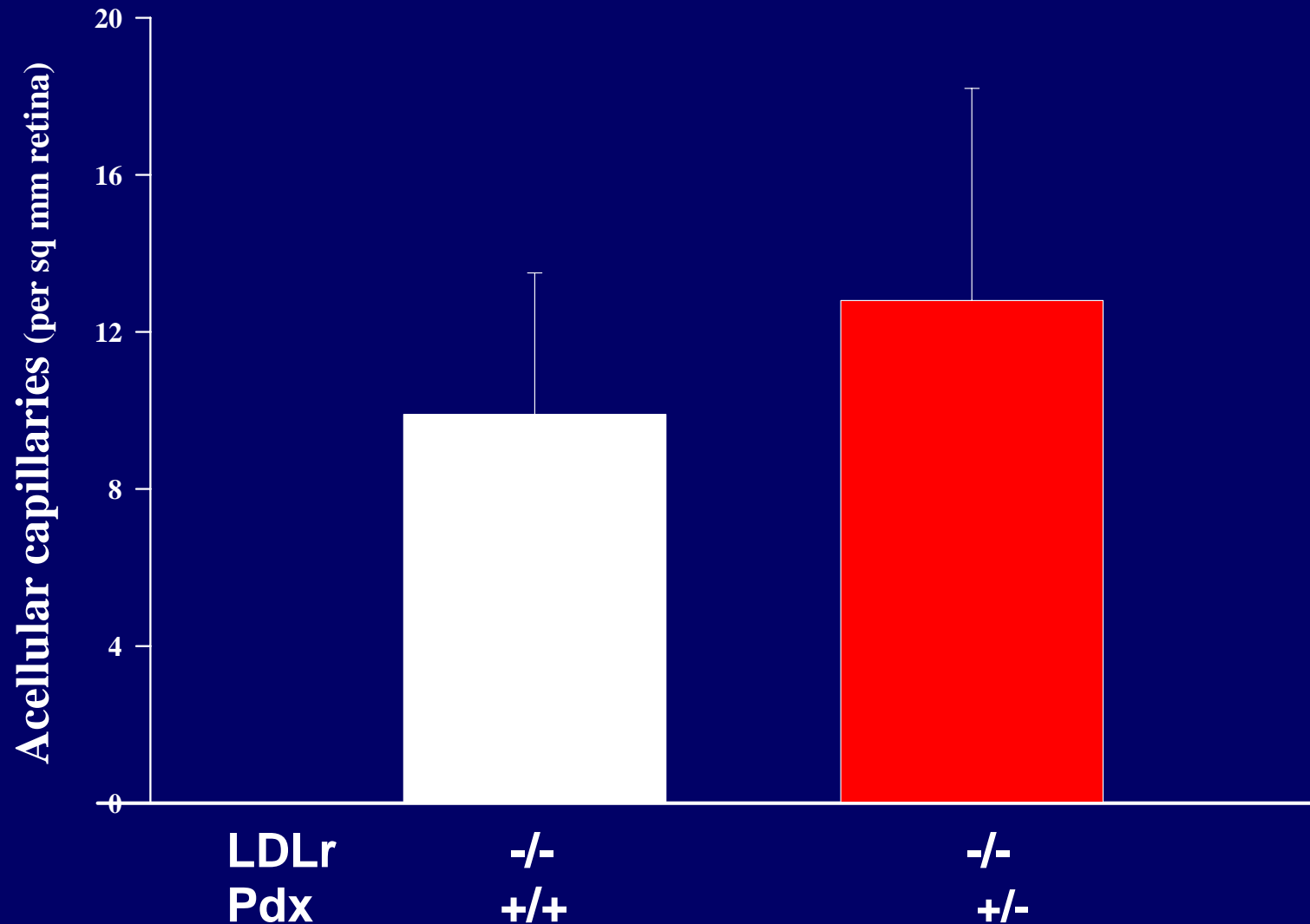
Mouse strains being tested:

- A/J
- COX2^{-/-}
- 12 LOX^{-/-}

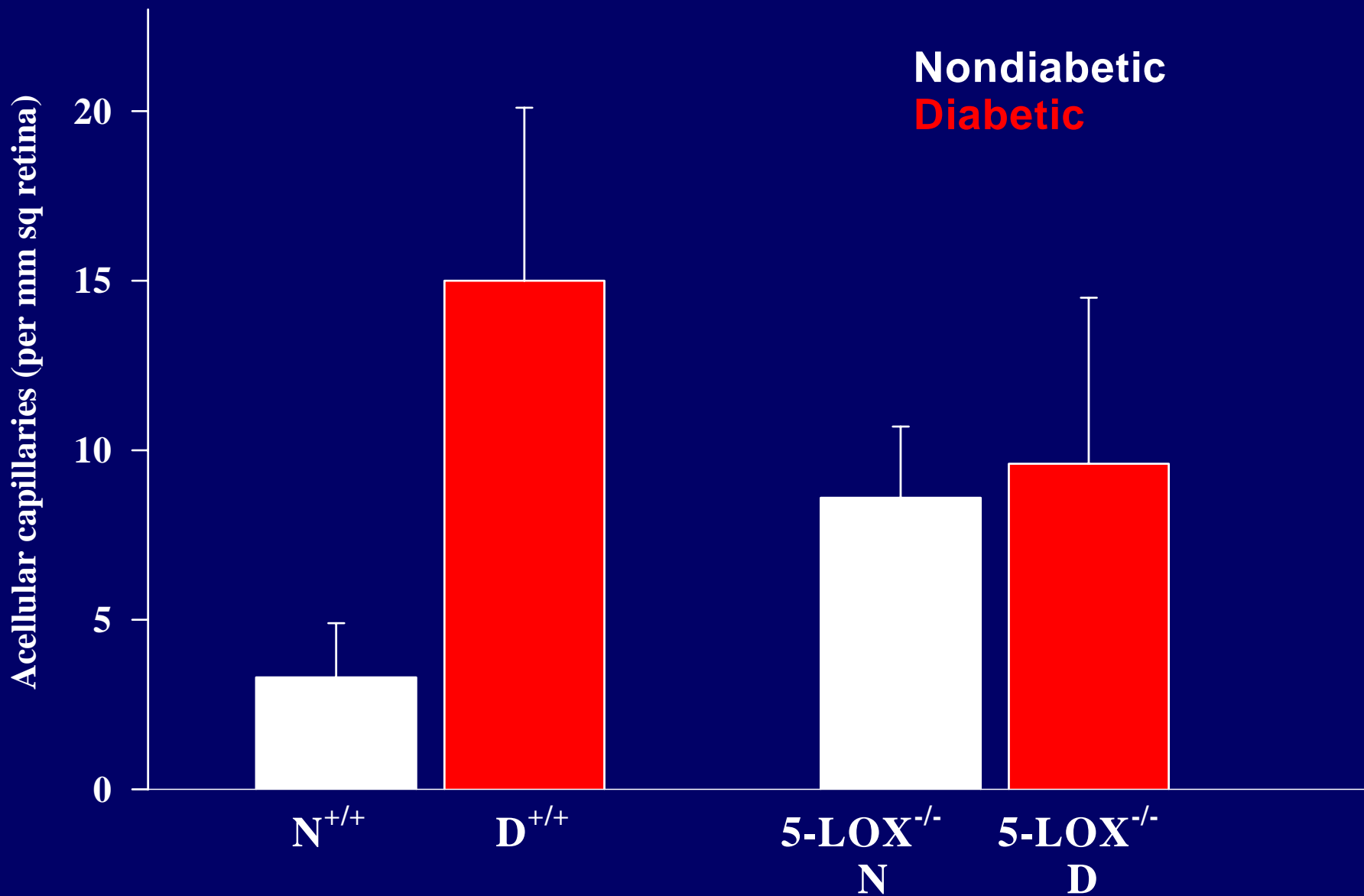
Models of particular interest:

- Hyperlipidemia
- ICAM overexpressor
- Increased production of growth factors or susceptibility to develop neovascularization
- Strong proinflammatory responses
- Accelerated aging/oxidative stress/mild hypertension

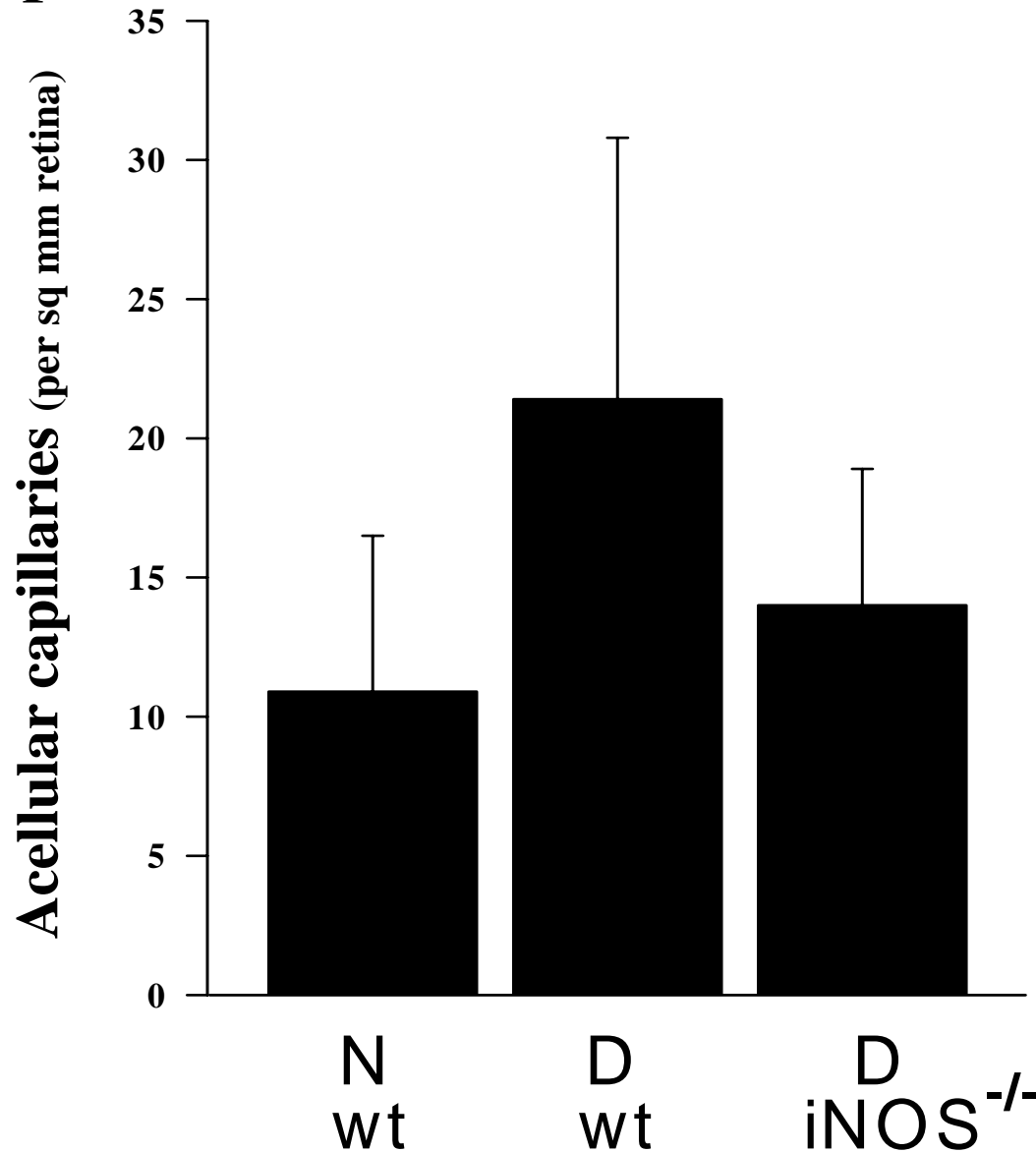
Combination of LDLr^{-/-} and Pdx^{+/-} has no effect on degeneration of retinal capillaries in diabetic mice



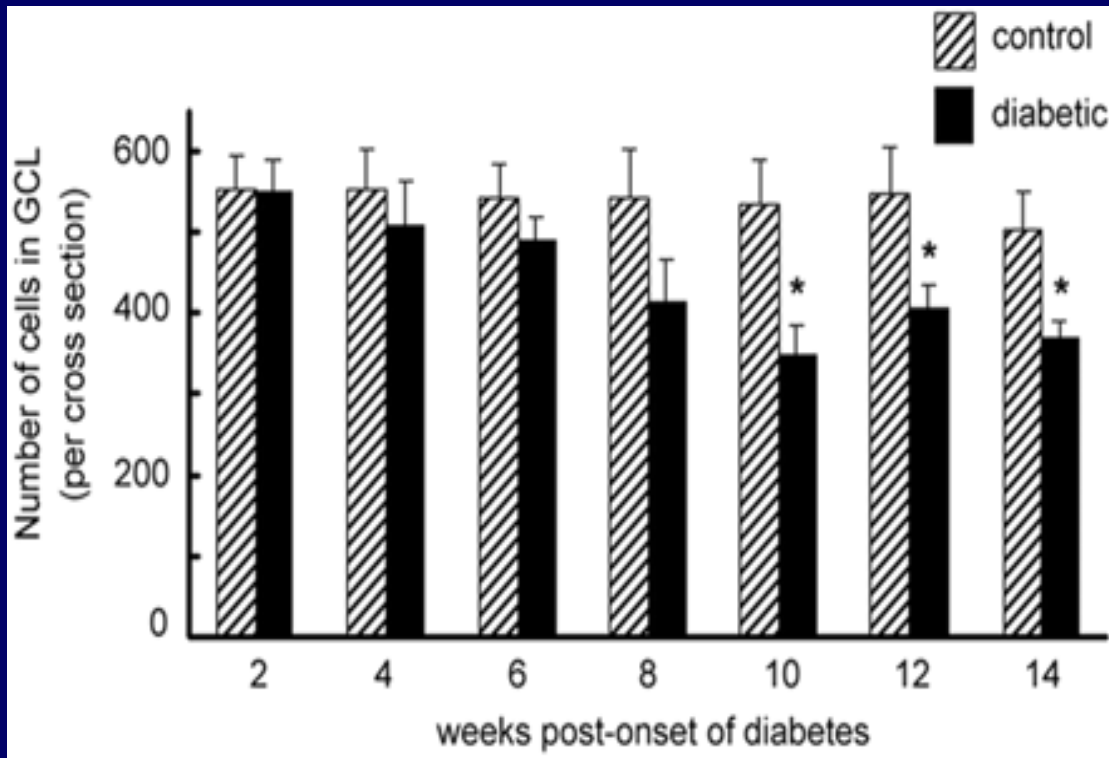
DELETION OF 5-LIPOXYGENASE SLOWS DEVELOPMENT OF RETINAL ACCELLULAR CAPILLARIES IN DIABETES



Deletion of iNOS slows development of acellular capillaries in diabetic C57Bl/6 mice

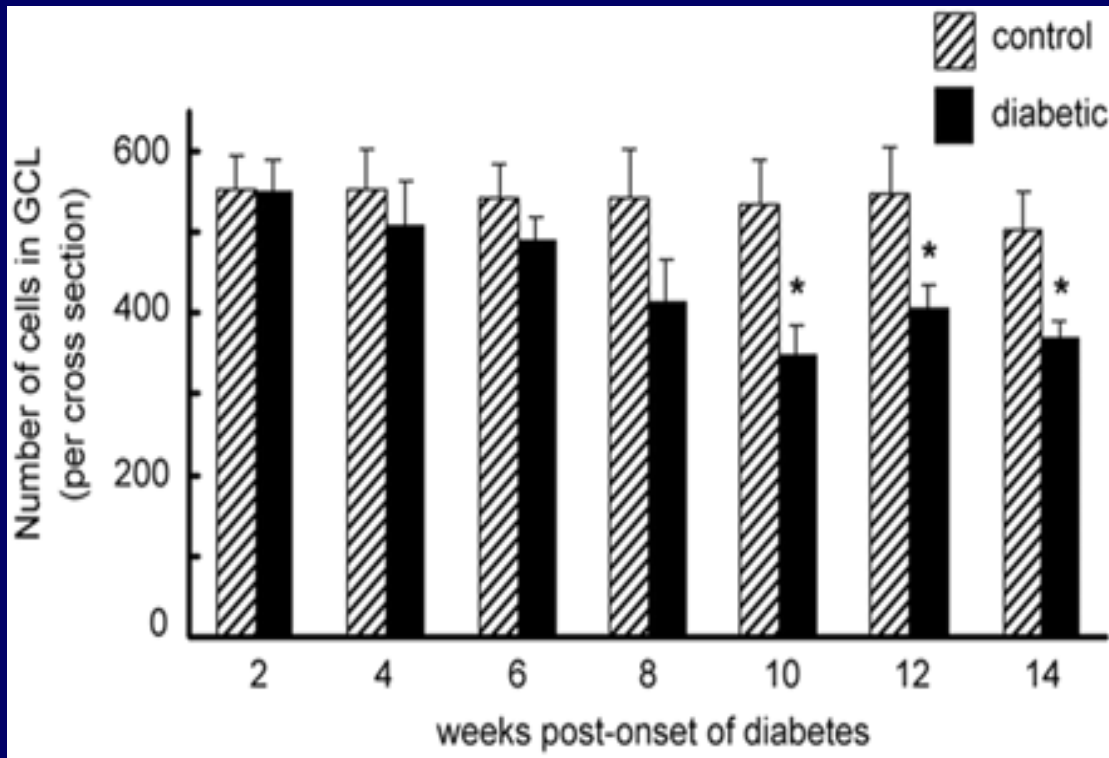


Evidence for and against degeneration of retinal ganglion cells in diabetic C57Bl/6 mice

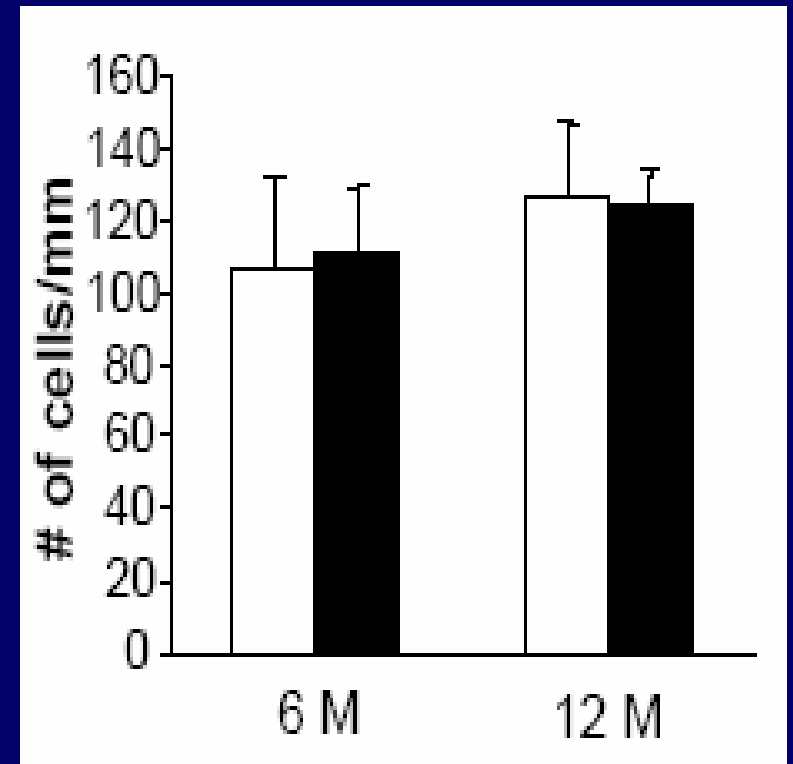


Martin *et al*; IOVS 45:3330, 2004

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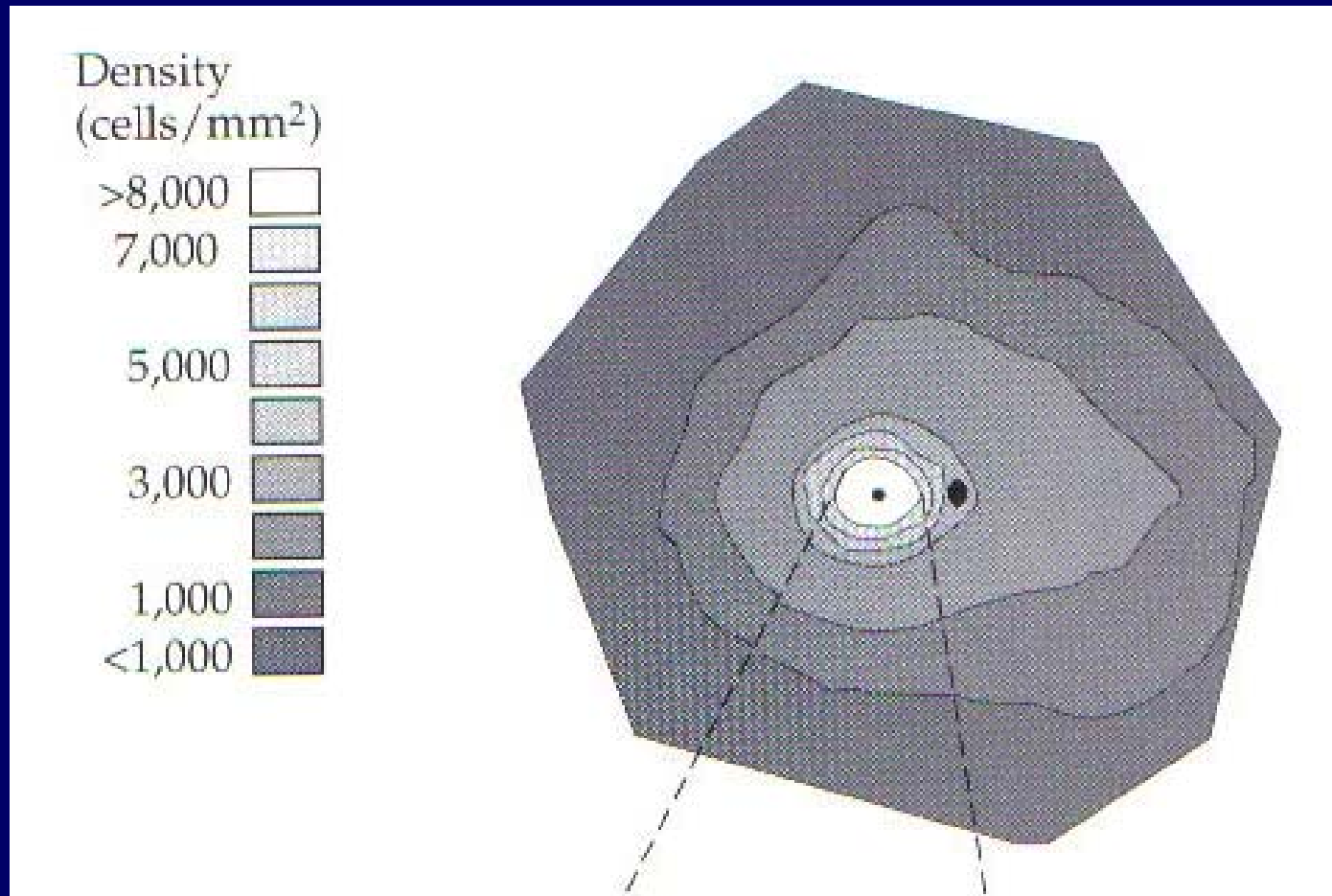


Martin *et al*; IOVS 45:3330, 2004



Kern

Ganglion cells are not distributed uniformly across the retina



Variability in ganglion cell counts

- Differences in density across retina
- “Contaminating” cells in the Ganglion Cell Layer

Solution:

Don't count sample of retina, count all ganglion cells across entire retina

Eye collection for evaluation of retinopathy

At least 5 animals per experimental group (include age-matched nondiabetic and diabetic controls). The longer the duration of diabetes, the better (C57bl/6 mice require at least 6 mos diabetes before retinal microvascular lesions can be detected).

Enucleate eye. Tissue needs to be collected fresh. Be careful not to push or compress the eye.

Fix both eyes into 10% buffered formalin (pH 7.4) in a microfuge tube. **DO NOT PUT IN ALCOHOL**