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Frank Giblin Studies Cataract Formation in the Lens of the Eye

CBR member **Frank Giblin** collaborates with a team of researchers from the **Florida Atlantic University** to study **cataract** formation in the **lens** of the eye. Using **knockout mice**, they were able to study the role of specific molecules in protecting the eye from **oxidative damage**. In a article in the May 2009 issue of the journal **Molecular Vision** (**Deletion of mouse MsrA results in HBO-induced cataract: MsrA repairs mitochondrial cytochrome c**, Volume 15, Pages 985-999), they state the problem and their goal:

"Considerable evidence indicates a role for **methionine sulfoxide reductase A** (MsrA) in lens cell resistance to oxidative stress through its maintenance of **mitochondrial** function. Correspondingly, increased protein methionine sulfoxide (PMSO) is associated with lens aging and human cataract formation, suggesting that loss of MsrA activity is associated with this disease. Here we tested the hypothesis that loss of MsrA protein repair is associated with cataract formation. To test this hypothesis we examined the effect of MsrA deletion on lens opacity in mice treated with **hyperbaric oxygen**, identified lens mitochondrial proteins oxidized upon deletion of MsrA and determined the ability of MsrA to repair the identified proteins."

They conclude that

"These results establish that MsrA deletion causes increased light scattering in mice exposed to HBO [hyperbaric oxygen] and they identify cyt c [**cytochrome c**] as oxidized in the knockout lenses. They also establish that MsrA can restore the in vitro activity of cyt c through its repair of PMSO. These results support the hypothesis that MsrA is important for the maintenance of lens transparency and provide evidence that repair of mitochondrial cyt c by MsrA could play an important role in defense of the lens against cataract formation."

SUMMARY

CBR member Frank Giblin collaborates with a team of researchers from the Florida Atlantic University to study cataract formation in the lens of the eye.

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