

## Selective estrogen-receptor modulators (SERMs) confer protection against photoreceptor degeneration

### Summary (1024-character limit)

Researchers at the National Eye Institute (NEI) have discovered a novel therapeutic strategy of using one or more selective estrogen-receptor modulators (SERMs), which may include the FDA-approved drug, Tamoxifen, for treating retinal degenerative diseases, like retinitis pigmentosa (RP) and age-related degeneration (AMD). SERMs exert their specific protection on photoreceptor degeneration likely by inhibiting microglial activation.

### NIH Reference Number

E-134-2016

### Product Type

- Therapeutics

### Keywords

- Estrogen-Receptor
- Retinal Degeneration
- Photoreceptor
- Microglial Inhibition
- Retinitis Pigmentosa
- RP
- Age-Related Degeneration
- AMD
- National Eye Institute
- NEI

### Collaboration Opportunity

This invention is available for licensing and co-development.

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### Description of Technology

Retinal degeneration is a deteriorative condition of the human retina caused by the progressive and eventual death of photoreceptor cells. To date, no effective treatment for genetically inherited or age-associated retinal degeneration, which includes a large patient population worldwide, is available. Researchers at the National Eye Institute (NEI) have discovered a novel therapeutic strategy of using one or more SERMs compounds, which may include the FDA-approved drug, Tamoxifen, for treating retinal degenerative diseases, like retinitis pigmentosa (RP) and age-related degeneration (AMD). SERMs exert their specific protection on photoreceptor degeneration likely by inhibiting microglial activation. Commercial entities who are interested in developing new drugs for ocular disorders are being actively sought for co-developing this technology as collaborative partners or licensing it for commercialization.

### Potential Commercial Applications

- Potential therapeutic drug(s) for retinal degenerative diseases such as RP, AMD etc.
- Potential therapeutic drug(s) for treating retinal degenerative conditions featuring photoreceptor death

### Competitive Advantages

- There is currently no treatment for the “dry” form (geographic atrophy form) of AMD, in which the degeneration of photoreceptors results in vision loss
  - Chemical drugs, with a well-characterized safety profile (like SERMs), that can neuroprotect photoreceptors, may be an effective therapy for those types of AMD
- There is currently no treatment for RP. Although gene therapy of RP is under active commercial development, this may not be broadly applicable to RP patients with diverse genetic causes for their condition
  - Microglial contribution to degeneration is shared in multiple genetic causes of RP, and the inhibition of this contribution (likely by SERMs) may be suitable to a broad spectrum of affected patients
  - Chemical compounds, like SERMs may be more advantageous than RP gene therapy in many aspects such as safety and administration

### Inventor(s)

Wai T Wong MD, PhD (NEI)

### Development Stage

- Pre-clinical (in vivo)

### Publications

Wang X, et al. Tamoxifen Provides Structural and Functional Rescue in Murine Models of Photoreceptor Degeneration. [[PMID 28235894](#)]

Brookshire B. Researchers stumble onto a new role for breast cancer drug. [[ScienceNews](#)]

### Patent Status

- **U.S. Provisional:** U.S. Provisional Patent Application Number 62/377,439, Filed 19 Aug 2016
- **U.S. Patent Filed:** U.S. Patent Application Number PCT/US2017/046359 , Filed 10 Aug 2017

### Therapeutic Area

- Eye and Ear, Nose & Throat