Standard and AMD Research Grant Applications

The Illinois Society for the Prevention of Blindness (ISPB) offers unique grant opportunities supporting mentored pre-clinical or clinical research programs designed to foster junior investigator development while advancing clinical care in ophthalmology and optometry. Preference is given to junior Principal Investigators at the start of their careers, including graduate, medical, or OD students currently enrolled full-time at an accredited institute of higher education, postdoctoral fellows or residents that are within seven years after receiving their advanced degree (MD, OD, PhD), and junior faculty occupying the academic rank of Research Assistant Professor or Assistant Professor. **Students, postdoctoral fellows, and residents are required to have a faculty mentor involved with their research.**

The Research Committee, which consists of ISPB board members and other professionals from ophthalmology and optometry, reviews and awards the grants. Applications are evaluated based on several criteria, including study originality, feasibility, scientific rigor, educational environment, and clinical significance.

**GRANT CRITERIA**

- Maximum grant amount not to exceed $10,000 for AMD and $5,000 for the Standard Grant.
- Application must be in the ISPB office by the deadline date.
- One application per project. Principal investigator or project did not receive an ISPB grant in the prior year.
- Incomplete applications will not be accepted.
- Project must be conducted in Illinois at an accredited university, medical school or laboratory.
- Funds cannot be used for equipment, computers, software (may consider specialized software), indirect costs, institutional administrative fees, salaries, publication costs, manuscript preparation, phone usage or travel.
- **OCT costs are allowed at $40 per subject if not covered by a third party insurer or part of standard care.**
- A $150 allowance can be made for the production and presentation of a scientific poster including ARVO membership.
- Individual can only serve as principal investigator for one grant.
- Principal investigator must remain in Illinois through the end of the grant project.
- Residents, postdoctoral fellows, and medical/OD students must provide a supportive letter on department letterhead from the mentor.
- Principal investigator must supply a color electronic photo for the ISPB website and publicity use before funds are distributed.
- Where applicable, an IRB/IACUC approval letter must be received before a check is distributed.
- Applicants will be notified by mid-June with funds distributed as above requirements are met.
- Funds must be expended and scope of proposal completed within one year if the grant approval.
- Funds not used will be returned to ISPB.

**ACKNOWLEDGEMENT**

Grantees are expected to recognize the Illinois Society for the Prevention of Blindness in all posters, publications or presentations related to the research. A copy of the poster, publication or presentation agenda should be included with the mid-year or final report.

**GRANT REPORTS**

Status reports are due the last week of January using the Mid-Year Report Form. The final report is due the last week of July using the Final Narrative Report Form. A financial report from the institution’s accounting department is also required and should be submitted with the Narrative Report.
Biomedical Research Grant Application

Please use Times New Roman font, size 12
Submission must be electronically uploaded by
Tuesday, May 09, 2017 by 12:00 pm CST
to: efineman@preventblindness.org

Date Submitted: 4/1/2017
Research Project Title: Elevated hydrostatic pressure alters endogenous expression of CTGF ET-1, and TGF-β2 in human trabecular meshwork cells.

Requested Funds: $5,000

TYPE OF STUDY (check one)
- Clinical Study
- Retrospective
- Prospective
- Pre-Clinical Research Study

STUDY FUNDING STATUS
- Currently Unfunded

Partially Funded:

Previously Funded:

CONTACT INFORMATION

Principal Investigator: Scott Summers
Academic Title: Graduate Student
Academic Affiliation: Xavier Institute for Higher Learning
Email: cyclops@Xavier.edu
Phone: (123) 456-7890

Faculty Mentor: Charles F. Xavier
Degree: Ph.D.
Academic Title: Professor
Academic Affiliation: Xavier Institute for Higher Learning
Email: professorx@Xavier.edu
Phone: (234) 567-8901

PI's Last Name: Summers
Co-Investigator or other additional personnel: Jean Grey

Academic Title: Co-Investigator

Academic Affiliation: Xavier Institute for Higher Learning

Email: phoenix@Xavier.edu

Phone: (345) 678-9012

Department Coordinator: Ororo Monroe

Academic Title: Grants Coordinator

Academic Affiliation: Xavier Institute for Higher Learning

Email: storm@Xavier.edu

Phone: (212) 222-5555

Grants Administrator: Max Eisenhardt

Administrating Institution: Friends of Xavier Institute

Address: 1407 Graymalkin Lane, Salem Center, IL 60000

Email: magneto@Xfriends.org

Phone: (456) 789-0123

**REGULATORY REQUIREMENTS**

*Regulatory committee approval is required prior to distribution of awarded funds.*

Are Human Subjects Involved? ■ No ■ Yes

If yes, IRB approval Date:

Are Vertebrate Animals Involved? ■ No ■ Yes

If yes, IACUC approval Date:

**RESEARCH PROPOSAL**

Eye Disease Subspecialty

Cataract Cornea ■ Glaucoma Retina Optometry AMD

Other:

-2- PI’s Last Name: Summers
Glaucoma is a leading cause of blindness worldwide, projected to affect nearly 80 million people by the year 2020.1 In the US, it is estimated that nearly 2 million individuals age 45 years and older have primary open angle glaucoma (POAG), the most prevalent form of the disease. Although the pathophysiology of POAG remains unclear, elevated intraocular pressure (IOP) is considered a poorly-understood hallmark in most patients with POAG.

Within healthy eyes, IOP is maintained by a balance of aqueous humor (AH) production and outflow. In patients with POAG, increased AH outflow resistance is considered a major contributor to pathologically elevated IOP.

Transforming growth factor (TGF)-β2, a pro-fibrotic cytokine present within AH, is markedly elevated in some patients with POAG.2 We and others have previously shown that TGF-β2 enhances outflow resistance and increases IOP, in part, by inducing endothelin-1 (ET-1) and connective tissue growth factor (CTGF) expression and release within the TM.3, 4 ET-1 and CTGF may ultimately lead to increases in IOP by enhancing TM cell contractility and extracellular matrix (ECM) deposition.

Despite these advancements, the direct effect of elevated pressure on TM cell responses remains unknown. Here, we present preliminary findings showing that cultured TM cells exposed to elevated hydrostatic pressure exhibit marked increases in endogenous CTGF, ET-1, and TGF-β2 expression and release, possibly involving the activation of mechano-sensitive ion channels.5

Purpose of Project or Hypothesis Being Tested
Elevated hydrostatic pressure enhances endogenous expression and release of CTGF, ET-1, and TGF-β2 in TM cell through the activation of TRPV4, a mechano-sensitive ion channel.
NARRATIVE/LAY ABSTRACT (*maximum 10 lines of text*):

Glaucoma is a leading cause of blindness, projected to affect nearly 80 million people worldwide by the year 2020. In the US alone, primary open angle glaucoma affects over 2 million individuals 45 years of age or older. The personal, social, and medical burden of glaucoma remains an extraordinarily significant health care concern. Elucidating the mechanisms that promote aberrant elevation of intraocular pressure is paramount to the development of novel therapeutic strategies for the management of glaucomatous patients.

ATTACHMENTS

Please prepare the following six sections as a *single pdf document* and include with submission. PI's last name must be on the bottom right corner of each page. *(Please adhere to the indicated page limitations)*

NARRATIVE

*Maximum one page*

- Study Rationale
- Hypothesis
- Specific Objectives
- Clinical Relevance

*Maximum five pages*

- Research Plan
- Study Design & Methods
- Statistical Plan
- Anticipated Results
- Pitfalls
- Alternative Strategies
- Timeline
- Cited References

*Maximum two pages (optional)*

- Preliminary Findings

BIOSKETCH (*no more than 5 pages*)

AUTHORIZATION (*use PDF provided by ISPB*)

IRB OR IACUC APPROVAL LETTER (*if available*)

MENTOR'S LETTER OF RECOMMENDATION (*required for postdoctoral fellows, medical/OD students, and residents*)
RESEARCH BUDGET

Funds cannot be used for major equipment, computers, software (may consider software specialized to the research), indirect costs, institutional administrative fees, salaries, manuscript preparation, publication costs, phone usage or travel.

- Maximum Allowable Budget: $5,000
- Maximum Allowable Budget for studies addressing Age-Related Macular Degeneration: $10,000
- **OCT costs up to $40 per subject are allowed if not covered by a third party insurer or part of standard care**
- Costs for statistical services up to $1,000 are allowed
- Costs for scientific poster allowance or ARVO dues up to $150 are allowed

<table>
<thead>
<tr>
<th>BUDGET CATEGORY</th>
<th>BUDGETED COST</th>
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<tbody>
<tr>
<td>(Provide in detail - “Supplies,” “Misc.” or “Other” will not be considered)</td>
<td>(Round numbers)</td>
</tr>
<tr>
<td>General plasticware (pipette tips, microfuge tubes)</td>
<td>$500.00</td>
</tr>
<tr>
<td>Tissue culture reagents (media, FB serum, antibiotics)</td>
<td>$1,000.00</td>
</tr>
<tr>
<td>Selective TRP inhibitors</td>
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<tr>
<td>Reagents for Western immunoblotting</td>
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<tr>
<td>TGF and ELISA kits for quantification of ET-1 secretion</td>
<td>$1,500.00</td>
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<tr>
<td>Primers and SYBR Green for analyzing expression</td>
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<td>$150 scientific poster allowance and ARVO dues (optional)</td>
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<td>TOTAL</td>
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(Note: A financial report from the accounting department of the institution will be required along with the final narrative report.)

**Budget Narrative (Provide detail and justification for budgeted items.)**

General plasticware such as tissue culture dishes, microcentrifuge tubes, pipet tips are necessary consumables for each of the proposed experiments. Tissue culture reagents (media, FBS, antibiotics) are purchased for cell culture of primary GTM3 neurons. Western immunoblotting reagents (primary and secondary antibodies, SDS-PAGE gels, transfer paper, nitrocellulose membranes, inorganic chemicals for buffers, Blotto) are required to complete the analysis of CTGF secretion. The TGF-β2 and ET-1 ELISA kits are required to quantify the content of active and total TGF-β2 and mature ET-1 peptide secreted by GTM3 cells. No major equipment purchases are required for the successful completion of the proposed pilot study.