



Glaucoma Research  
Society of Canada

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# 2011 RESEARCH GRANT PROJECTS

## **Comparative Evaluation of Anterior Segment Imaging Devices in Measuring Various Anterior Segments Angle-Related Parameters**

One of the ways to improve glaucoma detection is by using anterior segment imaging (ASI) devices. These devices take pictures of the front part of the eye and can help clinicians determine the underlying mechanism for the development of glaucoma.

Currently, there are many commercially available ASI devices. The purpose of our study is to compare 5 different ASI devices in order to assess their agreement. This is important because the results of this study may affect clinical decision-making in diagnosing and managing patients with glaucoma in the future.

– *Brian John Chan, Dr. Ike Ahmed, Dr. Mahmoud Rateb, Dr. Nir Shoham, University of Toronto, Toronto, Ontario*

## **The Impact of Glaucoma on Social Role Participation**

Few existing studies have examined how glaucoma impacts the broader home and social life roles such as community involvement, leisure pursuits, close relationships and employment.

This study will compare patterns of home and social life roles among individuals with mild, moderate and severe glaucoma, and assess how personal and environmental factors combine with vision problems to impact participation in social roles.

We will interview 150 individuals with glaucoma, 50 each with mild, moderate or severe visual field loss. Questions asked will include participant's visual function, daily activity limitations, and participation in major home and social life roles.

This study, the first of its kind to examine social participation among people with glaucoma incorporating biological, environmental and personal factors, will potentially make Canada an international leader in this area. Results from this study will help us design interventional programs that enhance the capacity of people with glaucoma to fully participate in all aspects of life.

– *Dr. Yaping Jin, Dr. Elizabeth Badley, Dr. Monique Gignac, University of Toronto, Toronto, Ontario*

## **Measurement of Intraocular Pressure (IOP) from the Scleral Surface: A Proof-of-Concept Study for a Continuous 24-Hour Monitoring IOP Device**

Lowering IOP remains the only way to manage and help stop the progression of glaucoma. But IOP is not constant, changing throughout a 24-hour period. This means that diurnal changes in IOP, particularly during sleep, are not accurately evaluated during regular office hours.

Developing a continuous IOP monitoring device would help improve glaucoma management. In this study, we plan to demonstrate the efficacy of using a strain gauge placed on the sclera, the white part of the eye, to continuously monitor changes in IOP over 24-hours. Using an animal model, we will determine whether we can measure deformation in a strain gauge in response to changes in IOP that are manually controlled.

To date, we have been able to measure IOP directly and indirectly, and measure strain with an increase and decrease in IOP. Further experiments will establish the efficacy and bio-safety of selected materials that will adhere the strain gauge to the sclera. Such a device has the potential to significantly impact the diagnosis and management of glaucoma.

– *Aphrodite Dracopoulos, Dr. John G. Flanagan, Toronto Western Hospital, Toronto, Ontario*

## **Are Rapid Eye Movement Saccades Affected in Glaucoma?**

Vision loss in glaucoma is due to nerve cell degeneration affecting the eye and its connections to vision centres of the brain. Some of these nerve cells connect to eye movement centres. While we know the ability to see colour and form are affected in glaucoma, the impact of glaucoma on eye movements is unknown.

Eye movements that quickly scan a visual scene are critical to many activities of daily life. This study will evaluate for the first time in detail, whether eye movements are affected in patients with glaucoma.

Exploring eye movement pathways is critical to understanding vision loss, and information gained may stimulate new management and treatment paradigms to help patients with glaucoma.

– *Dr. Neeru Gupta, Dr. Yeni Yücel, St. Michael's Hospital, Toronto, Ontario*