

# A Sight for Old Eyes: Front-line Research of Age-Related Macular Degeneration

Jonathan Chi<sup>a</sup>, Jay C.C. Wang, BHSc (Hons)<sup>b</sup>, Timothy Ratzlaff<sup>b</sup>

<sup>a</sup>Vancouver Fraser Medical Program 2013, UBC Faculty of Medicine, Vancouver, BC

<sup>b</sup>Vancouver Fraser Medical Program 2014, UBC Faculty of Medicine, Vancouver, BC

Age-related macular degeneration (AMD), a degenerative disease of the central retina associated with aging, is the leading cause of blindness in the elderly of North America.<sup>1</sup> The majority of patients have the “dry” form of AMD, presenting with varying degrees of central vision loss, and can progress to the “wet” form where neovasculatures generate in the retina.<sup>2</sup> These fragile vessels leak blood and fluid, displacing the macula from its natural position, causing damage, rapid vision loss, and perceived image distortions.<sup>2</sup>

We spoke with two experts in the field of AMD—Dr. David Maberley, a Vancouver ophthalmologist sub-specializing in the retina and vitreous humour, and Dr. Joanne Matsubara, a researcher at the UBC Eye Care Centre investigating connections between amyloid- $\beta$ , a pro-inflammatory peptide, and AMD pathogenesis.

Dr. Maberley is the founder and director for the Canadian Retinal Trials Group, a national clinical trials group conducting multi-centred randomized control trials. Concerning AMD, Dr. Maberley has led trials examining the roles of intraocular steroids in the context of Visudyne laser treatment of AMD and of intravitreal injections of anti-vascular endothelial growth factor (VEGF) therapy with or without steroids for AMD.<sup>3</sup> Looking to the future, Dr. Maberley foresees much potential for AMD-related research, explaining that there are effective treatments for the wet form of AMD but not so for the dry form. As such, further investigations need to be conducted on the latter.

As for wet AMD, Dr. Maberley believes the first step to increasing therapeutic efficiency would be to develop devices or medications with a more sustained release profile, thus decreasing patients’ total number of administrations and time spent in treatment. Furthermore, he commented that it would be worthwhile to examine other neovascularisation triggers of wet AMD, such as tumour necrosis factor (TNF), as well as other upstream mediators, such as complement factors, to uncover targets for early intervention.

Also along the frontlines of AMD research is Dr. Joanne Matsubara, working in her laboratory to further understand the pathophysiology of this disease. Specifically, she described, “We are studying how amyloid- $\beta$ , recently discovered to be a constituent of drusen [accumulations of ocular extracellular material], may



*In this photo:* Dr. David Maberley

affect cells in the outer retina.” Regarding the aetiology and potential therapeutic targets, Dr. Matsubara commented,

Our studies show that amyloid- $\beta$  oligomers cause the RPE [retinal pigment epithelium] cells to up-regulate pro-inflammatory cytokines such as IL-1 $\beta$  and IL-8. We know that low levels of these cytokines can trigger apoptotic cascades in neurons, and specifically at risk are the photoreceptor cells that sit adjacent to the RPE.<sup>4</sup>

In addition to the use of monoclonal antibodies against angiogenesis in AMD, cytokine inhibition and neuroprotection are being explored as other methods of remedy.<sup>5</sup> She concluded that the clinical application of her findings could potentially include anti-amyloid- $\beta$  drugs, or blocking pro-inflammatory cytokine secretion in the retina, leading to a resultant reduction in photoreceptor apoptosis.

We are thankful for the work of Dr. Matsubara and Dr. Maberley and hope to see more exciting findings about the aetiology and treatment for AMD in the near future. 🙌

## Correspondence

Tim Ratzlaff, timratz@interchange.ubc.ca

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## Playing for Fitness – Helping Seniors Stay Active

Ranita H. Manocha, BA<sup>a</sup>

<sup>a</sup>Vancouver Fraser Medical Program 2012, UBC Faculty of Medicine, Vancouver, BC

This past December, Gladys Burrill of the United States of America completed the Honolulu Marathon in nine hours and 53 minutes. Through exercising into her senior years, 92-year-old Burrill cemented herself in history as the oldest female to ever complete a marathon.<sup>1</sup> She also lowered her risk of osteoporosis, cognitive impairment, and cardiovascular disease,<sup>2</sup> conditions that affect longevity and independence. What can be done to encourage other seniors to stay active?

Jennifer Slater works as the Recreation Coordinator at Terraces on 7th, an independent and assisted living facility for seniors in Vancouver’s South Granville area. Slater coordinates a variety of events to encourage the facility’s residents to stay active. Twice per week, she leads an hour-long group fitness class where residents develop their strength, endurance, and balance



*In this photo:* Jennifer Slater (right), Recreation Coordinator at Terraces on 7th, created a “Fitness Stars” program to encourage participation in physical activity. Residents received a star for each program they attended. Claire Alderberg (left) achieved a Fitness Star award in March 2011.

### Correspondence

Ranita H. Manocha, [rmanocha@alumni.uwo.ca](mailto:rmanocha@alumni.uwo.ca)



*In this photo:* Irene Denny won the “curling” game during the “Terraces Olympics”.

in order to prevent falls and improve mobility. When working with seniors, Slater notes that it is important to modify exercises to suit an individual’s functional abilities. She also encourages residents to “work at their own pace and not to look around but to look at themselves” as they participate in her classes, noting improvements in their personal skills over time.

Other successful programs at Terraces include Tai Chi classes, personal trainer sessions, a walking program, and gardening sessions. One of the biggest hits with the residents, however, is the Wii™, a video-gaming system. This device allows residents to physically mimic bowling, boxing, golf, cycling, kayaking, and tennis with a handheld controller. This is especially beneficial for residents who cannot participate in