The Singapore Eye Research Institute, SERI, was delighted and proud to host the Asia-ARVO meeting for the second time. The meeting held from 20th to 23rd January 2011 at Resort World Convention Center, Singapore was a continuation of a pioneering history, initiated by SERI in 2003, this meeting series, when it was called the SERI-ARVO meeting. The meeting this year welcomed over 1100 attendees from 28 countries. For many, it was the opportunity to meet old friends and get insights into diseases of the eye and new therapeutic approaches. The presence of many international companies in ophthalmology such as Allergan, Alcon, Novartis, and Bausch and Lomb as well as many others along with their scientific development staffs stressed the fact that this was the place to bring together those involved in the problems such as advancing our understanding of a broad range of topics in areas of eye disease from myopia (short-sightedness), diseases of the retina, how to improve refractive surgery and infections of the eye, which is always of concern in SE Asia. These companies represented the two fascinating aspects of ophthalmology, drug and device developments which are active areas of clinical need. This meeting also had special symposia sponsored by other eye research organizations around the world: EVER, the European Association of Vision and Eye Research, a similar focused groups from Australia called ORIA (Ophthalmic Research Institute of Australia) and CERA (Center for Eye Research in Australia). And, of course, it was appreciated that the US ARVO was keen to sponsor a symposium on various topics in eye research.

Diseases of aging are very important as society notices the increased percentage of older population and the need to provide the retired an active and rewarding life. Clearly, eye diseases represent diseases of aging as virtually all the important eye disease such as age related macular degeneration, diabetic retinopathy, glaucoma, dry eye and cataract are found typically in people over 40 and these diseases progress with age. The various symposia forming the Asia-ARVO meeting covered these topics in great detail.

The animated conversations added to the already excited atmosphere as people walked from symposium to symposium. The plenary sessions covered important issues such as vascular imaging of the retina (Tien Yen Wong, SERI, NUHS, Singapore) and the damage to the optic nerve from glaucoma (Claude Burgoyne, University of Oregon, USA) and immune protection of the surface of the eye (Shigery Kinoshita, Kyoto University, Japan). Although, the topics were numerous and included two sessions on molecular genetics of eye disease with participants discussing current topics such as retinitis pigmentosa (Shoim Bhattacharya, UCL, London), corneal dystrophies (Gordon Klintworth, Duke, USA), genetic influences as glaucoma risk factors (Eranga Vithana, SERI, Singapore). Dry eye, a major clinical problem in Asia where the prevalence is 4-6 times greater than in the west, saw the presentation regarding meibomian gland disease as an unrecognized factor in dry eye disease (Louis Tong, SERI, Singapore) and Michael Stern (Allergan, USA) brought up the issue of regulatory immune cells in dry eye, a very
interesting idea from Kazuo Tsubota (Tokyo University, Japan) that relates to decreasing the progression of aging in the eye by diet. Special symposia sponsored separately by Allergan and Alcon took up the topics of the clinical management of dry eye by well-known experts from Singapore (Donald Tan, SNEC and SERI), the US (Steven Wilson), and France (Christophe Baudouin).

Although many therapeutic strategies and mechanisms of disease were symposium topics, the development of regenerative medicine revealed critical developments. We were delighted to have Alan Colman (A-Star, Singapore) talk about pluripotent stem cells and disease modeling and the important clinical topic of long-term outcome of limbal stem cell transplants was discussed by Virender Sangwan (India). This regenerative focus was carried over to a program, “Bionic Eye Symposium-The Diseased Retina: Replace or Regenerate” which represented the two major themes under development in retinal disease. The group led by Pete Coffey (University College London, England) has a clinical trial underway to transplant the damaged retinal pigment epithelium with cultured stem cells. Films of these patients’ activities in a controlled environment after the transplant were incredible as visual acuity had returned to them. However, there are a number of places around the world developing retinal imaging implants, these of course make use of nanotechnology. Two groups presented their work in this area. Mark Blumenkranz from Standford Medical Center (USA), showed the incredible engineering work and the early stage retinal implantation results. Also, Michael Ibbotson (Australia) presented similar results using a differently engineered technique. Clearly, these are of course very experimental and not in practice. However, the research about replacing the very sensitive neural retina to restore vision to millions of patients was exciting to all.

Glaucoma was also a major focus of the meeting as the number of glaucoma patients increases steadily around the world as the population ages and of course in Asia there is more closed angle glaucoma than in the west. All aspects of glaucoma were presented. At a Zeiss sponsored symposium, chaired by Tin Aung (SERI, Singapore also meeting co-organizer) and Jod Mehta (SERI and SNEC, Singapore), presented data from using optical coherence tomography for the anterior segment. However, patient compliance is nowhere a bigger issue than in the management of glaucoma and Tina Wong (SERI and SNEC) presented the results of studies she is carrying out on drug delivery systems with polymer chemists from NTU which suggested that maybe eye drops would not be necessary in the future with new methods to prolong drug bioavailability. The level as to which explanations for disease need to be sought was the subject of Jonathan Crowston (Australia) as he discussed dysfunction in the mitochondria as contributing to the pathology of glaucoma. Infections of the eye are of major concern in SE Asia. The wonderful climate is a greenhouse for infectious organisms and indeed many millions develop “corneal blindness” as a result of infections. The concern for contact lens wear was highlighted by the Asia Pacific Contact Lens Association of Ophthalmologists and sponsored by Menicon. The concern for the inflammatory aspects of infections was also taken by Chee Soon Phaik (SNEC, Singapore), James Chodosh (USA) and Michelle Callegan (University of Oklahoma, USA) and Jerry Neiderkorn (University of Texas, USA).

Myopia or “shortsightedness” as it is often called is a topic that affects many millions of children in Asia where myopia is at epidemic numbers. Myopia was taken up at all levels from genetics (Calvin Pang, CUHK, Hong Kong; Ming Guang HE, Guandong, China; and Saw Seang Mei, NUHS, Singapore). However, A. Barathi and Neville McBrien discussed new pharmacological targets for myopia therapy and a selective types of muscarinic blockers that would provide more insight into the mechanisms of action of pharmacological therapies.

SERI started this series of meetings which has now become institutionalized. In that, it has been formalized so it appears that the meeting format will have a long life. This meeting by all accounts of all the meetings in the past has been the best. SERI thanks the presenters for the enthusiasm and the outstanding quality of the presentations. The students and trainee abstracts were excellent. Also, we do appreciate the SERI staff lead by Ms. Kainnan for their terrific effort.

About the Author

Roger Beuerman is currently Senior Scientific Director of the Singapore Eye Research Institute, Professor of Neuroscience and Behavioral Disorders at DUKE-NUS School of Medicine and Adjunct Professor of Ophthalmology, Yong Loo Lin, School of Medicine at the National University of Singapore, Adjunct Professor of Chemical and Biomedical Engineering at Nanyang Technological University and Senior Scientist at the Bioinformatics Institute.

He has more than 20 years of experience in ophthalmology. Proteomic biomarkers of eye disease and development of new antimicrobial peptides are his major areas of interest. He has worked to develop methods for analyzing the microliter volumes of tears from the eye as a diagnostic source and looks to develop population based studies in proteomics. Roger has edited three texts in ophthalmology including one on dry eye disease. He is an ARVO Fellow, a Fellow of the Alcon Research institute, and the Paolo Foundation in Helsinki, Finland. In 2009, he was the recipient of the President’s (Singapore) First Science and Technology Award. Overall, he has more than 220 publications, and is a part of several editorial boards and grant award committees in Singapore and abroad.