

Guest Editorial

Dr. Gyan Prakash



Asian Eye Genetics Consortium (AEGC)

Many eye researchers from India have contributed to our current understanding of biology of eye diseases. Many Indian laboratories are involved in eye research, training of clinical and research fellows and research collaborations with numerous foreign laboratories in the US, Europe, Japan, Australia and the other countries. The common goal is to understand the cause of blindness and find better opportunities to treat the eye diseases. The Government of India - Department of

Biotechnology working with other government organizations, such as the US National Institutes of Health – National Eye Institute (NEI) has been instrumental in supporting several of the international research collaborations. In addition, several private research partnerships have been created recently to create new opportunities for genetic eye research.

Dr. Takeshi Iwata



Significant advancement in DNA sequencing and data exchange capabilities have helped in starting a new era in the field of eye genetics. Over a decade of genetic eye research has provided information on genetic variations involved in eye diseases. The genetic involvements are highly penetrant as in Mendelian eye diseases or present as risk factors in common eye diseases. In both the cases, genome sequences are traced within family and compared with many genome sequences collected around the world. The current literature now mostly contains information from patients of European decent and information on other ethnic groups are very limited due to the limited research and availability of research data outside the US and Europe. In 2014, the Asian Eye Genetics Consortium (AEGC) was established to focus on eye research in Asia, the most populated region of the world where very little has been explored for genetic eye diseases. The consortium has brought together many eye researchers interested in collaborative international eye research on the patients of Asian region.

The signing of an international research collaboration between the National Eye Institute (NEI) and Tokyo Medical Center (TMC) – National Institute of Sensory Organs (NISO) in April, 2014 led the discussion on establishing a consortium for collaborative research, training and data sharing. In 2014, NISO developed a Japan Genetic Consortium for Hereditary Retinal Disease. The initial consortium was established to originally perform whole exome analysis on Japanese patients with inherited retinal diseases to identify disease causing mutations. The initial study resulted with 85% of affected families with novel mutations leading to the hypothesis that unidentified mutations are dominant in Japanese population with inherited retinal diseases and this may also be true for other Asian population. The research collaborations with several eye institutions in the Asian region, including India that have the facility and research interests in studying eye genetics in the patients with rare eye diseases have become the core focus of the consortium. The NEI collaboration with TMC-NISO along with utilizing the already established ties with other Asian countries, resulted in the formal launch of the Asian Eye Genetics Consortium (AEGC) at the annual ARVO meeting in Orlando in May, 2014. The aim of the AEGC is to explore eye genetics in the Asian population. Approximately one hundred and fifty eye researchers from more than twenty countries have become the AEGC members and are currently interacting and collaborating to develop programs to share, catalogue and collaboratively work to identify the genetic aspect of eye diseases in the Asian countries. AEGC has the following goals and plans:

1. *Share genetic information in the Asian population to rapidly isolate common disease-associated variants*
2. *Establish system for accurate diagnosis and grouping of Asian eye diseases*

3. *Establish system for cost effective genetic analysis*
4. *Develop a research-oriented database to collect, diagnose and catalog eye diseases in Asia*
5. *Support and foster collaboration among the Asian countries for the advancement of research that will provide genetic information in the Asian population*
6. *Collaborate with other international or regional organizations with similar goals*
7. *Organize and hold regional congresses and other educational and scientific activities to promote goals of the consortium*

In February 2015, India became the first country to develop an AEGC local country chapter. The Indian chapter was launched at the meeting of All India Ophthalmological Society (AIOS) in New Delhi, India in 2015. Several local and international research leaders joined hands to organize the AEGC programs in India and the neighboring Asian countries in New Delhi in 2015. Later in 2015, there were AEGC sessions planned at Asia-ARVO in Yokohama, Japan in February, 2015, and the first AEGC database discussion meeting was held at the TMC in Tokyo. In the last three years, several representatives from the following countries have come on board to actively participate in the AEGC programs: US, Japan, India, Sri Lanka, Australia, China, S. Korea, Thailand, Singapore, Malaysia, Indonesia, UAE, Turkey, Bangladesh, Taiwan. In addition, the data sharing is being planned by constructing a common database for AEGC to pool genetic - phenotypic information.

The main goal of the AEGC is to support the global aspect for genetic eye research and accelerating the growth of international research collaborations in eye diseases. The Asian region is currently experiencing a strong growth in vision research programs and is expected to play a significant role in developing scientific programs in the coming decade. A concerted global effort like AEGC has the potential to accelerate the collaborative genetic eye research in generating useful new scientific data. The AEGC will seek to uncover new scientific opportunities and identify shared priorities to create unique international collaborations in genetic eye research. The AEGC has an opportunity to help in establishing such partnerships among scientists, governments, companies, and non - government organizations to support research programs for human health and understanding of the biology of eye diseases. The consortium has brought a collective thinking from the researchers around the world who have interest in genetic eye research in the Asian region. The guest editorial seeks to invite new ideas from all the readers that will support the expansion of genetic eye research in the Asian region and around the world.

References

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Gyan Prakash Ph.D., MBA
NATIONAL EYE INSTITUTE,
NATIONAL INSTITUTES OF HEALTH
BETHESDA, MD, USA

Takeshi Iwata Ph.D.
NATIONAL INSTITUTE OF SENSORY ORGANS
NATIONAL HOSPITAL ORGANIZATION TOKYO MEDICAL CENTER
TOKYO, JAPAN



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