

Hyderabad Eye Research Foundation

Photograph of the Applicant



- Mention the category of the Fellowship for which the nomination is being submitted: **Research fellowship in Basic Science**
- Name of the Applicant: **Dr Inderjeet Kaur**
- Date of birth: 19/05/1973
- Citizenship: Indian
- Designation and complete Office & Residence Address with Tel., Mobile No. & e-mail address of the applicant.

Designation: Research Scientist

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Khwajaguda, Manikonda,
Hyderabad 500089, Telangana

- Name of the Nominator: **Professor Dorairajan Balasubramanian**
- Designation and complete Office Address with Tel., Mobile No. & e-mail address of the nominator.

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- Signed Justification for sponsoring the nomination (not to exceed 400 words) by the nominator.

I have known Inderjeet Kaur since she joined our Institute about 20 years ago. Her research is primarily focused on determining the functional genomic underpinnings in inherited and complex ocular diseases using various multi-OMICS approaches. Her major contributions have largely been on deciphering the underlying molecular mechanisms in retinopathy of prematurity (ROP), age related macular degeneration (AMD) and diabetic retinopathy (DR) that constitute major blinding diseases worldwide. These investigations have advanced our understandings of neovascularization, neuroinflammation and neurodegeneration in the retina under disease stress, particularly hypoxia. All her research works have an overarching goal of translation from bench to bedside. Her research in ROP led to the identification of the genetic components, which revealed a novel role of microglia mediated complement activation and inflammation in disease pathogenesis. Her group demonstrated that MMP 9 and complement component C3 in tears could serve as potential biomarkers in disease progression. She has been able to translate this novel finding into development of a nanosensor based detection system in collaboration with IITH for measuring inflammatory markers in tear to aid the clinical diagnosis and predictive testing for ROP among preterm born infants (IPR filed). She has also been exploring the role of microglia in modulating immune response to prevent the progression of AMD and ROP (since these diseases are characterized by abnormal blood vessel growth in the retina). Based on the leads from this research, she is developing a unique dual drug delivery system for targeting inflammation and abnormal neovascularization in these conditions which is expected to be more efficacious and reduce the number of anti-VEGF injection required otherwise in these patients to stop the progression of these neovascular diseases. Using global metabolomics and transcriptomic analysis of the vitreous, retina and placenta of ROP patients, she could delineate the role of lipid metabolism in retinal neovascularization. Her publications have an H Index of 27. She is recipient of BM Birla Science Medal, DBT Crest Award and by the International ROP Society and ARVO. She is currently the Associate Editor of Journal of Genetics and secretary of the Indian Society of Human Genetics. She has trained over 50 research professionals in human genetics and has guided 11 students for PhD. Her dedicated research efforts are aimed at reducing the burden of blindness caused by retinal neurodegeneration among the most vulnerable cohorts (preterm infants and elders). I am thus pleased to nominate Inderjeet.



Prof. D. Balasubramanian, FNA, FTWAS, FASc, FNAsc

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