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| Project Reference | T3/70 |
| Project Title | **Exploring the Genetic Basis of Sight Threatening Disorders Using Genome-Wide Association Studies and Functional Analyses** |
| Theme(s) | Theme 3: Genetically informed causal inference and risk prediction |
| Supervisors | **Dr Mervyn Thomas (University of Leicester)** [**mt350@leicester.ac.uk**](mailto:mt350@leicester.ac.uk)  Dr Catherine John (University of Leicester) |
| Department | Psychology and Vision Sciences |
| Project Summary | Eye disorders are common and can impact every aspect of life. Some can threaten an individual’s sight or even their life.  Studying genetic variation which influences the development of the eye can help shed light on the underlying biological mechanisms, leading to a better understanding of who is at risk and how we could treat and prevent disease in future. With large new datasets, there is an opportunity for new discoveries.  We will use ground-breaking machine learning approaches to define conditions related to eye development from multimodal imaging datasets. This will then enable larger, more powerful studies (genome-wide association studies) of the genetics of the eye.  In this project, you will use a range of exciting and novel datasets and analytical approaches and develop skills spanning multiple fields. As well as undertaking genetic association analyses and prospects for refining machine learning derived phenotypes, you will have opportunities to use bioinformatic approaches to better understand the findings and how they relate to genes and biological pathways. Based on students’ interest, functional validation experiments can also be undertaken.  You will be supported by supervisors with expertise in both the methods and datasets which underpin this project. |