Current Research Topics

- Elucidation of the genetic basis of and identification of new genes for inherited ocular disorders with emphasis on hereditary retinal dystrophies and optic neuropathies
- The molecular basis of color vision and color vision deficiencies
- Functional analysis of mutant gene products, notably the cone CNG channel and the retinal phosphodiesterase by means of biochemical and cell biology methods and the development of bioassays to evaluate pharmaco-therapeutic approaches
- Characterization of the pathophysiological processes of degenerative retinal diseases and retinal mitocondriopathies at the cellular and system level
- Generation and characterization of animal models and reporter systems (mouse and zebrafish) for retinal degenerative diseases
- The quantitative genetics of retinal gene expression

Contact

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How to find us:

Current Projects:
- Blue Cone Monochromacy
- DFG Trilateral - Genetic disorders in Arab societies of Israel and the Palestinian Authority
- ERMION - European Research Project on Mendelian Inherited Optic Neuropathies
- EyeTN - a Marie Curie Initial Training Network
- HOPE2 - Hereditary Retinal Disorders: From Patients towards Therapies
- IonNeurONet - German Network of Neurological and Ophthalmological Ion Channel Disorders
- Pharmacogenomics in Glaucoma

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A large proportion of ocular conditions and ocular diseases in humans is governed or at least strongly influenced by genetic factors. In fact, the eye is amongst the organs that are most commonly afflicted by inherited disease. Our mission is “To uncover the genetic basis of inherited ocular disorders and to explain its clinical appearance and characteristics by constructing gene-to-function relationship at the molecular, cellular and physiological level”.

The Molecular Genetics Laboratory (MGL) at the Institute for Ophthalmic Research has been founded as early as 1991. One year later a biobank and patient database has been established, and we have collected DNA and files of patients and family members with inherited ocular diseases, with a strong focus on inherited retinal disorders, hereditary optic neuropathy and familial glaucoma.

Today the biobank holds more than 23,000 DNA samples of >4000 families with inherited retinal dystrophies, >630 families with autosomal dominant or sporadic optic atrophy, >1150 families with Lebers hereditary optic neuropathy and >1100 families with hereditary glaucoma.

Important Publications