1. **RESEARCH INTERESTS**

During the years I had several fields of interest, all to improve knowledge and to possibly translational to develop treatment for patients.

1. Ocular and brain tumors involving visual pathway, molecular analysis, translational research of grading, prognosis and early detection of spread. Ocular and brain tumors have recently received increasing interest, as molecular changes were found to clarify the development of and a possible target for treatment. BRAF mutations and copy number variation, as well as GNAQ mutations, were studied in uveal and conjunctival melanomas and also in pediatric low grade gliomas.
2. Pathophysiology of ocular diseases, especially focusing on optic neuropathy. I have developed a mouse model of anterios ischemic optic neuropathy (AION) and characterized the model, focusing on neuroprotection and stem cell therapy. We further investigated the model of optic nerve crush (ONC) and central retinal artery occlusion (CRAO). Recently we study diabetic retinoapty in a mouse model. For both models we examine therapeutic modalities:

2a. Stem cells therapy

Including differentiation of bone marrow derived stem cells in injured retinae, improved mobilization, enhanced engraftment, examin incorporation in developing retinae of neonates.

2b. Neuroprotection:

Hyperbaric oxygen chamber for the models of ischemic optic neuropathy, optic nerve crush and central artery occlusion in mice, bevacizmab and sildenafil (Viagra) injection in mouse model of stroke and ONC, brimonidine eye drops, models of TLR4 knock out or TNF alpha knock out mice.

1. Nanotechnology in diagnosis and treatment of diseases.
2. Clinical research in the field of Pediatric Neuro-Ophthalmology, such as optic pathway gliomas, malignant tumors of the optic nerve, other tumors in children involving the visual pathway and eye movement (crniopharyngioma, medulloblastoma), nystagmus, pseudotumor cerebri, irreversible and reversible (PRES) visual loss.
3. PI of international studies in the pediatric ophthalmology field (VEKTIS) and currently for Neuro-Ophthalmological studies (QUARK) and all fields in ophthalmology (AMD, BVO, ect)