Cone functional loss is the key event leading to blindness in rod-cone dystrophies. Dr. Sahel & colleagues embarked on a "fishing expedition" aimed at identifying the mechanisms underlying this loss as potential clues for therapies aiming at preserving/restoring light-adapted and central vision in these patients. With collaborators Thierry Leveillard and Saddek Mohand-Said, Dr. Sahel discovered Rod-derived Cone Viability Factor, identified its receptor, and demonstrated its potential therapeutic benefit in several animal models – paving the way to upcoming clinical trials. This strategy is now being extended in efforts to restore cone or inner retinal function by optogenetics. In-depth phenotyping will guide the selection of target populations of patients that might benefit from these strategies, while demonstration of therapeutic value will require the development of novel, real life, functional outcome measurements.