**Fundus Autofluorescence**

“The assessment of fundus autofluorescence is an adjunct to standard fundus imaging tools, as it can show the metabolic state of the RPE which other methods (e.g. FA or OCT) cannot. We found it very useful in patients with retinal dystrophies and other pathologies involving the RPE. FAF may play a crucial role in the follow-up of chloroquine patients, in the analysis of DME or even neovascular AMD cases in order to reveal how the therapy should be managed, and, in general, any conditions with the retina being involved. Most interestingly, FAF opens an alternative window on the pathophysiology of the retina which may bring fascinating changes to the diagnostics and treatment of retinal diseases.”

**Gábor Márk Somfai, MD, PhD, Junior Lecturer, Department of Ophthalmology, Faculty of Medicine, Semmelweis University.**

**Normal FAF**
Normal fundus autofluorescence of a 3-year-old female subject, visual acuity is 20/20. Note the dark appearance of the optic nerve head and the vessels which do not contain lipofuscin. The macular area is slightly hyperfluorescent due to its lipofuscin content.

**Diabetic retinopathy**
This 35-year-old male has Type 1 diabetes mellitus with severe non-proliferative diabetic retinopathy and severe macular edema. Despite this, he has a preserved visual acuity of 20/20. The areas without edema are not visible on the FAF image, whereas the hemorrhages are clearly distinguishable due to their blocking effect. The choroidal neovascular and the temporal inferior arcade is barely visible on the autofluorescence image.

**Age-related macular degeneration 1**
Female, 78 years old, geographic atrophy of the left eye, visual acuity is 20/40. Note the dark area in the macula corresponding to the atrophy with a small preserved island of normal fluorescence in the fovea, explaining the markedly good VA.

**Age-related macular degeneration 2**
73-year-old female with geographic atrophy and CNV in the right eye. Visual acuity is 20/40. The chorioretinal atrophies are clearly visible on the FAF image, whereas the hyperfluorescence in the macular area is indicative of a functional RPE (hence the good VA) which is also a good prognosis for intravitreal and iVVA therapy.

**Stargardt’s disease**
Left eye of a 25-year-old female patient with Stargardt’s disease, visual acuity is 20/100. Note the dark area in the macula corresponding to the atrophy with a small preserved island of normal fluorescence in the fovea, explaining the markedly good VA.

**Advanced cone-rod dystrophy**
35-year-old female with confirmed dystrophy, visual acuity is 1mcf. The FAF image shows the excessive loss of RPE cells in the macula, which is compared with the color fundus image. The surrounding patchy hyperfluorescence is indicative of rod photoreceptor loss which is seen overlaid on the color fundus image.

**Chloroquine maculopathy**
This 55-year-old female patient has been taking chloroquine for 14 years due to systemic lupus, which has been stopped 4 years ago due to the worsening of her vision in both eyes. Her visual acuity is this eye is 20/20 which can be explained by the excessive RPE cell death in the dark, hypofluorescent central area of the macula. Note the bright, hyperfluorescent ring around the area of macular atrophy.

**Acute Central Serous Chorioretinopathy**
This 35-year-old male subject has acute CSC in the right eye, with a visual acuity of 20/32 with an onset of symptoms 3 weeks ago and subretinal fluid on OCT. The affected area is showing hyperfluorescence which could be a sign of arterial reperfusion of the RPE.

**Chronic central serous chorioretinopathy after laser photoagulation**
16-year-old male with chronic CSC in the right eye. This image was taken 8 weeks after laser photoagulation at the site of fluorescein leakage seen on FA. Subretinal fluid resolved on OCT, VA improved from 20/100 to 20/25, however, a well-demarcated area of increased autofluorescence remained in the macula. The site of laser therapy is hyperfluorescent in the upper temporal edge of the macula due to the RPE damage.

**Best’s disease**
The right eye of a 45-year-old female with Best’s disease. Visual acuity is 20/20, the photoreceptor interphotoreceptor segment has a stain on OCT which shows the preservation of photoreceptors in the macula. At the same time the alterations of the RPE are evident, the central area of relatively preserved fluorescence being surrounded by a ring of dark hypofluorescent areas which indicate the death of RPE cells.

**Acute posterior multifocal placoid pigment epitheliopathy (AMPPHE)**
An 8 year old female with multifocal placoid pigment epitheliopathy in the left eye and visual acuity of 20/20. Note the white spots around the macula which are showing hyperfluorescence on FAF with minimal surrounding hyperfluorescent areas in some of the lesions. There are much more lesions visible on FAF compared to the color image. There was no activity in FA nor with OCT.

**We Speak Image**

[Image of fundus autofluorescence images with annotations and diagrams]