

PRESS RELEASE

MaxWell Biosystems Becomes a Key Partner in a €3M EU-Financed Project “HyVIS”: Next Generation Prosthesis for Visual Restoration



Hybrid Synapse for Vision (HyVIS) is a project funded by [European Union Horizon 2020 FET-OPEN program](#)¹, which aims to combine several technologies to achieve the groundbreaking restoration of synaptic light-mediated input in retinas with

impaired photoreceptors, leading to treatments for diseases such as in retinitis pigmentosa and age-related macular degeneration (AMD).

The key focus of HyVIS project is the [development of an artificial light-sensitive prosthesis, featuring a nano-sized neurotransmitter-releasing device to activate inner retinal neurons at very high spatial resolution](#). The HyVIS device targets to restore two key functions carried out by photoreceptors in the retina:

(1) visual transduction²

(2) transmission of information from photoreceptors to bipolar cells by functional artificial synapses.

The project, coordinated by [Istituto Italiano di Tecnologia – IIT \(Italy\)](#) and received €3 million EU funding, brings together some of the most important European research groups in the field from: [Eindhoven University of Technology \(Netherlands\)](#), [Institute of Molecular and Clinical Ophthalmology – IOB \(Switzerland\)](#), [Sorbonne Université \(France\)](#), [Universität Tübingen \(Germany\)](#), [MaxWell Biosystems \(Switzerland\)](#).

[MaxWell Biosystems](#)³ is an electronics-focused life-science company based in Zurich, Switzerland, developing and selling [high-content electrophysiology platforms](#) to support scientists in the pharmaceutical industry and in academia make their research more efficient. MaxWell Biosystems will be a key partner in the development of the HyVIS prosthesis by [providing expertise in hybrid neural systems, high-density microelectrode array technology, and the analysis of neuronal electrophysiological signals](#). MaxWell Biosystems will closely collaborate with project partners for in vitro testing of the HyVIS device in neuronal cell cultures as well as in retinal explants.



“Artificial subretinal implants represent an established technique aiming to restore vision by electrical stimulation of remaining neurons in the outer retina^{4,5}. The HyVIS project is focused on developing a next generation subretinal implant, enabling hybrid artificial synapse formation to restore visual transduction. MaxWell Biosystems’ HD-MEA technology will support the scientists in the HyVIS project, with focus on characterizing to what extent the HyVIS device can restore visual transduction and therefore convey electrical signals to the brain.”

Urs Frey, CEO & Co-founder at MaxWell Biosystems

References:

1. <https://cordis.europa.eu/project/id/964468>
2. <https://www.nature.com/articles/nrn1497>
3. <https://www.mxwbio.com>
4. <https://www.pixium-vision.com/prima-bionic-vision-system/>
5. <https://pubmed.ncbi.nlm.nih.gov/11834821/>

More info on the project:

<https://hybrid-vision.eu/>

Consortium:



Grant:



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About MaxWell Biosystems AG

MaxWell Biosystems AG provides high-content electrophysiology platforms that advance scientific discovery and accelerate drug discovery for neurodegenerative diseases. The company was founded in September 2016 as an ETH Zürich spin-off with its first product, MaxOne, a high-density microelectrode (HD-MEA) system used by academic and research laboratories to investigate the activity of cells in vitro at network, cellular, and subcellular levels. The launch of MaxTwo, a multi-well HD-MEA platform, increases the throughput of performing cell-based assays to 6- and 24-well plates catering to pharmaceutical and biotech companies, as well as contract research organizations. MaxWell Biosystems is a leading expert, both on the technology to develop hardware and software, as well as on the scientific applications of HD-MEAs.

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