

The brain processes for conscious visual perception and the technology that could restore it in blindness

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I will discuss the mechanisms that determine whether a weak visual stimulus will reach consciousness or not. If the stimulus is simple, early visual cortex acts as a relay station that sends the information to higher visual areas. If the stimulus arrives at a minimal strength, it will be stored in working memory. However, during more complex visual perceptions, which for example depend on the segregation of a figure from the background, early visual cortex' role goes beyond a simple relay. It acts as a cognitive blackboard and conscious perception depends on it. Our results also inspire new approaches to create a visual prosthesis for the blind, by creating a direct interface with the visual brain. I will discuss how high-channel-number interfaces with the visual brain can be used to restore a rudimentary form of vision in blind individuals.