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Sommario/riassunto

Cephalopods usually have large and mobile eyes with which they constantly scan their environment. The eyes of cephalopods are single-chamber eyes which show resemblance to vertebrate eyes. However there are marked differences such as the cephalopod eye having an everted retina instead of an inverted retina found in vertebrates. Their visual system allows the cephalopods, depending on species, to discriminate objects on the basis of their shapes or sizes, images from mirror images or to learn from the observation of others. The cephalopod visual system is also polarization sensitive and controls camouflage, an extraordinary ability almost exclusive to all cephalopods; they are capable of rapidly adapting their body coloration as well as altering their body shape to any background, in almost any condition and even during self-motion. Visual scene analysis ultimately leads to motor outputs that cause an appropriate change in skin coloration or texture by acting directly on chromatophores or papillae in the skin. Mirroring these numerous functions of the visual system, large parts of the cephalopod brain are devoted to the processing of visual information. This research topic focuses on current advances in the knowledge of cephalopod vision. It is designed to facilitate merging questions, approaches and data available through the work of different researchers working on different aspects of cephalopod vision. Thus the research topic creates mutual awareness, and facilitates the growth of a field of research with a long tradition - cephalopod vision, visual

perception and cognition as well as the mechanisms of camouflage. This research topic emerged from a workshop on "Vision in cephalopods" as part of the COST Action FA1301.