Why do human eyes look different from the eyes of other apes? Our eyes are unusually “wide and white”, with a distinctively elongated shape and a bright sclera (the white part of the human eye). But why did our eyes evolve this way? Researchers believe that the origins of our distinct white sclera are closely connected to the evolution of human exceptional communication and social cognition. Some theories suggest that our eye morphology evolved to make it easier to detect gaze direction and establish eye contact, which plays crucial roles in communication. However, these ideas are still largely speculative, and the adaptive significance of our eye appearance remains a puzzle.

That's where our project comes into play. We aim to investigate the evolutionary origins and significance of the coloration of the human eye. We seek to address several research questions and hypotheses related to human eye appearance, in particular, how the coloration of the eye influences conspicuity (how noticeable something is), and also the perception of trustworthiness and threat. Using photorealistic images of hominin faces – generated by AI, but carefully edited by human artists – we will explore five different eye patterns to determine which ones elicit different perceptions. By doing so, we will shed light on the competing explanations regarding the role of coloration and contrast in our eye appearance: is it the color itself that plays a role, or is it how noticeable the iris is against the background of the sclera.

Our project seeks to make two key contributions to the field. Firstly, we aim to provide empirical evidence that can help elucidate the mechanisms underlying the perceived trustworthiness, conspicuity and threat associated with patterns of eye coloration. Secondly, our project seeks to advance new methods in the study of human evolution, by pioneering the use of photorealistic, AI-generated hominin stimuli. This innovative approach enables us to manipulate specific features of eye appearance in a controlled experimental setting. By employing state-of-the-art technology, we can generate realistic stimuli that closely resemble ancestral human populations, bridging the gap between past and present.

The results of our research will have a significant impact on the understanding of human cognitive evolution, providing insights into the origins of communication, cooperation, and nonverbal signaling. Additionally, our findings may challenge existing theories. For example, an influential theory of gaze camouflage holds that the eyes of other apes evolved to be less conspicuous – to attract less attention and make it difficult to guess what the ape is looking at. But it may turn out that chimpanzee eyes are as conspicuous as those of humans.