**Talk Title** Cephalopod behavioral ecology as a comparative model for understanding visual communication

**Abstract:** In the course of evolution, humans cultivated the ability to communicate using various methods paralleling the development of sensory organs detecting a specific range of gestural, audio, visual, and tactile information. These communication methods have further refined into more complex and mediated languages that contain both connotative and denotative information that was necessary for speed, accuracy, and specificity of information transmission and exchange. Furthermore, in recent years, rapid progress in digital technology has begun to reshape the relationship between physical and mediated reality. The language is now constructed of the multi-layered logistical matrix that parallels the complexity of nature that is no longer consciously decipherable other than its facade. This indecipherable complexity of language brought the increasing necessity to relay again on the more direct relationship with the physical reality by fully utilizing immediate physiological sensation as cognitive stimuli that govern one's thought and action. In light of this current condition and transition, this study focuses on cephalopod’s behavioral ecology as a comparative model to investigate biological empiricism in a visual a language shared between cephalopod and human.

Coleoid cephalopod (octopus, squid, and cuttlefish), has developed its unique communication method derived from both environmental and biological factors that affected their gene expressions. Their ability to rapidly change their body pattern for crypsis to avoid predation has allowed them to expand this ability into a tool for inter and intraspecific communication. Cephalopod possesses a large brain relative to its body weight, complex nervous systems, and highly developed lens eyes. These physiological attributes enable them to control complex layers of neurally controlled cells (chromatophores and iridophores) in their skin to change their appearances. This unique ability of cephalopod to process external input into a visually detectable output allows quantitative analysis of not only the relationship between input and output but also allows the detection of their cognitive capability.

This talk is divided into 4 major parts. 1. The current state of cephalopod science and art, 2. Catalog of pharaoh cuttlefish, *Sepia pharaonis* body pattern and quantified analysis, 3. Comparative analysis of oval squid, Sepioteuthis lessoniana species complex’s body pattern development. 4. Comparison and application of cuttlefish body pattern in understanding art and design. With these four parts, the study will demonstrate the preliminary analysis of cephalopod body pattern as a comparative model to understand the fundamental principle of visual communication.