



University
of Victoria

GRADUATE COLLOQUIUM

DEPARTMENT OF ANTHROPOLOGY

The evolution of routine trichromacy & inter-individual differences in L:M cone ratios in catarrhine primates



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Monday, January 31st 2022

11:30 am – 12:50 pm

Online – via Zoom

Zoom meeting link and details on the website

www.uvic.ca/socialsciences/anthropology/research/colloquium/index.php

The evolution of routine trichromacy (the ability to distinguish red, green, and blue wavelengths of light) is considered to be a defining feature of catarrhine primates. It is thought to have major impacts on our evolution and survival as it provided us the ability to detect ripe fruits, new leaves, potential predators, and even receptive mates. Through a gene-duplication on the X-chromosome, catarrhine primates evolved both long wavelength (L; red) and medium wavelength (M; green) cone opsins, which remain strongly conserved in their wavelength sensitivities: 560nm and 530 nm, respectively. Although, the sensitivities are conserved across catarrhines, the ratio of expression between the L and M is highly variable between humans and other species, at 2:1 for humans and 1:1 for other species. Research has found functional differences of these ratios, with humans having improved acuity at the cost of color discrimination abilities. Interestingly, L:M ratios also vary between individuals, sometimes as high as a 30-fold difference, raising an important question: If cone ratios differences are functional between species, are such differences functional within species? To address this, I will briefly discuss what we know to date about L:M cone ratio variation and provide insight from my own study on a pedigreed population of macaques where I studied if cone ratio difference were heritable and varied by age or sex. Finally, I will discuss if cone ratio differences are functional and adaptive in catarrhines.

EVERYONE WELCOME

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