Deciphering dark and bright

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The human sensory systems contend with enormous diversity in the natural world. But it has been known for a long time the brain is adapted to exploit statistical regularities that nonetheless arise amongst this diversity. Research publishing this week in *PLOS Computational Biology* reports that established statistical distributions of visual features, such as visual contrast, spatial scale and depth, differ between dark and bright components of the natural world.

For scientists Emily Cooper and Anthony Norcia, gaining a more detailed description of statistical regularities in the natural world leads to a further understanding of how the nervous system has adapted to its environment.

Distinguishing between dark and bright visual features is a key computation of early visual pathways. However, the authors demonstrate that the dark and bright visual patterns driving cortical networks are asymmetric, producing predictable differences that may be exploited by the brain.

The authors expect that this dichotomy in dark and bright plays a key role in the generation of cortical and perceptual asymmetries.

"Our sensory systems are so tied to the demands of our environment that looking outwards to study world around us can often provide insights into what might be going on inside the brain," says Emily Cooper.

More information: Cooper EA, Norcia AM (2015) Predicting

Cortical Dark/Bright Asymmetries from Natural Image Statistics and Early Visual Transforms. *PLoS Comput Biol* 11(5): e1004268. DOI: 10.1371/journal.pcbi.1004268