Imaging Decision-Making: How the Brain Weights Different Sources of Information

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Decision making research has advanced dramatically in behavioral and systems neuroscience as well as economics. For more than a decade, many research programs have successfully studied this topic with various measures of neuronal activity at the systemic and microscopic level, and sophisticated computational models have revolutionized analysis approaches. With the topic's massive growth many subfields have evolved. It is time to re-integrate the mostly separated research lines and discuss how they can converge on common and generalizable models of decision making in humans. We will present some of the most important modeling, neuroimaging and analysis approaches and discuss how they can converge and complement each other to advance the mechanistic understanding of underlying neuronal mechanisms. This is also highly relevant for clinical research because many mental disorders are associated with dysfunctional decision making such as addiction, obsessive-compulsive and anxiety disorders.

Computational and representational analysis approaches to associative learning
Erie Boorman, University of Oxford, Oxford, United Kingdom

Trading immediate reward against information supporting long-term success
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Model based decisions and their interaction with informational influences
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Model Based vs. Model Free Learning: Who's Controlling the Controller?
Christian Ruff, University of Zurich, Zürich, Switzerland