

Yael Niv
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Affiliations

- from 2015 **Associate Professor**, Princeton Neuroscience Institute & Psychology Department, Princeton University
- 2008-2015 **Assistant Professor**, Princeton Neuroscience Institute & Psychology Department, Princeton University
- 2007-2008 **Princeton University** – Post-doctoral Fellow

Education

- 2002-2007 **The Hebrew University of Jerusalem, Interdisciplinary Center for Neural Computation & UCL, Gatsby Computational Neuroscience Unit – PhD *summa cum laude*, Jan 2008**
Thesis research: "*The effects of motivation on habitual instrumental behavior*"
Supervisors: Peter Dayan (Gatsby Computational Neuroscience Unit), Daphna Joel (Tel-Aviv University) and Hanoch Gutfreund (Interdisciplinary Center for Neural Computation)
- 1999-2001 **Tel-Aviv University, Psychology Department – MA *summa cum laude*, Dec 2001**
Thesis research: "Evolution of Reinforcement Learning in Uncertain Environments"
Supervisors: Eytan Ruppin (Computer Science), and Daphna Joel (Psychology)
- 1995-1999 **Tel-Aviv University, the Adi Lautman Interdisciplinary Program for Fostering Excellence (cross-disciplinary BA-bypass program) – Undergraduate studies according to an individually designed interdisciplinary curriculum focused on computational neuroscience.**

External Funding

- 2016-2021 National Institute on Drug Abuse R01 – Orbitofrontal cortex as a cognitive map of task states (role: PI)
- 2014-2019 Army Research Office Presidential Early Career Award for Science and Engineering (PECASE) – The computational and neural basis of reinforcement learning in multidimensional environments (role: PI)
- 2012-2018 John Templeton Foundation – Toward a scientific understanding of the human capacity for cognitive control (role: co-I with Jonathan Cohen (PI), Nathaniel Daw, Kenneth Norman, Nickolas Turk-Browne)
- 2012-2015 National Institute for Mental Health R01 – Neural and computational mechanisms of selective attention in experience based decision-making (role: PI)
- 2012-2015 Human Frontiers Science Program Organization (HFSP) – The striatal cholinergic system and attention for learning: from neurotransmission to personality (role: co-PI with Jeff Wickens, Genela Morris, Anastasia Christakou)
- 2012-2015 NSF Collaborative Research in Computational Neuroscience (CRCNS) – Neural correlates of hierarchical reinforcement learning (role: co-PI with Matt Botvinick and Andy Barto)
- 2011-2015 Ellison Medical Foundation Scholar – Interactions between learning and attention

throughout the lifespan (role: PI)

- 2011-2012 National Institute for Drug Abuse R03 - fMRI investigations of how we learn what is relevant for a decision (role: PI)
- 2010-2014 Sloan Research Fellowship - Using advanced computational methods to understand learning (role: PI)
- 2010-2012 United States-Israel Binational Science Foundation - Neural correlates of multidimensional learning: dimensionality reduction in striatal representations (role: co-PI with Genela Morris)

Fellowships & Awards

- 2015 National Academy of Sciences Troland Research Award
- 2014 Recipient of 2012 Presidential Early Career Award for Scientists and Engineers (PECASE)
- 2011-2015 Ellison Medical Foundation Scholar
- 2010-2012 Alfred P. Sloan Research Fellow
- 2007-2008 Human Frontiers Science Program, Long term post-doctoral fellowship "*How we learn what is relevant: fMRI of prefrontal-basal ganglia interactions in uninstructed tasks*"
- 2008 The Hebrew University of Jerusalem - Max Schlomiuk award for outstanding PhD thesis
- 2007 Rothschild post-doctoral fellowship (declined)
- 2004-2006 Rector's Excellence PhD fellowship, Hebrew University
- 2005 NIPS Outstanding Student Paper award, "*How fast to work: Response vigor, motivation and tonic dopamine*"
- 2001-2004 Merit based scholarship, Interdisciplinary Center for Neural Computation
- 2004 Computational Neuroscience (CNS) best talk award, "*The Effects of Uncertainty on TD Learning*"
- 2004 Dan David Scholarship for PhD Graduate Students in the field of Brain Sciences
- 2003 EC Thematic Network Fellowship for academic visit to the Gatsby Computational Neuroscience Unit
- 1996-1997 Adi Lautman Interdisciplinary Program for Fostering Excellence - outstanding achievements award
- 1995-1999 Merit based scholarship, Adi Lautman Interdisciplinary Program for Fostering Excellence

Peer reviewed publications (* denotes equally contributing authors)

- In Press **N Rouhani, KA Norman & Y Niv** - *Dissociable effects of surprising rewards on learning and memory* - Journal of Experimental Psychology: Learning, Memory & Cognition
- E Eldar, JD Cohen & Y Niv** - *Amplified selectivity in cognitive processing implements the neural gain model of norepinephrine function* - Behavioral and Brain Sciences (commentary on: M Mather, D Clewett, M Sakaki & CW Harley - *Norepinephrine ignites local hot spots of neuronal excitation: How arousal amplifies selectivity in perception and memory*)
- 2018 **AJ Langdon, MJ Sharpe, G Schoenbaum & Y Niv (2018)** - *Model-based predictions for dopamine* - Current Opinion in Neurobiology 49:1-7

- 2017 **S Dubrow, N Rouhani, Y Niv & KA Norman** – *Does mental context drift or shift?* – Current Opinion in Behavioral Sciences 17:141-146
- MJ Sharpe, NJ Marchant, LR Whitaker, CT Richie, YJ Zhang, EJ Campbell, PP Koivula, JC Necarsulmer, C Mejias-Aponte, M Morales, J Pickel, JC Smith, Y Niv, Y Shaham, BK Harvey* & G Schoenbaum*** – *Lateral hypothalamic GABAergic neurons encode reward predictions that are relayed to the ventral tegmental area to regulate learning.* Current Biology 27:2089-2100
- SJ Gershman, M-H Monfils, KA Norman & Y Niv (2017)** – *The computational nature of memory modification* – eLife 6:e23763
- MJ Sharpe, CY Chang, MA Liu, HM Bachelor, LE Mueller, JL Jones, Y Niv & G Schoenbaum (2017)** – *Dopamine transients are sufficient and necessary for acquisition of model-based associations* – Nature Neuroscience 20:735-742
- YC Leong*, A Radulescu*, R Daniel, V DeWoskin & Y Niv (2017)** – *Dynamic interaction between reinforcement learning and attention in multidimensional environments* – Neuron 93:451-463
- A Auchter, L Cormack, Y Niv, F Gonzalez-Lima & M-H Monfils (2017)** – *Reconsolidation-extinction interactions in fear-memory attenuation: the role of inter-trial interval variability* – Frontiers in Behavioral Neuroscience 11:2. doi: 10.3389/fnbeh.2017.00002
- JD Cohen, N Daw, B Engelhardt, U Hasson, K Li, Y Niv, KA Norman, J Pillow, PJ Ramadge, NB Turk-Browne & TL Wilke (2017)** – *Computational approaches to fMRI analysis* – Nature Neuroscience 20(3):304-313
- 2016 **N Schuck, MB Cai, RC Wilson & Y Niv (2016)** – *Human orbitofrontal cortex represents a cognitive map of state space* – Neuron 91(6):1402-12
- MB Cai, NW Schuck, J Pillow & Y Niv (2016)** – *A Bayesian method for reducing bias in neural representational similarity analysis* – Advances in Neural Information Processing Systems 29 (NIPS 2016), 4952-4960
- E Eldar, Y Niv & JD Cohen (2016)** – *Do you see the forest or the trees? Neural gain and integration during perceptual processing* – Psychological Science, 27(12):1632-1643
- A Radulescu, R Daniel & Y Niv (2016)** – *The effects of aging on the interaction between reinforcement learning and attention* – Psychology and Aging 31(7):747-757
- SCY Chan, Y Niv* & KA Norman* (2016)** – *A probability distribution over latent causes in the orbitofrontal cortex* – J Neuroscience 36(30):7817-7828
- D Arkadir, A Radulescu, D Raymond, N Lubarr, SB Bressman, P Mazzoni & Y Niv (2016)** – *A genetic movement disorder increases risk taking in humans* – eLife 5:e14155
- Y Takahashi*, A Langdon*, Y Niv & G Schoenbaum (2016)** – *Temporal specificity of reward prediction errors signaled by putative dopamine neurons in rat VTA depends on ventral striatum* – Neuron 91(1):182-193
- Y Niv & A Langdon (2016)** – *Reinforcement learning with Marr* – Current Opinion in Behavioral Sciences 11:67-73
- E Eldar*, RB Rutledge*, RJ Dolan & Y Niv (2016)** – *Mood as representation of momentum* – Trends in Cognitive Science 20(1):15-24
- 2015 **SJ Gershman, KA Norman & Y Niv (2015)** – *Discovering latent causes in reinforcement learning* – Current Opinion in Behavioral Sciences 5:43-50

- Dunsmoor JE, Niv Y, Daw ND & Phelps EA (2015)– *Rethinking extinction*–Neuron,88:47-63
- Y Niv, R Daniel, A Geana, SJ Gershman, YC Leong, A Radulescu & RC Wilson (2015) – *Reinforcement learning in multidimensional environments relies on attention mechanisms* – J Neuroscience 35(21): 8145-8157
- A Geana & Y Niv (2015) – *Causal model comparison shows that human representation learning is not Bayesian* –Cold Spring Harbor Symposia on Quantitative Biology, Volume 79: Cognition
- RC Wilson & Y Niv (2015) – *Is model fitting necessary for model-based fMRI?* – PLoS Computational Biology 11(6): e1004237
- SJ Gershman & Y Niv (2015) – *Novelty and inductive generalization in human reinforcement learning* –Topics in Cognitive Science 7(3),391-415
- E Eldar & Y Niv (2015) – *Interaction between emotional state and learning underlies mood instability* – Nature Communications 6:6149
- 2014 SJ Gershman, A Radulescu, KA Norman & Y Niv (2014) – *Statistical computations underlying the dynamics of memory updating* – PLoS Computational Biology 10(11) e1003939
- FA Soto, SJ Gershman & Y Niv (2014) – *Explaining compound generalization in associative and causal learning through rational principles of dimensional generalization* – Psychological Review 121(3):526-558
- RC Wilson, YK Takahashi, G Schoenbaum* & Y Niv* (2014) – *Orbitofrontal cortex encodes a cognitive map of task space* – Neuron 81(2): 267-279
- A Solway*, C Diuk*, N Cordova, D Yee, AG Barto, Y Niv & MM Botvinick (2014) – *Optimal behavioral hierarchy* – PLoS Computational Biology 10(8): e1003779
- 2013 SJ Gershman, CJ Jones, KA Norman, M-H Monfils & Y Niv (2013) – *Gradual extinction prevents the return of fear: implications for the discovery of state* – Frontiers in Behavioral Neuroscience 7:164
- SJ Gershman & Y Niv (2013) –*Perceptual estimation obeys Occam’s razor* – Frontiers in Psychology 4:623
- E Eldar, JD Cohen & Y Niv (2013) – *The effects of neural gain on attention and learning* – Nature Neuroscience 16:1146-1153
- A Christakou, SJ Gershman, Y Niv, A Simmons, M Brammer & K Rubia (2013) – *Neural and psychological maturation of decision-making in adolescence and young adulthood* – The Journal of Cognitive Neuroscience 25(11): 1807-1823
- C Diuk, K Tsai, JD Wallis, MM Botvinick & Y Niv (2013)– *Two simultaneous, but separable, prediction errors in human ventral striatum* – The Journal of Neuroscience 33(13):5797-5805
- 2012 SJ Gershman & Y Niv (2012) – *Exploring a latent cause theory of classical conditioning* – Learning & Behavior 40:255-268
- F Lucantonio, TA Stalnaker, Y Shaham, Y Niv & G Schoenbaum (2012) – *The impact of orbitofrontal dysfunction on cocaine addiction* – Nature Neuroscience 15(3):358-366
- RC Wilson & Y Niv (2012) – *Inferring relevance in a changing world* – Frontiers in Human Neuroscience 5:189. doi:10.3389/fnhum.2011.00189
- Y Niv, J Edlund, P Dayan & JP O’Doherty (2012) – *Neural prediction errors reveal a risk-sensitive reinforcement learning process in the human brain* – The Journal of Neuroscience

32(2):551-562

- 2011 **YK Takahashi, MR Roesch, RC Wilson, K Toreson, P O'Donnell, Y Niv* & G Schoenbaum*** (2011) – *Expectancy-related changes in firing of dopamine neurons depend on orbitofrontal cortex* – *Nature Neuroscience* 14(12):1590-1597
- E Eldar, G Morris & Y Niv** (2011) – *The effects of motivation on response rate: A hidden semi-Markov model analysis of behavioral dynamics* – *The Journal of Neuroscience Methods* 201:251-261
- JJF Ribas-Fernandes, A Solway, C Diuk, JT McGuire, AG Barto, Y Niv & MM Botvinick** (2011) – *A neural signature of hierarchical reinforcement learning* – *Neuron* 71:370-379
- M McDannald, F Lucantonio, K Burke, Y Niv & G Schoenbaum** (2011) – *Ventral striatum and orbitofrontal cortex are both required for model-based, but not model-free, reinforcement learning* – *The Journal of Neuroscience* 31(7):2700-2705
- 2010 **SJ Gershman, JD Cohen & Y Niv** (2010) – *Learning to selectively attend* – Proceedings of the 32nd Annual Conference of the Cognitive Science Society
- SJ Gershman & Y Niv** (2010) – *Learning latent structure: Carving nature at its joints* – *Current Opinion in Neurobiology* 20(2):251-256 (Special issue on Cognitive Neuroscience)
- SJ Gershman, DM Blei & Y Niv** (2010) – *Context, learning and extinction* – *Psychological Review*, 117(1):197-209
- 2009 **MT Todd, Y Niv & JD Cohen** (2009) – *Learning to use working memory in partially observable environments through dopaminergic reinforcement* – In: D Koller, D Schuurmans, Y Bengio & L Bottou, eds., *Advances in Neural Information Processing Systems* 21, 1689-1696
- Y Niv** (2009) – *Reinforcement learning in the brain* – *Journal of Mathematical Psychology* 53(3), 139-154 (special issue on partially observable Markov decision processes)
- MM Botvinick, Y Niv & AC Barto** (2009) – *Hierarchically organized behavior and its neural foundations: A reinforcement-learning perspective* – *Cognition* 113, 262-280
- 2008 **P Dayan & Y Niv** (2008) – *Reinforcement learning: The Good, The Bad, and The Ugly* – *Current Opinion in Neurobiology*, 18(2), 185-196 (special issue on Cognitive Neuroscience)
- Y Takahashi, G Schoenbaum & Y Niv** (2008) – *Silencing the Critics: Understanding the effects of cocaine sensitization on dorsal and ventral striatum in the context of an Actor/Critic model* – *Frontiers in Neuroscience* 2, 86-99
- D Schiller, I Levy, Y Niv, JE LeDoux & EA Phelps** (2008) – *From fear to safety and back – Reversal of fear in the human brain* – *The Journal of Neuroscience* 28(45), 11517-11525
- Y Niv & G Schoenbaum** (2008) – *Dialogues on prediction errors* – *Trends in Cognitive Science* 12(7):265-272
- 2007 **Y Niv, ND Daw, D Joel & P Dayan** (2007) – *Tonic dopamine: Opportunity costs and the control of response vigor* – *Psychopharmacology* 191(3), 507-520 (special issue on dopamine)
- Y Niv** (2007) – *Cost, Benefit, Tonic Phasic: What do response rates tell us about dopamine and motivation?* – *Annals of the New York Academy of Science* 1104, 357-376
- 2006 **Y Niv, D Joel & P Dayan** (2006) – *A normative perspective on motivation* – *Trends in Cognitive Sciences* 10(8), 375-381
- P Dayan, Y Niv, B Seymour & ND Daw** (2006) – *The misbehavior of value and the discipline of*

- the will* - Neural Networks 19(8), 1153-1160 (special issue on decision making)
- 2005 **Y Niv, ND Daw & P Dayan (2005)** - *How fast to work: Response vigor, motivation and tonic dopamine* - In: Y. Weiss, B. Schölkopf and J. Platt, eds., Neural Information Processing Systems 18, 1019-1026, MIT Press (Conference Talk, Outstanding Student Paper Award)
- ND Daw, Y Niv & P Dayan (2005)** - *Uncertainty based competition between prefrontal and dorsolateral striatal systems for behavioral control* - Nature Neuroscience, 8(12),1704-1711
- Y Niv, MO Duff & P Dayan (2005)** - *Dopamine, uncertainty and TD learning* - Behavioral and Brain Functions 1:6
- 2002 **Y Niv, D Joel, I Meilijson & E Ruppin (2002)** - *Evolution of reinforcement learning in uncertain environments: A simple explanation for complex foraging behaviors* - Adaptive Behavior 10(1), 5-24
- D Joel, Y Niv & E Ruppin (2002)** - *Actor-critic models of the basal ganglia: New anatomical and computational perspectives* - Neural Networks 15, 535-547
- 2001 **Y Niv, D Joel, I Meilijson & E Ruppin (2001)** - *Evolution of reinforcement learning in foraging bees: A simple explanation for risk averse behavior* - Neurocomputing 44(1), 951-956

Commentaries, chapters, technical reports

- In press **NW Schuck, RC Wilson & Y Niv (2018)** - *A state representation for reinforcement learning and decision making in the orbitofrontal cortex* -In: Bornstein, A., Shenhav, A. And Morris, R. (Eds.), Understanding Goal-Directed Decision Making: Computations and Circuits. Amsterdam, NL: Elsevier. (also posted on [bioRxiv](#))
- 2017 **Y Niv (2017)** - *Deep down, you are a scientist*. In: D Linden, ed. Think Tank: Forty Neuroscientists Explore the Biological Roots of Human Experience. Yale Press.
- 2016 **Z Kurth-Nelson, JP O'Doherty, DM Barch, S Denève, D Durstewitz, MJ Frank, JA Gordon, SJ Mathew, Y Niv, K Ressler & H Tost (2016)** - *Computational Approaches for Studying Mechanisms of Psychiatric Disorders*. In: AD Redish & JA Gordon, eds. Computational Psychiatry: New Perspectives on Mental Illness. [Strüngmann Forum Reports](#), vol. 20, J. Lupp, series editor. Cambridge, MA: [MIT Press](#)
- 2015 **MJ Sharpe, AM Wikenheiser, Y Niv & G Schoenbaum (2015)** - *The state of the orbitofrontal cortex* - Neuron 88(6):1075-1077
- R Daniel, NW Schuck & Y Niv (2015)** - *How to divide and conquer the world, one step at a time* - PNAS 112(10), 2929-2930
- Y Niv, A Radulescu & A Langdon (2015)** - *A free-choice premium in the basal ganglia* - Trends in Cognitive Science, 19(1), 4-5
- 2013 **Y Niv (2013)** - *Dopamine ramps up* - Nature 500(7464), 533-5
- G Schoenbaum, TA Stalnaker, Y Niv (2013)** - *How did the chicken cross the road? With her striatal cholinergic interneurons, of course* - Neuron, 79(1), 3-6
- 2012 **C Diuk, A Schapiro, N Cordova, Y Niv & MM Botvinick (in press)** - *Divide and conquer: Hierarchical reinforcement learning and task decomposition in humans*. In: G Baldassare & M Mirolli eds., Computational and Robotic Models of the Hierarchical Organization of Behavior, Springer Verlag
- MM Botvinick, Y Niv & A Barto (2012)** - *Hierarchically organized behavior and its neural foundations: A reinforcement learning perspective*. In: A Seth, T Prescott & J Bryson, eds.,

- Modelling Natural Action Selection, pp. 264-269, Cambridge: Cambridge University Press
- 2011 **Y Niv & S Chan (2011)** – *On the value of information and other rewards* – Nature Neuroscience 14(9), 1095-1097
- JJF Ribas-Fernandes, Y Niv & MM Botvinick (2011)** – *Neural correlates of hierarchical reinforcement learning* In: RB Mars, J Sallet MFS Rushworth & N Yeung, eds., Neural basis of motivational and cognitive control, Chapter 17, pp. 285-310, MIT Press
- 2008 **Y Niv & PR Montague (2008)** – *Theoretical and Empirical Studies of Learning* – In: P.W. Glimcher, C.F. Camerer, E. Fehr & R.A. Poldrack, eds., Neuroeconomics: Decision making and the brain, Chapter 22, pp. 329-349, Elsevier
- P Dayan, ND Daw & Y Niv (2008)** – *Learning, action, inference and neuromodulation* – In: L. Squire et al, eds., Encyclopedia of Neuroscience, Elsevier, Amsterdam
- 2007 **Y Niv & M Rivlin-Etzion (2007)** – *Parkinson's disease: Fighting the will?* – Journal of Neuroscience, 24(44), 11777-11779
- 2006 **Y Niv, ND Daw & P Dayan (2006)** - *Choice values* - Nature Neuroscience 9(8), 987-988
- ND Daw, Y Niv & P Dayan (2006)** - *Actions, policies, values, and the basal ganglia* – In: Bezdard, E. editor, Recent Breakthroughs in Basal Ganglia Research, Nova Science Publishers Inc., New York, USA
- Y Niv, P Dayan & D Joel (2006)** - *The effects of motivation on extensively trained behavior* - Leibniz Technical Report, Hebrew University, 2006-6

Selected abstracts

- 2017 **A Langdon, Y Takahashi, MR Roesch, G Schoenbaum & Y Niv (2017)** – *Dynamic neural representation of reward predictions* – Society for Neuroscience (nano-symposium talk)
- NW Schuck & Y Niv (2017)** – *Sequential replay of non-spatial task states in the human hippocampus* – Society for Neuroscience (nano-symposium talk)
- MJ Sharpe, NJ Marchant, LR Whitaker, CT Richie, YJ Zhang, EJ Campbell, PP Koivula, JC Necarsulmer, C Mejias-Aponte, M Morales, J Pickel, JC Smith, Y Niv, Y Shaham, BK Harvey* & G Schoenbaum* (2017)** – *An unlikely circuit for cue-reward learning* – Society for Neuroscience
- YS Shin & Y Niv (2017)** – *Latent cause inference in social biases* – Computational Cognitive Neuroscience
- MB Cai, NW Schuck, JW Pillow & Y Niv (2017)** – *Spurious structure in representational similarity analysis and a Bayesian approach to reducing bias in RSA of fMRI data* – Computational Cognitive Neuroscience
- MB Cai, NW Schuck, JW Pillow & Y Niv (2017)** – *When temporal similarity is mistaken for representational similarity: a Bayesian approach to reduce bias in RSA of fMRI data* – Society for Neuroscience
- A Radulescu, YC Leong & Y Niv (2017)** – *Reward-sensitive attention dynamics during human reinforcement learning* – Reinforcement Learning and Decision Making (RLDM2017), selected as an oral presentation
- MJ Sharpe, CY Chang, MA Liu, HM Bathelor, LE Mueller, JL Jones, Y Niv & G Schoenbaum (2017)** – *Dopamine transients are sufficient and necessary for acquisition of model-*

based associations – Reinforcement Learning and Decision Making (RLDM2017), selected for a spotlight presentation

YS Shin & Y Niv (2017) – *Latent cause inference in social biases* – Reinforcement Learning and Decision Making (RLDM2017)

A Jaskir & Y Niv (2017) – *Modeled learning weights predict attention and memory in a multidimensional probabilistic task* – Reinforcement Learning and Decision Making (RLDM2017)

LX Cai, Y Niv & IB Witten (2017) – *A positive feedback loop between dopamine and freezing opposes extinction of fear conditioning* – Reinforcement Learning and Decision Making (RLDM2017)

GB Hermsdorff & Y Niv (2017) – *Characterizing people's priors over naturalistic task structure* – Reinforcement Learning and Decision Making (RLDM2017)

PF Hitchcock, A Radulescu, Y Niv & CR Sims (2017) – *Assessing the potential of computational modeling in clinical science* – Reinforcement Learning and Decision Making (RLDM2017)

AJ Langdon & Y Niv (2017) – *Time-adaptive temporal difference reinforcement learning* – Reinforcement Learning and Decision Making (RLDM2017)

MB Cai, NW Schuck, MJ Anderson, JW Pillow & Y Niv (2017) – *Bias in neural representational similarity analysis and a Bayesian method for reducing bias* – Reinforcement Learning and Decision Making (RLDM2017)

N Rouhani, KA Norman & Y Niv (2017) – *Dissociable effects of surprising rewards on learning and memory* – Reinforcement Learning and Decision Making (RLDM2017)

P Hitchcock, A Radulescu, Y Niv & CR Sims (2017) – *Translating a reinforcement learning task in a computational psychiatry assay: Challenges and Strategies* – CogSci

A Langdon, Y Takahashi, M Roesch, G Schoenbaum & Y Niv (2017) – *Dynamic neural representation of reward predictions in rat ventral striatum during learning* – COSYNE

NW Schuck & Y Niv (2017) – *Task states are represented in OFC during task performance and replayed in hippocampus at rest* – COSYNE

2016

N Rouhani & Y Niv (2016) – *Reward prediction errors affect episodic memory: implications for depression* – Annual meeting of the American College of Neuropsychopharmacology (ACNP)

GB Hermsdorff & Y Niv (2016) – *Hemodynamic response function for prediction errors in the ventral striatum* – Society for Neuroscience

MJ Sharpe, CY Chang, MA Liu, Y Niv, JL Jones & Geoffrey Schoenbaum (2016) – *Dopaminergic error signals support associative structures used for model-based behaviors* – Society for Neuroscience

N Rouhani, KA Norman & Y Niv (2016) – *Reward prediction errors enhance episodic memory* – Society for Neuroscience

A Radulescu, C Allefeld, N Schuck, J-D Haynes & Y Niv (2016) – *Studying value guided decision making through model-based multivariate fMRI* – Society for Neuroeconomics

N Rouhani, KA Norman & Y Niv (2016) – *Reward prediction errors enhance episodic memory* – Society for Neuroeconomics

YS Shin & Y Niv (2016) – *Finding it hard to change your mind after one bad experience? You might be too Bayesian* – Society for Neuroeconomics

N Rouhani, KA Norman & Y Niv (2016) – *Reward prediction errors enhance episodic memory* – Context and Episodic Memory Symposium

A Langdon, Y Takahashi, G Schoenbaum & Y Niv (2016) – *Temporal expectations in reward prediction: ‘what’ and ‘when’ computations in the basal ganglia* – COSYNE 2016 (selected as an oral presentation)

2015 **A Langdon, Y Takahashi, G Schoenbaum & Y Niv (2015)** – *Ventral striatum is necessary for temporal specificity of expectations in dopaminergic reward prediction error signals* – Society for Neuroscience

M Granovetter, E Eldar & Y Niv (2015) – *Attention-based learning deficits in individuals with autism suggest constitutively elevated norepinephrine levels* – Society for Neuroscience

SCY Chan, KA Norman & Y Niv (2015) – *Neural representations of posterior distributions over latent causes* – RLDM2015, Alberta CA

R Daniel, A Radulescu & Y Niv (2015) – *Learning in multidimensional environments: Computational and neural processes across the lifespan* – RLDM2015, Alberta CA

NW Schuck & Y Niv (2015) – *Human orbitofrontal cortex represents a cognitive map of state space* – RLDM2015, Alberta CA

GB Hermsdorff & Y Niv (2015) – *Modeling the hemodynamic response function for prediction errors in the human striatum* – RLDM2015, Alberta CA

A Langdon & Y Niv (2015) – *A learning mechanism for variance sensitive reinforcement learning* – RLDM2015, Alberta CA

A Geana & Y Niv (2015) – *Model comparison via real-time manipulation of human learning* – RLDM2015, Alberta CA

YC Leong, R Daniel, A Radulescu, V DeWoskin & Y Niv (2015) – *Dynamic interaction between reinforcement learning and attention in multidimensional environments* – 5th Annual Interdisciplinary Symposium on Decision Neuroscience, Boston, MA

SCY Chan, KA Norman & Y Niv (2015) – *The neural representation of posterior distributions over hidden variables* – COSYNE 2014: Computational and Systems Neuroscience, Salt Lake City, Utah

2014 **RC Wilson & Y Niv (2014)** – *Is model fitting necessary for model-based fMRI?* – Society for Neuroscience Abstracts 40:457.06

R Daniel, A Radulescu & Y Niv (2014) – *Impaired learning in multidimensional environments in healthy human aging* – Society for Neuroscience Abstracts 40:88.06

SCY Chan, Y Niv & KA Norman (2014) – *Posterior distributions over hidden variables: Schemas in the brain* – Society for Neuroscience Abstracts 40:741.05

MM Botvinick, C Diuk, D Yee, J Cheong, A Weinstein, Y Niv & A Barto (2014) – *A general form for state-space representations in frontal and temporal cortex* – Society for Neuroscience Abstracts 40:555.19

SCY Chan, NW Schuck, N Lopatina & Y Niv (2014) – *State prediction errors in the orbitofrontal cortex* – Society for Neuroeconomics (oral presentation), Miami, FL

E Eldar & Y Niv (2014) – *The interaction between learning and mood*, Society of Cognitive Neuroscience Meeting, Boston, MA

YC Leong, R Daniel, A Radulescu & Y Niv (2014) – *Behavioral and neural correlates of attentional control during learning*, Society of Cognitive Neuroscience Meeting, Boston, MA

SCY Chan, C Nist-Lund, Y Niv & KA Norman (2014) – *Temporal context as a posterior distribution over latent states* – Context and Episodic Memory Symposium, Philadelphia, PA

E Eldar & Y Niv (2014) – *The interaction between learning and mood*, COSYNE 2014: Computational and Systems Neuroscience, Salt Lake City, Utah

D Arkadir, A Radulescu, D Raymond, S Bressman, P Mazzoni & Y Niv (2014) – *A link between corticostriatal plasticity and risk taking in humans*, COSYNE 2014: Computational and Systems Neuroscience, Salt Lake City, Utah

2013 **SJ Gershman, CE Jones, KA Norman, MH Monfils & Y Niv (2013)** – *Gradual extinction prevents the return of fear*, Society for Neuroscience Abstracts 39:99.06

JW Kanen, SJ Gershman, MH Monfils, EA Phelps & Y Niv (2013) – *Can gradual extinction prevent the return of fear in humans?*, Society for Neuroscience Abstracts 39:99.07

A Auchter, LK Cormack, Y Niv & MH Monfils (2013) – *Reconsolidation-extinction interactions in fear memory attenuation: examining the role of inter-trial interval variability*, Society for Neuroscience Abstracts 39:93.04

SCY Chan, N Lopatina & Y Niv (2013) – *“Identity prediction errors” and model-based learning* – RLDM2013, Princeton, NJ

R Daniel, V DeWoskin, YC Leong, A Radulescu & Y Niv (2013) – *Humans employ selective attention when learning in complex environments: evidence from computational modeling and neuroimaging* – RLDM2013, Princeton, NJ

E Eldar & Y Niv (2013) – *A reinforcement learning theory of mood instability* – RLDM2013, Princeton, NJ

YC Leong & Y Niv (2013) – *Human reinforcement learning processes act on learned attentionally-filtered representations of the world* – RLDM2013, Princeton, NJ

A Radulescu, R Daniel & Y Niv (2013) – *Age-related Differences in Learning to Selectively Attend* – RLDM2013, Princeton, NJ

RC Wilson & Y Niv (2013) – *Is model fitting necessary for model-based fMRI?* – RLDM2013, Princeton, NJ

A Solway, C Diuk, NI Cordova, D Yee, AG Barto, Y Niv & MM Botvinick (2013) – *Optimal task decomposition* – RLDM2013, Princeton, NJ

2012 **E Eldar, A Radulescu, Y Niv & JD Cohen (2012)** – *Norepinephrine, neural gain, and “first one wins” network dynamics* – COSYNE 2012: Computational and Systems Neuroscience, Salt Lake City, Utah

C Diuk, D Yee, JJF Ribas-Fernandes, N Cordova, A Schapiro, Y Niv & MM Botvinick (2012) – *Divide and conquer: Task decomposition in humans* – Society for Neuroscience Abstracts 38:592.20

E Eldar & Y Niv (2012) – *Learning about what you learn best: norepinephrine, neural gain, and local processing* – Society for Neuroscience Abstracts 38:592.11

- A Geana & Y Niv (2012)** – *Do we pay attention to the forest or the trees? A comparison of learning models using real-time task design* – Society for Neuroscience Abstracts
- Y Leong & Y Niv (2012)** – *The role of selective attention in learning* – Society for Neuroscience Abstracts 38:592.12
- A Radulescu & Y Niv (2012)** – *Age related differences in learning to selectively attend* – Society for Neuroscience Abstracts 38:592.15
- RC Wilson, YK Takahashi, G Schoenbaum & Y Niv (2012)** – *Orbitofrontal cortex as a cognitive map of task space: implications for reversal learning and extinction* – Society for Neuroscience Abstracts 38:289.17
- 2011 **C Diuk, MM Botvinick & Y Niv (2011)** – *Two coincident but separable prediction errors in human ventral striatum* – Society for Neuroscience Abstracts 37:827.14
- 2010 **C Diuk, A Barto, MM Botvinick & Y Niv (2010)** – *Hierarchical Reinforcement Learning: An fMRI Study of learning in a two-level gambling task* – Society for Neuroscience Abstracts 36:907.13
- MA McDannald, F Lucantonio, KA Burke, Y Niv & G Schoenbaum (2010)** – *Different critical roles for ventral striatum and orbitofrontal cortex in learning driven by changes in value versus identity* – Society for Neuroscience Abstracts 36:707.8
- Y Niv & SJ Gershman (2010)** – *Representation learning and reinforcement learning: An fMRI study of learning to selectively attend* – Society for Neuroscience Abstracts 36:907.15
- N Lopatina, T Thamrongtattararit, G Schoenbaum & Y Niv (2010)** – *Human learning in a transreinforcer blocking paradigm* – Pavlovian Society Meeting, Baltimore, Maryland
- YK Takahashi, MR Roesch, RC Wilson, Y Niv, K Toreson, P O'Donnell & G Schoenbaum (2010)** – *Orbitofrontal cortex is required for expectancy-related changes in phasic firing of midbrain dopamine neurons* – Society for Neuroscience Abstracts 36:404.1
- MT Todd, Y Niv & JD Cohen (2010)** – *Identifying internal representations of context in fMRI* – Society for Neuroscience Abstracts 36
- RC Wilson, JD Cohen & Y Niv (2010)** – *Inferring relevance in a changing world* – Society for Neuroscience Abstracts 36:907.12
- RC Wilson, YK Takahashi, MR Roesch, T Stalnaker, G Schoenbaum & Y Niv (2010)** – *A Computational Model of the Role of Orbitofrontal Cortex and Ventral Striatum in Signalling Reward Expectancy in Reinforcement Learning* – Society for Neuroscience Abstracts 36:404.1
- A Christakou, S Gershman, Y Niv, M Brammer & K Rubia (2010)** – *Temporal Difference Modeling of Decision-making Under Ambiguity: Application in Adolescent Development* – Motivational and Cognitive Control Meeting, June 2010, Oxford, UK
- 2009 **S Gershman, D Blei & Y Niv (2009, talk)** – *An Infinite Mixture Model of Context-dependent Learning and Extinction* – COSYNE 2009: Computational and Systems Neuroscience, Salt Lake City, Utah
- J Fernandes, J McGuire, Y Niv & MM Botvinick (2010)** – *Neural correlates of hierarchical reinforcement learning: An fMRI study* – Society for Neuroscience Abstracts 35:102.16
- 2008 **Y Niv, J Edlund, P Dayan & JP O'Doherty (2008, talk)** – *Neural prediction errors reveal risk sensitivity in instrumental choice* – Israeli Human Brain Mapping 2008, Tel Aviv, Israel

- Y Niv, P Dayan & JP O'Doherty (2008, poster and spotlight presentation) – *Decision making: Neural prediction errors show risk sensitivity* – COSYNE 2008: Computational and Systems Neuroscience, Salt Lake City, Utah
- 2007 D Schiller, Y Niv, I Levy, JE LeDoux & EA Phelps (2007, poster and featured short presentation) – *Reversal of fear learning in the human brain* – Linking Affect to Action: Critical Contributions of the Orbitofrontal Cortex, NYAS Symposium, New York, NY
- 2006 Y Niv, JA Edlund, P Dayan & JP O'Doherty (2006, poster) – *Neural correlates of risk sensitivity: An fMRI study of instrumental choice behavior* – Society for Neuroscience Abstracts 32:664.8, Atlanta, Georgia
- 2005 Y Niv, ND Daw & P Dayan (2005, poster) – *The effects of motivation on rates of responding: A reinforcement learning approach* – European Brain and Behavior Society Meeting, Dublin, Ireland
- Y Niv, P Dayan & D Joel (2005, talk) – *The effects of motivation on habitual behavior* – Associative Learning Symposium 2005, Gregynog, Wales
- Y Niv, ND Daw, D Joel & P Dayan (2005, poster) – *Motivational effects on behavior: Towards a reinforcement learning model of rates of responding* – COSYNE 2005: Computational and Systems Neuroscience, Salt Lake City, Utah
- ND Daw, Y Niv & P Dayan (2005, talk) – *Uncertainty-based competition between prefrontal and striatal systems for behavioural control* – COSYNE 2005: Computational and Systems Neuroscience, Salt Lake City, Utah
- 2004 Y Niv, MO Duff & P Dayan (2004, poster) – *Asymmetric coding of temporal difference errors: Implications for dopamine firing patterns* - IBAGS VIII: The 8th Triennial Meeting of the International Basal Ganglia Society, Crieff, Scotland
- Y Niv, MO Duff & P Dayan (2004, talk) – *Dopamine, uncertainty and TD learning* - CNS2004: The 13th Annual Computational Neuroscience Meeting, Baltimore, Maryland
- Y Niv, MO Duff & P Dayan (2004,talk) - *The effects of uncertainty on TD learning* - COSYNE 2004: Computational and Systems Neuroscience, New York, NY
- 2001 Y Niv, D Joel, I Meilijson & E Ruppín (2001) – *Evolution of reinforcement learning in uncertain environments: Emergence of risk aversion and probability matching* – In: J. Kelemen and P. Sosik eds., *Advances in Artificial Life - Proceedings of the 6th European Conference, ECAL 2001*, Prague, 252-261

Theses

- 2007 PhD Thesis – **Interdisciplinary Center for Neural Computation, The Hebrew University of Jerusalem:** *The effects of motivation on habitual instrumental behavior*
- 2001 MA Thesis – **Psychology Department, Tel Aviv University:** *Evolution of Reinforcement Learning in Uncertain Environments*

Workshops/Conferences organized

- 2016 **FENS Brain meeting: New insights into psychiatric disorders through computational, biological and developmental approaches** – September 25-28, Copenhagen, Denmark (co-organizers John Krystal and Oscar Marin)
- 2016 **Addiction, in theory** – May 10-12, London, UK (co-organizers: Peter Dayan, Geoff

Schoenbaum)

- 2015 **The 2nd Multidisciplinary conference on Reinforcement Learning and Decision Making (RLDM2015)** – June 7-10, Edmonton, Alberta, CA – General Chair (co-organizers: Satinder Singh, Peter Dayan, Rich Sutton, Susan Murphy, Nicholas Roy)
- 2013 **The 1st Multidisciplinary conference on Reinforcement Learning and Decision Making (RLDM2013)** – Oct 24-27, Princeton, New Jersey (co-organizers: Satinder Singh, Peter Dayan, Rich Sutton, Elizabeth Phelps, Nicholas Roy)
- 2012 **“Rumelhart Symposium” in honor of Peter Dayan at CogSci2012** – The annual meeting of the Cognitive Science Society, August 1-4 2012, Sapporo, Japan (co-organizer: Nathaniel Daw)
- 2010 **“Batsheva Seminar on Reward and Decision Making in the Brain”**, February 16-20, Jerusalem, Israel (co-organizers: Hagai Bergman, Daphna Joel)
- 2007 NIPS Workshop: **“Hierarchical organization of behavior: Computational, psychological and neural perspectives”**, December 7-8 (co-organizers: Matthew Botvinick and Andrew Barto)
- 2005 Gatsby Foundation Workshop: **“Motivation and action selection”**, June 20-22 (co-organizers: Nathaniel Daw and Peter Dayan)

Invited talks/Seminars (past and planned future)

- 2019 **International Convention of Psychological Science (ICPS)** – Invited speaker (March 2019, Paris)
- EMBO/EMBL Symposium “Probing neural dynamics with behavioral genetics”** – Invited speaker (April 2019, Tubingen)
- 2018 **Australian Learning Group Meeting** – Keynote speaker (July 2018, Sydney)
- European Behavioural Pharmacology Society workshop – Animal and human behavior: Using computational approaches to build a two-way bridge** – Invited speaker (July 2018, Cambridge)
- Neurobiology of Cognition Gordon Research Conference** – Invited speaker (July 2018)
- Lehigh University** – Invited keynote (May 2018)
- Gatsby Computational Neuroscience Unit** – Invited seminar (May 2018)
- Society for Affective Science** – Invited “What is value?” panel speaker (April 2018)
- Rutgers University, Cognitive Science Colloquium** – Invited seminar (February 2018)
- 2017 **Dutch Psychonomics Society conference** – Keynote speaker (Dec 2017)
- Neural Information Processing Systems (NIPS)** – Keynote speaker (Dec 2017)
- Carnegie Mellon University, Psychology Department Colloquium** – Invited speaker (Nov 2017)
- Computational Psychiatry: A didactic introduction** – Invited speaker (Nov 2017)
- Society for Neuroscience Annual Meeting** – Invited Special Lecture (Nov 2017)
- The Brain Prize Meeting 2017: “Rewarding Neuroscience”** – Keynote speaker (Oct 2017, Funen, Denmark)

- Grand Rounds at Princeton House** – Invited speaker (Sep 2017)
- Cognitive Computational Neuroscience (CCN) meeting** – Plenary speaker in inaugural meeting (Sep 2017, New York)
- NIDA/NIAAA Cutting Edge Seminar Series** – Invited speaker (August 2017)
- Kavli Summer Institute in Cognitive Neuroscience** – Invited speaker (July 2017)
- Reinforcement Learning and Decision Making (RLDM) conference** – Invited speaker (June 2017, Ann Arbor, MI)
- Weizmann Institute, Department of Neuroscience** – Invited speaker (May 2017)
- Cognitive improvement: approaches, mechanisms and applications meeting** – Invited speaker (May 2017, Bar Ilan University, Israel)
- Stanford Neuroscience Institute Seminar Series** – Invited speaker (May 2017)
- UC Berkeley, Psychology Department Edwin Ghiselli lecture** – Invited speaker (May 2017)
- UT Austin Psychology Department Seminar Series** – Invited speaker (January 2017)
- Mount Sinai Diversity in Neuroscience Series** – Invited speaker (January 2017)
- 2016 **3rd Annual Symposium of Brain Imaging Center (BIC), Icahn School of Medicine at Mount Sinai** – Invited speaker (Oct 2016)
- Rochester Conte Center Symposium: Persistent, maladaptive behaviors: why we make bad choices** – Invited speaker (Oct 2016)
- Advanced Course in Computational Neuroscience (ACCN), Lisbon, Portugal** – Invited speaker (August 2016)
- RIKEN Brain Science Institute Summer Program** – Invited speaker (June 2016)
- Icahn School of Medicine at Mount Sinai Psychiatry Grand Rounds** – Invited speaker (May 2016)
- Social & Affective Neuroscience Society (SANS) Annual Conference** – Invited anchor talk (Apr 2016)
- Berlin School of Mind and Brain** – Invited speaker (March 2016)
- Harvard Center for Brain Science Seminar Series** – Invited speaker (Feb 2016)
- UCLA Joint Seminar in Neuroscience** – Invited speaker (Jan 2016)
- 2015 **Third Quadrennial Meeting on Orbitofrontal Cortex Function** – Invited speaker (Sep 2015)
- Ernst Strüngmann Forum: Computational Psychiatry: What Can Theoretical Neuroscience and Psychiatry Teach Each Other?** – Invited participant (June 2015)
- Austin Conference on Learning and Memory** – Invited speaker (April 2015)
- Decision Neuroscience of Aging Conference** – Invited speaker & workshop leader (March 2015)
- Columbia University** – Decision Neuroeconomics seminar series – Invited talk (February 2015)
- Yale University** – Current Works in Behavior, Genetics, and Neuroscience talk series –

- Invited talk (February 2015)
- 2014 **Indiana University** – Cognitive Science Colloquium Series and Program in Neuroscience joint invitation – Invited talk (November 2014)
- University of Washington** – Psychology Department – Invited Loucks lecturer (October 2014)
- UCSD** – Cognitive Neural Systems Seminar – Invited talk (October 2014)
- Duke University** – Cognitive neuroscience colloquium – Invited talk (October 2014)
- Second MPS-UCL Symposium and Advanced Course on Computational Psychiatry and Ageing Research** – Invited keynote lecture on Representation Learning (September 2014)
- Gordon Research Conference: Neurobiology of Cognition** – Invited speaker (July 2014)
- Cold Spring Harbor Laboratory Symposium on Cognition** – Invited speaker (May 2014)
- Brown University Neuroscience Program Seminar Series** – Invited talk (May 2014)
- NYU Center for Neuroeconomics**, Neuroeconomics colloquium – Invited talk (April 2014)
- Computational Systems Neuroscience (COSYNE) 2014** – Invited speaker (Feb 2014)
- 2013 **MIT** – Vision and learning course (Tommaso Poggio & Shimon Ullman) – Invited guest lecturer (November 2013)
- Albert Einstein College of Medicine** – Neuroscience Department Seminar Series – Invited talk (September 2013)
- UCL Emotion club (Raymond Dolan)** – Invited talk (September 2013)
- Boston University** – CompNet workshop on prediction errors in cognition – Invited speaker (July 2013)
- Third Symposium on the Biology of Decision Making** – Paris, France – Invited speaker (May 2013)
- MIT** – Brain and Cognitive Sciences – Invited talk (March 2013)
- Tamagawa–Caltech Reward and Decision Making on Risk and Aversion Meeting** – Hawaii – Invited speaker (March 2013)
- 3rd International Conference on Applications of Neuroimaging to Alcoholism** – Yale University – Invited speaker (February 2013)
- Weill Medical College of Cornell University** – Sackler Science speaker series – Invited talk (Jan 2013)
- 2012 **Workshop 2: Cognitive Neuroscience** – Invited speaker (December 2012)
- Neural Computation: From Perception to Cognitive Function, Berlin** – Invited speaker (Oct 2012)
- Annual meeting of the Society for Neuroeconomics** – Invited workshop speaker (September 2012)
- ESF Workshop on “Motivation and Action”, Copenhagen** – Invited speaker (August 2012)
- Washington University, St. Louis** – Cognitive, Computational and Systems Neuroscience (CCSN) Invited lecturer (May 2012)
- NIDA** – Invited talk (May 2012)

- NIH/NINDS - Invited talk (May 2012)
- TEDxRutgers - Invited talk “How do we make decisions” (April 2012)
- University of Michigan, Ann Arbor - Biopsychology Colloquium series - Invited talk (April 2012)
- Stanford Mind Brain and Computation symposium - “Reinforcement learning: Computational roles for dopamine, striatum, and hippocampus” - Invited speaker (Feb 2012)
- 2011 NYU - Memory in Brain Lecture Series - Invited talk (October 2011)
- Columbia University - Cognitive Lunch Series - Invited talk (September 2011)
- Gordon Conference on Eye Movements - Invited speaker (August 2011)
- Workshop on the Neuroscience and Psychophysiology of Experience-Based Decisions - Technion University - Invited speaker (June 2011)
- Association for Behavioral Analysis International (ABAI) annual convention, B. F. Skinner Lecture Series - Invited speaker - “Learning latent structure” (May 2011)
- Computational Systems Neuroscience (COSYNE) 2011 - Attention, reinforcement learning and reward workshop - Invited workshop speaker
- Winter Conference on Brain Research - Invited speaker in symposium on “Two brains are better than one: Multiple learning systems for economic decision making”
- Winter Conference on Brain Research - Invited speaker in symposium on “How do we learn what outcomes to expect from a decision? Investigations into the neural circuits mediating model-based learning about reward value versus identity”
- 2010 University of Pennsylvania - Institute for Research in Cognitive Science Colloquium Series - Invited talk (December 2010)
- University of Rochester, Department of Brain and Cognitive Science - BCS Colloquium Series - Invited talk (September 2010)
- UCL - Functional Imaging Lab Brain Meeting series - Invited talk (May 2010)
- Computations, Decisions, and Movement Meeting - Rauischholzhausen Castle, Germany - Invited speaker (May 2010)
- Carnegie Mellon University, School of Computer Science - Intelligence Seminar Series - Invited talk (March 2010)
- 2009 Sloan-Swartz Annual Meeting on Theoretical Neuroscience - Invited feature presentation on “Model-driven studies of learning and decision making” (July 2009)
- The 26th International Conference on Machine Learning - Invited tutorial on “The Neuroscience of Reinforcement learning” (June 2009)
- Yale University School of Medicine - Invited talk (February 2009)
- 2008 NIPS 2008 Workshop: Machine learning meets human learning - Invited speaker (December 2008)
- NIPS 2008 Minisymposium: Principled theoretical frameworks for the perception-action cycle - Invited speaker (December 2008)

- University of Minnesota, Center for Cognitive Sciences colloquium series** – Invited talk (Nov 2008)
- Workshop on Open Problems in Neuroscience of Decision Making** – Invited speaker (October 2008, Okinawa, Japan)
- International Symposium on Drug Addiction: Mechanisms and Therapeutic Approaches** – Invited speaker (October 2008, Kunming, China)
- Technion, Industrial Engineering Department** – Invited talk (August 2008)
- Technion, Biological Networks Group** – Invited talk (July 2008)
- Annual Meeting of the Society for the Neural Control of Movement** – Invited speaker (May 2008)
- Barbados workshop on Fast Reinforcement Learning** – Invited speaker (April 2008)
- Neural circuits and decision making in rodents** – Invited speaker (April 2008, Janelia Farm)
- Columbia University, Neurotheory Seminar Series** – Invited talk (February 2008)
- 2007 **Caltech, BMS seminar series** – Invited talk (November 2007)
- Hofstra University, Computer Science Department** – Invited talk (October 2007)
- Champalimaud Neuroscience Workshop on “Neural bases of reward and decision making”** – Invited speaker (September 2007, Lisbon, Portugal)
- Neurofinance symposium on “The neural bases for human decision making under uncertainty”** – Invited speaker (July 2007, University of Zurich)
- University of Maryland, Schoenbaum/O’Donnell Systems journal club** – Invited talk (May 2007)
- 2006 **NYU Neuroeconomics seminar series** – Invited talk (November 2006)
- Cambridge University, Psychology department** – Invited talk (July 2006)
- Reward and decision making in cortico-basal ganglia networks** – Invited speaker (June 2006, Lake Arrowhead, CA)
- Choice and the Brain Symposium** – Invited speaker (June 2006, Caltech)
- Weizmann Institute, Tsodyks Lab** – Invited talk (April 2006)
- Course on “Schizophrenia: A systems neuroscience perspective,” Weizmann Institute** – Invited guest lecture on “Dopamine and reward” (April 2006)
- University of Oxford, Rushworth Lab** – Invited talk (January 2006)
- 2005 **Baylor College of Medicine, Montague Lab** – Invited talk (November 2005)
- Computational Cognitive Neuroscience Conference** – Invited speaker (November 2005)
- NYU, Phelps Lab** – Invited talk (November 2005)
- 2004 **NYU, Glimcher-Heeger Lab meeting** – Invited talk (July 2004)
- 2003 **Tel Aviv University, Psychology department colloquium** – Invited talk (February 2003)
- 2001 **The Hebrew University of Jerusalem, Beehave group** – Invited talk (January 2001)
- Panel series in neurosciences: A Multidisciplinary Overview of Brain Research** – The

- Adams Super Center for Brain Research, Tel Aviv University – Invited talk (January 2001)
- 2000 EPFL – Floreano Lab – Invited talk (October 2000)
- University of Bern, Computational neuroscience colloquium – Invited talk (October 2000)
- Haifa University, Computer science colloquium – Invited talk (May 2000)

Teaching

- Fall 2017 **Princeton University, FRS147** – “Reinforcement learning and decision making,” Freshman Seminar
- yearly **Princeton University, Neuroscience Institute** – NEU501 – lecturer in “Learning & Memory” module in team-taught graduate core course (formerly “Learning” module in NEU502)
- since 2010
- biyearly **Princeton University, NEU202/PSY259** – “Introduction to Cognitive Neuroscience” (course required for NEU major)
- since 2011
- biyearly **Princeton University, Psychology Department** – NEU/PSY338 – “Animal learning and decision making: psychological, computational and neural perspectives”
- since 2009
- Spring **Princeton University, Neuroscience Institute & Psychology Department** – NEU/PSY425 – “Neuroeconomics” (advanced undergraduate and graduate seminar)
- 2014
- August **Summer School in Neuroeconomics and Social Neuroscience, Duke University** – invited lecturer
- 2017
- July 2017 **Kavli Summer Institute in Cognitive Neuroscience, UC Santa Barbara** – invited lecturer
- August **Advanced Course in Computational Neuroscience (ACCN), Lisbon, Portugal** – invited lecturer
- 2016
- June 2016 **RIKEN Brain Science Institute Summer Program** – invited lecturer
- June 2014 **Okinawa Computational Neuroscience Course** – invited lecturer “Advanced reinforcement learning”
- July 2012-13, 15-17 **Biophysics and Computation in Neurons and Networks (BCNN) Summer Course** – invited lecturer (<http://bcnn.princeton.edu>)
- Aug 2011, 2013 **Methods in Computational Neuroscience Summer Course (Woods Hole)** – invited lecturer (“Reinforcement Learning”)
- April 2009 **Programme Gulbenkian Champalimaud Neuroscience Course on Basal Ganglia, Reinforcement and Reward**, invited lecturer.
- 2009 **Hebrew University, Interdisciplinary Center for Neural Computation** – “Reinforcement learning: neural, behavioral, and computational approaches” (with Nathaniel Daw, Hagai Bergman)
- Aug 2008, Aug 2009 **Advanced Course in Computational Neuroscience, Freiburg, Germany** – “Reinforcement learning”, invited lecturer
- May 2008 **Programme Gulbenkian Champalimaud Neuroscience Course on Reinforcement Learning** – “Neural Reinforcement learning: Dopamine and reward”, invited lecturer
- 2008 **Hebrew University, Interdisciplinary Center for Neural Computation** – Mini course on “Reinforcement Learning and Decision Making” (with Nathaniel Daw)

- 2006 **Hebrew University, Interdisciplinary Center for Neural Computation** - "Introduction to Learning and Behavior: Conditioning and the Brain" (graduate course). Novel course that brought together psychological theories on animal conditioning, computational models, and their neural substrates
- July 2005 **Okinawa Computational Neuroscience Course, *Predictions and Decisions* - Tutor**, Computational Modeling. <http://www.irp.oist.jp/ocnc/2005/projects/modeling/niv.html>
- 2003 **Hebrew University, Interdisciplinary Center for Neural Computation** - Lecturer in graduate course "Introduction to Learning and Behavior".
- 1999-2000 **Tel-Aviv University, department of psychology** - Teaching Assistant in undergraduate seminar "Modeling of Rats' Spatial Behavior".
- 1994-1996 **Guide in the Society for the Preservation of Nature in Israel**. Nature classes for elementary school children, guide of youth and family field trips

Mentoring

- Graduate students
- Mingyu Song** – second year student (PNI)
 - Nicole Drummond** – third year student (PNI)
 - Angela Radulescu** – fourth year student (Psychology)
 - Nina Rouhani** – fourth year student (Psychology)
 - Gecia Hermsdorff** – fifth year student (PNI)
 - Yeon Soon Shin** – fourth year student (PNI), jointly supervised by Kenneth Norman
 - Stephanie Chan** – graduated 2015, jointly supervised by Kenneth Norman
 - Andra Geana** – graduated 2015, jointly supervised by Jonathan Cohen, postdoctoral fellow at Brown University (Supervisor: Michael Frank)
 - Eran Eldar** – graduated 2014, postdoctoral fellow at the Max Planck/UCL Centre for Computational Psychiatry at UCL (Supervisor: Raymond Dolan)
 - Samuel J Gershman** – graduated 2013, jointly supervised by Kenneth Norman, postdoctoral fellow at MIT (Josh Tenenbaum), Assistant professor at Harvard since 2015
 - Michael T Todd** – graduated 2013, jointly supervised by Jonathan Cohen, postdoctoral fellow at Berkeley (Mark D'Esposito), currently working at Netflix
- Post-doctoral fellows
- Daniel Bennett** – PhD University of Melbourne
 - Melissa Sharpe** – PhD University of New South Wales
 - Mingbo Cai** – PhD Baylor College of Medicine
 - Sarah DuBrow** – PhD NYU
 - Angela Langdon** – PhD University of Sydney
 - Nicholas Schuck** – PhD University of Berlin, PI at Max Planck Berlin since 2017
 - Reka Daniel** – PhD University of Magdeburg, currently data scientist at Dstillery
 - Robert Wilson** – PhD University of Pennsylvania, Assistant professor at University of Arizona, Tuscon, since 2015
 - Carlos Diuk** – PhD Rutgers University, jointly supervised by Matthew Botvinick, currently at Facebook
- Research assistants
- Valkyrie Falso** – current research assistant and lab manager
 - Katharine Holmes** – currently training for the 2020 Olympics games (fencing team)
 - Angela Radulescu** – currently graduate student in my lab
 - Yuan Chang Leong** – currently graduate student at Stanford (supervisor: Jamil Zaki)
 - Nina Lopatina** – currently postdoc at Berkeley (supervisor: Joni Wallis)

Graduate thesis committees

- Present: DongWon Oh (Advisor: Alex Todorov, PSY) – thesis committee
Lili Cai (Advisor: Ilana Witten, PNI) – thesis committee
Peter Hitchcock (Advisor: Chris Sims, Drexel University) – thesis committee
Joel Finkelstein (Advisors: Ilana Witten, Yael Niv, PSY) – thesis committee
Sam McDougal (Advisors: Jordan Taylor, Yael Niv, PSY) – thesis committee
Heather Wied (Advisor: Geoffrey Schoenbaum, NIDA) – thesis committee
- Past: Olga Lositsky (Advisors: Jonathan Cohen, Ken Norman, PNI) – thesis committee 2017
Ariana Strandburg-Peshkin (Advisor: Iain Couzin EEB) – thesis committee 2016
Alec Solway (Advisor: Matthew Botvinick, PNI) – thesis committee 2013
Dominic Kao (Advisor: Yael Niv, CS) – MSE thesis committee 2012
Bingni Brunton (Advisor: Carlos Brody, MOL) – thesis committee & thesis reader, 2012
Adam Moore (Advisors: Andrew Conway & Jon Cohen, PSY) – thesis committee, 2011
Susan McDuff (Advisor: Kenneth Norman, PSY) – dissertation oral committee, 2009
Tan Lee (Advisor: Susan Fiske, PSY) – thesis oral committee, 2010
Umar Syed (Advisor: Rob Schapire, COS) – nonreader thesis committee, 2010

Undergraduate senior thesis advising

- Present: Julie Newman (PNI, junior and senior advising, 2017-2018)
Riley MacAulay (PNI, junior and senior advising, 2017-2018)
Claire Lee (PNI, junior and senior advising, 2017-2018)
- Past: Jennifer Bu (Psychology, junior and senior advising, 2016-2017)
Alana Jaskir (Computer Science independent work 2016-2017)
Andrew Schilling (PNI, junior and senior advising, 2016-2017)
Katharine Holmes (Psychology, senior thesis advising, 2016-2017)
Jessica Lee (Psychology, senior advising, 2015-2016)
Kelsey McDonnald (Psychology & PNI, junior and senior advising, 2014-2015)
Michael Grannovetter (Psychology & PNI, junior and senior advising, 2013-2015)
Aaron Hauptman (Economics & PNI, secondary advisor, 2014-2015)
Karin Tsai (Computer science independent work, 2010)
Vivian DeWoskin (Psychology junior and senior thesis, 2010-2011)
Alexander Tank (Molecular biology junior and senior thesis, 2010-2011)
Yuan Chang Leong (Psychology senior thesis, 2012-2013)
Momchil Tomov (Computer science independent work, 2013)
Katya Dombrowski (Psychology senior thesis, 2013-2014)
Lauren Song (EEB, secondary advisor, 2013-2014)

Other committees/Advisory boards

- from 2017 Editorial Board member: *Current Opinion in Behavioral Sciences*
- from 2016 Editorial Board member: *Decision*
- from 2016 External Advisory Board member for Silvio O. Conte NIMH Center “*Neurocircuitry of OCD: Effects of Modulation*” (PI: Suzanne Haber)
- from 2016 Advisory Committee member for *Computational Cognitive Neuroscience* (CCN) conference
- 2015-2017 Committee on Public Lectures, Princeton University, member (two-year appointment)
- from 2015 Consulting editor for *Psychological Review*; Editorial board member, *Journal of Computational Psychiatry* (new public-access journal published by MIT Press)

- from 2015 Faculty Advisor, Wilson College, Princeton University
- from 2015 Co-chair of graduate and postdoc professional development committee, PNI (with Tim Buschman)
- from 2014 Director of graduate admissions, PNI (2014: co-director with Matthew Botvinick)
- from 2013 Executive planning committee, Reinforcement Learning and Decision Making meeting (RLDM), General Chair for 2015 conference
- from 2013 Editorial board member: *Behavioral Neuroscience*
- from 2012 Curriculum committee member, PNI
- 2012-2015 Elected board member: Society for Neuroeconomics, Program Committee in 2014
- 2012-2014 Board member - Bowery Babes Inc., a nonprofit organization dedicated to supporting women from pregnancy through the early years of motherhood and beyond, and to protect and enrich downtown Manhattan as a place to raise a family. Chair of Education and Charitable Giving committees.
- 2009,2013 Co-organizer, Princeton Neuroscience Institute annual retreat
- 2012-2013 Organizing Committee - IBAGS XI (meeting of the International Basal Ganglia Society), March 3-7 2013, Eilat, Israel
- 2010-2011 Faculty of 1000 contributing member - Theoretical & Computational Neuroscience
- 2010 Co-Chair, Committee for Student Fellowships (Princeton Neuroscience Institute)
- 2010 Area Chair for NIPS2010 Program Committee
- 2009 Area Chair for NIPS2009 Program Committee; Program Committee for ICML/UAI/COLT Workshop on Abstraction in Reinforcement Learning
- From 2009 EU funded Integrated Project (contract n. ICT-231722) "IM-CLeVeR - Intrinsically Motivated Cumulative Learning Versatile Robots" - International Scientific Advisory Board
- 2009 Neuroscience program admissions committee

Ad hoc reviewer

- (alphabetic order)
- Adaptive Behavior, Behavior and Brain Functions, Cerebral Cortex, Cognition, European Journal of Neuroscience, Frontiers in Computational Neuroscience, Frontiers in Integrative Neuroscience, Human Frontiers Science Program Organization (HFSP), International Conference on Machine Learning (ICML), Journal of Computational Neuroscience, Journal of Mathematical Psychology, Journal of Neurophysiology, Journal of Neuroscience, Learning & Memory, Machine Learning, National Institutes of Health, National Science Foundation, Nature, Nature Neuroscience, Neural Computation, Neuroimage, Neuron, Neuroscience, Neural Information Processing Systems (NIPS), PLoS Computational Biology, Proceedings of the National Academy of Science (PNAS), Psychopharmacology, Reinforcement Learning and Decision Making (RLDM), Scholarpedia, Science, Trends in Cognitive Science