Curriculum Vitae

1. Personal Information

a. **Roesch, Matthew Ryan**, University of Maryland, Department of Psychology and Program in Neuroscience and Cognitive Science, College Park, MD, 20742

b. Current Academic Appointment: **Associate Professor**, University of Maryland, Department of Psychology and Program in Neuroscience and Cognitive Science, College Park, MD, 20742, 2013-present

c. Other Academic Appointments while at UMD: Affiliate Professor in the Department of Biology; Member of Neuroscience and Cognitive Science Program

d. Education

Ph.D. in Neuroscience, Department of Neuroscience and the Center for the Neural Basis of Cognition at the University of Pittsburgh, Pittsburgh, PA, 2004

B.S. with Honors in Neuroscience, Cum Laude, University of Pittsburgh, Pittsburgh, PA, 1997

e. Employment Background

i. Assistant Professor, University of Maryland, Department of Psychology and Program in Neuroscience and Cognitive Science, College Park, MD, 20742, 2009-2013

ii. Assistant Professor, University of Maryland School of Medicine, Department of Anatomy and Neurobiology, Baltimore, MD, 21201, 2007-2009

iii. Post-Doctoral Fellow, University of Maryland School of Medicine, Department of Anatomy and Neurobiology, Baltimore, MD, 21201, 2004-2007

2. Research, Scholarly and Creative Activities

Peer-Reviewed Articles (Google Scholar: 4265 citations; h-idex = 32)

a. Book Chapters

Bissonette GB, **Roesch MR**. Neurophysiology of Reward-Guided Behavior: Correlates Related to Predictions, Value, Motivation, Errors, Attention, and Action. Curr Top Behav Neurosci. 2015 Aug 15. Edited by Eleanor Simpson and Peter Balsam.

Schoenbaum, G., **Roesch, M.R**., Stalnaker, T.A., and Takahashi, Y. (2011) The orbitofrontal cortex and outcome expectancies: optimizing behavior and sensory perception. In: The Neurobiology of Sensation and Reward. Edited by J.A. Gottfried.

Roesch, M.R. and Schoenbaum, G (2011) Dissociating encoding of attention, errors and value in outcome-related neural activity. In: Attention and Performance XXIII. Edited by M. Delgado, E. Phelps and T.W. Robbins.

Roesch, M.R. and Schoenbaum, G. (2006) From Associations to Expectancies: Orbitofrontal Cortex as Gateway Between the Limbic System and Representational Memory In: The Orbitofrontal Cortex. Edited by D.H. Zald and S.L. Rauch.

b. Articles in Journals

Bissonette GB, **Roesch MR**. Editorial: Neural Circuitry of Behavioral Flexibility: Dopamine and Related Systems. Front Behav Neurosci. 2016 Jan 28;10:6. doi: 10.3389/fnbeh.2016.00006.

Bissonette GB, **Roesch MR**. Neurophysiology of rule switching in the corticostriatal circuit. Neuroscience. 2016 Feb 3. pii: S0306-4522(16)00105-6. doi: 10.1016/j.neuroscience.2016.01.062.

Bissonette GB, **Roesch MR**. Development and function of the midbrain dopamine system: what we know and what we need to. *Genes Brain Behav*. 2015 Oct 13.

Bryden DW, Burton AC, Barnett BR, Cohen VJ, Hearn TN, Jones EA, Kariyil RJ, Kunin A, In Kwak S, Lee J, Lubinski BL, Rao GK, Zhan A, **Roesch MR**. Prenatal Nicotine Exposure Impairs Executive Control Signals in Medial Prefrontal Cortex. *Neuropsychopharmacology*. 2016 Feb;41(3):716-25. [Mentored grad students: Burton and Bryden. Mentored Gemstone Team]

Bissonette GB, **Roesch MR**. Neural correlates of rules and conflict in medial prefrontal cortex during decision and feedback epochs. *Front Behav Neurosci*. 2015 Oct 6;9:266.

Bissonette GB, **Roesch MR**. Rule encoding in dorsal striatum impacts action selection. *Eur J Neurosci.* 2015 Oct;42(8):2555-67.

A Hernandez, AC Burton, P O'Donnell, G Schoenbaum, **MR Roesch.** Altered Basolateral Amygdala Encoding in an Animal Model of Schizophrenia. *J Neuro*, 35 (16), 6394-6400 (2015) [Mentored grad student: Burton]

Bryden DW and **Roesch MR**. Executive control signals in orbitofrontal cortex during response inhibition. *J Neuro*, 35 (16), 6394-6400; (2015) [Mentored grad student: Bryden]

Kashtelyan V, Lichtenberg NT, Chen ML, Cheer JF, and **Roesch MR**. Observation of reward delivery to a conspecific modulates dopamine release in ventral striatum. *Current Biology* 24 (21), 2564-2568

Bissonette GB, Schoenbaum G, **Roesch MR**, and Powell EM. Interneurons are necessary for coordinated activity during reversal learning in orbitofrontal cortex. *Biological Psychiatry* (2014; Aug 1)

Bissonette GB, Bryden DW, and **Roesch MR**. You won't regret reading this. *Nature Neuroscience* 17(7):892-3. (2014) [Mentored grad student: Bryden]

Burton AC, Nakamura K, **Roesch MR**. From ventral-medial to dorsal-lateral striatum: Neural correlates of reward-guided decision-making. *Neurobiol Learn Mem*. 2014 May 21. [Mentored grad student: Burton]

Bissonette, GB, Gentry RN, Padmala S, Pessoa L, **Roesch MR**. Impact of appetitive and aversive outcomes on brain responses: linking the animal and human literatures. Frontiers in Systems Neuroscience. *Front Syst Neurosci*. 2014 Mar 4;8:24. [Mentored grad student: Gentry]

Lichtenberg NT, Kashtelyan V, Burton AC, Bissonette GB, **Roesch MR**. Nucleus Accumbens Core lesions enhance two-way active avoidance. *Neuroscience*. 2014, Jan 31. [Mentored grad student: Burton]

Bissonette, G.B., Burton, A.C., Gentry, R.N., Goldstein, B.L., Hearn, T.N., Barnett, B.R., Kashtelyan, V. **& Roesch, M.R.** (2013) Separate populations of neurons in ventral striatum encode value and motivation. *PLoS One*, 8, e64673. [Mentored grad student: Burton]

Bissonette, G.B., Powell, E.M. & **Roesch, M.R.** (2013) Neural structures underlying set-shifting: roles of medial prefrontal cortex and anterior cingulate cortex. *Behavioural brain research*, 250, 91-101.

Burton, A.C., Bissonette, G.B., Lichtenberg, N.T., Kashtelyan, V. & **Roesch, M.R.** (2013) Ventral Striatum Lesions Enhance Stimulus and Response Encoding in Dorsal Striatum. *Biological psychiatry*. [Mentored grad student: Burton]

Burton, A.C., Kashtelyan, V., Bryden, D.W. & **Roesch, M.R.** (2013) Increased Firing to Cues That Predict Low-Value Reward in the Medial Orbitofrontal Cortex. *Cerebral cortex*. [Mentored grad student: Burton and Bryden]

Roesch MR, Esber GR, Bryden DW, Cerri DH, Haney ZR, Schoenbaum G. Normal aging alters learning and attention-related teaching signals in basolateral amygdala. *J Neurosci*. 2012 Sep 19;32(38):13137-44. [Mentored grad student: Bryden]

Bryden DW, Burton AC, Kashtelyan V, Barnett BR, **Roesch MR**. Response inhibition signals and miscoding of direction in dorsomedial striatum. *Front Integr Neurosci*. 2012;6:69. [Mentored grad student: Bryden and Burton; Mentored undergrad student: Barnett]

Roesch MR*, Esber GR*, Bali S, Trageser J, Bissonette GB, Puche A, Holland PC, and Schoenbaum G. Attention-related Pearce-Kay-Hall signals in basolateral amygdala require the midbrain dopaminergic system. *Biol Psychiatry*. 2012 Dec 15;72(12):1012-9.

Stalnaker TA, Calhoon G, Ogawa M, **Roesch MR** and Schoenbaum G. Reward prediction error signaling in dorsomedial striatum is action-specific. *J Neurosci*. 2012 Jul 25;32(30):10296-305.

Roesch MR, Bryden DW, Cerri DH, Haney ZR and Schoenbaum G. Willingness to wait and the encoding of time-discounted reward in the orbitofrontal cortex of aged rats. (*J Neurosci*.2012 Apr 18;32(16):5525-33) [Mentored grad student: Bryden]

Roesch MR, Esber GR, Li J, Daw ND and Schoenbaum. Surprise! Neural correlates of Pearce-Hall and Rescorla-Wagner coexist in the brain. *Eur J Neurosci* (2012 Apr;35(7):1190-200) Invited Review.

Goldstein BL, Barnett BR, Vasquez G, Tobia SC, Kashtelyan V, Burton AC, Bryden DW, **Roesch MR**. Ventral striatum encodes past and predicted value independent of motor

contingencies. *J Neurosci*. 2012 Feb 8;32(6):2027-36. [Mentored undergrad students: Goldstein, Barnett and Kashtelyan; Mentored grad students: Bryden and Burton]

Kashtelyan V, Tobia SC, Burton AC, Bryden DW**, Roesch MR.** Basolateral amygdala encodes upcoming errors but not response conflict. *Eur J Neurosci.* 2012 Feb 22. [Mentored undergrad students: Kashtelyan; Mentored grad students: Bryden and Burton]

Bryden DW, Johnson EE, Tobia SC, Kashtelyan V, **Roesch MR**. Attention for learning signals in anterior cingulate cortex. *J Neurosci.* 2011 Dec 14;31(50):18266-74. [Mentored undergrad students: Johnson and Kashtelyan; Mentored grad student: Bryden]

Takahashi YK, **Roesch MR**, Wilkson RC, Toreson K, O'Donnell P, Niv Y, and Schoenbaum G. Expectancy-related changes in firing of dopamine neurons depend on orbitofrontal cortex. *Nat Neurosci.* 2011 Oct 30;14(12):1590-7.

Roesch, MR and Bryden, DW., Impact of time-discounted reward on neural activity in the rat limbic corticostriatal system, *Front Neurosci.* 2011;5:130 Invited Review. [Mentored grad student: Bryden]

Bryden DW, Johnson EE, Diao E and **Roesch MR**, Impact of expected value on neural activity in rat substantia nigra pars reticulata. (2011) *European Journal of Neuroscience* Jun;33(12):2308-17. [Mentored undergrad students: Johnson and Diao; Mentored grad student: Bryden]

Gruber, A.J., Calhoon, G.G., Shusterman, I., Schoenbaum, G., **Roesch, M.R**., and O'Donnell, P. (2010) More is less: a disinhibited prefrontal cortex impairs cognitive flexibility. *Journal of Neuroscience*. 30:17102-17110.

Calu DJ, **Roesch MR**, Haney RZ, Holland PC, Schoenbaum G. Neural correlates of variations in event processing during learning in central nucleus of amygdala. *Neuron* 2010 Dec 9;68(5):991-1001. [Mentored grad student: Calu]

Roesch MR, Calu DJ, Esber GR, Schoenbaum G. All that glitters ... dissociating attention and outcome expectancy from prediction errors signals. *J Neurophysiol*. 2010 Aug;104(2):587-95. Epub 2010 Jun 16. Invited Review

Stalnaker TA, Calhoon GG, Ogawa M, **Roesch MR**, Schoenbaum G. Neural correlates of stimulus-response and response-outcome associations in dorsolateral versus dorsomedial striatum. *Front Integr Neurosci*. 2010 May 19;4:12.

Roesch MR, Calu DJ, Esber GR, Schoenbaum G. Neural correlates of variations in event processing during learning in basolateral amygdala. *J Neurosci*. 2010 Feb 17;30(7):2464-71. [Mentored grad student: Calu]

Schoenbaum G**, Roesch MR**, Stalnaker TA, Takahashi YK. A new perspective on the role of the orbitofrontal cortex in adaptive behaviour. *Nat Rev Neurosci*. 2009 Nov 11.

Roesch MR, Singh T, Brown PL, Mullins SE, Schoenbaum G. Ventral striatal neurons encode the value of the chosen action in rats deciding between differently delayed or sized rewards. *J Neurosci*. 2009 Oct 21;29(42):13365-76. [Mentored grad student: Singh]

Roesch, M.R. *, Yuji K. Takahashi*****, Thomas A Stalnaker, Richard Z Haney, Donna J Calu, Adam R Taylor, Kathryn A Burke, and Geoffrey Schoenbaum. (2009) The orbitofrontal cortex is necessary for *learning*! *Neuron.* Apr 30;62(2):269-80.

Stalnaker, T.A., Takahashi, Y., **Roesch, M.R.,** and Schoenbaum, G. (2008) Neural substrates of cognitive inflexibility after chronic cocaine exposure. *Neuropharmacology*. 2008 Jul 22.

Roesch, M.R.,* Takahashi Y*****., Stalnaker T.A., and Schoenbaum, G. (2007) Cocaine shifts balance of cue-evoked firing from ventral to dorsal striatum. *Front Integr Neurosci.* 2007 Dec;1(11)

Roesch*, M.R., Calu*****, D.J. and Schoenbaum G., (2007) Dopamine neurons in rat ventral tegmental area encode the more valuable option when deciding between differently sized and delayed rewards. *Nat Neurosci:* Dec;10(12):1615-24. [Mentored grad student: Calu]

Roesch, M.R. and Olson C.R. (2007) Neural activity related to anticipated reward: Does it represent value or reflect motivation? *Ann N Y Acad Sci* Invited Review

Stalnaker, T.A., **Roesch, M.R.,** Franz, T.M., Calu, D.J., Burke K.A., Singh T. and Schoenbaum, G. (2007) Cocaine-induced decision-making deficits are mediated by miscoding in basolateral amygdala. *Nat Neurosci* 10, 949-51.

Stalnaker, T.A., **Roesch M.R.,** Calu, D.J., Burke K.A., Singh T. and Schoenbaum, G. (2007) Neural correlates of inflexible behavior in the orbitofrontal-amygdalar circuit after cocaine exposure. *Ann N Y Acad Sci* May;1104:21-34.

Roesch, M.R., Takahashi, Y., Gugsa, N., Bissonette, G.B. & Schoenbaum, G. Previous cocaine exposure makes rats hypersensitive to both delay and reward magnitude. *J Neurosci.* 27, 245-50 (2007).

Roesch, M.R., Calu D.J., Burke K.A. & Schoenbaum G (2007). Should I stay or should I go? Transformation of time-discounted rewards in orbitofrontal cortex and associated brain circuits. *Ann N Y Acad Sci*, 1104:21-34 Invited Review.

Calu, D.J., **Roesch, M.R.**, Stalnaker, T.A. & Schoenbaum, G. (2007) Associative Encoding in Posterior Piriform Cortex during Odor Discrimination and Reversal Learning. *Cereb Cortex* Jun;17(6):1342-9. Epub 2006 Aug 1

Roesch, M.R., Stalnaker, T.A. & Schoenbaum, G. (2007) Associative Encoding in Anterior Piriform Cortex versus Orbitofrontal Cortex during Odor Discrimination and Reversal Learning. *Cereb Cortex* Mar;17(3):643-52. Epub 2006 May 12

Stalnaker, T.A., **Roesch, M.R.**, Franz, T.M., Burke, K.A. & Schoenbaum, G. (2006) Abnormal associative encoding in orbitofrontal neurons in cocaine-experienced rats during decision-making. *Eur J Neurosci* 24, 2643-53.

Roesch, M.R., Taylor, A.R. & Schoenbaum, G. (2006) Encoding of time-discounted rewards in orbitofrontal cortex is independent of value representation. *Neuron* **51**, 509-20.

Schoenbaum, G., **Roesch, M.R**. & Stalnaker, T.A. Orbitofrontal cortex, decision-making and drug addiction. *Trends Neurosci* 29, 116-24 (2006). Invited Review

Schoenbaum, G., and **Roesch M.,** (2005) Orbitofrontal cortex, associative learning, and expectancies. *Neuron* 47(5):633-636.

Roesch, M.R. and Olson, C.R. (2005) Neuronal activity in primate orbitofrontal cortex reflects the value of time. *J Neurophysiol* 94, 2457-71.

Roesch, M.R. and Olson, C.R. (2005) Neuronal Activity Dependent on Anticipated and Elapsed Delay in Macaque Prefrontal Cortex, Frontal and Supplementary Eye Fields and Premotor Cortex. *J Neurophysiol.* (2):1469-97

Nakamura K, **Roesch, M.R.** and Olson C.R. (2005) Neuronal activity in macaque SEF and ACC during performance of tasks involving conflict. *J Neurophysiol.* Feb;93(2):884-908.

Roesch, M.R. and Olson, C.R. (2004) Neuronal Activity Related to Reward Value and Motivation in Primate Frontal Cortex. *Science.* Apr 9;304(5668):307-10.

Roesch, M.R. and Olson, C.R. (2003) Neuronal Activity Related to Magnitude of Predicted Reward in Macaque Prefrontal Cortex, Frontal and Supplementary Eye Fields and Premotor Cortex. *J. Neurophysiol.* 90: 1766-1789

Rinaman, L., **Roesch, M.R.** and Card, J.P. (1999) Retrograde Transynaptic Pseudorabies Virus Infection of Central Autonomic Circuits in Neonatal Rats. *Developmental Brain Research* 114: 207-216.

* indicates joint first authors.

c. Invited talks

Roots of Compassion, UMD, College Park, 2016
National Institute of Health, ANGST meeting, Bethesda, 2016
Center for Behavioral Neuroscience at American University, Washington DC, 2015
Center for the Neural Basis of Cognition, Carnegie Mellon & Pitt, Pittsburgh, 2015
Scientific Research Center on Decision Neuroscience and Aging, Florida, 2015
Center for the Neural Basis of Cognition, 20 Anniversary speaker, Pittsburgh, 2014
Workshop on Computational Properties of Prefrontal Cortex, Whistler, 2014
Scientific Research Center on Decision Neuroscience and Aging, Florida, 2014
NIDA Behavioral Branch, Baltimore, 2012
Brain awareness week, McDaniel College, 2011
Maryland Psi Chi Honor Society, 2011
Winter Brain Conference, 2008, 2009
Neural Basis of Flexible Associate Learning, SFN, 2008
Mechanism of Brain and Mind, Japan, 2008
Lab visit, Dr. Minuro Kimura, Japan 2008
Brain, Mind, and Society seminar series, Caltech, 2008
Neural Circuits and Decision Making in Rodents, Janelia Farm, 2008
Program in Neuroscience Retreat, University of Maryland, 2008

European Brain and Behavior Society, Italy, 2007
National Eye Institute, Laboratory of Sensorimotor Research, 2007
Linking Affect to Action: Critical Contribution of Orbitofrontal Cortex, 2007

f. Colloquia and Research Presentations

A. C. Burton, G. B. Bissonette, A. C. Zhao, P. K. Patel, M. R. **Roesch**. Cocaine self-administration enhances response-outcome encoding in dorsal striatum. 537.03/BB56, SFN 2015

Dooling RJ, Roesch MR, and Manabe K. Interval timing in Zebrafish (Danio rerio). ABAI's 41st Annual Convention,May 22–26, 2015

Barnett BR, Cohen VJ, Hearn TN, Jones EA, Kariyil RJ, Kunin A, Kwak S, Lee J, Lubinski BL, Rao GK, Zhan A, Bryden DW, Burton AC, and **Roesch MR**. Impact of prenatal nicotine exposure on impulsivity and neural activity in medial prefrontal cortex (Workshop on Computational Properties of Prefrontal Cortex 2014)

Bissonette G, Butts DA, **Roesch MR**; Examination of neural encoding in Medial Dorsal Striatum during rule shifting. SFN 2014

Genry RN, **Roesch MR**; Neural firing in the bed nucleus of the stria terminalis (BNST): Cue and reward modulation during reversals. SFN 2014

Bryden DW, Burton A, **Roesch MR**; Impact of response inhibition on activity in frontal cortex and dorsal striatum. SFN 2014

Savory N, Burton A, Bissonette G, **Roesch MR**. Impact of Cocaine Self-administration on Escape-avoidance. Annual Biomedical Research Conference for Minority Students (ABRCMS 2014)

Bissonette GB, **Roesch MR**, and Powell EM. Genetic variations lead to differential trajectories of interneuron ontogeny, behavior and physiological correlates (GABAergic Signaling in Health and Disease; Neuropharmacology Conference 2014)

Gentry RN, Kashtelyan V, Lichtenberg NT, Sayed N, Lee B, **Roesch MR**. Yin and yang: How expected reward and punishment modulate behavior and its corresponding neural signals (BRIDGES, University of Maryland, 2013)

Burton AC, Bissonette GB, Lichtenberg N, Kashtelyan V, and **Roesch MR**. Ventral striatum lesions enhance stimulus and response encoding in dorsal striatum (BRIDGES, University of Maryland, 2013)

Bryden DW, **Roesch MR**. The role of medial and lateral orbitofrontal cortex in response inhibition (BRIDGES, University of Maryland, 2013)

Gentry RN, Kashtelyan V, Lichtenberg NT, Sayed N, Lee B, **Roesch MR**. Yin and yang: How expected reward and punishment modulate behavior and its corresponding neural signals (SFN 2013)

Burton AC, Bissonette GB, Lichtenberg N, Kashtelyan V, and **Roesch MR**. Ventral striatum lesions enhance stimulus and response encoding in dorsal striatum (SFN 2013)

Bissonette GB, **Roesch MR**. Neural and behavioral examination of Medial Dorsal Striatal function during rule shifting (SFN 2013)

Barnett BR, Cohen VJ, Hearn TN, Jones EA, Kariyil RJ, Kunin A, Kwak S, Lee J, Lubinski BL, Rao GK, Zhan A, Bryden DW, Burton AC, and **Roesch MR**. Impact of prenatal nicotine exposure on impulsivity and neural activity in medial prefrontal cortex (SFN 2013)

Kashtelyan V, Lichtenberg, NT, Chen, ML, Cheer JF, **Roesch MR**. Observation of reward delivery to a conspecific promotes dopamine release in ventral striatum (SFN 2013)

Bryden DW, **Roesch MR**. The role of medial and lateral orbitofrontal cortex in response inhibition (SFN 2013)

J Bellot, O Sigaud, **MR Roesch**, G Schoenbaum, B Girard, M Khamassi. Dopamine neurons activity in a multi-choice task: reward prediction error or value function? Proceedings of the French Computational Neuroscience NeuroComp/ KEOpS 2012

Bryden DW, Burton AC, Kashtelyan V, Barnett BR, and **Roesch MR**. Response inhibition signals and miscoding of direction in dorsomedial striatum (SFN 2012)

Bissonette GB,Goldstein BL, Burton AC, Kashtelyan V and **Roesch MR**. Increased firing in ventral striatum associated with reward and punishment (SFN 2012)

Burton AC, Kashtelyan V, Bryden DW and **Roesch MR**. Increased firing to cues that predict low value reward in medial orbitofrontal cortex (SFN 2012)

Roesch MR, Goldstein G, Vasquez SC, Tobia SC. Burton A, and Bryden DW. Independent and integrated representations of action and outcome in ventral striatum (SFN 2011)

Bryden DW, Tobia SC, Kashtelyan V, **Roesch, MR.** Activity in anterior cingulate cortex increases on behavioral trials after reward contingencies unexpectedly change (SFN 2011)

Stalnaker TA, Calhoon GG, Ogawa M, **Roesch MR** and Schoenabum G. Signaling of reward prediction errors by fast-spiking interneurons in dorsomedial striatum is specific for the action that produced them (SFN 2011)

Bryden DW and **Roesch MR.** Nuerons in substantia nigra pars reticulate encode expected outcome and response bias in rats deciding between differently valued rewards. (2010) Society for Neuroscience abstracts.

Takahashi, Y.K., **Roesch, M.R**., Wilson, R., Niv, Y., Toreson, K., O'Donnell, P., and Schoenbaum, G. (2010) Orbitofrontal cortex is required for expectancy-related changes in phasic firing of midbrain dopamine neurons. Critical Contributions of the Orbitofrontal Cortex to Behavior. A NYAS Meeting, NYC.

Wilson, R., Takahashi, Y.K., **Roesch**, M.R., Schoenbaum, G., and Niv, Y. (2010) A computational model of the role of orbitofrontal cortex and ventral striatum in signaling reward expectancy in reinforcement learning. Neuroscience Abstracts.

Calhoon, G.G., Shusterman, I., Gruber, A., **Roesch**, M., Schoenbaum, G., and O'Donnell, P. (2010) Cognitive flexibility in rats with a neonatal ventral hippocampal lesion is associated with a disinhibited prefrontal cortex. Neuroscience Abstracts.

Takahashi, Y.K., **Roesch**, M.R., Wilson, R., Niv, Y., Toreson, K., O'Donnell, P., and Schoenbaum, G. (2010) Orbitofrontal cortex is required for expectancy-related changes in phasic firing of midbrain dopamine neurons. Neuroscience Abstracts.

Esber, G.R., **Roesch**, M.R., Bissonette, G., Puche, A., Holland, P.C., and Schoenbaum, G. (2010) Attention-related teaching signals in basolateral amygdala do not require input from midbrain dopamine neurons. Neuroscience Abstracts.

Cerri, D.H., Haney, R.Z., Bryden, D.W., **Roesch**, M.R., and Schoenbaum, G. (2010) Delayed reward is discounted less in the orbitofrontal cortex of aged rats. Neuroscience Abstracts.

Calu, D.J., **Roesch, M.R.,** Haney, R.Z., Holland, P.C., and Schoenbaum, G. (2010) Neural correlates of variations in event processing during learning in central nucleus of amygdala. Neuroscience Abstracts.

Calu, D.J., **Roesch, M.R**., and Schoenbaum, G. (2010) Neural activity in central nucleus of amygdala drives increased CS and US processing in response to decrements, but not increments, in reward value. Winter Conference on Brain Research. Breckenridge, CO.

Takahashi, Y.K., **Roesch**, M.R., Trageser, J.C., and Schoenbaum, G. (2010) Ipsilateral orbitofrontal lesions alter signaling of reward prediction errors by dopamine neurons in ventral tegmental area. Winter Conference on Brain Research. Breckenridge, CO.

Stalnaker, TA, Calhoon, G, Ogawa, M, **Roesch**, MR, Schoenbaum, G. (2009) Neural correlates of stimulus-response and response-outcome associations in dorsolateral versus dorsomedial striatum. Neuroscience Abstracts.

Gruber, AJ, **Roesch**, MR, Shusterman, I, Schoenbaum, G, and O'Donnell, P. (2009) Systemically administered mGluR 2/3 agonist attenuates impairments of value-based decision making in the neonatal hippocampal lesion model of schizophrenia. Neuroscience Abstracts.

Roesch, M.R., Calu, D.C., and Schoenbaum, G. (2008) Changes in reward-related signaling in the basolateral amygdala – attention or error signaling? Society for Neuroscience

T. Singh, P.L Brown, S.E. Mullins, G. Schoenbaum, & **M.R. Roesch.** (2008) Decision-related activity in ventral striatum reflects value and direction. Society for Neuroscience

A.J. Gruber, P. O'Donnell, G. Schoenbaum, and **M.R. Roesch**. (2008) Altered behavior and cortical neural activity during an economic decision making task in a developmental rodent model of schizophrenia. Society for Neuroscience

Stalnaker T.A., Singh, T., Calu, D.J., **Roesch, M.R.** and Schoenbaum, G. (2007) Lesions of basolateral amygdala eliminate the reversal impairment caused by cocaine exposure. Society for Neuroscience

Roesch, M.R., Calu, D.J. and Schoenbaum, G. (2007) Dopamine neurons in rat ventral tegmental area encode the more valuable option when deciding between immediate versus delayed rewards. Society for Neuroscience

Takahashi, Y.K., **Roesch, M.R.,** Stalnaker, T.A. and Schoenbaum, G. (2007) Cocaine shifts the balance of associative encoding during decision-making from ventral to dorsolateral striatum. Society for Neuroscience

Calu, DJ, **Roesch**, MR, and Schoenbaum, G. (2007) A comparison of reward-related activity during learning in VTA and OFC. Linking Affect to Action: Critical Contributions of the Orbitofrontal Cortex. A NYAS Meeting, NYC.

Calu D.J., **Roesch, M.R.** and Schoenbaum, G. (2007) Orbitofrontal cortex does not signal reward prediction errors. Society for Neuroscience

Roesch M.R., Takahashi Y, Gugsa N, Bissonette, G.B. and Schoenbaum G. (2006) Previous cocaine exposure makes rats hypersensitive to reward size and delay length.Society for Neuroscience

Calu D.J., **Roesch M.R.**, Stalnaker, T.A. and Schoenbaum G. (2006)
Associative encoding in posterior piriform cortex during odor discrimination and reversal learning. Society for Neuroscience

Stalnaker, T.A., **Roesch, M.R.**, Franz, T., Burke, K.A., and Schoenbaum, G. (2005)
Orbitofrontal cortex fails to represent bad outcomes after cocaine exposure. CPDD.
Orlando, FL.

Calu D.J., Stalnaker T.A., **Roesch M.R.**, Franz T.M. and Schoenbaum, G. (2005). Basolateral amygdala generates abnormally persistent presentations of predicted outcomes and cue value after cocaine exposure. Society for Neuroscience

Schoenbaum G, Stalnaker T.A., **Roesch M.R.** (2005) Associative encoding in anterior piriform cortex versus orbitofrontal cortex during odor discrimination and reversal learning. Society for Neuroscience

Stalnaker, T.A., **Roesch, M.R.**, Franz, T., Burke, K.A., and Schoenbaum, G. (2005)
Orbitofrontal cortex fails to represent bad outcomes after cocaine exposure. CPDD.

Roesch M.R. and Olson C.R., (2003). Distinguishing Reward Representation from Motivational Modulation in Primate Frontal Cortex. Society for Neuroscience

Sather B.L., **Roesch M.R.**, and Olson C.R., (2003). Unilateral Reversible Inactivation of Macaque FEF Produces an Impairment of Saccadic Target Selection as Distinct from a Contralateral Neglect. Society for Neuroscience

Nakamura K., **Roesch M.R.** and Olson C.R., (2002), Error Signals in Macaque Medial Frontal Cortex during Performance of an Oculomotor Task with Conflict. Society for Neuroscience: 464.7

Roesch M.R. and Olson C.R., (2001). Neurons in monkey supplementary eye field and prefrontal cortex exhibit different patterns of dependence on expected reward and delay. Society for

Neuroscience: 59.4

Nakamura K., **Roesch M.R.**, Arai, K and Olson C.R., (2001), Effect of conflict on distinct classes of neurons in the supplementary eye field and prefrontal cortex. Society for Neuroscience: 59.5

Arai K., **Roesch M.R.**, Nakamura, K. and Olson C.R., (2001) Classification of supplementary eye field and prefrontal neurons into categories based on temporal pattern of activity. Society for Neuroscience: 59.6

Roesch M.R., Nakamura K and Olson C.R., (2000). Performance of Monkeys on Oculomotor Tasks Involving Stimulus-Response Incompatibility. Society for Neuroscience: 362.6

Roesch M.R. and Olson C.R. (1999). Neuronal Activity Related to Expected Reward and Expected Delay in Macaque Prefrontal Cortex. Society for Neuroscience: 355.2**.**

g. Sponsored Research: Grants

Principal Investigator, R01: Restoration and Further assessment of the Actor-Critic and Connected Areas After Cocaine Self-Administration. 2016-2021. Percentile = 9%. Amount: $ 1,796,081 (NIDA 2 R01 DA031695-06).

Co-Principal Investigator, R01 10/01/2015– 9/30/2018. CRCNS: US-Fr Research: Neurobehavioral Assessment of a Reward Learning Model. Amount: (NIDA $413,000. R01DA040993-01; ANR: 229,770 €)

Co-I R01 MH071589 (Pessoa: PI) 12/01/2014 – 11/30/2019.
"Interaction of Emotional Perception and Visual Attention" Amount: 2,515,097

Co-Principal Investigator, R01: Neural circuits underlying decisions that cause conspecific distress. Second submission percentile score: 22. On NIMH's "wish list" but not funded.

Principle Investigator, R21: Neural mechanism underlying social recognition of reward. Amount: $405,347 (NIMH R21 MH103806)

Principal Investigator, R01: Impact of cocaine on the Actor/Critic circuit, 2011-2016, Amount: $1,762,372 (NIDA R01DA031695).

Principal Investigator, K01, Orbitofrontal-Accumbens Interactions, Dopamine Modulation and Impulsive Choice, 2007-2012, Amount: $833,500 (NIDA K01 DA021609-01A1)

Co-investigator, UMD ADVANCE (Advancing Women, transforming the University, investing in a culture of inclusive excellence) Interdisciplinary and Engaged Research Seed Grant, 2014, Amount $20,000, PIs: Erica Glasper and Matthew Roesch

Co-investigator, University of Maryland Seed Grant, The role of dopamine in signaling prediction errors during observational learning in normal rats and in rat models of autism, 2011-2012, Amount $74,891, PIs: Matthew Roesch and Joe Cheer

Co-investigator, Tier 2 drif incentive, Center for Integrative Study of Reward Processes, 2011, Amount: $59,985, PIs: Carl Lejuez, Jens Herberholz, Laura MacPherson, Matthew Roesch, Richard Yi, Catalina Kopetz.

3. Teaching, Mentoring and Advising.

a. Courses, Lectures and Course Development

"Neurophysiology of Reward, Decision-Making and Executive Function": PSYC

"Animal Learning and Behavior": PSYC 309F, Spring semesters; 2010-present

Gemstone Instructor: GEMS; Fall and spring semesters; Team RITALIN: 2011-2014

Gemstone Instructor: GEMS; Fall and spring semesters; Team STRIDE: 2014-2016

Lab Credit: 2-3 Students per semester. PSYC499H; PSYC479; BSCI399(1325)

Guest lectures at UM: "Prefrontal Cortex" (Fritz, Boldger); "Translational Neuroscience" (Kanold); "Disorders of the Nervous System" (Singer, Gaudry); "NACS graduate readings course" (Moss); "Temperament and personality" (Shackman)

Instructor for medical neuroscience small groups session (2 weeks), "Drug addiction and decision-making", University of Maryland School of Medicine, 2008

b. Advising: Research Direction

i. *Post-doc:*

Greg Bissonette: Post-doc, 2011-present
Daniel Bryden: Post-doc, 2015-present

ii. *Doctoral:*

a. *Ronny Gentry:* Graduate Student, NACS, 2012-present
b. *Amanda Burton:* Graduate Student, NACS, 2012-present
c. *Daniel Bryden*: Graduate Student, NACS, 2009-2015
    i. UMD Distinguished Dissertation Award, 2016
    ii. UMD Graduate Poster Award
    iii. NSF honorable mention
d. *Tara* Augenstein: Graduate Student, T32 Co-Advisor, PYSC, 2014-2015

iii. *Undergraduate:*

a. *Gemstone, Team STRIDE:* 11 undergraduate students, 2014-2017
b. *Nishell Savory*, Summer Research Initiative in BSOS for Minorities, 2014
c. *Brian Lee,* McNair Internship Experience and Harper Travel Award winner, 2013
d. *Gemstone, Team RITILAN*: 11 undergraduate students, 2011-2014
e. *Brandon Goldstein*: Undergraduate honors student, Psychology, 2010-2012
f. *Hannah Kleiman:* Summer intern; College Park Scholars program
g. *Emily Johnson*: Undergraduate honors student, Psychology, 2009-2011
h. *Psi Chi mentor*: Veronica Fox, Xavier Diao, and Amanda Burton

i. *Paid undergrad interns*: Brian Barnett, Taylor Hearn, Emily Jones, Mindy Chen
j. *Lab Credit/Lab volunteers*: ~2-3 Students per semester: Amanda Burton, Brian Barnett, Ryan Mannion, Gloria Vasquez, Taylor Fedechko, Nowshin Sayed, Shannon Morrow, Adam Zhao, Brian Lee, Nick Brown, Maria Donelly, Kendall Heatly, Elyse Bloom, Janet Adeola, Brandon Goldstein, Xavier Diao, Emily Johnson, Mindy Chen, Pooja Patel, Sarah Haughwout, Shannon Morrow, Steven Tobia, Vadim Kashtelyan, Nina Lichtenberg, Jheeyae Ahn, Rachel Herman

iv. *High School:*
a. *Joshua Franklin:* Eleanor Roosevelt High School Science and Technology Internship Program, 2013-2014
b. *Yvonne-Crystal Monterrosa*: Poolesville High school Science, Math and Computer Science Internship Program, Summer 2012
c. *Priya Kavalam*: Eleanor Roosevelt High School Science and Technology Internship Program, 2011-2012
d. *Renuka Tripu*: Poolesville High school Science, Math and Computer Science Internship Program, Summer 2010
e. *Gloria Vasquez*: Eleanor Roosevelt High School Science and Technology Internship Program, 2010-2011

4. Service

a. Editorships, Editorial Boards and Reviewing Activities

i. *Associate Editor* for Journal of Neuroscience, 2012-Present
ii. *NIH Study Section:* Sensory, Perceptual and Cognitive (SPC; 2015)
iii. *Handling Editor* for Frontiers: Neural circuitry of behavioral flexibility
iv. *Review Editor* for Frontiers in Behavioral Neuroscience
v. *NIDA reviewer* for Cutting-Edge Basic Research Awards (CEBRA; R21)
vi. *NIDA reviewer* for (EUREKA; R01)
vii. *The Wellcome Trust reviewer* Sir Henry Dale Fellowship (2013)
viii. *Ad hoc Journal Reviewer:* On average ~4/month: Journal of Neuroscience, Neuroscience (Top reviewer 2011), Nature Neuroscience, Science, Nature Communications, Journal of Neuroscience Methods, Current Biology, European Journal of Neuroscience, Trends in Cognitive Neuroscience, Progress in Neurobiology, Behavioral Pharmacology, Neuroscience letters, Neuropsychopharmacology, Frontiers in Decision Neuroscience, Journal of Neurophsyiology, Cognitive, Affective, and Behavioral Science, Learning and Memory, Neurobiology of Aging, Cerebral Cortex, PLOS one, Schizophrenia Bulletin, Neuropsychologia, Scientific Reports, and Neurobiology of Learning and Memory.

b. Campus Service

Univ. of Maryland Laboratory Operations and Safety Committee (LOSC), 2016-2019
Psychology Merit Review Committee 2016-2018
Graduate Student Probation committee 2016
NACS seminar host, 2016
U Maryland Institutional Animal Care and Use Committee (IACUC), 2015-present
Psychology Executive Committee, 2015-present
NACS Graduate Admissions Director, 2014-present
NACS executive committee, 2014-present

Maryland Neuroscience Society, Faculty Advisor, 2014-present
Reviewer for NACS fellowships (Dissertation, Wylie, and Hodos), 2014-present
Mind, Brain, and Behavior co-leader for retreat preparation (2014)
BRB annex committee (2013)
BSOS College Council Psychology Representative (2013-2015)
Renovations committee (2013-2015)
Biological and Chemical Hygiene (BACH) committee, 2011-2013.
NACS Graduate Admissions Committee, 2011-present
Ad hoc role for Glasper hiring committee in psychology
Announcer at psychology commencement ceremony (2010-2011)

c. Thesis committees:

Graduate

Krystyna Solarana, PhD student, Neuroscience and Cognitive Science, Dean's Rep
Aminah Sheikh, PhD student, Neuroscience and Cognitive Science, Dean's Rep
Andrew Venezia, PhD student, Neuroscience and Cognitive Science, Dean's Rep
Srikanth Padmala, PhD student, Neuroscience and Cognitive Science
Matthew Swierzbinksi, PhD student, Neuroscience and Cognitive Science
Claire Kaplan, Masters student, Psychology
Richard Smith, PhD student, BISI-PSYS; Dean's Representative
Moon Choi, Graduate student, Neuroscience and Cognitive Science
Sarada Viswanathan, Graduate student, BISI-PSYS; Dean's Representative
Heather Wied, MD/PhD student, Program in Neuroscience, U Maryland SOM
Daniel Bryden, Graduate student, Neuroscience and Cognitive Science
Ronny Gentry, Graduate student, Neuroscience and Cognitive Science
Amanda Burton, Graduate student, Neuroscience and Cognitive Science
Yu Gu, Graduate student, Neuroscience and Cognitive Science; Dean's Representative
Gerry Carter, Graduate student, Biology
Karen Montey, Graduate student, Biology
Alexia Nunez Parra, Graduate student, Neuroscience and Cognitive Science
Kevin Donaldson, Graduate student, Neuroscience and Cognitive Science
Teghi Singh, Graduate student, Program in Neuroscience, U Maryland SOM

Undergraduate

Vishnupriya Kareddy, Undergraduate honor theses, Biology
Team BRAIN BLAST, Undergraduate Gemstone Honors defense
Team PANCREAS, Undergraduate Gemstone Honors defense
Meghan Murphy, Undergraduate honors thesis, Psychology
Cecelia Kim, Undergraduate honors theses defense, Biology
Rob Maurer, Undergraduate honors theses defense, Biology
Alexandra Houston-Ludlam, Undergraduate honors thesis, Psychology
Ka Yang, Undergraduate honors thesis defense, Biology
Sanmet Singh, Undergraduate honors thesis defense, Biology
Awais Mailik, Undergraduate honors thesis defense, Biology
Emily Johnson, Undergraduate honors thesis defense, Psychology
Laurene Dampare, Undergraduate honors thesis defense, Psychology
Juan F. Duque, Undergraduate honors thesis defense, Psychology

d. Examination and Student Committees

Graduate

Ruilong Hu, Graduate student, Neuroscience and Cognitive Science
Moon Choi, Graduate student, Neuroscience and Cognitive Science
Rachel Adler, Graduate student, Neuroscience and Cognitive Science
Vanessa Medley, Graduate student, Psychology
Gerry Carter, Graduate student, Biology
Graham Marquart, Graduate student, Neuroscience and Cognitive Science
Yu Gu, Graduate student, Neuroscience and Cognitive Science
Molly Hyer, Graduate student, Neuroscience and Cognitive Science
Dan Bryden, Graduate student, Neuroscience and Cognitive Science
Ronny Gentry, Graduate student, Neuroscience and Cognitive Science
Amanda Burton, Graduate student, Neuroscience and Cognitive Science

e. Community

Mentor for high school students performing research in my lab as part of their Science Internship Program (Poolesville and Eleanor Roosevelt)

5. Awards and Honors

Mentor of the Year, Gemstone, Honors College, U Maryland, 2013
Nominated by Psychology for Teacher and Mentor award from BSOS, 2013
Nominated by UMCP to submit for Searle Scholar fellowship 2010
Winter brain conference travel award 2009
Frontiers in Addiction Research 2008 Travel Award
Cellular and Integrative Neuroscience Post-Doctoral Training Grant, 2005-2007
National Science Foundation IGERT (Integrative Graduate Education and Research Training) fellowship, 2003-2004
National Institutes of Health predoctoral fellowship, 1999-2000
James E. Bradler Award for Excellence in Research, Department of Neuroscience, University of Pittsburgh, 1996
Center for Neuroscience at the University of Pittsburgh (CNUP) undergraduate fellowship, 1996