

Alberto J. Del Arco

Associate Professor of Exercise Science
Department of Health, Exercise Science and Recreation Management
School of Applied Sciences
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EDUCATION

- 2000 - 2002** **Postdoctoral Training.** Department of Neuroscience, Karolinska Institute, Stockholm, Sweden
- 2000** **Ph.D. Neuroscience.** Faculty of Medicine, Universidad Complutense, Madrid, Spain
- 1994** **B.A. Biology.** Faculty of Biology, Universidad Complutense, Madrid, Spain

CAREER

- 2018 -** **Associate Professor,** Department of Health, Exercise Science and Recreation Management, School of Applied Sciences, University of Mississippi, Oxford, MS
- 2018 -** **Adjunct Associate Professor,** Department of Biomolecular Sciences, School of Pharmacy, University of Mississippi, Oxford, MS
- 2016 -** **Scientist/Educator,** Department of Neurobiology and Anatomical Sciences, University of Mississippi Medical Center, Jackson, MS
- 2015 - 2018** **Assistant Professor,** Department of Health, Exercise Science and Recreation Management, School of Applied Sciences, University of Mississippi, Oxford, MS
- 2009 - 2015** **Visiting Scholar.** Department of Neuroscience, University of Pittsburgh, Pittsburgh, PA
- 2007 - 2015** **Profesor Contratado Doctor** (permanent Faculty appointment). Department of Physiology, Faculty of Medicine, Universidad Complutense, Madrid, Spain
- 2004 - 2006** **Profesor Ayudante Doctor** (temporary Faculty appointment), Department of Physiology, Faculty of Medicine, Universidad Complutense, Madrid, Spain
- 2003** **Research Collaborator.** Department of Physiology, Faculty of Medicine, Universidad Complutense, Madrid, Spain

RESEARCH INTEREST

Prefrontal cortex • nucleus accumbens • amygdala • ventral tegmental area • NMDA receptors • dopamine • corticosterone • *in vivo* electrophysiology • stress • physical activity • motor control • learning and memory • aging • psychiatric disorders

PUBLICATIONS

For more detailed information about the publication record, see Google Scholar:

<https://scholar.google.com/citations?user=e1qGlaIAAAAJ&hl=en&oi=ao>

Original research articles

- Lemon, C., Del Arco, A. (2021) Intermittent social stress produces different short- and long-term effects on effort-based reward-seeking behavior. *Behav. Brain Res.* 417:113613.
- Hill, C.M., Waddell, D.E., Del Arco, A. (2021) Cortical preparatory activity during motor learning reflects visuomotor retention deficits after punishment feedback. *Exp. Brain Res.* doi: 10.1007/s00221-021-06200-x.
- Hill, C.M., Stringer, M., Waddell, D.E., Del Arco, A. (2020) Punishment Feedback Impairs Memory and Changes Cortical Feedback-Related Potentials During Motor Learning. *Front. Hum Neurosci.* 14: 294.
- Del Arco, A., Park, J., Moghaddam, B. (2020) Unanticipated stressful and rewarding experiences engage the same prefrontal cortex and ventral tegmental area neuronal populations. *eNeuro* 7: ENEURO.0029-20.2020.
- Sullivan, L., Shaffer, H., Hill, C., Del Arco, A. (2019) Time-dependent changes in cognitive flexibility performance during intermittent social stress: Relevance for motivation and reward-seeking behavior. *Behav. Brain Res.* 370: 111972.
- Ponce, P., Del Arco, A., Loprinzi, P. (2019) Physical activity *versus* psychological stress: Effects on salivary cortisol and working memory performance. *Medicina* 55: 119.
- Ikuta, T., Del Arco, A., Karlsgodt, K.H. (2018) White matter integrity in the fronto-striatal accumbens predicts impulsivity. *Brain Imaging and Behavior* 12: 1524-1528.
- Loprinzi, P. D., Ikuta, T., Del Arco, A. (2018) Dose-response associations between physical activity and cognitive function in a national sample of older adults. *American Journal of Health Promotion.*32:554-560.
- Del Arco, A., Park, J., Wood, J., Kim, Y., Moghaddam, B. (2017) Adaptive encoding of outcome prediction by prefrontal cortex ensembles supports behavioral flexibility. *J Neurosci.* 37: 8363-8373.
- Ronzoni, G., Del Arco, A., Mora, F., Segovia, G. (2016) Enhanced noradrenergic activity in the amygdala contributes to hyperarousal in an animal model of PTSD. *Psychoneuroendocrinology* 70: 1-9.
- Junchol, P., Wood, J., Bondi, C., Del Arco, A., Moghaddam, B. (2016) Anxiety evokes hypofrontality and disrupts rule-relevant encoding by dorsomedial prefrontal cortex neurons. *J Neurosci.* 36: 3322-3335.
- Ronzoni, G., Antón, M., Mora, F., Segovia, G., Del Arco, A. (2016) Infralimbic cortex controls the activity of the hypothalamus-pituitary adrenal axis and the formation of aversive memory: effects of environmental enrichment. *Behav. Brain Res.*297: 338-344
- Del Arco, A., Ronzoni, G., Mora, F. (2015) Hypofunction of prefrontal cortex NMDA receptors does not change stress-induced release of dopamine and noradrenaline in amygdala but disrupts aversive memory. *Psychopharmacology* 232: 2577-2586.
- Garrido, P., De Blas, M., Ronzoni, G., Cordero, I., Antón, M., Giné, E., Santos, A., Del Arco, A., Segovia, G., Mora, F. (2013) Differential effects of environmental enrichment and isolation housing on the hormonal and neurochemical responses to stress in the prefrontal cortex of the adult rat: relationship to working and emotional memories. *J. Neural Transm.* 120: 829-843.
- Garrido, P., De Blas, M., Del Arco, A., Segovia, G. Mora, F. (2012) Aging increases plasma but not hippocampal or prefrontal corticosterone levels in response to acute stress. *Neurobiol. Aging* 33: 375-382.

- Del Arco, A., Ronzoni, G., Mora, F. (2011) Prefrontal stimulation of GABA_A receptors counteracts the corticolimbic hyperactivity produced by NMDA antagonists in the prefrontal cortex of the rat. *Psychopharmacology* 214: 525-536.
- Del Arco, A., Segovia, G., De Blas, M., Garrido, P., Acuña-Castroviejo, D., Pamplona, R., Mora, F. (2011) Prefrontal cortex, caloric restriction and stress during aging: Studies on dopamine and acetylcholine release, BDNF and working memory. *Behav. Brain Res.* 216:136-145.
- Segovia, G., Del Arco, A., De Blas, M., Garrido, P., Mora, F. (2010) Environmental enrichment increases the in vivo extracellular concentration of dopamine in the nucleus accumbens: a microdialysis study. *J. Neural Transm.* 117: 1123-1130.
- Del Arco, A., Segovia, G., Mora, F. (2008) Blockade of NMDA receptors in the prefrontal cortex increases dopamine and acetylcholine release in the nucleus accumbens and motor activity. *Psychopharmacology* 201: 325-338.
- Segovia, G., Del Arco, A., Garrido, P., De Blas, M., Mora, F. (2008) Environmental enrichment reduces the response to stress of the cholinergic system in the prefrontal cortex during aging. *Neurochem. Int.* 52: 1198-1203.
- Segovia, G., Del Arco, A., De Blas, M., Garrido, P., Mora, F. (2008) Effects of an enriched environment on the release of dopamine in the prefrontal cortex produced by stress and on working memory during aging in the awake rat. *Behav. Brain Res.* 187: 304-311.
- Del Arco A., Segovia G., Garrido P., De Blas M., Mora F. (2007) Stress, prefrontal cortex and environmental enrichment: Studies on dopamine and acetylcholine release and working memory performance in rats. *Behav. Brain Res.* 176: 267-276.
- Del Arco A., Segovia G., Canales J.J., Garrido P., De Blas M., García-Verdugo J.M., Mora F. (2007) Environmental enrichment reduces the function of D1 dopamine receptors in the prefrontal cortex of the rat. *J. Neural Transm.* 114: 43-48.
- Del Arco A., Mora F., Mohammed A.H., Fuxe K. (2007) Stimulation of D2 receptors in the prefrontal cortex reduces PCP-induced motor activity, acetylcholine release and dopamine metabolism in the nucleus accumbens. *J. Neural Transm.* 114: 185-193.
- Del Arco A. And Mora F. (2005) Glutamate-dopamine in vivo interaction in the prefrontal cortex modulates the release of dopamine and acetylcholine in the nucleus accumbens of the awake rat. *J. Neural Trans.* 112: 97-109.
- Del Arco A., Zhu S, Teraasma A, Mohammed A.H. And Fuxe K. (2004) Hyperactivity to novelty induced by social isolation is not correlated with changes in D2 receptor function in striatum. *Psychopharmacology* 171: 148-155.
- Díaz-Cabiale, Z, Vivó, M, Del Arco, A., O'Connor, W.T., Harte, M.K, Müller, C.E., Martínez, E., Popoli, P., Fuxe, K., Ferré, S. (2002) Metabotropic glutamate mGlu5 receptor-mediated modulation of the ventral striopallidal GABA pathway in rats. Interactions with adenosine A2a and dopamine D2 receptors. *Neurosci. Lett.* 324: 154-158.
- Del Arco, A., Mora, F. (2002) NMDA and AMPA/Kainate glutamatergic agonists increase the extracellular concentrations of GABA in the prefrontal cortex of the freely moving rat: modulation by endogenous dopamine. *Brain Res. Bull.* 57: 623-630.
- Del Arco, A., Segovia, G., Mora, F. (2001) Dopamine release during stress in the prefrontal cortex of the rat decreases with age. *NeuroReport* 12: 4019-4022.
- Del Arco, A., Mora, F. (2001) Dopamine release in the prefrontal cortex during stress is reduced by the local activation of glutamate receptors. *Brain Res. Bull.* 56: 125-130.

- Del Arco, A., Segovia, G., Mora, F. (2001) Endogenous glutamate-aurine interaction in striatum and nucleus accumbens of the freely moving rat: studies during the normal process of aging. *Mech. Ageing Dev.* 122: 401-414.
- Segovia, G., Del Arco, A., Prieto, L., Mora, F. (2001) Glutamate-glutamine cycle and aging in striatum of the awake rat: effects of a glutamate transporter blocker. *Neurochem. Res.* 26: 37-41.
- Del Arco, A., Mora, F. (2000) Endogenous dopamine potentiates the effects of glutamate on extracellular GABA in the prefrontal cortex of the freely moving rat. *Brain Res. Bull.* 53: 339-345.
- Márquez De Prado, B., Castañeda, T.R., Galindo, A., Del Arco, A., Segovia, G., Reiter, R., Mora, F. (2000) Melatonin disrupts the circadian rhythms of glutamate and GABA in the neostriatum of the awake rat: a microdialysis study. *J. Pineal Res.* 29: 209-216.
- Del Arco, A., Segovia, G., Mora, F. (2000) Effects of endogenous glutamate on extracellular concentrations of taurine in striatum and nucleus accumbens of the awake rat: involvement of NMDA and AMPA/Kainate receptors. *Amino Acids* 19: 729-738.
- Galindo, A., Del Arco, A., Mora, F. (1999) Endogenous GABA potentiates the potassium-induced release of dopamine in striatum of the freely moving rat: a microdialysis study. *Brain Res. Bull.* 50: 209-214.
- Segovia, G., Del Arco, A., Mora, F. (1999) Effects of aging on the interaction between glutamate, dopamine and GABA in striatum and nucleus accumbens of the awake rat. *J. Neurochem.* 73: 2063-2072.
- Del Arco, A., Mora, F. (1999) Effects of endogenous glutamate on extracellular concentrations of GABA, dopamine and dopamine metabolites in the prefrontal cortex of the freely moving rat: involvement of NMDA and AMPA/KA receptors. *Neurochem. Res.* 24: 1027-1035.
- Exposito, I., Del Arco, A., Segovia, G., Mora, F. (1999) Endogenous dopamine increases extracellular concentrations of glutamate and GABA in striatum of the freely moving rat: involvement of D1 and D2 dopamine receptors. *Neurochem. Res.* 24: 849-856.
- Segovia, G., Del Arco, A., Mora, F. (1999) Role of glutamate receptors and glutamate transporters in the regulation of the glutamate-glutamine cycle in the awake rat. *Neurochem. Res.* 24: 779-783.
- Del Arco, A., González-Mora, J.L., Armas, V.R., Mora, F. (1999) Amphetamine increase the extracellular concentration of glutamate in striatum of the awake rat: involvement of high affinity transporter mechanisms. *Neuropharmacology* 38: 943-954.
- Del Arco, A., Martínez, R., Mora, F. (1998) Amphetamine increases extracellular concentrations of glutamate in the prefrontal cortex of the awake rat: a microdialysis study. *Neurochem. Res.* 23: 1153-1158.
- Del Arco, A., Castañeda, R. T., Mora, F. (1998) Amphetamine releases GABA in striatum of the freely moving rat: involvement of calcium and high affinity transporter mechanisms. *Neuropharmacology* 37: 199-205.
- Segovia, G., Del Arco, A., Mora, F. (1997) Endogenous glutamate increases extracellular concentrations of dopamine, GABA and taurine through NMDA and AMPA/Kainate receptors in striatum of the freely moving rat: a microdialysis study. *J. Neurochem.* 69: 1476-1483.

Review articles

- Mora, F., Segovia, G., Del Arco, A., De Blas, M., Garrido, P. (2012) Stress, neurotransmitters, corticosterone and body-brain integration. *Brain Res.* 1476: 71-85.
- Del Arco, A., Mora, F. (2009) Neurotransmitters and prefrontal cortex-limbic system interactions: implications for plasticity and psychiatric disorders. *J. Neural Transm.* 116: 941-952.
- Segovia, G., Del Arco, A., Mora, F. (2009) Environmental enrichment, prefrontal cortex, stress and aging of the brain. *J. Neural Transm.* 116: 1007-1016.
- Del Arco A., Mora F. (2008) Prefrontal cortex-nucleus accumbens interaction: in vivo modulation by dopamine and glutamate in the prefrontal cortex. *Pharmacol. Biochem. Behav.* 90: 226-235.
- Mora, F., Segovia, G., Del Arco, A. (2008) Glutamate-dopamine-GABA interactions in the aging basal ganglia. *Brain Res. Rev.* 58: 340-353.
- Mora F., Segovia G., Del Arco A. (2007) Aging and plasticity: Structural changes and neurotransmitters dynamic in several areas of the brain. *Brain Res. Rev.* 55: 78-88.
- Del Arco A., Segovia G, Fuxe K., Mora F. (2003) Changes of dialysate concentrations of glutamate and GABA in the brain: an index of volume transmission mediated actions? *J. Neurochem.* 85: 23-33.
- Segovia, G., Porrás, A., Del Arco, A., Mora, F. (2001) Glutamatergic neurotransmission in aging: a critical perspective. *Mech. Ageing Dev.* 122: 1-29.

Book chapters

- Mora F., Segovia G., Del Arco A. (2010) Envejecimiento cerebral. In: Fisiología Humana (Eds. Tresguerres, J.A.F., Ariznavarreta, C., Cachofeiro, V., Cardinali, D., Escrich Escriche, E., Gil-Loyzaga, P., Lahera Juliá, V., Mora, F., Romano Pardo, M., Tamargo Menéndez, J.). McGraw Hill Interamericana, pp. 1154-1162.
- Porrás, A., Del Arco, A., Segovia, G. (2006) Neurociencias. In: Psiquiatría Geriátrica (Eds. Agüera, L., Cervilla, J., Martín, M.). Masson (Elsevier), pp. 125-158.
- Del Arco A., Mohammed A., Fuxe K., Mora F. (2003) Prefrontal cortex D2 receptors regulate spontaneous motor activity and extracellular dopamine and acetylcholine in the nucleus accumbens of the rat. In: Monitoring Molecules in Neuroscience (Eds. Kehr, J., Fuxe, K., Svensson, T. and Ungerstedt, U), pp. 322-324.
- Mora F., Del Arco A., Segovia G. (2003) Glutamate-dopamine interactions in striatum and nucleus accumbens of the conscious rat during aging. In: Basal Ganglia VI. (Ed. Graybiel, A.M.). Plenum Press. N.Y., pp. 615-622.
- Mora, F., Segovia, G., Del Arco, A. (1999) Endogenous glutamate-dopamine-GABA interactions in specific circuits of the brain of the awake animal. In: Recent Research Developments in Neurochemistry. (Ed. Pandalai, S.G.). Research Signpost, Trivandrum, India, pp. 171-178.
- Segovia, G., Del Arco, A., Mora, F. (1996) Endogenous glutamate, through NMDA and AMPA receptors, differentially mediates increases in dopamine, GABA and taurine in striatum of the freely moving rat. In: Monitoring Molecules in Neuroscience. (Eds. González-Mora, J.L., Borges, R. and Mas, M.), pp. 251-252.
- Del Arco, A., Segovia, G., Mora, F. (1996) Endogenous glutamate produces an increase in extracellular concentrations of dopamine, GABA and taurine in striatum of the freely moving rat: correlational studies. In: Monitoring Molecules in Neuroscience. (Eds. González-Mora, J.L., Borges, R. and Mas, M.), pp. 253-254.

CONFERENCE ABSTRACTS

- Harris, H.M., Del Arco, A. (2021) Intermittent social defeat stress decreases the neuronal response to reward-predicting cues in the prefrontal cortex during a reward-seeking task. 50th Society for Neuroscience (Virtual)
- Hill, C., Waddell, D., Del Arco, A. (2021) Reinforcement feedback changes beta and gamma neural oscillations during visuomotor learning. 50th Society for Neuroscience (Virtual)
- Sullivan, L., Shaffer, H., Hill, C., Del Arco, A. (2019) Effects of repeated intermittent episodes of social stress on the acquisition and extinction of a reward-seeking task. 49th Society for Neuroscience. Chicago. USA
- Hill, C., Stringer, M., Waddell, D., Del Arco, A. (2019) Punishment, but not reward, impairs retention and decreases cortical feedback related potentials during motor learning. 49th Society for Neuroscience. Chicago. USA
- Park, J., Del Arco, A., Yu B., Moghaddam, B. (2016) Risky reward seeking disrupts coordination of prefrontal cortex and VTA neuronal activity. 46th Society for Neuroscience. San Diego. USA
- Park, J., Yu B., Del Arco, A., Moghaddam, B. (2015) Mesoprefrontal neuronal encoding of anxiety-related changes in goal-directed behavior. 45th Society for Neuroscience. Chicago. USA
- Del Arco, A., Kim, Y., Park, J., Wood, J., Moghaddam, B. (2014) Outcome anticipation, but not outcome feedback, activity in the prefrontal cortex guides behavioral adaptation. 44th Society for Neuroscience. Washington D.C. USA
- Park, J., Bondi, C., Del Arco, A., Wood, J., Moghaddam, B. (2014) Effect of anxiety on spontaneous activity of the prefrontal cortex and its neuronal correlates of the extra-dimensional set-shifting task . 44th Society for Neuroscience. Washington D.C. USA.
- Ronzoni, G., Del Arco, A., Mora, G., Segovia, G. (2014) Changes of noradrenergic activity in the amygdala of the rat contribute to hiperarousal after an acute traumatic event. 9th Federation of European Neuroscience Societies. Milan, Italy.
- Del Arco, A., Kim, Y., Wood, J., Park, J., Moghaddam, B. (2013) Neuronal activity in prelimbic and orbitofrontal cortex during operant set shifting in rats. 43rd Society for Neuroscience. Washington D.C. USA.
- Del Arco, A., Kim, Y., Wood, J., Moghaddam, B., Bradberry, C. (2012) Prefrontal cortical neuronal activity during an automated operant set shifting task in rats. 42nd Society for Neuroscience. New Orleans, LA, USA.
- Del Arco A, Ronzoni G., Mora F. (2012) Prefrontal cortex NMDA antagonists and amygdala response to stress: Studies on dopamine, noradrenaline and corticosterone dialysate concentrations and aversive memory. 8th Federation of European Neuroscience Societies. Barcelona, Spain.
- Ronzoni, G., Antón, M., Del Arco, A., Segovia, G., Mora, F. (2012) Environmental enrichment and stress: Role of infra-limbic prefrontal cortex in modulating aversive memory and stress-induced corticosterone blood levels. 8th Federation of European Neuroscience Societies. Barcelona, Spain.
- Del Arco, A., Bondi, C., Burkowsky, A., Moghaddam, B. (2010) The effects of anxiogenics, corticosterone and fear conditioning on attention and behavioral flexibility in rats. 40th Society for Neuroscience. San Diego, CA, USA.

- Bondi, C., Wood, J., Del Arco, A., Moghaddam, B. (2010) The effect of anxiogenics on single unit activity and local field potential oscillations in prefrontal cortex of freely moving rats. 40th Society for Neuroscience. San Diego, CA, USA.
- Garrido, P., De Blas, M., Del Arco, A., Segovia, G., Mora, F. (2010) Environmental enrichment but not aging modifies the stress-induced increases of corticosterone in the prefrontal cortex of the awake rat. 7th Federation of European Neuroscience Societies. Amsterdam, Netherlands.
- Del Arco, A., Ronzoni, G., Cordero, I., Mora, F. (2010) NMDA blockade in the prefrontal cortex increases dialysate concentrations of acetylcholine and corticosterone in the hippocampus and motor activity: Role of prefrontal GABA_A stimulation. 7th Federation of European Neuroscience Societies. Amsterdam, Netherlands.
- De Blas, M., Garrido, P., Segovia, G., Del Arco, A., Mora, F. (2008) Environmental enrichment and the interaction between glutamate and dopamine, acetylcholine and GABA in the nucleus accumbens of the awake rat. 6th Federation of European Neuroscience Societies Geneva, Switzerland.
- Garrido, P., De Blas, M., Del Arco, A., Segovia, G., Mora, F. (2008) Environmental enrichment suppresses dopamine and corticosterone increases produced by acute stress in the prefrontal cortex of the rat. 6th Federation of European Neuroscience Societies Geneva, Switzerland.
- Garrido, P., Del Arco, A., Segovia, G., De Blas, M., Mora, F. (2007) Enriquecimiento ambiental, envejecimiento y corteza prefrontal: efecto del estrés sobre la liberación de dopamina, acetilcolina, glutamato y GABA y sobre la memoria de trabajo. 12th Congreso de la Sociedad Española de Neurociencia. Valencia, Spain.
- De Blas, M., Garrido, P., Segovia, G., Del Arco, A., Mora, F. (2007) Enriquecimiento ambiental y envejecimiento: estudio de la interacción glutamato-dopamina en el núcleo accumbens. 12th Meeting of the Spanish Neuroscience Society. Valencia, Spain.
- Segovia, G., Del Arco, A., De Blas, M., Garrido, P., Mora, F. (2007) Restricción calórica y envejecimiento: estudio de la interacción glutamato-dopamina en el núcleo accumbens. 12th Meeting of the Spanish Neuroscience Society. Valencia, Spain.
- Del Arco, A., Segovia, G., Garrido, P., De Blas, M., Mora, F. (2007) Estudio de la función de los receptores D1 dopaminérgicos en la corteza prefrontal durante el proceso de envejecimiento: efectos del enriquecimiento ambiental y la restricción calórica. 12th Meeting of the Spanish Neuroscience Society. Valencia, Spain.
- Del Arco, A., Segovia, G., Garrido, P., De Blas, M., Mora, F. (2007) Prefrontal cortex and aging: effects of environmental enrichment on the release of dopamine produced by stress. Dopamine 50 years. Goteborg, Sweden.
- Del Arco, A., Segovia, G., Garrido, P., De Blas, M., Mora, F. (2005) Estudio de la función de los receptores D1 dopaminérgicos en la corteza prefrontal: efectos del enriquecimiento ambiental y la restricción calórica. 11th Meeting of the Spanish Neuroscience Society. Malaga, Spain.
- Amores, A., Del Arco, A., More, F., Mohammed, A., Agnati, L., Fuxe, K. (2004) Stimulation of D2 dopamine receptors in prefrontal cortex reduces the increase of motor activity and the release of acetylcholine in the nucleus accumbens produced by phencyclidine. 4th Federation of European Neuroscience Societies. Lisbon, Portugal.
- Del Arco, A., Segovia, G., Mora, F. (2004) Blockade of NMDA glutamate receptors in prefrontal cortex increases spontaneous motor activity and releases acetylcholine in the nucleus

accumbens of the awake rat. 4th Federation of European Neuroscience Societies. Lisbon, Portugal.

- Del Arco, A., Segovia, G., Mora, F. (2001) El envejecimiento reduce la liberación de dopamina producida por estrés en la corteza prefrontal de la rata despierta. 9th Meeting of the Spanish Neuroscience Society. Santiago de Compostela, Spain.
- Del Arco, A., Mora, F. (2000) NMDA and AMPA glutamatergic agonists inhibit the stress induced dopamine release in the prefrontal cortex of the freely moving rat. 2nd Federation of European Neuroscience Societies. Brighton, U.K..
- Del Arco, A., Mora, F. (1999) El glutamato modula el efecto de la dopamina endógena sobre la concentración extracelular de GABA en la corteza prefrontal de la rata despierta. 8th Meeting of the Spanish Neuroscience Society. Murcia, Spain.
- Del Arco, A., Segovia, G., Mora, F. (1999) Effects of endogenous glutamate on extracellular concentrations of taurine in striatum and nucleus accumbens of the awake rat: involvement of NMDA and AMPA/Kainate receptors. 6th International Congress on Amino Acids. Bonn, Germany.
- Mora, F., Castañeda, T. R., Del Arco, A., Segovia, G. (1998) Endogenous dopamine differentially increases extracellular glutamate in nucleus accumbens, striatum and prefrontal cortex of the awake rat. 28th Society for Neuroscience. Los Angeles, CA, USA.
- Del Arco, A., Gisolfi, C. Mora, F. (1998) Interactions of endogenous glutamate, dopamine and GABA in the prefrontal cortex of the awake rat: involvement of NMDA and AMPA/KA receptors. 28th Society for Neuroscience. Los Angeles, CA, USA.
- Del Arco, A., Mora, F. (1997) High affinity glutamate transporters inhibitors blocked the release of glutamate but not dopamine induced by amphetamine in striatum of the freely moving rat. International Joint Meeting of Physiology (SECF & APS). Málaga, Spain.
- Del Arco, A., Martinez, R., Mora, F. (1995) Effects of intracerebral infusion of amphetamine on the extracellular concentrations of glutamic acid and taurine in the medial prefrontal cortex of the conscious rat: a microdialysis study. 27th Congress of the Spanish Physiological Society. Salamanca, Spain.
- Del Arco, A., Martinez, R., Mora, F. (1994) Effects of intracerebral perfusion of amphetamine on the release of glutamic acid in the neostriatum of the conscious rat. 17th Annual Meeting of European Neurosciences Associations. Viena, Austria.

GRANTS

Grant applications funded

Del Arco A. (Principal Investigator) (2019-2021). **From stress to drug addiction: The neuronal networks that underlie vulnerability to drug abuse.** COBRE III Pilot Project Program. The Center of Biomedical Research Excellence in Natural Products Neuroscience. School of Pharmacy, University of Mississippi. \$100,000

Del Arco, A. (Principal Investigator) (2018). SAS Research Incentive Program (NFSRS6000). School of Applied Sciences. \$6,000.

Del Arco, A. (Principal Investigator) (2017). SAS Research Incentive Program (RS2000). School of Applied Sciences. \$2,000.

Del Arco, A. (Principal Investigator) (2016). SAS Research Incentive Program (NFSRS6000). School of Applied Sciences. \$6,000.

Del Arco, A. (Principal Investigator) (2015). SAS Research Incentive Program (RS2000). School of Applied Sciences. \$2,000.

Del Arco, A. (Principal Investigator) (2009). **Hypofunction of NMDA receptors in the prefrontal cortex: Effects on cholinergic transmission and corticosterone concentrations in the hippocampus of the awake rat.** CAM CCG08-UCM/SAL-4282. Universidad Complutense and Comunidad de Madrid (Spain). 10,000 €.

Del Arco, A. (Principal Investigator) (2008). **Effects of environmental enrichment on the NMDA/D1 interaction in the Prefrontal cortex–nucleus accumbens circuit: Relevance for schizophrenia.** PR34/07-15783. Banco Santander foundation and Universidad Complutense (Spain). 10,000 €.

Del Arco, A. (Principal Investigator) (2008). **D1 receptors in the prefrontal cortex: Modulation of acetylcholine release and motor activity.** CCG07-UCM/SAL-2162. Universidad Complutense and Comunidad de Madrid (Spain). 6,000 €.

TEACHING EXPERIENCE

Current

Department of Health, Exercise Science and Recreation Management, School of Applied Sciences, University of Mississippi

2015 –	ES 609 Motor Behavior (Fall)
2016 –	ES 344 Aging in the 21 st Century (Spring and Fall)
2016 –	ES 620 Stress and the Brain (Spring)
2016 –	ES 609 Motor Behavior (Fall)
2017 –	ES 344 Aging in the 21 st Century (Spring and Fall)
2017 –	ES 620 Stress and the Brain (Spring)
2017 –	ES 609 Motor Behavior (Fall)
2018 –	ES 344 Aging in the 21 st Century (Spring)
2018 –	ES 515 Stress and the Brain (Spring)
2018 –	ES 344 Aging in the 21 st Century (Fall)
2018 –	ES 609 Motor Behavior (Fall)
2019 –	ES 344 Aging in the 21 st Century (Spring)
2019 –	ES 609 Motor Behavior (Spring)
2019 –	ES 344 Aging in the 21 st Century (Fall)
2019 –	ES 515 Stress and the Brain (Fall)
2020 –	ES 344 Aging in the 21 st Century Web (Spring)
2020 –	ES 609 Motor Behavior (Spring)
2020 –	ES 344 Aging in the 21 st Century Web (Fall)
2020 –	ES 515 Stress and the Brain (Fall)
2021 –	ES 344 Aging in the 21 st Century Web (Spring)
2021 –	ES 609 Motor Behavior (Spring)
2021 –	ES 344 Aging in the 21 st Century Web (Fall)

Previous

Department of Physiology, Faculty of Medicine, Universidad Complutense, Madrid, Spain.

2006 – 2015 Neurophysiology. Medical students.
Neurophysiology. Nutrition and Dietetics students.
Human Physiology. Occupational Therapy students.

2004 – 2015 Practices of Physiology. Medical students.
2010 Methodology of research in Neurosciences. Ph.D. students

Dissertations and Theses Committees

Dissertations

Alaa Qrareya (in progress). Department of Biomolecular Sciences, School of Pharmacy, University of Mississippi. (Dissertation committee member)

Mohammed Salahuddin (in progress). Department of Biomolecular Sciences, School of Pharmacy, University of Mississippi. (Dissertation committee member)

Gaurav Shrestha (in progress). Department of Biology, College of Liberal Arts. University of Mississippi (Dissertation committee member)

Erik Hodges (2020). “Behavioral chronopharmacology of cannabinoids in young and aged mice” Department of Biomolecular Sciences, School of Pharmacy, University of Mississippi. (Dissertation committee member)

Disha Prabhu (2020). “Role of insulin-like growth factor 1 in the regulation of astrocyte structure, functions and cognition”. Department of Biomolecular Sciences, School of Pharmacy, University of Mississippi. (Dissertation committee member)

Christopher Hill (2019) “Reward and punishment: The neural correlates of reinforcement feedback during motor learning”. Department of Health, Exercise Science and Recreation Management, School of Applied Sciences, University of Mississippi. (Dissertation committee chair)

Charles C. Williams (2018). “Examining changes in bat swing kinematics in different areas of the strike zone over the course of a fall season in collegiate baseball and softball players”. Department of Health, Exercise Science and Recreation Management, School of Applied Sciences, University of Mississippi. (Dissertation committee member)

Jacob R. Gdovin, Ph.D. (2017). “A kinematic comparison of shoulder and elbow dynamics influenced by the shoe-surface interface in youth and adolescent baseball pitchers”. Department of Health, Exercise Science and Recreation Management, School of Applied Sciences, University of Mississippi. (Dissertation committee member)

Giacomo Ronzoni Blazquez, Ph.D. (2015). “Prefrontal cortex, amygdala and stress: Study of noradrenaline, corticosterone and aversive memory in the rat”. Department of Physiology, Faculty of Medicine, Universidad Complutense, Madrid, Spain. (Dissertation committee chair)

Undergraduate Theses

Jackson Benton (2020) “Effects of prolonged downhill running on upper body muscle functions”. Department of Health, Exercise Science and Recreation Management, School of Applied Sciences, University of Mississippi. (Honor’s Thesis committee member)

Dejun Jackson (2020) “Neuroprotective effects of estrane and pregnane steroids in response to combined exposure to an HIV-1 protein and oxycodone”. Department of Biomolecular Sciences, School of Pharmacy, University of Mississippi. (Honor’s Thesis committee member)

Grace Burnett (2020) “Acute exercise on prospective memory function: open vs. closed skilled exercise”. Department of Health, Exercise Science and Recreation Management, School of Applied Sciences, University of Mississippi. (Honor’s Thesis committee member)

Lauren Sullivan (2019) “Effects of repetitive stress on reward-seeking behavior”. Department of Biology, College of Liberal Arts, University of Mississippi. (Honor’s Thesis committee chair)

Rosemary Marquez (2019) “Feedback-related neuronal processing during motor learning”. Department of Psychology, College of Liberal Arts, University of Mississippi. (Honor’s Thesis committee chair)

Hannah Shaffer (2019) “Time course effects of repetitive intermittent social stress on a prefrontal cortex-dependent cognitive flexibility task”. Department of Biology, College of Liberal Arts, University of Mississippi. (Honor’s Thesis committee chair)

Madlyn Lawrence (2019) “Resting state fMRI study of the olfactory region in autism”. Department of Communication Sciences and Disorders, School of Applied Sciences, University of Mississippi. (Honor’s Thesis committee member)

Paige Rucker (2017) “Pituitary gland functional connectivity and BMI”. Department of Communication Sciences and Disorders, School of Applied Sciences, University of Mississippi. (Honor’s Thesis committee member)

PROFESSIONAL ACTIVITIES

Membership in Professional Organizations

- Regular member of the Society for Neuroscience (SFN)
- Regular member of the Federation for European Neuroscience Societies (FENS)
- Regular member of the Spanish Society of Evolutionary Biology (SESBE)