

Curriculum Vitae

MIGUEL Á. LUJÁN PÉREZ, PhD MSc

Personal information

Postdoctoral fellow/Research associate at the Department of Neurobiology,

University of Maryland School of Medicine, Baltimore, MD, USA.

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Google Scholar: bit.ly/3sxncZ7

Education

- March 2020 **Ph.D. Defense** March 13th, 2020. "Cannabidiol as a Potential Therapeutic Strategy to Reduce Cocaine Seeking in Mice." Qualification: **Excellent Cum Laude**
- 2016 – 2020 **PhD in Biomedicine** at the Neurobiology of Behavior (GReNeC – NeuroBio) Lab at Pompeu Fabra University (Spain) under the supervision of Prof. Olga Valverde
- 2014 – 2015 **Master in Neuroscience** at University of Barcelona (Spain)
- 2010 – 2014 **B.S. in Psychology** at University Jaume I (Spain)

Professional experience

- 2024 – present Research associate (CheerLab), University of Maryland, School of Medicine. Baltimore, MD (USA)
- 2020 – 2024 Postdoctoral fellow at CheerLab in the University of Maryland, School of Medicine under the supervision of Dr. Joseph Cheer. Baltimore, MD (USA)
- 2019 Graduate internship at CheerLab in the University of Maryland, School of Medicine under the supervision of Dr. Joseph Cheer. Baltimore, MD (USA)
- 2019 Graduate internship at the Neural Circuit and Signal Transduction lab at the Institut de Génomique Fonctionnelle (IGF), under the supervision of Dr. Emmanuel Valjent. Montpellier, (France)
- 2015 – 2020 PhD student at Neurobiology of Behavior (GReNeC – NeuroBio) Lab at Pompeu Fabra University (Spain) under the supervision of Prof. Olga Valverde
- 2014 – 2015 Visiting MSc student at Neurobiology of Behavior (GReNeC – NeuroBio) Lab at Pompeu Fabra University (Spain) under the supervision of Prof. Olga Valverde
- 2011 – 2014 Visiting undergraduate student at Learning, Memory and Addiction Lab at Jaume I University (Spain) under the supervision of Dr. Raul Pastor and Dr. Laura Font

Honors and awards

- 2024 *American College of Neuropsychopharmacology* **Harry June Travel Award** (ACNP/NIAAA), Phoenix AZ (USA)
- Michael Shipley Postdoctoral Award**: Office of Postdoctoral Scholars, School of Medicine (University of Maryland)
- Society of Biological Psychiatry* (SOBP) **Travel Fellowship Award**, Austin TX (USA)
- 2023 *Mount Sinai Neuroscience Postdoc Seminars* (MSN) **selected speaker**, New York NY (USA)

Postdoctoral Fellow Excellence in Research 2023 Award: Graduate Program in Life Sciences and Office of Postdoctoral Scholars (*University of Maryland*).

UM's Postdoctoral Professional Development '23 **Award** (*University of Maryland*)

Best poster award: Gordon Research Conference: Cannabinoid Function in the CNS 2023. Castelldefels (Spain)

1st Place **poster award:** IBRO-COLNE XIV International Neuroscience Seminar. Cali (Colombia)

Behavior, Biology, and Chemistry: Translational Research in Substance Abuse Disorders **travel award**. San Antonio, TX (USA)

2022 Gordon Research Conference: Neurobiology of Addiction 2022 **travel award**. Newry, ME (USA)

International Society for Neurochemistry (ISN) **travel award** to attend the *Addiction 2022* conference. Sardinia (Italy).

CAJAL Advanced Neuroscience Programme **selected trainee**. Course in 'Interacting with Neural Circuits', Lisbon (Portugal)

UM's Postdoctoral Professional Development '22 **Award** (*University of Maryland*)

Outstanding **Poster Award**. Winter Conference on Brain Research (WCBR 2022), Snowmass, CO (USA)

Winter Conference on Brain Research (WCBR 2022) **Travel awardee**. Snowmass, CO (USA)

2019 EBPS Young Scientist Workshop **selected trainee**. Braga (Portugal)

Foreign Lab Visiting scholarship (from the *Ministry of Education and Sciences of Spanish Government*) (3 months)

FuturiZe Bursary **travel grant** to attend the 2nd LisbonAddictions conference. Lisbon (Portugal)

2017 TWIST Bursary **travel grant** to attend the 1st LisbonAddictions conference. Lisbon (Portugal)

2016 **Grants for the recruitment of new research staff** (from *Catalan Agency of Universities and Research*) (7 months)

2015 **Young Faculty Training Fellowship** (from the *Ministry of Education and Sciences of Spanish Government*) (4 years)

Current and past funded support

		<u>Active</u>
2024	(PI, 100%) M ^Á . Luján, University of Maryland, School of Medicine K99DA060209: Postpartum Neurobiological Sequelae of Prescription Opioid Use During Pregnancy. Total projected costs: \$1,105,387 USD	
2016 – 2020	'Formación Profesorado Universitario (FPU)' MECD, Spanish Government, FPU15/02492 Total Direct Costs: 66,000€ Undergraduate Ph.D. Research fellow	<u>Completed</u>
2019	'FPU - Estancia doctorado en el extranjero' MECD, Spanish Government, EST18/00410 Total Direct Costs: 6,900€ Visiting Graduate fellow	

Publications

Luján* M^Á, Young-Morrison* R, Aroni S, Katona I, Melis M, Cheer JF (2024). Dynamic Overrepresentation of Accumbal Cues in Food- and Opioid-Seeking Rats after Prenatal THC Exposure. [bioRxiv 2024.05.06.592839](https://doi.org/10.1101/2024.05.06.592839). *In review at Science Advances*.
*Corresponding author, *equally contributed.

Luján* M^Á, Covey* DP, Young-Morrison R, Zhang LY, Kim A, Morgado F, Patel S, Bass CE, Paladini C, Cheer JF (2023). Mobilization of endogenous cannabinoids by midbrain dopamine neurons is required for the encoding of predictive reward signals. *Nature Communications* 14: 1-12. *Equally contributed.

Wilkinson CS, **Luján M^Á**, Hales C, Costa K, Fiore VG, Knackstedt LA, Kober H (2023). Listening to the Data: Computational Approaches to Addiction and Learning. *Journal of Neuroscience* 43: 7547-7553.

Luján M^Á, Oliver B, Young-Morrison R, Engi S, Zhang LY, Wenzel J, Li Y, Zlebnik N, Cheer JF (2023). A multivariate regressor of patterned dopamine release predicts relapse to cocaine. *Cell Reports* 42(6): 112553.

Alegre-Zurano L, Berbegal-Sáez P, **Luján M^Á**, Cantacorps L, Martín-Sánchez A, García-Baos A, & Valverde O (2022). Cannabidiol decreases motivation for cocaine in a behavioral economics paradigm but does not prevent incubation of craving in mice. *Biomedicine & Pharmacotherapy* 148: 112708.

Luján M^Á, Cantacorps L, Alegre-Zurano L, Martín-Sánchez A, & Valverde O (2021). CB1 receptor antagonist AM4113 reverts the effects of cannabidiol on cue and stress-induced reinstatement of cocaine-seeking behaviour in mice. *Progress in Neuro-psychopharmacology and Biological Psychiatry* 113: 110462.

Alegre-Zurano L, López-Arnau R, **Luján M^Á**, Camarasa J, Valverde O (2021). Cannabidiol modulates the motivational and anxiety-like effects of 3,4-methylenedioxypyrovalerone (MDPV) in mice. *International Journal of Molecular Sciences* 22(15): 8304.

Covey D, Hernandez E, **Luján M^Á**, Cheer JF (2021). Enhanced dopaminergic encoding of reward cost and motivation is achieved by chronic augmentation of endocannabinoid levels and is accompanied by a lack of suppression of its effects. *Journal of Neuroscience* 41: JN-RM-0285-21.

Luján M^Á, Cheer JF, and Melis M (2021). Choosing the right drug: Status and future of endocannabinoid research for the prevention of drug-seeking reinstatement. *Current Opinion in Pharmacology* 56: 29-38.

Luján* M^Á & Valverde* O (2020) The pro-neurogenic effects of cannabidiol and its potential therapeutic implications in psychiatric disorders. *Frontiers in Behavioral Neuroscience*, 14, 109. *Corresponding authors.

Cantacorps L, Montagud-Romero S, **Luján M^Á**, Valverde O. (2020) Prenatal and postnatal alcohol exposure increases vulnerability to cocaine addiction in adult mice. *British Journal of Pharmacology* 177: 1090-1105.

Castro-Zavala A, Martín-Sánchez A, **Luján M^Á**, Valverde O. (2019). Maternal separation increases cocaine intake through a mechanism involving plasticity in glutamate signalling. *Addiction Biology*, e12911

Luján M^Á, Cantacorps L, & Valverde O (2019) The pharmacological reduction of hippocampal neurogenesis attenuates the protective effects of cannabidiol on cocaine voluntary intake *Addiction biology*, 25: e12778

Luján M^Á, Colomar L, Tarragón E, López-Cruz L, Pastor R, & Font L (2019) Drug-free and context-dependent locomotor hyperactivity in DBA/2 J mice previously treated with repeated cocaine: Relationship with behavioral sensitization and role of noradrenergic receptors. *Pharmacology Biochemistry and Behavior*, 176, 101-110

Ferrer-Pérez C, Castro-Zavala A, **Luján M^Á**, Filarowska J, Ballestín R, Miñarro J, ... & Rodríguez-Arias M (2019). Oxytocin prevents the increase of cocaine-related responses produced by social defeat. *Neuropharmacology*, 146, 50-64

Luján M^Á, Castro-Zavala A, Alegre-Zurano L, & Valverde O (2018) Repeated Cannabidiol treatment reduces cocaine intake and modulates neural proliferation and CB1R expression in the mouse hippocampus. *Neuropharmacology*, 143, 163-175

López-Arnau* R, **Luján*** M^Á, Duart-Castells L, Pubil, D, Camarasa J, Valverde O and Escubedo E (2017) 'Exposure of adolescent mice to 3,4-methylenedioxypyrovalerone increases the psychostimulant, rewarding and reinforcing effects of cocaine in adulthood', *British journal of pharmacology*, 174: 1161–1173. *Equally contributed.

Font L, **Luján MÁ**, and Pastor R (2013) 'Involvement of the endogenous opioid system in the psychopharmacological actions of ethanol: the role of acetaldehyde' *Frontiers in behavioral neuroscience*, 7: 93.

Book chapters

Luján MÁ, Kim A, Zhang LY, Cheer JF. (*in press*). Cannabinoid-based pharmacology for the management of drug relapse. Alexander, Patel, Cooper (Eds.). In: *Behavioral Impact of Cannabinoids* (2nd ed.). Springer Nature.

Scientific output and dissemination

Publications: 18 (1 co-corresponding author, 10 first author, 3 co-first author), 1 book chapter

Impact: Citations 361
h-index 10

Conference participations: 3 chaired panels + 18 invited talks + 22 poster presentations

Media appearances: La Vanguardia (2019): "[Descubren por qué un derivado del cannabis reduce el consumo de cocaína](#)"

El Mundo (2017): "[Estudian los efectos del consumo de droga canibal en la adolescencia](#)"

Administrative duties / comissions

- Service to peer-review journals: Guest reviewing editor: *Frontiers in Cellular Neuroscience*, special issue on "New Insights into Presynaptic G Protein-Coupled Receptors and Addiction"

Ad hoc reviewer: *Journal of Neuroscience*, *Neuropharmacology*, *eNeuro*, *Cellular & Molecular Biology Letters*, *Behavioral Neurology*, *Cannabis and Cannabinoid Research*, *Biomolecules*

- Volunteer public outreach: Scientific liason, *Neuroscience Scholars Program* (Baltimore, MD 2024)

Brewing Biology: Addiction (Baltimore, MD 2023)

- Volunteer scientific service: Co-Chair, *Cannabis Research Interest Group* (Kahlert Institute of Addiction Medicine, MD)

Professional Societies Memberships

2023 – present European Society of Behavioral Pharmacology (EBPS)

2022 – present Dopamine Society – *Founding member*

2017 – present Spanish Society of Cannabinoid Research (SEIC)

2021 – present Society for Neuroscience (SfN)

Teaching and Mentoring activities

2023 **Thesis committee member**, M.C. Mañas-Padilla, PhD, Facultad de Medicina, Universidad de Malaga (Spain), advisors: Dr. J.L. Santin-Nuñez and Dr. M.E. Castilla-Ortega.

2022-2024 Lecturer, **Dopamine and Reward – Action-Motivation-Emotion Module**. 12-15, graduate students. Program in Neuroscience. University of Maryland, School of Medicine.

2021-2022 Lecturer, **Analyses of Variance – Biostats course**. 12-15, graduate students. Program in Neuroscience. University of Maryland, School of Medicine.

2018-2020	Lecturer, Neurobiology of Addiction (568681) 20-22, 1st year students. Master's Degree in Neuroscience. University Pompeu Fabra.
2017-2020	Lecturer, Biological Foundations of Criminology (24273) 12-15, sophomore students. Bachelor's Degree in Criminology. University Pompeu Fabra.
2017-2020	Lecturer, Neurobiology (20429) 12-15, 4 th year residents. Bachelor's Degree in Human Biology. University Pompeu Fabra.

Conference attendances

Panel chair

1. Wilkinson C., **Luján M.Á.** Listening to the data: Novel computational approaches to addiction and reward processing. *Society for Neuroscience*, Washington D.C. (USA).
2. **Luján M.Á.**, Kober H. Towards neural markers of drug addiction: computational approaches in animals and humans. *European Behavioral Pharmacology Society*, Manheim (Germany).
3. **Luján M.Á.**, Zhang LY. The Astrocyte-Neuron Interaction in Reward Circuitry: Endocannabinoid, Plasticity and Motivation. *Winter Conference on Brain Research*, Snowbird, UT (USA)

Invited talks

1. **Luján M.Á.**, A pallido-midbrain cannabinoid circuit for the acquisition of conditioned reinforcement. *Winter Conference on Brain Research*, Breckenridge CO (USA)
2. **Luján M.Á.**, A sex-specific transcriptomic program controls motivational maladaptations induced by prenatal THC exposure. *Mount Sinai Neuroscience Postdoc Seminars (MSN)*, New York NY (USA)
3. **Luján M.Á.**, Midbrain dopamine neurons mobilize 2-AG to encode predictive warning signals during active avoidance learning. *American College of Neuropharmacology (ACNP)*, Tampa FL (USA)
4. **Luján M.Á.**, A multivariate Bayesian regressor of patterned dopamine release predicts relapse to cocaine. *Society for Neuroscience (SfN)*, Washington DC (USA)
5. **Luján M.Á.**, Mark K., Substance use in pregnancy: an overview of research strengths and opportunities. *Kahlert Institute for Addiction Medicine Inaugural Retreat*, Baltimore MD (USA)
6. **Luján M.Á.**, Midbrain dopamine neurons mobilize 2-AG to encode predictive warning signals during active avoidance learning. *Pavlovian Society*, 2023, Austin TX (USA)
7. **Luján M.Á.**, A multivariate Bayesian regressor of patterned dopamine release predicts relapse to cocaine. *European Behavioral Pharmacology Society*, Manheim (Germany)
8. **Luján M.Á.**, Midbrain dopamine neurons mobilize 2-AG to encode predictive warning signals during active avoidance learning. *Gordon Research Seminar: Cannabinoid Function in the CNS*, 2023, Castelldefels (Spain)
9. **Luján M.Á.**, A multivariate Bayesian regressor of patterned dopamine release predicts relapse to cocaine. *Behavior, Biology, and Chemistry 2023*, San Antonio TX (USA)
10. **Luján M.Á.**, Prenatal THC exposure promotes aberrant reward seeking, exacerbated dopaminergic encoding of reward-predictive cues and transcriptomic alterations in the midbrain of adult offspring rats. *Addiction2022 International Meeting*, Sardinia (Italy)

11. **Luján M.Á.**, Prenatal THC exposure promotes aberrant reward seeking, exacerbated dopaminergic encoding of reward-predictive cues and transcriptomic alterations in the midbrain of adult offspring rats. *Gordon Research Seminar: Neurobiology of Addiction 2022*, Newry, ME (USA)
12. **Luján M.Á.**, Prenatal Exposure to Cannabis: Dopaminergic impairments and opioid abuse. *Substance Use in Pregnancy (SuP) Symposium 2022*, Baltimore, MD (USA)
13. **Luján M.Á.**, Long-Lasting Consequences of Prenatal Cannabis Exposure: Motivational, Dopaminergic and Transcriptomic Impairments. *Dopamine 2022*, Montreal (Canada)
14. **Luján M.Á.**, Prenatal THC Exposure Promotes Transcriptional Network Changes in the Ventral Tegmental Area and Promotes Reward Seeking and Phasic Dopamine Terminal Release in the Adult Rat Offspring. *Baltimore Brain Series 2022*, Baltimore MD (USA)

Poster presentations

1. **Luján M.Á.**, Young-Morrison R, Cheer JF. NAc Tensorial Representations Reveal Reward Processing Alterations following Prenatal Cannabis Exposure. Society of Biological Psychiatry (SOBP), 2024. Austin TX (USA)
2. Young-Morrison R, **Luján M.Á.**, Moin Ashfar N, Cheer JF. Prenatal THC exposure sex-specifically increases motivation and tensorial representations of cued rewards in the NAc. Society for Neuroscience (SfN), 2023. Washington DC (USA)
3. **Luján M.Á.**, Young-Morrison R., Gildish I, Kim A, Peters K, Loewinger G, Morgado F, Zhang LY, Katona I, Cheer JF. Midbrain dopamine neurons mobilize 2-AG to encode predictive warning signals during active avoidance. Gordon Research Conference: Cannabinoid Function in the CNS, 2023, Barcelona (Spain)
4. **Luján M.Á.**, Zlebnik NE, Young-Morrison R, Engi S, Oliver B, Zhang LY, Cheer JF. Predicting Relapse with the Animal's Entire History of Cocaine-Evoked Dopamine Responses. IBRO-COLNE XIV International Neuroscience Seminar. Cali (Colombia)
5. **Luján M.Á.**, Zlebnik NE, Young-Morrison R, Engi S, Oliver B, Zhang LY, Cheer JF. Predicting Relapse with the Animal's Entire History of Cocaine-Evoked Dopamine Responses. Winter Conference on Brain Research (WCBR 2023). Snowbird, UT (United States)
6. **Luján M.Á.**, Young-Morrison R., Calarco C., Mahasweta B., Aroni A., Peters K., Fox M.E., Ament S., Kumar G., Melis M., Lobo M.K, Cheer J.F. Prenatal THC exposure promotes aberrant reward seeking, exacerbated dopaminergic encoding of reward-predictive cues and transcriptomic alterations in the midbrain of adult rats. American College of Neuropharmacology (ACNP), 2022, Phoenix, AZ (United States)
7. **Luján M.Á.**, Young-Morrison R., Calarco C., Mahasweta B., Aroni A., Ament S., Kumar G., Melis M., Lobo M.K, Cheer J.F. Prenatal THC Exposure Promotes Transcriptional Network Changes in the VTA and Promotes Reward Seeking and Phasic Dopamine Terminal Release in the Offspring. Gordon Research Conference: Neurobiology of Addiction, 2022, Newry, ME (United States)
8. **Luján M.Á.**, Calarco C., Mahasweta B., Aroni. A, Ament S., Kumar G., Melis M., Lobo M.K, Cheer J.F. Prenatal THC Exposure Promotes Transcriptional Network Changes in the VTA and Promotes Reward Seeking and Phasic Dopamine Terminal Release in the Offspring. Winter Conference on Brain Research (WCBR 2022). Snowmass, CO (United States)
9. **Luján M.Á.**, Calarco C., Mahasweta B., Aroni. A, Ament S., Kumar G., Melis M., Lobo M.K, Cheer J.F. Prenatal THC exposure promotes transcriptional network changes in the ventral tegmental area and promotes reward seeking and phasic dopamine terminal release in the adult rat offspring. Gordon Research Conference: Cannabinoid Function in the CNS, 2021, Ventura, CA (United States)
10. **Luján M.Á.**, Cantacorps L. and Valverde O. Cannabidiol treatment reduces cocaine voluntary intake in mice through a mechanism involving adult hippocampal neurogenesis. Lisbon Addictions, 2019 Lisbon (Portugal)

11. **Luján M.Á.**, Cantacorps L. and Valverde O. CBD-induced reduction of cocaine voluntary intake: crucial implication of neural proliferation in the dentate gyrus. Biennial Meeting of European Behavioural Pharmacology Society (EBPS) 2019, Braga (Portugal)
12. Cantacorps, L., Montagud-Romero, S., **Luján M.Á.**, Valverde O. Binge alcohol Exposure during development alter cocaine reinforcing effects in adult mice. European Brain and Behavior Society (EBPS) Conference, 2019, Praga (Czech Republic)
13. Martín-Sánchez, A; Castro-Zavala, A **Luján, M.Á.**, Valverde, O. Maternal separation potentiates cocaine intake through glutamatergic changes. Sociedad Española de Neurociencias (SENC), 2019, Santiago de Compostela (Spain)
14. NE Zlebnik, **M. Á. Luján**, G Hernandez, S Cuesta, S Kummer, D Nouel, LY Zhang, JM Wenzel, C Flores, JF Cheer. Cannabinoid exposure in adolescence dysregulates genes that orchestrate dopamine neuron development and impairs cocaine-motivated behavior. Gordon Research Conference: Cannabinoid Function in the CNS, 2019, Barcelona (Spain)
15. Castro-Zavala A., **Luján M.Á.**, Martín-Sánchez A., Valverde O. Early life stress-induced molecular alterations in the mesolimbic system enhances cocaine self-administration in mice. Federation of European Neuroscience Societies (FENS), 2018, Berlin (Germany)
16. Montagud-Romero, S., Cantacorps, L., **Luján M.Á.**, Valverde O. HDAC inhibitor as a therapeutic strategy against the Central Nervous System alterations associated with prenatal and lactation ethanol exposure. Federation of European Neuroscience Societies (FENS), 2018, Berlin (Germany)
17. **Luján M.Á.**, Cantacorps L., Alegre-Zurano, L., Montagud-Romero, S. and Valverde O. Cannabidiol attenuates cocaine taking and increases hippocampal neurogenesis. Federation of European Neuroscience Societies (FENS), 2018 Berlin (Germany)
18. **Luján M.Á.**, L. Alegre and O. Valverde. Cannabidiol attenuates the reinforcing properties of cocaine: A potential role for neurogenesis. 2nd Lisbon Addictions, 2017, Lisbon (Portugal)
19. **Luján M.Á.**, López-Arnau, R., Duart-Castells, L., Pubill, D., Camarasa, J., Valverde, O. and Escubedo, E. 'Early Exposure of mice to MDPV increases the vulnerability to cocaine in adulthood.' 37th SEF national Meeting with guest society: the British Pharmacological Society, 2017, Barcelona (Spain)
20. **Luján M.Á.**, and Valverde, O. Cannabidiol attenuates cocaine-induced place preference and reinstatement of cocaine self-administration behavior. Xth Sociedad Catalana de Biología. 2016 in Barcelona (Spain)
21. Colomar Mollá L., **Luján M.Á.**, López-Cruz, L., Sánchez-Sarasúa, S., Camarena C., Pastor R. and Font L. Involvement of the beta-adrenergic system in the expression of conditioned hyperactivity in mice sensitized to the psychomotor actions of cocaine. Federation of European Neuroscience Societies (FENS) 2016, Copenhagen, (Denmark)
22. **Luján M.Á.**, Font L., Lopez-Cruz L. and Pastor R. Expression of drug-free, context-dependent stimulation after psychomotor sensitization to cocaine. The 15th Biennial Meeting of European Behavioural Pharmacology Society (EBPS) 2013, La Rochelle (France)
23. Pastor R., **Luján M.Á.** and Font L. Context-dependent effects of opioid antagonism on the acquisition and expression of behavioral sensitization to ethanol in mice. Federation of European Neuroscience Societies (FENS), 2012. Barcelona, (Spain)