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**BIOGRAPHICAL SKETCH**

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NAME		POSITION TITLE	
Rafael MALDONADO, MD, PhD (eRA Commons user: r.maldonado)		Profesor	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Cadix (Spain)	MD	1985	Medicine
University of Cadix (Spain)	PhD	1988	Neuropharmacology
University René Descartes-Paris V (France)	PhD	1990	Molecular Pharmacology
Research Institut of Scripps Clinic (La Jolla, CA, USA)	Post-doc	1990-1991	Neuropharmacology

**A. Personal statement**

I carried out research for 11 years in France and the USA and, since 2000, I am Professor of Pharmacology of the University Pompeu Fabra (Barcelona, Spain), where I founded the Laboratory of Neuropharmacology, presently with around 30 persons under my direction. My research lines are focused in the study of the neurochemical/anatomical basis of drug dependence, including opioids, cannabinoids and nicotine. Moreover, I am studying affective disorders (depression, anxiety), neuropathic pain and eating disorders. I have over 230 scientific articles in international journals and I have been Principal Investigator for 25 years of research grants funded by the main Spanish, European and USA agencies. I am also reviewer/member of the Editorial Board of several scientific journals, and have also collaborated with public authorities and private companies in the research policy and pharmaceuticals development on drug abuse and pain. I have a well-consolidated experience as group leader and investigator in neurobehavioral projects using animal models in an integrated approach.

**B. Positions and Honors.****Positions**

1985-88 PhD Fellowship. University of Cadix, Spain  
1988-90 Postdoctoral Research Fellow. University René Descartes-Paris V, France  
1990-91 Postdoctoral Research Fellow. Research Institut of Scripps Clinic. La Jolla, CA, USA  
1992-98 Research Scientific of INSERM (CR1). INSERM U 266. Paris. France  
1998-99 Visiting Professor. University Pompeu Fabra. Barcelona, Spain  
1999-current Profesor of Pharmacology. University Pompeu Fabra. Barcelona, Spain

**Other Experience**

- 2000-02: Member of expert pannel of the European Commission (Key Action 3: Cell Factory)  
- 2001-05: Vice-president of the Spanish Society for Cannabinoid Research  
- 2001-05: External advisor of the World Health Organisation  
- Member of the Executive Committee of the International Narcotic Research Conference (1999-2002; 2004-2007), Europain (2000-current) and European Behavioural Pharmacology Society (2002-current)  
- 2003-08: Member of the Board of Management of Hospital Carlos Haya (Spain)  
- 2003-08: Scientific Head of the Spanish National Research Biomedicine Program (Ministry of Science & Technology)  
- 2006: Speaker in the Spanish Parliament (lower house in the Parliament) about the effects of cannabis in the young population (April 3, 2006)  
- 2008: Speaker at the Biomedical Seminar presented to SS. AA. RR. los Príncipes de Asturias (Dña. Letizia y D. Felipe de Borbón) (May 21, 2008)  
- 2009: Member of the National Academy of Pharmacy of France

**Honors and Awards**

1992. Almirall award given by the Spanish Pharmacology Society to the best research article published during 1991 (Maldonado et al., *Psychopharmacology* 105: 197-203, 1991).  
1994. Uphjon award given by the Spanish Pharmacology Society to the best unpublished research article during 1993 (Maldonado et al., Inhibition of morphine withdrawal syndrome by the association of a peptidase inhibitor and a CCK-B antagonist).  
1995. Young Research Prize of the Spanish Pharmacology Society.  
2000. Research Distinction of the Generalitat de Catalunya.  
2002. UPSA award given to the best published article during 2000-2001 on pain research  
2006. Excellence Annual Award of NNSN-NIDA of National Institutes of Health (USA)  
2008. Premi Consell Social de la Universitat Pompeu Fabra a la Transferència de Coneixement.  
2009. ICREA Academia Distinction.  
2011. Premio de Investigación de la Fundación Antoni Esteve.

**H INDEX: 50** (total number of citations = 10,327)**C. Selected peer-reviewed publications (in chronological order)** (selected from 230 peer-reviewed publications)

- G.F. Koob, **R. Maldonado**, L. Stinus. Neural substrates of opiate withdrawal. *Trends Neurosci.* 15: 186-191, 1992. PMID: 1377426  
- **R. Maldonado**, L., Stinus, L. Gold, G.F. Koob. Role of different brain structures in the expression of the physical morphine withdrawal syndrome. *J. Pharmacol. Exp. Ther.* 261: 669-677, 1992. PMID: 1578378  
- Tejedor-Real P, Mico J.A, **Maldonado R**, Roques B.P, Gibert-Rahola J. Effects of mixed (RB 38 A) and selective (RB 38 B) inhibitors of enkephalin degrading enzymes on a model of depression in the rat. *Biol. Psych.*, 34: 100-107, 1993. PMID: 8373929  
- **R. Maldonado**, O. Valverde, S. Turcaud, M.C. Fournié-Zaluski, B.P. Roques. Antinociceptive response induced by mixed inhibitors of the enkephalin catabolism in peripheral inflammation. *Pain* 58: 77-83, 1994. PMID: 7970841  
- H.W.D. Matthes, **R. Maldonado**, F. Simonin, O. Valverde, S. Slowe, I. Kitchen, K. Befort, A. Dierich, M. Le Meur, P. Dollé, E. Tzavara, J. Hanoune, B.P. Roques, B.L. Kieffer. Loss of morphine-induced analgesia, reward effect and withdrawal symptoms in mice lacking the  $\mu$ -opioid-receptor gene. *Nature* 383: 819-823, 1996. PMID: 8893006  
- **R. Maldonado**, J.A. Blendy, E. Tzavara, P. Gass, B.P. Roques, J. Hanoune, G. Schütz. A mutation in the CREB gene strongly reduces the withdrawal syndrome in morphine dependent mice. *Science* 273: 657-659, 1996. PMID: 8662559

- **R. Maldonado**, A. Saiardi, O. Valverde, T.A. Samad, B.P. Roques, E. Borrelli. Absence of opiate rewarding effects in mice lacking dopamine D<sub>2</sub> receptors. *Nature* 388: 586-589, 1997. PMID: 9252189
- **R. Maldonado**. Participation of noradrenergic pathways in the expression of opiate withdrawal: Biochemical and pharmacological evidences. *Neurosci. Biobehav. Rev.* 21: 91-104, 1997. PMID: 8994212
- F. Simonin, O. Valverde, C. Smadja, S. Slowe, I. Kitchen, A. Dierich, M. LeMeur, B.P. Roques, **R. Maldonado**, B. Kieffer. Disruption of the kappa-opioid receptor gene in mice enhances sensitivity to chemical visceral pain, impairs pharmacological actions of the selective kappa agonist U-50,488H and attenuates morphine withdrawal. *EMBO J*, 17: 886-897, 1998. PMID: 9463367
- **R. Maldonado**, C. Smadja, C. Maxuchelli, P. Sassone-Corsi. Emotional and Locomotor Responses are altered in mice deficient of the transcription factor CREM. *Proc. Nat. Acad. Sci. USA* 96: 14094-14099, 1999. PMID: 10570204
- D. Filliol, S. Ghozland, J. Chluba, M. Martin, H. Matthes, F. Simonin, K. Befort, A. Dierich, M. LeMeur, O. Valverde, **R. Maldonado**, B.L. Kieffer. Delta- and mu-opioid receptor-deficient mice exhibit opposing alterations of emotional responses. *Nature Genetics* 25: 195-200, 2000. PMID: 10835636
- O. Valverde, **R. Maldonado**, E. Valjent, A.M. Zimmer, A. Zimmer. Cannabinoid withdrawal is modified in pre-proenkephalin knock-out mice. *J. Neurosci.* 20: 8913-8918, 2000. PMID: 11125007
- E. Valjent, Corvol JC, C. Pagès, M.J. Besson, **R. Maldonado**, J. Caboche. Involvement of the extracellular signal-regulated cascade for cocaine-rewarding properties. *J. Neurosci.* 20: 8701-8709, 2000. PMID: 11102476
- M. Navarro, M.R.A. Carrera, W. Fratta, O. Valverde, G. Cossu, L. Fattore, J.A. Chowen, R. Gomez, I. Del Arco, M.A. Villanua, **R. Maldonado**, G.F. Koob, F. Rodriguez de Fonseca. Functional interaction between opioid and cannabinoid systems in addiction. *J. Neurosci.* 21:5344-5350, 2001. PMID: 11438610
- C. Otto, D. Wolfer, P. Gass, M. Martin, W. Zuschratter, H.J. Gröne, C. Kellendonk, F. Tronche, **R. Maldonado**, H.P. Lipp, G. Schütz. The PACAP-type-I-receptor plays a crucial role in hippocampus-dependent associative learning. *J. Neurosci.* 21: 5520-5527, 2001. PMID: 11466423
- A. Zimmer, E. Valjent, M. König, A.M. Zimmer, S. Clarke, P. Robledo, C.C. Chen, H. Hahn, O. Valverde, R.G. Hill, I. Kitchen, **R. Maldonado**. Absence of delta-9-tetrahydrocannabinol dysphoric effects in dynorphin-deficient mice. *J. Neurosci.* 21: 9499-9505, 2001. PMID: 11717384
- S. Ghozland, H.W.D. Matthes, F. Simonin, D. Filliol, B.L. Kieffer, **R. Maldonado**. Motivational effects of cannabinoids are mediated by mu- and kappa-opioid receptors. *J. Neurosci.* 22: 1146-1154, 2002. PMID: 11826143
- **R. Maldonado**, F. Rodriguez de Fonseca. Cannabinoid addiction: behavioral models and neural correlates. *J. Neurosci.* 22: 3326-3321, 2002. PMID: 11978807
- **R. Maldonado**. Study of cannabinoid dependence in animals. *Pharmacol Ther.* 95: 153-164, 2002. PMID: 12182962
- C. Mazzucchelli, C. Vantaggiato, A. Ciarni, S. Fasano, P. Pakhotin, W. Krezel, H. Welzl, D. Wolfer, G. Pagès, O. Valverde, A. Marowsky, **R. Maldonado**, M. Ehrenguber, V. Cestari, H.P. Lipp, P.F. Chapman, J. Pouyssegur, R. Brambilla. ERK1 MAP kinase is crucial for striatum-dependent synaptic-plasticity and behavior. *Neuron*. 34: 1-20, 2002. PMID: 12062026
- F. Berrendero, B. L. Kieffer **R. Maldonado**. Attenuation of nicotine-induced antinociception, rewarding effects and dependence in mu-opioid receptor knockout mice. *J. Neurosci.* 22: 10935-10940, 2002. PMID: 12486188
- F. Berrendero, V. Mendizábal, P. Robledo, L. Galeote, A. Bilkei-Gorzo, A. Zimmer, **R. Maldonado**. Nicotine-induced antinociception, rewarding effects and physical dependence are mediated by pre-proenkephalin derivatives. *J. Neurosci.* 25: 1103-1112, 2005. PMID: 15689546
- Laurent P, Becker J.A, Valverde O, de Kerchove A, Schiffmann S.N, **Maldonado R**, Vassart G, Parmentier M. The prolactin-releasing peptide acts as a functional antagonist of the opioid system through its receptor GPR10. *Nature Neurosci.* 8: 1735-1741, 2005. PMID: 16299503
- Mendizabal V, Zimmer A, **Maldonado R**. Involvement of kappa/dynorphin system in WIN 55,212-2 self-administration in mice. *Neuropsychopharmacology* 9: 1957-66, 2006. PMID: 16292318
- Soria G, Castañé A, Ledent C, Parmentier M, **Maldonado R**, Valverde O. The lack of A<sub>2A</sub> adenosine receptors diminishes the reinforcing efficacy of cocaine. *Neuropsychopharmacology* 31: 978-987, 2006. PMID: 16123743
- **Maldonado R**, Valverde O, Berrendero F. Involvement of CB1 cannabinoid receptors in drug addiction. *Trends Neurosci.* 29: 225-232, 2006. PMID: 16483675
- Ozaita A, Puighermanal E, **Maldonado R**. Regulation of PI3K/Akt/GSK-3 pathway by cannabinoids in the brain. *J. Neurochem.* 104: 1105-14, 2007. PMID: 17484726
- Trigo JM, Renoir T, Lanfumey L, Hamon M, Lesch KP, Robledo P, **Maldonado R**. 3,4-methylenedioxymethamphetamine self-administration is abolished in serotonin transporter knockout mice. *Biol. Psychiatry* 6: 669-79, 2007. PMID: 17306775
- Bilkei-Gorzo A, Rácz I, Michel K, Darvas M, **Maldonado R**, Zimmer A. A common genetic predisposition to stress sensitivity and stress-induced nicotine craving. *Biol. Psychiatry* 63: 164-71, 2008. PMID: 17570348
- Touriño C, Ledent C, **Maldonado R**, Valverde O. CB(1)Cannabinoid Receptor Modulates 3,4-Methylenedioxymethamphetamine Acute Responses and Reinforcement. *Biol. Psychiatry*. 63: 1030-38, 2008. PMID: 17950256
- Bura SA, Nadal X, Ledent C, **Maldonado R**, Valverde O. A<sub>2A</sub> adenosine receptor regulates glia proliferation and pain after peripheral nerve injury. *Pain*. 140: 95-103, 2008. PMID: 18768260
- Avale ME, Faure P, Pons S, Robledo P, Deltheil T, David D, Gardier A, Maldonado R, Granon S, Changeux J-P, Maskos U. Interplay of beta2 nicotinic receptors and dopamine pathways in the control of spontaneous locomotion. *Proc. Natl. Acad. Sci. U.S.A.* 105:15991-15996, 2008. PMID: 18832468
- Racz I, Nadal X, Alferink J, Baños JE, Rehnelt J, Martín M, Pintado B, Gutiérrez-Adán A, Sanguino E, Bellora N, Manzanares J, Zimmer A, **Maldonado R**. Interferon- $\gamma$  is a critical modulator of CB2 cannabinoid receptor signaling during neuropathic pain. *J. Neurosci.* 28: 12136-12145, 2008. PMID: 19005078
- Racz I, Nadal X, Alferink J, Baños JE, Rehnelt J, Martín M, Pintado B, Gutiérrez-Adán A, Sanguino E, Manzanares J, Zimmer A, **Maldonado R**. Crucial role of CB2 cannabinoid receptor in the regulation of central immune responses during neuropathic pain *J. Neurosci.* 28: 12125-12135, 2008. PMID: 19005077
- Cabañero D, Celerier E, Garcia-Nogales P, Mata M, Roques B, **Maldonado R**, Puig M. The pro-nociceptive effects of remifentanyl or surgical injury in mice are associated with a decrease in delta-opioid receptor mRNA levels: Prevention of the nociceptive response by on-site delivery of enkephalins. *Pain*. 141: 88-96, 2009. PMID: 19058913

- Puighermanal E, Busquets-Garcia A, Maldonado R, Ozaita A. Cannabinoid modulation of hippocampal long-term memory is mediated by mTOR signaling. *Nature Neurosci.* 12: 1152-1158, 2009. PMID: 19648913
- Fasano S, D'Antoni A, Orban PC, Valjent E, Putignano E, Vara H, Pizzorusso T, Giustetto M, Yoon B, Soloway P, **Maldonado R**, Caboche J, Brambilla R. Ras-guanine nucleotide-releasing factor 1 (Ras-GRF1) controls activation of extracellular signal-regulated kinase (ERK) signaling in the striatum and long-term behavioral responses to cocaine. *Biol. Psychiatry*, 66: 758-768, 2009. PMID: 19446794
- de la Puente B, Nadal X, Portillo-Salido E, Sánchez-Arroyos R, Ovalle S, Palacios G, Muro A, Romero L, Entrena JM, Baeyens JM, López-García JA, **Maldonado R**, Zamanillo D, Vela JM. Sigma-1 receptors regulate activity-induced spinal sensitization and neuropathic pain after peripheral nerve injury. *Pain*, 145: 294-303, 2009. PMID: 19505761
- Plaza-Zabala A., Martín-García E., de Lecea L., **Maldonado R.**, Berrendero F. Hypocretins regulate the anxiogenic-like effects of nicotine and induce reinstatement of nicotine-seeking behaviour. *J. Neurosci.*, 30:2300-2310, 2010. PMID: 20147556
- Berrendero F, Robledo P, Trigo JM, Martín-García E, **Maldonado R**. Neurobiological mechanisms involved in nicotine dependence and reward: participation of the endogenous opioid system. *Neurosci. Biobehav. Rev.*, 35: 220-231, 2010. PMID: 20170672
- Le Merrer J, Plaza-Zabala A, Del Boca C, Matifas A, **Maldonado R**, Kieffer B. Deletion of the delta opioid receptor gene impairs conditioned learning but preserves morphine reinforcement. *Biol Psychiatry*, 69: 700-3, 2011. PMID: 21168121
- Busquets-Garcia A, Puighermanal E, Pastor A, de la Torre R, **Maldonado R**, Ozaita A. Differential role of anandamide and 2-arachidonoylglycerol in memory and anxiety-like responses. *Biol. Psychiatry*, 70: 479-486, 2011. PMID: 21684528.
- Berrendero F, Plaza-Zabala A, Galeote L, Flores A, Bura SA, Kieffer BL, **Maldonado R**. Influence of  $\delta$ -opioid receptors in the behavioral effects of nicotine. *Neuropsychopharmacology*, 37: 2332-44, 2012. PMID: 22669166.
- Busquets-Garcia A, Gomis-González M, Guegan T, Agustín-Pavón C, Pastor A, de la Torre R, Dierssen M, **Maldonado R**, Ozaita A. Targeting the endocannabinoid system in the treatment of fragile X syndrome. *Nature Med*, 19:603-7, 2013. PMID: 23542787.
- La Porta C, Bura SA, Aracil-Fernández A, Manzanares J, **Maldonado R**. Role of CB1 and CB2 cannabinoid receptors in the development of joint pain induced by monosodium iodoacetate. *Pain*. 2013 Jan;154: 160-174, PMID: 23199705
- Cutando L, Busquets-Garcia A, Puighermanal E, Gomis-González M, Delgado-García JM, Gruart A, **Maldonado R**, Ozaita A. Microglial activation underlies cerebellar deficits produced by repeated cannabis exposure. *J. Clin. Invest.* 2013 June 24.

#### D. Research support

##### Ongoing research support

**Project title:** Molecular mechanism of empathy (MOLEMPATHY)  
**Financing entity:** VII Framework Programme, European Commission, Marie Curie IEF-2010 (#274950) **Duration:** 2011-2013  
**Group's budget:** 230.980 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)  
**Trainee:** Dr. Konstantin Kuteykin-Teplyakov

**Project title:** Modelling food addiction and neuroplasticity (NeuroFood)  
**Financing entity:** AGAUR, Genrealitat de Catalunya (#CONES2010-0033) **Duration:** 2010-2010  
**Group's budget:** 33.228 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF), coordinating three labs (co-IPs, MA Martin, UPF ; E. Valjent, INSERM-Montpellier and E. Célérier, Panlab-Harvard Apparatus)

**Project title:** Contribute to identify a new therapeutic strategy of addiction using the serotonin 4 receptors  
**Financing entity:** International Project for Scientific Cooperation (PICS), CNRS, Ministry of Foreign Affairs France (PICS2009) **Duration:** 2010-2012  
**Overall budget:** 123.000 € **Group's budget:** 75.000 €  
**Coordinator:** Valérie Compan (UMR CNRS 5203, Montpellier, Francia)  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Nuevos modelos animales para el estudio del comportamiento de búsqueda de cocaína: estudios comportamentales y bioquímicos  
**Financing entity:** Plan Nacional Sobre Drogas, Spanish Ministry of Health (PNSD 2009/026). **Duration:** 2009-2011  
**Group's budget:** 75.000 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Ajut per donar suport a les activitats dels grups de recerca consolidats **Duration:** 2009-2011  
**Financing entity:** Generalitat de Catalunya-Ministry of Innovation and Universities, GRUP de RECERCA CONSOLIDAT (#2009SGR00731)  
**Group's budget:** 74.880,00 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** NEOGENIUS PHARMA  
**Financing entity:** Spanish Ministry of Science and Innovation (#CENIT2009) **Duration:** 2009-2012  
**Group's budget:** 560.000 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Participación de los sistemas opioide y cannabinoide en los trastornos adictivos  
**Financing entity:** Ministerio de Educación y Ciencia (Consolider-C #SAF2007-64062) **Duration:** 2007-2012  
**Group's Budget:** 817.960 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Study on new therapeutic targets for the development of neuroprotectant drugs  
**Financing entity:** Fundacio La Marató TV3 (#Marato TV3 2006-061230) **Duration:** 2007-2010  
**Overall budget:** 396.039 € **Group's budget:** 144.996 €  
**Coordinator:** Rafael Maldonado (University Pompeu Fabra), with the participation of other two Spanish laboratories

**Project title:** Redes temáticas de investigación cooperativa en salud (RETICS)-Instituto de Salud Carlos III. Red de trastornos adictivos (RTA).  
**Financing entity:** Instituto de Salud Carlos III (#RD06/001/001). **Duration:** 2006-2012  
**Group's budget:** 344.000 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

Completed research support (last 5 years)

**Project title:** Phenotypical characterisation of animal models for neuropsychiatric disorders related to compulsive behaviour (PHECOMP)  
**Financing entity:** VI Framework Programme, European Commission, DG RTD (#LHSM-CT-2007-037669) **Duration:** 2007-2010  
**Overall budget:** 2,170.000 € **Group's budget:** 411.000 €  
**Coordinator:** Rafael Maldonado (University Pompeu Fabra), STREP-SMEs comprising 8 research groups.  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Genomics, mechanisms and treatment of addiction (GENADDICT)  
**Financing entity:** VI Framework Programme, European Commission, DG RTD (#LSHM-CT-2004-05166) **Duration:** 2005-2010  
**Overall budget:** 8,100.000 € **Group's budget:** 535.000 €  
**Coordinator:** Ian Kitchen (University of Surrey), Rafael Maldonado is workpackage leader for behavioral studies (comprising 4 research groups).  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Vulnerability to nicotine addiction  
**Financing entity:** National Institutes of Health (USA), NIDA (#DA016768) **Duration:** 2004-2010  
**Overall budget:** 1,620.000 US\$ **Group's budget:** 540.000 US\$  
**Coordinator:** Rafael Maldonado, with the participation of other two European laboratories (Brigitte L. Kieffer, France and Andreas Zimmer, Germany).  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** New molecules in mood disorders: a genomic, neurobiological and systems approach in animal models and human disorder (NEWMOOD)  
**Financing entity:** VI Framework Programme, European Commission, DG RTD (#LSHM-CT-2004-503474) **Duration:** 2004-2009  
**Overall budget:** 7,900.000 € **Group's budget:** 490.000 €  
**Coordinator:** Bill Deakin (University of Manchester). Rafael Maldonado is workpackage leader for behavioral studies (comprising 6 research groups).  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** The neurobiology of endogenous cannabinoid transmission: role in normal brain function and potential therapeutic implications.  
**Financing entity:** European Commission . FP5-Quality of Life & Management of Living Resources, #QLRT-2001-01691 **Duration:** 2002-2009  
**Group's budget:** 160.000 €  
**Principal investigator:** Dr. Rafael Maldonado

**Project title:** Molecular bases involved in cannabinoid dependence  
**Financing entity:** EC-DG RTD, PR03705-FPVI Structuring ERA-2002-Mobility-12 (# MIRC-CT-2004-014856) **Duration:** 2004-2006  
**Group's budget:** 80.000 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** "Acción Complementaria" of the European projects GENADDICT, NEWMOOD and PHECOMP  
**Financing entity:** Ministerio de Educación y Ciencia (#SAF2004-22482-E; 2004-22273 and 2005-24632-E; #2006-28374-E) **Duration:** 2005-2010  
**Group's budget:** 208.000 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Estudio de la participación del sistema opioide endógeno en las propiedades adictivas de la nicotina.  
**Financing entity:** Ministerio de Ciencia y Tecnología (#BFU2004-00920/BFI) **Duration:** 2004-2007  
**Group's budget:** 229.000 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Redes de centros del Instituto de Salud Carlos III. Investigación en enfermedades neurológicas.  
**Financing entity:** Instituto de Salud Carlos III (#C03/06). **Duration:** 2003-2006  
**Group's budget:** 93.000 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Redes de centros del Instituto de Salud Carlos III (C03/005). Investigación en drogodependencias.  
**Financing entity:** Instituto de Salud Carlos III **Duration:** 2003-2006  
**Group's budget:** 84.000 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Puesta a punto de modelos comportamentales, neuroquímicos y moleculares: aplicación en el desarrollo de nuevas terapias antipsicóticas  
**Financing entity:** Mataró TV3 **Duration:** 2002-2005  
**Overall budget:** 240.404 € **Group's budget:** 79.500 €  
**Coordinator:** Dr. Rafael Maldonado (UPF) with the participation of other three Spanish laboratories.

**Project title:** Uso de ratones KO para estudiar la participación del sistema opioide y cannabinoide endógeno en efectos adictivos de psicoestimulantes  
**Financing entity:** Ministerio de Ciencia y Tecnología (# GEN2003-20651) **Duration:** 2004-2006  
**Group's budget:** 126.500 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Ajut per donar suport a les activitats dels grups de recerca consolidats **Duration:** 2002-2005 and 2005-2008  
**Financing entity:** Generalitat de Catalunya-DURSI, GRUP de RECERCA CONSOLIDAT (# 2002SGR00193 and # 2005SGR00131)  
**Group's budget:** 35.061 € and 50.600 €  
**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** Red de Transferencia de Tecnología del CIDEM (X-IT)

**Financing entity:** Generalitat de Catalunya, Dep. d'Indústria i Treball (# AL06205 - CIDEM 2005)    **Duration:** 2005-2010

**Group's budget:** 203.000 €

**Principal investigator:** Dr. Rafael Maldonado (UPF)

**Project title:** GENIUS PHARMA

**Financing entity:** Spanish Ministry of Science and Innovation (#CENIT2005), thru Laboratorios DR. ESTEVE    **Duration:** 2006-2009

**Group's budget:** 480.000 €

**Principal investigator:** Dr. Rafael Maldonado (UPF)