Curriculum Vitae Europass

Personal Information

Name(i)	**Carta Anna R.**
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E-mail	acarta@unica.it
Citizenship	Italian
Date of birth	16/01/1969
Sex	F

Profession

Full Professor of Pharmacology

Professional experience

from 2021: Full Professor, University of Cagliari. SSD Bio/14
From 2015: Associate Professor, University of Cagliari. SSD Bio/14.
From 2001: Assistant Professor at the University of Cagliari.
1999-2000: Technician at the University of Cagliari.

2003- Acad. board, PhD in Neuroscience, UNICA.
2019- vice-coordinator, PhD in Neuroscience, UNICA.
2017- Acad. board School of Clinical Pharmacology and Toxicology, UNICA.
Editorial board Neurotox. Research; Exp. Neurology; Guest editor for Frontiers in Neuroscience, Parkinson's Disease.

Activity Preclinical research in Neuroscience.

Education/training

1995-1998: Post doc in the laboratory of Systems Neuroscience, NIMH, Bethesda, MD.

1993-1996: Specialization in Toxicology at the University of Cagliari.

1992: Degree in Pharmacy at the University of Cagliari.

Research themes professional skills

Lab Chief. Preclinical research. In vivo models for the study of neurodegeneration in Parkinson's disease.

Neuropathological mechanisms of neurodegeneration and search for neuroprotective strategies. Role of neuroinflammation in Parkinson's disease neuropathology and L-DOPA-induced motor complications (dyskinesia), with a focus on microglial phenotypes and cytokines. Alpha-synuclein toxicity and alpha-sinyclein/microglia cross talk.
Parkinson's disease is a neurodegenerative disorder nowadays classified as a proteinopathy affecting dopamine neurons, whose hallmark is the accumulation of proteinaceous aggregates of alpha-synuclein (αSyn) in neuronal and non-neuronal brain cells. PD also affects the functions and integrity of glial cells, being

characterized by chronic unremittent neuroinflammation. We investigate the functions of microglia, a cell population pivotal to brain tissue homeostasis and defense. We have contributed to show that both a loss of glial defensive functions and toxic gains of functions are implicated in the neurodegenerative process (Pisanu et al, 2014). Moreover, we have shown that the chronic treatment with the pro-drug l-dopa causes maladaptive glial alterations that favors the development of therapy complications such as dyskinesia (Mulas et al, 2016). Lately, based on evidence pointing to soluble oligomers as the most toxic αSyn species, we have developed a rat PD model based on the intracerebral inoculation of αSyn oligomers, and we have investigated the in vivo pathological interaction of αSyn with microglia (Boi et al, 2020). Our final goal is to understand whether we can harness microglia function for good to arrest PD neuropathology. To this aim we have investigated the effectiveness of anti-inflammatory PPAR-gamma agonists and neuromodulatory drugs such as thalidomide and derivatives both in halting the neurodegenerative process and mitigating the development of l-dopa-induced dyskinesia (Carta et al, 2011; Martinez et al, 2015; Lecca et al, 2018; Casu et al, 2020; Boi et al 2019).

Technical skills:

In vivo models of Parkinson's disease: 6-OHDA, alpha-syn intracerebral infusion, MPTP

Behavioral tests on rodents: motor and sensorimotor tests

Ex vivo methods: mRNA in situ hybridization, Immunohistochemistry and immunofluorescence

Image analysis

Personal skills

Italian

language

English

European level

Understanding				Spoken				Written	
Listening		Reading		Comunication		Speech			
	C1		C1		C1		C1		C1

Funded grants

2000 Young Researcher, Ministry of Univ. and Research, Prot 1214, 2002
2002 RAS, Prot. 001382
2004 PRIN 2004: 2004052391_002
2008 Enterprise Ireland/Trinity College of Dublin. PC-2008-318
2010 MJFF 2010, N. 112-010/2310
2013 P&S Foundation, 2013. N. 10006298
2013 FBS 2013, Prot. U629.2013/AI.553.MGB
2015 Intram. Res. support UNICA
2018 RAS, basic res. funding 2017
2019 NIH PO_75N95D20P00083
2021 MJFF Target Validation ID MJFF-001133

Principal publications from last 10 years

1. Carboni E, Carta AR, Carboni E, Novelli A. Repurposing Ketamine in Depression and Related Disorders: Can This Enigmatic Drug Achieve Success? Front Neurosci. 2021 Apr 30;15:657714. doi: 10.3389/fnins.2021.657714. eCollection 2021.

2. Jung YJ, Tweedie D, Scerba MT, Kim DS, Palmas MF, Pisanu A, Carta AR, Greig NH. Repurposing Immunomodulatory Imide Drugs (IMiDs) in Neuropsychiatric and Neurodegenerative Disorders. Front Neurosci. 2021 Mar 29;15:656921. doi: 10.3389/fnins.2021.656921. eCollection 2021.

3. Jadzic D, Bassareo V, Carta AR, Carboni E. Nicotine, cocaine, amphetamine, morphine, and ethanol increase norepinephrine output in the bed nucleus of stria terminalis of freely moving rats. Addict Biol. 2021 Jan;26(1):e12864. doi: 10.1111/adb.12864.

4. Boi L, Pisanu A, Palmas MF, Fusco G, Carboni E, Casu MA, Satta V, Scherma M, Janda E, Mocci I, Mulas G, Ena A, Spiga S, Fadda P, De Simone A, Carta AR. Modeling Parkinson's Disease Neuropathology and Symptoms by Intranigral Inoculation of Preformed Human α-Synuclein Oligomers. Int J Mol Sci. 2020 Nov 12;21(22):8535. doi: 10.3390/ijms21228535.

5. Murgia F, Atzori L, Carboni E, Santoru ML, Hendren A, Pisanu A, Caboni P, Boi L, Fusco G, Carta AR. Metabolomics Fingerprint Induced by the Intranigral Inoculation of Exogenous Human Alpha-Synuclein Oligomers in a Rat Model of Parkinson's Disease. Int J Mol Sci. 2020 Sep 14;21(18):6745. doi: 10.3390/ijms21186745.

6. Carboni E, Carta AR, Carboni E. Can pioglitazone be potentially useful therapeutically in treating patients with COVID-19? Med Hypotheses. 2020 Apr 22;140:109776. doi: 10.1016/j.mehy.2020.109776.

7. Kuter KZ, Cenci MA, Carta AR. The role of glia in Parkinson's disease: Emerging concepts and therapeutic applications. Prog Brain Res. 2020;252:131-168. doi: 10.1016/bs.pbr.2020.02.004.

8. Carta AR, Boi L, Pisanu A, Palmas MF, Carboni E, De Simone A. Advances in modelling alpha-synuclein-induced Parkinson's diseases in rodents: Virus-based models versus inoculation of exogenous preformed toxic species. J Neurosci Methods. 2020 May 15;338:108685. doi: 10.1016/j.jneumeth.2020.108685.

9. Casu MA, Mocci I, Isola R, Pisanu A, Boi L, Mulas G, Greig NH, Setzu MD and Carta AR. Neuroprotection by the Immunomodulatory Drug Pomalidomide in the Drosophila LRRK2WD40 Genetic Model of Parkinson's Disease. Front. Aging Neurosci. doi: 10.3389/fnagi.2020.00031.

10. Jadzic D, Bassareo V, Carta AR, Carboni E. Nicotine, cocaine, amphetamine, morphine, and ethanol increase norepinephrine output in the bed nucleus of stria terminalis of freely moving rats. Addict Biol. 2019 Dec 17:e12864.

11. Cardia MC, Carta AR, Caboni P, Maccioni AM, Erbì S, Boi L, Meloni MC, Lai F, Sinico C. Trimethyl Chitosan Hydrogel Nanoparticles for Progesterone Delivery in Neurodegenerative Disorders. Pharmaceutics. 2019 Dec 6;11(12). pii: E657.

12. Di Benedetto G, Burgaletto C, Carta AR, Saccone S, Lempereur L, Mulas G, Loreto C, Bernardini R, Cantarella G. Beneficial effects of curtailing immune susceptibility in an Alzheimer's disease model. J Neuroinflammation. 2019 Aug 13;16(1):166. doi: 10.1186/s12974-019-1554-9.

13. BOI L., PISANU A., GREIG N.H., SCERBA M.T., TWEEDIE D., MULAS G., FENU S., CARBONI E., SPIGA S., CARTA A.R. (2019). Immunomodulatory drugs alleviate l-dopa-induced dyskinesia in a rat model of Parkinson's disease. MOV DISORD. Jul 23. doi: 10.1002/mds.27799.

14. Lecca D, Janda E, Mulas G, Diana A, Martino C, Angius F, Spolitu S, Casu MA, Simbula G, Boi L, Batetta B, Spiga S, Carta AR. (2018) Boosting phagocytosis and anti-inflammatory phenotype in microglia mediates neuroprotection by PPARγ agonist MDG548 in Parkinson's disease models. BR J PHARMACOL. 175(16):3298-3314. doi: 10.1111/bph.14214.

15. Pisanu A, Boi L, Mulas G, Spiga S, Fenu S, Carta AR. 2018. Neuroinflammation in L-DOPA-induced dyskinesia: beyond the immune function. J Neural Transm (Vienna). 125:1287-1297. doi: 10.1007/s00702-018-1874-4.

16. Carta AR, Mulas G, Bortolanza M, Duarte T, Pillai E, Fisone G, Vozari Raisman R, Del Bel E. L-DOPA-induced dyskinesia and neuroinflammation: do microglia and astrocytes play a role? Eur J Neurosci. 2016. doi: 10.1111/ejn.13482. [Epub ahead of print].

17. Mulas G, Espa E, Fenu S, Spiga S, Cossu G, Pillai E, Carboni E, Simbula G, Jadžić D, Angius F, Spolitu S, Batetta B, Lecca D, Giuffrida A, Carta AR. Differential induction of dyskinesia and neuroinflammation by pulsatile versus continuous l-DOPA delivery in the 6-OHDA model of Parkinson's disease. Exp Neurol. 2016;286:83-92.

18. Joers V, Tansey MG, Mulas G, Carta AR. Microglial phenotypes in Parkinson's disease and animal models of the disease. Prog Neurobiol. 2016 Apr 20. pii: S0301-0082(15)30053-8.

19. Martinez AA, Morgese MG, Pisanu A, Macheda T, Paquette MA, Seillier A, Cassano T, Carta AR, Giuffrida A. Activation of PPAR gamma receptors reduces levodopa-induced dyskinesias in 6-OHDA-lesioned rats. Neurobiol Dis. 2014; 74C:295-304.

20. Carta AR, Simuni T. Thiazolidinediones under preclinical and early clinical development for the treatment of Parkinson's disease. Expert Opin Investig Drugs. 2014; 24:219-27.

21. Pisanu A, Lecca D, Mulas G, Wardas J, Simbula G, Spiga S, Carta AR. Dynamic changes in pro- and anti- inflammatory cytokines in microglia after PPAR-γ agonist neuroprotective treatment in the MPTPp mouse model of progressive Parkinson's disease. Neurobiol Dis 2014; 71:280-91.

22. Carta AR. PPAR-γ: Therapeutic Prospects in Parkinson's Disease. Current Drug Targets 2013; 14(7):743- 51.

23. Carta AR, Pisanu A. Modulating Microglia Activity with PPAR-γ Agonists: A Promising Therapy for Parkinson's Disease?. Neurotoxicity Research 2013; 23:112-123.

24. Carta AR, Carboni E, Spiga S. The MPTP/probenecid model of progressive Parkinson's disease. Methods Mol Biol. 2013; 964:295-308.

25. Carta AR. The role of microglia–lymphocyte interaction in PD neuropathology. Basal Ganglia 2012; 2: 123-130.

26. Carta AR, Giuffrida A, Fisone G. Dyskinesia in Parkinson's disease therapy. Parkinson's Disease 2012; ISSN: 2042-0080.

27. Carboni E, Cadeddu R, Carta AR. Role of prefrontal cortex dopamine and noradrenaline circuitry in addiction. In: Rijeka:David Belin. Addiction-from pathophysiology to treatment 2012; 129-168, , ISBN: 978-953-51-0783-5

28. Caboni P, Sarais G, Aissani N, Tocco G, Sasanelli N, Liori B, Carta AR, Angioni A. Nematicidal activity of 2- thiophenecarboxaldehyde and methylisothiocyanate from caper (Capparis spinosa) against Meloidogyne incognita. J of Agr and Food Chem 2012; 60: 7345-7351.

29. Carta Anna R., Frau Lucia, Pisanu Augusta, Wardas Jadwiga, Spiga Saturnino, Carboni Ezio. Rosiglitazone decreases peroxisome proliferator receptor-gamma levels in microglia and inhibits TNF- alpha production: new evidences on neuroprotection in a progressive Parkinson's disease model. Neuroscience, 2011; 194:250-261.

30. Carta AR, Pisanu A, Carboni E. Do PPAR-Gamma Agonists Have a Future in Parkinson's Disease Therapy? Parkinsons Dis. 2011; 2011:689181

31. Carta AR, Frau L, Pinna A, Morelli M. Dyskinetic potential of dopamine agonists is associated with different striatonigral/striatopallidal zif-268 expression. Exp Neurol 2010; 224:395-402.

32. Carta AR, Pinna A, Corsini GU, Caramelli A, Morelli M. Farmaci utilizzati nella terapia della malattia di Parkinson e di altri disturbi motori. In: L. Annunziato, G. Di Renzo. Trattato di Farmacologia. 2010; 30: 561-584. ISBN: 978-88-7947-511-2.

33. Morelli M, Carta A, Kachroo A, Schwarzschild MA. Pathophysiological roles for purines: Adenosine, caffeine and urate. In: Anders Björklund and M. Angela Cenci. Recent Advances in Parkinson's Disease: Basic Research. Progr. Brain Res 2010; 183: 183-208. ISBN: 978-0-444-53614-3.

34. Morelli M, Simola M, Popoli P, Carta AR. Role of Adenosine in the Basal Ganglia. In: Heinz Steiner, Kuei Y Tseng. Handbook of Basal Ganglia: Structure and Function 2010; 201-217, ISBN: 978-0-12-374767-9

35. Carta AR, Kachroo A, Schintu N, Xu K, Schwarzschild MA, Wardas J, Morelli M. Inactivation of neuronal forebrain A receptors protects dopaminergic neurons in a mouse model of Parkinson's disease. J Neurochem. 2009; 111:1478-89.

36. Nicoletta Schintu, Lucia Frau, Marcello Ibba, Arianna Garau, Ezio Carboni and Anna R Carta. Progressive dopaminergic degeneration in the chronic MPTPp mause model of Parkinson's disease. Neurotoxicity Research 2009; 16:127-39.

37. Schintu N, Frau L, Ibba M, Caboni P, Garau A, Carboni E and Carta AR. PPAR-gamma mediated neuroprotection in a chronic mouse model of Parkinson's disease, Eur. J. Neurosci. 2009; 29:954-63.

38. Morelli M, Carta AR, Jenner P. Adenosine A2A receptors and Parkinson's disease. Handb Exp Pharmacol. 2009; 193:589-615.

39. Carta AR, Frau L, Pinna A, Morelli M. Behavioural correlates of dopaminergic agonists dyskinetic potential in the 6-OHDA lesioned rat. In: Henk Berendse, Lex Cools, Pieter Voorn and Tony Mulder. Advances in Behavioral Biology: the basal ganglia IX. 2009 vol. IX, p. 461-470, NEW YORK:Springer, ISBN: 978-1-4419-0340-2

40. Carboni E Cadeddu R, Carta AR. The Interrelationship between Dopamine and Noradrenaline in the Prefrontal Cortex: From Physiology to Therapy. In: Prefrontal Cortex: Roles, Interventions and Traumas. 2009; ISBN: 978-953-51-0783-5.