

BIOGRAPHICAL SKETCH Resume 2009

NAME Palacios, Adrián Born 1958 Chilean Nationality Married 1 child www.cnv.cl www.iscv.cl http://www.cnv.cl/anillosensorial/	POSITION TITLE Professor of Neuroscience Facultad de Ciencias Universidad de Valparaíso Chile	
---	--	---

EDUCATION

INSTITUTION	DEGREE	YEAR	FIELD
Sorbonne University Paris V	BS	1982	Psychology
Pierre et Marie Curie University Paris VI	PhD	1991	Neuroscience
TRAINING			
Yale University (TH Goldsmith Lab)	Postdoctoral / Research Assistant	1991-1996	Sensory Neuroscience
Harvard University (John Dowling Lab)	Visiting Researcher	2000 (three months)	Sensory Neuroscience
Ecole Polytechnique CREA -CNRS	Visiting Researcher	2008-2010	Computational Neurosciences
INRIA-CORTEX Henri Poincare Universite	Visiting Researcher	2008-2010	Computational Neurosciences

A. Position and Honors**Positions and Employment**

1996- Professor, Faculty of Science, Universidad de Valparaíso, Chile.

2006-2007 Postgraduate Coordinator, Faculty of Science, Universidad de Valparaíso, Chile.

Other Experience and Professional Memberships

2002-2007 (march) Head of the Neurosciences Ph.D. Program, Universidad de Valparaíso, Chile.

2005-2007 (march) Vice president, Chilean Neurosciences Society, Chile

2003- Neurosciences French Society, France

2000-2002 Director of Master degree in Neuroscience, Universidad de Valparaíso, Chile.

2002- Animal Behavior Society, USA

2001- Journal Associate Editor, Biological Research

2000- The International Society for Neurochemistry, USA

1993- Chilean Physiological Society

1991- Society for Neuroscience, USA

1991- Editor Associate, Behavioral Brain Sciences,

1990- Reviewer: Behavioral Brain Sciences (BBS), Journal Comparative Physiology A, Vision Research, Visual Neurosciences, Biological Research, Journal Comparative Biology, North American Journal of Fisheries Management, Evolutionary Ecology Research.

Editor

2007 Trends in Cognitive Sciences *Biological Research*, Special edition

2003 Tribute to Francisco Varela *Biological Research*, Special edition

1996 The senses *Biological Research*, Special edition

Honors and Positions

2009- Invited Professor Henri Poincare University, INRIA CORTEX Janvier

2008- Invited Researcher INRIA CORTEX Novembre-Decembre

2003- Senior Investigator. Instituto de Sistemas Complejos de Valparaíso, Chile ISCV

2003- Fellow of the Center for Advanced Studies in Ecology & Biodiversity (CASEB)

2001. Visiting Research, Molecular Cellular Biology Labs, John Dowling lab, Harvard U, January-April

1998. Visiting Professor, Mind / Brain Institute, Johns Hopkins U, October - November

1993-1997. Associate Research Scientist, Yale U, EEUU.

1991-1992. Postdoctoral Associate, Yale University, EEUU.

1990 Postdoctoral Fellow, Yale U, EEUU.

1990 Postgraduate Fellowship Fundación Philippe y Fundación Simone & Cino del Duca, Francia.

Teaching

Undergraduate and graduate teaching at the Universidad de Valparaiso, and Invited Lectures in the Universidad de Chile, Universidad Catolica de Chile.

B. Publications

- 1] M'Harzi M, Palacios A, Monmaur P, Houcine O, Delacour J (1987) Effects of selective lesions of hippocampal connections on learning set in the rat. *Physiology & Behavior* 40:181-188.
- 2] Willig F, Palacios A, Monmaur P, Laurent J, Delacour J (1987) Short-term memory exploration and locomotor activity in aged rats. *Neurobiology of Aging* 8:393-402.
- 3] Palacios A, Martinoya C, Bloch S, Varela F (1990) Color mixing in the Pigeon: A psychophysical determination in the longwave spectral range. *Vision Research* 30:587-596.
- 4] Palacios A, Bonnardel V, Varela F (1990) An autoshaping method for wavelength discrimination in birds. *Compte Rendu de l'Academie des Sciences, Paris* 311:213-218.
- 5] Palacios A, Giovanni H, Varela F (1991). Chromatic discrimination in Pigeons after thalamic lesions of nuclei Rotundus (Rt) and Geniculatus Lateralis ventralis (GLv): a psychophysical study *Compte Rendu de l'Academie des Sciences, Paris* 312:113-116.
- 6] Giovanni H, Palacios A, Sansonetti A, Varela F (1991) Role of the nucleus geniculatus lateralis ventralis (GLv) in the optokinetic reflex: a lesion study in the pigeon. *Experimental Brain Research* 86:601-607.
- 7] M'Harzi M, Jarrard LE, Willig F, Palacios A, Delacour J (1991) Selective fimbria and thalamic lesions differentially impair forms of working memory. *Behavior and Neural Biology* 56:221-239.
- 8] Thompson E, Palacios A, Varela F (1992) Ways of coloring: Comparative color vision as case study for cognitive science. *Behavioral and Brain Sciences* 15:1-25.
- 9] Thompson E, Palacios A, Varela F (1992) On the ways to color: Authors response. *Behavioral and Brain Sciences* 15:56-74.
- 10] Palacios AG, Varela FJ (1992) Color mixing in the pigeon (*Columba livia*) II: A psychophysique determination in the middled, short and near-UV wavelength range. *Vision Research* 32:1947-1953.
- 11] Palacios AG, Goldsmith TH (1993) Photocurrents in retinal rods of Pigeons (*Columba livia*): Kinetics and spectral sensitivity. *Journal of Physiology (London)* 471:817-829.
- 12] Varela FJ, Palacios AG, Goldsmith TH (1993) Color vision of birds: In *Vision, brain and behavior of birds* 5:77-98. ed. Zeigler H. P., Bischof H. J., MIT Press, Cambridge
- 13] Zeigler HP, Jager R, Palacios AG (1993) Sensorimotor mechanisms and pecking in the pigeon. In *Vision, brain and behavior of birds*. 15:265-283. ed. Zeigler H. P., Bischof H. J., MIT Press, Cambridge
- 14] Palacios AG, Goldsmith TH, Bernard G (1996) Sensitivity of cones from a cyprinid fish (*Danio aequipinnatus*) to ultraviolet and visible light. *Visual Neurosciences*. 13:411-421.
- 15] Palacios AG, Goldsmith TH (1996) Visual transduction in vertebrates rods. *Biological Research*. 29:195-198.
- 16] Roessel van P, Palacios AG, Goldsmith TH. (1997) Activity of long-wavelength cones under scotopic conditions in the cyprinid fish *Danio aequipinnatus*. *Journal of Comparative Physiology A*. 181:493-500.
- 17] Palacios AG, Srivastava R, Goldsmith TH. (1998). Spectral and polarization sensitivity of photocurrents of amphibian rods in the visible and ultraviolet. *Visual Neuroscience*. 15:319-331.
- 18] Palacios AG, Varela FJ, Srivastava R, Goldsmith TH. (1998) Spectral sensitivity in cones in the goldfish, *Carassius auratus*. *Vision Research*. 38:2135-2146.
- 19] Palma F, Roncagliolo P, Bacigalupo J, Palacios AG. (2001). Membrane current of retinal rods of *Caudiverbera caudiverbera* (Amphibia: Leptodactylidae): Dark noise, spectral and absolute sensitivity. *Visual Neuros* 18:663-673.
- 20] Thompson E, Palacios A, Varela F (2002) Ways of coloring: Comparative color vision as case study for cognitive science. In *Vision and Mind: Selected Readings in the Philosophy of Perception*. Ed. by A. Noe, E. Thompson. Chap. 15:351-418. MIT Press, Cambridge, USA. (Reprinted for Behavioral and Brain Science, 1992).
- 21] Chávez AE., Bozinovic F, Peichl L, Palacios AG. (2003) Reflectance In The Genus Octodon (Rodentia): Implications For Visual Ecology Retinal Spectral Sensitivity, Fur Coloration And Urine. *IOVS*. 44:2290-2296.
- 22] Chávez AE, Roncagliolo M, Kurth H, Reichenbach A, Palacios AG. (2003). The Retinal Anatomy and Function of the Myelin Mutant *Taip* Rat. *Brain Research*. 964:144-152.
- 23] Palacios AG, Bozinovic F (2003). An "Enactive" Approach to Physiological & Behavioral Ecology: Thoughts on the table. *Biol Res* 36:95-99.
- 24] Palacios AG, Bacigalupo J (2003). Francisco Varela (1946-2001): Filling the Mind – Brain Gap: A Life Adventure. *Biol Res* 36:3-6.
- 25] Palacios A, Bacigalupo J. Guest Editors. (2003) A Tribute to Francisco Varela (1946-2001). *Biol Res* 36:1-134.

- 26] Chávez AE., Pannicke T, Roncagliolo M, Reichenbach A, Palacios AG. (2004). "Electrophysiological Properties of Retinal Müller Glial Cells from a Myelin Mutant Rat" *Glia*. 45:338-345.
- 27] Herrera G., Fernández MJ, Pohl N., Diaz M., Bozinovic F., Palacios AG. (2004). Sistema Visual en el Colibrí Austral (*Sephanoides sephaniodes*) y el Picaflor Cordillerano (*Oreotrochilus leucoplerus*: Electroretinografía y Coloración. *Ornitología Neotropical* 15:215-222.
- 28] Palacios, A., L. Peichl et F. Bozinovic (2004) *La vision ultraviolette du rat degus*. *Pour la Science Cerveau & Psycho* 5:92-95.
- 29] Peichl L, Chavez AE, Ocampo A, Mena W, Bozinovic F, Palacios AG (2005). Eye and Vision in the Subterranean Rodent Cururo (*Spalacopus Cyanus*, Octodontidae). *The Journal of Comparative Neurology* 486:197-208.
- 30] Ocampo-Garcés A, Hernández F, Mena W, Palacios AG. (2005). Wheel-running and rest-activity pattern interaction in two octodontids (*Octodon degus*, *Octodon bridgesi*). *Biological Research* 38:299-305.
- 31] Ocampo-Garcés A, Mena W, Hernández F, Cortés N, Palacios AG. (2006). Circadian chronotypes among wild captured west-andean octodontids. *Biological Research* 39:209-20.
- 32] Brückner G., S. Pavlica, M. Morawski, AG Palacios, A. Reichenbach (2006). Organization of brain extracellular matrix in the Chilean fat-tailed mouse opossum *Thylamys elegans* (Waterhouse, 1839). *J Chem Neuroanat* 32:143-58.
- 33] Goles E, Palacios AG (2007) Dynamical complexity in cognitive neural networks. *Biological Research* 40:381-384
- 34] Cosmelli D, Palacios AG (2007). Networks in cognitive systems and biomedicina: cerebral processes, models and mathematical tools design. *Biological Research* 40:479-485
- 35] Herrera G, Zagal JC, Diaz M, Fernández MJ, Vielma A, Cure M, Martinez J, Bozinovic F, Palacios AG. (2008) Spectral sensitivities of photoreceptors and their role in colour discrimination in the Green-backed Firecrown Hummingbird (*Sephanoides sephaniodes*). *J Comp Physiol A Neuroethol Sens Neural Behav Physiol*. 194(9):785-94
- 36] Zagal, J.C., Ruiz-del-Solar, J., Palacios A.G.. (2008). Fitness Based Identification of a Robot Structure. *Proc. 11th Int. Conf. on Artificial Life*, pp.733-740, MIT Press, Cambridge, MA.
- 37] Palacios AG. (2009) *La Red Encarnada: Cerebro vs Metrópolis*. (The embodied network: Brain vs Metropolis). Editorial Ariel, España.
- 38] Delgado LM; Vielma AH; Palacios AG; Schmachtenberg O. (2009) The GABAergic system in the retina of neonate and adult *Octodon degus*, studied by immunohistochemistry and electroretinography *J Comp Neurol*. 514(5):459-472.
- 39] Cure M, Palacios AG (2009) Do Hummingbird see in the Ultraviolet? *The Open Medical Informatics Journal* 3:9-12
- 40] Palacios-Munoz A, Martinez PL, Palacios AG and Martinez A (2009) Critic role of connexin36 gap junction channels in the synaptic transmission in the retina of *Octodon degus*, a diurnal mammal. Submitted *EJN*
- 41] Martinez J., Palacios AG, Marquez I.N., Arroyo M.T.K. and Mpodozis J. (2009) Can red flowers be conspicuous to bees?: *Bombus dahlbomii* and South American temperate forests flowers as a case in point. Submitted *Journal Experimental Biology ISI*
- 42] Schleich CE, Vielma A, Glosmann M, Palacios AG, , Peichl L. (2009) The Eyes of Two Subterranean Tuco-tuco Species (Rodentia, Ctenomys): Histological Characteristics and Retinal Spectral Sensitivity. To be submitted *Journal of Comparative Neurology ISI*
- 43] Peichl L, Vielma A, Bozinovic F, Arrese CA, Hunt DM, Palacios AG. (2009). Visual pigments and spectral sensitivity in a South American marsupial (*Thylamys elegans*). In press *Journal of Comparative Neurology ISI*

Congress and Lectures

More than 90 abstracts and talk presentation in congress meetings.

B. Research Support

2010-2011 INRIA CONICYT Algorithms for Modelling the Visual System (AMVIS). **Submitted** F. Alexander, T. Vieville, B. Cessac, J.C. Zagal, A. Palacios.

2010-2012 ANR-CONICYT From the neurophysiology of natural vision to embodied robotic action. **Submitted**

Coordinator T.Vieville, A.Palacios CI: F. Alexander, A. Hutt, L. Bougrain, INRIA-CORTEX, B. Cessac NeuroMathCom, O. Pietquin, H. Frezza-Buet SUPELEC/IMS, E. Goles UAI-ISCV, D. Cosmelli, PUC, J Ruiz del Solar, E. Tanter UCH, R. Salas UV.

2009-2011 CNRS-NEUROINFORMATIC Analysis and Modeling of Sensory Transduction to Perception based on experimental data and neural network models. PI Axel Hutt, Co Invest, T. Vieville, B. Cessac, L. Bougrain, INRIA-CORTEX, D. Cosmelli, PUC. Adrian Palacios, CNV.

2006-2009 FIRCA NIH. Senile Degeneration in the Brain of *O degus*, PI A. Kirkwood. 1 R03 TW007171-01.

2005-2009 Ring in Sensory Biology. PI. CONICYT- PBCT #ACT45. (<http://www.cnv.cl/anillosensorial/>)

2006-2009. MORPHEX. Morphogenesis and gene regulatory networks in plants and animals: a complex systems modeling approach. CONICYT RUE26 Cooperación Internacional. E Goles PI, J Asenjo, A Palacios Co Investigador.

2006-2009. MORPHEX. Morphogenesis and gene regulatory networks in plants and animals: a complex systems modeling approach. EC NEST-2005PATH-043322/STREP. Eric Goles PI, Juan Asenjo, Adrian Palacios Co Investigador.

2004-2008 Neuronal visual processing in *Octodon degus* retina. PI. Fondecyt #1040309.

C. Thesis supervision in my lab (present and past)

- Postdoctoral Fellows (5)
- Postgraduate Students (11)
- Thesis Committees (17)
- Undergraduate (10)

D. Field of Research

Sensory systems must ultimately be understood at all the biological levels of analysis, from molecular events in cells to the behavioural repertoires of animals seen in the ecological conditions in which their kind evolved. The study of colour vision in non-mammalian species reveals alternatives to the more familiar evolutionary 'designs' encountered in closer relatives to humans. In Francisco Varela lab's and working for my PhD degree I show, using behavioural colour-matching experiments, that Avian (*Columba livia*) use ultraviolet cones to shape its color vision space (*Vision Research*, 32:1947-1953, 1992). In an effort to bring comparative colour vision as case study for cognitive science we propose, grounded in some of our experimental and theoretical works, a theoretical framework for discussion (this work was published along with 33 commentaries from leader authors in the field. *Behavioral and Brain Sciences*, 15:1-74, 1992). Moving to Timothy Goldsmith lab's at Yale University, our primary aim was to establish the spectral sensitivities and response kinetics of rods and cones by recording photocurrents with suction electrodes (*Journal of Physiology (London)*. 471:817-829, 1993). The best preparation that we found for examining UV cones was *Danio aequipinnatus*, a small cyprinid related to zebrafish (*Visual Neurosciences*. 13:411-421, 1996). We extend the measurement to amphibians rods (*Rana pipiens*, *Ambystoma tigrinum*, *Xenopus laevis*). One interesting finding in *Xenopus* rods the photocurrent produced by single photoisomerizations is several times smaller than in the other two species (*Visual Neuroscience*. 15:319-331, 1998). In recording from several spectral classes of fish cones we found that light absorbed by aromatic amino acids (i.e. 280nm) in the opsin can excite the cell, although the quantum efficiency is not as when absorption occurs in the retinal-protein chromophore (*Vision Research*. 38:2135-2146, 1998). From 1997 I start my own lab at the University of Valparaiso, Chile. Our current lab projects are focus in sensory ecology, especially in the visual system, from single photoreceptor recording, electroretinogram (ERG) and measure of the reflectance spectra, from animals and their microhabitat, that are likely to be used as signals in sexual selection, recognition of conspecifics, camouflage. More recently we use recording in retina slices using patch-clamp, ganglion cells population recording in whole mount retinas using multielectrodes MEA array (64X). Furthermore, at the retinal an intricate bioelectrical neural signal network develop dynamically depending on background illumination and the behavioural meaning of the task for the animal. We are using mathematical tools to model visual driving behaviour. Recently, we start to work in the field of Neurobiology of Learning and Memory, using behaviour, biochemistry and synaptic plasticity (LTP, LTD) approaches in *Octodon degus*, a rodent that during aging develop brain marks proper of Alzheimer diseases. Another area of my interest is complexity and I coordinating several multidisciplinary activities in the area of cognitive sciences at the *Instituto de Sistema de Complejos de Valparaiso, Chile*. (www.iscv.cl). Since 2007 we start a collaboration with the INRIA CORTEX-ODYSEE team to build better algorithms for the early steps of the visual systems, where the distribution of photon flux catch by the photo sensor layer will be transducer in a neural signal than will be pack and coded by ganglions cells in terms of action potentials. What exactly is this neural code is one of our questions and is addressed with multielectrodes retina recording and computational modelling.