

CURRICULUM VITAE
SERAPIO M. BACA, PHD
DOB: 07/17/1973

US CITIZEN

David Geffen School of Medicine
UCLA Neurology Department
Headache Research and Treatment Group
635 Charles E. Young Dr. South
Room 579F
Los Angeles, CA 90095, USA
(310) 206-1966
smbaca@ucla.edu

EDUCATION

- 2005 - 2010 Postdoctoral Research Fellow, University of California, Los Angeles, Los Angeles, CA
- 2000 - 2005 Ph.D., Neurosciences, University of California, San Diego, La Jolla, CA
- 2000 NEURON Course, San Diego Supercomputing Center, La Jolla, CA
- 1999 Neural Systems and Behavior Course, Marine Biological Laboratories, Woods Hole, MA
- 1998 - 2000 M.S., Neurosciences, University of California, San Diego, La Jolla, CA
- 1997 Teaching Assistant Training and Teaching Opportunity Course, Emory University, Atlanta, GA
- 1996 - 1998 Neuroscience, Emory University, Atlanta, GA
- 1991 - 1995 B.A., Psychology, The Colorado College, Colorado Springs, CO

DISSERTATION

- 2005 **Baca SM.** Inhibitory motor neurons are essential for the production of local bending in the medicinal leech.

PROFESSIONAL EXPERIENCE

- 2010 - 2011 Staff Research Associate, University of California, Los Angeles, Los Angeles, CA
- 2011 - Assistant Researcher, Neurology, University of California, Los Angeles, Los Angeles, CA

PROFESSIONAL ACTIVITIES, UNIVERSITY SERVICE

- 1994 - 1995 The Colorado College's Neuroscience Outreach Program for Elementary Schoolchildren
- 1999 - 2000 UCSD Neurosciences Graduate Program Social Chair
- 2005 - 2007 UCLA Neurobiology Postdoctoral Seminar Co-Organizer
- 2006 - 2008 UCLA Society for Postdoctoral Scholars, Communications Committee Executive Member

- 2008 UCLA Society for Postdoctoral Scholars, Communications Committee Vice President
- 2008 - 2010 UCLA Society for Postdoctoral Scholars, Acting Chief Technology Officer (<https://www.postdoc.ucla.edu>)

PROFESSIONAL ACTIVITIES, PROFESSIONAL ASSOCIATIONS AND SCHOLARLY SOCIETIES

- 1999 - Society for Neuroscience Member
- 2000 - American Association for the Advancement of Science Member
- 2003 - Society for the Advancement of Chicanos/Chicanas and Native Americans in Science and Engineering Member
- 2013- American Academy of Neurology Member
- 2013- American Headache Society Member
- 2013- International Headache Society Member

PROFESSIONAL ACTIVITIES, EDITORIAL SERVICES

- Neuron* (ad hoc reviewer)
- Journal of Neurophysiology* (ad hoc reviewer)
- Journal of Neuroscience* (ad hoc reviewer)
- Nature Neuroscience* (ad hoc reviewer)

HONORS AND SPECIAL AWARDS

- 1991 - 1995 El Pomar Scholar at The Colorado College
- 1992 National Institute of Mental Health Predoctoral Intramural Research Training Award (PIs: Drs. Farouk Karoum and Stanislaw Chrapusta)
- 1993 - 1995 Dean's List
- 1994 Associated Colleges of the Midwest Minority Scholar Grant Recipient
- 1994 William Arthur Blakely Memorial Award (Excellence in Psychology at The Colorado College)
- 1994 - 1995 Howard Hughes Biology Grant Recipient
- 1995 - 1996 National Institute of Mental Health Predoctoral Intramural Research Training Award (PIs: Drs. Michael Egan and Thomas Hyde)
- 1996 - 1997 Woodruff Minority Graduate Fellow at Emory University
- 1999 American Society for Cell Biology/Marine Biological Laboratories Minority Funding Recipient
- 2000 Merck Neuroscience Fellowship Award
- 2013 American Headache Society Research Award

TEACHING AND MENTORSHIP

- 1999 - 2003 Neurosciences "Bootcamp" Teaching Assistant, University of California, San Diego, La Jolla, CA
- 2000 Euro-Neuro Nerve Net School Lab Instructor, University of Bordeaux, Bordeaux, France
- 2007 Graduate Level Lecturer, Neurobiology (Microcircuits and Basic Neuroscience),

- University of California, Los Angeles, Los Angeles, CA
- 2007 Visiting Assistant Professor, Psychology Department, The Colorado College, Colorado Springs, CO
- 2008 - Supervisor for Undergraduate and Staff Research Associates, University of California, Los Angeles, Los Angeles, CA

RESEARCH GRANTS AND FELLOWSHIPS RECEIVED

- 2001 - 2003 National Institute of Mental Health National Research Service Award: *Leech Local Bending: Understanding a Sensory Motor Loop* (MH13037; \$78,104)
- 2005 - 2007 UCLA Neurobiology Postdoctoral Fellowship on National Institute of Neurological Disorders and Stroke Training Grant (NINDS T32NS030673: PI: Alan Grinnell; Cellular Neurobiology)
- 2008 - 2009 National Heart, Lung and Blood Institute National Research Service Award: *The Role of pFRG Neurons in the Respiratory Network* (F32HL087589; \$104,632)
- 2013 Migraine Research Foundation Grant (\$45,000.00)

LECTURES AND PRESENTATIONS

- 2013 **Baca, SM.** Optical and Selective Activation of Astrocytes Can Trigger Cortical Spreading Depression. International Headache Society Meeting. Boston, MA, June 27-30, 2013.
- 2013 **Baca SM.** Selective Activation of Astrocytes Can Trigger Cortical Spreading Depression. American Academy of Neurology 65th Annual Meeting, March 16 to March 23, 2013 at the San Diego Convention Center, San Diego, CA.
- 2009 **Baca SM,** Marin-Burgin A, Wagenaar, DA, and Kristan WB, Jr. Widespread inhibition proportional to excitation controls the gain of a leech behavioral circuit. October 12th, 2009. Department of Physiology, Showa University School of Medicine, Hatanodai, Shinogawa-ku, Tokyo, Japan.
- 2010 **Baca SM,** Hsu P, Onimaru, H, and Feldman, JL. Role of the Parafacial Respiratory Group in Generating Expiration *in vitro*. 4th Motor Systems Meeting. November 12th, 2010. Salk Institute for Biological Studies, La Jolla, CA.

RESEARCH PAPERS (PEER REVIEWED)

1. **Baca, SM** & Jacobs B. A quantitative dendritic analysis of four functionally distinct areas of human cerebral cortex. *Modern Psychological Studies*, 1995, 3, 52-63.
2. Hamid EH, Hyde TM, **Baca SM**, Egan MF. Failure to down regulate NMDA receptors in the striatum and nucleus accumbens associated with neuroleptic-induced dyskinesia. *Brain Res.* 1998 Jun 15; 796(1-2): 291-5.
3. **Baca SM**, Lipska BK, Egan MF, Bachus SE, Ferguson JN, Hyde TM. Effects of prefrontal cortical lesions on neuropeptide and dopamine receptor gene expression in the striatum-accumbens complex. *Brain Res.* 1998 Jun 22; 797(1): 55-64.
4. Spurney CF, **Baca SM**, Murray AM, Jaskiw GE, Kleinman JE, Hyde TM. Differential effects of haloperidol and clozapine on ionotropic glutamate receptors in rats. *Synapse.* 1999 Dec 15; 34(4): 266-76.
5. Bower CM, Hyde TM, Zaka M, Hamid EH, **Baca SM**, Egan MF. Decreased mu-opioid receptor binding in the globus pallidus of rats treated with chronic haloperidol. *Psychopharmacology (Berl).* 2000 Jun; 150(3): 260-3.
6. Jacobs B, Schall M, Prather M, Kapler E, Driscoll L, **Baca SM**, Jacobs J, Ford K, Wainwright M, Trembl M. Regional dendritic and spine variation in human cerebral cortex: a quantitative golgi study. *Cereb Cortex.* 2001 Jun; 11(6): 558-71.
7. Marin-Burgin A, Eisenhart JF, **Baca SM**, Kristan WB, Jr., French K. (2005). Sequential Development of Electrical and Chemical Synaptic Connections Generates a Specific Behavioral Circuit in the Leech. *The Journal of Neuroscience*, March 9, 2005, 25(10):2478-2489.
8. **Baca SM**, Thomson EE, and Kristan WB, Jr. (2005). Location and intensity discrimination in the leech local bend response using optic flow and principal components analysis. *J Neurophysiol* (February 9, 2005). doi:10.1152/jn.01263.2004.
9. **Baca SM**, Marin-Burgin A, Wagenaar, DA, and Kristan WB, Jr. (2008). Widespread inhibition proportional to excitation controls the gain of a leech behavioral circuit. *Neuron*, 57(2), 276-289.
10. Noir J, Hemmerlin F, Wicht J, **Baca SM**, Aurnou JM. (2009). An experimental and numerical study of librational flow in planetary cores and subsurface oceans. *Physics of the Earth and Planetary Interiors*, 173(1-2), 141-152.
11. Morgado-Valle C, **Baca SM**, Feldman JL (2010). Glycinergic Pacemaker Neurons in PreBötzing Complex of Neonatal Mouse. *The Journal of Neuroscience*, March 10, 2010, 30(10): 3634-3639.

12. Charles AC, **Baca SM**. Cortical spreading depression and migraine. *Nat Rev Neurol*. 2013 Sep 17. doi: 10.1038/nrneurol.2013.192.
13. Hansen JM, **Baca SM**, VanValkenburgh P, Charles AC (2013). Distinctive anatomical and physiological features of migraine aura revealed by 18 years of recording. *Brain*. 2013 Dec; 136 (Pt 12): 3589-95.

PAPERS IN PREPARATION (RESEARCH COMPLETED)

1. **Baca SM**, Hsu P, Onimaru, H, and Feldman JL. (2011). Role of the parafacial respiratory group in generating expiration *in vitro*.
2. **Baca SM**, Jones, RT, Chen K, Dietz JK, Sofroniew M, Mody I, Charles A. (2014). Selective activation of astrocytes can trigger cortical spreading depression.

ABSTRACTS

1. Ferguson JN, Driscoll J, Courns K, Rattenbury K, **Baca SM**, Larsen L, and Jacobs B. An overview of the Colorado College elementary school outreach program for neuroscience education. Program No. 101.21. 1995. San Diego, CA: Society for Neuroscience. 1995.
2. **Baca SM**, Jacobs, B. (1995). A quantitative dendritic analysis of four functionally distinct areas of human cerebral cortex. *Modern Psychological Studies*.
3. **Baca SM**, Larsen L, Kernan R, Fisher B, and Jacobs B. Dendritic and spine analyses across hierarchically arranged areas of human neocortex: A quantitative Golgi study. Program No. 182.9. 1995. San Diego, CA: Society for Neuroscience. 1995.
4. Hamid E, Hyde TM, **Baca SM**, and Egan MF. Mu opioid receptors and tardive dyskinesia: A study on a rat model of TD. Program No. 467.20. 1996, Washington, DC: Society for Neuroscience, 1996.
5. Egan MF, Hamid E, **Baca SM**, and Hyde TM. Alterations in NMDA receptor density in a rat model of tardive dyskinesia. Program No. 467.19. 1996, Washington, DC: Society for Neuroscience, 1996.
6. **Baca SM**, Egan MF, Bachus SM, Lipska B, Ferguson JN, and Hyde TM. Effects of prefrontal cortical lesions on neuropeptide and dopamine receptor gene expression in the striatum- accumbens complex. Program No. 657.13 1996, Washington, DC: Society for Neuroscience, 1996.
7. Hamid EH, **Baca SM**, Meredith GE, Hyde TM, and Egan MF. (1998). Neuroleptic drug effects on synaptophysin gene expression levels. *Biol Psych*, 43 (113) Suppl. 8.
8. **Baca SM**, Singer E, and Kristan WK, Jr. Lateral inhibitory connections contribute to the local

bend response in the medicinal leech (*Hirudo medicinalis*). Program No. 426. Computational and Neuroscience Meeting. July, 16-20, 2000, Brugge, Belgium.

9. **Baca SM** and Kristan WB, Jr. Influence of inhibition in the local bend response of the medicinal leech (*Hirudo medicinalis*). Program No. 518.5. 2001, Washington, DC: Society for Neuroscience, 2001. Online.
10. **Baca SM**, Thomson EE, and Kristan WB, Jr. The effects of force intensity and stimulus duration on local bending behavior in the medicinal leech, *Hirudo medicinalis*. Program No. 269.16. 2003, Washington, DC: Society for Neuroscience, 2003. Online.
11. **Baca SM**, Marin-Burgin A, and Kristan WB, Jr. A balance of strong inhibition and strong excitation produce local bending in the medicinal leech (*Hirudo medicinalis*). UCLA Neural Microcircuits Training Program Symposium, 2006.
12. Wagenaar DA, **Baca SM**, Kristan WB, Jr. Role of Inhibition in the Local Bend Response of the Medicinal Leech. 8th International Congress of Neuroethology 2007, Vancouver, Canada.
13. Wagenaar DA, **Baca SM**, Marin-Burgin A, and Kristan WB, Jr. Inhibition helps shape the spatial and temporal profiles of the local bend response of the medicinal leech. Program No. 312.10, Washington, DC: Society for Neuroscience, 2007.
14. **Baca SM**, Hsu P, and Feldman JL. Exploring respiratory modes in pontine-brainstem-spinal cord preparations from neonatal rats. (submitted) Chicago, IL: Society for Neuroscience, 2009.
15. Hsu P, **Baca SM**, and Feldman JL. Active expiration in brainstem-spinal cord preparations of neonatal rats. UCLA Undergraduate Research Center: Center for Academic and Research Excellence. Science Poster Day 2009.
16. **Baca SM**, Hsu P, Onimaru, H, and Feldman JL. Role of the parafacial respiratory group in generating expiration *in vitro*. San Diego, CA: Society for Neuroscience, 2010.
17. **Baca SM**, Jones, RT, Chen K, Dietz JK, Sofroniew M, Mody I, Charles A. Cortical spreading depression triggered by selective activation of astrocytes, Society for Neuroscience 2013.
18. J.M. Hansen JM, VanValkenburgh P, **Baca SM**, Charles AC. Distinctive Anatomical and Physiological Features of Migraine Aura Revealed by 20 Years of Patient Recording. International Headache Society 2013.