Julio F. Cordero-Morales, Ph.D.
Assistant Professor
Department of Physiology
The University of Tennessee Health Science Center
894 Union Avenue, Memphis, TN 38163
Room 356A Nash Research Building
Office: (901) 448-8206
Lab: (901) 448-8205
jcordero@uthsc.edu
http://corderovasquezlab.weebly.com

EDUCATION

2008	Ph.D.	University of Virginia, in Physiology
2001	Licentiate in Biology	Universidad Central de Venezuela, in Cellular Biology

HONORS and AWARDS

2011-2014 Lilly Research laboratories Fellow of the Life Sciences Research Foundation (Postdoctoral Fellowship)

2008 Student Research Achievement Award 52nd Annual Meeting of the Biophysical Society.

2007 Outstanding Graduate Student Award, University of Virginia Structural, Computational Biology and Biophysics

ACADEMIC POSITIONS HELD:

2014-present
Assistant Professor
Department of Physiology
The University of Tennessee Health Science Center

2009 - 2014
Postdoctoral Fellow
Department of Physiology
University of California San Francisco
Research Advisor: Dr. David Julius
Structural and biophysical properties of sensory TRP channels

2004 - 2009
Graduate Student and Research Associate
Department of Biochemistry and Molecular Biology
University of Chicago
Research Advisor: Dr. Eduardo Perozo

Structural and molecular basis of K^+ channel gating

2001 - 2004 Research Assistant
Department Molecular Physiology and Biological Physics
University of Virginia
Supervisor: Dr. Eduardo Perozo
Structural and molecular basis of K^+ channel gating

1999 - 2001 Research Assistant
Laboratory of Membrane Physiology
Universidad Central de Venezuela
Instituto de Biología Experimental (I.B.E).
Supervisor: Dr. Pedro Romero
The role of stretch-activated Ca^{2+} channel in human red cells

1998 - 1999 Research Assistant
Laboratory of Structural Biology
Instituto Venezolano de Investig. Científicas (I.V.I.C)
Centro de Biofísica y Bioquímica
Supervisor: Dr. Raul Padrón
Phosphorylation mechanism of the myosin regulatory light chain from tarantula striated muscle

1994 - 1995 Research Assistant
Laboratory of Microorganisms Ecology
Universidad Central de Venezuela
Advisor: Dr. Héctor Bastardo
Developing technology to recover heavy crude oil using Microorganisms

SCIENTIFIC SKILLS

- Molecular biology.
- Electrophysiology, patch clamp and two-electrode voltage clamp (proteoliposomes, neurons, HEK293 and CHO cells, and Xenopus oocytes).
- Cells and sensory neuron tissue cultures.
- Pharmacology of mammalian sensory systems.
- Macroscopic flux assays.
- Calcium imaging.
- Protein expression and biochemistry for structural studies of prokaryotic and eukaryotic membrane proteins.
- X-ray crystallography of membrane proteins.
- Electron paramagnetic resonance spectroscopy of membrane proteins.

PEER-REVIEWED PUBLICATIONS

1. **Cordero-Morales JF**, Jogini V, Lewis A, Vásquez V, Tristani-Firouzi M, and Perozo E. Structural basis of an inherited *hERG1* long QT mutant. (*To be submitted*)

2. Cao E, **Cordero-Morales JF**, Liu B, Qin F, and Julius D. (2013) TRPV1 channels are intrinsically heat sensitive and negatively regulated by phosphoinositide lipids. ***Neuron,*** 77:667-679.

3. Raghuraman H, **Cordero-Morales JF**, Jogini V, Pan AC, Kollewe A, Roux B and Perozo P. (2012) Mechanism of Cd^{2+}-coordination during slow inactivation in potassium channels. ***Structure,*** 20:1-11.

4. **Cordero-Morales JF***, Gracheva EO* and Julius D. (2011) Cytoplasmic Ankyrin Repeat Domains of TRPA1 Dictate Sensitivity to Thermal and Chemical Stimuli. ***Proc Natl Acad Sci,*** 108:E1184–E1191. * These authors equally contributed to this work.
   - Evaluated article in Faculty 1000

5. Ferrer-Villada T, **Cordero-Morales JF**, Arias M, Ficker E, Medovoy D, Perozo E and Tristani-Firouzi M. (2011) Molecular coupling in the hERG K+ channel inactivation pathway. ***J Biol Chem,*** 286:39091-9.

6. **Cordero-Morales JF**, Jogini V, Chakrapani S, and Perozo E. (2011) A multipoint hydrogen bond network underlying KcsA C-type inactivation. ***Biophysical Journal****, 100:2387-2393.*

7. Chakrapani S*, **Cordero-Morales JF***, Jogini V, Pan A, Cortes DM, Roux B and Perozo, E. (2011) On the structural basis of modal gating behavior in K^+ channels. ***Nature Structural and Molecular Biology***, 18:67-75. * These author equally contributed to this work.

8. Gracheva EO*, **Cordero-Morales JF***, González-Carcacía JA, Ingolia NT, Aranguren CI, Manno C, Weissman JS, and Julius D. (2011) Ganglion-specific splicing of TRPV1 underlies infrared sensation in vampire bats. ***Nature,*** 476:88-91. * These author equally contributed to this work

   - Journal Cover
   - News and Views: Heat-thirsty bats. ***Nature,*** 476:40-41
   - Featured in The New York Times (Science). Heat Sensor Helps Vampire Bat find Meals. By Sindya N. Bhanoo. Published: August 5, 2011
   - Featured in The New York Times (Science). As Genes Learn Tricks, animal Lifestyles Evolve. By Sean B. Carroll. Published: August 27, 2012

9. Gracheva EO, Ingolia NT, Kelly YM, **Cordero-Morales JF**, Hollopeter G, Chesler AT, Sánchez EE, Perez JC, Weissman JS, and Julius D. (2010) Molecular Basis of Infrared Detection by Snakes. ***Nature***, 464:1006-1011.

10. Cuello LG, Jogini V, Cortes DM, Pan AC, Gagnon DH, Dalmas O, **Cordero-Morales JF**, Chakrapani S, Roux B and Perozo E. (2010) Structural Basis for the Coupling between Activation and Inactivation Gate in Potassium Channels. ***Nature,*** 466:272-276.

11. Vásquez V., Sotomayor M., **Cordero-Morales J.F**., Schulten K., and Perozo E. (2008) A Structural Mechanism for MscS gating in Lipid Bilayers. ***Science***, 321:1210-1214.

12. **Cordero-Morales J.F.**, Jogini V., Lewis A., Vásquez V., Cortes D.M, Roux B., and Perozo E. (2007) Molecular driving forces determining potassium channel slow inactivation. ***Nature Structural and Molecular Biology***, 14: 1062-1069.

13. Chakrapani S., **Cordero-Morales J.F.**, and Perozo E. 2007. A quantitative description of KcsA gating. Macroscopic current I. ***Journal of General Physiology*** 130: 465-478.

14. Chakrapani S., **Cordero-Morales J.F.**, and Perozo E. (2007) A quantitative description of KcsA gating. Single channel current II. ***Journal of General Physiology*** 130: 479-496.

15. **Cordero-Morales J.F.**, Cuello L., Zhao Y., Jogini V., Cortes D.M., Roux B., and Perozo E. (2006) Molecular determinants of gating at the potassium channel selectivity filter. ***Nature Structural and Molecular Biology*** 13: 311-318.

    - Journal Cover

16. **Cordero-Morales J.F.**, Cuello L., and Perozo E. (2006) Voltage-dependent gating at the potassium channel selectivity filter. ***Nature Structural and Molecular Biology*** 13: 319-321.

17. Blunck R., **Cordero-Morales J.F.**, Cuello L., Perozo E., and Bezanilla F. (2006) Detection of the opening of the bundle crossing in KcsA with fluorescence lifetime spectroscopy reveals the existence of two gates for ion conduction. ***Journal of General Physiology***. 128: 569-581.

18. **Cordero J.F.**, Rodriguez P., and Romero P. (2004) Differences in intramembrane particles distribution in young and old human erythrocytes. ***Cell Biol Int*** 28: 423-31.

19. **Cordero J.F.** and Romero P. (2002) Caffeine activates mechanosensitive Ca^{2+} channels in human red cells. ***Cell Calcium*** 31: 189-200.

PROFESSIONAL ACTIVITIES

2011- Member, Neuroscience Society
2010 Referee for Neuroscience Letter
2006 Co-chairman, Voltage-gated K^+ Channels Platform, Biophysical Society Meeting, Long Beach
2001- Member, Biophysical Society

INVITED TALKS

2006 International Symposium on "Membrane Proteins and Cellular Dynamics". University of Osnabruck. Germany.
2010 Gordon research conferences (ion channels) "Molecular basis of infrared detection by snakes". Tilton School, Tilton, NH.

MEETINGS ASSISTANCE

1. **Cao E**., Cordero-Morales J.F., Liu B., Qin F., Julius D. 2013. TRPV1 channels are intrinsically heat sensitive and negatively regulated by phosphoinositide lipids. (**Platform**). 57rd Annual meeting of the Biophysical Society, Philadelphia, PA.

2. **Cordero-Morales J.F**., Gracheva E.O., Julius D. 2012. Cytoplasmic ankyrin repeats of transient receptor potential a1 (trpa1) dictate sensitivity to thermal and chemical stimuli. (**Platform**). 56rd Annual meeting of the Biophysical Society, San Diego, CA.

3. **Cordero-Morales J.F.**, Jogini V., Vásquez V., Bourdeau RW., Yu H., Roux R., Tristani-Firouzi M., and Perozo E. 2011. Engineering the *hERG1* Selectivity Filter into the NaK pore Domain. (**Poster**). 55rd Annual meeting of the Biophysical Society, Baltimore, MA.

4. **Cordero-Morales J.F.**, Jogini V., Lewis A., Vásquez V., Tristani-Firouzi M., and Perozo E. 2011. Structural basis of an inherited *hERG1* long QT mutant. (**Poster**). 55rd Annual meeting of the Biophysical Society, Baltimore, MA.

5. **Cordero-Morales J.F.**, Jogini V., Lewis A., Vásquez V., Tristani-Firouzi M., and Perozo E. 2009. On the Nature of hERG Inactivation using KcsA, Shaker, and Kv1.2 as Structural and Functional Models (**Poster**). 53rd Annual meeting of the Biophysical Society, Boston, MA.

6. Cuello LG., Jogini V., Cortes D.M., Pan A.C, Gagnon D.G., **Cordero-Morales J.F.**, Chakrapani S., Roux B., and Perozo E. 2009. Structural Basis for the coupling between activation and inactivation gating in potassium channels (**Platform**). 53rd Annual meeting of the Biophysical Society, Boston, MA.

7. Raghuraman H., **Cordero-Morales J.F.**, Jogini V., and Perozo E. 2009. Gating-related structural dynamics in the outer vestibule of KcsA: A functional and spectroscopic analysis (**Platform**). 53rd Annual meeting of the Biophysical Society, Boston, MA.

8. Vásquez V., Sotomayor M., **Cordero-Morales J.F.**, Schulten K., and Perozo E. 2008. A Structural Mechanism for MscS Gating in Lipid Bilayers (**Poster**). Force-Gated Ion Channels: From Structure to Sensation. Janelia Farm Research Campus. Ashburn, VA.

9. **Cordero-Morales J.F.**, Jogini V., Chakrapani S., and Perozo E. 2008. A multi-point hydrogen-bond network driving KcsA C-type inactivation (**Poster**). 52nd Annual Meeting of the Biophysical Society. Long Beach, CA.

10. Chakrapani S., **Cordero-Morales J.F.**, Cuello L., and Perozo E. 2008. C-type inactivation from the perspective of permeant ions (**Poster**). 52nd Annual Meeting of the Biophysical Society. Long Beach, CA.

11. Raghuraman H., **Cordero-Morales J.F.**, and Perozo E. 2008. Gating-related conformational changes in the outer vestibule of KcsA: A functional and spectroscopic analysis (**Poster**). 52nd Annual Meeting of the Biophysical Society. Long Beach, CA.

12. Vásquez V., **Cordero-Morales J.F.**, Cortes D.M., and Perozo E. 2008. Structural Dynamics of MscS Transmembrane Segments in the Open State. A Site-directed Spin-labeling Analysis (**Platform**). 52nd Annual meeting of the Biophysical Society, Long Beach, CA.

13. **Cordero-Morales J.F.**, Cortes D.M., Chakrapani S., Jogini V., Cuello L., Vásquez V., and Perozo E. 2007. Multiple gating modes in KcsA are determined by the selectivity filter dynamics (**Platform**). 51st Annual Meeting of the Biophysical Society. Baltimore, MA.

14. Cuello L., Chakrapani S., **Cordero-Morales J.F.**, and Perozo E. 2007. Molecular basis of the conformational coupling between K+ channels activation and inactivation gates (**Platform**). 51st Annual Meeting of the Biophysical Society. Baltimore, MA.

15. Jogini V., **Cordero-Morales J.F.**, Roux B., and Perozo E. 2007. Structural changes associated with gating events at the KcsA selectivity filter: A molecular dynamics study (**Poster**). 51st Annual Meeting of the Biophysical Society. Baltimore, MA.

16. **Cordero-Morales J.F.**, Cuello L., Zhao Y., Jogini V., Cortes D.M., Roux B., and Perozo E. 2006. Molecular determinants of gating at the potassium channel selectivity filter (**Platform**). 50th Annual Meeting of the Biophysical Society. Salt Lake City, UT.

17. **Cordero-Morales J.F.**, Cuello L., and Perozo E. 2006. Voltage-dependent gating at the potassium channels selectivity filter (**Poster**). 50th Annual Meeting of the Biophysical Society. Salt Lake City, UT.

18. Chakrapani S., **Cordero-Morales J.F.**, and Perozo E. 2006. Kinetic analysis of gating mechanisms in KcsA using macroscopic and single-channel currents (**Poster**). 50th Annual Meeting of the Biophysical Society. Salt Lake City, UT.

19. Blunck R., **Cordero-Morales J.F.**, Cuello L., Perozo E., and Bezanilla F. 2006.Monitoring the opening of KcsA using single channel fluorescence spectroscopy (**Poster**). 50th Annual Meeting of the Biophysical Society. Salt Lake City, UT.

20. Blunck R., **Cordero-Morales J.F.**, Cuello L., Perozo E., and Bezanilla F. 2005. Detecting the opening of the bundle crossing in KcsA using fluorescence lifetime spectroscopy (**Poster**). 49th Annual Meeting of the Biophysical Society. Long Beach, CA.

21. **Cordero-Morales J.F.**, Cuello L., and Perozo E. (2003) Modulation of gating in KcsA by Voltage (**Poster**). 47th Annual Meeting of the Biophysical Society. San Antonio, T

22. **Cordero J.F.**, Romero P. 2001. Caffeine activates mechanosensitive Ca^{2+} channels in human red cells (**Poster**). XXXIV International Congress of Physiological Sciences. Christchurch, New Zealand.

23. **Cordero J.F.** and Romero P. 2000. Stretch-sensitive channels activated by caffeine in human erythrocytes (**Poster**). Asociación Venezolana para el Avance de la Ciencia AsoVAC. Caracas, Venezuela.

24. **Cordero J.F.**, Hernandez C., Romero E., and Romero P. 1999. Voltage dependent Ca^{2+} channels in human erythrocytes (**Platform**). Asociación Venezolana para el Avance de la Ciencia AsoVAC. Maracay, Venezuela.

25. **Cordero J.F.**, Rodríguez P., Aguilar V., and Romero P. 1999. Study of the distribution of intramembrane particles (IMP) in the human erythrocytes through freeze-fracture (**Poster**). V Interamerican Congress on Electron Microscopy. Isla de Margarita, Venezuela.