CURRICULUM VITAE
Ricardo A. Bernal

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Department of Chemistry & Biochemistry
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Education and Training:

Postdoctoral 12/02 – 8/06 (Cryo-Electron Microscopy)
Medical Research Council – Laboratory of Molecular Biology, Cambridge, U. K.
Daniela Stock, Advisor
• 3D Structure determination of the yeast and bacterial ATPases by cryo-EM.

Ph.D. 12/02 (X-Ray Crystallography & Cryo-Electron Microscopy).
Purdue University, West Lafayette, Indiana.
Michael G. Rossmann, Advisor.
• Structural studies of bacteriophage alpha-3 assembly.

M.S. 5/93 (Biological Sciences).
The University of Texas at El Paso, El Paso, Texas.
Perpetua Muganda, Advisor.
• Virology - human cytomegalovirus.

B.S. 8/90 (Microbiology).
Texas A&M University, College Station, Texas.

Honors, Awards:

- Biophysics Training Grant Fellowship, Purdue University, 1997-2002.
- EMBO Postdoctoral Research Fellow 2002-2004.
- MRC Career Development Award Postdoctoral Fellowship 2004-2006.
- Full member Sigma Xi, 2007.
- Graduate Marshal for Students, Spring 2012 Commencement Ceremony, May 2012.
- Tenure and Promotion to Associate Professor, September 1, 2012.
- ORSP Award for Outstanding Efforts in Securing Extramural Funding, Office of Research and Sponsored Projects, April 15, 2015.
- ORSP Award for Outstanding Efforts in Securing Extramural Funding, Office of Research and Sponsored Projects, September 29, 2016.
- UTEP College of Science Faculty Research Mentoring Award, Fall, 2016.
- UTEP College of Science Faculty Research Mentoring Award, Spring 2017.
- Graduate School 2016-17 UTEP Outstanding Thesis Award to mentee Jihui Li, April 2017
- Academic and Research Excellence in Biochemistry Award to undergraduate mentee Anna Karen Orta, December 2017
- Outstanding Graduate Student in Environmental Science Award to mentee Janelly Villalobos, December 2017
- ORSP Award for Outstanding Efforts in Securing Extramural Funding, Office of Research and Sponsored Projects, May 13, 2019.
- College of Science Faculty Marshal of Students at commencement in December 2022.

Professional Memberships

- Sigma Xi, Full Member. (2007 - Present).
- American Chemical Society. (May 1993 - Present).
- Tri-beta Biological Honor Society. (1992 - Present).
- Texas Academy of Science, Board of Directors (2017-2022), Coordinator of IT.
- Texas Academy of Science, UTEP Local Chapter (2022-present), Faculty Advisor.

Research and Professional Experience:

8/18-08/20

The University of Texas at El Paso, Dept Chemistry & Biochemistry, El Paso, TX
Interim Department Chair

9/12-present

The University of Texas at El Paso, Dept Chemistry & Biochemistry, El Paso, TX
Associate Professor

- Macromolecular interactions in viruses, ATPases, and chaperonins that lead to the formation of functionally active protein complexes.
- Molecular Biology (cloning, mutagenesis), Biochemistry (protein expression, purification and functional characterization), X-ray crystallography and Cryo-Electron Microscopy.

8/06-8/12

The University of Texas at El Paso, Chemistry Department, El Paso, TX 79968, USA
Assistant Professor

- Structural Biochemistry of large macromolecular complexes.

11/02-8/06

Medical Research Council – Laboratory of Molecular Biology, Cambridge, UK
Postdoctoral Research Fellow

- 3D Structure determination of the yeast V-type ATPase using cryo-electron microscopy.
- 3D Structure determination of the *Thermus thermophilus* ATPase by electron microscopy.

8/96-11/02

Purdue University, West Lafayette, Indiana.
Graduate Research

- X-ray structure determination of the bacteriophage α3 mature virion
- X-ray structure determination of the bacteriophage α3/φX174 chimeric virion.
- Cryo-electron microscopic reconstruction of bacteriophage α3 procapsid

3/95-8/96

National Cancer Institute - Frederick Cancer Research and Development Center, Frederick, MD
Laboratory of Drug Discovery Research and Development, DTP-DCT.
Senior Research Technician.

- Anti-cancer agents derived from natural products. Natural product inhibitors of ras/raf signal transduction.
- Anti-HIV agents derived from natural products.

1/94-2/95

National Cancer Institute - Frederick Cancer Research and Development Center, Frederick, MD
Laboratory of Viral Carcinogenesis, Viral Pathology Section.
Senior Research Technician.

- Characterization of 3pK, a new MAP kinase activated protein kinase.
  - Purified 3pK for kinase assays and for antibody production.
  - Characterized 3pK by immunohistochemistry, cell fractionations, ^{35}S Pulse-chase and in-vivo ^{32}P labeling, transient cell transfections, and protein kinase assays

Manuscripts in Preparation/Press (*Postdoc; GGraduate Student; uUndergraduate):

- DH Von Salzen[G], A Rodriguez[G], A Ullah, **RA Bernal** (2024)The Hsp60 C-terminus Senses Substrate and Triggers Allosteric ATP Hydrolysis. **Submitted and under review.**
- Daniel Von Salzen[G], and **Ricardo A. Bernal.** The C-terminus of the hsp60 is involved as a ROS scavenger in the chaperonin protein folding chamber. **Submission eminent.**
- Holguin, BA. [G], Villalobos, J. [G], Orta, AK[u], Bhatt, JM[*], and **Ricardo A. Bernal.** The Chaperone Activity of Heat Shock Protein 27 and Its Mutants Involved in Charcot-Maria-Tooth Disease. **In preparation.**
- Samantha Garcia[u], Humberto Rojo[G], Timothy Brown[u], Ricardo Avila[u], Jay M. Bhatt[*], Anna K. Orta[u], Sudheer K. Molugu, and Ricardo A. Bernal A point mutation in the φ-EL chaperonin results in a non-functional double-ring structure. **In preparation.**

Original Publications (*Postdoc; GGraduate Student; uUndergraduate):

- R Sanchez-Rosario[G], ZL Hildenbrand, RA Bernal (2024) Microbial diversity in produced water: A Comprehensive Review. The Microbe 2024 Vol. 4 Pages 100119 **https://doi.org/10.1016/j.microb.2024.100119**
- Sanchez-Rosario R[G], Garcia J[u], Rodriguez V, Schug KA, Hildenbrand ZL, **Bernal RA** (2024). Using Bacteriophages to Treat Resilient Bacteria Found in Produced Water. Water. 2024; 16(6):797. **https://doi.org/10.3390/w16060797**
- DH Von Salzen[G], A Rodriguez[G], A Ullah, **RA Bernal** (2023)The Hsp60 C-terminus Senses Substrate and Triggers Allosteric ATP Hydrolysis. bioRxiv, **https://doi.org/10.1101/2023.09.15.558033**
- BA Holguin[G], ZL Hildenbrand, RA Bernal (2022) Insights Into the Role of Heat Shock Protein 27 in the Development of Neurodegeneration. **Frontiers in Molecular Neuroscience**. 15. PMID: 35431800
- Alejandra Gomez[G], Mahesh Narayan, Lijuan Zhao, Xiaorong Jia, **Ricardo A Bernal**, Martha L Lopez-Moreno, Jose R Peralta-Videa (2021) Effects of nano-enabled agricultural strategies on food quality: Current knowledge and future research needs. **Journal of Hazardous Materials**. 401, p. 123385. PMID: 32763688
- Rodriguez A[G], Von Salzen D[G], Holguin BA[G] and **Bernal RA** (2020) Complex Destabilization in the Mitochondrial Chaperonin Hsp60 Leads to Disease. **Front. Mol. Biosci.** 7:159. PMID: 32766281.
- MA Ahsan[G], MA Imam, AR Puente Santiago, A Rodriguez[G], B Alvarado-Tenorio, **RA Bernal**, R Luque and J Noveron (2020). Spent tea leaves templated synthesis of highly active and durable cobalt-based trifunctional versatile electrocatalysts for hydrogen and oxygen evolution as well as oxygen reduction reactions. **Journal of Green Chemistry**. https://doi.org/10.1039/D0GC02155E
- MA Ahsan[G], A Puente Santiago, A Rodriguez[G], V Maturano-Rojas, B Alvarado-Tenorio, **R Bernal**, JC. Noveron (2020) Biomass-derived ultrathin carbon-shell coated iron nanoparticles as high-performance tri-functional HER, ORR and Fenton-like catalysts. **Journal of Cleaner Production**, Volume 275, 2020, 124141, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2020.124141.
- A Gomez[G], M Narayan, L Zhao, X Jia, **RA. Bernal**, ML Lopez-Moreno, JR Peralta-Videa (2020) Effects of nano-enabled agricultural strategies on food quality: Current knowledge

and future research needs. **Journal of Hazardous Materials**, Volume 401, 2021, 123385, PMID: 32763688.

- JM Bhatt*, and RA Bernal (2019) **In: Heat Shock Protein 60 in Human Diseases and Disorders.** "Single-Ring Intermediates in the Catalytic Cycle of the Human Mitochondrial Hsp60". Asea and Kaur Editors. Springer Nature Publishers. DOI 10.1007/978-3-030-23154-5. https://www.springer.com/gp/book/9783030231538
- Jinliang WangG, Adrian S EnriquezG, Jihui LiG, Alejandro RodriguezG, Bianka HolguinG, Daniel Von SalzenG, Jay M Bhatt*, **Ricardo A Bernal** (2019) MitCHAP-60 and Hereditary Spastic Paraplegia SPG-13 Arise from an Inactive hsp60 Chaperonin that Fails to Fold the ATP Synthase β-Subunit. **Nature Scientific Reports** 9 (1), 1-13. PMID: 31444388
- Md Tariqul Islam, Arieana Dominguez, Bonifacio Alvarado-Tenorio, **Ricardo A Bernal**, Milka O Montes, Juan C Noveron (2019) Sucrose-Mediated Fast Synthesis of Zinc Oxide Nanoparticles for the Photocatalytic Degradation of Organic Pollutants in Water. **ACS Omega** 4 (4), 6560-6572. PMID: 31459786
- Jay Manoj Bhatt*, Adrian Sergio EnriquezG, Jinliang WangG, Humberto Mendivil RojoG, Sudheer Kumar Molugu, Zacariah Louis Hildenbrand and **Ricardo Andres Bernal** (2018) Single-Ring Intermediates are Essential for Some Chaperonins. **Front. Mol. Biosci.** 2018 5:42. PMID: 29755985
- Md. Tariqul Islam, Hangkun Jing, Ting Yang, Emmanuel Zubia, Alan G. Goos. **Ricardo A. Bernal**, Cristian E. Botez, Mahesh Narayan, Candace K. Chan, Juan C. Noveron (2018) Fullerene stabilized gold nanoparticles supported on titanium dioxide for enhanced photocatalytic degradation of methyl orange and catalytic reduction of 4-nitrophenol. **J. Env. Chem. Eng.**, Volume 6, Issue 4, 2018, 3827-3836.
- Md Tariqul IslamG, Saenz Arana RicardoG, Huiyao Wang, **Ricardo A Bernal**, Juan Noveron (2018) Green synthesis of gold, silver, platinum, and palladium nanoparticles reduced and stabilized by sodium rhodizonate and their catalytic reduction of 4-nitrophenol and methyl orange. **New J. Chem.**, 2018, 42, 6472-6478.
- Sai Krishna, K.*; Zhang, J. G; Castro, E. G; **Bernal, R. A.**; Li, X. (2017) Atomically-precise Au25(SG)18 nanoclusters: Rapid single-step synthesis and application in photothermal therapy. **ACS Appl. Mater. Interfaces**. 2017, 10 (1), pp 75–82. PMID: 29231708
- Adrian S. EnriquezG, Humberto M. RojoG, Jay M. Bhatt*, Sudheer K. Molugu, Zacariah L. Hildenbrand, and **Ricardo A. Bernal** (2017) The Human Mitochondrial Hsp60 in the APO Conformation Forms a Stable Tetradecameric Complex. **Cell Cycle**. 2017 Jun 8:1-11, PMID: 28594255
- Christine M. Calton, Matthew P. Bronnimann, Ariana R. Manson, Shuaizhi Li, Janice A. Chapman, Marcela Suarez-Berumen, Tatum R. Williamson, Sudheer K. Molugu, **Ricardo A. Bernal**, and Samuel K. Campos (2017) Translocation of the Papillomavirus 1 L2/vDNA Complex Across the Limiting Membrane Requires the Onset of Mitosis. **PLoS Pathogens**. 2017 May 2;13(5). PMID: 28463988
- Sudheer K MoluguG, Zacariah L HildenbrandG, David Gene Morgan, Michael B Sherman, Lilin He, Costa Georgopoulos, Natalia V Sernova, Lidia P Kurochkina, Vadim V Mesyanzhinov, Konstantin A Miroshnikov, **Ricardo A Bernal** (2016) Ring Separation Highlights the Protein-Folding Mechanism Used by the Phage EL-Encoded Chaperonin. **Structure**. April 2016, 24(4); pages 537-546. 2016 Apr 5;24(4):537-46. PubMed PMID: 26996960

- Chaston JJ, Smits C, Aragão D, Wong AS, Ahsan B, Sandin S, Molugu SK, Molugu SK[G], **Bernal RA**, Stock D, Stewart AG. (2016) Structural and Functional Insights into the Evolution and Stress Adaptation of Type II Chaperonins. **Structure**. 2016 Mar 1;24(3):364-74, PubMed PMID: 26853941.
- Molugu SK, Li J[G], **Bernal RA**. (2015) Separation of E. coli chaperonin groEL from β-galactosidase without denaturation. **J Chromatogr B Analyt Technol Biomed Life Sci.** 2015 Dec 15;1007:93-9. PubMed PMID: 26590880.
- Tafoya D[u], Hildenbrand Z, Herrera N[u], Molugu S, Mesyanzhinov V, Miroshnikov K, **Bernal RA**. (2013) Enzymatic characterization of a lysin encoded by bacteriophage EL. **Bacteriophage** 2013; PMID: 24228221
- Hildenbrand, Zacariah L. [G], Molugu, Sudheer K. [G], and **Bernal Ricardo A.** (2012) Anchoring and scaffolding: V_1-ATPase interactions with widespread implications**.** **Cell Cycle** 11(11): pages 2041-2042. PMID: 22592525
- Zacariah L. Hildenbrand[G] and **Ricardo A. Bernal** (2012). Chaperonin-mediated folding of viral proteins; **In: Viral Molecular Machines**, Rao and Rossmann Editors. Springer, 2011. Chapter 13 pages 307-324. PMID: 22297519
- M. V. Filchikov, D. I. Osmakov, L. V. Logovskaya, N. N. Sykilinda, V. A. Kadykov, L. P. Kurochkina, V. V. Mesyanzhinov, **R. A. Bernal**, K. A. Miroshnikov (2012) Pseudomonas Aeruginosa bacteriophage SN: 3D-reconstruction of the capsid and identification of surface proteins by electron microscopy. **Russian Journal of Bioorganic Chemistry** 04/2012; 35(6):728-733. PMID: 20208580
- Hildenbrand Zacariah L[G], **Bernal Ricardo A**. (2012) Interplay between Hsp90 and TPR domain-containing proteins in steroidogenic signaling. **Cell Cycle**. Apr 1; 11(7), pages 1263-1264. PMID: 22421152
- Min Zhou, Nina Morgner, Nelson P. Barrera, Argyris Politis, Shoshanna C Isaacson, Dijana Matak-Vinković, Takeshi Murata, **Ricardo A. Bernal**, Daniela Stock and Carol V. Robinson (2011). Mass spectrometry of intact V-type ATPases reveals bound lipids and the effects of nucleotide binding. ***Science***, 334, pages 380-385. PMID: 22021858
- Zacariah L. Hildenbrand[G], Sudheer K. Molugu[G], Nadia Herrera[u], Citlally Ramirez, Chuan Xiao and **Ricardo A. Bernal** (2011). Hsp90 can Accommodate the Simultaneous Binding of the FKBP52 and HOP Proteins. **Oncotarget**, Volume 2, No 1-2, Pages 45-58. PMID: 21378414
- Hildenbrand ZL[G], Molugu SK[G], Stock D, **Bernal RA** (2010) The C-H Peripheral Stalk Base: A Novel Component in V_1-ATPase Assembly. **PLoS ONE** 5(9): PMID: 20838636
- Hildenbrand, ZL[G], Molugu, SK[G], Paul, A., Avila, GA. [G], Herrera, N[u], Xiao, C, Cox, MB and **Bernal, RA** (2010) High-Yield Expression and Purification of the Hsp90-associated p23, FKBP52, HOP and SGTα proteins. ***Journal of Chromatography B***, PMID: 20829124.
- Lawrence K. Lee, Alastair G. Stewart, Mhairi Donohoe, **Ricardo A. Bernal** & Daniela Stock (2010) "The structure of the peripheral stalk of *T. thermophilus* H+-ATPase/synthase" **Nature Structure and Molecular Biology**, **17**(3), 373-8. PMID: 20173764
- Filchikov MV, Osmakov DI, Logovskaia LV, Sykilinda NN, Kadykov VA, Kurochkina LP, Mesianzhinov VV, **Bernal RA**, Miroshnikov KA. (2009) *Pseudomonas aeruginosa* bacteriophage SN: 3D-reconstruction of the capsid and identification of surface proteins by electron microscopy. **Bioorg Khim**. **35**(6), 808-15. PMID: 20208580

- Esteban, O., **Bernal, R.A.**, Donohoe,M., Videler, H., Sharon, M., Robinson, C.V., and Stock, D. (2007) Stoichiometry and localisation of the stator subunits E and G in *T. thermophilus* H+ ATPase/synthase. **J. Biol. Chem.** **283**(5), 2595-603. PMID: 18055467
- Schäfer, I., Bailer, S.M., Düser, M.G., Börsch, M., **Bernal, R.A**., Stock, D., and Grüber, G. (2006) Crystal structure of the archaeal A_1A_o ATP synthase subunit B from *Methanosarcina mazei Gö1*: Implications of nucleotide-binding differences in the major A_1A_o subunits A and B. **J. Mol. Biol. 358, 725-740.** PMID: 16563431
- Makyio, H., Iino, R., Ikeda, C, Imamura, H., Tamakoshi, M., Iwata, M., Stock, D., **Bernal, R.A**., Yoshida, M., Yokoyama, K. and Iwata, S. (2005) Structure of a central stalk subunit F of the V-type ATPase/synthase from *Thermus thermophilus*. **EMBO J. 24, 3974-83**. PMID: 16281059
- **Bernal, R.A.** and Stock, D. (2004) Three-Dimensional Structure of the Intact *Thermus thermophilus* H^+-ATPase/Synthase by Electron Microscopy. **Structure, 12, 1789-1798.** PMID: 15458628
- **Bernal, R.A.**, Hafenstein, S., Esmeralda, R.,Fane, B.A., and Rossmann, M.G. (2004). The ϕX174 Protein J Mediates DNA Packaging and Viral Attachment to Host Cells. **J. Mol. Biol., 337, 1109-1122**. PMID: 15046981 ✷ Includes Journal cover
- **Bernal, R.A.**, Hafenstein, S., Olson, N.H., Bowman, V.D, Chipman, P.R., Baker, T.S., Fane, B.A., and Rossmann, M.G. (2003). Structural Studies of Bacteriophage α-3 Assembly. **J. Mol. Biol., 325, 11-24.** PMID: 12473449 ✷ Includes Journal cover
- Rossmann, M.G., **Bernal, R.A.**, and Pletnev, S. (2001). Combining Electron Microscopic With X-Ray Crystallographic Structures. **J. Struct. Biol. 136, 190-200**. PMID: 12051899
- Dokland, T., **Bernal, R.A.**, Burch, A., Pletnev, S., Fane, B., and Rossmann, M.G. (1999). The role of scaffolding proteins in the assembly of the small, single stranded DNA virus φx174. **J. Mol. Biol., 288, 595-608.** PMID: 10329166
- Wojnowski L, **Bernal R**, Park CM, Handel MA, Hollander WF and Zimmer A. (1998). Reduced activity of BRAF protein kinase in hop and hop(hpy) mouse mutants. **Mamm. Genome, 9, 905-906**. PMID: 9799843
- Wojnowski, L., Zimmer, A.M., Beck, T.W., Hahn, H., **Bernal, R.**, Rapp, U.R., and Zimmer, A. (1997). Endothelial apoptosis in B-raf deficient mice. **Nature Genetics, 16, 293-297**. PMID: 9207797
- Sithanandam, G., Latif, F., Duh, F.M., **Bernal, R.A.**, Smola, U., Li, H., Kuzmin, I., Wixler, V., Geil, L., Shrestha, S., Lloyd, P.A., Bader, S., Sekido, Y., Tartof, K.D., Kashuba, V.I., Zabarovsky, E.R., Dean, M., Rapp, U.R., Klein, G., Zbar, B., Lerman, M., Minna, J., and Allikmets, R. (1996). 3pK, a new mitogen-activated protein kinase-activated protein kinase located in the small cell lung cancer tumor suppressor gene region. **Mol. Cell. Biol., 16, number 3, 868-876**. PMID: 8622688
- Muganda, P., Fischer, A., and **Bernal, R.A.** (1994). Identification of a casein kinase activity found elevated in human cytomegalovirus transformed cells. **Biochem. Biophys. Res. Comm., 207, 740-746.** PMID: 7864867

Invited Articles:

- **Bernal, R.A.** (2008) 2006 article (listed below) was reprinted in the Spring 2008 edition of the Purdue University BioNews newsletter.
- **Bernal, R.A.** (2006) Have Ph.D., Will Travel: Choosing an International Postdoc. Invited feature article in the Postdoc and Beyond section of SACNAS News. **9**, 20-23.

Invited Seminars:

- **Bernal, RA** (2023) The Hsp60 C-terminus Senses Substrate and Triggers Allosteric ATP Hydrolysis. Invited Seminar, Congreso Internacional de Ciencias Naturales y Aplicadas, **UACJ**, Cuidad Juarez, Chih. November 27- December 1, 2023.
- **Bernal, RA** (2023) The Hsp60 C-terminus Senses Substrate and Triggers Allosteric ATP Hydrolysis. Invited Departmental Seminar, Instituto de Ciencias Biomedicas, Departamento de Ciencias Químico-Biologicas, **UACJ**, Cuidad Juarez, Chih. October 6, 2023
- **Bernal, RA** (2019) Heat Shock Proteins and their Role in Human Disease. Invited Seminar, **New Mexico State University**, Las Cruces, New Mexico, February 12, 2019.
- **Bernal, RA** (2018) Point Mutations in the HSP60 Chaperonin Lead to Human Neurodegenerative Disorders: How Structure Can Help Elucidate the Causes. SACNAS, Advances in Structural Biology Section, Invited Speaker, San Antonio, Texas October 11-13, 2018.
- **Bernal, RA** (2018) La Reconstrucción de la Chaperonina ΦEL Revela un Mecanismo único Para el Plegamiento Asistido de Proteínas. Invited Seminar, **1ª Semana de Ciencias Químico-Biológicas**, Cuidad Juárez Chihuahua, México. April 11, 2018. *Presented in Spanish*.
- **Bernal, RA** (2018) Why do we have to try so hard promoting diversity in science? **Science in a Global World: Diversity in Scientific Practice - Chemistry/Philosophy Roundtable.** Oral presentation, The University of Texas at EL Paso, El Paso, Texas, March 24, 2018
- **Bernal, RA** (2017) A New Class of Chaperonins Includes Ring Separation as Part of the Protein Folding Cycle. Invited Seminar, **Rossmann Symposium, Purdue University**, West Lafayette, Indiana. September 29, 2017.
- **Bernal, RA** (2017) Proteins that fold other proteins. Invited Seminar for MARC students, **New Mexico State University**, Las Cruces, New Mexico, February 14, 2017.
- **Bernal, RA** (2016) Proteins that fold other proteins. Oral presentation, **MARC retreat**, The Lodge, Cloudcroft, New Mexico, May 16, 2016.
- **Bernal, R.A.** (2015) Ring separation highlights the protein folding mechanism used by the phage EL encoded chaperonin. Oral presentation, **Texas Protein Folders and Function Meeting**. Cleveland Texas, April 10-12, 2015.
- **Bernal, R.A.** (2014) Novel chaperonin protein folding mechanism*. Internal Seminar,* **UTEP Chemical Biology and Drug Development Symposium.** October 10, 2014.
- **Bernal, R.A.** (2013) Recent Alzheimer's Breakthrough: Cure or Hype? Oral presentation, **UTEP Chemistry Department***.* October 18, 2013.

- **Bernal, R.A.** (2011) 3-D Structure Determination of Macromolecular Complexes that Utilize ATP. *Internal Seminar,* **UTEP Chemistry Department**.
- **Bernal, R.A.** (2011) Structural Studies of Macromolecular Complexes that Utilize ATP. *Invited Seminar* **Our Lady of the Lake University**, San Antonio, Texas, April 8, 2011.
- **Bernal, R.A.** (2010) Structural Studies of Macromolecular Complexes that Utilize. *Invited Seminar* **University of Kansas**, Lawrence, Kansas. September 20, 2010.
- **Bernal, R.A.** (2009) Cryo-EM Reconstructions of a Virus Encoded Chaperonin Point to a Unique Protein Folding Mechanism. *Invited Seminar* **18th Evergreen International Phage Biology Meeting**, Olympia, Washington. August 11, 2009.
- **Bernal, R.A.** (2009) Structure, Function, and Regulation of ATP Utilizing Enzymes. **Oak Ridge National Lab**, Center for Structural Biology. Oak Ridge, Tennessee. July 15, 2009.
- **Bernal, R.A.** (2007) Three-dimensional structure of the *Thermus thermophilus* ATP synthase by electron microscopy. *Invited Seminar*, Department of Biological Sciences, **Purdue University**, West Lafayette, IN, February 27, 2007.
- **Bernal, R.A.** (2006) Deciphering the three-dimensional structure of the *Thermus thermophilus* ATP synthase using electron microscopy. *Invited Seminar*, The Wellcome Trust Centre for Human Genetics, Division of Structural Biology, **University of Oxford**, July 27, 2006.
- **Bernal, R.A.** (2005) Three-dimensional structure of the *Thermus thermophilus* ATP synthase by electron microscopy. *Invited Seminar*, Laboratory of Molecular Bioengineering, **Russian Academy of Sciences**, Moscow, Russia. November 2005.

Student & Postdoc Abstracts (*Postdoc; GGraduate Student; uUndergraduate):

- Ramon Sanchez-Rosario[G], Zacariah Hildenbrand and **Ricardo A. Bernal** (2024) Unconventional Bacterial Disinfection in Produced Water. Viruses of Microbes International Conference, July 15-19, 2024 Cairns, Queensland, Australia.
- Olga Fernanda Aguilar Palomares[u] and **Ricardo A. Bernal** (2024) Evaluation of ROS-mediated oxidative stress in alpha-synuclein. COURI Annual Symposium, University of Texas at El Paso, August 3, 2024.
- Daniel Von Salzen[G], and **Ricardo A. Bernal** (2023) Hsp60's C-Terminal Tail is an important Sensor to Initiate Protein Refolding. Texas Academy of Science Annual Meeting: March 3, 2023 (1st place Oral Presentation Award in Graduate Student Presentation Competition).
- Zhaobo Li[G], Daniel Von Salzen[G], and **Ricardo A. Bernal** (2023) Structure Study of Human Small Heat Shock Protein 27. UTEP ABCD Symposium. April 1, 2023
- Laura S. Ronquillo-Silva[u], Samantha Garcia[u], Daniel von Salzen[G] and **Ricardo A. Bernal**. (2023). The importance of ring separation in the φ EL chaperonin refolding activity. Texas Academy of Science Annual Meeting: March 3, 2023 (2nd place Poster Award).
- Zhaobo Li[G], Ricardo A. Bernal (2023) Structure Study of Human Small Heat Shock Protein 27. Texas Academy of Science Annual Meeting. March 3, 2023
- Zhaobo Li[G], Bianka A Holguin[G], and Ricardo A. Bernal (2022) Structure Investigation of Human Small Heat Shock Protein 27. Texas Academy of Science Annual Meeting. February 26, 2022
- Samantha Garcia[u], Daniel von Salzen[G], and **Ricardo A. Bernal** (2020) Characterization of a Chaperonin Mutant. Annual Biomedical Research Conference for Minority Students. November 9th 2020 (Poster Award)

- Samantha Garcia[u] and **Ricardo A. Bernal**. (2019) Characterization of a Chaperonin Mutant. American Chemical Society Southwest and Rocky Mountain Joint Regional Meeting, El Paso Convention Center at El Paso, Texas. November 13th, 2019
- Bianka Holguin[G], Janelly Villalobos[G], Karen Orta[u], Maria Grajeda[u], Andres Orta[u], and **Ricardo A. Bernal** (2019). Mutations in the Small Heat Shock Protein 27 Affect Phosphorylation Regulated Chaperone Activity. 24th Annual Sealy Structural Biology Symposium, University of Texas Medical Branch at Galveston, Texas. May 4th, 2019 (Poster Award)
- Roberto Salas[u], Alejandro Rodriguez[G], Daniel Von Salzen[G], Bianka Holguin[G], and **Ricardo A. Bernal** (2019) Assessing φ-EL A91T Mutation as an Inhibitor in Heptameric Ring Separation, COURI Symposium, El Paso, TX, April 13, 2019.
- Bianka Holguin[G], Janelly Villalobos[G], Karen Orta[u], Maria Grajeda[u], Andres Orta[u], and **Ricardo A. Bernal** (2019). Mutations in the Small Heat Shock Protein 27 Affect Phosphorylation Regulated Chaperone Activity. Chemistry Research Day, poster presentation, University of Texas at El Paso, El Paso Texas. April 13th, 2019.
- Alejandro Rodriguez[G], Zachary Martinez, Edison Castro, Manuel Llano, Luis Echegoyen, and **Ricardo A. Bernal** (2019). Inhibitory Role of Functionalized Fullerenes in HIV-1 Maturation. 2nd Annual Chemistry Research Day, University of Texas at El Paso, Texas. April 12-13, 2019.
- Bianka Holguin[G] and **Ricardo A. Bernal** (2018) Mutations in Small Heat-Shock Protein 27 Affect Phosphorylation Regulated Chaperone Activity. Poster, Purdue Cryo-EM Symposium, West Lafayette, Indiana, November 6-8, 2018.
- Alicia Najar[u], Maximus Buckingham[u], Bhatt Jay[*], and **Ricardo A. Bernal** (2018) Bacteriophages for *Pseudomonas aeruginosa*. Poster, COURI Symposium, El Paso, TX, August 4, 2018.
- Michael Mendoza[u], and **Ricardo A. Bernal** (2018) High-Resolution Structure of ϕEL-T91A in ADP Conformation. Poster, COURI Symposium, El Paso, TX, August 4, 2018.
- Jesus Garcia[u], Maximus Buckingham[u], Bhatt Jay[*], and **Ricardo A. Bernal** (2018) Bacteriophage propagation and purification for *Pseudomonas aeruginosa*. Poster, COURI Symposium, El Paso, TX, August 4, 2018.
- Grajeda, M.[u], von Salzen[u], D. Bhatt, J[*], and **Bernal, RA** (2018) The APO structural conformation of the phage EL encoded chaperonin. Poster, COURI Symposium, El Paso, TX, April 21, 2018.
- von Salzen, D. [u], Bhatt, J[*], and **Bernal, RA** (2018) Crystallization of the ADP and ATP bound φ-EL Chaperonin. Poster, COURI Symposium, El Paso, TX, April 24, 2018.
- Wang, J.[G], Enriquez,A.[G], Rojo,H.[G], Li,J.[G], and **Bernal, RA** (2018). Human hsp60 Chaperonin Mutation Disrupts Conformational Changes & Leads to Disease. Poster, Keystone Symposia, Cryo-EM from Cells to Molecules: Multi-Scale Visualization of Biological Systems, Granlibakken Tahoe, Tahoe City, California, USA, February 4-8th, 2018.
- Rodriguez, A. [G], Martinez, Z., Castro-Portillo, E., Echegoyen, L., Llano, M., and **Bernal, R.A**. (2018). Inhibitory Role of Functionalized Fullerenes in HIV-1 Maturation. Poster, Keystone Symposia - Cryo-EM from Cells to Molecules: Multi-Scale Visualization of Biological Systems, Tahoe City, CA, February 4-8th, 2018.
- Bhatt, J. [*], Holguin, BA. [G], Orta,AK.[u], Villalobos, J. [G], and **Bernal, RA** (2017). Structure-function relationship of Hsp27 mutations involved in neurodegenerative Charcot-Marie-Tooth disease. Poster, ASCB-EMBO 2017 meeting, Philadelphia, PA, December 2-6th, 2017.
- Villalobos, J. [G],Holguin, BA. [G], and **Bernal, RA** (2017) The Chaperone Activity of Heat Shock Protein 27 and Its Mutants Involved in Charcot-Maria-Tooth Disease. Oral Presentation, Graduate Student Research Expo, The University of Texas at El Paso, November 10, 2017.

- Wang, J. [G], and **Bernal, RA** (2017) A Point Mutation that Leads to a Human Neurodegenerative Disorder Destabilizes the Heat Shock Protein 60 Chaperonin. Oral Presentation, Graduate Student Research Expo, The University of Texas at El Paso, November 10, 2017.
- Orta, AK. [u], Holguin, B. [G], Villalobos, J. [G], Bhatt, J. [*], **Bernal, RA**. (2017). "Structural Significance of the R136W Point Mutation in HSP27 that Leads to Neurodegenerative Disease". Oral Presentation. Minority Access to Research Careers Annual Retreat, Cloudcroft, NM, May 17, 2017.
- Orta, AK. [u], Holguin, B. [G], Villalobos, J. [G], **Bernal, RA**. (2017). "Structural Significance of the R136W Point Mutation in HSP27 that Leads to Neurodegenerative Disease". Poster. COURI Symposium at UTEP, El Paso, TX, August 5, 2017.
- von Salzen, D. [u], Garcia, J. [u], Bhatt, J[*], and **Bernal, RA** (2017) Crystallization of the ADP and ATP bound φ-EL Chaperonin. Poster, COURI Symposium, El Paso, TX, August 5, 2017.
- Garcia, J. [u], von Salzen, D. [u], Bhatt, J[*], and **Bernal, RA** (2017) Crystallization of the APO φ-EL Chaperonin. Poster, COURI Symposium, El Paso, TX, August 5, 2017.
- Orta, AK. [u], Holguin, BA. [G], Villalobos, J. [G], **Bernal, RA**. (2017). "Biochemical characterization of wild-type Hsp27 and point mutations that lead to neurodegenerative disease". Oral Presentation. Gulf Coast Undergraduate Research Symposium at RICE University, Houston, TX, November 4, 2017.
- Wang, J. [G], and **Bernal, RA** (2017) A Point Mutation that Leads to a Human Neurodegenerative Disorder Destabilizes the Heat Shock Protein 60 Chaperonin. Poster, 25th Texas Protein Folders and Function Meeting, Cleveland, TX, April 7-9, 2017
- Enriquez, A. [G], and **Bernal, RA** (2017) The Human Mitochondrial Chaperonin: It Takes Two Single-Rings to Tango. Poster, 25th Texas Protein Folders and Function Meeting, Cleveland, TX, April 7-9, 2017.
- Li, J. [G] and **Bernal, R.A.** (2017) Structure and Biological Activity of a D3G Mutation in the Human Mitochondrial hsp60 Chaperonin. Poster, 25th Texas Protein Folders and Function Meeting, Cleveland, TX, April 7-9, 2017.
- Orta, A.K. [u] and **Bernal, R.A.** (2017) Structural Significance of the R136W Point Mutation in hsp27 that Leads to Neurodegenerative Disease. Poster, 25th Texas Protein Folders and Function Meeting, Cleveland, TX, April 7-9, 2017.
- Rojo, H.M. [G] and **Bernal, R.A.** (2017) Point Mutation Leads to Inhibition of a Crucial Ring Separation Step in Protein Folding Mechanism of Viral Chaperonin φEL. Poster, 25th Texas Protein Folders and Function Meeting, Cleveland, TX, April 7-9, 2017.
- Villalobos, J. [G], and **Bernal, R.A.** (2017) The Activity of Phosphorylated and Non-phosphorylated hsp27 Involved in Charcot-Marie-Tooth Disease. Poster, 25th Texas Protein Folders and Function Meeting, Cleveland, TX, April 7-9, 2017.
- Wang, J. [G], and **Bernal, RA** (2017) The Mechanism of Hsp60 V98I Point Mutation that Leads to a Human Neurodegenerative Disorder. Poster, Cardwell Collaborative T3@C2 Poster Session, The Medical Center of the Americas (MCA) Foundation, March,23,2017
- Orta, AK. [u], Holguin, B. [G], Villalobos, J. [G], Bhatt, J. [*], **Bernal, RA**. (2017). "Structural Significance of the R136W Point Mutation in HSP27 that Leads to Neurodegenerative Disease". Poster. Texas Academy of Science Annual Meeting, Belton, TX, March 2017.
- Villalobos, J[G], and **Bernal, RA** (2016) The Structure and Activity of Heat Shock Protein 27 and an S135F Mutation that Leads to a Neurodegenerative Disorder. Poster, Graduate Student Research Expo, The University of Texas at El Paso, November 11, 2016. ***3rd Place Poster Award***
- Wang, J. [G], and **Bernal, RA** (2016) A Point Mutation that Leads to a Human Neurodegenerative Disorder Destabilizes the Heat Shock Protein 60 Chaperonin. Oral

Presentation, Graduate Student Research Expo, The University of Texas at El Paso, November 11, 2016.

- Li, J[G], and **Bernal, RA** (2016) Structure and Biological Activity of a D3G mutation in the Human Mitochondrial Hsp60 Chaperonin. Oral Presentation, Graduate Student Research Expo, The University of Texas at El Paso, November 11, 2016.
- Rojo, H.M. [G], and **Bernal, RA** (2016) Point mutation leads to Inhibition of a Crucial Ring Separation step in protein folding mechanism of viral chaperonin φEL. Oral Presentation, Graduate Student Research Expo, The University of Texas at El Paso, November 11, 2016.
- Rodriguez, A[G], Martinez, ZS, Castro, E, Echegoyen, L, Llano, M, and **Bernal, RA** (2016) Inhibitory Role of F15 Fullerene in HIV-1 Maturation. Poster, Graduate Student Research Expo, The University of Texas at El Paso, November 11, 2016.
- Holguin, BA[G], Villalobos, J[G], Rodriguez, A[G], Orta, K[u], Bhatt, J[*], and **Bernal, RA** (2016) Mutation in Small Heat-Shock Protein 27 Inhibits Phosphorylation Dependent Chaperone Activity. Poster, Graduate Student Research Expo, The University of Texas at El Paso, November 11, 2016.
- Li, J[G], and **Bernal, RA** (2016) Structural and Biological Activity Study of D3G Mutant Mitochondrial Chaperonin hsp60. Poster, Cardwell Collaborative T3@C2 Poster Session, The Medical Center of the Americas (MCA) Foundation, October 18, 2016.
- Wang, J[G], and **Bernal, RA** (2016) Electron Microscope Reconstruction and Atomic Structure Fitting of the Human hsp60 Chaperonin Mutant. Poster, Cardwell Collaborative T3@C2 Poster Session, The Medical Center of the Americas (MCA) Foundation, October 18, 2016.
- Fresquez, J[u], Rojo, H.M. [G], Enriquez, A.S. [G], Li, J. [G], Wang, J. [G] and **Bernal, RA** (2016) Purification and protein folding activity of human mitochondrial chaperonin Hsp10. Poster, COURI Summer Symposium, The University of Texas at El Paso, August 6, 2016.
- Zhang, YanMin[u], Rojo, H.M. [G], Enriquez, A.S. [G], Li, J. [G], Wang, J. [G] and **Bernal, RA** (2016) Purification and ATPase activity of human mitochondria chaperonin Hsp60. Poster, COURI Summer Symposium, The University of Texas at El Paso, August 6, 2016.
- Orta, KA[u] and **Bernal, RA** (2016) Structural significance of the R136W point mutation in hsp27 that leads to neurodegenerative disease. Oral presentation, MARC retreat, The Lodge, Cloudcroft, New Mexico, May 16, 2016.
- Li, J. [G], and **Bernal, RA** (2015) Structural and Biological Activity Study of D3G Mutant Mitochondrial Chaperonin hsp60. Poster, Graduate Student Research Expo, The University of Texas at El Paso, November 13, 2015.
- Rojo, HM[G], and **Bernal, RA** (2015) Protein Refolding Activity of the Viral Encoded Chaperonin φEL. Oral Presentation. Graduate Student Research Expo, The University of Texas at El Paso, November 13, 2015.
- Enriquez, AS[G], and **Bernal RA** (2015) Structural Investigation into the Human Mitochondrial Chaperonin. Poster, Graduate Student Research Expo, The University of Texas at El Paso, November 13, 2015.
- Rodriguez, A. [u], Enriquez, A. [G], Li, J. [G], Molugu, S.K., **Bernal, R.A.** (2015) Cloning of wild type hsp60 for structure determination. COURI Summer Symposium, The University of Texas at El Paso, August 1, 2015.
- Avila, R. [u], Campos S., and **Bernal, R.A.** (2015) Three--dimensional reconstruction of the HPV16 viral capsid complex. COURI Summer Symposium, The University of Texas at El Paso, August 1, 2015.
- Rojo, H. [u], Avila, R. [u], Molugu, S.K., and **Bernal, R.A.** (2015) Protein refolding activity of the virally encoded chaperonin phi-EL. COURI Summer Symposium, The University of Texas at El Paso, August 1, 2015.

- Clift, A. [u], Enriquez, A.S. [G], Li, J. [G], Molugu, S.K., and **Bernal, R.A.** (2015) Learning biochemical procedures via the cloning of Hsp60 D3G. COURI Summer Symposium, The University of Texas at El Paso, August 1, 2015.
- Villalobos, J. [u], Rojo, H. [u], Ruiz, M., Castro, E., Martinez, Z., Llano, M., Echegoyen, L., and **Bernal, R.A.** (2015) Learning Fundamental Biochemical Procedures by Cloning HIV Protease. COURI Summer Symposium, The University of Texas at El Paso, August 1, 2015.
- Ruiz, M., Castro, E., Martinez, Z., **Bernal, R.A**., Llano, M., and Echegoyen, L. (2015) Water-soluble [70]-fullerene derivatives for anti-HIV properties. COURI Summer Symposium, The University of Texas at El Paso, August 1, 2015.
- Avila R[u], Hantzopulos S[u], Monsivais F[u], Orta K[u], Rojo H[u], Brown TP[u], Molugu SK, and **Bernal RA** (2015) A point mutation in the phi-EL chaperonin alters ring separation and protein folding activity. University of Texas at El Paso COURI Symposium. April 18, 2015.
- Molugu, SK[G] and **Bernal, RA** (2015) Ring separation highlights the protein folding mechanism used by the phage EL encoded chaperonin. Keystone Symposia - Hybrid Methods in Structural Biology. March 4-8, 2015.
- Enriquez, AS[G] and **Bernal, RA** (2015) Human hsp60 expressed in *E. coli* yields fully assembled and functional chaperonin that can be isolated in various conformations. University of Texas at El Paso, Department of Chemistry departmental seminar, March 27th, 2015.
- Brown, TP[u] and **Bernal, R.A**. (2013) Insect Cell Expression and Purification of PTEN -A Tumor Suppressing Lipid Phosphatase. ABRCMS Conference, Nashville, TN. November 15, 2013.
- Brown, T.P. [u], Molugu, S.K. [G], and **Bernal, R.A**. (2012) "Development of a Chaperonin Activity Assay" 2012 West Texas STEM Conference Midland College, TX, October 5-6, 2012.
- Brown, T.P. [u], Molugu, S.K. [G], and **Bernal, R.A**. (2012) "Development of a Chaperonin Activity Assay" 2012 Summer COURI Symposium University of Texas at El Paso, TX, July 27, 2012.
- Danielle Martinez[u], Sudheer K. Molugu[G], & **Ricardo A. Bernal** (2012) "Refolding of the Green Fluorescent Protein by the Φ-EL Chaperonin." 2012 Summer COURI Symposium University of Texas at El Paso, TX, July 27, 2012.
- Sudheer Molugu[G], Zacariah Hildenbrand[G], Diana Tafoya[u], Nadia Herrera[u], David Morgan, Michael Sherman, Lidiya P. Kurochkina, Vadim V. Mesyanzhinov, Konstantin A. Miroshnikov, **Ricardo A. Bernal,** (2011) A Novel Mechanism of Bacteriophage Encoded φEL Chaperonin. September 21, 2011.
- Herrera, N. [u], Hildenbrand, Z.L. [G], Molugu, S.K., Mesyanzhinov, V.V., Miroshnikov, K., and **Bernal, R.A.** (2011) "Characterization and crystallization of a lysozyme encoded by bacteriophage SN" 2011 HHMI Gilliam Fellows Conference**.** HHMI Conference Center, Chevy Chase, MD, August 9- August 11, 2011.
- Herrera, N. [u], Hildenbrand, Z.L. [G], Molugu, S.K. [G], Mesyanzhinov, V.V., Miroshnikov, K., and **Bernal, R.A.** (2011) "Characterization and crystallization of a lysozyme encoded by bacteriophage SN" 1st Annual COURI Symposium: *Showcasing Emerging Research at the Forefront of Science*. The University of Texas at El Paso, El Paso, TX, April 16, 2011.
- Herrera, N. [u], Hildenbrand, Z.L. [G], Molugu, S.K. [G], Mesyanzhinov, V.V., Miroshnikov, K., and **Bernal, R.A.** (2011) "Characterization and crystallization of a lysozyme encoded by bacteriophage SN" University of Texas at El Paso Symposium on Infectious Diseases and Health Disparities in a Changing World. The University of Texas at El Paso, El Paso, TX, April 3- April 5, 2011.
- Hildenbrand, Z.L. [G], Molugu, S.K. [G], and **Bernal, R.A.** (2010) The Inhibitory Interactions of the Yeast V_1-ATPase Captured by Cryo-Electron Microscopy. ACS Chemistry Week at

UTEP, Graduate poster competition. University of Texas at El Paso, October 20th, 2010.

- Herrera, N. [u], Hildenbrand, Z.L. [G], Molugu, S.K. [G], Mesyanzhinov, V.V., Miroshnikov, K., and **Bernal, R.A**. (2010) Characterization and crystallization of a lysozyme encoded by bacteriophage SN. National SACNAS Conference Anaheim Convention Center, Anaheim, CA, September 29-October 3, 2010.
- Hildenbrand, Z.L. [G], Molugu, S.K. [G], and **Bernal, R.A.** (2010) V_1-ATPase Peripheral Stalk Architecture UTEP Chemistry Department Fall seminar series. University of Texas at El Paso, October 1st, 2010.
- Herrera, N.[u], Hildenbrand, Z.L. [G], Molugu, S.K. [G], Mesyanzhinov, V.V., Miroshnikov, K., and **Bernal, R.A.** (2010) Studies towards the open conformation of the MscL found in *Mycobacterium Tuberculosis.* 4th Annual Research Colloquium Texas Tech Health Sciences Center/ University of Texas at El Paso, TX, May 4-5, 2010.
- Herrera, N.[u], Hildenbrand, Z.L. [G], Molugu, S.K. [G], Mesyanzhinov, V.V., Miroshnikov, K., and **Bernal, R.A.** (2010) Cloning, expression, purification and crystallization of a lysozyme encoded by bacteriophage SN. The MARC/RISE 2010 Symposium. University of Texas at El Paso, TX, April 23, 2010.
- Molugu. S.K. [G], Hildenbrand. Z.L. [G], Natchiar. K.S. [*], Herrera. N. [u], and **Bernal, R.A.** (2010) Cryo-EM reconstruction of the first virus encoded chaperonin in the ATP bound state. Rio Grande Branch Annual Meeting for the American Society for Microbiology – 2010.
- Hildenbrand, Z.L. [G], Molugu, S.K. [G], Herrera, N. [u], Xiao, C., Cox, M.B., and **Bernal, R.A.** (2010) The formation of Hsp90-mediated sub-assemblies: A structural perspective on steroid hormone receptor maturation. Rio Grande Branch Meeting of the American Society of Microbiology. University of Texas at El Paso, February 25th, 2010.
- Herrera, N. [u], Hildenbrand, Z.L. [G], Molugu, S.K. [G], Mesyanzhinov, V.V., Miroshnikov, K.A., **Bernal, R.A.** (2009) Cloning, Expression, Purification and Crystallization of a Lysozyme Encoded by Bacteriphage SN. **1st Place poster** presentation at the Louis Stokes Alliance for Minority Participation Conference, Austin, Texas. September 9-13, 2009.
- Molugu, S.K. [G] Hildenbrand, Z.L. [G], Natchiar, K.S. [*], Sernova, N., Kurochkina, L.P., Herrera, N.[u], Mesyanzhinov, V.V., Miroshnikov, K.A., **Bernal, R.A.** (2009) Cryo-EM Reconstruction of a Bacteriophage Encoded Chaperonin. 18th Evergreen International Phage Biology Meeting, Olympia, Washington. August 9-14, 2009.
- Molugu. S.K. [G], Hildenbrand. Z.L. [G], Natchiar. K.S. [*], Herrera. N. [u], and **Bernal, R.A.** (2009) Cryo-EM reconstruction of the first virus encoded chaperonin in the ATP bound state. South West Regional Meeting – ACS- 2009.
- Hildenbrand, Z.L. [G], Herrera, N. [u], Molugu, S.K. [G], Cox, M.B., and **Bernal, R.A.** (2009) The structural elucidation of Hsp90/p23-mediated specificity for the large immunophilin protein FKBP52. ACS Southwest Regional Meeting. Camino Real, El Paso TX, November 4th, 2009.
- Herrera, N. [u], Hildenbrand, Z.L., Molugu, S.K., Mesyanzhinov, V.V., Miroshnikov, K., and **Bernal, R.A.** (2009) Cloning, expression, purification and crystallization of a lysozyme encoded by bacteriophage SN. ACS Southwest Regional Meeting. Camino Real, El Paso, TX, November 4-7, 2009.
- Herrera, N. [u], Hildenbrand, Z.L. [G], Molugu, S.K. [G], Mesyanzhinov, V.V., Miroshnikov, K., and **Bernal, R.A**. (2009) Cloning, expression, purification and crystallization of a lysozyme encoded by bacteriophage SN. SACNAS National Conference. Sheraton, Dallas, TX, October 15-18, 2009.
- Herrera, N. [u], Hildenbrand, Z.L. [G], Molugu, S.K. [G], Mesyanzhinov, V.V., Miroshnikov, K., and **Bernal, R.A.** 2009 Cloning, expression, purification and crystallization of a lysozyme encoded by bacteriophage SN Louis Stokes Alliance for Minority Participation Summer Research Academy Conference. University of Texas at Austin, September 9-13, 2009.

- Herrera, N. [u], Hildenbrand, Z.L. [G], Molugu, S.K. [G], Mesyanzhinov, V.V., Miroshnikov, K.A., **Bernal, R.A.** (2009) Cloning, Expression, Purification and Crystallization of a Lysozyme Encoded by Bacteriophage SN. 18th Evergreen International Phage Biology Meeting, Olympia, Washington. August 9-14, 2009.
- Herrera, N. [u], Hildenbrand, Z.L. [G], Molugu, S.K. [G], Mesyanzhinov, V.V., Miroshnikov, K.A., **Bernal, R.A.** (2009) Cloning, Expression, Purification and Crystallization of a Lysozyme Encoded by Bacteriophage SN. Poster presentation at the Louis Stokes Alliance for Minority Participation Conference End-of-Summer Symposium, El Paso, Texas. July 31, 2009.
- Hildenbrand, Z.L. [G], Mologu, S. [G],and **Bernal, R.A.** (2009) The Inhibitory Interactions of the Yeast V_1-ATPase. NSF Joint Annual Meeting. OMNI SHOREHAM, Washington D.C., June 9th, 2009
- Hildenbrand, Z.L. [G], Mologu, S. [G],and **Bernal, R.A.** (2009) V-ATPase Regulation: The Rotor Stops Here! Hildenbrand, Z.L., Mologu, S.,and Bernal, R.A. UTEP/SACNAS RESEARCH EXPO. **1st place oral presentation prize**. University of Texas at El Paso, April 16th, 2009.
- Molugu, S.K. [G], Hildenbrand, Z.L. [G], Natchiar, K.S. [*], **Bernal, R.A.** (2009) Cryo-EM Reconstruction of First Virus Encoded Chaperonin. **Second place award** for poster presentation at the UTEP SACNAS Chapter Annual Research Expo, El Paso, Texas. April 16, 2009
- Hildenbrand, Z.L. [G], Molugu, S.K. [G], Stock, D. and **Bernal, R.A.** (2008) Enzyme Stabilization and Regulation of the V-ATPase. Oral Presentation, NCMI Workshop on Single Particle Reconstruction, Map Interpretation and Visualization, December 10-13, 2008. University of Houston, Baylor College of Medicine.
- Maxim V. Filchikov, Artem I. Domashin, Nina N. Sykilinda, Oleg V. Chertkov, Rob Lavigne, **Ricardo A. Bernal**, Konstantin A. Miroshnikov. (2008) Comparative genomics and capsid EM-Reconstruction of a YuA-like and KMV-like bacteriophages of *Pseudomonas aeruginosa*. Presented at "Phage Biology, Ecology, Therapy Conference" June 12-17, 2008 at the George Eliava Institute, Tbilisi, Republic of Georgia.
- Molugu, S. [G], Natchiar, K. [*], Hildenbrand, Z.L. [G] and **Bernal R.A.** (2008) Structure determination of the first virus encoded chaperonin. Poster, SACNAS UTEP Chapter Science Symposium, El Paso, TX.
- Hildenbrand, Z.L. [G], Molugu, S. [G], and **Bernal R.A.** (2008) The Three-Dimensional Reconstruction of Yeast V1-ATPase using Cryo-Electron Microscopy. Poster, SACNAS UTEP Chapter Science Symposium, El Paso, Texas.
- Molugu, S. [G], Nagula, S. [G] and **Bernal R.A.** (2007) Structure determination of the first virus encoded chaperonin. Poster, SACNAS UTEP Chapter Science Symposium, El Paso, Texas.
- Molugu, S.K. [G] and **Bernal R.A.** (2007) Structure determination of the first virus encoded chaperonin. Poster, UTEP Bioinformatics Symposium, El Paso, Texas.
- **Bernal, R.A.** and Stock, D. (2004) Three-dimensional structure of the *Thermus thermophilus* ATP synthase by electron microscopy. *Seminar*, Structural Studies Colloquia. MRC-Laboratory of Molecular Biology, Cambridge, England, June 24, 2004.
- **Bernal, R.A.** and Stock, D. (2004) Three-dimensional glimpse at a bacterial V-ATPase. *Poster*, Structural Analysis of Supramolecular Assemblies by Hybrid Methods. Lake Tahoe, California. March 17-20, 2004.
- **Bernal, R.A.** (2003) Negative stain reconstruction of a bacterial V-ATPase. *Seminar*, EMBO practical course on image processing for cryo-electron microscopy. Birkbeck College, London, U.K. September 10-17, 2003.
- **Bernal, R.A.** (2001) *Session Chair*: Virus Assembly session I. Conference on Virus and Phage Assembly, Helsinki, Finland, June 30-July 5, 2001.

- **Bernal, R.A.**, Burch, A., Hafenstein, S., Fane, B., and Rossmann, M.G. (2001) Bacteriophage α-3 Morphogenesis. *Seminar*, Conference on Virus and Phage Assembly, Helsinki, Finland, June 30-July 5, 2001.
- **Bernal, R.A.**, Burch, A., Hafenstein, S., Fane, B., and Rossmann, M.G. (2000) Structural analysis of bacteriophage α-3 morphogenesis. *Seminar*, Sixth annual Purdue University Biophysics and Cell Biology Symposium. West Lafayette, Indiana, December 1-2, 2000.
- **Bernal, R.A.**, Burch, A., Hafenstein, S., Fane, B., and Rossmann, M.G. (2000) Bacteriophage α-3 Morphogenesis. *Seminar*, Society for the Advancement of Chicanos and Native Americans in Science, Atlanta, Georgia, October 12-15, 2000.
- **Bernal, R.A.**, Burch, A., Hafenstein, S., Fane, B., and Rossmann, M.G. (2000) Microviridae morphogenesis as described by the X-ray structure of the bacteriophage α-3 virion and Cryo-EM reconstruction of the α-3 procapsid. *Poster*, FASEB 2000 Summer Research Virus Assembly Conference, Saxton's River, Vermont, June 10-15, 2000.
- **Bernal, R.A.**, Burch, A., Hafenstein, S., Fane, B., and Rossmann, M.G. (1999) Preliminary structure determination of the bacteriophage α-3. *Seminar*, Society for the Advancement of Chicanos and Native Americans in Science, Portland, Oregon, October 12-15, 1999.
- **Bernal, R.A.** (1999) *Session Chair*: Portals and Entry. Conference on Virus and Phage Assembly, Rio Rico, Arizona, June 8-13, 1999.
- **Bernal, R.A.**, Burch, A., Fane, B., and Rossmann, M.G. (1999) Preliminary investigation of the bacteriophage α-3 crystal structure. *Seminar*, Conference on Virus and Phage Assembly, Rio Rico, Arizona, June 8-13, 1999.
- Allikmets, R, Sithanandam, G., Latif, F., **Bernal, R.A.**, Duh, F.M., Smola, U., Li, H., Kuzmin, I., Wixler,V., Geil, L., Shrestha, S., Lloyd, P.A., Bader, S., Sekido, Y., Tartof, K.D., Kashuba, V.I., Zabarovsky, E.R., Dean, M., Rapp, U.R., Klein, G., Zbar, B., Lerman, M., Minna, J (1995) 3pK, a new MAP kinase activated protein kinase, located in the small cell lung cancer tumor suppressor gene region. Poster, Hood College Oncogene Meeting, Frederick, Maryland.
- Muganda, P., Hernandez, J. **Bernal, R.A.** and Gameros, O. (1993) Relationship of the cellular protein p53 to human cytomegalovirus DNA synthesis. Poster presentation, American Society for Microbiology, Atlanta, Georgia, May 16-20, 1993.
- **Bernal, R.A.**, Fisher, A. and Muganda, P. (1993) Characterization and identification of a casein kinase activity extracted from cells transformed by human cytomegalovirus. *Poster*, American Society for Microbiology, Atlanta, Georgia, May 16-20, 1993.
- Hernandez, J., **Bernal, R.**, Gameros, O. and Muganda, P. (1993) Relationship of the cellular protein p53 to human cytomegalovirus DNA synthesis. Abstract and poster presentation, Undergraduate Research Symposia at The University of Texas Medical Branch at Galveston, Galveston, Texas, Feb. 4, 1993.
- **Bernal, R.A.**, Fisher, A. and Muganda, P. (1993) Characterization and identification of a casein kinase activity extracted from cells transformed by human cytomegalovirus. *Seminar*, Undergraduate Research Symposia at The University of Texas Medical Branch at Galveston, Galveston Texas, Feb. 4, 1993.
- **Bernal, R.A.**, Fisher, A. and Muganda, P. (1993) Characterization and identification of a casein kinase activity extracted from cells transformed by human cytomegalovirus. *Poster*, Society for the Advancement of Chicanos and Native Americans in Science, Albuquerque, NM, Jan.14, 1993.
- **Bernal, R.A.**, Fisher, A., Molina, A., Hernandez and Muganda, P. (1992) Purification and properties of a casein kinase activity from a human cytomegalovirus transformed cell line. *Poster*, American Society for Microbiology, New Orleans, Louisiana, May 26-30, 1992.

Postdocs

- Kundhavai Natchiar (2009 – 2011, now has permanent position at IGBMC, Illkirch, France)
- Jay M. Bhatt (2016 – 2018, now a Research Assistant Professor at Creighton University, Omaha, Nebraska)

Ph.D. Students Graduated

- Zacariah Hildenbrand – 2010 (best Ph.D. Dissertation in College of Science for 2010-11 & Research Scientist at UT Arlington)
- Sudheer Molugu – 2011 (currently Faculty Researcher at University of Pennsylvania)
- Adrian Enriquez – 2017 (currently Postdoc at Scripps Research Institute in La Jolla, CA)
- Jinliang Wang – December 2018 (currently Postdoc at University of Southern California)
- Bianka Holguin – 2022 (currently in El Paso health startup)
- Alex Rodriguez – 2022 (currently in El Paso health startup)
- Daniel Von Salzen – 2023 (currently a postdoc)
- Ramon Sanchez-Rosario – 2024

M.S. Students Graduated

- Vindhya Shatdarsanam – 2008 (Ph.D. at University of Melbourne, Australia)
- Sanjay Molugu – 2015 (working in industry as computer analyst)
- Jihui Li – 2016 (best MS Thesis in College of Science for 2016-17, now working in Industry)
- Janelly Villalobos – 2017 (Outstanding Graduate Student in Environmental Science Award)
- Humberto Rojo – 2018 (now working in Industry)
- Zhaobo Li - 2023 (position in Industry)

Undergraduate Students Researchers (from more than 20)

- Maximizing Access to Research Careers (MARC undergraduates mentored)
  - Nadia Herrera – 2011 (Ph.D. from Caltech in 2017, postdoc at UCSF, currently working in industry)
  - Diana Tafoya – 2012 (Ph.D. from Vanderbilt in 2018, postdoc at Vanderbilt, now working in industry in Austin Texas)
  - Timothy P. Brown – 2014 (currently in MD/PhD program at Texas Tech – Lubbock)
  - Karen Orta – 2018 (graduated with PhD from Caltech Spring 2024)
  - Maria Grajeda – 2020 (Post Baccalaureate at Johns Hopkins Medical School, currently in medical school at UT Southwestern)
  - Andres Orta – 2021 (currently in PhD program at Caltech)

- Other Undergraduate Students Mentored
  - Olga Fernanda Palomares (from UACJ)
  - Roberto Salas
  - Paul Beltran
  - Michael Mendoza
  - Daniel Von Salzen (currently PhD student in my lab)
  - Jesus Garcia
  - Alicia Najar
  - Min Yan (Summer student from China)
  - Alexa Clift (now a graduate student at Texas Tech)
  - Alejandro Rodriguez (Earned PhD in my lab)
  - Bianka Holguin (Earned PhD in my lab)

- Janelly Villalobos (went on to get a M.S. from my lab)
- Humberto Rojo (went on to get MS in my lab)
- Sophia Hantzopulos (now a graduate student at Texas Tech)
- Fernando Monsivais (now a graduate student at Texas Tech)
- Ricardo Avila (now getting his PhD)
- Dorian Acosta
- Farhad Zonoozi (Dental School at University of Pittsburgh)
- Danielle Martinez
- Bridget Logan
- Zacariah Hildenbrand (Research Professor at UTEP and oil industry consultant)
- Veronica Ramos
- Adrian Palma
- Citlally Ramirez
- Adrian Ugarte

Research Funding: (I have brought in >$3 million since arriving at UTEP)

Past:

- National Institutes of Health (NIGMS) – Award # SC3GM113805 (Awarded $453,000). April 1, 2015 – March 31, 2019. “Structural Significance of Point Mutations within the Human hsp60 Chaperonin”. Principle Investigator.

- Welch Foundation Grant - Award #AH-1649 (Awarded $195,000), June 1, 2016 - May 31, 2019. “Deciphering the Structural and Functional Basis for Ring Separation in Chaperonins”. Principle Investigator.

- Welch Foundation Grant - Award #AH-1649 (Awarded $180,000), June 1, 2013 - May 31, 2016. “Biochemical and biophysical investigation of a novel protein folding mechanism”. Principle Investigator.

- National Science Foundation – Award #0923437 Major Research Instrumentation Grant (Awarded $1,259,954). September 1, 2009-August 31, 2012. MRI: Acquisition of a Field Emission Gun Transmission Electron Microscope for Biological Structure Determination. Principle Investigator.
- Welch Foundation Grant - Award #AH-1649 (Awarded $160,000), June 1, 2010 - May 31, 2013. “Elucidation of a Novel Mechanism used by a Virus Encoded Chaperonin”. Principle Investigator.
- Oak Ridge National Lab Faculty Summer Research Program - January 2009 (3 month summer appointment awarded), Oak Ridge, Tennessee. Principle Investigator.
- Oak Ridge National Lab High Flux Isotope Reactor Neutron Beamline Access – July 2009 (beam access). Principle Investigator.
- Advanced Photon Source Synchrotron, Argonne Labs, Chicago, IL (for synchrotron data collection time). Awarded, 24 hours in October 2008 and 48 hours in December 2008. Principle Investigator.
- Welch Foundation Grant - Award #AH-1649 (Awarded $150,000), June 1, 2007 – May 31, 2010. “Structure determination of the first virus encoded chaperonin.” Principle Investigator.

- UTEP University Research Institute grant (Awarded $5,025 for 1 yr). November 2006 “Crystallization of the yeast V-type ATPase catalytic component”. Principle Investigator.
- Welch Foundation Grant - Award #AH-1649 (Awarded $195,000), **June 1, 2019 - May 31, 2022.** “High Resolution Cryo-EM Reconstructions of the Heat Shock Protein 60 and its Conformational Intermediates”. Principle Investigator.
- Welch Foundation - Award #AH-1649 from 2007-2022
- Texas Research Incentive Program (TRIP) Award – 2023 ($42,000).

Current or Pending:

- BIOTA Solutions– 2024 ($250,000). **Pending Research Gift**. “Using Bacteriophages to Treat Resilient Bacteria Found in Produced Water”.