

# Diego Romero-Perez

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## **EDUCATION**

### **Ph.D., Molecular Pathology.**

University of California, San Diego. School of Medicine. 2008.

### **B.S., Biology.**

National Autonomous University of Mexico. School of Sciences. 1998.

## **EXPERIENCE**

**Professor.** *Autonomous University of Baja California. School of Chemistry and Engineering. Tijuana, BC. 2013-Present*

- Teaching Pathophysiology, Clinical Toxicology, Pharmacology and Biochemistry.

**Postdoctoral Associate.** *Sanford-Burnham Medical Research Institute. Cancer Center. La Jolla, CA 2010-present.*

- Project: Development of a Solid Phase Assay for Ubiquitylation Substrate Screening (SPASS).
- Project: SILAC-based quantitative proteomic approach to identify stage-specific biomarkers in an initiation/progression model of human prostate cancer.
- Coupled biotinylated ubiquitin to streptavidin magnetic beads.
- Charged ubiquitin-conjugating enzymes (UBE2s) onto ubiquitin agarose and ubiquitin-magnetic bead complexes.
- Performed stable isotope labeling of amino acids in cell culture (SILAC) of transformed prostate cell lines.
- Performed super-SILAC using the prostate cancer cell lines PC3 and DU145 as a reference to compare proteomic profiles in other prostate cell lines.
- Identified ubiquitylated substrates by specific UBE2s in cell lysates from prostate cancer cell lines using our SPASS approach.
- Performed global analysis of gene expression patterns and protein abundance among prostate cancer cell lines using Ingenuity Pathway Analysis.

**Staff Research Associate II.** *UCSD Pharmacology. La Jolla, CA 2008-2010.*

- Outsourcing Project: Time-course and dose-response studies of cardiac drug-candidates in the isolated perfused heart.
- Provided consulting services on translational and pre-clinical research.
- Implemented an electromechanical model of an isolated perfused rat heart to simulate ischemia/reperfusion injury.

**Postdoctoral Associate.** *Sanford-Burnham Medical Research Institute. Infectious and Inflammatory Disease Center. La Jolla, CA 2008-2010.*

- Project: Structural/functional basis for broad-spectrum neutralization of avian and human influenza A viruses for development of novel recombinant vaccines in insect cells.
- Generated baculoviruses expressing human furin in insect cells.
- Expressed/purified furin-cleaved hemagglutinin (HA) from influenza viruses using the baculovirus expression system in insect cells.
- Expressed/purified recombinant synthetic neutralizing antibodies (scFv) vs. HA in *E. coli*.
- Seeded/isolated crystals of neutralizing antibody-HA complexes for X-ray diffraction.
- Expressed/purified recombinant modified, snake venom botrocetin in insect cells.

**Graduate Student Researcher.** *UCSD. School of Medicine. La Jolla, CA 2003 - 2008.*

- Established the role of matrix metalloproteinases in mediating myocardial injury during ischemia/reperfusion.
- Determined tetracyclines mechanisms of cardioprotection from ischemia/reperfusion injury.
- Assisted in the development of novel semi-selective matrix metalloproteinase inhibitors.

**Research Associate.** *Laboratory of Molecular Biology, School of Medicine, University of the Army. Mexico City, 2000 - 2002.*

- Project: Mutations responsible for decreasing activity in repressor E2 of the Human Papilloma Virus type 16 Asiatic-American variants.
- Achieved site directed mutagenesis of e2 genes using recombinant circle-PCR.
- Generated vectors expressing GFP under control of the P97 HPV E6/E7 oncogenes promoter.
- Accomplished transient and stable transfection of cell lines.
- Assessed activity of P97 under control of different mutant E2 repressors.

**Research Associate.** *Department of Cellular Engineering and Biocatalysis, Institute of Biotechnology, UNAM. Cuernavaca, Mexico. 1998.*

- Project: Characterization of unknown open reading frames in *E. coli*.
- Cloned and expressed gene *udhA* in *E. coli*.
- Determined activity of UDHA as a soluble pyridine nucleotide transhydrogenase.
- Characterized new subfamily of soluble transhydrogenases.

## **QUALIFICATIONS**

### **Molecular Biology:**

- DNA / RNA isolation
- PCR / RT-PCR
- Site directed mutagenesis
- DNA cloning / sequencing
- Functional genomics / transcriptomics

### **Cell Biology:**

- Mammalian and insect cell culture
- Transient / stable transfection of cells
- Cytotoxicity assays
- Preparation of cardiac cell cultures
- Functional proteomics / SILAC

### **Physiology:**

- Isolated perfused hearts / Langendorff
- Small and large animal surgery
- Stem cell implant in rat hearts
- Haemodynamics / Millar catheter
- Cardiac morphometry

### **Bioinformatics:**

- Systems biology: GeneGo, Ingenuity Pathway Analysis, Cytoscape.
- Comparative sequence analysis: Clustal W, GCG, GenBank, ExPASy, DNASTAR.
- Molecular modeling: PyMol.
- Cardiac hemodynamics: WinDaq.

### **Computer skills:**

- Conversant with Windows, MacIntosh and UNIX operating systems.
- Desktop applications in MS Word, Excel, PowerPoint, EndNote.
- Biostatistics: SigmaStat, SigmaPlot, GraphPad Prism.
- Digital image processing.

### **Microbiology:**

- Transformation / culture of bacteria
- Plasmid preparation
- Protein expression / purification
- Pathogenicity / virulence determination

### **Biochemistry:**

- Protein engineering / cyclic permutation
- Protein precipitation / LC-MS/MS
- Protein crystallization / x-ray diffraction
- Western blot
- Fast Performance Liquid Chromatography

- Light / fluorescence microscopy
- Spectrophotometry
- Flow cytometry
- Histology
- ELISA

**Languages:**

- Bilingual English/Spanish
- French reading comprehension.

**PUBLICATIONS**

- Puerta, D.T., Griffin, M.O., Lewis, J.A., **Romero-Perez, D.**, Garcia, R., Villarreal, F.J. & Cohen, S.M. 2006. **Heterocyclic zinc-binding groups for use in next-generation matrix metalloproteinase inhibitors: potency, toxicity, and reactivity.** *J. Biol. Inorg. Chem.* **11**:131-138
- Arpita Agrawal, **Diego Romero-Perez**, Jennifer Jacobsen, Francisco J. Villarreal, Seth M. Cohen. 2008. **Zinc-binding groups modulate selective inhibition of MMPs.** *ChemMedChem.* **3**:812-820
- Katrina Yamazaki, **Diego Romero-Perez**, Brenda Cortez-Gomez, Maria Rivas, Michelle Cruz, Guillermo Ceballos, Francisco Villarreal. 2008. **Short and long-term effects of (-)-epicatechin on myocardial ischemia/reperfusion injury.** *Am J Physiol Heart Circ Physiol.* **295**: H761-H767
- **Diego Romero-Perez**, Eduardo Fricovsky, Katrina Go Yamazaki, Michael Griffin, Maraliz Barraza-Hidalgo, Wolfgang Dillmann, Francisco Villarreal. 2008. **Cardiac uptake of minocycline and mechanisms of in vivo cardioprotection.** *J Am Coll Cardiol.* **52**:1086-1094
- **Diego Romero-Perez**, Arpita Agrawal, Jennifer Jacobsen, Yilong Yan, Robert Thomas, Seth Cohen, Francisco Villarreal. 2009. **Effects of novel semi-selective MMP inhibitors on ex vivo cardiac structure/function.** *J Cardiovasc Pharmacol.* **53**:452-461

**FELLOWSHIPS**

- Doctoral Fellowship. CONACYT, Mexico, 2003-2006.
- Doctoral Fellowship. UC-MEXUS, USA, 2006-2008.
- Systems Pharmacology and Translational Biology Summer course. NIH, USA, 2006.

**AWARDS**

- 1999 award for best biotechnology dissertation research nationwide. Mexican Society of Biotechnology and Bioengineering. ( <http://www.smbb.com.mx/premioalfredosanchez.html> )