BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Perez, J. Manuel	Associate Professor
eRA COMMONS USER NAME (credential, e.g., agency login) MANNY PEREZ	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
University of Puerto Rico, Mayaguez, PR	B.S.	1986	Chemistry
University of Puerto Rico, Mayaguez, PR	M.S.	1990	Chemistry
Boston University, Boston, MA	Ph.D.	1998	Chemistry/Biochemistry
MGH-Harvard Medical School	Post-Doc	2003	Nanotech./Mol. Imaging

A. Personal Statement

J. Manuel Perez, PhD is a principal investigator in the Nanomedicine Research Center, Department of Neurosurgery. His Lab conducts research on the design of nanoparticle technologies for biomedical imaging, diagnostics and therapy. The main focus of Dr. Perez research is to develop clinically translational nanoparticles for the imaging and treatment of cancers. In particular, the design of activatable imaging agents is an active area of research in his lab. Toward this goal, he has developed a facile procedure for the encapsulation of drugs into polymer-coated iron oxide nanoparticles. These nanoparticles can deliver a drug to tumors, while reporting on drug localization and release in vivo via MRI. When these nanoparticles are conjugated with a targeting ligand, they provide targeted drug delivery to cancer cells, while avoiding normal cells. In addition, Dr. Perez Lab has developed hyperbranched polymeric nanoparticles for the delivery of drugs and imaging agents to cancers. This biodegradable polymer nanoparticle platform is particularly suitable for the delivery of therapeutic peptides. Recently, we have been working with a therapeutic peptide that causes significant mitochondrial aggregation, and cytoskeletal disruption, resulting in cell detachment (anoikis). These findings suggest that the peptide could have the potential to impair cancer cell invasiveness through its actions on the cytoskeleton. Ongoing research using these nanoparticles to deliver a therapeutic peptide to breast and prostate cancer are encouraging and soon we plan to extend our research into other tumors such as gliomas. Finally, another area of interest in Dr. Perez Lab is the design of small molecule-nanoparticle conjugates that can be used to interrogate biological system and access binding to various cells surface receptors.

B. Positions and Honors

Positions and Employment

2000-2003	Postdoctoral Fellow, Center for Molecular Imaging Research, Massachusetts General Hospital, Harvard Medical School
2003-2005	Instructor in Chemistry, Harvard Medical School
2005-2015	Associate Professor, University of Central Florida, Nanoscience Technology Center
2015-Present	Associate Professor, Cedar Sinai Medical Center, Department of Neurosurgery and Department of Biomedical Sciences

Other Experience and Professional Memberships

1995-Present	American Association for the Advancement of Science
1998-Present	American Chemical Society
2002-Present	American Association for Cancer Research

Honors

1984	Puerto Rico Board of Chemists Award
1994-1997	NIH Molecular Biophysics Training Fellow (T32)
2001-2003	NCI (CMBB) Grant Supplement Recipient
2002	AACR Minority Scholar in Cancer Research Travel Award (Molecular Imaging in Cancer:Linking Biology, Function and Clinical Applications In Vivo, Orlando Fl.)
2002	Magnetic Microsphere Society Travel Award (4th International Conference on the Scientific and Clinical Applications of Magnetic Carriers, Tallahassee Fl.)
2003	NCI-Career Development Award (KO1)
2004	Outstanding Presentation, AACR Conference on *The Role of Telomeres and Telomerase in Cancer*, San Francisco, CA.

C. Selected Peer-reviewed Publications (Selected from **46** peer-reviewed publications)

Most relevant to the current application

1. Kaittanis, C., Shaffer, T. M., Ogirala, A., Santra, S., **Perez, J. M**., Chiosis. G., Li, Y., Josephson, L., Grimm, J. Environment-responsive nanophores for therapy and treatment monitoring via molecular MRI quenching, Nature Comm. 2014, DOI: 10.1038/ncomms4384.

2. Lee MW, Bassiouni R, Sparrow NA, Iketani A, Boohaker, RJ, Moskowitz C, Vishnubhotla P, Khaled AS, Oyer J, Copik A, Fernandez-Valle C, **Perez JM** and **Khaled, AR**. "The CT20 Peptide Causes Detachment and Death of Metastatic Breast Cancer Cells by Promoting Mitochondrial Aggregation and Cytoskeletal Disruption, Cell Death & Disease 2014, 5, e1249; doi:10.1038/cddis.2014.225.

3. Boohaker, R.J., Zhang, G., Lee, M.W., Nemec, K.N., Santra, S., **Perez, J.M., Khaled, A.R**. Rational development of a cytotoxic peptide to trigger cell death, Mol. Pharmaceutics 2012, 9, 2080-2093

4. Santra, S., Jativa, S.D., Kaittanis C., Santiesteban, Normand, G. **Grimm, J., Perez, J.M.** Gadolinium-Encapsulating Iron Oxide Nanoprobe as Activatable NMR/MRI Contrast Agent, ACS Nano, 2012, 8, 7281-7294

5. Boohaker, R.J., Lee, M.W., Vishnubhotla, P., **Perez, JM, Khaled, A.R**. The Use of Therapeutic Peptides to Target and to Kill Cancer Cells, Curr Med Chem. 2012, 19(22), 3794-3804

6. Santra, S., Kaittanis C., **Perez J.M**. Aliphatic hyperbranched polyester: A new building block in the construction of multifunctional nanoparticles and nanocomposites, *Langmuir* 2010, 26(8), 5364-5373. PMCID: PMC2854188

7. Santra, S., Kaittanis C., **Perez J.M**. Cytochrome c Encapsulating Theranostic Nanoparticles: A Novel Bifunctional System for targeted delivery of therapeutic membrane-impermeable proteins to tumors and imaging of cancer therapy. *Mol. Pharmaceutics* 2010, 7(4), 1209-1222. PMCID: PMC2914151

8 Kaittanis C., Santra, S., **Perez J.M.** Role of Nanoparticle Valency in the Nondestructive Magnetic-Relaxation-Mediated Detection and Magnetic Isolation of Cells in Complex Media, *J. Am. Chem. Soc*. 2009, 12780-12791. PMCID: PMC2757139

9. Santra, S., Kaittanis C., **Grimm J.** and **Perez J.M.** Drug/Dye-Loaded, Multifunctional Iron Oxide Nanoparticles for Combined Targeted Cancer Therapy and Dual Optical/MR-Imaging, *Small* 2009, 5, 1862-1868. PMID: 19384879

Additional recent publications of importance to the field

1. Nath, S., Kaittanis, C., Ramachandran V., Dalal. N.S., **Perez, J.M.** Synthesis, magnetic characterization and sensing applications of novel dextran-coated iron oxide nanorods. *Chem. Mat.* 2009, 21, 1761-1767 PMCID: PMC2923475

2. Asati, A., Santra S., Kaittanis, C, Nath S. **Perez, J.M**. Oxidase-like activity of polymer-coated cerium oxide nanoparticles, *Angew.Chem.Int.Ed*. 2009, 48, 2308-2312. PMCID: PMC2830002

3. Kaittanis, C., Nath, S., **Perez J.M.** Rapid nanoparticle-mediated monitoring of bacterial metabolic activity and assessment of antimicrobial susceptibility in blood with magnetic relaxation, *PLOS One* 2008, 3(9), e3253 PMCID: PMC2533125

4. **Perez, J.M.**, Asati, A., Nath, S; Kaittanis, C.Synthesis of biocompatible dextran-coated nanoceria with pH-depenedent antioxidant properties, *Small*, 2008, 5: 552-556. PMID: 18433077

5. Kaittanis, C., Saleh, A. N., **Perez J.M.** One-step, nanoparticle-mediated Bacterial Detection with Magnetic Relaxation, *NanoLetters*, 2007, 7: 380-383. PMID: 178298004

6. **Perez, J.M.**, Simeone, F.J., Tsourkas, A., Josephson, L, Weissleder, R. Peroxidase substrate nanosensors for MR imaging, NanoLetters, 2004, 4: 119-122.

7. **Perez, J.M.**, Simeone, F.J., Josephson, L; Weissleder, R. Viral-induced self-assembly of magnetic nanoparticles allows the detection of viral particles in biological media, J. Am. Chem. Soc., 2003, 125: 10192-10193. PMID: 12926940

8. **Perez, J.M.**, Josephson, L, O'Loughin,T., Hogemann, D., Weissleder, R. Magnetic relaxation switches capable of sensing molecular interactions, Nature Biotech., 2002, 20: 816-820. PMID: 12134166

9. **Perez, J.M.**, O'Loughin,T., Simeone, F.J., Weissleder, R., Josephson, L. DNA-based Magnetic Nanoparticle Assembly Acts as Magnetic relaxation Nanoswitch Allowing Screening of DNA Cleaving Agents, J. Am. Chem. Soc., 2002, 124: 2856-2857. PMID: 11902860

D. Research Support

Ongoing Research Support

Current Research Support

R01 EB019288-01A1 Perez/Khaled (PIs) 2014-2018

The goal of this project is to develop a polymeric nanoparticle platform for the dual delivery of a therapeutic peptide and a PET imaging agents to prostate cancer (PCa). Targeting to PCa will be achieved by conjugating a ligand that binds specifically to prostate specific membrane antigen (PSMA), a membrane protein highly expressed in PCa.

Completed Research Support

Florida Breast Cancer Society Khaled (PI) 2012-2014
"Exploiting Metabolism to Target Cytotoxic Peptides to Breast Cancer Tumors"
The aims of this project are to examine the metabolic functions of human breast cancer cells and correlate to hormone receptor status and susceptibility to cytotoxic peptides.

R01 GM084331 Perez (PI) 2008 – 2013
NIH/NIGM
An integrated NMR/magnetic nanosensor system for detection of bacteria and toxin
The goal of this first investigator application is to develop magnetic nanosensors for the detection of mycobacterium avius ss paratuberculosis and ricin in blood sample using magnetic relaxation methods

Subcontract Perez (PI) 5/1/10 – 12/31/10
The Henry M. Jackson Foundation for the Advancement of Military Medicine
Novel Fluorescent labeled polymer coated cerium oxide nanoparticles for effective antioxidant activity
The goal of this study was to understand the antioxidant properties of cerium oxide nanoparticles upon cell internalization.

KO1 CA101781 Perez (PI) 7/1/03 – 12/30-08
NIH/NCI
Development of Magnetic Sensors for MRI Cancer Imaging
The goal of this study was to develop magnetic nanoparticle conjugates as sensors for telomerase activity as a measure of tumor progression
Role: Principal Investigator