BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Madeline Torres-Lugo, PhD	Professor
eRA COMMONS USER NAME (credential, e.g., agency login) MADTORRES	

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
University of Puerto Rico, Mayaguez Campus, Mayaguez PR	BS	1997	Chemical Engineering
Purdue University, West Lafayette, IN	MS	1999	Chemical Engineering
Purdue University, West Lafayette, IN	PhD	2001	Chemical Engineering

A. Personal Statement

Dr. Madeline Torres-Lugo is an Associate Professor in the Department of Chemical Engineering at the University of Puerto Rico, Mayaguez Campus. She has extensively worked on the medical application of biomaterials, design and characterization of drug delivery devices, as well as their interactions with tissues. Currently, her research focuses on various areas including: (i) design and characterization of novel nanoscale and microscale drug delivery systems for poorly absorbed drugs, (ii) investigation of the mechanisms of interaction between carrier/drug, carrier/tissue, and (iii) understanding in vitro and in vivo transport mechanisms. The researcher expertise also includes ample knowledge of free radical polymerization, dispersion polymerization, Fourier transform infrared spectroscopy, confocal laser scanning microscopy, and human cell culture.

B. Positions and Honors

Research Assistant – Department of Chemical Engineering Purdue University, West Lafayette, IN 1997-2001
Assistant Professor – Department of Chemical Engineering University of Puerto Rico, Mayagüez Campus, Mayagüez PR, 2001- 2004
Associate Professor – Department of Chemical Engineering, University of Puerto Rico, Mayagüez Campus, Mayagüez PR, 2004- 2011
Professor- Department of Chemical Engineering, University of Puerto Rico, Mayagüez Campus, Mayagüez PR, 2012-present

Honors and Awards

12/98 Gold Medal Award Winner for best work in the *Material Research Society Meeting* held in Boston, Massachusetts.
1998/99 MS GEM Fellowship in Engineering
1999-2000 Ph.D GEM Fellowship in Engineering
1999 Fearnot Award Winner for best summer seminar from the Biomedical Engineering Department, Purdue University
2000 Magoon Award for Excellence in Teaching, Purdue University, West Lafayette, Indiana
2005 Distinguished Professor Award, Chemical Engineering Department
2010 Chemical Engineering: Innovative Women in Education

C. Selected peer-reviewed publications (in chronological order).

1. Court,K.A., Jerez,J.,Romañach ,R., Torres-Lugo, M., Particle Encapsulation in Crosslinked Hydrogel Systems: Distribution and Optimization, accepted, *J. Mater. Sci. Eng. A&B*, 2012.

2. López, G.E., Cruz, A., Sepulveda-Chervony, M., Lopez-Garriga, J., Torres-Lugo, M., Using a reduced dimensionality model to compute the thermodynamic properties of dimeric polypeptides systems aggregates, *J. Biol. Phys.*, 38(3): 383-395, 2012.
3. Creixell, M., Bohorquez, A., Torres-Lugo, M., Rinaldi, C., EGFR-targeted magnetic nanoparticle heaters can kill cancer cells without a perceptible temperature rise, *Nano Letters*, 5(9): 7124-7129, 2011
4. Lee, J.S, Rodríguez-Luccioni, H, Méndez, J., Sood A.K, Rianldi, C., Torres-Lugo, M., Hyperthermia Induced by Magnetic Nanoparticles Improves the Effectiveness of the Anticancer Drug cis-Diamminedichloroplatinum*, J. Nanosci. Nanotech*, 11(5):4153-4157, 2011.
5. Rodríguez-Luccioni, H., Latorre-Esteves, M., Méndez, J., Soto, O., Rodríguez, A., Rinaldi, C., Torres-Lugo, M., Enhanced Reduction in Cell Viability by Hyperthermia Using Magnetic Nanoparticles, *Int. J. Nanomed*., 6:373-380, 2011.
6. Creixell, M., Herrera, A.P., Ayala, V, Latorre-Estevez, M., Perez-Torres, M., Torres-Lugo, M., Rianldi, C., Preparation of Epidermal Growth Factor Conjugated Iron Oxide Nanoparticles and their Internalization into Colon Cancer Cells, J. Mag. Mag. Mater, 322, 2244-2250, 2010.
7. Hernández,R., Méndez, J., Lamboy, J., Torres-Lugo, M., Roman, F.R., Melendez, E., Titanium(IV) Complexes : Cytotoxicity and Cellular Uptake of Titanium(IV) Complexes on Caco-2 Cell Line, *Toxicology in Vitro,* 24(1),178-183 , 2010.
8. Latorre-Esteves, M., Cortés A., Torres-Lugo, M., Rinaldi, C., Synthesis and characterization of carboxymethyl dextran-coated Mn/Zn ferrite for biomedical applications, *J. Mag. Magn. Mater.,*321(19), 3061-3066, 2009.
9. Santos-Román, N., Mendez, J., Torres-Lugo, Poly (Ethylene Glycol)-Based Crosslinked Networks with Potential Multidrug Resistance 1 (MDR1) Protein Inhibition Effects, *J. Bioact. Comp. Polym*.,24(5), 444-456, 2009
10. Herrera, A. P, Rodríguez, M., Torres-Lugo, M., Rinaldi, **C.,** Multifunctional magnetite nanoparticles coated with fluorescent thermo-responsive polymeric shells**,** *J. Mater. Chem.*, 18(8), 855-858, 2008.
11. Castro-Forrero, A., Jimenez, D., Lopez-Garriga, J., Torres-Lugo, M., Immobilization of HbI from *Lucina Pectinata* in Hydrophilic Polymer Networks for the Development of a Hydrogen Sulfide Biosensor, *J. Appl. Polym. Sci.* ,107(2), 881-890, (2008).
12. Torres-Lugo, M. García, M., Record, R., Peppas, N.A., pH-Sensitive Hydrogels as Gastrointestinal Tract Absorption Enhancers: Transport Mechanisms of Salmon Calcitonin and other Model Molecules using the Caco-2 Cell Model, *Biotech. Prog.,* **18**, 612-616 (2002).
13. Torres-Lugo, M. García, M., Record, R., Peppas, N.A., Physicochemical Behavior and Cytotoxic Effects of P(MAA-g-EG) Nanospheres for the Oral Delivery of Proteins, *J. Controlled Rel.*, **80**, 197-205, (2002).
14. M. Garcia, M. Torres-Lugo, M. J. Alonso and N. A. Peppas, "Biointeractions of pH-Sensitive Poly(methacrylic acid-g-ethylene glycol) Hydrogel Microspheres with the Caco-2 Model Cell Line", in "New Trends in Polymers for Oral and Parenteral Administration: From Design to Receptors", G. Barratt, D. Duchêne, F. Fattal and J.Y. Legendre, eds., 386-389, Editions de Santé, Paris, 2001.
15. O. Sipahigil, M. Torres-Lugo and N.A. Peppas, FTIR Spectroscopic Analysis of Protein/Carrier Interactions in Novel Protein Delivery Systems*, STP Pharma*, **12**, 345-350 (2002).

D. Research Support

Torres-Lugo, M. (PI)

ONGOING Subproject NIH-2P20RR016470-09 NIH-INBRE Physicochemical Understanding of Protein Crystal Confinement in Polymeric Systems. Examination of the parameters involved in protein crystal confinement, stability, and biological stability.	8/1/09-8/1/14	AY:2.25 S:1.5

Subproject NSF CREST (HRD-0833112) CREST: Nanotechnology Center for Biomedical and Energy Driven Systems (senior personnel) Design and characterization of magnetically actuated drug delivery systems.	9/1/09-9/1/14	AY:2.25 S:0.15
NIH RISE2BEST (Co-PI) R25GM088023 Leader of the undergraduate training component.	9/11-9/15	AY:1.25
COMPLETED 2S06GM008103-30 NIH-MBRS Examination of the Mechanisms of Interaction of PEG-Rich Matrices with the MRP and MDR Transporters This project envisions the understanding of the physicochemical interactions of poly(ethylene glycol) rich matrices with the multidrug resistance protein and the p-glycoprotein through transport experiments utilizing the Caco-2 cell model.	5/05/2003- 04/30/2007 $443,566 (entire period)	
Co-PI CTS-0609117 NSF-NIRT Magnetically and Thermally Active Nanoparticles for Cancer Treatment. Development of the synthesis, functionalization, and characterization of magnetic nanoparticles with biocompatible polymers. Molecular modeling of membrane rupture and polymer-membrane interactions.	7/1/06-7/1/10	AY:2.25 S:1.25