JAIME E. RAMÍREZ-VICK, PH.D.

EDUCATION

Postdoctorate, Cancer Genetics, Cancer Center, University of California, San Francisco, CA
Postdoctorate, Cancer Genetics, Life Sciences Division, Lawrence Berkeley Natl Lab, Berkeley, CA
Ph.D., Chemical Engineering, 1997, Arizona State University, Tempe, AZ
M.S., Chemical Engineering, 1989, University of Puerto Rico, Mayagüez, PR
B.S., Chemical Engineering, 1985, University of Puerto Rico, Mayagüez, PR

CITIZENSHIP: United States of America

ORCID: http://orcid.org/0000-0001-9845-3734

PROFESSIONAL EXPERIENCE

08/15-Pres **Professor and Chair**, Department of Biomedical, Industrial and Human Factors Engineering, Wright State University, Dayton, OH

Within the first three months as chair, brought the department together in defining a strategic plan to develop a research agenda. This was the result of challenging my faculty to explore new alternatives and opportunities in research aligned with current college-wide goals of strengthening the college of engineering graduate programs. The strategic plan was one to develop neuroengineering research within the department in synergy with current university-wide initiatives. Established core facilities in Tissue Culture and Nanomedical Synthesis & Characterization and an MS program in Neuroengineering in support of this initiative. Had all my junior faculty promoted to Associate Professors with tenure through individual mentoring.

01/12-07/15 **Chair**, Engineering Science and Materials Department, University of Puerto Rico, Mayagüez, PR

Established a student-professor mentorship program for all departmental undergraduate courses. Defined a new strategic hiring policy to help further successful research in functional nanomaterials and ocean engineering. Re-focused the online courses in Material Science & Engineering focusing on the needs of the local industries. Planned expansion of research laboratories to increase the number of graduate students and the percentage of faculty actively engaged in research. Developed a lecture capture system for each of the core engineering courses, adopted by 25% of the faculty by the Fall of 2013. Obtained approval of two graduate programs: MS in Material Science and Engineering and PhD in Bioengineering. Established a junior faculty mentorship program to increase performance. Increased research performance of faculty by over 30%, with all junior faculty having external research funds. This was done through focusing their efforts as a group within specific areas of Engineering Education,

Material Science, Bioengineering, Structural Engineering, and Ocean Engineering. This increased research expenditures from external sponsored research from $1M in 2009 to around $5M. Defined a collaborative agreement between the Structural Engineering and Ocean Engineering groups and the Ports Authority for redesigning all of its docks. Restructured the departmental staff to increase performance while improving morale.

10/09-12/11 **Associate Chair**, Engineering Science and Materials Department, University of Puerto Rico, Mayagüez, PR

Restructured the departmental staff workflow and duties to avoid duplication. Restructured the registration and course assignment process to optimize the use of the departmental resources. Developed a teaching and research mentorship program for junior faculty to improve their performance. Established an undergraduate mentoring program with senior undergraduate students as tutors for each of the required undergraduate courses.

07/07-07/15 **Professor**, Engineering Science and Materials Department, University of Puerto Rico, Mayagüez, PR

Founded the Cancer Molecular & Cellular Bioengineering Laboratory for the development of cancer diagnostics and therapies with all necessary equipment and infrastructure. Established a research program in cancer diagnostics and therapies and in bone regenerative medicine.

01/02-06/07 **Associate Professor**, Engineering Science and Materials Department, University of Puerto Rico, Mayagüez, PR

Developed the bioinformatics infrastructure at the university and consolidated research efforts through collaboration with the Pittsburgh Supercomputing Center. Established the basis for an Institute for Medical Device Technologies based on an Innovation Studio Concept with the collaboration of the local industry and government.

04/00-12/06 **President**, Daedalus BioTechnologies, Berkeley, CA and Mayagüez, PR

Founded and operated the company in Berkeley and Puerto Rico. Created the technology base and vision for a DNA microarray-based diagnostic and bioinformatics venture. Defined the company's culture and initial niche markets. Developed the company's electronic genetic diagnostic device. Designed the company's knowledge base structure and bioinformatics expert system. Designed the manufacturing process and initial plant layout. Recruited the members of the company's Technical Advisory Board. Forged partnerships with key academic laboratories for the initial development and characterization of the Company's products. Established strategic alliances with clinical laboratories for the initial validation of the company's products.

01/99-03/00 **Director of Technology**, Iris Biotechnologies, Inc., Santa Clara, CA

Developed the core elements of the company's technology, including nucleic acid conjugation chemistries, microfluidic chip, probe design algorithm, and hybridization assays. Established the company intellectual property position with

respect to competing companies. Developed the business plan and helped secure initial funding. Defined and recruited the members of the Company's Scientific Advisory Board. Established manufacturing including outsourcing of certain critical components. Managed consultants who helped finalize the design of the overall GPM product family and foundry manufacturing support. Developed the launch product. Hired the required scientific and technical staff. Developed a modular manufacturing line scheme to determine the feasibility of adding production lines versus adding a manufacturing shift. Establishes alliances with both clinical and academic laboratories for initial sales. This company became public in January 2009.

07/98-12/98 **Postdoctoral Fellow**, Cancer Center, University of California, San Francisco, CA
Development of DNA microarray technology for the determination of gene expression levels for the study and detection of cancer. Worked on the final developmental stages of the robotic microarrayer with negative-pressure capillary dispensers. Worked together with software developers in the writing of the programs for running the robotic microarrayer. Developed microarray data analysis algorithms.

11/97-06/98 **Lawrence Postdoctoral Fellow**, Lawrence Berkeley Natl Laboratory, Berkeley, CA
Developed technology for the detection of oncogene activation in thyroid cancer specimens using immobilized DNA probes of tyrosine kinase gene segments, i.e., DNA microarrays. Researched various conjugation chemistries for different types of biomolecules using different substrates. Optimized hybridization protocols using probes generated by PCR or other enzymatic reactions. Established new technology based on a collection of cDNAs and corresponding large insert genomic clones, which includes the catalytic domains of known tyrosine kinase genes from thyroid cancer specimens.

HONORS & AWARDS

2015 Tenured Full Professor, Wright State University, Dayton, OH
2012 Adjunct Professor of Chemistry, University of Puerto Rico – Mayaguez, PR
2012 Adjunct Professor of Chemical Engineering, University of Puerto Rico – Mayaguez, PR
2008 Adjunct Professor of Biomedical Engineering, Purdue University, West Lafayette, IN
2007 Tenured Full Professor, University of Puerto Rico
2004 Keynote Speaker, 3rd Scientific Research Congress, IAU - Bayamón
2004 Keynote Speaker, Computing Research Conference, UPR - Mayagüez
1998 American Histochemical Society Travel Award
1998 Lawrence Postdoctoral Fellowship
1996 Phi Kappa Phi Honor Society
1994 ASU Graduate Academic Scholarship
1994 ASU Graduate Tuition Scholarship
1990 GEM Ph.D. Fellowship
1987 Dean's Honors List

JUNIOR FACULTY MENTORING (staring date)

1) Surinder P. Singh, Associate Professor, Engineering Science & Materials Dept., UPRM, 2009
2) Mauricio Cabrera-Rios, Associate Professor, Industrial Engineering Dept., UPRM, 2009
3) Aidcer Vidot, Assistant Professor, Engineering Science & Materials Dept., UPRM, 2010
4) Luis Montejo, Assistant Professor, Engineering Science & Materials Dept., UPRM, 2010
5) Lourdes Medina, Assistant Professor, Industrial Engineering Department, UPRM, 2012
6) Magda Latorre-Esteves, Assistant Researcher, Chemical Engineering Dept., UPRM, 2012
7) Maribella Domenech, Assistant Professor, Chemical Engineering Department, UPRM, 2012
8) Alejandro Ortiz-Acevedo, Assistant Professor, Biology Department, UPRM, 2012
9) Pedro Resto, Assistant Professor, Mechanical Engineering Department, UPRM, 2013
10) Jorge Almodovar-Montañez, Assistant Professor, Chemical Engineering Dept., UPRM, 2013
11) Wandaliz Torres-Garcia, Assistant Professor, Industrial Engineering Dept., UPRM, 2014
12) Liliana Polo, Assistant Professor, Department of Agroindustrial Engineering, University of Sucre, 2015
13) Nasser Kashou, Assistant Professor, Department of Biomedical, Industrial and Human Factors Engineering, WSU, 2015
14) Mary Fendley, Assistant Professor, Department of Biomedical, Industrial and Human Factors Engineering, WSU 2015
15) Subhashini Ganapathy, Assistant Professor, Department of Biomedical, Industrial and Human Factors Engineering, WSU 2015
16) Ulas Sunar, Associate Professor, Department of Biomedical, Industrial and Human Factors Engineering, WSU 2016

STUDENT MENTORING

Postdoctoral Scholar

1) Liliana Polo, “Magneto-Responsive Scaffolds for Bone Regeneration,” (2015)
2) Puspendra Pal Singh, “Biophysical stimulation for the modulation of mesenchymal stem cell differentiation,” (2016-19)
3) Nasim Nosoudi, “Nanomedical high-density lipoprotein formulation for targeting cardiovascular calcification,” (2016-19)

Thesis Advisor

1) Elizabeth Cordoba, “Rule-Based Expert System to Infer Biological Pathways in *Rhodobacter sphaeroides*,” MS Computer Engineering (2005)
2) Claudia Acevedo, “In Silico Analysis of the Putative CcmE Protein from *Rhodobacter sphaeroides* 2.4.1,”MS Biology (2007)
3) Netzahualcóyotl Palomera, “Organic/Inorganic Films for Biosensor Application” MS Mechanical Engineering (2011)
4) Wilmer E. Garzón, “A multialgorithmic proposal for the analysis of biological sequences,” MS Computer Engineering (2012)
5) Delva Rivera, “Osteoblastic Differentiation of Mesenchymal Stem Cells on Metal Oxide Nanoscaffolds,” MS Physics, (2015)

6) Anson Jacob Oommen, “In vitro atherosclerosis model for drug delivery,” MS Biomedical Engineering (2017 Exp)
7) Fatema Tuj Zohora, “Dimensionality of in vitro growth environment and its effect of MSC differentiation,” MS Biomedical Engineering (2017 Exp)
8) Alyaa Isam Mohammed, “Magneto-thermoresponsive scaffolds for bone regeneration,” MS Biomedical Engineering (2017 Exp)
9) Kaivon Derek Assani, “Targeting inflammation to induce skin regeneration on chronic ulcers using a gene-activated MSC delivery patch,” MS Biomedical Engineering (2018 Exp)
10) Anamul Haque, “Nanomedical formulation targeting biofilms and inflammation in chronic wounds,” PhD Engineering - Medical and Biological Systems (2020 Exp)
11) Juan Maldonado, “Directing mesenchymal stem cell commitment using pulsed electromagnetic fields under microgravity,” MS Biomedical Engineering (2018 Exp)
12) Kaveh Stephan Sanaei, “Low-intensity pulsed ultrasound stimulation for bone regeneration” MS Biomedical Engineering (2018 Exp)
13) Neva Agarwala, “Polymer-lipid core-shell nanoparticles with RNAi for treating triple-negative breast cancer,” PhD Engineering – Medical & Biological Systems (2020 Exp)

Thesis Committee

1) Eliana Valenzuela, “A Framework for Ranking Data Sources and Query Processing Sites in Database Middleware Systems,” PhD Computer & Information Science & Engineering (2008)
2) Prashi Joshi, “Anti-Tumor Chloroquine-Gold Nanocomposites and their Binding Interaction with Bovine Serum Albumin: Biophysical and Biochemical Aspects of Protein Binding,” PhD Biophysics (2012)
3) Marie Lluberes, “Markov Model Checking of Probabilistic Boolean Networks Representations of Genes,” PhD CISE, (2015)
4) Wanda Perez, “Nanostructured electrochemical biosensors for transcription factor detection,” PhD Chemistry, (2015)
5) David Castilla, “GFOGER peptide concentration on Ti surfaces employing polysaccharide coatings,” MS Chemical Engineering (2016)
6) Heleine Rivera, “Bone regeneration using ultrathin coatings from chitosan and alginate as GFOGER peptide delivery vehicle,” MS Chemical Engineering (2016)
7) Syed Zaidi, “Optical Redox Imaging of Metabolic Activity,” MS Biomedical Engineering (2016)
8) Aaron Madaris, “Characterization of Peripheral Lung Lesions by Statistical Image Processing of Endobronchial Ultrasound Images,” MS Biomedical Engineering (2016)
9) Chien Poon, “Skin Disease Characterization using Optical and Ultrasound Imaging,” MS Biomedical Engineering (2016)
10) Zahra Meghjani, “Optical Oximeter for Monitoring of Brain Function in Pediatric Population,” MS Biomedical Engineering (2016)
11) Stephanie Suhr, “A Fractal-based Mathematical Model for Cancellous Bone Growth Considering the Hierarchical Nature of Bone,” MS Biomedical Engineering (2016)

Undergraduate Honors Projects

1) Doris M. Velasquez, “Toxicological Studies of PEG-Functionalized ZnO Nanoparticles on Breast Cancer Cells,” BS Biology (2011)

2) Diana A. Avila-Garcia, “Nanostructured Materials for Cancer Treatment,” BS Industrial Biotechnology (2011)
3) Melissa Alvarado, “Characterization of M-NP Uptake and Retention by Mesenchymal Stem Cells,” BS Industrial Biotechnology (2011)
4) Christian Muñoz, “Biodegradable Nanocarriers for Photodynamic Therapy,” BS Industrial Microbiology (2012)
5) Idaliz M Martínez-Traverso, “Differentiation of Mesenchymal Stem Cells under Microgravity,” BS Industrial Biotechnology (2012)
6) Ivan Otero, “Multifunctional Core/Shell Nanoparticles for Cancer Theranostics,” BS Industrial Biotechnology (2012)
7) Ricardo Jimenez-Ramos, “Effect of Adsorbed Protein Conformation on Osteoblast Cell Binding to Metal Oxide Substrates,” BS Chemical Engineering (2012)
8) Carla Rodriguez, “Toxicological Studies of PEG-Functionalized ZnO Nanoparticles on Breast Cancer Cells,” BS Chemical Engineering (2013)
9) Jose Ferriol, “Synthesis and characterization of water-soluble ZnO nanoparticles,” BS Mechanical Engineering (2013)
10) Abner Vazquez, “Differentiation of Human Mesenchymal Stem Cells using Metal Oxide Scaffolds,” BS Biology (2013)
11) Jessie Polanco, “Cartilage formation using mesenchymal stem cells in 3D cultures,” BS Industrial Biotechnology (2013)
12) Xavier Nieves, “ZnO Nanorod-Modified Indium Tin Oxide Electrochemical Biosensor for BP1 Breast Cancer Biomarker Detection,” BS Mechanical Engineering (2014)
13) Erika Ceinos, “Differentiation of Mesenchymal Stem Cells under Microgravity,” BS Biology (2016)
14) Hyeon Ju Song, “Colorectal cancer detection and treatment by nanomedical delivery of siRNAs and superparamagnetic nanoparticles,” BS Chemical Engineering (2016)
15) Nour Hanadeh, “Effect of dimensionality on *in vitro* chondrogenesis using mesenchymal stem cells” BS Biomedical Engineering (2017)
16) Sonia Himed, “Effect of dimensionality on *in vitro* osteogenesis using mesenchymal stem cells” BS Biomedical Engineering (2017)

<u>Practical Training (F-1 OPT Visa)</u>

1) Maria A Abreu-Sepulveda, “Probabilistic Boolean Networks as Models of Genetic Regulatory Networks,” MS Computer Engineering (2009)
2) Claudia Acevedo-Morantes, “Cytotoxicity and Reactive Oxygen Species Generated by Ferrocenium and Ferrocene on MCF7 and MCF10A Cell Lines” MS Biology (2010)
3) Aura Vazquez, “Mesenchymal Stem Cells as Drug-Loaded Nanoparticle Vehicles” MS Biology (2011)
4) Ana Vega-Davila, “Development of electrospun gelatin-chitosan composite scaffolds for osteoblastic tissue engineering applications,” MS Mechanical Engineering (2012)
5) Yareni P. Lara-Rodriguez, “Synthesis and characterization of water-soluble ZnO nanoparticles,” MS Mechanical Engineering (2013)
6) Juliana Bueno-Vera, “Electrochemical Characterization of MC3T3-E1 Cells Cultured on γTiAl and Ti6Al4V Alloys for Biological Implant Applications,” MS Mechanical Engineering (2014)

MAJOR CONTRACTS & GRANTS

Active Research Support:

09/15 – 09/18 "The University of Puerto Rico at Mayaguez Faculty Development Program: Structural Engineering for Nuclear Facilities – Experimental Research Initiative," NRC-HQ-84-15-G-0032 (**$ 359,707**) (PI)

04/15 – 03/18 "REU: Research Experiences for Undergraduates in Reconfigurable and Multifunctional Soft Materials at UPRM," NSF REU 1460704 (**$ 272,731**) (Co-PI).

08/14 – 07/17 "The University of Puerto Rico at Mayaguez Faculty Development Program in Structural Engineering for Nuclear Facilities," NRC-HQ-84-14-G-0057 (**$ 449,600**) (PI)

Completed Research Support:

11/14 – 10/16 "Acquisition of a J.A. Woollam Infrared Variable Angle Spectroscopic Ellipsometer," DoD HBCU/MI 66323-RT-REP (**$ 296,354**) (Co-PI)

07/14 – 06/16 "Confocal Raman-AFM-SNON Imaging Spectroscopic System," DoD DURIP 11234618 (**$ 467,233**) (Co-PI)
All the funds where for buying and installing the equipment.

12/13 – 11/15 "Acquisition of an Instron Electropuls E3000 Instrument for Mechanical Testing," DoD HBCU/MI 64688-RT-REP (**$ 250,700**) (Co-PI)
All the funds where for buying and installing the equipment.

02/10 – 01/14 "Combinatorial Metal Oxide Substrates to Enhance Osteogenic Stem Cell Functions," NIH SC2GM089642 (**$ 317,900**) (PI)

01/08 – 06/09 "Combinatorial Growth of Oxide Nanoscaffolds and its Influence in Osteoblast Cell Adhesion," UPRM – BioSEI (**$ 90,000**) (PI)

09/05 – 08/09 "Assisting Bioinformatics Efforts at Minority Schools," NIH – T36GM008789 (**$ 390,644**) (Co-I)

08/03 – 07/05 "Bioengineering Research & Education (BReEd) Experiences at UPRM," NSF 0343259 (**$ 99,653**) (Co-PI)

05/03 – 04/04 "IBM Shared University Research Proposal: CISE Terascale Facility for GRID Applications at UPRM," IBM – Shared University Research (**$ 100,000**) (Co-PI)

08/04 – 07/06 "Acquisition of a Multipurpose Microwave Plasma CVD Reactor for Nanostructure Fabrication," NSF 0420604 (**$ 317,900**) (PI),

01/03 – 12/03 "Self-Assembly of Oligonucleotides for Electronic Hybridization," Seed Funds University of Puerto Rico – Mayagüez (**$ 29,500**) (PI)

PUBLICATIONS

Textbook**:**

García, AA, MR Bonen, **J Ramírez-Vick**, M Sadaka, A Vuppu, "**Bioseparation Process Science**," Blackwell Science (1999).

Book Chapters**:**

N Nosoudi, SP Singh, **JE Ramirez-Vick**, "Molecular biosensor feedback control in cancer nanomedicine," In: Next generation point-of-care biomedical sensors technologies for cancer diagnosis. SP Singh, P Chandra, and Y Nee Eds. Springer-Nature Publishers, Invited, In Press (2017)

M Domenech, **JE Ramirez-Vick**, DO Freytes "Delivering Therapeutic Cells to the Heart," In: Biomaterials for Cell Delivery: Vehicles in Regenerative Medicine. NS Templeton and A Atala Eds. CRC Press, Boca Raton, FL. Invited, In Press (2016)

MT Acevedo–Morantes, **JE Ramirez-Vick**, "Supercritical Fluid Technology Applications in Pharmaceutical Drug Formulations," In: Handbook on Supercritical Fluids: Fundamentals, Properties and Applications. PF Arce and M Aznar Eds. Nova Science Publishers, Hauppauge, NY (2014).

Peer-Reviewed Journal Articles**:**

FT Zohora, SP Singh, **JE Ramirez-Vick**, "3D culture of mesenchymal stem cells for tissue regeneration," Regen Med Res, In Preparation (2017).

A Aldebs, SP Singh, **JE Ramirez-Vick**, "Magnetic scaffolds for bone regeneration," Int J Nanomedicine, In Preparation (2017).

L Polo-Corrales, M Domenech, R Bizios, **JE Ramirez-Vick**, "Biochemical and Biophysical Modulation of MSC Differentiation," Tissue Eng Part B, In Preparation (2017).

DM Rivera-Chacon, L Polo-Corrales, SP Singh, **JE Ramirez-Vick**, "Osteoblastic Differentiation of Mesenchymal Stem Cells on Metal Oxide Nanoscaffolds," J Biomed Mater Res Part A, Submitted (2017).

K Arora, **JE Ramirez-Vick**, SP Singh, “Cystein facilitated gold based immunoelectrode for Electrochemical Impedometric Detection of Oral Cancer,” J Biosensors Bioelectron, Submitted (2017).

M Choudhary, P Yadav, A Singh, S Kaur, **JE Ramirez-Vick**, P Chandra, K Arora, SP Singh, “CD 59 targeted ultrasensitive electrochemical immunosensor for fast and noninvasive diagnosis of oral cancer,” Electroanalysis, 28:1-11 (2016)

L Polo-Corrales, M Domenech, **JE Ramirez-Vick**, DO Freytes, "Tissue Engineering Strategies for Myocardial Regeneration," Tissue Eng Part B, 22(6):438-458 (2016).

WI Perez, Y Soto, **JE Ramirez-Vick**, E Melendez, “Nanostructured gold dsDNA sensor for early detection of breast cancer by beta protein 1 (BP_1),” J Electroanal Chem, 751:49-56 (2015).

X Narváez-Pita, C Ortega-Zuniga, CY Acevedo-Morantes, B Pastrana, J Olivero-Verbel, **JE Ramírez-Vick**, E Meléndez, "Water soluble molybdenocene complexes: Synthesis, cytotoxic activity and binding studies to ubiquitin by fluorescence spectroscopy, circular dichroism and molecular modeling "J Inorg Biochem, 132(3):77-91 (2014).

L Polo-Corrales, M Latorre-Esteves, **JE Ramirez-Vick**, “Scaffold design for bone regeneration,” J Nanosci Nanotech, 14(1):1-42 (2014).

JE Ramirez-Vick, “Biophysical Stimulation for Bone Regeneration,” JSM Biotech Biomed Eng, 1(2):1014-1016 (2013).

CY Acevedo-Morantes, MT Acevedo-Morantes, D Suleiman-Rosado, **JE Ramírez-Vick**, "Evaluation of the Cytotoxic Effect of Camptothecin Solid Lipid Nanoparticles on MCF7 cells," Drug Delivery, 20(8):338-48 (2013).

M Alvarado-Velez, DM Rivera-Chacon, CY Acevedo-Morantes, SP Singh, E Gultepe, D Nagesha, S Sridhar, **JE Ramirez-Vick**, “Effect of fibronectin and vitronectin on human fetal osteoblast cell attachment, and proliferation on nanostructured titanium surfaces,” J Biomed Nanotechnol, 9(6)1-6 (2013).

CY Acevedo-Morantes, E Meléndez, SP Singh, **JE Ramírez-Vick**, "Cytotoxic effect of Ferrocene and Ferrocenium Ions on MCF7 Breast Cancer Cells," J Cancer Sci Ther, 4(9):271-275 (2012).

SK Arya, S Saha, **JE Ramirez-Vick**, V Gupta, S Bhansalia, SP Singh, “Recent Advances in ZnO Nanostructures and Thin Films for Biosensor Applications,” Analytica Chimica Acta, 737:1-21 (2012).

P Joshi, S Chakraborti, P Chakrabarti, ZA Ansari, **JE Ramirez-Vick**, SP Singh, and V Shanker, “Anti-Tumor Chloroquine-Gold Nanocomposites and their Binding Interaction with Bovine Serum Albumin: Biophysical and Biochemical Aspects of Protein Binding,” Colloids and Surfaces B: Biointerfaces, 95:195-200 (2012).

JE Ramirez-Vick, “Nanostructured ZnO for Electrochemical Biosensors,” Biosens Bioelectron, 3(2):e109 (2012).

CY Acevedo-Morantes, PG Caceres-Valencia, RA Irizarry-Ortiz, SP Singh, **JE Ramirez-Vick**, "Combinatorial Metal Oxide Nanoscaffolds and its Influence in Osteoblast Cell Adhesion," J Applied Physics, 111(10):102810-102817 (2012).

N Palomera, JL. Vera, E Meléndez, **JE Ramirez-Vick**, M. Tomar, SK Arya, SP Singh, "Redox Active Poly(pyrrole-N-ferrocene-pyrrole) Copolymer-Based Mediator-Free Biosensors," Journal of Electroanalytical Chemistry, 658(1-2):33-37 (2011).

N Palomera, M Balaguera, SK Arya, S Hernandez, M. Tomar, **JE Ramirez-Vick**, SP Singh, " Zinc Oxide Nanorods Modified Indium Tin Oxide Surface Based Amperometric Urea Biosensor," Journal of Nanoscience and Nanotechnology, 11(8):6683- 6689 (2011).

Ramírez-Vick, JE, AA García, J Lee, "Immobilization of silver ions onto paramagnetic particles for binding and release of a biotin-labeled oligonucleotide," *Reactive and Functional Polymers*, **43**:53-62 (2000).

Ramírez-Vick, JE, AA García, JJ Lee, "Recovery of an oligonucleotide using silver ions immobilized onto paramagnetic particles," *Prep. Biochem. Biotechnol*. **28(3)**:243-60 (1998).

Ramírez-Vick, JE, AA García, "Recent developments in the use of group-specific ligands for affinity bioseparations," *Sep. Purif. Meth*., **25(2)**:85-129 (1997).

Ramírez-Vick, J., and F. F. Vargas. Albumin modulation of paracellular permeability of pig vena caval endothelium shows specificity for pig albumin. Am. J. Physiology (Heart Circ. Physiol.) 33: H1382-H1387 (1993).

Patents (17):

Ramírez-Vick, JE, "Hybridization of target DNA with immobilized nucleic acid analogs," Canadian Patent Number CA 2 414 329 (2010).

Ramirez-Vick, JE, “Inmovilización reversibles de ligandos sobre superficies metálicas, su preparación y empleo en aplicaciones bioquímicas,” Spanish Patent Number ES 2 269 147 (2007).

Ramírez-Vick, JE, "Hybridization of target DNA with immobilized nucleic acid analogs," United States Patent Number US 7,270,954 B1 (2007).

Ramírez-Vick, JE, "Reversible binding of molecules to metal substrates through affinity interactions," United States Patent Number US 7,108,971 B2 (2006).

Ramírez-Vick, JE, "Reversible immobilization of ligands onto metal surfaces, their preparation and use in biochemical applications," European Patent Number EP 1 214 594 B1 (2006).

Ramírez-Vick, JE, and S. Chin, "Magnetic field-enhanced hybridization of target molecules to immobilized probes," United States Patent Number US 6,852,493 B2 (2005).

Ramirez-Vick, JE, “Fremgangsmåde til forøgelse af hybridiseringshastigheden af nucleinsyre,” Danish Patent Number DK/EP 1206572 T3 (2003).

Ramirez-Vick, JE, “Verfahren für die erhöhung der hybridisierungsrate von nukleinsäuren,” German Patent Number DE 600 01 425 T2 (2003).

Ramirez-Vick, JE, “Método para aumentar la velocidad de hibridación de ácidos nucleicos,” Spanish Patent Number ES 2 269 147 (2003).

Ramírez-Vick, JE, "Method for increasing the hybridization rate of nucleic acids," European Patent Number EP 1 206 572 B1 (2003).

Ramírez-Vick, JE, "Method for increasing the hybridization rate of nucleic acids," Canadian Patent Number CA 2 409 523 (2002).

Ramírez-Vick, JE, "Reversible immobilization of ligands onto metal surfaces, their preparation and use in biochemical applications," Canadian Patent Number CA 2 409 442 (2002).

Ramírez-Vick, JE, "Hybridization of target DNA with immobilized nucleic acid analogs," European Patent Number EP 1 234 182 A2 (2002).

Ramírez-Vick, JE, "Hybridization of target DNA with immobilized nucleic acid analogs," World Intellectual Property Organization Patent Number WO 01/01144 A2 (2001).

Ramírez-Vick, JE, "Method for increasing the hybridization rate of nucleic acids," World Intellectual Property Organization Patent Number WO 00/73506 A1 (2000).

Ramírez-Vick, JE, "Reversible immobilization of ligands onto metal surfaces, their preparation and use in biochemical applications," Australian Patent Number AU 050172A5 (2000).

Ramírez-Vick, JE, "Reversible immobilization of ligands onto metal surfaces, their preparation and use in biochemical applications," World Intellectual Property Organization Patent Number WO 00/70345 A1 (2000).

Peer-Reviewed Conference Proceedings:

CY Acevedo-Morantes, MT Acevedo-Morantes, D Suleiman-Rosado, **JE Ramírez-Vick**, "Evaluation of the Cytotoxic Effect of Liposome-Encapsulated Camptothecin on MCF7 Breast Cancer Cells," American Association of Pharmaceutical Scientists Proceedings, November 10-14, 2013.

M Lluberes, J Seguel, **JE Ramírez-Vick**, “Markov Model Checking of Probabilistic Boolean Networks Representations of Genes,” International Conference on Bioinformatics & Computational Biology, BioComp 2011 Proceedings, July 18-21, 2011.

C Rodriguez-Martinez, P Joshi, JL Vera, **JE Ramirez-Vick**, O Perales, SP Singh, “Cytotoxic studies of PEG functionalized ZnO Nanoparticles on MCF-7 cancer cells,” NSTI-Nanotech 2011 3:420-423, 2011.

N Palomera, M Balaguera, MS Tomar, **JE Ramírez-Vick**, S. Arya, SP Singh, “Zinc Oxide Nanorod Films for Electrochemical Urea Biosensor,” MRS Spring 2011 Proceedings, April 25-29, 2011.

M Alvarado-Velez, DM Rivera-Chacon, CY Acevedo-Morantes, SP Singh, E Gultepe, D Nagesha, S Sridhar, **JE Ramirez-Vick**, “Effects of fibronectin and vitronectin on human fetal osteoblast cell attachment and proliferation on nanostructured titania surfaces,” Meeting Abstract: 414-BIOT, 241st National Meeting and Exposition of the American-Chemical-Society (ACS) Anaheim, CA March 27-31, 2011.

P Joshi, S Chakraborti, **JE Ramirez-Vick**, ZA Ansaria, V Shanker, P Chakrabarti, SP Singh, Anti-Tumor Chloroquine-Gold Nanocomposites and their Binding Interaction with Bovine Serum Albumin: Biophysical and Biochemical Aspects of Protein Binding,” Materials Research Society Symposium Proceedings 1316:92-97, 2011.

N Palomera, M Balaguera, SK Arya, S Hernandez, MS Tomar, **JE Ramírez-Vick**, SP Singh. Zinc oxide nanorod films for electrochemical urea biosensor. Materials Research Society Symposium Proceedings 1355:54-59, 2011.

CY Acevedo-Morantes, PG Caceres-Valencia, RA Irizarry-Ortiz, SP Singh, E Acuña-Fernández, **JE Ramirez-Vick** "Osteoblast Cell Adhesion on Combinatorial Metal Oxide Nanoscaffolds," International Symposium on Integrated Functionalities, ISIF 2010, June 13-16, 2010.

J Seguel, M Cabrera, **JE Ramirez-Vick**, "A Minor in Bioinformatics within Engineering Curricula" To appear in Proceedings of Frontiers of Education, WORLDCOMP 2009, July 2009.

PG Caceres, **J Ramirez-Vick**, and JD Carmona, "A Combinatorial Approach to the Synthesis of Carbon Nanotubes," 4th International Workshop on Combinatorial Materials Science and Technology Proceedings, San Juan, PR, December 2-5, 2006.

L Castillo, M Arocha, A Esteves, **J Ramirez-Vick**, G Lee-Glauser, M Glauser, T Apple, Z Warhaft, R Vasquez, and D Freund. New Trends in Engineering Education: The AGEP: ME CNY-PR. IEEE Proceedings ITHET, July 7-9, 2005.

E Cordova-Bermeo and **JE Ramírez-Vick**. Expert System for Biochemical Pathway Inference. CRC Proceedings 2004, April 2, 2004.

M Rodriguez-Martinez, W Rivera, J Seguel, B Velez-Rivera, D Rodriguez, PI Rivera-Vega, and **JE Ramírez-Vick**. CISE Terascale Facility for GRID Applications at UPRM. 5th Annual Austin CAS Conference, February 19-20, 2004

TEACHING

<u>Courses Developed</u>:

Wright State:

BME 6421 Biotransport
BME 7521 Advanced Biotransport and Artificial Internal Organs
BME 7530 Nanomedicine Fundamentals
BME 7980 Tissue Engineering and Regenerative Medicine

UPR:

BIOL 6994 Protein and DNA Sequence Analysis
BIOL 6997 Protein and DNA Sequence Analysis Laboratory
ESM 5036 Bioinformatics
ESM 5995 Introduction to Micro and Nanobiotechnology: BioMEMS

ESM 5997 Interdisciplinary Approaches to Project Management
ME 6008 Biomaterials
ME 6135 Tissue Engineering
CHE 8025 Molecular and Cellular Bioengineering
CHE 8104 Introduction to Nanomedicine Science and Technology
CISE 8998 Structural Bioinformatics

Courses Taught:

Wright State:
BME 6410 Biothermodynamics
EGR 7910 MEIE Project I
EGR 7920 MEIE Project II

UPR:
ESM 3016 Algorithms and Computer Programming
ESM 4001 Engineering Materials
ESM 4010 Fluid Mechanics for ME
ESM 4015 Fluid Mechanics for CE
ChE 4008 Mathematical Analysis of Chemical Engineering Problems
ChE 4010 Momentum Transfer Operations
ChE 4017 Chemical Engineering Kinetics and Catalysis
ChE 4027 Chemical Engineering Seminar
ChE 4034 Chemical Engineering Laboratory I
ChE 5025 Analysis and Control of Processes
ChE 5030 Chemical Engineering Laboratory II
ChE 8027 Engineering Principles Applied to Drug Therapy
ChE 8035 Bioseparation Engineering
ChE 8103 Nanoparticle Science and Technology
BIOL 6990 Research
BIOL 6991 Bioinformatics for Biologists
CompE 6995 Microarray Data Analysis

PROFESSIONAL ACTIVITIES

Editorial Board

Advanced Science Engineering and Medicine,

Advances in Biosensors and Bioelectronics,

Austin Journal of Biomedical Engineering,

Frontiers in Sensors,

Journal of Biosensors & Bioelectronics,

JSM Biotechnology & Biomedical Engineering.

Editor

ACS Applied Materials & Interfaces,

Applied Surface Science,

BioMedical Engineering OnLine,

Bio-Medical Materials and Engineering,

BioNanoScience Journal,

Bioorganic & Medicinal Chemistry Letters,

Biotechnology Progress,

Bone,

Chemistry Central Journal,

Colloids and Surfaces B: Biointerfaces,

Drug Delivery,

European Journal of Medicinal Chemistry,

European Journal of Nanomedicine,

International Journal of Nanotechnology,

Macromolecular Bioscience,

Nanomedicine,

Nature Cell Death & Disease,

Stem Cells International.

NIH Peer Review Panel

Ad Hoc Member of the Biomaterials and Biointerfaces Study Section

Grant Reviewer

Qatar National Research Fund

NIH Integrated Review Groups

Ad Hoc Member of the Biological Chemistry and Macromolecular Biophysics,
Ad Hoc Member of the Interdisciplinary Molecular Sciences and Training

SCIENTIFIC SOCIETIES

- Biomedical Engineering Society
- Tissue Engineering & Regenerative Medicine International Society
- American Institute for Medical and Biological Engineering
- Society of Biomaterials
- American Society of Engineering Education
- Institute of Industrial and Systems Engineers
- IEEE Engineering in Medicine and Biology Society

ACADEMIC PROGRAMS

1. Council of Chairs in Bioengineering and Biomedical Engineering, Member 2015-Present
2. Academic Council, American Institute for Medical and Biological Engineering, Member 2015-Present
3. Council of Industrial Engineering Academic Department Heads, Institute of Industrial & Systems Engineers, Member 2015-Present
4. Ph.D. Program in Biotechnology, University of Puerto Rico – Mayagüez, Steering Committee Member, 2002-2007.
5. Industrial Biotechnology Program, University of Puerto Rico – Mayagüez, Steering Committee Member, 2002-2015.
6. Ph.D. Program in Bioengineering, University of Puerto Rico – Mayagüez –Steering Committee Director, 2003-2015.
7. Institute for Medical Device Technologies based on an Innovation Studio Concept, Multidisciplinary and Multicampus Research Institute, University of Puerto Rico – Mayagüez, Steering Committee Director, 2005-2007.

ACADEMIC SERVICE

1. International Recruitment and Outreach Committee, Wright State University, 2016-Present.
2. Institutional Biosafety Committee, University of Puerto Rico – Mayagüez, Founding Chairman, 2003-2015.
3. Academic Affairs Committee, School of Engineering, University of Puerto Rico – Mayagüez, Chairman, 2003-2005.
4. Computing Committee, Engineering Sciences and Materials Department, University of Puerto Rico at Mayagüez, Chairman, 2004-2013.
5. ABET Accreditation Committee, School of Engineering, University of Puerto Rico – Mayagüez, Member, 2005-2009.
6. Institutional Review Board, University of Puerto Rico – Mayagüez, Member, 2008-2010.
7. Engineering Science & Materials Department, University of Puerto Rico, Mayagüez, Associate Chair, 2009-2011.
8. Engineering Science & Materials Department, University of Puerto Rico – Mayagüez, Chair, 2012-2015.
9. Governing Board of the UPR Resource Center for Science and Engineering, University of Puerto Rico, Founding Member, 2014-2015.
10. Graduate & Research Committee, School of Engineering, University of Puerto Rico – Mayagüez, Member, 2015.

CONSULTING

05/03 – 05/04 Hewlett-Packard, Puerto Rico, “Development of a high-throughput DNA microarray printing platform.”

08/03 – 06/05	Eli Lilly and Company, Puerto Rico, Process Personnel Training
01/03 – 06/04	Amgen, Puerto Rico, Process Personnel Training
01/03 – Present	Industrial Biotechnology Learning Center, Process Personnel Training
04/05 – 06/06	Foam Application Technologies, Inc., “Novel applications for carbon foam.”
07/06 – 10/07	ThermalCentric International Corporation, “Development of a carbon foam catheter.”
11/06 – 05/07	Cordis Corporation, Johnson & Johnson, “Development of an online near IR QA system for Coronary Stent manufacturing.”