Nicole Diana Raptis
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Data scientist with a unique combination of biomedical engineering expertise. 13 years of in-depth and hands-on experience in big data analytics and mathematical modeling of biomedical research data. Excellent leadership, presentation, and client expectation management skills with international exposure in the U.S. and Europe.

Specialties

- Extensive, interdisciplinary biomedical and clinical laboratory research experience with sophisticated instrumentation for study of biological systems
- Expertise in aseptic cell culture, *in vitro* molecular assays, including immunohistochemistry, quantum dot nanotechnology, fluorescence microscopy, flow cytometry, fluorescence-activated cell sorting
- Acquired extensive data sets; statistically evaluated and presented results clearly and accurately
- Highly detail-oriented with advanced knowledge of mathematical and statistical modeling, including regression, clustering, classification, and Monte Carlo simulations
- Superior quantitative, analytical, and complex problem-solving skills
- Solid project management, leadership, and bilingual public speaking qualities

Technologies

- R, SPSS, SAS, SigmaPlot (Systat), MS Excel, WinDaq, LabView, C, HTML, Java, MATLAB

October 2011 to Present
Independent Contractor, LeFrak Organization, Jersey City, NJ

- Analyzing market and financial data to meet client expectations; managing successful investor relationships
- Training and guiding junior team members from initial idea projections through successful delivery of product

January 2003 to Present
Project & Property Manager

- Promoting commercial and residential property sales throughout Worcester County area
- Cultivating real estate investor business and directing property maintenance personnel

September 2011 to December 2013
STEM Education Specialist, Harvard Square Tutors, New York, NY

- Provided private group and individualized tutoring and academic support services for students Grades 7-12 in Science, Technology, Engineering, and Math subjects to enhance student performance

October 2010 to May 2011
Data Analyst, Independent Consultant, New York, NY

- Conducted data analysis and research for London-based company utilizing EU-based distribution models for alternative investments

June 2007 to September 2010
Lead Science Teacher, Renaissance High School for Musical Theater and Technology, Bronx, NY

- Led science department in concert with special education team in high-need school district
- Mastered classroom management and instructional delivery of state-mandated core curricula for science
- Directed school talent show production, science enrichment team, and dance club
- Collaborated with Lincoln Center Institute for the Arts in Education

September 2006 to June 2007
Ph.D. Candidate/Graduate Teaching Assistant, Drexel University, Philadelphia, PA

- Received unique opportunity to serve as senior instructor for undergraduate premedical laboratory course entitled "Techniques in Cell Biology"
- Completed Advanced Engineering Mathematics I & II coursework for Ph.D. program transfer

February 2005 to August 2006
Ph.D. Candidate/Graduate Research Assistant, UMASS Medical School, Worcester, MA

- Investigated inductive capacity of human mesenchymal stem cells (hMSCs) to differentiate into proliferative cardiac-specific cell fates in vitro
- Identified fluorescent markers and optimized immunohistochemistry parameters; managed staining process to maximize image processing accuracy using fluorescence microscopy interface
- Developed cell-based therapeutic methods to advance creation of bioengineered 3-D scaffold to serve as regenerative microenvironment sustaining native tissue architecture, strength and function as required for treatment of myocardial infarction in vivo
- Demonstrated effective delivery methods for implanting hMSCs loaded with quantum dot nanoparticles for cell tracking within the myocardium (canine model)
- Participated in animal cardiothoracic surgeries
- Mentored undergraduate research interns

July 2003 to January 2005
Research Engineer II, UMASS Medical School, Worcester, MA

- Devoted to clinical study of apnea and neural control of respiration in premature infants in NICU
- Collaborated with co-investigators of medical team on protocol design and validation
- Set up sophisticated cardio-respiratory equipment and computerized system of stimulus delivery using WinDaq and LabView for signal processing (EEG, EMG, EOG, Respitrace)
- Monitored patients directly using advanced ectrophysiological and polysomnographical methods
- Conducted in-depth quantitative analyses of comprehensive big data sets involving multiple subjects using SPSS, SAS, SigmaPlot (Systat), and MS Excel
- Published big data analytics results and presented findings to the neonatal medical community

August to 2002 to December 2002
M.S. Candidate/Graduate Research Assistant, University of Miami, Coral Gables, FL

- Investigated promotional effects of mechanical loading and influences of biomechanical stimuli on short- and long-term chondrogenesis of rabbit mesenchymal stem cells in 3-D agarose constructs using novel bioreactor system

June 2001 to April 2002
Jr. Research Engineer, Ortec International, Inc. New York, NY

- Played key role in development of new research activities for improvement of company product, OrCel® (Bilayered Cellular Matrix) and its applications

June 2000 to December 2000
Research Assistant, Columbia University, New York, NY

- Assisted in design of in vitro model systems for effective engineering of cardiac tissue via maintenance and cultivation of fibroblasts in 3-D collagen matrix; investigated morphological aspects of cell behavior

September 1996 to May 1998
Research Intern, UMASS Medical School, Worcester, MA

- Tested novel computer-based, continuous noninvasive blood pressure determination method developed by DxTek, Inc. through bedside monitoring experiments using cuff less apparatus on SICU patients

Education

PhD Candidate, Biomedical Sciences, From 2004
University of Massachusetts Medical School, Worcester, MA

MA, Science Education, 2009
The City University of New York- City College, New York, NY
School of Education/ New York City Teaching Fellows

BS, Biomedical Engineering, 2001
Columbia University, New York, NY
Fu Foundation School of Engineering & Applied Science

BA, Biology with Minor in Spanish & Concentration in International Studies, 2000
Clark University, Worcester, MA
Departments of Art, History, and Literature, **Universidad de Sevilla**, Seville, Spain, 1999
Intensive Language Program, **Escuela Internacional Tandem**, Madrid, Spain, 1998

Awards & Honors
Stein Institute of Gerontology Fellowship, University of Miami, M.S. Program, 2002
Academic Dean's List, Columbia University, 2001
Frank H. Lee Memorial Scholarship, Columbia University**,** 3/2 B.A./B.S. Combined Program**,** 1999-2001
Worcester County Alumni/Robert H. Wetzel Scholarship, Clark University, 1996-1999
American Hellenic Educational Progressive Association (AHEPA) Scholarship, 1998

Research Abstracts & Presentations

- Potapova IA, Doronin S, Kelly DJ, Rosen AB, Schuldt AJ, Lu Z, Guo Y, **Raptis ND**, Towner A, Robinson RB, Rosen MR, Brink PR, Gaudette GR, Cohen IS, Functional Regeneration Of The Canine Ventricle Using Adult Human Mesenchymal Stem Cells Committed In Vitro To A Cardiac Lineage, 3rd Annual Symposium of the American Heart Association Council on Basic Cardiovascular Sciences, Keystone, CO, July 2006
- **Raptis ND**, Leslie NA, Tselentakis EV, Saltman AE, Gaudette GR, Veritas® Patch As Scaffold For Myocardial Regeneration, 10th Annual University of Massachusetts Medical School Research Retreat at the Marine Biological Laboratory, Woods Hole, MA, Oct 2005
- Bloch-Salisbury E, **Raptis N**, Byrne R, Picarillo A, Naples M, Bednarek F, and Paydarfar D, The Effects of Vibro-tactile Stimulation On Apnea And Sleep States In Premature Infants, 23rd Annual Conference for Sleep Disorders in Infancy & Childhood at the Annenberg Center for Health Sciences, Rancho Mirage, CA, Jan 2005
- Bloch-Salisbury E, **Raptis N**, Byrne R, Bednarek F, and Paydarfar D, Low Frequency Vibro-tactile Stimulation Of The Crib Mattress Reduces Apnea In Premature Infants, Mead Johnson Nutritional Division Regional Perinatal Conference, Chatham, MA, Oct 2004
- Bloch-Salisbury E, **Raptis N**, Byrne R, Picarillo A, Naples M, Bednarek F, and Paydarfar D, Vibro-tactile Stimulation Reduces Apnea In Premature Infants, 22nd Annual Conference for Sleep Disorders in Infancy & Childhood at the Annenberg Center for Health Sciences, Rancho Mirage, CA, Jan 2004

Languages
Spanish fluency; Greek proficiency; working knowledge of German, French, & Italian