



Exponent®

Engineering & Scientific Consulting

Cristina Rodriguez Quijada, Ph.D.

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Professional Profile

Dr. Rodriguez-Quijada's expertise centers on the interface between biology and materials, with an emphasis on the evaluation of medical devices. In particular, she is experienced in product conceptualization, evaluation of product performance, investigation of microbial contamination, and customization of testing methodologies for clinical in vitro diagnostics (IVD), biosensors, and drug delivery systems.

Dr. Rodriguez-Quijada assists clients in the identification and characterization of proteins (immunoassays, proteomics, and enzymatic assays), nucleic acids (DNA and RNA), and microorganisms (viruses, bacteria, and fungi). She has utilized her experience in the product evaluation of IVDs and biosensors, failure and root cause analysis evaluations related to medical devices, and in the investigation of microbial contaminations from consumer products, medical devices, and food products. Additionally, she has experience conducting technical due diligence by assessing the technology performance, product development strategy, and evaluating quality management systems.

Dr. Rodriguez-Quijada is also skilled in vitro and in vivo testing of materials, and utilizes imaging techniques such as SEM, TEM, fluorescence microscopy and confocal imaging to assess the performance of materials used for biomedical applications. She also has practical knowledge in nanoparticle characterization techniques such as dynamic light scattering and zeta potential.

Prior to joining Exponent, she completed her Ph.D. work in Biomedical Engineering and Biotechnology at the University of Massachusetts Boston. Her dissertation focused on the study of the interactions between inorganic materials and biomolecules to enhance the performance and capabilities of biomaterials used as diagnostic or therapeutic tools. Dr. Rodriguez-Quijada has published a number of papers in the fields of diagnostics and biomaterials, and has shared her research interests at several international and domestic conferences.

Academic Credentials & Professional Honors

Ph.D., Biomedical Engineering & Biotechnology, University of Massachusetts, Boston, 2020

M.S., Bioengineering, Universitat Ramon Llull, 2016

B.S., Chemical Engineering, Universitat Ramon Llull, 2014

Fellowships:

College of Science and Mathematics Dean's Doctoral Research Fellowship 2019, 2020

Rafael del Pino Fellowship 2017 – 2019

BLOKIT fellowship 2014

Fellowship from Fundacion de Empresas IQS 2010

Awards:

Bollinger Grant from UMass Boston 2019

Beacon Student Success Fellowship from UMass Boston 2018

Herbert Lipke Memorial Endowment Travel Fund from UMass Boston 2018

Goranson Award from UMass Boston 2016, 2018

Internship Grant CRUE CEPYME award from Banco Santander 2013

Licenses and Certifications

Certified ISO 13485 Medical Device Management Systems Lead Auditor

Prior Experience

Visiting Student, Fraunhofer Center for Manufacturing Innovation, July 2015-June 2016

Undergraduate Research Assistant, Sagetis Biotech, May 2014-October 2014

Process and Project Engineer Assistant, CPQ Ingenieros, March 2014-July 2014

Undergraduate Research Assistant, Universitat Ramon Llull (IQS School of Engineering), June 2013-September 2013

Publications

Rodriguez-Quijada C, Lyons C, Sanchez-Purra M, Santamaria C, Leonardo BM, Quinn S, Tlusty MF, Shiaris M, Hamad-Schifferli K. Gold Nanoparticle Paper Immunoassays for Sensing the Presence of *Vibrio parahaemolyticus* in Oyster Hemolymph. ACS Omega 2023.

Rodriguez-Quijada C, and J. B. Dahl. Non-contact microfluidic mechanical property measurements of single apoptotic bodies. Biochimica et Biophysica Acta (BBA) - General Subjects 2020; 1865, 4, 129657.

Rodriguez-Quijada C, Gomez-Marquez J, Hamad-Schifferli K. Repurposing Old Antibodies for New Diseases by Exploiting Cross-Reactivity and Multicolored Nanoparticles. ACS Nano 2020; 14, 6, 6626-6635.

Rodriguez-Quijada C, Lyons C, Santamaria C, Quinn S, Tlusty M, Shiaris M, Hamad-Schifferli K. Optimization of paper-based nanoparticle immunoassays for direct detection of the bacterial pathogen *V. parahaemolyticus* in oyster hemolymph. Analytical Methods 2020; 12, 23, 3056-3063.

Rodriguez-Quijada C, de Puig H, Sánchez-Purrà M, Yelleswarapu C, Evans J, Celli J, Hamad-Schifferli K. Protease Degradation of Protein Coronas and its Impact on Cancer Cells and Drug Payload Release. ACS Applied Materials and Interfaces 2019; 11, 16, 14588-14596.

Russo L, Sánchez-Purrà M, Rodriguez-Quijada C, Leonardo B, Puentes V, Hamad-Schifferli K. Detection

of Resistance Protein A (MxA) in Paper-based Immunoassays with Surface Enhanced Raman Spectroscopy with AuAg Nanoshells. *Nanoscale* 2019; 11, 10819-10827.

Hristov D, Rodriguez-Quijada C, Gomez-Marquez J, Hamad-Schifferli K. Designing Paper-based Assays for Biomedical Applications. *Sensors* 2019; 19, E554.

Sánchez-Purrà M, Roig-Solvas B, Rodriguez-Quijada C, Leonardo B, Hamad-Schifferli K. Reporter Selection for Nanotags in Multiplexed Surface Enhanced Raman Spectroscopy Assays. *ACS omega* 2018; 3, 9, 10733-10742.

Rodriguez-Quijada C,† Sánchez-Purrà M,† de Puig H, Hamad-Schifferli K. Physical Properties of Biomolecules at the Nanomaterial Interface. *Journal of Physical Chemistry* 2018; 122, 11, 2827-2840.

Rodriguez-Quijada C, Hamad-Schifferli K. Applications of Plasmonic Nanomaterials for Phototriggered Theranostics. *Handbook of Nanomaterials for Cancer Theranostics* 2018; Chapter 5, 125-142.

Sánchez-Purrà M, Roig-Solvas B, Versiani A, Rodriguez-Quijada C, de Puig H, Bosch I, Gehrke L, Hamad-Schifferli K. Design of SERS Nanotags for Multiplexed Lateral Flow Immunoassays. *Molecular Systems Design & Engineering* 2017; 2, 401-409.

Presentations

Rodriguez-Quijada C, Coombs K, Robertson B, Loree H. Evaluation of Flush Effectiveness with Needleless Access Connectors. ASAIO, Chicago, IL, 2022. *ASAIO Journal* 68(Supplement 2):p 102, June 2022.

Invited Lecture. Drexel University, Department of Biomedical Engineering, Bergerson C, Rodriguez-Quijada C. In Vitro Diagnostics, POC and COVID-19, 2021.

Rodriguez-Quijada C, Hamad-Schifferli K. Using Gold Nanoparticles for Diagnostics and Sensing in Low Cost Devices. Oral Communication. American Chemical Society National Meeting (ACS), San Diego, CA, 2019.

Rodriguez-Quijada C, Hamad-Schifferli K. Rapid Paper Tests for Detection of Pathogenic Vibrios in Aquaculture. Oral Communication. American Chemical Society National Meeting (ACS), San Diego, CA, 2019.

Rodriguez-Quijada C, Shiaris M, Tlusty M, Hamad-Schifferli K. *Vibrio parahaemolyticus* (Vp) Detection with Rapid Test Immunoassays. Poster presentation. Annual Environmental Research Colloquium, Boston, MA, 2019.

Rodriguez-Quijada C, de Puig H, Sánchez-Purrà M, Yelleswarapu C, Celli J, Hamad-Schifferli K. Exposure to Proteolytic Environment from Pancreatic Tumor Cells Leads to Protein Corona Degradation. Oral Communication. International Conference on Nanomedicine and Nanobiotechnology, Rome, Italy, 2018.

Rodriguez-Quijada C, de Puig H, Sanchez-Purra M, Yelleswarapu C, Celli J, Hamad-Schifferli K. Protein Corona Degrades when Exposed to the Proteolytic Environment of Pancreatic Ductal Adenocarcinoma. Oral Communication. American Chemical Society National Meeting (ACS), Boston, MA, 2018.

Rodriguez-Quijada C, de Puig H, Sánchez-Purrà M, Yelleswarapu C, Celli J, Hamad-Schifferli K. Protein Corona Degradation in Tumor Microenvironment Leads the Fate and Theranostic Efficacy of Gold Nanoparticles. Poster presentation. The Networking Exchange at the Broad Institute, Boston, MA, 2018.

Rodriguez-Quijada C, Cramer G, Petrovic L, Celli J, Hamad-Schifferli K. Protein Corona Evolution in

Tumor Microenvironment Defines the Fate and Theranostic Efficacy of Nanocarriers. Oral Communication. Material Research Society (MRS) Fall, Boston, MA, 2017.

Peer Reviews

Plos One