BIOGRAPHICAL SKETCH

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NAME: Marquez, Cesar A.
eRA COMMONS USER NAME (credential, e.g., agency login): CMARQUEZ-1
POSITION TITLE: Professional Assistant Professor of Chemistry

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Alcala University, Madrid, Spain	B.S.	09/1999	Chemistry
Jacobs University Bremen, Bremen, Germany	Ph.D.	06/2004	Supramolecular Chemistry
York University, Ontario, Canada	Postdoctoral	01/2005	Supramolecular Chemistry
Carl von Ossieztky University, Oldenburg, Germany	Postdoctoral	02/2007	Supramolecular Chemistry

A. Personal Statement

I have gained extensive research and managerial experience at different biotechnology companies. After the completion of two Postdoctoral appointments in 2007, I accepted the position of Scientific Director at Metabolic Renal Diseases, a start-up biotech specialized in the field of Metabolomics. Its activities center in the development of analytical tools oriented toward the biotechnology and pharmaceutical industries. My responsibilities included managing budgets, preparing proposals and winning external financial support for research, as well as directing research projects. As a result of my team's efforts, we produced intellectual property currently materializing in two patents. My responsibilities were extended in 2011, when I accepted a position as R&D Director at OWL Metabolomics, a biotech centered in pioneering analytical and biostatistical applications for the early diagnosis of liver disease, among other projects, in Life Sciences. At OWL I was in charge of designing and directing their research projects, winning external financial support, budgeting, technology transfer from lab bench to production, and finally, representing the company in technical meetings with clients. My most recent position in the Life Sciences industry has been as R&D Manager at PRACS Institute, a CRO specialized in early phase clinical pharmacology, bioanalytical, and scientific affairs services. PRACS' clinical research expertise consisted of traditional early-stage, healthy-volunteer clinical pharmacology and bioavailability studies, as well as specialty Phase $I_{a/b}$ trials in patients. PRACS' bioanalytical services supported clinical and preclinical drug and biomarker analysis for small and large molecules. My main responsibilities included the direction of all method development and validation activities at PRACS bioanalytical research teams in Fargo and Toronto. I was also responsible for the daily management of personnel and departmental activities, while providing scientific and technical guidance to internal teams and clients.

During my stay at TAMU-CC, I have applied this experience toward enhancing the learning process of my students, with the intention of preparing them for their futures as science professionals. During the last three years I have created and lead a non-sponsored Undergraduate Research Experience (named DCS) as High Impact Educational Practice intended to provide our students with a professional research environment where they can discover their scientific interests, develop self-designed interdisciplinary research initiatives and produce relevant results, all under the umbrella of our department and the mentoring of dedicated faculty. The enrollment data for the DCS' three years reflects a dominance of White students during the 2016-9. A total of 48 students from this ethnicity have participated, meanwhile there have been 32 Hispanic, 2 African American, 3 Asian students and 10 international students. A total of 52 male students and only 43 female students during the 2016-18 period

B. Positions and Honors

Positions and Employment

2004-2005 Post Doctoral Fellow, Centre for Research in Mass Spectrometry, York University, Canada
2005-2007 Post Doctoral Fellow, Carl von Ossieztky University of Oldenburg, Germany
2008-2012 Scientific Director, MD Renal, Spain
2011-2012. R&D Director, OWL Metabolomics, Spain 1999-2007
2013 R&D Manager, PRACS Institute, Canada
2013–2018 Adjunct Professor, Texas A&M University – Corpus Christi, Corpus Christi, Texas
2019– Professional Assistant Professor, Texas A&M University – Corpus Christi, Corpus Christi, Texas

Awards

2001 "Influence of the Binding of Metals on an Exceptionally Fluorescent Host/Guest Compound", Swiss Society for Photochemistry and Photophysics Fellowship, SGPP Conference, Russia,
2001 "Polarizabilities Inside Molecular Containers", Cover Illustration for Angew. Chem. Int. Ed.
2003 "Host-Guest Systems", Presentation Award at the "Meeting of the NPR 47. Supramolecular Functional Materials", Switzerland
2006 "ESI-MS Study on the Aldol Reaction Catalyzed by Proline", Presentation Award at the "Berichtskolloquium zum DFG Schwerpunktprogramm Organokatalyse", Max Planck Institut für Kohlenforschung, Germany
2011 "Transition-Metal-Promoted Chemoselective Photoreactions at the Cucurbituril Rim", Inside Cover Illustration for Angew. Chem. Int. Ed.
2018 "Cesar A. Marquez and the Dead Chemists' Society", Cover Illustration for Island Waves, TAMU-CC

Other Experience and Professional Memberships

2014-19 Organic Chemistry Laboratories Coordinator at PENS
2015-17 Member of the Center for Faculty Excellence (CFE) Committee at TAMU–CC
2017-18 Science Evaluator for The Hambidge Center for the Creative Arts & Sciences
2018-19 Member of the University Curriculum Committee at TAMU–CC
2018-19 Member of the College Grade Appeal Committee at TAMU–CC
2018-19 Evaluator for the Open Educational Resources Grant Program
2018-20 Member of the Undergraduate Council at TAMU–CC

C. Contribution to Science

1) My early publications were generated when I was attending Alcala de Henares University as research assistant, and they centered in the development of new photochemical synthetic routes for pyridines derivatives, and their application in material sciences. I participated in three papers:
   a) Fuentes, L.; Marquez, C. A.; Contreras, M.; Lorenzo, M. *Synthesis and Structure of New Substituted 2-Dicyanomethylene-1,2-dihydropyridines. J. Heterocyclic Chem.*, 1995, 32, 29
   b) Fuentes, L.; Lorenzo, M.; Marquez, C. A.; Galakhov, M. *Amalgam (Na•Hg) Reduction of some 4-Substituted-2-amino-3,5-dicyano-6-methoxypyridines. New Evidence Regarding the Oxidation Step in their Synthesis. J. Heterocyclic Chem.*, 1999, 36, 481
   c) Fuentes, L.; Lorenzo, M.; Galakhov, M.; Martin, A.; Marquez, C. A. *Synthesis, X-ray Structure and NMR Data of 12-Amino-15-phenyl-2,5,8-trioxa-13-azabicyclo[9.2.2] pentadeca-1(14),12-diene-11,14-dicarbonitrile. Chem. Comm.*, 2000, 18, 1775
2) During my Ph.D. at Basel University, Switzerland and Jacobs University Bremen, Germany, I got involved in Supramolecular Chemistry. In particular, I studied host/guest systems, the mechanism of complexation of small guest moieties, the effects of their inclusion on their photophysical properties, and potential applications. These are the publications produced at that time:
   a) Marquez, C. A.; Nau, W. M. *Polarizabilities Inside Molecular Containers. Angew. Chem., Int. Ed.*, 2001, 40, 4387
   b) Marquez, C. A.; Nau, W. M. *Polarisierbarkeiten im Inneren von molekularen Containern. Angew. Chem.*, 2001, 113, 451
   c) Marquez, C. A.; Nau, W. M. *Two Mechanism of Slow Host-Guest Complexation between Cucurbit[6]uril and Cyclohexyl methylamine: pH-Responsive Supramolecular Kinetics. Angew. Chem., Int. Ed.*, 2001, 40, 3155
   d) Marquez, C. A.; Nau, W. M. *Zwei Mechanismen für die langsame Wirt-Gast-Komplexierung zwischen Cucurbit[6]uril und Cyclohexylmethylamin: pH-abhängige supramolekulare Kinetik. Angew. Chem.*, 2001, 113, 3248
   e) Marquez, C. A.; Pischel, U.; Nau, W. M. *Selective Fluorescence Quenching of 2,3-Diazabicyclo[2.2.2]oct-2-ene by Nucleotides. Org. Lett.*, 2003, 5, 3911
   f) Nau, W. M.; Huang, F.; Wang, X.; Bakirci, H; Gramlich, G.; Marquez, C. A. *Exploiting Long-Lived Molecular Fluorescence. Chimia*, 2003, 57, 161
   g) Marquez, C. A.; Huang, F.; Nau, W. M. *Cucurbiturils: Molecular Nanocapsules for Time-Resolved Fluorescence-based Assays. IEEE Trans. Nanobiosci.*, 2004, 3, 39
   h) Marquez, C. A.; Hudgins, R. R.; Nau, W. M. *Mechanism of Host-Guest Complexation by Cucurbituril. J. Am. Chem. Soc.*, 2004, 126, 5806
   i) Koner, A. L.; Marquez, C. A.; Dickman, H.; Nau, W. M. *Transition-Metal-Promoted Chemoselective Photoreactions at the Cucurbituril Rim. Angew. Chem. Int. Ed.*, 2011, 50, 545

j) Koner, A. L.; Marquez, C. A.; Dickman, M.H.; Nau, W. M. *Chemoselektive Photoreaktionen mithilfe von Übergangsmetallen in Cucurbiturilen. Angew. Chem.*, 2011, 123, 567

3) During my post-doctoral appointments, I participated in the study of reaction mechanisms using mass specgtrometry. In particular, I studied organocatalytic processes involved L-proline and produced the following papers:
   a) Marquez, C. A.; Metzger, J. O. *ESI-MS Study on the Aldol Reaction Catalyzed by L-proline. Chem. Comm.*, 2006, 1539
   b) Marquez, C. A.; Fabretti, F.; Metzger, J. O. *Untersuchung der direkten organokatalysierten α-Halogenierung von Aldehyden mit Elektrospray-Ionisierungs-Massenspektrometrie. Angew. Chem.*, 2007, 119, 7040
   c) Marquez, C. A.; Fabretti, F.; Metzger, J. O. *Electrospray Ionization Mass Spectrometric Study on the Direct Organocatalytic α-Halogenation of Aldehydes. Angew. Chem. Int. Ed.*, 2007, 46, 6915
   d) Marquez, C. A.; Wang, H.; Fabretti, F.; Metzger, J. O. *Electron-Transfer-Catalyzed Dimerization of trans-Anethole: Detection of the Distonic Tetramethylene Radical Cation Intermediate by Extractive Electrospray Ionization Mass Spectrometry. J. Am. Chem. Soc.*, 2008, 130, 17208

4) Finally, in my role as research director in three different institutions, I participated in multiple mass spectrometric studies concerning biofluids and other bio-materials. Part of the work was published or patented; here is the list of them:
   a) Marquez, C. A. *Methods and Reagents for the Quantitative Determination of Metabolites in Biological Samples. OWL Metabolomics*, patent P4564EP00, 2011
   b) Falcon, J. M. *Method for the Diagnosis of Liver Injury Based on a Metabolomic Profile.; Contract Research Project for CIC BiomaGUNE*, patent PCT/EP2012/057275, 2012
   c) Gonzalez, E.; van Liempd, S.; Conde, J.; Gutierrez, V.; Perez, M.; Mayo, R.; Berisa, A.; Alonso, C.; Marquez, C. A.; Barr, J.; Lu, S.; Mato, J. M.; Falcon, J. M. *Serum UPLC-MS/MS Metabolic Profiling in an Experimental Model for Acute-Liver Injury Reveals Potential Biomarkers for Hepatotoxicity. Metabolomics*, 2012, 8, 997

D. Research Support

Ongoing Research Support

I am currently lead non-sponsored Undergraduate Research Experience (named DCS) as High Impact Educational Practice at PENS.

Completed Research Support

IPT-010000-2010-013 Marquez (Key Personnel) 2010-2013
Development of biomarkers for determining the degree of hepatic fibrosis and patient prognosis of acute hepatic diseases using advanced metabolomics tools. Innpacto Project financed by the Spanish Ministry of Science and Innovation

PTQ-11-04600 Marquez (PI) 2011-2013
Experimental Development of an Informatic Software for Patient Classification within the project LIVERBIOMARK. Torres Quevedo Project financed by the Spanish Ministry of Science and Innovation

IN-2008/0000076 Marquez (PI) 2008-2013
Design and development of a kit for the identification and absolute quantification of metabolites in complex mixtures. Nets Project financed by the Basque Department of Technology and Innovation

6/12/TK/2010/4 Marquez (PI) 2010-2012
Software development for the prediction and quantification of hepatotoxicity based on metabolomic profile analysis in serum. Bizkaiberri DBF Project financed by the Vizcaya Office for Industrial Promotion

PTQ-09-02-01986 Marquez (PI) 2010-2012
Informatic tool for the automatic detection and identification of metabolites in biofluids. Torres Quevedo Project financed by the Spanish Ministry of Science and Innovation

IG-2010/0000932 Marquez (PI) 2010-2011
Design and development of a kit for the experimental optimization of mass spectrometric analysis of urine samples. Gaitek Project financed by the Basque Department of Technology and Innovation

PPT-A20479275-2009 Marquez (PI) 2009-2011
Creation of a mass spectrometric platform for the identification and absolute quantification of metabolites in complex mixtures. Innpacto Project financed by the Spanish Ministry of Science and Innovation

PTQ-08-03-08278 Marquez (PI) 2008-2010
Design and development of a kit for the identification and quantification of metabolites. Torres Quevedo Project financed by the Spanish Ministry of Science and Innovation