

## CURRICULUM VITAE

### 1. SANDRA RUSSO-RODRIGUEZ, PH.D.

Lecturer in Chemistry  
Department of Chemistry  
Brown University, Box H  
324 Brook Street, Providence, RI 02912

### 2. HOME ADDRESS

70 Crestview Circle, Centerville, MA 02632

### 3. EDUCATION

1979-1983 Massachusetts Institute of Technology, Cambridge, MA  
Ph.D. Organic Chemistry, September 1983  
Advisor: William H. Rastetter  
Thesis: "Synthesis of Dihydrodiols and Diol Epoxides of Fluoranthene"  
Award: Graduate and Opportunities Program Fellowship, 1979-1982

1976-1979 University of Puerto Rico, Rio Piedras, PR  
B.Sc. Chemistry, Magna Cum Laude, May 1979.  
Undergraduate research on porphyrin analogs of P-450.

### 4. PROFESSIONAL EXPERIENCE

BROWN UNIVERSITY, Providence, RI October 15, 2005-present  
*Lecturer in Chemistry*, Department of Chemistry, Instructor of individualized tutorial program of Equilibrium, Rate and Structure Chem 330T, the summer Chem 100 web online preparatory course for incoming first-year students, and Instructor for Chem 100 or Introductory Chemistry. Tutor for Introductory, General and Organic Chemistry. Organizer of Responsible Conduct of Research workshop for Chemistry and Physics graduate students.

CAPE COD COMMUNITY COLLEGE, Barnstable, MA June 2002-Aug. 2005  
*Adjunct Faculty*, Department of Chemistry.  
Instructor of the Summer General Chemistry I Lecture and Laboratory, taught one semester of General Chemistry in 7 weeks.

POLAROID CORPORATION, Waltham MA September 2002-June 2003  
*Research Chemist*, Digital Imaging Research.

- Synthesized heterocyclic dyes for exploratory novel thermal/digital imaging.

*Self-Employed Part-time Research Consultant*, TX & MA January 2000-June 2002

- Conducted computer prior art searches to support patent filings and research for Boulder Scientific Company.

BOULDER SCIENTIFIC COMPANY, Mead CO March 1998-December 1999  
*Research Scientist*

- Developed cross-coupling methods for custom compound and novel metallocene ligand. Explored practical scalable synthesis of custom compounds. Two patents.
- Conducted prior art searches to promote patent filings and served as coordinator between scientists and patent lawyer.

AMGEN, INC., Boulder, CO October 1990-December 1997  
*Research Scientist II. 1994-1997.*

Medicinal chemistry, Inflammation, and Neurobiology. Supervisor and Team Member

- Designed and synthesized constrained heterocyclic compounds as inhibitors of cytokine TNF. Synthesized medium-ring azepine hydroxamates. Achieved three patents.
- For Neurobiology Project in collaboration with Amgen Thousand Oaks, CA and outside company in San Diego, CA: Made diverse compounds for *in vitro* testing for activity against NPY receptor. Achieved a lead compound.

*Research Scientist I, 1990-1994.*

Antisense Research. Supervisor, and Team member.

- Achieved solution and solid-phase synthesis of 5'-modified backbone oligonucleotide analogs for evaluation in Antisense program, one patent.
- Synthesized steroid- and lipid- conjugates oligonucleotides to improve cellular delivery for Restenosis Antisense program.
- Purchased and managed GE Omega 300 MHz NMR Instrument. Trained users and maintained instrument.

POLAROID CORPORATION, Cambridge MA May 1988-July 1990  
*Research Scientist, Exploratory Chemical Research*

- Research in the synthesis of leuco azamethine yellow dyes for laser-addressed electronic imaging resulted in two patents.
- Investigated the use of releasable heterocycles for silver imaging.
- Managed Bruker 300 MHz NMR for Chemical Research department. Trained users.

INSTRUMENTATION LABORATORY, Lexington MA April 1986-April 1988  
*Scientist, Synthetic Organic Chemistry*

Synthesized compounds for development of diagnostic systems

- Synthesized drug derivatives and conjugates as immunogens or markers.
- Synthesized calcium ionophores for development of clinical electrode.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA  
September 1983-April 1986

*Postdoctoral Associate. Advisor: William R. Roush. Trichothecene mycotoxins*

- Synthesized glucuronides of anguidine and T-2 toxin and prepared <sup>14</sup>C-anguidine for metabolic and toxicology studies.
- Synthesized novel structural analogs of anguidine for toxicology evaluation.

## 5. PUBLICATIONS

### PATENTS

US 6291699, Sep. 18, 2001.

“2-Alkyl-4-(2,6-dialkylphenyl)indenes”, Birmingham, J.M.; Russo-Rodriguez, S.

WO 2001055087, 2001.

“Synthesis of N4, N4'-diphenyl-N4, N4'-di-m-tolylbiphenyl-4,4'-diamine by a nickel-catalyzed coupling” Russo-Rodriguez, S.; Sullivan, J.M.

US 6107291, August 22, 2000.

“Azepine or larger medium ring derivatives and methods of use” Russo-Rodriguez, S.E.; Koch, K.; Termin, A.; Hummel, C.

WO 9932451, July 1, 1999.

“Preparation of azepinehydroxamates and related compounds as inhibitors of metalloproteinase and tumor necrosis factor release” Russo-Rodriguez, S.E.; Koch, K.; Termin, A.; Hummel, C.

“Substituted fused heterocyclic anti-inflammatory compounds”, Amgen Patent disclosure, Russo-Rodriguez, S.E.; Koch, K.

WO 9906410, February 11, 1999.

“Hydroxamic acid substituted fused heterocyclic metalloproteinase inhibitors” Thomson, D.S.; Koch, K.; Hwang, C.K.; Russo-Rodriguez, S.E.; Hummel, D.

US 5864031, January 26, 1999.

“Process for preparing 5' dithio-modified oligonucleotides” Russo-Rodriguez, S.E.; Koga, T.M.

WO 9604295, February 15, 1996 and EP 772622, May 5, 1997.

“Preparation of 5'-Dithio-modified Oligonucleotides for nucleic acid therapeutics and diagnostics” Russo-Rodriguez, S.E.; Koga, T.M.

US 5350870, September 27, 1994. “Leuco dyes and thermal imaging: reduced bubble formation due to absence of thermally fragmented moieties” Boggs, R.A.; Cournoyer, R.L.; Ellis, E.W.; Russo-Rodriguez, S.E.; Telfer, S.J.; Waller, D.P.; Zuraw, M.J.

US 5236884, August 17, 1993.

“Leuco dyes and thermal imaging methods and materials using them”. Boggs, R.A.; Cournoyer, R.L.; Ellis, E.W.; Russo-Rodriguez, S.E.; Telfer, S.J.; Waller, D.P.; Zuraw, M.J.

## JOURNAL ARTICLES

W.R. Roush and S. Russo-Rodriguez “ Trichothecene Degradation Studies. 3. Synthesis of 12,13-Deoxy-12,13-methanoanguidine and 12-Epianguidine, Two Optically Active Analogs of the Epoxytrichothecene Mycotoxin Anguidine” *J. Org. Chem.* 1987, 52, 603.

W.R. Roush and S. Russo-Rodriguez “Trichothecene Degradation Studies. 2. Synthesis of (13-<sup>14</sup>C) Anguidine” *J. Org. Chem.* 1987, 52, 598.

J. R. Babson, S. Russo-Rodriguez, W.H.Rastetter and G.N. Wogan “Identification of Fluoranthene N2-deoxyguanosine Adduct” *Carcinogenesis* 1986, 7, 859.

J. R. Babson, S. Russo-Rodriguez, R.V. Wattley, P.L. Bergstein, W.H. Rastetter, H.L. Liber, B.M. Andon, W.G.Thilly and G.N. Wogan “Microsomal Activation of Fluoranthene to Mutagenic Metabolites” *Toxicol. And Appl. Pharmacol.* 1986, 85, 355.

W.R. Roush and S. Russo-Rodriguez “Trichothecene Degradation Studies: Synthesis of 12,13-Deoxyanguidine and 12,13-Deoxyverrucarol” *J. Org. Chem.* 1985, 50, 5465.

W.R. Roush, M.A. Marletta, S. Russo-Rodriguez and J. Recchia “Trichothecene Metabolism Studies. 2. Structure of 3- $\alpha$ -(1 $\beta$ -D-Glucopyranosiduronyl)-8 $\alpha$ -isovaleroxyscirpen-3,4 $\beta$ ,15-triol-15-acetate Produced from T-2 Toxin In Vitro” *Tetrahedron Lett.* 1985, 26, 5231.

W.R. Roush and S. Russo-Rodriguez “Synthesis of 4 $\beta$ -Acetoxyscirpen-3 $\alpha$ ,15-diol” *J. Org. Chem.* 1985, 50, 3324.

W.R. Roush, M.A. Marletta, S. Russo-Rodriguez and J. Recchia “Trichothecene Metabolism Studies: Isolation and Structure Determination of 15-Acetyl-3 $\alpha$ -(1 $\beta$ -D-glucopyranosiduronyl)-scirpen-3,4 $\beta$ ,15-triol” *J. Am. Chem. Soc.* 1985, 107, 3354.

W.H. Rastetter, R.B. Nachbar, S. Russo-Rodriguez, R.V. Wattley, W.G. Thilly, B.M. Andon, W.L. Jorgensen and M. Ibrahim “Fluoranthene: Synthesis and Biological Testing of Four Diol Epoxides” *J. Org. Chem.* 1982, 47, 4873.

## 7.COMMUNITY SERVICE

Tristate Consortium conference, Summer 2006. Brown University, organized by John Tyler, Interaction with high school teachers in Science and Math to discuss ways to improve Science education, focus on problem solving and impact college performance.

ALANA mentor, Brown, September 2006-September 2007. ALANA and Latino student resource, 2006-2009.

Disciplinary hearing student adviser and resource person, Spring 2007-Spring 2009 and Fall 2011.

Volunteer mentor, Gateway Science, Barnstable Middle School, September 2005-June 2006.

Volunteer teacher, Gateway Science Earth and Sky Project, Barnstable Middle School, September-December 2004.

Volunteer teacher, Gateway Science, 5<sup>th</sup> Grade Barnstable School, Nov. 2001- April 2002.

## 8.ACADEMIC HONORS

*H.E.W. Graduate and Opportunities Program Predoctoral Fellowship, M.I.T. 1979-1982*

*U.P.R. Natural Sciences Faculty Award, 1976*

*U.P.R. Alumnae Association Award, 1976*

*P.R American Chemical Society, Outstanding Senior Award, 1976*

*Isidoro A. Colon Award, Rotary Club of PR, Undergraduate Award,1976.*

## 9.TEACHING

### BROWN UNIVERSITY

*\*October 15, 2005-present.*

*Instructor of Chem 330T course: Fall 2005-Spring 2006.; 2006-2007; 2007-2008; 2009-2010; 2010-2011; 2011-2012. Chem 330T is an individualized program of study of the Chem 330 material directed to students who are in danger of failing Chem 330, that starts in mid- to late fall and ends in the Spring. Enrollment: Spring of 2006 was 40 students; 2007 40 students; 2008 36 students; 2009 46 students; 2010 96 students; 2011 34 students; 2012 70 students. I have performed course-development and improvements every year, usually during the summers*

*Instructor of Chem 0100 Introductory Chemistry. Spring 2008 , Fall 2008, Fall 2009, Fall 2010 Enrollment: 51 students in the Spring 08, 76 students in Fall 08, 88 students in Fall 09, 200 students in Fall 2010. I lectured and incorporated frequent class problems (weekly quizzes in the spring; weekly iclicker questions in the Fall) and weekly online homework (Socratic tutorials and problems) Mastering Chemistry.*

*Managed and assisted Chem 0100 Introductory Chemistry. Fall 2011. Enrollment: 150 students. I wrote weekly Conference problems and weekly quizzes during summer 2011 and revised them during Fall 2011. I completely revised the MasteringChemistry online homework. I ran two out of the 7 mandatory problem sessions or section Conferences of the course. Collaborated with lecturer Jim Golen, M Zimmt and K Hess to run Conferences, revise problems, quizzes, and exams for this class. I organized 4 graduate*

TAs and managed the grading of weekly quizzes and monthly exams; hired undergraduate TAs to assist with office hours and conferences.

*Tutor and support for Chem 330 and office hours for Chem 100 and other classes.* Chem 330 or Equilibrium, Rate and Structure has an enrollment of 543-547 students (2005 and 2006), 600 students in Fall 2007, 576 students in Fall 2008, 130 students in Spring 2009, 510 students in Fall 2009, 160 students in spring 2010, 430-475 students in Fall 2010, 200 students in Spring 2011, and 451 students or so in Fall 2011. I usually see anywhere from 5 to 25 students per day in office hours and walk-in open help hours four to five days a week, depending on the semester and other duties. The number of students who come to my office hours ranges from 138 students to 370 students per semester, depending on semester's enrollment *and* the willingness of students to find Marston Hall. Since fall of 2009 the number includes Chem 330 and 100 students.

\* *Tutor and Resource to Chem 100 students (enrollment of 40 and 60 students during the Spring 06 and 07, respectively) and Chem 350 students (enrollment of up to 450-475 students). Spring 2006, Spring 2007, Spring 2008, Spring 2011* – I provide open office hours and personalized assistance by appointment.

\* *Instructor of the Chem100 web online tutorial course. Summer 2006, 2007, 2008, 2009, 2010, and 2011. January 2011 and January 2012 for undergraduate Engineers.* Chem 100 web is a free online non-credit tutorial available to incoming first-year students and interested students to help prepare for Chem 330 placement exam and preview some Chem 330 topics. The course was totally revised and updated in 2006-2007, and further modification was done in 2010 and 2011 to adjust for placement exam changes. This course is advertised to all incoming first years with the help of Dean of the College in the summer, and assistance from Engineering in December. Enrollment: 167 students in 2006, 291 students in 2007, 528 students in 2008, 475 students in 2009, 540 students in 2010, and 501 students in 2011.

## CAPE COD COMMUNITY COLLEGE

*Adjunct Faculty.* June 2002-August 2005. Instructor of CHEM101-63 course. I taught a vigorous first-semester general chemistry course with laboratory in 7 weeks in the summers. I taught both lecture and laboratory.

### 10. Curriculum Improvement Proposals/Funded

UTRA, summer 2006, funded a teaching assistant, Ms. Kimberly Martinod ('07) \$3000. Kimberly assisted me in revising, updating, and launching Chem 100 web online course (originally written by Profs Weber and Rose-Petruck) using a wiki platform linked with mycourses. She helped transfer the content from html to wiki, and we both revised the course content and edited and/or modified the assessments in mycourses. I wrote and added a diagnostic or pretest to the course, and I rewrote substantial portions of the course and assessments. The tasks were aided by assistance from Stewart Mader from ITG with the use of a wiki.

Curricular Development Grant from the Dean of the College, \$2500, summer 2007, to run and revise Chem 100 web course in summer 2007 and completely revise all problem sets, exams, and workshop problems of Chem 330T, and make course improvements for 330T and Chem 100. This grant allowed me to write new problems for workshop of Chem 330T and examine a number of assisted online homework/ tutorials, making possible introduction of a workshop to Chem 330T and introduction of Mastering Chemistry online homework and tutorials in the Fall and spring of 2007-2008 to Chem 100 and Chem 330T to address the challenge of improving problem-solving skills of *all* students.

Course proposal for 'Chem 33T in January' program, with Dean David Targan, sent to January@Brown committee, October 2007. The course had 6 registered students in January 2008, and it was one of five courses offered in January@Brown 08: Jan 9-18, 10am-1pm. In December 2008 the January@Brown 2009 program was cancelled, but I ran the planned lectures in January 12-17 2009 to any interested available students; one student attended all lectures, two others came part-time. Since there is no funded housing for students, most students are not able to come in January.

#### 11. Professional Development

- \* Survival Skills and Ethics conference, June 2007, Snowmass Colorado, Organized by University of Pittsburgh, sponsored by Council of Graduate Schools grant given by Sheila Bonde: allowed me to prepare to organize an Ethics course for graduate students.
- \* POGIL one-day workshop at Worcester State College, April 2008, sponsored by NSF
- \* POGIL-IC workshop at Stony Brook University, Stony Brook, NY, 4 days June 2008 Organized by David M Hanson and sponsored by NSF. This workshop led me to adopt a process-oriented guided inquiry learning text by David Hanson, Foundations of Chemistry, in 2008-2009 for use in Chem 330T workshop, still in use at the present time.
- \* Attended a few meetings with Yolanda Rome, Sarah Taylor, Ann Gaylin and David Targan during spring 2010 on status of help to students.
- \* Workshop to learn about Supplemental Instruction hosted by David Targan and Yolanda Rome, May 13 and 14, 2010 at the Science Center 9am-4pm. Workshop led by Maureen Hurley from The International Center for Supplemental Instruction at University of Missouri-Kansas City, on SI.
- \* Attended many of the Science Lunches organized by Jan Tullis at the Science Center, on the spring semesters of 2009, 2010, and 2011. Informal meetings promoted interactions between Brown's Physical, Life Science, Engineering and Math Faculty regarding teaching.
- \* Attended all Chem 100 lectures of Prof Jim Golen during Fall 2011 to reflect on how to improve Chem 100 in the future.
- \* Currently participate in TEAM advising collaborative monthly meetings since September 2011 to get information and resources for advising underrepresented students.