Michael G. Zagorski

Mailing Address
Department of Chemistry
Millis Science Center
Case Western Reserve University
Cleveland, Ohio 44106-7078 USA
Phone: 216-368-3706 Fax: 216-368-3006 E-mail: michael.zagorski@case.edu

Home Address
31720 Woodsdale Lane
Solon, Ohio 44139 USA

Personal
Married for almost 27-years to Elizabeth E. Zagorski (deceased 12/27/2013), two daughters (ages 23 and 25)

Education and Employment History

2004-present: Professor, Department of Chemistry (primary) and Department of Physiology & Biophysics (secondary), Case Western Reserve University, Cleveland, Ohio.

1998-2004: Associate Professor, Department of Chemistry (primary) and Department of Physiology & Biophysics (secondary), Case Western Reserve University, Cleveland, Ohio.

1992-98: Assistant Professor, Department of Chemistry (primary) and Department of Physiology & Biophysics (secondary), Case Western Reserve University, Cleveland, Ohio.

1989-92: Research Scientist, Suntory Institute for Bioorganic Research, Osaka, Japan.

1986-89: Research Scientist & Manager, NMR Center for Basic Medical Sciences, Columbia University, College of Physicians & Surgeons, New York, New York, advisor: Dr. Dinshaw Patel.

1983-86: NIH Postdoctoral Fellow, NMR & Organic Chemistry, Columbia University, New York, New York, advisor: Dr. Koji Nakanishi.

1983: Ph.D. in Organic Chemistry, Case Western Reserve University, Cleveland, Ohio, thesis advisor: Dr. Robert G. Salomon.

1977: B.S. in Chemistry and Biology (dual major), S.U.N.Y. at Oneonta, Oneonta, New York.

Awards and Honors

2000: John S. Diekoff Award for Distinguished Graduate Teaching, Case Western Reserve University, Cleveland, Ohio.

1999: Outstanding Alumnus, SUNY Oneonta, Oneonta, New York.

1994-97: Faculty Scholars Award, Alzheimer's Association, Chicago, Illinois.

1993: Ruth Salta Junior Investigator Achievement Award, Alzheimer's Disease Research Section, American Health Assistance Foundation, Rockville, Maryland.

1983-85: NIH Postdoctoral Fellow, Department of Chemistry, Columbia University, New York, New York.

1980-81: Graduate Alumni Research Fellow, Case Western Reserve University, Cleveland, Ohio.

Major Research Interests

Elucidating the molecular mechanisms associated with protein misfolding and amyloid formation, together with the application of CD, AFM, EM, and NMR spectroscopic techniques in the analysis of protein structures. Currently, our efforts are focused with amyloid-forming proteins associated with Alzheimer's, Parkinson's and Prion diseases.

Past Research Group Members

(G = Graduate, P = Postdoctoral, U = Undergraduate)**:**

P Lulu Xu, 9/93-2/94, currently a staff member at Miami University, Oxford, Ohio
P Joseph Talafous, 8/94-6/95, currently an independent computer consultant
G Charlene Keane, M.S. degree, currently employed at Ben Venue Laboratories, Bedford, Ohio
G Qing Zhang, M.S. degree, a former graduate student at University of California, Berkeley
G Erin Clancy, M.S. degree, currently a student at Ohio State University, Clinical Pharmacology
G Shu-Chuan Jao, M. S. degree, currently a faculty member of Chemistry in Taiwan
G Keith Marcinowski, Ph.D., currently employed at OMG, Inc., Cleveland, Ohio
U Karla Draft, attended medical school, Indiana University, 1996-2000
U Arthur Salomon, currently a faculty member at Brown University
U Patrick A. White, attended medical school, Ohio State University, 1997-2001
U Yan Glickberg, attended law school, University of Pennsylvania, 2000-present
U Tarun Bhalla, attended medical school, Ohio State University, 1999-present
G Kan Ma, Ph.D., currently employed at NIH, Bethesda, MD
G Haiyan Shao, Ph.D., currently employed at Gryphon Sciences, San Francisco, CA
G Hong Zeng, M.S., technician at Dept. of Pathology, CWRU
U Jamie Bugh
G Rachele Rhea, M.S. currently employed at the Cleveland Clinic, Cleveland, OH
G Yongbo Zhang, currently a NMR manager, Northwestern University
P Krisztina Bencze, currently doing additional postdoctoral at Wayne State University,
U Kate Bunasky
U Laura Beck, currently a graduate student at Yale University
U Eli Zarkhin, currently applying to medical school
U Ray Choi, currently in medical school at Stanford University
U Ishan Roy, currently in M.D., Ph.D. program at University of Wisconsin
U Angela Buckley
U Amber Abbott, B.S. in Chemistry, Spring 2010
G Jing Yang, M.S., currently a homemaker
G Lijun Peng, M.S., MBA employed in China
G Rehka Srinivasan, Ph.D., currently an instructor member at CWRU
G Liming Hou, Ph.D., a postdoc in my lab (Feb 2003-Sept. 2004), and currently at Abbott Vascular
G Mihaela Apetri, Ph.D., currently employed in Leiden, Netherlands
G Edmund Ickert, M.S., currently a graduate student in Computer Science at CWRU
G Lei Li, Ph.D., MBA finished postdoc with Michael Zagorski on 3/31/11
G John Tedesco, Ph.D., currently an assistant professor, Lake Erie College
G Lijun (Julie) Zhu, M.S., May 2011, currently enrolled in M.S. program for Statistics at Bowling Green State University
G Megan Browning, M.S., January 2012, currently employed at Oakwood Laboratories
U Emily Steiner, B.A. in Chemistry Spring 2009, attending the Medical College of Ohio in Toledo
U Marianne Lalonde, B.S. in Chemistry Spring 2009, graduate student at Northwestern University)
U Nicoletta Frankenstein (B.A. in Chemistry Spring 2009)

U Jack Clark (transferred from CWRU)
U Sarah Woldemariam (B.S. in Chemistry Spring 2011)
U Christopher White, B.A. in Chemistry Spring 2011)
G Fang Han (Ph.D. 2014), currently enrolled in M.B.A. program at NorthEastern Uninversity

Current Research Group Members

G Colin Augista-Boyle (Ph.D. expected in 2017)

Research Collaborations at Case Western Reserve University

My research involves extensive collaborations, particularly with many faculty in the School of Medicine. These collaborations generally fall into two categories: (1) protein misfolding human diseases (Alzheimer's, Parkinson's, Prion) and (2) NMR-related structural biology, in which the latter includes being an active member of the Cleveland Center for Structural Biology (CCSB). The CCSB is a facility operated jointly by CWRU and the Cleveland Clinic. It is located close to campus and is equipped with several high field NMR and X-ray crystallographic instruments as well as researchers who are involved primarily with protein structure determination. Below is a list of my past and present collaborators on campus:

Alzheimer's Disease			
Robert Friedland	Dept. of Neurology	1992-present	Studying the effects of nicotine on the structure of the Aβ peptide, funded by a grant from Philip Morris (1993-2002).
Witold Surewicz	Dept. of Pathology	1995-2002	Amyloid precursor and the prion proteins. Several of my graduate students work part time in his laboratory and we have a NIH-R01 grant.
Mark Smith(diseased)	Dept. of Pathology	1995-2010	Effects of nicotine analogs on the aggregation of the Aβ protein. We had a joint grant from the Smokeless Tobacco Agency.
Steven Younkin	Dept. of Pathology	1992-95	We worked together on several projects related to the Aβ peptide. He was a Co-PI on several of my NIH R01 grants and he is now located at the Mayo Clinic, Jacksonville, Florida.
Shu Guang Chen	Dept. of Pathology	2000-present	We are collaborating on a project dealing with the function and the structure of human doppel protein. A joint NIH grant is pending.
Vernon Anderson	Dept. of Biochemistry	1999-2009	Joint collaboration with the α-synuclein protein. Currently funded by the Alzheimer's Assoc. and another pending NIH grant.
Craig Atwood	Dept. of Pathology	2000	Joint collaboration of the effects metals and cholesterol on the structure of the amyloid Aβ.
Man-Sun Sy	Dept. of Pathology	2003-2006	Working on the development of Aβ peptide antibodies to identify Met 35 oxidation
Bruce Lamb	Cleveland Clinic	2007-present	Measuirng toxicity of Aβ peptide
Structural Biology			
James Zull	Dept. of Biology	1992-93	Structure of parathyroid hormone.

			One of my graduate students worked in his lab and we submitted an NIH R01 grant together.
Darhl Foreman	Dept. of Biology	1993-97	NMR analysis of anhydrolevuglandins in uterine extracts. We submitted an NIH R01 grant in 1994.
John Mieyal	Dept. of Pharmacology	1993-95	I acted as a collaborator on several of his NIH and NSF grants, plus assisted his graduate students with NMR.
Chuck Sanders	Dept. of Physiology & Biophysics	1992-2001	For three years, we jointly submitted NIH and NSF grants for obtaining the 600 MHz NMR in the School of Medicine.
Mary Barkley	Dept. of Chemistry	1996-1999	NMR Studies of somatostatin analogs. A graduate student from Mary's group, Paul Adams, worked part-time under my supervision. I was Co-PI on her NIH R01 grant submitted on 7/1/97.
Philip Garner	Dept. of Chemistry	1995-96	Synthesis, DNA Binding affinities, and structures of PNA analogs. He provided PNA samples for NMR structure determination in water solution.
Donald Jacobsen	Cleveland Clinic	2000-present	NMR studies of homocysteine-modified TTR. I am a collaborator with his NIH grant.
Woodrow Guo	Dept. of Chemistry	2000-2004	NMR studies of glycopeptides and I will provide assistance with NMR work and have served as a Co-PI on several grants
Roger Marchant	Dept. of Biomed. Engin.	2000-present	The structure of the ABri and Aβ amyloid proteins using AFM.

Research Collaborations at Other Institutions

Except for the collaboration at the University of Akron, all of these involve projects related to Alzheimer's disease. Below is a list of the individuals and projects:

Dale Ray	University of Akron	1992-1998	A novel ^{19}F to ^{15}N NOE. He did the majority of the preliminary NMR experiments, plus assisted my students with NMR training. I submitted a grant on this topic to the Exploratory Research Program of Proctor & Gamble and Ohio Board of Regents .
Donald Weaver	Queens University	1993-95	Structure of the Aβ channel. He was performing modeling and was a Co-PI on two of my NIH R01 grants.

Valerie Daggett	University of Washington	1994-96	I acted as a consultant for several of her grants, in which we would provide NMR data for the Aβ modeling done in her lab.
Ashley Bush	Harvard University	1994-98	Projects examining the effects of zinc on the structure and aggregational properties of the Aβ. I have acted as a collaborator on grants for our laboratories.
Michael Vitek	Duke University	1994-1996	He had attempted to provide us with the Aβ protein from a bacterial expression system.
Dmitry Goldgaber	SUNY Stony Brook	1993-94	Studying Effects of transthyretin on the structure of amyloid β-peptide. This collaboration resulted in a publication in Proc. Natl. Acad. Sci. USA.
Tsunao Saitoh	UCSD	1994-96	Research on the NACP protein, unfortunately he is now deceased and this collaboration has ended. I submitted a manuscript on this project to Biochemistry.
Mark Kindy	University of Kentucky	1995-98	Structure of serum amyloid-A (SAA) protein.
Michael Pappolla	University of Southern Alabama	1997-2004	Effects of melatonin on the structure of the Aβ. We published two papers together and plan to apply for a joint NIH grant.
Alan Pryzbala	University of Georgia	1997-2002	We are collaborating on NMR studies of the Aβ, where he is providing expressed NMR labeled protein.
Jianjun Wang	Southern Illinois	1999-2000	The major goal of this project was to determine the structure of the ApoE-Aβ peptide complex.
Stephen Meredith	University of Chicago	2001-2008	Study the binding of peptide inhibitors to the Aβ peptide
Jorge Ghiso	New York University	1999-2004	Discern the mechanism of amyloid formation of the ABri peptide associated with Familial British Dementia. I recently published a manuscript describing this work.
Virginia Lee	University of Penn.	2003-2006	Determine the NMR structure of the tau protein (found in neurofibrillary tangles in Alzheimer's disease) and investigate the binding between Tau and α-synuclein.
Kenjiro Ono	Kanazawa University	2010-present	Determining the mechanism by which polyphenolic compounds inhibit Aβ amyloid formation

Teaching Experience

Year	Course	Laboratory Sessions
Fall 1992, 2008-9	Chem 113, Principles of Chemistry Lab (ancillary)	1
Fall 1993-95	Chem 503, Special Topics Course: NMR Spectroscopy	
Fall 1994	Chem 605, Chemistry Colloquium (ancillary)	
Spring 1994-2012	Chem 325/425, Physical Methods of Organic Structure Determination	
Fall 1996	Chem 233, Introduction to Organic Chemistry Lab I	5
Spring 2009-2011	Chem 233, Introduction to Organic Chemistry Lab I (ancillary)	
Fall 2011	Chem 233, Introduction to Organic Chemistry Lab I (ancillary)	
Spring 1997	Chem 234, Introduction to Organic Chemistry Lab I (ancillary)	1
	Chem. 605, Chemistry Colloquium (ancillary)	
Fall 1997	Chem 233, Introduction to Organic Chemistry Lab I	5
Spring 1998-2000	Chem 224, Introduction to Organic Chemistry	
Fall 1998-99	Chem 223, Introduction to Organic Chemistry	
Fall 2000	Chem 503, Special Topics Course: NMR Spectroscopy	
Spring 2001-09	Chem 325/425, Physical Methods of Organic Structure Determination	
Fall 2001-04, 08-10	Chem 421, Advanced Organic Chemistry I	
Fall 2005-07-11, 2015	FSSO 104, Chemical Aspects of the Aging Mind	
Spring 2014	Chem 333/422, Medicinal Chemistry and Drug Development	
Spring 2012-16	Chem 322, Laboratory Methods of Organic Chemistry	1
	Chem 325/425, Physical Methods of Organic Structure Determination	

Thesis Defenses

Elso Difranco, Ph.D., January 1994
Joseph Talafous, Ph.D., January 1995
Kiesung Lee, Ph.D., May 1995
Daniel Fercu, Ph.D., March 1996
Yu-Chuan Yang, Ph.D., July 1996
G. (Murthy) Subbanagounder, Ph.D., March 1997
Penglie Zhang, Ph.D., July 1997
Olga Vinogradova, Ph.D., June 1998
Meihua Tu, Ph.D., July 1998
Anne Douglas, Ph.D., November 1999
Lech Czerski, Ph.D., Dept. of Physiology & Biophysics, March 2000
Paul Adams, Ph.D., January 2000
Andrei Studenov, Ph.D., April 2000
Yijun Deng, Ph.D., June 2000
Heung Bae Jeon, Ph.D., June 2000
Yahua Liu, Ph.D., November 2000
Michael Jobling, Ph.D., March 2001, External Reviewer, University of Melbourne
Eugenia Batyreva, Ph.D., June 2001
Jisook Kim, Ph.D., July 2001
Ismet Dorange, Ph.D., August 2001
Andrew J. Thompson, December 2001, External Reviewer, University of Melbourne
Hao Zhu, Ph.D., July 2002
Liliana Stefan, Ph.D., September 2002
David Vanik, Ph.D., February 2004
Adrian Apetri, Ph.D., March 2004
Victor Ghidu, Ph.D., October 2004
Xiaobo Chen, Ph.D., May 2005
Xiaorong Gu, Ph.D., June 2005
Eric Jones, Ph.D., March 2006
Brian Serve, Ph.D., July 2006
Lu Liang, Ph.D., July 2006
Monica Totir, Ph.D., December 2006

Jessica Ward, Ph.D., October 2007
Guanshu Liu, Ph.D., December 2007, Dept. of Biomedical Engineering
Luxuan Guo, Ph.D., Dept. of Pathology
Kristen-Louise Hatcher, Ph.D., Dept. of Pathology, January 2009
Jiayin Gu, Ph.D., July 2008
Xiaochun Zhu, Ph.D., August 2008
Wei Li, Ph.D., August 2009
Xiaodong Gu, May 2010
Jennifer Fishovitz, November 2010
Li Hong, November 2010

Undergraduate Advising

Current, total of 6 students

Committee Memberships and Related Activities

1992-94, 2000-02	Member, Executive Committee
1992	Member, Graduate Committee
1993-95, 1997	Member, Graduate Recruiting Committee
1993-94, 2000	Participant, Undergraduate Recruitment Phonothon
1994-98	Participant, Interviewing for Undergraduate Ohio Leadership Awards
1993-94	Participant, Tour Guide for High School Students of Chemistry Department.
1993-present	Member, Cleveland Center for Structural Biology, Cleveland, Ohio.
1997-present	Chair, Cumulative Exam Committee
1992-present	Member, Alzheimer's Center, School of Medicine & University Hospitals, Case Western Reserve University, Cleveland, Ohio.
1992-present	Adjunct Appointment, Department of Physiology & Biophysics, School of Medicine, Case Western Reserve University, Cleveland, Ohio.
1999-2000	Chair, Chemistry Colloquium Seminar
2000	Assisted with Science Olympiad, Case Western Reserve University, Cleveland, Ohio.
2001-present	Practicum Advisory Board Member, Career Center, Case Western Reserve University, Cleveland, Ohio.
2001	President's Tail-gate Party During Family Weekend, Case Western Reserve University, Cleveland, Ohio.
2001-present	Chair, Undergraduate Recruiting Committee, Department of Chemistry, Case Western Reserve University, Cleveland, Ohio, this includes participating in Open House sessions on 10/6/01 and 11/10/01.
2000-01	Speaker, Freshman Forum Series During Orientation Week, presentation entitled, "High Tech and Alzheimer's Disease," Case Western Reserve University, Cleveland, Ohio.
2002-03	Program Committee Member, Research ShowCase 2003, Case Western Reserve University, Cleveland, Ohio.
2001-present	Board Member, Horizon Science Academy, Cleveland, Ohio.
2002-2004	Treasurer, American Chemical Society, Cleveland Section.
May 18, 2003	Marshall, Commencement, Case Western Reserve University, Cleveland, Ohio.
2004-present	Member, Committee on Academic Computing & Information Resources, Case Western Reserve University, Cleveland, Ohio.
Summer 2004	Mentor, April Walls, ACES Summer Undergraduate Research Program, Case Western Reserve University, Cleveland, Ohio.
April 2005	Video Presentation for Saturday Sampler Recruiting Session, Case Western Reserve University, Cleveland, Ohio.
Spring 2008	Invited membership in the Chemistry Fraternity, Alpha Chi Sigma, Case Western Reserve University, Cleveland, Ohio.
April 25, 2008	Participant for "Jail and Bail Fundraiser" event by Theta Upsilon chapter of Alpha Phi Omega, Case Western Reserve University, Cleveland, Ohio.

Fall 2008-2009	Chair, Visibility Committee, Department of Chemistry, Case Western Reserve University, Cleveland, Ohio.
Fall 2010-present	Member, Visibility Committee, Department of Chemistry, Case Western Reserve University, Cleveland, Ohio.
Fall 2010-present	Member, Graduate Affairs Committee, Department of Chemistry, Case Western Reserve University, Cleveland, Ohio.
2008-present	Member, Alpha Chi Sigma, Professional Chemistry Fraternity, Case Western Reserve University, Cleveland, Ohio.

Journals Serving as a Reviewer

Protein Science, Proceedings of the National Academy of Sciences, Biophysical Journal, Journal of the American Chemical Society, FEBS Letters, Biochemistry, Journal of Molecular Biology, Neurology, Journal of Neurochemistry, Amyloid, Tetrahedron, Neurobiology of Aging, Journal of Inorganic Biochemistry, Journal of Biological Chemistry.

Granting Agencies and Tenure/Promotion Reviews

1994	Research Corporation, Inc., Tucson, Arizona
1996-97	National Institutes of Health, Ad-Hoc Committee Member, Neuroscience of Aging Review Committee (NIA-N), Bethesda, Maryland
1996	Grant Reviewer, American Health Assistance Foundation, Rockville, Maryland
1996-present:	Grant Reviewer, Alzheimer's Association, Chicago, Illinois
1997-98:	National Science Foundation, Major Research Instrumentation Program, Arlington, Virginia
1998	The Wellcome Trust Foundation, London, UK
1999	Tenure Review, University of Texas-Houston, Health Science Center, Houston, Texas
1999-2001	Tenure Review, Boston University, Boston, Massachusetts
1999-2001	Ad-Hoc Member, NIH Study Section MDCN-2 and MDCN-1, Bethesda, Maryland
2001	Ad-Hoc Reviewer, NIH Special Emphasis, SSS-Q, Bethesda, Maryland
2004	Ad-Hoc Reviewer, NIH Study Section BBCB, Bethesda, Maryland
2004	Reviewer, NIH Instrumentation Study Section PB, Bethesda, Maryland (was unable to serve due to travel)
2004	Ad-Hoc Reviewer, NIH Study Section IDM-B Bethesda, Maryland
2004-present	Permanent Member, NIH Study Section MDCN-C (DDNS, Drug Discovery for the Nervous System), Bethesda, Maryland
2006	Ad-Hoc Reviewer, NIH Study Section BPNS, Bethesda, Maryland
2005	Ad-Hoc Reviewer, NIH Study Section MSFC, Bethesda, Maryland
2005	Chair, NIH Study Section PPC ZAG7 ZIJ-8, Bethesda, Maryland

Consulting and Related Activities

1997	Exclusive Consultant, Pfizer, Inc., Groton, Connecticut
1997	Member, Scientific Advisory Board, Neurochem, Inc., Montreal, Canada
1998-2001	Consultant, Parke-Davis, Inc., Ann Arbor, Michigan
1998	Consultant, ProteoTech, Inc., Redmond, Washington
1998	Contributing Author, Current Drugs, Ltd., London, UK
2001	Member, Editorial Board, Frontiers in Bioscience, Searington, New York.
2006-2011	Member, Editorial Board, Journal of Biological Chemistry, American Society for Biochemistry and Molecular Biology, Bethesda, Maryland
2006-2008	Member, Review Board, Case Cancer Center, Cleveland, Ohio

Service Seminars

Case Western Reserve University, Focus Program for Undergraduate Admissions, October 12, 1992, and November 12, 1994. My seminars were entitled, "Investigating the Biochemical Basis of Diseases."

The College at Wooster, Wooster, Ohio, Women in Science Program, April 4, 1994.

Ohio University, Department of Chemistry, Athens, Ohio, January 27, 1995. My seminar was entitled, "Mechanism of Amyloidogenesis in Alzheimer's Disease."

Miami University, Department of Chemistry, Oxford, Ohio, February 16, 1995. My seminar was entitled, "Solution Structures of the Amyloid β-Peptide Found in Alzheimer's Disease."

Alfred University, Division of Chemistry, Alfred, New York, October 9, 1995. My seminar was entitled, "A Molecular Approach to the Treatment of Alzheimer's Disease."

S.U.N.Y. Brockport, Department of Chemistry, Brockport, New York, October 10, 1995. My seminar was entitled, "A Molecular Approach to the Treatment of Alzheimer's Disease."

Minority Education Seminar, Department of Physiology & Biophysics, Case Western Reserve University, Cleveland, Ohio, July 9, 1997. My seminar was entitled, "Nicotine Inhibition to Amyloidosis in Alzheimer's Disease."

Solon High School, Solon, Ohio, Program for Premedical and Advanced Placement Science Students, September 24, 1997. My seminar was entitled, "Chemistry and the Treatment of Alzheimer's Disease."

Arthur Road Primary School, Solon, Ohio, participant for chemistry demonstration for EWOW-Career Day program, January 1998, 1999, 2000, and 2003.

St. Rita School, Solon, Ohio, judge for Science Fair at junior high school, January 23, 1999.

Freshman Forum Orientation 2000, CWRU, August 18, 2000 and August 27, 2001, and my seminars were entitled, "High Tech and Alzheimer's Disease."

Solon Orchard Middle School (5^{th} and 6^{th} grades), Career Day participant, June 10, 2002-3

Invited Presentations

American Chemical Society National Meeting, Houston, Texas, March 15, 1980. Title of my presentation (number O-59) was, "Mechanism of Amine Catalyzed Fragmentation of 2,3-Dioxabicyclo[2.2.1]heptane, the Prostaglandin Endoperoxide Nucleus."

Neurogenetic Corp., Paramus, New Jersey, January 3, 1990. Title of my presentation was, "Solution Structures of Pardaxin P-2 and the β-Amyloid Peptide Using a Combined Analysis of CD, NMR, and Molecular Dynamics."

Sterling Drug Inc., Malvern, Pennsylvania, January 8, 1990. Title of my presentation was "Solution Structures of Pardaxin P-2 and the β-Amyloid Peptide Using a Combined Analysis of CD, NMR, and Molecular Dynamics."

Jeol Trading Co., NMR Users Conference, Osaka, Japan, June 20, 1991. Title of my presentation was, "Mechanism of Amyloidosis of β-Peptide."

The University of Tokyo, Department of Chemistry, Tokyo, Japan, July 17, 1991. Weekly colloquium entitled, "Solution Structures of β Peptide and Its Constituent Fragments: Relation to Amyloid Deposition."

Kanagawa Academy of Science and Technology, Kanagawa, Japan, July 18, 1991. My seminar was entitled, "Mechanism of Amyloidosis in Alzheimer's Disease."

The following represent invitations since my arriving at CWRU:
Gliatech, Inc. Beachwood, Ohio, February 22, 1993. My seminar was entitled, "Effects of Glycosaminoglycans Upon the Aggregational Properties of the Amyloid β-Peptide."

Symposia entitled "Disease States of Amyloid Aggregation and Fibril Formation-A Biophysical Approach," sponsored by Lilly Research Laboratories, Indianapolis, Indiana, March 9-10, 1993. Title of my presentation was, "Mechanism of pH Induced Amyloidogenesis of β-Peptide."

NMR Users' Conference, Varian Associates, University of Akron, Akron, Ohio, August 20, 1993. My seminar was entitled, "NMR Studies of the Amyloid β-Peptide."

The University of Toledo, Department of Medicinal Chemistry, Toledo, Ohio, October 21, 1993. My seminar was entitled, "Solution Structure of the Amyloid β-Peptide."

Philip Morris U.S.A., Research & Development Section, Richmond, Virginia, November 3, 1993. My seminar was entitled, "Nicotine and Alzheimer's Disease."

Gliatech, Inc. Beachwood, Ohio, December 10, 1993. My seminar was entitled, "Effects of Glycosaminoglycans Upon the Aggregational Properties of the Amyloid β-Peptide."

Cleveland State University, Department of Chemistry, Cleveland, Ohio, February 11, 1994. My seminar was entitled, "The Solution Structure of the Amyloid β-Peptide."

The University of Akron, Department of Chemistry, Akron, Ohio, March 9, 1994. My seminar was entitled, "Structures and Dynamics of β-Amyloidosis in Alzheimer's Disease."

The Cleveland Clinic Foundation, Department of Cardiovascular Biology, Cleveland, Ohio, May 10, 1994. My seminar was entitled, "Solution Structures of the Amyloid β-Peptide Found in Alzheimer's Disease."

Kent State University, Department of Chemistry, Kent, Ohio, March 23, 1995. My seminar was entitled, "Solution Structures of the Amyloid β-Peptide Found in Alzheimer's Disease."

New York University, Department of Pathology & Neurology, May 18, 1995. My seminar was entitled, "The Solution Structure of the β-Peptide Provides a Molecular Basis for Amyloid Formation in Alzheimer's Disease."

American Cyanamid, Inc. Cardiovascular-Central Nervous System Research Section, May 19, 1995. My seminar was entitled, "The Solution Structure of the β-Peptide Provides a Molecular Basis for Amyloid Formation in Alzheimer's Disease."

American Chemical Society, 27th Regional Meeting, Akron, Ohio, May 31-June 2, 1995. I was the Symposium Organizer for a session entitled, "Structural Biology of Macromolecules, Crystallography & NMR Approaches."

The University of Akron, Department of Chemistry, Akron, Ohio, 8th Annual Midwest NMR User's Meeting, August 17-18, 1995. My seminar was entitled, "Mechanism of Aggregation of the Amyloid β-Peptide."

American Cyanamid, Inc. Alzheimer's Disease Research Section, September 30, 1995. My seminar was entitled, "A Molecular Basis of Amyloid Formation in Alzheimer's Disease."

Suntory Institute for Bioorganic Research, Osaka, Japan, July 29, 1996. My seminar was entitled, "The Solution Structure of the Amyloid β-Peptide Provides a Molecular Approach to the Treatment of Alzheimer's Disease."

Pfizer, Inc., Groton, Connecticut, November 7, 1996. My seminar was entitled, "The Solution Structure of the Amyloid β-Peptide Provides a Molecular Approach to the Treatment of Alzheimer's Disease."

Press Conference, American Chemical Society, Washington, DC, October 22, 1996. My topic was, "Nicotine Has Implications in Treatment of Alzheimer's Disease," which was shown on 24 television stations and 164 newspapers and magazines worldwide.

Eli Lilly & Co., Indianapolis, IN, January 9, 1997. My seminar was entitled, "The Solution Structure of the Amyloid β-Peptide Provides a Molecular Approach to the Treatment of Alzheimer's Disease."

Athena Neurosciences, Inc., San Francisco, CA, January 10, 1997. My seminar was entitled, "The Solution Structure of the Amyloid β-Peptide Provides a Molecular Approach to the Treatment of Alzheimer's Disease."

Queens University, Kingston, Ontario, Canada, February 4, 1997. I was unable to give a seminar due to weather problems.

Neurochem, Inc., Montreal, Quebec, Canada, February 21, 1997. My seminar was entitled, "The Solution Structure of the Amyloid β-Peptide Provides a Molecular Approach to the Treatment of Alzheimer's Disease."

University of Houston, Department of Chemistry, Houston, Texas, April 28, 1997. My seminar was entitled, "Molecular Mechanisms of Amyloid Formation in Alzheimer's Disease."

American Chemical Society, 29th Regional Meeting, Midland, Michigan, May 28-29, 1997. I was the Symposium Organizer for a session entitled, "Recent Applications of NMR to Biological Macromolecular Systems."

The University Hospitals Alzheimer Center and Gliatech Inc., Symposium entitled, "The Neuroscience of Alzheimer's Disease, " Cleveland, Ohio, June 19-20, 1997. My seminar was entitled, "The Solution Structure of the Amyloid β-(1-42) Peptide Facilitates the Rational Design of Selective Amyloidosis Inhibitors in Alzheimer's Disease."

FASEB Summer Research Conference entitled, "Amyloid and Other Abnormal Assembly Processes," Copper Mountain, Colorado, July 13-18, 1997. My seminar was entitled, "The Solution Structure of the β-(1-42) Peptide Provides a Molecular Basis for Amyloid Formation in Alzheimer's Disease."

Parke-Davis, Inc., Pharmaceutical Research Division, Ann Arbor, Michigan, September 26, 1997. My seminar is entitled, "NMR Studies of the Amyloid β-(1-40) Peptide in Water Solution."

Indiana University, Department of Chemistry, Bloomington, Indiana, October 24, 1997. My seminar is entitled, "NMR Studies of the NACP Protein in Alzheimer's Disease."

Television Interview, Dr. Ted Castelle's Medical Show, Channel 5, Cleveland, Ohio, November, 13, 1997. In a 3 minute live interview, I briefly discussed my research work in Alzheimer's disease.

American Chemical Society, National Meeting, Dallas, Texas, April 2, 1998, Medicinal Chemistry symposium on amyloid. My seminar is entitled, "The Use of NMR for the Design of Therapeutic Inhibitors of Amyloidosis in Alzheimer's Disease."

American Chemical Society, 30th Regional Meeting, Cleveland, Ohio, May 25-29, 1998. I was the Symposium Organizer for a 2-day session entitled, "Biological Applications of NMR."

Johnson & Johnson, Inc., Medicinal Chemistry Department, Spring House, Pennsylvania, May 20, 1998. My seminar is entitled, "The NMR Solution Structure of the β-Peptide Facilitates the Design of Amyloid Inhibitors."

The University of Michigan, Biophysics Research Division, Ann Arbor, Michigan, September 25, 1998. My seminar was entitled, " Mechanism of Amyloid Fibril Formation in Alzheimer's Disease."

Praecis Pharmaceutical, Inc., Cambridge, Massachusetts, October 6, 1998. My seminar is entitled, "The Utility of NMR for the Design of Amyloid Inhibitors."

International Workshop on Conformational Diseases, Dead Sea, Israel, November 8-12, 1998. My seminar was entitled, "The Solution Structures of the Amyloid β-(1-40) and β-(1-42) Peptides and the Utility of NMR in the Design of β-Amyloid Inhibitors."

Keystone Symposia, Frontiers of NMR in Molecular Biology, Breckenridge, Colorado, January 9-15, 1999. My seminar was entitled, "Amyloid Aβ(1-40) and Aβ(1-42) Adopt Remarkably Stable, Monomeric, and Extended Structures in Water Solution at neutral pH."

Buffalo State College, Buffalo, New York, February 25, 1999. My seminar was entitled, "Mechanism of Amyloidosis in Alzheimer's Disease."

John Carroll University, University Heights, Ohio, February 13, 1999. My seminar was entitled, "The Utility of NMR for the Design of Amyloid Inhibitors."

Southern Illinois University, Department of Biochemistry, Carbondale, Illinois, December 10, 1999. My seminar was entitled, "ApoE Interactions with the Amyloid Aβ Peptide."

4th International Symposium on Medicinal Chemistry of Neurodegenerative Diseases, American Chemical Society, January 30-February 2, 2000, Cancun, Mexico. My seminar was entitled, "Mechanism and Inhibition of Aβ Amyloid Formation."

Symposium on Nicotine Mechanisms in Alzheimer's Disease, San Juan, Puerto Rico, March 16-18, 2000. My seminar was entitled, "Nicotine and Amyloid Formation."

The University Hospitals Alzheimer Center, Symposium entitled, "The Neurobiology and Clinical Management of Alzheimer's Disease and Related Disorders," Cleveland, Ohio, March 29-31, 2000. My seminar was entitled, "The Molecular Biology of Alzheimer's Disease."

Beijing Institute of Pharmacology, Bejing, China, May 23, 2000. My seminar was entitled, "The Mechanism of Protein Misfolding and Amyloid Formation in Alzheimer's Disease."

Shanghai Institute of Organic Chemistry, Shanghai, China, May 26, 2000. My seminar was entitled, "The Mechanism of Protein Misfolding and Amyloid Formation in Alzheimer's Disease."

Suntory Institute for Bioorganic Research, Osaka, Japan, June 1, 2000. My seminar was entitled, "The Utility of NMR in the Design of β-Amyloid Inhibitors."

Novartis Pharma AG, Nervous System Research, Basel, Switzerland, June 26, 2000. My seminar was entitled, "The Utility of NMR in the Design of β-Amyloid Inhibitors."

Serono Pharmaceutical Research Institute, Geneva, Switzerland, June 28, 2000. My seminar was entitled, "The Mechanism of Prion and Aβ Amyloid Formation."

Johnson & Johnson, Inc., Medicinal Chemistry Department, Spring House, Pennsylvania, September 8, 2000. My seminar is entitled, "The Utility of NMR in the Design of β-Amyloid Inhibitors."

Case Western Reserve University, Department of Chemistry, October 5, 2000. My seminar was entitled, "Protein Misfolding and Human Disease."

The University of Puerto Rico, Department of Chemistry, October 9, 2000, San Juan, Puerto Rico. My seminar was entitled, "Amyloid Disease and Protein Misfolding."

National Minority Research Symposium, November 8-10, 2000, Washington, DC. My seminar was entitled, "The Mechanism of Amyloid Formation in Alzheimer's Diesease."

Neuropeptide Society Annual Meeting, February 3-6, 2001, Breckenridge, Colorado. My seminar is entitled, "The Amyloid Aβ: The Peptide From Hell."

SUNY at Oneonta, Oneonta, New York, Department of Chemistry, May 4, 2000. My seminar was entitled, "Amyloid Formation and its Relationship to Alzheimer's Disease."

American Chemical Society Meeting, symposium entitled, "Structural and Mechanistic Aspects of Protein Aggregation and Amyloid Fibrillization", Orlando, Florida, April 7-11, 2002. My seminar was entitled, "Solution NMR Studies Reveal Distinct Mechanisms of Amyloidosis for the Aβ(1-40) and Aβ(1-42) Peptides."

6th International Conference on Alzheimer's and Parkinson's Diseases, Seville, Spain, May 8-12, 2003. My seminar was entitled, "Methionine-35 Oxidation Reduces Fibril Assembly of the Amyloid Aβ(1-42) Peptide of Alzheimer's Disease."

The University of Michigan, Department of Medicinal Chemistry, October 23, 2003. My seminar was entitled, "The Relationship of Aβ Amyloid Formation and the Met35 Oxidation State."

The University of Chicago, Department of Pathology, November 19, 2003. My seminar was entitled, "Amyloid Aβ as an Antioxidant ?"

Summer Neuropeptide Conference, Miami, Florida, July 5-10, 2004. I organized and was Chair for a session entitled, "Amyloidosis and Related Protein Deposition Disorders in the CNS," and my talk was entitled, "Production of Native Protofibril Structures from Aggregation of α-Synuclein in Water-Methanol Solution."

American Chemical Society Meeting, symposium entitled, "Biophysical Aspects of Protein and Peptide Aggregation: Experiment and Theory", San Diego, CA, March 13-17, 2005. My seminar is entitled, "Metal Binding Structural Motifs in the Aβ Peptide of Alzheimer's Disease."

The Cleveland Center for Structural Biology, NMR Symposia, May 12-14, 2006, and the title of my talk was, "Metal Binding Structural Motifs in the Aβ Peptide of Alzheimer's Disease."

The University of Missouri-Columbia, Department of Chemistry, February 2, 2007. My seminar was entitled, "NMR Reveals Unique Binding Motifs Between the Aβ Peptide and Metals."

The Cleveland Clinic Foundation, Alzheimer's Center, May 14, 2007, and the title of my talk was, "Structure of Aβ Soluble Oligomers."

Rensselaer Polytechnic Institute, Department of Biology, September 24, 2007. My seminar was entitled, "NMR Reveals Unique Binding Motifs Between the Aβ Peptide and Metals."

The University of Miami, Department of Chemistry, November 1, 2007. My seminar was entitled, "NMR Reveals Unique Binding Motifs Between the Aβ Peptide and Metals."

John Carroll University, Department of Chemistry, April 2, 2008. My seminar was entitled, "NMR Reveals Unique Binding Motifs Between the Aβ Peptide and Metals."

33rd FEBS Congress & 11th IUBMB Conference, Athens, Greece, June 28 – July 3, 2008. My talk was entitled, "Production of Micelle-like Structures During the Early Stages of Aβ(1-40) and Aβ(1-42) Association." Talk was cancelled due to wife's illness with breast cancer.

The University of Pittsburgh, Department of Structural Biology, November 6, 2008. My talk was entitled, "Production of Micelle-like Structures During the Early Stages of Aβ(1-40) and Aβ(1-42) Association."

The University of Kansas, Department of Pharmaceutical Chemistry, March 3, 2009. . My talk was entitled, "Production of Micelle-like Structures During the Early Stages of Aβ(1-40) and Aβ(1-42) Association."

International Conference of Alzheimer's Disease (ICAD), Vienna Austria, July 13, 2009, "Production of Micelle-like Structures During the Early Stages of Aβ(1-40) and Aβ(1-42) Association."

Protein Aggregation in Neurodegenerative Diseases: Mini-Symposium Focused on Aβ and α-Synuclein, October 6, 2009. Wyeth Pharmaceuticals, Princeton, NJ.

17th Neuroscience Seminar, School of Medicine, Kanazawa University, Kanazawa, Japan, January 26, 2010. The title of my talk was, "Production of Micelle-like Structures During the Early Stages of Aβ(1-40) and Aβ(1-42) Association."

International Symposium on Amyloidogenesis and Anti-Amyloid Therapies, KKR Hotel, Tokyo, Japan, January 28, 2010. The title of my talk was, "Production of Micelle-like Structures During the Early Stages of Aβ(1-40) and Aβ(1-42) Association."

Research Experience

July 1992-present: Assistant (1992-1998), Associate Professor (1998-2004), and Full Professor (2004-present), Department of Chemistry and Department of Physiology & Biophysics (adjunct), Case Western Reserve University, Cleveland, Ohio. My research is focused upon using NMR and CD to elucidate the mechanisms in which amyloid peptides assemble into insoluble β-pleated sheet structures.

September 1989-June 1992: Research Scientist, Suntory Institute for Bioorganic Research, Osaka, Japan. Conduct basic research on projects regarding the structure and dynamics of proteins, primarily using NMR, CD and molecular modeling techniques. I had complete autonomy with regard to the selection of my research projects, and I began a project that involved studying the solution conformations and dynamics of the amyloid β-peptide found in Alzheimer's disease. This project is being continued in my present position as an Assistant Professor of Chemistry at Case Western Reserve University. Also, approximately 10% of my time was spent assisting organic and

medicinal chemists in the company by running specialized two-dimensional (2D) NMR experiments and offering advice for spectral assignments.

January 1986-September 1989: Associate Research Scientist and Manager of the NMR Center for the Basic Medical Sciences, Department of Biochemistry and Molecular Biophysics, Columbia University, New York, New York. Collaborations on research projects, training of users of the NMR facility, and responsible for maintaining Bruker AM-300, AM-400, and AM-500 spectrometers. Research projects included NMR studies of proteins, nucleic acids and new methods for measuring glutathione in perfused rat hearts. With the collaboration of Dr. Dinshaw Patel, two proteins (Pardaxin P-2 and Arc) were studied by 2D NMR. The first ten months of my employment in this position were spent at Bruker Instruments, Billerica, Massachusetts, where I obtained first hand knowledge of the NMR equipment by working closely with application scientists and engineers.

March 1983-December 1985: Postdoctoral Research Associate in Natural Products Chemistry, Columbia University, New York, New York, under the supervision of Dr. Koji Nakanishi. Identification of small (MW<1000) structurally-complex natural products by NMR. Research projects included using NMR to elucidate the structure of Brevetoxin-A and Azadiractin. Responsible for maintaining group's Bruker WM-250 NMR spectrometer.

January 1983-March 1983: Postdoctoral Research Associate in Organic Chemistry, Case Western Reserve University, Cleveland, Ohio, under the supervision of Dr. Robert G. Salomon.

September 1977-December 1982: Graduate Student, Department of Chemistry, Case Western Reserve University, Cleveland, Ohio. Ph.D. thesis title: "Mechanisms of Rearrangements of the Prostaglandin Endoperoxide Nucleus". Extensive use of kinetic and deuterium isotope effects were used to delineate the mechanisms of rearrangements of 2,3-dioxabicyclo[2.2.1]heptane, the highly reactive bicyclic peroxide nucleus of the natural prostaglandin endoperoxide, PGH_2. These studies inspired and guided further studies with PGH_2 which led to the discovery of new aldehyde products, levuglandins, formed from decomposition of PGH_2 under physiological conditions.

June 1976-September 1976: Summer job, lab technician, Department of Chemistry, Sloan Kettering Cancer Research Institute, Rye, New York. Assisted Ph.D. level research scientists in projects related with isolation and identification of adducts of the potent carcinogen, 3-hydroxyxanthine, with DNA and proteins.

Publications

Manuscripts 1-8 resulted from my Ph.D. thesis research under the guidance of Robert G. Salomon.

1. "Prostaglandin Endoperoxides. 11. Mechanism of Amine Catalyzed Fragmentation of 2,3-Dioxabicyclo[2.2.1]heptane," M. G. Zagorski and R. G. Salomon, *J. Am. Chem. Soc*. **1980**, 102, 2501-2503.

2. "Prostaglandin Endoperoxides. 12. Carboxylate Catalysis and the Effects of Proton Donors on the Decomposition of 2,3-Dioxabicyclo[2.2.1]heptane," M. G. Zagorski and R. G. Salomon, *J. Am. Chem. Soc*. **1982**, 104, 3498-3503.

3. "Base Catalyzed Fragmentation of 2,3-Dioxabicyclo[2.2.1]heptane, the Bicycle Peroxide Nucleus of Prostaglandin Endoperoxides: Large Secondary Kinetic Deuterium Isotope Effects," M. G. Zagorski and R. G. Salomon, *J. Am. Chem. Soc*. **1984**, 106, 1750-1759.

4. "Solvent Induced Fragmentation of Prostaglandin Endoperoxides. New Aldehyde Products from PGH_2 and a Novel Intramolecular 1,2-Hydride Shift During Endoperoxide Fragmentation in

Aqueous Solution," R. G. Salomon, D. B. Miller, M. G. Zagorski and D. J. Coughlin, *J. Am. Chem. Soc.* **1984**, 106, 6049-6060.

5. "Copper(I) Catalysis of Olefin Photoreactions. 9. Photobicyclization of α, β, and γ-(Alkenyl)Allyl Alcohols," R. G. Salomon, D. J. Coughlin, S. Ghosh and M. G. Zagorski, *J. Am. Chem. Soc.* **1982**, 104, 998-1007.

6. "Total Synthesis Refutes the Postulated Structure of Leucogenenol," R. G. Salomon, M. F. Salomon, M. G. Zagorski, J. M. Reuter and D. J. Coughlin, *J. Am. Chem. Soc.* **1982**, 104, 1008-1013.

7. "Copper(I) Catalysis of Olefin Photoreactions. 10. Syntheses of Multicyclic Carbon Networks by Photobicyclization," R. G. Salomon, S. Ghosh, M. G. Zagorski and M. Reitz, *J. Org. Chem.* **1982**, 47, 829-836.

8. "Oxygen-17 Nuclear Magnetic Resonance Chemical Shifts of Dialkyl Peroxides: Large Conformational Effects," M. G. Zagorski, D. S. Allan, R. G. Salomon, E. L. Clennan, P. C. Heah and R. P. L'Esperance, *J. Org. Chem.* **1985**, 50, 4484-4490.

Manuscripts 9-15 resulted from my NIH postdoctoral studies under the guidance of Koji Nakanishi.

9. "Biosynthetic Origins and Assignments of ^{13}C NMR Peaks of Brevetoxin B," M. S. Lee, D. J. Repeta, K. Nakanishi and M. G. Zagorski, *J. Am. Chem. Soc.* **1986**, 108, 7855-7856.

10. "Structure of Brevetoxin A as Constructed from NMR and MS Data," J. Pawlak, M. S. Tempesta, J. Golik, M. G. Zagorski, M. S. Lee, K. Nakanishi, T. Iwashita, M. L. Gross and K. B. Tomer, *J. Am. Chem. Soc.* **1987**, 109, 1144-1150.

11. "An NMR Spectroscopic Study of Azadiractin and Its Trimethyl Ether," C. J. Turner, M. S. Tempesta, R. B. Taylor, M. G. Zagorski, J. S. Termini, D. R. Schroeder and K. Nakanishi, *Tetrahedron* **1987**, 43, 2789-2803.

12. "Full Proton NMR Assignment of BTX-A, $C_{49}H_{70}O_{13}$," M. S. Lee, K. Nakanishi and M. G. Zagorski, *New Journal of Chemistry* **1987**, 11, 753-756.

13 "^{13}C-NMR Study of Taurine and Chlorotaurine in Human Cells," Y. Y. Lin, C. E. Wright, M. G. Zagorski and K. Nakanishi, *Biochem. Biophys. Acta.* **1988**, 969, 242-248.

14. "Antifungal Polyphenols from *Cordia goetzei*," A. Marston, M. G. Zagorski and K. Hostettman, *Helv. Chim. Acta* **1988**, 71, 1210-1219.

Manuscripts 17, 19, and 23 resulted during my position as the NMR facility manager at the Medical School of Columbia University, under the supervision of Dinshaw Patel. Manuscripts 15 and 18 are from continued collaborations with Koji Nakanishi, while 16, 20, 21, and 22 are improved NMR pulse techniques developed by myself. I am the corresponding author of manuscripts 15, 16, 19, 20, 21, 22, and 23.

15. "Assignments of ^{13}C NMR Peaks of Brevetoxin A: Application of Two Dimensional Hartmann-Hahn Spectroscopy," M. G. Zagorski, M. S. Lee, G. Qin and K. Nakanishi, *J. Org. Chem.* **1988**, 53, 4156-4158.

16. "Assignments of ^{31}P and ^{1}H Resonances in Oligonucleotides by Two Dimensional Hartmann-Hahn Spectroscopy," M. G. Zagorski and D. G. Norman, *J. Magn. Reson.* **1989**, 83, 167-172.

17. "Conformational Transitions in Cytidine Bulge-Containing Deoxytridecanucleotide Duplexes: Extra Cytidine Equilibrates Between Looped Out (Low Temperature) and Stacked (Elevated Temperature) Conformations in Solution," M. W. Kalnik, D. G. Norman, M. G. Zagorski, P. F. Swann and D. J. Patel, *Biochemistry* **1989**, 28, 294-303.

18. "Biosynthetic Studies of Brevetoxins: Potent Neurotoxins Produced by the Dinoflagellate *Gymnodinium breve (Ptychodiscus brevis)*," M. S. Lee, G. Qin, K. Nakanishi and M. G. Zagorski, *J. Am. Chem. Soc.* **1989**, 111, 6234-6241.

19. "NMR Studies of Arc Repressor Mutants: Proton Assignments, Secondary Structure and Long Range Contacts for the Thermostable Pro8→Leu Variant of Arc," M. G. Zagorski, J. U. Bowie, A. K. Vershon, R. T. Sauer and D. J. Patel, *Biochemistry* **1989**, 28, 9813-9825.

20. "Improved Frequency Selectivity for Presaturation of H_2O in 2D NMR Spectra of Proteins," M. G. Zagorski, *J. Magn. Reson.* **1990**, 86, 400-405.

21. "How to Obtain Accurate CAMELSPIN or ROESY Spectra with Identical Low-Power Pulses for Both the Preparation and Mixing Intervals," M. G. Zagorski, *J. Magn. Reson.* **1990**, 89, 608-614.

22. "Further Reduction of the Water "Hump" Using the GROPE-16 Sequence," M. G. Zagorski, *J. Magn. Reson.* **1991**, 91, 141-147.

23. "Solution Structure of Pardaxin P-2," M. G. Zagorski, D. G. Norman, C. J. Barrow, T. Iwashita, K. Tachibana and D. J. Patel, *Biochemistry* **1991**, 30, 8009-8017.

Manuscripts 24-29 were performed at the Suntory Institute of Bioorganic Research in Osaka, Japan. I initiated the project related to the solution structures of the amyloid β-peptide and Colin Barrow was a postdoctoral research associate working under my supervision. I am the corresponding author of manuscripts 25, 27, 28, and 29.

24. "Structure of Trehalostatin: A Potent and Specific Inhibitor of Trehalase," T. Nakayama, T. Amachi, S. Murao, T. Sakai, T. Shin, P. T. M. Kenny, T. Iwashita, M. G. Zagorski, H. Komura and K. Nomoto *J. Chem. Soc., Chem. Commun.* **1991**, 919-921.

25. "Solution Structures of β-peptide and Its Constituent Fragments: Relation to Amyloid Deposition," C. J. Barrow and M. G. Zagorski, *Science* **1991**, 253, 179-182.

26. "Covalent Modification of Alzheimer's Amyloid β-peptide in Formic Acid Solutions," R. Orlando, P. T. M. Kenny and M. G. Zagorski, *Biochem. Biophys. Res. Commun.* **1992**, 184, 686-691.

27. "Solution Conformations and Aggregational Properties of Synthetic Amyloid β-Peptides of Alzheimer's Disease. Analysis of Circular Dichroism Spectra," C. J. Barrow, A. Yasuda, P. T. M. Kenny and M. G. Zagorski, *J. Mol. Biol.*, **1992**, 225, 1075-1093.

28. "NMR Studies of Amyloid β-Peptides: Proton Assignments, Secondary Structures, and Mechanism of an α-helix→β-sheet Conversion for a Homologous, 28-Residue, N-Terminal Fragment," M. G. Zagorski and C. J. Barrow, *Biochemistry*, **1992**, 31, 5621-5631.

29. "Improved Lineshapes and Water Suppression in 2D NMR Spectra Using Composite 90° Pulses to Compensate RF Imperfections," M. G. Zagorski, *J. Magn. Reson,* **1992**, 99, 403-407.

The following papers represent research performed since my arrival at CWRU (July 1992). All of the manuscripts deal with the amyloid β-peptide and other aspects of Alzheimer's disease research. I am the corresponding author of manuscripts 30, 32, 33, 35, 37, 38, 39, 40, 41, 43, 45, 47, 48, 49, 50, 51, 52, 53, 55, 56, 57, 58, 60, and 61.

30. "Solution Structure of Residues 1 to 28 of the Amyloid β-Peptide," J. A. Talafous, K. J. Marcinowski, G. Klopman, and M. G. Zagorski, *Biochemistry,* **1994**, 33, 7788-7796.

31. "Transthyretin Sequesters Amyloid β Protein and Prevents Amyloid Formation," A. L. Schwarzman, L. Gregori, M. Vitek, S. Lyubski, W. J. Strittmatter, J. Enghilde, R. Bhasin, J. Silverman, K. H. Weisgraber, P. K. Coyle, M. G. Zagorski, J. Talafous, M. Eisenberg, A. M. Saunders, A. D. Roses, and D. Goldgaber, *Proc. Natl. Acad. Sci. USA,* **1994**, 91, 8368-8372.

32. "Nicotine Inhibits Amyloid Formation by the β-Peptide," A. R. Salomon, K. J. Marcinowski, R. P. Friedland, and M. G. Zagorski, *Biochemistry,* **1996**, 35, 13568-13578.

33. "The Solution Structures of the β-Amyloid Peptide Provide a Molecular Approach for the Treatment of Alzheimer's Disease," H. Shao, K. J. Marcinowski, E. L. Clancy, A. R. Salomon, and M. G. Zagorski, in "Research Advances in Alzheimer's Disease and Related Disorders," eds., K. Iqbal, B. Winblad, T. Nishimura, M. Takeda, and H. M. Wisniewski, Wiley & Sons Ltd., **1997**, 729-739.

34. "Mechanisms of Neurotoxicity Associated with Amyloid β Deposition and the Role of Free Radicals in the Pathogenesis of Alzheimer's Disease: A Critical Appraisal," L. M. Sayre, M. G. Zagorski, W. K. Surewicz, G. A. Krafft, and G. Perry, *Chem. Res. Toxicol.,* **1997**, 10, 518-526

35. "Trifluoroacetic Acid Pretreatment Reproducibly Disaggregates the Amyloid β-Peptide," S.-C. Jao, K. Ma, J. Talafous, R. Orlando, and M. G. Zagorski, *Amyloid: Int. J. Exp. Clin. Invest.,* **1997**, 4, 239-252.

36. "Structure Dependent Inhibition of β-Fibrillogenesis by Melatonin," M. Pappolla, P. Bozner, C. Soto, M. Zagorski, H. Shao, N. K. Robakis, B. Frangione, and J. Ghiso, *J. Biol. Chem.,* **1998**, 273, 7185-7188.

37. "Amyloid Aggregation Inhibitors," M. G. Zagorski, *IDrugs,* **1998**, 1, 17-18.

38. "Solution Structure Model of Residues 1-28 of the Amyloid β-Peptide When Bound to Micelles," K. J. Marcinowski, H. Shao, E. L. Clancy, and M. G. Zagorski, *J. Am. Chem. Soc.,* **1998**, 120, 11082-11091.

39. "Solution Structures of Micelle-bound Amyloid β-(1-40) and β-(1-42) Peptides of Alzheimer's Disease," H. Shao, S.-C. Jao, K. Ma, and M. G. Zagorski, *J. Mol. Biol.,* **1999**, 285, 755-773.

40. "The Molecular Mechanism of Amyloidosis in Alzheimer's Disease," M. G. Zagorski, in "The Biology-Chemistry Interface," eds., R. Cooper and J. K. Snyder, Marcel Dekker, **1999**, 14, 397-430.

41. "Methodological and Chemical Factors Affecting Amyloid β Peptide Amyloidogenicity," M. G. Zagorski, J. Yang, H. Shao, K. Ma, H. Zeng, and A. Hong, in *Amyloid and Other Protein Deposition,* ed. R. Wetzel, *Methods Enzymology,* **1999**, 309, 189-204.

42. "Dual Anti-amyloidogenic and Antioxidant Properties of Melatonin: A New Therapy for Alzheimer's Disease?", M. A. Pappolla, Y.-J. Chyan, P. Bozner, C. Soto, H. Shao, R. J. Reiter, G. Brewer, N. K. Robakis, M. G. Zagorski, B. Frangione, and J. Ghiso, in "Alzheimer's Disease and Related Disorders", eds., K. Iqbal, D. F. Swaab, and H. M. Wisniewski, Wiley & Sons Ltd., **1999**, 661-669.

43. "Residue Specific pKa Measurements of the β-Peptide and Mechanism of pH-Induced Amyloid Formation," K. Ma, E. L. Clancy, Y. Zhang, D. G. Ray, K. Wollenberg, and M. G. Zagorski, *J. Am. Chem. Soc.,* **1999**, 121, 8698-8706.

44. "Solution Structure of the E200K Variant of Human Prion Protein," Y. Zhang, W. Swietnicki, M. G. Zagorski, W. K. Surewicz, and F. D. Sönnichsen, *J. Biol. Chem.* **2000**, 275, 33650-33654.

45. "Melatonin Reverses the Profibrillogenic Activity of Apolipoprotein E4 on the Alzheimer Amyloid Aβ Protein," B. Poeggeler, L. Miravelle, M. G. Zagorski, T. Wisniewski, Y.-J. Chyan, Y. Zhang, H. Shao, T. Bryant-Thomas, R. Vidal, B. Frangione, J. Ghiso, and M. Pappolla, *Biochemistry,* **2001**, 40, 14995-15001.

46. "Amyloid Aβ-The Peptide From Hell," M. G Zagorski, H. Shao, K. Ma, H. Li, J. Yang, and H. Zeng, *Regulatory Peptides*, **2001**, 97, S31.

47. "Nicotine and Amyloid Formation," H. Zeng, Y. Zhang, L.-J. Peng, H. Shao, N. K. Menon, J. Yang, A. R. Salomon, R. P. Friedland, and M. G. Zagorski, *Biol. Psychiatry,* **2001**, 49, 248-257.

48. "Intramolecular Quenching of Tryptophan Fluorescence by the Peptide Bond in Cyclic Hexapeptides," P. D. Adams, Y. Chen, K. Ma, M. G. Zagorski, F. D. Sönnichsen, M. L. McLaughlin, and M. D. Barkley, *J. Am. Chem. Soc.*, **2002**, 124, 9278-9286.

49. "Methionine 35 Oxidation Reduces Fibril Assembly of the Amyloid Aβ-(1-42) Peptide of Alzheimer's Disease," L. Hou, I. Kang, R. E. Marchant, and M. G. Zagorski, *J. Biol. Chem.*, **2002**, 277, 40173-40176.

50. "pH-Dependent Amyloid and Protofibril Formation by the ABri Peptide of Familial British Dementia," R. Srinivasan, E. M. Jones, K. Liu, J. Ghiso, R. E. Marchant, and M. G. Zagorski, *J. Mol. Biol.,* **2003**, 333, 1003-1023.

51. "ABri peptide Associated with Familial British Dementia Forms Annular and Ring-like Protofibrillar Structures," R. Srinivasan, R. E. Marchant, and M. G. Zagorski, *Amyloid: Int. J. Exp. Clin. Invest, .***2004**, 11, 10-13

52. "Solution NMR Studies of the Aβ(1-40) and Aβ(1-42) Peptides Establish that the Met35 Oxidation State Affects the Mechanism of Amyloid Formation," L. Hou, H. Shao, Y. Zhang, H. Li, N. K. Menon, E. B. Neuhaus, J. M. Brewer, I.-J. Byeon, D. G. Ray, M. P. Vitek, T. Iwashita, R. A. Makula, A. Przybyla, and M. G. Zagorski, *J. Am. Chem. Soc.*, **2004**, 126, 1992-2005.

53. "Sorting Out the Driving Forces for Parallel and Antiparallel Alignments in the Aβ Peptide Fibril Structure," L. Hou and M. G. Zagorski, *Biophys. J.,* **2004**, 86, 1-2.

54. "Raman Spectroscopic Characterization of Secondary Structure in Natively Unfolded Proteins: α-Synuclein," N. C. Maiti, M. M. Apetri, M. G. Zagorski, P. R. Carey, and V. E. Anderson, *J. Am. Chem. Soc.,* **2004**, 126. 2399-2408.

55. "Secondary Structure of α-Synuclein Oligomers: Characterization by Raman and Atomic Force Microscopy," M. M. Apetri, N. C. Maiti, M. G. Zagorski, P. R. Carey, and V. E. Anderson, *J. Mol. Biol.,* **2006**, 355, 63-71.

56. "NMR Reveals Anomalous Copper(II) Binding to the Amyloid Aβ Peptide of Alzheimer's Disease," L. Hou and M. G. Zagorski, *J. Am. Chem. Soc.*, **2006**, 128, 9260-9261.

57. "Antibodies to Potato Virus Y Bind to the Amyloid β Protein: Immunohistochemical and NMR Studies," R. P. Friedland, J. M. Tedesco, A. C. Wilson, C. S. Atwood, M. A. Smith, G. Perry, and M. G. Zagorski, *J. Biol. Chem.,* **2008**, 283, 22550-22556.

58. "Antigen-antibody Dissociation in Alzheimer's Disease: a Novel Approach to Diagnosis," K. A. Gustaw, M. R. Garrett, H. Lee, R. J. Castellani, M. G. Zagorski, A. Prakasam, S. L. Siedlak, X. Zhu, G. Perry, R. B. Petersen, R. P. Friedland, and M. A. Smith, *J. Neurochem.,* **2008**, 106, 1350-1356.

59. "NMR Uncovers a Unique Binding Motif Between α-Synuclein and Tau," M. M. Apetri, V. Lee, D. Eliezer, and M. G. Zagorski, *Protein Science,* submitted.

60. "Production of Native Protofibril Structures from Aggregation of α-Synuclein in Methanol-Water Solutions," M. M. Apetri, R. Srinivasan, V. E. Anderson, and M. G. Zagorski, *Biophys. J.*, submitted.

61. "Modification of Amyloid-β1-42 Fibril Structure by Methionine-35 Oxidation," L. Hou, H-G. Lee, F. Han, J. M. Tedesco, G. Perry, M. A. Smith, , and M. G. Zagorski, *J. Alzheimer's Disease*, **2013**, 37, 9-18.

62. "The PI3-Akt-mTOR Pathway Regulates β-amyloid Oligomer Induced Neuronal Cell Cycle Events," K. Bhaskar**,** M. Miller, A. Chludzinski, M. G. Zagorski, and B. Lamb, *Molecular Neurodegeneration,* **2009**, 4, 14-32 .

63. "Production of Micelle-Like Structures During the Early-Stages of Aβ(1-40) and Aβ(1-42) Association," L. Li, X. Mao, L. Hou, M. Miller, K. Bhaskar, V. Anderson, J. A. Mann, B. Lamb and M. G. Zagorski, *J. Mol. Biol.*, submitted.

64. "Phenolic Compounds Prevent Amyloid β-Protein Oligomerization by Site Specific Binding," K. Ono, L. Li, Y. Takamura, Y. Yoshiike, L. Zhu, F. Han, X. Mao, T. Ikeda, J. Takasaki, H. Nishijo, A. Takashima, D. B. Teplow, M. G. Zagorski, and M. Yamada, *J. Biol Chem.,* **2012**, 287, 14631-14643.

Research Proposal Activity

My starting date at CWRU was July 1, 1992, in which I was provided with $50,000 in discretionary support, as well as matching funds for a 600 MHz NMR spectrometer. My first two months of summer salary for July and August 1992, were covered by my grant with the American Health Assistance Foundation. In August 1992, I also began supporting two graduate students (Keith Marcinowski and Charlene Keane).

Agency	Proposal Title	Role	Date Submittted	Outcome	Direct Costs
NIH-Shared Instrumentation Grant	"500 Megahertz NMR Spectrometer and Facility"	Co-PI	3/30/91	Denied	$400,000
NSF-Instrumentation Program	"500 Megahertz NMR Spectrometer and Facility"	Co-PI	6/6/91	Denied	$400,000
NIH, R01	"Structure of Parathyroid Hormone"	Co-PI	11/1/91	Denied	$543,044
American Health Assistance Foundation	"Solution Structure of β-Peptide"	PI	11/1/91	Funded	$188,171
NIH, R01	"Mechanism of Amyloidogenesis of β-Peptide"	PI	2/1/92	Denied	$351,469

NIH-Shared Instrumentation Grant	"Acquisition of an 11.7 Tesla ("500 MHz") NMR Spectrometer	Co-PI	3/30/92	Denied	$389,690
NSF-Instrumentation Program	"500 Megahertz NMR Spectrometer and Facility"	Co-PI	4/6/92	Denied	$391,780
Start date at CWRU, July 1, 1992					
NIH, R01	"Mechanism of Amyloidogenesis of β-Peptide"	PI	11/1/92	Denied	$378,702
McKnight Endowment Fund for Neuroscience, Scholars Award	"Dynamics of Association of the Amyloid β-Peptide Found in Alzheimer's Disease"	PI	1/1/93	Denied	$120,000
American Federation for Aging Research, New York	"Sequence Specific pKa Measurements of the Amyloid β-Peptide Found in Alzheimer's Disease"	PI	1/15/93	Funded	$22,000
Gliatech, Inc.	"Adducts of the Amyloid β-Peptide and Glycosaminoglycans"	PI	2/9/93	Funded	$32,000
NIH-Shared Instrumentation Grant	"Acquisition of an 11.7 Tesla ("500 MHz") NMR Spectrometer"	Co-PI	4/1/93	Funded	$175,00
NSF-Instrumentation Program	"500 Megahertz NMR Spectrometer"	Co-PI	4/6/93	Funded	$200,000
Suntory Institute for Bioorganic Research	"Effects of Micelles on the Aggregational Properties of the Amyloid β-Peptide"	PI	7/1/93	Funded	$13,500
American Federation for Aging Research, Ohio Affiliate	"Effects of Inorganic Elements on the Solution Conformations and Aggregational Properties of the Amyloid β-Peptide Found in Alzheimer's Disease"	PI	6/15/93	Funded	$7,500
NIH, R01	"Mechanism of Amyloidogenesis of β-Peptide"	PI	7/1/93	Denied	$395,932
American Heart Association, Established Investigator Award	"Interactions of the Amyloid β-Peptide with Lipids and Apolipoproteins"	PI	7/1/93	Denied	$349,851
American Heart Association, Grant-In - Aid	"Interactions of the Amyloid β-Peptide with Lipids and Apolipoproteins"	PI	7/1/93	Denied	$116,764
Philip Morris, Inc.	"Effects of Cigarette Smoking on the Development of Alzheimer's Disease: Epidemiological, Clinical, and Neurobiological Studies"	Co-PI	4/1/93 12/31/94	Funded Funded	$5,000 $75,000
American Health Assistance Foundation	"Solution Structure of β-Peptide"	PI	11/1/93	Denied	$196,541
Alzheimer's Association	"Interactions of the Amyloid β-Peptide with Lipids and Apolipoproteins"	PI	1/14/94	Funded	$142,625
Alzheimer's Association	"Structures, Dynamics, and Amyloidosis of the β-Peptides Found in HCHWA-D"	PI	1/14/94	Denied	$150,000
American Federation for Aging Research, New York, Glenn Foundation Scholarship	"Effects of Calcium on the Solution Structures and Aggregational Properties of the Amyloid β-Peptide"	PI	2/1/94	Denied	$7,500

American Federation for Aging Research, New York, extension with additional funds	"Sequence Specific pKa Measurements of the Amyloid β-Peptide Found in Alzheimer's Disease"	PI	4/11/94	Denied	$15,000
NIH, Cellular Pathology, Pilot 2, PI is P. Gambetti	"Solution Structures of the β-(1-39) and β-(1-42) Peptides"	Co-PI	4/18/94	Funded	$64,000
Gliatech, Inc.	"Adducts of the Amyloid β-Peptide and Glycosaminoglycans," Competitive Renewal	PI	4/25/94	Denied	$32,000
NIH, R01	"Structures of the β-Peptides Found in HCHWA-D"	PI	5/31/94	Denied	$354,584
American Health Assistance Foundation	"Adducts of the β-Peptide and Zinc"	PI	10/31/94	Denied	$195,754
Procter & Gamble, University Exploratory Research Program	"A New Heteronuclear NOE-NMR Technique Applied to Macromolecular Complexes"	PI	1/4/95	Denied	$150,000
Alzheimer's Association	"Amyloidosis in HCHWA-D"	PI	1/15/95	Not Allowed	$150,000
NIH, Alzheimer's Center of CWRU, Pilot 2	"Solution Structure of NACP"	PI	2/15/95	Denied	$40,000
NIH, R01	"Structures of the β-Peptides Found in HCHWA-D"	PI	2/28/95	Denied	$276,032
Research Initiation Grant, Case Western Reserve University	"A Novel Heteronuclear NOE NMR Experiment"	PI	4/28/95	Funded	$5,000
RFP program, Alzheimer's Association, letter of intent sent	"A New Treatment to Prevent Amyloid Formation"	PI	9/30/95	Denied	$150,000
Research Grants, Alzheimer's Association, letter of intent sent	"A New Treatment to Prevent Amyloid Formation"	PI	3/1/96	Not Submitted	$50,000
March of Dimes	"Solution Structure of the NACP Protein"	PI	9/29/95	Denied	$108,763
NIH, Supplement to R01, AG-12981, Mark S. Kindy, PI	"Amyloidosis of the SAA Protein"	Co-PI	9/30/95	Denied	$32,000
Smokeless Tobacco Research Council, Inc.	"Protein Interactions, Nicotine and Alzheimer's Disease"	Co-PI	12/12/95	Denied	$167,535
Gliatech, Inc.	"Solution Structure of the Micelle-Bound β-(1-42) Peptide"	PI	3/31/96	Denied	$30,000
Philip Morris, Inc.	"Aβ Aggregation Studies"	Co-PI	3/18/96	Funded	$193,398
NIH, Shared Instrumentation Proposal	"Upgrade of a 9.4 Tesla 400 MHz NMR Spectrometer"	PI	3/27/96	Funded	$340,00
NIH, R01	"Solution Structure of the Amyloid β-(1-42)"	PI	6/1/96	Funded	$426,390
Smokeless Tobacco Research Council, Inc.	"Protein Interactions, Nicotine and Alzheimer's Disease	Co-PI	5/96	Funded	$176,250
Neurochem, Inc.	"NMR Binding Studies of β-Amyloid Inhibitors"	PI	3/97	Denied	$40,000

NIH, R01 GM 42101	"Fluorescence Studies of Peptide Structure and Dynamics"	Co-PI	7/1/97	Denied	$752,330
NIH, R01	"Structural Determinants of Amyloid Fibril Formation"	Co-PI	9/30/97	Denied	$655,034
NIH, R01	"Neuronal Membrane as a Target of β-Amyloid Peptide"	Co-PI	9/30/97	Denied	$629,978
NSF, IGERT 9720783	Training Program in Biophysics and Bioengineering	Co-PI	9/8/97	Denied	$2,062,511
Beckman Foundation	Undergraduate Beckman Scholars Program	Co-PI	2/15/98	Denied	$45,500
NIH, R01	"Structural Determinants of Amyloid Fibril Formation"	Co-PI	7/1/98	Denied	$655,034
NIH, R01	"Conformational Studies of Peptide Ligands"	Co-PI	4/1/98	Denied	$752,330
NIH, R01	"Biophysical Mechanisms of Prion Protein Pathogenesis"	Co-PI	6/1/98	Funded	$792,001
Smokeless Tobacco Research Council, Inc.	"Protein Interactions, Nicotine and Alzheimer's Disease	Co-PI	7/1/98	Denied	$87,122
Parke-Davis, Inc.	"Aβ Inhibitor Complexes"	PI	1/1/99	Funded	$33,000
Johnson & Johnson, Inc.	"Amyloid β-Peptide Inhibitor Complexes"	PI	1/1/99-12/31/00	Funded	$20,000
NIH, Shared Instrumentation Proposal	"Analytical Ultracentrifuge for Bioorganic/Biophysical Chemistry"	Co-PI	3/17/99	Funded	$204,495
NIH, R01	"Inhibition and Mechanism of Amyloid β-Aggregation"	PI	8/15/99	Funded	$1,117,367
American Health Assistance Foundation	"The Utility of NMR in the Design of β-Amyloid Inhibitors"	PI	10/15/99	Funded	$198,050
U.S.-Israel Binational Science Foundation	"Mechanism of Antibody Disaggregation of the β-Amyloid"	Co-PI	11/1/99	Not allowed	$159,917
NIH & Japan Society for the Promotion of Science	"Solid State NMR Studies of the Amyloid Aβ Peptide"	PI	10/27/99	Funded	$110,000
Alzheimer's Association	"Solution Structure of α-Synuclein"	PI	12/29/00	Denied	$270,000
NIH, Shared Instrumentation Proposal	"400 MHz NMR Spectrometer"	PI	3/28/01	Denied	$218,000
NIH, Administrative Supplement	Peptide Synthesizer for NIH R01	PI	8/31/01	Funded	$64,950
NSF	"Synthetic and Structural Studies on Sperm CD52"	Co-PI	9/1/01	Denied	$595,661
NIH, R01	"Molecular Basis of Doppel Protein Pathogenicity"	Co-PI	6/1/01	Denied	$1,642,000
NIH, R01	"N-Methyl and Other Peptide Inhibitors of Fibrillogenesis"	Co-PI	4/01/02	Funded	$162,460
Alzheimer's Association	"Solution Structure of α-Synuclein"	PI	12/29/01	Funded	$240,000
NIH, Shared Instrumentation Proposal	"400 MHz NMR Spectrometer"	Co-PI	3/37/03	Funded	$275,440
NIH, R01	"N-Methyl and Other Peptide Inhibitors of Fibrillogenesis"	Co-PI	7/1/02	Funded	$1,150, 003

NSF	"Synthetic and Structural Studies on Sperm CD52"	Co-PI	2/1/04	Funded	$384,000
NIH, R01	"Inhibition and Mechanism of Amyloid β-Aggregation"	PI	7/1/04	Denied	$1,746,250
American Health Assistance Foundation	"Metal Binding Structural Motifs in the Aβ Peptide"	PI	9/28/04	Denied	$300,000
Alzheimer's Association	"Methionine-35 Oxidation and Effects on Aβ Plaque Disaggregation"	PI	12/1/04	Denied	$300,000
NIH, R01	"Mechanism of Amyloid β-Aggregation"	PI	6/1/05	Funded	$1,150,000
American Health Assistance Foundation	"Metal Binding Structural Motifs in the Aβ Peptide"	PI	10/14/05	Denied	$300,000
Philip Morris Research Program	"Solution Structures of Nicotine and Nornicotine When Bound to the Aβ Peptide"	PI	8/15/05	Denied	$772,299
Alzheimer's Association	"Molecular Assemblies of the Aβ Derived Diffusible Ligands"	PI	1/6/06	Denied	$250,000
Alzheimer's Association	"NMR Structure of the Aβ Peptide Inside Living Cells"	PI	2/8/12	Denied	$250,000
Alzheimer's Association	"NMR Structure of the Aβ Peptide Inside Living Cells"	PI	2/8/13	Denied	$250,000
NIH, R21	"NMR Structure of the Aβ Peptide Inside Living Cells"	PI	5/4/15	Pending	$275,000

Completed Research Support

IIRG-02-4238 Zagorski (PI) 8/1/02-7/31/05
Alzheimer's Association $80,000 (annual direct costs)
The Solution Structure of α-Synuclein
The major goals of this project is to explore the aggregation of a-synuclein in water-methanol solution.
Role: PI

CHE-0407144 Guo (PI) 4/4/04-3/31/07
NSF
Synthetic and Structural Studies on Sperm CD52
The major goals are to synthesize and characterize the solution structure of the sperm Glycopeptide CD52
Role: Co-PI (0% effort) this collaboration was discontinued since the PI has relocated to another institution

S10 RR16702 Sayre (PI) 4/1/04-3/31/05
NIH
400 MHz NMR Spectrometer
This proposal was to purchase a walk up NMR instrument for the Department of Chemistry.
Role: Co-PI (0% effort)

R01 AG14363 Zagorski (PI) 4/1/00-3/31/06
NIH/NIA
Inhibition and Mechanism of Amyloid β-Aggregation
Biophysical studies of the amyloid Aβ peptide with the major focus toward elucidation of the amino acids making contacts during the early stages of aggregation.
Role: PI

R01 NS24469 Meredith (PI) 1/15/03-1/14/08
NIH/NIGM
N-Methyl and Other Peptide Inhibitors of Fibrillogenesis

My contributions to this project will include the execution and interpretation of the NMR experiments of the amyloid Aβ peptide and peptide inhibitors
Role: Co-Investigator (consortium)

Pending Research Support

R21 AG052708 Zagorski (PI) 4/1/16-3/31/18
NIH/NIA
NMR Structure of the Aβ Peptide Inside Living Cells
We will use NMR to study the structural ensembles of the Aβ peptide inside living eukaryotic cells, which will establish whether or not the Aβ structures *in vitro* are the same as those in living cells *in vivo*.
Role: PI