

Cornelia Mihai, Ph.D.

Curriculum Vitae

EDUCATION

- PhD, Medicinal Chemistry, University of Illinois at Chicago, Chicago, August 2001
Thesis title: "Synthetic Phosphoinositides as Substrate Analogs and Ligands of Phospholipase C". Advisor: Professor Karol S. Bruzik
- MS in Chemistry, University of Illinois at Chicago, Chicago, 1996
- BS in Chemical Engineering, Polytechnic Institute of Bucharest, Bucharest, Romania, 1981

HIGHLIGHTS

- More than 10 years research experience (3 years post-doctoral and 10 years pre-doctoral).
- Proven record in Synthetic Medicinal Chemistry, Bioorganic Chemistry, Mechanistic and Synthetic Enzymology and Analytical Chemistry.
- Proficiency in design, synthesis and characterization of organic compounds using classical and modern analytical techniques: carbohydrate analogs, organophosphorus compounds, nucleosides, oligonucleotides, natural products intermediates, heterocyclic compounds.
- In-depth knowledge of enzymes purification, enzyme characterization, enzyme kinetics, enzyme inhibition and assay development using different biochemical and biophysical techniques.
- Demonstrated skills in management of chemical and biochemical laboratories.
- Supervisory and training experience in an academic R&D setting.
- More than 14 years diverse teaching experience.
- Grants writing skills.

TEACHING EXPERIENCE

2004 – present: Northwestern Oklahoma State University, Department of Natural Science

August 2004 – May 2009

Assistant Professor of Chemistry

August 2009 – May 2014

Associate Professor of Chemistry

August 2014 – Present

Professor of Chemistry

Duties:

- Teaching General Chemistry to non-majors (lectures and laboratory sessions)
- Teaching Chemistry Seminar for senior students with majors in Chemistry, Biology and Pre-Health Sciences.

- Teaching upper division courses in Organic Chemistry (lectures and laboratory sessions), Biochemistry (lecture and laboratory sessions), Medicinal Chemistry (lectures) and Advanced Organic Chemistry (lectures).
- Preparation and delivery of student laboratories, maintenance of analytical and student laboratory equipment and chemistry supplies,
- Supervision of student research and advising students with chemistry majors and minors

1996 – 1998 University of Illinois at Chicago, College of Pharmacy, Department of Medicinal Chemistry and Pharmacognosy, Teaching Assistant

1998 University of Illinois at Chicago

- Participated at the University of Illinois at Chicago Teaching Assistants Orientation as Teaching Assistant Consultant.

1994 – 1996 University of Illinois at Chicago, Department of Chemistry, Teaching Assistant.

RESEARCH EXPERIENCE

July 2002 – July 2004. Postdoctoral Research Associate, Department of Chemistry, University of Iowa with Professor Amnon Kohen

January 2002 – July 2002. Research Scientist, Advanced Oligonucleotide Synthesis and Molecular Genetics, Integrated DNA Technologies, Coralville, Iowa

September 2001 – January 2002. Research Associate, Albany Molecular Research, Inc., Biocatalysis Division, Coralville, Iowa

August 1996 – August 2001. Ph.D. Graduate Assistant, Dept. of Medicinal Chemistry and Pharmacognosy, University of Illinois at Chicago with Professor Karol S. Bruzik

March 1991 – July 1994. Research Scientist, Institute of Oncology, Department of Chemical Carcinogenesis and Molecular Biology, Bucharest, Romania

April 1994 – July 1994. Visiting Scientist, University of Oviedo, Department of Organic and Inorganic Chemistry, Oviedo, Spain

November 1984 – March 1991. Research Scientist and Project leader, Food Chemistry Institute, Dept. of Food Analysis, Bucharest, Romania

Grant Applications 2009 – 2018

1. OK-INBRE Faculty Mini-Grant Proposal – not funded

Proposal title: “***Synthesis of dihydrofolate reductase substrate analogs modified at the para-aminobenzoyl moiety***”

Funding agency: OK-INBRE (National Institutes of Health and the Oklahoma State Regents for Higher Education)

Funds requested: \$24,907.00

Date: March 2009

2. NSF-CCLI grant proposal – not funded

Proposal title: “***Integrating NMR Spectroscopy for the Enhancement of the Undergraduate Chemistry Curriculum at Northwestern Oklahoma State University***”

Funding agency: NSF

Funds requested: \$174,900.00

Date: May 2009

3. OK-INBRE Faculty Mini-Grant Proposal – funded

Proposal title: “***Synthesis of several L-glutamates derivatives modified at the aromatic ring, as precursors of new dihydrofolate reductase substrate analogs***”

Funding agency: National Institutes of Health and the Oklahoma State Regents for Higher Education

Funds received: \$24,731.00

Date: March 2010

4. OK-INBRE Equipment Grant Proposal – not funded

Proposal title: “***Acquisition of an Automated and Multi-Purpose Flash Chromatography Purification System at NWOSU funding agency***”

Funding agency: National Institutes of Health and the Oklahoma State Regents for Higher Education

Funds requested: \$ 21,669

Date: January 2011

5. OK-INBRE Equipment Grant Proposal – funded

Proposal title: “***Acquisition of a Proteins Purification System Critical for the Enhancement of the Undergraduate Science Curriculum at Northwestern Oklahoma State University***”

Funding agency: National Institutes of Health and the Oklahoma State Regents for Higher Education

Funds received: \$ 19,569.00

Date: July 2011

6. OK-INBRE Equipment Grant Proposal – not funded

Proposal title: ***“Development of a Biomedical Research Laboratory at NWOSU”***

Funding agency: National Institutes of Health and the Oklahoma State Regents for Higher Education

Funds requested: \$ 34,148.00

Date: January 2012

7. BioRad Biotechnology Explorer Mini-Grant 2011-2012 – not funded

Proposal title: ***“Acquisition of Electrophoresis Equipment and Materials Essential for the Improvement of the Undergraduate Science Curriculum at Northwestern Oklahoma State University”***

Funding agency: Bio-Rad Laboratories

Funds requested: \$ 1,965.00

Date: February 2012

8. OK-INBRE Faculty Mini-Grant Proposal – not funded

Proposal title: ***“Synthesis of several L-glutamates derivatives modified at the aromatic ring, as precursors of new dihydrofolate reductase substrate analogs”***

Funding agency: National Institutes of Health and the Oklahoma State Regents for Higher Education

Funds requested: \$24,731.00

Date: March 2013

9. OK-INBRE Small Equipment Grant Proposal – not funded

Proposal title: ***“Acquisition of an Analytical Automatic Polarimeter designed for the Enhancement of the Undergraduate Science Curriculum at Northwestern Oklahoma State University”***

Funding agency: National Institutes of Health and the Oklahoma State Regents for Higher Education

Funds requested: \$15,000.00

Date: February 2014

10. OK-INBRE Large Equipment Grant Proposal – not funded

Proposal title: ***“Development of a Life Sciences Research Laboratory designed for the Enhancement of the Undergraduate Science Curriculum at Northwestern Oklahoma State University”***

Funding agency: National Institutes of Health and the Oklahoma State Regents for Higher Education

Funds requested: \$35,000.00

Date: February 2014

PROFESSIONAL AFFILIATIONS

Organic Chemistry and Medicinal Chemistry Divisions, American Chemical Society, 1995.

AWARDS

- John Sheffield Teacher of the Year, awarded by Northwestern Oklahoma State University, 2017.
- Northwestern Oklahoma State University recognition awards for submission of a grant on behalf of NWOSU, 2009-2011.
- Travel Award, April 2001 (Awarded by American Chemical Society, Division of Medicinal Chemistry).
- Joseph Celer Scholarship Award, 2001 (Awarded by the College of Pharmacy, University of Illinois at Chicago).

RELEVANT PUBLICATIONS

1. **Cornelia Mihai**, Xiangjun Yue, Li Zhao, Alex Kravchuk, Ming-Daw Tsai and Karol S. Bruzik, Nonhydrolyzable Analogs of Phosphatidylinositol as Ligands of Phospholipases C, *New Journal of Chemistry*, 2010, 34, 925-933.
2. Y. Liu, **C. Mihai**, R. J. Kubiak, M. Rebecchi, K. S. Bruzik, Phosphorothiolate Analogues of Phosphatidylinositols as Assay Substrates for Phospholipase C, *ChemBiochem*, 2007, 8, 1430-1439.
3. Nitish Agrawal, **Cornelia Mihai**, and Amnon Kohen, Microscale Synthesis of isotopically labeled R -[6- x H]-N 5 , N 10 -methylene 5,6,7,8-tetrahydrofolate as a cofactor for thymidylate synthase, *Anal. Biochem.* 2004, 328, 44-5
4. Nitish Agrawal, Baoyu Hong, **Cornelia Mihai**, and Amnon Kohen, Vibrationally enhanced hydrogen tunneling in the *E. coli* thymidylate synthase catalyzed reaction, *Biochemistry*, 2004, 43, 1998-2006.
5. **Cornelia Mihai**, Alexander V. Kravchuk, Ming-Daw Tsai and Karol S. Bruzik, Application of Brønsted-type LFER in the study of the phospholipase C mechanism, *J. Am. Chem. Soc.*, 2003, 125, 3236-3242.
6. Robert Kubiak, Xiangjun Yue, Robert J. Hondal, **Cornelia Mihai**, Ming-Daw Tsai and Karol Bruzik, Identification of a novel catalytic triad with dual function in enzymatic cleavage of the P-O bond, *Biochemistry*, 2001, 40, 5422-5432.

7. **Cornelia Mihai**, Jan Mataka, Suzette Riddle, Ming-Daw Tsai and Karol S. Bruzik, Synthesis of enantiomerically pure phosphorothiolate assay substrate for Phosphatidylinositol-specific Phospholipase C, *Bioorganic & Medicinal Chemistry Letters*, 1997, 7, 1235-1238.

8. Colovai, A., Herdan, J., Popovici, C., **Cornelia Mihai**, Grigoras, C., Voiculescu, N., Niculescu-Duvaz, I., In vitro inhibition of DNA adducts formation by hindered hydroquinols and quinines, *Carcinogenesis*, 1993, 14, 1137-1141.

RELEVANT PRESENTATIONS

1. Nitish Agrawal, **Cornelia Mihai**, Baoyu Hong, Steven Sikorski, Lin Wang and Amnon Kohen "Environmentally Coupled Tunneling in Enzymatic Hydride Transfer Reactions", Gordon Research Conference on Isotopes in Biological CA, February 15-20, 2004.
2. Nitish Agrawal, Baoyu Hong, **Cornelia Mihai**, and Amnon Kohen. "Enzyme Dynamics and Quantum Mechanical Tunneling in w.t. *E. coli* Thymidylate Synthase", The 12th Biocatalysis and Bioprocessing Conference, University of Iowa, Iowa City, October 27-29, 2003.
3. Nitish Agrawal, Baoyu Hong, **Cornelia Mihai**, and Amnon Kohen. "Enzyme Dynamics and Quantum Mechanical Tunneling in w.t. *E. coli* Thymidylate Synthase", XXIII Midwest Enzyme Chemistry Conference, University of Illinois at Chicago, Chicago, October 4, 2003.
4. Nitish Agrawal, **Cornelia Mihai**, and Amnon Kohen. "Temperature Dependence Studies of Kinetic Isotope Effects with w.t. *E. coli* Thymidylate Synthase", International Isotope Effects Conference, Uppsala, Sweden, June 22-27, 2003.
5. Bruzik, K. S., **Mihai, C.**, Kubiak, R. J., Kravchuk, A. L., Tsai, M.-D. "Matched Enzyme-Substrate Mutagenesis and Brønsted LFER study show strong cooperative effects in catalytic mechanism of phospholipase C", 222nd ACS National Meeting, Chicago, August 26-30, 2001.
6. Kubiak, R. J., Kravchuk, A. V., **Mihai, C.**, Tsai, M.-D., Bruzik, K. S. "Cooperative Effects in Enzymatic Catalysis of Phosphorus-Oxygen Bond Cleavage", Post ICPC-15, The 15th International Conference on Phosphorus Chemistry, Beijing, August 6-8, 2001.
7. **Mihai, C.**, Bruzik, K. S. "Brønsted-Type Linear Free Energy Relationships in The Enzymatic Cleavage of Phosphorus-Oxygen Bond", VIth International Conference on Heteroatom Chemistry, Lodz, Poland, June 22-27, 2001.

8. **Mihai, C.**, Kravchuk, A. V., Tsai, M.-D., Bruzik, K. S. "Use of Brønsted-type LFER in the study of the mechanism of Phospholipase C", 221st ACS National Meeting, San Diego, April 1-5, 2001.
9. **Mihai, C.**, Kravchuk, A. V., Tsai, M.-D., Bruzik, K. S. "The use of Brønsted-type LFER in the study of the mechanism of Phospholipase C", 39th Annual Medicinal Chemistry Meeting, Minnesota-Illinois-Kansas-Iowa, University of Minnesota, Minneapolis, April, 2001.
10. **Mihai, C.**, Kravchuk, A. V., Tsai, M.-D., Bruzik, K. S. "The use of Brønsted-type LFER in the study of the mechanism of Phospholipase C", XX Midwest Enzyme Chemistry Conference, University of Chicago, Chicago, September 23, 2000.
11. Kubiak, R. J., **Mihai, C.**, Yue, X., Bruzik, K. S. "Comprehensive Synthesis of Inositol Phospholipids and Their Conformationally Constrained Analogs", The 13th International Conference on Organic Synthesis, ICOS-13, Warsaw, Poland, July 1-5, 2000.
12. **Mihai, C.**, Kravchuk, A. V., Tsai, M.-D., Bruzik, K. S. "The use of Brønsted-type LFER in the study of the mechanism of Phospholipase C. 38th Annual Medicinal Chemistry Meeting, Minnesota-Illinois-Kansas-Iowa, University of Iowa, Iowa City, March 31-April2, 2000.
13. Bruzik, K. S., Kubiak, R. J., Hondal, R. J., Yue, X., **Mihai, C.**, Tsai, M.-D. "Identification of a Novel Catalytic Triad with Dual Function in Enzymatic Cleavage of the P-O Bond", Gordon Conference on Enzyme Mechanisms and Cofactors, Meriden, NH, July 1999.
14. Bruzik, K. S., Kubiak, R. J., Hondal, R. J., Yue, X., **Mihai, C.**, M., Tsai, M.-D. "Identification of a Novel Catalytic Triad with Dual Function in Enzymatic Cleavage of the P-O Bond", American Society of Biochemistry and Molecular Biology, San Francisco, May 1999.
15. Kubiak, R. J., Hondal, R. J., Yue, X., **Mihai, C.**, Tsai, M.-D., Bruzik, K. S. "Identification of a Novel Catalytic Triad with Dual Function in Enzymatic Cleavage of the P-O Bond", XVIII Midwest Enzyme Chemistry Conference, Chicago, October 3, 1998.
16. Kubiak, R. J., Yue, X., **Mihai, C.**, Bruzik, K. S. "Synthesis and Application of Analogs of Phosphatidylinositol to Study Mechanism of Phosphatidylinositol-Specific Phospholipase C", ICPC-14, The 14th International Conference of Phosphorus Chemistry, Cincinnati, July 12-17, 1998.

17. Kubiak, R. J., **Mihai, C.**, Yue, X., Bruzik, K. S. "Phosphatidylinositol-Specific Phospholipase C and Ribonuclease A: A mechanistic comparison", 36th Annual Medicinal Chemistry Meeting, Minnesota-Illinois-Kansas-Iowa, University of Illinois at Chicago, Chicago, May 22-24, 1998.

18. **Mihai, C.**, Mataka, J., Bruzik, K. S. "Stereospecific synthesis of thiol analogs of phosphatidylinositol", XVI Midwest Enzyme Chemistry Conference, Chicago, October 12, 1996.