

Ernest L. Maynard, Jr.
Assistant Professor

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APPOINTMENTS

- Aug 2004 *Assistant Professor*, Uniformed Services University of the Health Sciences
- Oct 2004 *Member*, Molecular and Cell Biology Graduate Program
- Nov 2004 *Member*, Emerging Infectious Disease Graduate Program
- Aug 2005 *Member*, Biomedical Instrumentation Center Committee
- Aug 2006 *Member*, Graduate Education Committee

EDUCATION AND TRAINING

- July 2001 *N.I.H. Postdoctoral Fellow*
The Johns Hopkins University School of Medicine, Baltimore, MD
Area of focus: Biophysical studies of peroxisomal protein import
Mentor: Dr. Jeremy M. Berg
- May 2001 *Ph.D., Chemistry*
Texas A&M University, College Station, TX
Thesis title: "Kinetics and Mechanism of Acetyl-CoA Synthase, a CO-Channeling Enzyme"
Mentor: Dr. Paul A. Lindahl
- Dec 1995 *B.S., Chemistry*
Texas A&M University, College Station, TX
Area of focus: Organometallic chemistry of CO₂ catalysis
Mentor: Dr. Donald J. Darensbourg

RESEARCH ACTIVITIES

Peer-Reviewed Publications

- Darensbourg, D.J.; Maynard, E.L.; Holtcamp, M.W.; Klausmeyer, K.K. and Reibenspies, J.H. "Synthesis and X-ray Structure of the Novel Aluminum Complex [η^3 -HB(3-Phpz)₂(5-Phpz)₂Al][AlCl₄]. Catalysis of CO₂/Propylene Oxide to Propylene Carbonate by the AlCl₄⁻ Anion" *Inorg. Chem.* **1996**, *35*, 2682-2684.
- Maynard, E.L. and Lindahl, P.A. "Kinetic Mechanism of Acetyl-CoA Synthesis Catalyzed by CO Dehydrogenase Acetyl-CoA Synthase: Preliminary Evidence for a Molecular Tunnel" *J. Inorg. Biochem.* **1999**, *74*, 227.
- Maynard, E.L. and Lindahl, P.A. "Evidence of a Molecular Tunnel Connecting the Active Sites for CO₂ Reduction and Acetyl-CoA Synthesis in Acetyl-CoA Synthase from *Clostridium thermoaceticum*" *J. Am. Chem. Soc.* **1999**, *121*, 9221-9222.
- Maynard, E.L.; Sewell, C.; and Lindahl, P.A. "Kinetic Mechanism of Acetyl-CoA Synthase: Steady-State Synthesis at Variable CO/CO₂ Pressures" *J. Am. Chem. Soc.* **2001**, *123*, 4697-4703.

5. Maynard, E.L. and Lindahl, P.A. "Catalytic Coupling of the Active Sites in Acetyl-CoA Synthase, a Bifunctional CO-Channeling Enzyme" *Biochemistry* **2001**, *40*, 13262-13267.
6. Gatto G.J., Maynard, E.L., Guerrero, A.L., Geisbrecht, B.V., Gould, S.J., and Berg, J.M. "Correlating structure and affinity for PEX5-PTS1 complexes" *Biochemistry* **2003**, *42*, 1660-1666.
7. Maynard, E.L., Tan, X., and Lindahl, P.A. "Autocatalytic Activation of Acetyl-CoA Synthase" *Journal of Biological Inorganic Chemistry* **2004**, *9*, 316-322.
8. Maynard, E.L., Gatto, G.J., and Berg, J.M. "Pex5p Binding Affinities for Canonical and Non-Canonical PTS1 Peptides" *Proteins* **2004**, *55*, 856-61.
9. Paul, I., Cui, J., and Maynard, E.L. "Zinc Binding to the HCCH Motif of HIV-1 Vif Induces a Conformational Change that Mediates Protein-Protein Interactions" *Proc. Nat. Acad. Sci. USA* **2006**, *103*, 18475-80.
10. Maynard, E.L. and Berg, J.M. "Quantitative Analysis of Peroxisomal Targeting signal Type-1 Binding to Wild-type and Pathogenic Mutants of Pex5p Supports an Affinity Threshold for Peroxisomal Protein Targeting" *J. Mol. Biol.* **2007**, March 12 [in press].

Funding

Current

New Investigator Start Up Grant

PI, Dr. Ernest Maynard

Uniformed Services University of the Health Sciences

C071HI

Aug 2004 - Aug 2007

Total direct costs: \$300,000 (\$150,000 equipment + \$150,000 supplies)

Past

The Role of PEX5 in Peroxisomal Protein Trafficking

NIH Postdoctoral Fellowship

PI, Dr. Ernest Maynard

NIH/NIDDK

F32 DK60371

Aug 2001- Aug 2004

Total annual direct costs: \$15,000 (discretionary funds) + NRSA salary

The Mechanism of Acetyl-CoA Synthase, a CO-Channeling Enzyme

Chemistry/Biology Interface Award

PI, Ernest Maynard (Mentor, Paul A. Lindahl)

NIH/NIGMS

GM 08523

Sept 1999- May 2001

Total annual direct costs: \$54,744 (tuition, stipend, travel)

TEACHING

Fall 2004

BCO520 Graduate Biochemistry: *Enzyme Structure, Function, and Mechanism Section*

BCO521 Graduate Biochemistry Supplement: *Enzyme Structure, Function, and Mechanism Section*

Fall 2005

MS1 Medical Biochemistry: *Protein targeting, Cholesterol and bile acid metabolism, Steroid hormone biosynthesis, Phospholipids and sphingolipids, Eicosanoid synthesis*

Fall 2006

Curriculum vitae, Ernest L. Maynard

MS1	Medical Biochemistry: <i>Cholesterol and bile acid metabolism, Steroid hormone biosynthesis, Phospholipids and sphingolipids, Eicosanoid synthesis</i>
BCO520	Graduate Biochemistry: <i>Enzyme Structure, Function, and Mechanism Section</i>
BCO521	Graduate Biochemistry Supplement: <i>Enzyme Structure, Function, and Mechanism Section</i>

MENTORING

Advisees

Name	Dates	Degree	Degree Received
Stephanie Ford-Molvik	09/06-03/07	B.S.	-
Rachael Nhan	07/06-03/07	M.S.	-
Sparsh Gola	06/06-08/06	Blair HS Junior	n/a
Indrani Paul	04/05-07/06	Ph.D.	n/a
Ankush Jain	05/05-08/05	Quince Orchard HS Diploma	n/a
Jian Cui	07/05-10/05	Dulaney HS Diploma	n/a

Thesis Committees

Name	Program	Thesis Title (Abbreviated)	Years
Shilpi Paul	MCB	Characterization of FAE-like KCSs	2004-2007
Ryan Jochim	EID	Leishmania receptors	2005-
Beth Carpenter	MCB	Structure/Function of Fur	2005-
Cristina Stoica	MCB	T regulatory cell functions	2005-
Robert Cybulski	EID	Exosporium of <i>B. anthracis</i>	2006-
Brett Swierczewski	EID	Protein Kinase A and Schistosomiasis	2006-

Graduate Program Participation

Emerging and Infectious Disease Program

Date	Activity
11/04	Appointed as faculty member
2005-present	Interviewed prospective graduate students

Molecular and Cell Biology Program

Date	Activity
10/04	Appointed as faculty member
2005-present	Interviewed prospective graduate students

ORGANIZATIONAL ACTIVITIES

Conferences and Community Activities

Organizer and participant, Johns Hopkins Community Biophysics Day, March 2002, and 2003

Chair, Gordon Graduate Research Seminar: Bioinorganic Chemistry, January 2002

Vice Chair, Gordon Graduate Research Seminar: Bioinorganic Chemistry, January 2001

Organizer and coordinator, Departmental Seminar Series, USUHS, 2006-

Grant Review Groups

Department of Energy, *Grant Reviewer*, 2003

Professional Societies

American Chemical Society, *Member*, 1995-present

American Association for the Advancement of Science, *Member*, 1995-present

RECOGNITION

Awards and Honors

N.I.H. Postdoctoral Fellowship (2001-2004)
N.I.H. Chemistry/Biology Interface Award (1999-2001)
2000 A.E. Martell Travel Award (1999 and 2000)

Invited Talks

“Mechanistic Studies of The Bifunctional Acetyl-CoA Synthase Found in *Clostridium thermoaceticum*” Gordon Graduate Research Seminar: Bioinorganic Chemistry, Ventura, CA, January **1999**.

“Digging Deeper Into The Catalytic Mechanism of Acetyl-CoA Synthase” Gordon Graduate Research Seminar: Bioinorganic Chemistry, Ventura, CA, January **2000**.

“The Bifunctional CO-Channeling Mechanism of Acetyl-CoA Synthase” Gordon Graduate Research Seminar: Bioinorganic Chemistry, Ventura, CA, January **2001**.

“Pex5-PTS1 Structure and Thermodynamics in Peroxisomal Protein Import and Disease” Department of Chemistry, Johns Hopkins University, Baltimore, MD, January **2004**.

“HIV-1 Vif: Metal Binding, Conformational Flexibility and Biological Interactions” Department of Structural Biology, University of Pittsburgh School of Medicine, Pittsburgh, PA, August **2006**.

“Zinc-induced folding and RNA recognition by Vif” Department of Chemistry and Biochemistry, University of Wisconsin-Madison, WI, September **2007**.

“Metal Binding Specificity and Conformational Flexibility of HIV-1 Vif” Department of Chemistry, Texas A&M University, College Station, TX, October **2007**.

Presentations

“The Kinetic Mechanism of Tyrosine Hydroxylase” Oral presentation, Literature Seminar Series, Texas A&M University, College Station, TX, September **1997**.

“Kinetic mechanism of acetyl-CoA synthesis catalyzed by CO dehydrogenase / acetyl-CoA synthase: preliminary evidence for a molecular tunnel” Poster presentation, 9th Annual International Conference on Bioinorganic Chemistry, Minneapolis, MN, July **1999**.

“Kinetics and Mechanism of The Ni-Fe/S Containing Acetyl-CoA Synthase from *Clostridium thermoaceticum*” Poster presentation, Center for Advanced Biomolecular Research (CABR) Symposium, College Station, TX, November **2000**.

“The Role of PEX5 in Peroxisomal Protein Trafficking” Poster presentation, Gordon Graduate Research Seminar: Bioinorganic Chemistry, Ventura, CA, January **2002**.

“Biophysical Studies of Peroxisomal Protein Import” Poster presentation, 14th Annual Protein Society Meeting, San Diego, CA, August **2002**.

“Metal-Dependent Protein Targeting” Poster presentation, Metals in Biology Gordon Research Conference, Ventura, CA, January **2005**.

“Metal binding and conformational properties of a novel motif in HIV-1 Vif”, Uniformed Services University of the Health Sciences Research Week, Bethesda, MD, May **2006**.

“The Vif HCCH Motif Mediates Protein-Protein Interactions in Response to Zinc”, Biopolymers Gordon Research Conference, Newport, RI, June **2006**.

“Probing the Molecular Mechanism of HIV-1 Vif”, Uniformed Services University of the Health Sciences Research Week, Bethesda, MD, May **2007**.