

## BIOGRAPHICAL SKETCH

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NAME Elan Zohar Eisenmesser	POSITION TITLE Asst.Prof. University of Colorado Denver, School of Medicine, Department of Biochemistry and Molecular Genetics.		
eRA COMMONS USER NAME (credential, e.g., agency login) Eisenmesser.E			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
State Univ. Stony Brook, NY Purdue University, IN Natl. Cancer Inst., MD Brandeis University, MA	B.Sc. PhD	1987-1991 1992-1998 1998-2001 2001-2006	Physics & Astronomy Biology Biophysics/Biochem. Biophysics/Biochem

### A. Positions and Honors.

#### Professional Experience

1987-1991	State University of New York Stony Brook, Stony Brook, New York Undergraduate Research: Physics Dept. (Peter Paul, Ph.D.) and Astro. Dept. (Frederick Walter, Ph.D.)
1992-1998	Purdue University, West Lafayette, Indiana Graduate Research: Biochemical and structural studies of a band 3 peptide with glycolytic enzymes, developed computational algorithm of energy embedding for CHARMMv23, accuracy of bound peptide structures determined by exchange transferred nuclear Overhauser data, NMR studies of a virally encoded fungal toxin and the Rous sarcoma virus capsid protein (Carol Beth Post, Ph.D).
1998-2001	National Cancer Institute-FCRDC, Frederick, Maryland PostDoctoral Research: Interleukin-13 purification, biochemical analysis (CD,MS), and solution structure determination using NMR.
2001-2006	Brandeis University, Waltham, Massachusetts PostDoctoral Research: Dynamics and mechanism of peptidyl-prolyl isomerases using multiple techniques that include mutagenesis, crystallography and NMR. Characterizing isomerase viral targets.
2006-	University of Colorado Denver, School of Medicine, Aurora, Colorado Assistant Professor Research: Ligands-receptors involved in cancer and enzyme dynamics.

#### Honors:

1991	SPS Physics Honor Society
1992-93	NIH Biophysics Training Grant
1995-96	NIH Biophysics Training Grant
2007-08	American Cancer Society Institutional Research Grant, UC Cancer Center

### B. Selected peer-reviewed publications (in chronological order).

1. **Eisenmesser EZ**, Post CB "Insights into tyrosine phosphorylation control of protein-protein association from the NMR structure of a band 3 peptide inhibitor bound to glyceraldehyde-3-phosphate dehydrogenase" *Biochemistry* 37:867-77 (1998).
2. Post CB, Gaul BS, **Eisenmesser EZ**, Schneider ML "NMR structure of phospho-tyrosine signaling complexes" *Med Res Rev* 19:295-305 (1999).
3. Pomes R, **Eisenmesser EZ**, Post CB, Roux B "Calculating excess chemical potentials using dynamic simulations in the fourth dimension" *J Chem Phys* 111:3387-95 (1999)
4. **Eisenmesser EZ**, Kapust RB, Nawrocki JP, Mazzulla MJ, Pannell LK, Waugh DS, Byrd RA "Expression, purification, refolding, and characterization of recombinant human interleukin-13: utilization of intracellular processing" *Protein Expr Purif* 20:186-95 (2000).

5. **Eisenmesser EZ**, Zbell AP, Post CB “Accuracy of bound peptide structures determined by exchange transferred nuclear Overhauser data: a simulation study” *J Biomol NMR* 17:17-32 (2000).
6. Kingston RL, Fitzon-Ostendorp T, **Eisenmesser EZ**, Schatz GW, Vogt VM, Post CB, Rossmann MG “Structure and self-association of the Rous sarcoma virus capsid protein” *Structure* 8:617-28 (2000).
7. **Eisenmesser EZ**, Horita DA, Altieri AS, Byrd RA “Solution structure of interleukin-13 and insights into receptor engagement” *J Mol Biol.* 310:231-41 (2001).
8. **Eisenmesser EZ**, Horita DA, Byrd RA “Secondary structure and backbone resonance assignments for human interleukin-13” *J Biomol NMR* 19:93-4 (2001).
9. Bosco DA, **Eisenmesser EZ**, Pochapsky S, Sundquist WI, Kern D “Catalysis of cis/trans isomerization in native HIV-1 capsid by human cyclophilin A” *Proc Natl Acad Sci U S A.* 99:5247-52 (2002).
10. **Eisenmesser EZ**, Bosco DA, Akke M, Kern D “Enzyme dynamics during catalysis” *Science* 295:1520-3 (2002).
11. Wolf-Watz M, Thai V, Henzler-Wildman K, Hadjipavlou G, **Eisenmesser EZ**, Kern D “Linkage between dynamics and catalysis in a thermophilic-mesophilic enzyme pair” *Nat Struct Mol Biol.* 11:945-9 (2004).
12. **Eisenmesser EZ**, Millet O, Labeikovsky W, Korzhnev DM, Wolf-Watz M, Bosco DA, Skalicky JJ, Kay LE, Kern D “Intrinsic dynamics of an enzyme underlies catalysis” *Nature* 438:117-21 (2005)
13. Kern D, **Eisenmesser EZ**, Wolf-Watz M “Enzyme dynamics during catalysis measured by NMR spectroscopy” *Methods Enzymol.* 394:507-24 (2005)
14. Labeikovsky W, **Eisenmesser EZ**, Bosco D, Kern D “Structure and dynamics of pin1 by NMR” *J Mol Biol.* 367:1370-81 (2007)
15. Thai V, Renesto P, Fowler CA, Brown D, Davis T, Gu W, Pollock DD, Kern D, Raoult D, **Eisenmesser EZ**. “Structural, biochemical, and in vivo studies of the first virally encoded cyclophilin from the Mimivirus” *J Mol Biol.* 378, 71-86 (2008)
16. Davis T, Walker J, Ouyang H, Mackenzie F, Newman E, **Eisenmesser EZ**, Dhe-Paganon S “The Crystal Structure of Human WD40-Repeat Domain Peptidyl-Prolyl Isomerase” *FEBS,* 275, 2283-95 (2008).
17. Kovacs JM, Hannan JP, **Eisenmesser EZ**, Holers VM. “Mapping of the C3D ligand binding site on complement receptor 2 (CR2/CD21) using nuclear magnetic resonance and chemical shift analysis “ *J. Biol Chem.* 284, 9513-9520 (2009).
18. Schlegel J, Armstrong G, Redzic JS, Zhang F, and **Eisenmesser EZ**. “Characterizing and controlling the inherent dynamics of cyclophilin-A” *Protein Science* 18, 811-824 (2009).
19. Schlegel J, Redzic JS, Porter CC, Yurchenko V, Bukrinsky M, Armstrong GS, Zhang F, Isern NG, DeGregori J, Hodges R, **Eisenmesser EZ**. “Solution characterization of the extracellular region of EMMPRIN/CD147 and its interaction with its enzyme ligand cyclophilin-A”. *J Mol Biol.*, 18, 518-535 (2009).
20. Clarkson MW, Lei M, **Eisenmesser EZ**, Labeikovsky W, Redfield A, Kern D “Mesodynamics in the SARS nucleocapsid measured by NMR field cycling” *J. Biomol. NMR* 45:217-225 (2009).
21. Gardino AK, Villali J, Kivenson A, Lei M, Liu CF, Steindel P, **Eisenmesser EZ**, Labeikovsky W, Wolf-Watz M, Clarkson MW, Kern D. “Transient non-native hydrogen bonds promote activation of a signaling protein.” *Cell* 11:139(6):1049-1051 (2009).
22. Yurchenko V, Constant S, **Eisenmesser EZ**, Bukrinsky M. “Cyclophilin-CD147 interactions: a new target for anti-inflammatory therapeutics.” *Clin Exp Immunol.* 160(3):305-317 (2010).
23. Kovacs JM, Hannan JP, **Eisenmesser EZ**, Holers VM. “Biophysical investigations of

Program Director/Principal Investigator (Last, First, Middle): Eisenmesser, Elan Z.

complement receptor 2-ligand interactions reveal amino acid contacts unique to each receptor-ligand pair. " J. Biol Chem. 285(35), 27251-8 (2010).

24. Davis TL, Walker JR, Campagna-Slater V, Finerty PJ, Paramanathan R, Bernstein G, MacKenzie F, Tempel W, Ouyang H, Lee WH, **Eisenmesser EZ**, Dhe-Paganon S. "Structural and biochemical characterization of the human cyclophilin family of peptidyl-prolyl isomerases." PLoS Biol. 8(7):e1000439 (2010).
25. Bosco DA, **Eisenmesser EZ**, Clarkson MW, Wolf-Watz M, Labeikovsky W, Millet O, Kern D. "Dissecting the microscopic steps of the cyclophilin A enzymatic cycle on the biological substrate HIV capsid by NMR." J. Mol Biol. PMID:20708627 (2010).

### C. Research Support.

#### Active:

National Science Foundation MCB-0820567 9/1/08-8/31/11  
"Probing dynamics within an enzyme family."  
\$369,847  
Role: PI

#### Previous:

Milheim Foundation for cancer prevention, treatment, and cure. 7/1/08-6/30/09  
"Characterizing the CD147 receptor and its cyclophilin ligand interactions."  
\$10,000  
Role: PI

"Characterizing the CD147 receptor and its cyclophilin ligand interactions." 7/1/08-6/30/09  
Cancer League of Colorado,  
\$30,000  
Role: PI

"Characterizing the CD147 receptor and its cyclophilin ligand interactions." 6/1/07-6/30/08  
American Cancer Society/University of Colorado Cancer Center Seed Grant  
\$20,000  
Role: PI