

# Exploring the Role of Protein Conformational Dynamics in Molecular Recognition using NMR

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## ABSTRACT

Proteins often bind small molecules modulators or substrates with dynamic substructures. Knowing how the internal motions of these substructures change upon substrate binding can help guide inhibitor design. NMR spectroscopy is an attractive means for identifying these changes, as it can profile sequence-specific changes over a broad time scale. Accordingly, this presentation will discuss our NMR studies of bacterial proteins supporting resistance to beta-lactam antibiotics. While our findings are still restricted mainly to the protein backbone, they suggest enhanced protein flexibility can amplify antibiotic resistance.

### BIO:

### Biography

2010-present

Associate Professor, University of Notre Dame

2010-present

Concurrent Associate Professor, Department of Physics,
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2003-2010

Assistant Professor, University of Notre Dame

1994-2003

Senior Investigator, Structural Biology and Biophysics, Vertex Pharmaceuticals

1993-1994

Postdoctoral Fellow, ETH-Zürich, Switzerland

1993

Ph.D. in Molecular Biophysics, University of Michigan

### B.S. in Applied and Engineering Physics, Cornell University

#### Selected Awards

2011

Edmund P. Joyce Award for Excellence in Undergraduate Teaching 1993-1994 Damon Runyon-Walter Winchell Cancer Research Fund Postdoctoral Fellowship 1989-1991

Molecular Biophysics Predoctoral Training Fellowship