

## MMI 291 Seminar Series

Current Theme: Interdisciplinary Research  
Winter Quarter 2025 – CRN 30957

**Friday Seminar at 12:10-1 p.m.**

**Genome and Biomedical Sciences Facility, Room 1005**

### “Structural Basis for RNA editing by ADARs: Advancing Tools to Treat Genetic Disorders”

#### Research Bio

Andrew Fisher is a Professor in the Departments of Chemistry and Molecular and Cellular Biology. His lab focuses on understanding the structural basis for function of biologically important macromolecules. The lab utilizes the disciplines of X-ray crystallography and Cryo-EM to determine the atomic resolution structures of the macromolecules and higher-ordered complexes. The molecule's atomic resolution structure provides tremendous insight into understanding how the macromolecule functions. In collaboration with Peter Beal's lab (UC-Davis), the Fisher lab has recently been focusing on the structural basis for RNA editing by the enzyme Adenosine Deaminase acting on RNA (ADAR). Key structural insights identified in the lab have provided a better understanding on ADAR's function and sequence preference in RNA editing, which is crucial for several biological processes. Additionally, structures determined in the lab have led to incorporation of nucleotide analogs in guide-RNA to help facilitate improved site-directed RNA editing to treat genetic disorders at the RNA level.

#### Publications

Fisher, A. J., and Beal, P. A. (2024). “Structural Perspectives on Adenosine to Inosine RNA editing by ADARs”. *Molecular Therapy Nucleic Acids*. **35**:102284. (PMID: [39165563](#))

Doherty, E., Wilcox, X., van Sint Fiet, L., Kemmel, C., Turunen, J., Klein, B., Tantillo, D., Fisher, A. J., and Beal, P. A. (2021). “Rational Design of RNA Editing Guide Strands: Cytidine Analogs at the Orphan Position”. *J. Am. Chem. Soc.*, **143**:6865-6876. (PMID: [33939417](#))

Thuy-Boun, A. S., Thomas, J. M., Grajo, H. L., Palumbo, C. M., Park, S., Nguyen, L. T., Fisher, A. J., and Beal, P. A. (2020). “Asymmetric Dimerization of Adenosine Deaminase acting on RNA Facilitates Substrate Recognition”. *Nucleic Acids Res.* **48**:7958-7972. (PMID: [32597966](#))

Jan.  
24



**Andrew J. Fisher., Ph.D.**

Professor

Chemistry and the Molecular and  
Cellular Biology Depts.  
University of California, Davis

**January 24, 2025**

**12:10 – 1 p.m.**

**Genome and  
Biomedical  
Sciences Facility,  
Room 1005**

**In-person presentation**

Medical Microbiology and  
Immunology  
School of Medicine

Seminar Contact:  
Karryn Doyle  
[kddoyle@ucdavis.edu](mailto:kddoyle@ucdavis.edu)