



# Sloan Career Cornerstone Center

## Profiles of Chemists



**Alexander Mackerell**

**Associate Professor  
Department of Pharmaceutical Sciences  
University of Maryland School of Pharmacy  
Baltimore, MD**

### **Education:**

B.S. - Chemistry, University of Hawaii

Ph.D. - Biochemistry, Rutgers University

Post Doctoral Fellowships, Chemistry/Medical Physics, Harvard University/Kavoliuska Institute  
Sweden

### **Job Description:**

Associate Professor, Department of Pharmaceutical Sciences

### **Video Transcript 1:**

"What we want to do is get an atomic detail picture of how a chemical works. We want to take a mathematical model which then allows us to predict how the energy of the system will change as we change the structure, so we can take a chemical, and calculate its energy. We can then change the three-dimensional shape, calculate the new energy, and we can then predict what shape is the most likely to exist. We can then relate that shape to the actual biological function. We can then take this information, three-dimensional shape and ultimately put it on the screen and take a look at it and we actually visualize the relationship of the structure of the molecule to its biological or chemical functions."

### **Video Transcript 2:**

"The research areas that I work in are primarily health related and that's one of the satisfying things about doing this type of research is one, I enjoy it and two, I see, I get the satisfaction of seeing it be applied to solve larger problems: working on understanding the mechanisms of a cancer agent, understanding the mechanisms of a given drug, the information from that can then be used to develop new drugs which can then improve the quality of life for people, the public in general and that's very satisfying."

### **"Profiles of Chemists"**

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