



### **2001 IOTA SIGMA PI AGNES FAY MORGAN RESEARCH AWARD**

#### ***Professor Jean Chmielewski, Purdue University***

Professor Jean Chmielewski is the **2001 recipient of the Iota Sigma Pi Agnes Fay Morgan Research Award**. This annual award is given for research achievement in chemistry or biochemistry. The nominee must be a woman chemist or biochemist, not over forty years of age at the time of her nomination.

Dr. Chmielewski is currently an associate professor of Chemistry at Purdue University. Since 1990, she has taught Organic Chemistry (undergraduate and graduate), Organic Chemistry Laboratory, Undergraduate Chemistry Seminar, Modern Synthetic Organic Laboratory, and Current Topics in Bioorganic Chemistry. Dr. Chmielewski's areas of research include the design and synthesis of dimerization inhibitors of therapeutically significant enzymes such as of HIV-1 protease and integrase. An ultimate goal of her work is the inhibition of transcription factor/DNA interactions by specifically disrupting the protein-protein interactions of dimeric transcription factors. Another project is the design of a unique self-replicating peptide system that is sensitive to environmental conditions and can reproduce only under extreme conditions. In Dr. Chmielewski's lab, a new liposome has been prepared that achieves a pH-dependent cargo unloading within the low-pH environment of cellular endosomes. The liposomes are designed to be cell target specific and the liposomal contents are released specifically within cancer cells. Dr. Chmielewski's group has developed peptide shuttles that not only facilitate the cytoplasmic delivery of small molecule and peptidic agents, but also efficiently promote the uptake of these agents into the nucleus, the site of action for

numerous anti-cancer therapeutics. Another project involves the synthesis, in one step, of stable five-, six-, and seven-helix bundle structures from peptides with sixteen amino acid residues. In Dr. Chmielewski's lab, a wide range of biopolymers has been isolated within host crystalline matrices of biominerals. The folded states of the proteins within the matrices have been confirmed and their thermal stability demonstrated.

Dr. Chmielewski has over forty-eight publications and four book chapters or review articles. She has given eighty-four invited lectures. Dr. Chmielewski has obtained almost 3.5 million dollars in funding in seventeen grants and fellowships. Twenty-seven graduate students, thirteen undergraduate students, and three postdoctoral assistants have worked with Dr. Chmielewski. Dr. Chmielewski has consistently received excellent evaluations from students and, as a result, received the Arthur E. Kelly Award for Excellence in Teaching. She was named an Alfred P. Sloan Fellow and an Exxon Foundation Fellow. The National Science Foundation and the National Institutes of Health have recognized her research. She serves on the Editorial Boards of Chemical and Engineering News and the Journal of Peptide Chemistry.