PROTEO
FONCTION | STRUCTURE INGÉNIERIE DES PROTÉINES

UNIVERSITÉ LAVAL
Département de chimie

CONFÉRENCE

Dr Beate Koksch

Freie Universität Berlin, Institute for Chemistry and Biochemistry – Organic Chemistry, Takustrasse 3, 14195 Berlin, Germany

Jeudi le 22 mars 2012 à 11h00
Local 3820 du Pavillon Alexandre-Vachon
Université Laval

Fluorine Meets Peptides

Despite its low abundance in naturally occurring biomolecules, fluorine's favorable impact on the pharmacokinetics and biological properties makes it an outstanding element for peptide and protein modification. Fluorine's effects trace back to its unique physicochemical properties, which are a very high electronegativity and electron affinity combined with a very low polarizability and high stability of the carbon-fluorine bond. As fluoroalkyl groups uniquely combine two contrary properties - polarity *and* hydrophobicity - their effects as substituents in native proteins are not easily predicted.

We have developed peptide-based models to systematically studying the complex molecular interactions of fluoroalkyl groups within native polypeptides regarding space filling, lipophilicity and hydrogen-bonding. Using these *in vitro* investigations we determined how fluorinated amino acids influence the folding of native polypeptide motifs and established the key influence of the fluorine-fluorine interactions on peptide and protein folding. The combination of the peptide model with analytical techniques and screening methods such as surface plasmon resonance (SPR) and phage display technology creates perfect systems that allow to studying the interaction pattern of a variety of fluorinated residues with all kinds of hydrophobic as well as charged amino acid side chains, respectively, within polypeptide environments. These studies pave the way for using the beneficial properties of fluorinated amino acids for the deliberate *de novo* design of biologically relevant peptide drugs as well as of fluorinated protein-based materials.

Cordiale bienvenue à toutes et à tous!

Apportez votre tasse!