Report of Participation in the ICMRBS XXVI

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With the support from the Nuclear Magnetic Resonance Society of Japan, I attended the XXVIth International Conference on Magnetic Resonance in Biological Systems (ICMRBS) on August 24th-29th at Dallas, Texas. I would like to express my gratitude to committee members and sponsors giving me such a great opportunity to expand my knowledge and vision in the NMR field.

ICMRBS is one of the representative international symposiums for the solution-state and solid-state NMR applications to the biological system studies. NMR scientists all over the world got together to share their ideas and research results. I obtained a lot of information about different types of NMR methods and research targets through participating in the lectures given by these researchers. For instance, with the development of magic angle spin (MAS), the solid-state NMR has become a powerful technique for protein structures determination by using fast MAS frequencies and non-uniform sampling (NUS) schedule simultaneously, presented by Professor Tatyana Polenova. On another hand, Professor Hashim Al-Hashimi showed the non-canonical Hoogsteen base pairing existing at the high-energy state of the DNA conformation, which was determined by $R1\rho$ relaxation dispersion experiments, and suggested that the Hoogstean base-pairing has much more biological importance than previously expected.

The title of my poster presentation is "Interface Dynamics in FKBP12-ligand Complexes Studied by the High Pressure SAIL NMR Method". In this study, I focused on the aromatic ring flipping motions of Phe and Tyr residues in the free and the ligand-bound forms. By using the SAIL amino acids, I could determine the ring flipping rates of one Tyr and one Phe residue locating at the binding interface in the ligand bound states with high accuracy. To estimate the *extra* expanded volume for phenyl ring to flip, the “activation volume” was evaluated in three different types of FKBP12-ligand complexes by performing the high-pressure experiments. I got valuable suggestions from Dr. Ad Bax and Dr. Marius Clore during my presentation. In addition to learning from these authoritative scientists in NMR field, discussing to young researchers could also be very helpful in detail of technique skills and information. The way to study ring flipping motion in solid-state NMR by using deuterium spectra was taught by a postdoc in UIUC during the poster section. Seemingly, more and more researches will focus on the dynamics of aromatic rings beyond the well-established methods of methyl groups.

It is an excellent experience to communicate with foreign researchers and obtain information from them. It also stimulates me to work harder. Hopefully, I could also contribute to NMR society in the future.