DATE: Day <u>17</u> Month <u>May</u> Year 2019

SUMMARY of
2018 RESEARCH RESULTS REPORT
For International Collaborative Research with IPR, Osaka University

Research Title		Plasticity of Protein-RNA interactions
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Summary

The dsRBD of TRBP undergoes on-off exchange when bound to RNA leading to line broadening of HSQC signals. We first observed this broadening in titration data collected at 600 MHz NMR in our lab and wanted to see if the exchange is on which side of intermediate time-scale by recording the data at high-field magnet. Interestingly, the peaks got broadened at much earlier in the titration point giving us a hint on the intermediate time-scale exchange, which is an important information for designing the dynamics experiment in the bound-state of the protein.

Further, we measured fast time-scale dynamics (ps to ns time-scale) and slow dynamics (μs to ms time-scale) on the dsRBD of TRBP in absence of any RNA. We analyzed the fast dynamics data using model-free analysis and found a lot of plasticity in the structured regions of the protein, suggesting protein is adaptable to multiple conformations required for targeting multiple RNA conformations. Further, slow dynamics data measured on free protein showed a range of dynamics across the backbone, and faster micro-second time-scale motions in the RNA-binding regions. Faster time-scale motions in RNA-binding region suggested again conformational exchange required specifically for the RNA-binding.

In RNA-bound dsRBD dynamics (fast and slow) was measured and analyzed again and compared with free-protein dynamics.

*Deadline: May 17, 2019
*Please submit it to E-mail: tanpakuken-kyoten@office.osaka-u.ac.jp.
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