Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Synchrotron radiation circular dichroism spectroscopy study of recombinant Tβ4 folding[1] YUNG-CHIN HUANG, HSUEH-LIANG CHU, PENG-JEN CHEN, CHIA-CHING CHANG, Natl Chiao Tung Univ — Thymosin beta 4 (Tβ4) is a 43-amino acid small peptide, has been demonstrated that it can promote cardiac repair, wound repair, tissue protection, and involve in the proliferation of blood cell precursor stem cells of bone marrow. Moreover, Tβ4 has been identified as a multifunction intrinsically disordered protein, which is lacking the stable tertiary structure. Owing to the small size and disordered character, the Tβ4 protein degrades rapidly and the storage condition is critical. Therefore, it is not easy to reveal its folding mechanism of native Tβ4. However, recombinant Tβ4 protein (rTβ4), which fused with a 5-kDa peptide in its amino-terminal, is stable and possesses identical function of Tβ4. Therefore, rTβ4 can be used to study its folding mechanism. By using over-critical folding process, stable folding intermediates of rTβ4 can be obtained. Structure analysis of folding intermediates by synchrotron radiation circular dichroism (SRCD) and fluorescence spectroscopies indicate that rTβ4 is a random coli major protein and its hydrophobic region becomes compact gradually. Moreover, the rTβ4 folding is a two state transition. Thermal denaturation analysis indicates that rTβ4 lacks stable tertiary structure. These results indicated that rTβ4, similar to Tβ4, is an intrinsically disordered protein.

[1]Research is supported by MOST, Taiwan. MOST 103-2112-M-009 -011 -MY3.
Corresponding author: Chia-Ching Chang; ccchang01@faculty.nctu.edu.tw

Yung-Chin Huang
Natl Chiao Tung Univ

Date submitted: 04 Nov 2015 Electronic form version 1.4