

S27-4 **Structural and functional properties of the C-terminal region of mitochondrial ADP/ATP carrier**

○Yasuo SHINOHARA¹, Mitsuru HASHIMOTO², Yoshitaka KIHARA³, Kazuto OHKURA⁴,
Eiji MAJIMA⁵, Hiroshi TERADA⁶

¹University of Tokushima, ²Matsuyama University, ³University of Maryland, ⁴Chiba Institute of Science, ⁵Protenova Inc.,

⁶Tokyo University of Science

ADP/ATP carrier (AAC) catalyzes the exchange of ADP and ATP across the mitochondrial inner membrane. Transport of nucleotides by AAC is known to be achieved by interconversion of the conformation of the carrier between c-state and m-state, in which the substrate recognition site faces the cytosol and matrix, respectively. Comparison of the amino acid sequence of yeast type 2 ADP/ATP carrier (yAAC2) with that of bovine type 1 AAC (bAAC1) revealed that the N- and C-terminus of yAAC2 are 15- and 6-amino acids longer, respectively, than those of bAAC1. To examine the structural and functional properties of the C-terminal region of yAAC2, we first prepared various C-terminal truncated mutants of yAAC2 and bAAC1 and examined their functional features. As a result, we found that the 6-amino acid residue extension of the C-terminus of yAAC2 was not necessary for the function of this carrier and that the remainder of the C-terminal region of yAAC2, having a length conserved with that of bAAC1, is important for the transport function of AACs. Furthermore, based on the reactivities of cysteine residues that replaced amino acids in the sixth transmembrane segment, the probable structural features of the C-terminal region of this carrier will be discussed.