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The structural mechanism of transport by the mitochondrial ADP/ATP carrier

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Mitochondrial ADP/ATP carriers in the inner membrane belong to the mitochondrial carrier family and they transport ADP into the mitochondrial matrix for ATP synthesis, and ATP out to the cytosol to fuel the cell. They cycle between cytoplasmic-open and matrix-open states, in which the substrate-binding site is alternately accessible from either compartment for ADP or ATP binding. We will present data that will resolve their mechanism in atomic

detail. In agreement with earlier published data, the structural evidence demonstrates that the carrier functions as a monomer and has a single substrate binding site and two salt bridge networks that regulate access to this site in a conformation-dependent way. The structural analysis also explains the role of all conserved sequence features of mitochondrial carriers, showing that the mechanism is universal for this class of transport proteins.

Biography

Edmund Kunji holds a PhD in Mathematics and Natural Sciences from the University of Groningen and he has been an EMBO Postdoctoral Fellow with Richard Henderson at the MRC Laboratory of Molecular Biology, Cambridge. Since 2000 he is a Research Group Leader at the MRC Mitochondrial Biology Unit, University of Cambridge, where he works with his group on structures of transport proteins to elucidate the transport processes in mitochondria.

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