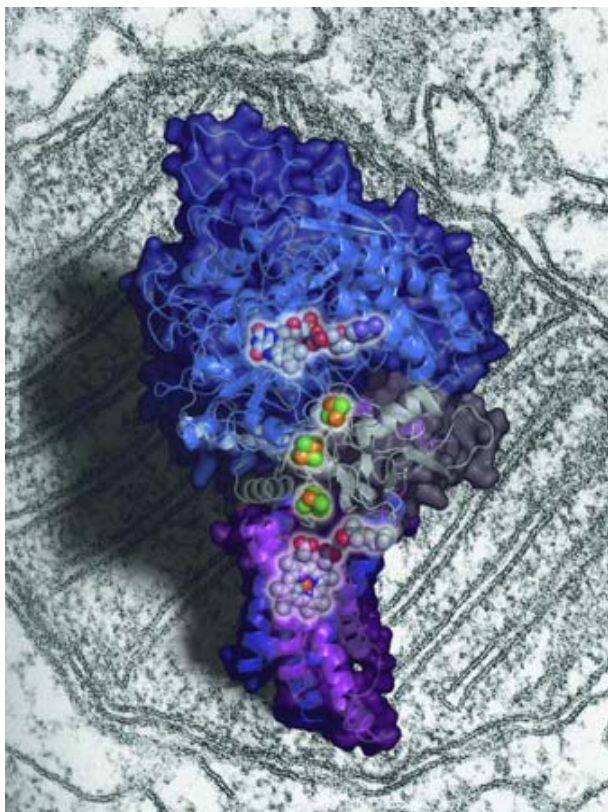


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Mitochondrial Respiratory Complex II Structure Solved by Scientists



The three dimensional structure of one mitochondrial respiratory membrane protein complex is firstly solved in the world.

The "Tsinghua University-Institute of Biophysics, CAS Joint Research Group for Structural Biology" led by Prof. Zihe Rao, Vice-dean of the Medical School in Tsinghua University and Director-general of the Institute of Biophysics, CAS, published their paper entitled Crystal Structure of Mitochondrial Respiratory Membrane Protein Complex II in Cell on July 1st , 2005.

This research group is the first to successfully solve the three-dimensional structure of the mitochondrial respiratory membrane protein Complex II, filling an important blank in the research fields of mitochondrial structural biology and cell biology as well as in biochemistry textbooks.

Mitochondria, as cellular organelles, are the "energy factory" of the cell and are mainly responsible for cell aerobic respiration. They realize energy transformation through the oxidation-phosphorylation process and provide most of the energy for cell activity. The oxidation process in mitochondria is carried out by four respiratory membrane protein complexes inside the mitochondrial inner membrane (Complex I, II, III and IV). Since the 1990s, determining the structures of these four membrane protein complexes has been a challenging and central hot topic in biology. For many years, leading scientists from the United States, Japan, England and Germany have made great efforts to try to make advances in this area. To date, only scientists from the United States and Japan have

succeeded in solved the crystal structures of Complex III and Complex IV. However, there has been no breakthrough in the structures of Complex I or Complex II until now.

Three years ago, led by Prof. Rao and in collaboration with the Institute of Biophysics, the scientists began trying to solve the three-dimensional structure of the mitochondrial respiratory membrane protein Complex II using new methods. They opted to extract and purify this membrane protein complex from porcine heart and finally completed the structure determination of this complex, which is comprised of four different proteins. The Complex II structure provides a bona fide model for the study of human mitochondrial diseases related to mutations in this complex.

It is one successful example of the collaboration between our university and the Institute of Biophysics, CAS, and also symbolizes that some research fields in basic life sciences of our country have already reached the international advanced level.

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