

The team focuses on studying chromatin structure and epigenetic regulatory mechanism, has made a number of original scientific breakthroughs through close collaboration and continuous efforts, and significantly promoted China's academic position in the field of chromatin and epigenetics. They determined 3D structures of the 30-nm chromatin fiber by cryo-EM, revealing a novel two-start helical structure with tetranucleosome as the fundamental regulatory structural unit; revealed novel mechanisms governing the regulation of histone acetyltransferase activity of Rtt109 by ASF1 and that for safeguarding the unique methylation landscape of the oocyte genome by Stella; demonstrated that BEND3 prevents premature gene activation by presetting epigenetic modifications at bivalent genes and regulates cell fate transition during development; and uncovered a novel epigenetic mechanism for regulating the selection and activation of early replication origins by histone variant H2A.Z. Their achievements have been cited by internationally renowned textbooks and selected as Top Ten Scientific Advancements in China of Year 2020.