Research on the Structures of Two Bunya Viruses' Transcription and Replication Complex of Nucleoprotein

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Bunyaviridae family is a group of RNA single negative strand viruses, including 5 geniuses and more than 350 species known. Pre-researches show that all Bunya viruses have special nucleoprotein coded by s-RNA that can unite its RNA to become complexes during the processes of transcription and replication in order to protect the viruses' RNA, but we do not know the molecular mechanism of these complexes yet. My work analyses two representative Bunya viruses—— Bunyamwera virus (BUNV) and Severe Fever with Thrombocytopenia Syndrome virus (SFTSV) transcription and replication complexes of nucleoprotein, and clarifies the molecular mechanism of these two complexes. BUNV-NP-RNA complex is a tetra-polymer and binds RNA inside itself; SFTSV-NP-RNA complex is a hexane-polymer and may bind the RNA with its central hole. These complexes' structures can help prevent viruses' RNA from being degraded by enzyme of host cell. We can design and sift the targeted molecule towards the weakness of Bunya viruses based on the information of nucleoprotein complex's structure and develop the new particular drug. The work can also offer advice references on other research of Bunya Viruses.

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