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## Cation roles in the structure of a fish nodavirus observed in electron cryo-microscopy and X-ray diffraction

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The virus-like particle (VLP) assembled from capsid subunits of the dragon grouper nervous necrosis virus (DGNNV) is very similar to its native T=3 virion, in addition that the VLPs can enter fish cells with macropinocytosis way. Furthermore, the disulfide bounds are not essential for the VLP formation, whereas cations are involved in the VLP stability *in vitro*. At pH 8.0, the VLPs can be precipitated with EDTA at room temperature. In weak basic condition, cryoEM model of the capsid protein (52-213<sup>th</sup> amino acids) at 3.56 Å resolution reveals calcium-ion bridges and unique cation- $\pi$  interactions. Submersion of VLP crystals in cations provide sharper diffraction intensity than control and enhanced the radiation damage. All together supports that cations stabilize the viral particle by holding three subunits in an asymmetric unit of trimer.

## Biography

Chan-Shing Lin has completed his PhD at University of California, Irvine, in 1992. He has published more than 65 papers in reputed journals and has been serving as an Editorial Board Member of *Archive of Virology* and Frontier journals. He has also consulted biotechnology companies in building the cGMP processes for manufacturing vaccines and bio-medicals.

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