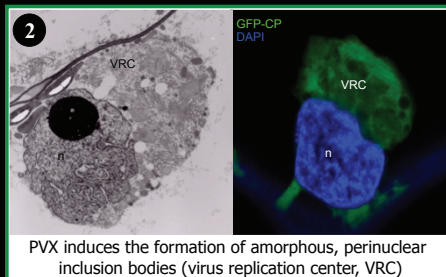
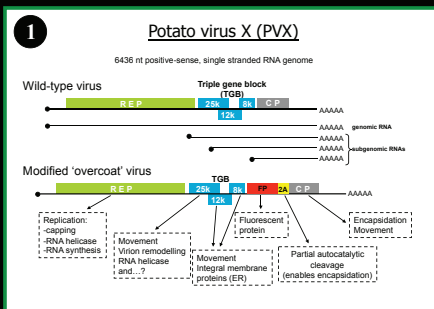


A virus-induced quasi-organelle for ribonucleoprotein complex sorting

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Within the VRC, ER- and Golgi-derived endomembranes (3b,c) as well as actin microfilaments (3a,b) encircle a characteristic protein aggregate known as 'lamellar inclusion body' or 'beaded sheet' which contains or consists of viral TGB1 protein (3d). RNA viruses replicate on host cell membranes. Unencapsidated single-stranded RNA (Pumilio BIFC) (3e,f,g) as well as double stranded RNA replication intermediates (Syto82) (3h) are also found around the TGB1 inclusions (3e), indicating virus replication happens there. Encapsidated virions and coat protein are found at the VRC periphery (3a,f,g) and do not overlap with the 'naked' RNA signal (3f,g)

5 What is the function of the VRC?

Work by the Atabekov lab (above) has shown that PVX virions isolated from plants are non-translatable. TGB1 binds the 5' end of the virions and destabilises them.

Potexviruses are mechanically transmitted and need to maximise progeny virion production. During replication & translation, encapsidation must be prevented. Conversely, encapsidated virions must not be destabilised by TGB1.

TGB1 aggregates of Foxtail mosaic potyvirus (FMV) release functional protein in the presence of RNA or CP (Hsu et al. (2004) Arch. Virol. 149: 1027-35). Possibly, aggregation of the TGB1 protein and its release in the presence of viral RNA creates a protein gradient that permits replication/translation in proximity to the protein inclusion, and encapsidation further away from it. Recruitment of the membranes harbouring the replication sites by TGB1 ensures correct positioning of the viral RNA within the TGB1 gradient.

TGB1 may also be involved in other ribonucleoprotein remodelling processes in potyvirus RNA metabolism.

