

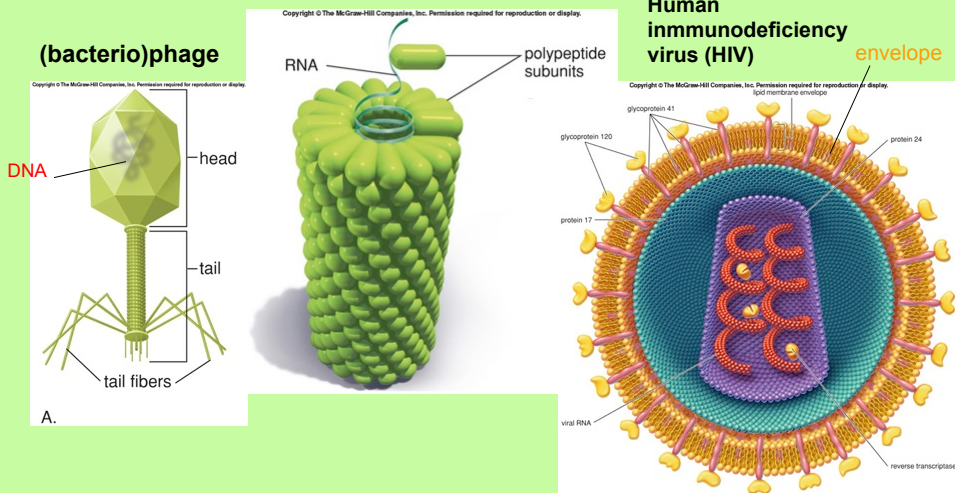
Ch 17: Viruses, Viroids & Prions

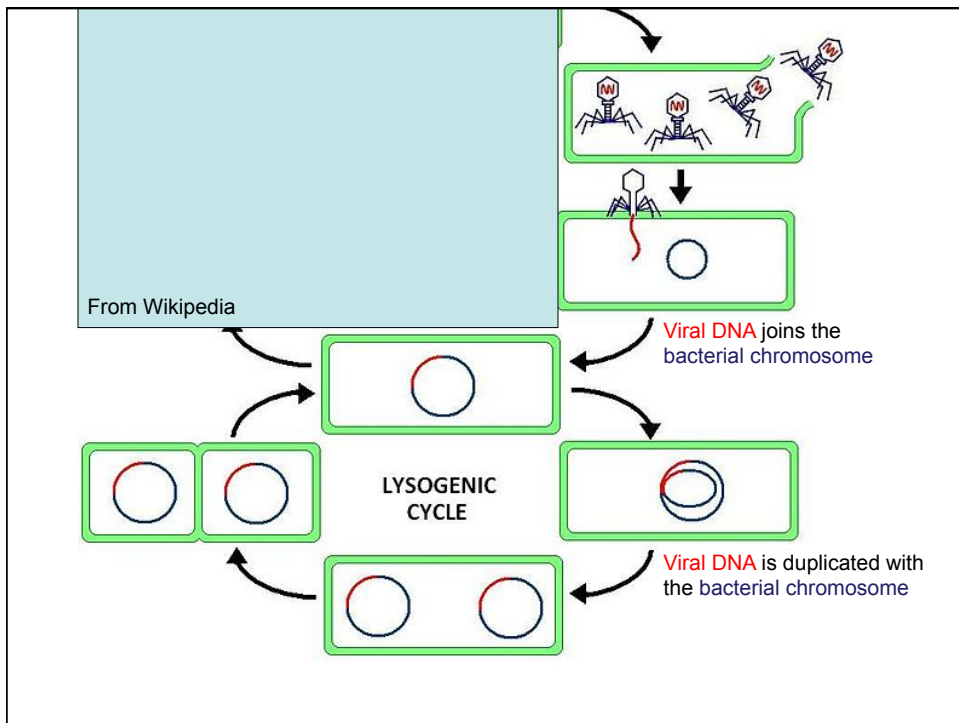
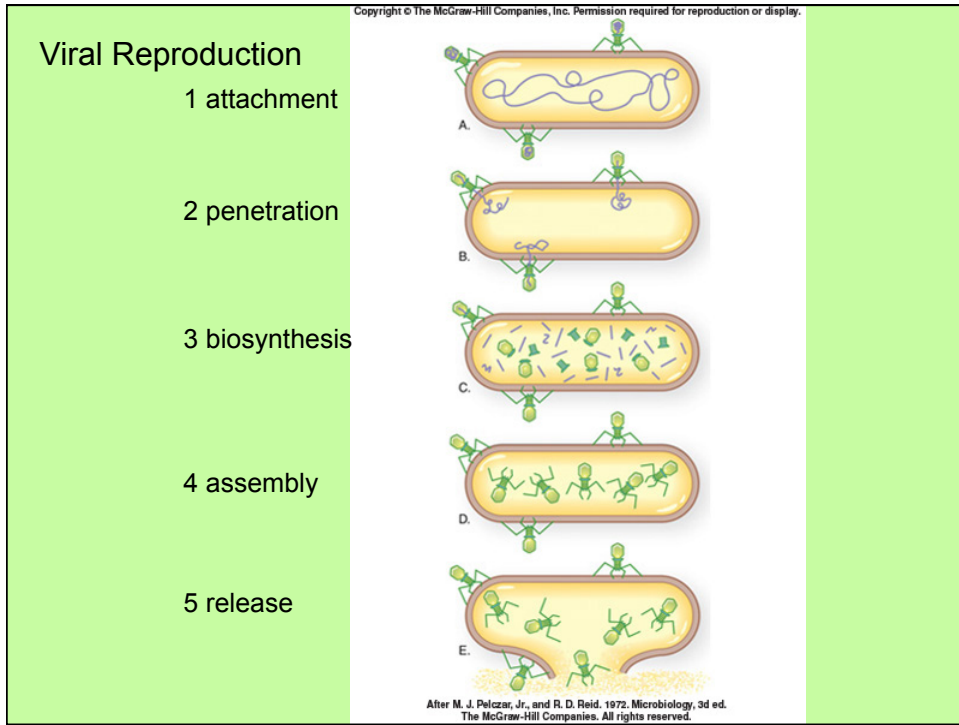
Not alive (but do get own taxonomy)


no cells; structure = nucleic acid + protein capsid

no metabolism

Tobacco mosaic virus (TMV)





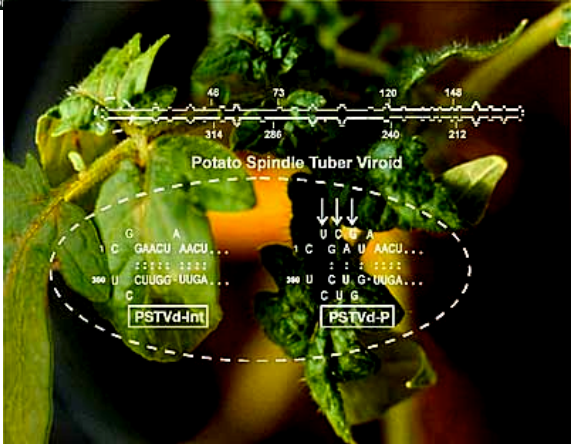


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Other non-living infectious agents

Viroids: naked, infectious RNAs (smaller than viruses)

- so far only known to affect plants
- (eg: potato spindle tuber disease)

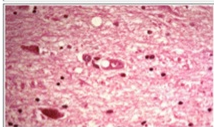
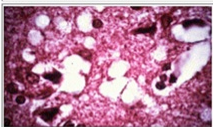
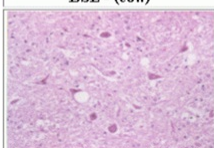
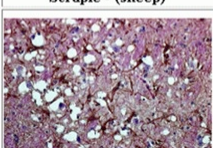


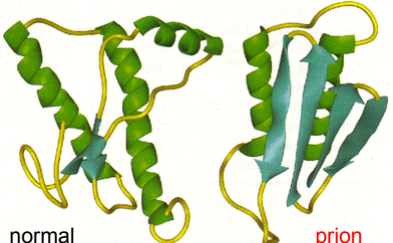
Other non-living infectious agents

Prions: infectious proteins (no genetic material) - cause transmissible spongiform encephalopathies (TSEs) in mammals by causing normal brain proteins to fold differently (None known in plants)

Infamous examples:

- scrapie (sheep)
- Creutzfeld-Jakob Disease (CJD)
- bovine spongiform encephalopathy (= BSE = mad cow disease)
- (n)vCJD seems to be "mad cow" moved to people

| | |
|---|---|
| CJD - human | Kuru - human |
|  |  |
| BSE - (cow) | Scrapie - (sheep) |
|  |  |



normal prion

Image: M.D. Michelitsch, A.W. Wallace, and F.E. Cohen

The fundamental event in establishing prion disease is the conversion of α -helices (corkscrew domains) in the normal prion protein, PrP^C, (left) into beta-sheets (flattened regions) observed in PrP^{Sc}, the abnormal, disease-causing form of the prion protein (right).