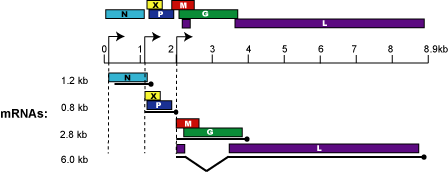
Bornavirus

**Introduction**

The family of Bornaviridae consisted of only bornavirus. Bornavirus is under its own family due to its unique replication process - a RNA virus that replications in the nucleus. Currently, bornavirus is the only known animal RNA virus that can replicate in the nucleus. Bornavirus often infect the central, peripheral and autonomic nervous system causing neuropsychiatric disorders in humans and animals.

**Structure and replication**

Bornavirus (BDV) is enveloped, non-segmented, negative sense RNA. Its genome is about 8.9 kb long. The BDV can encode at least six proteins, however, the main structural proteins include nucleoprotein (N), phosphoprotein (P), matrix protein (M), envelope glycoprotein (G) and RNA-dependent polymerase (L).

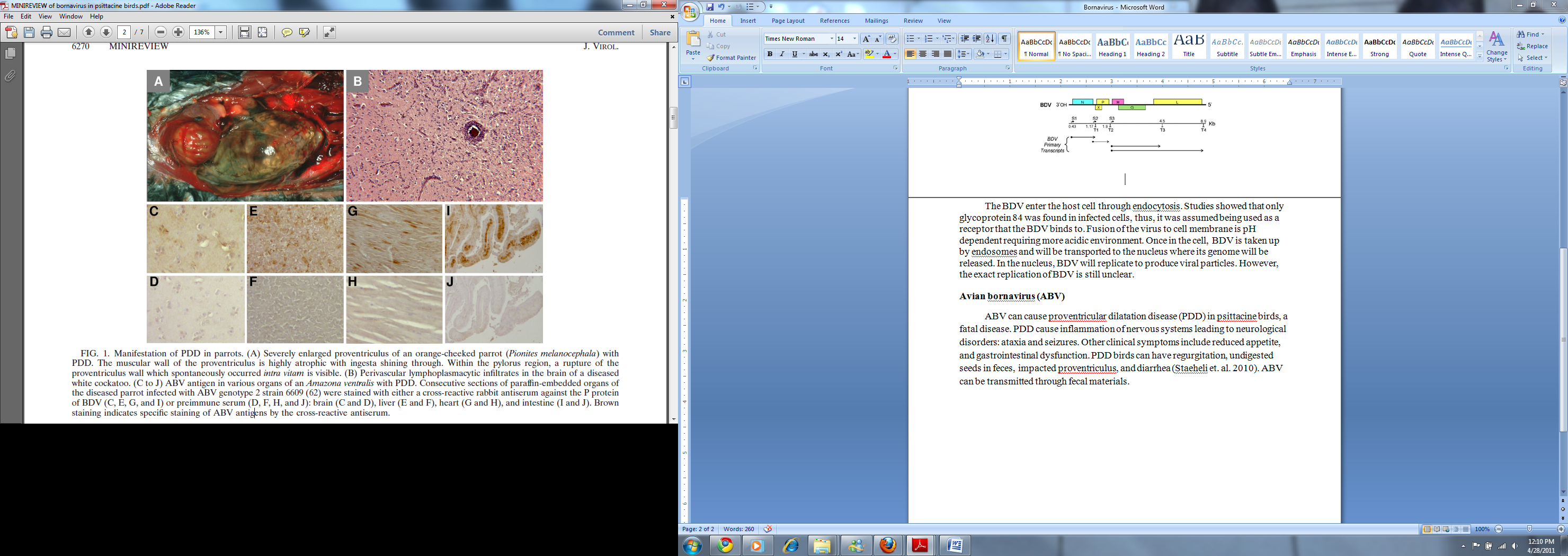




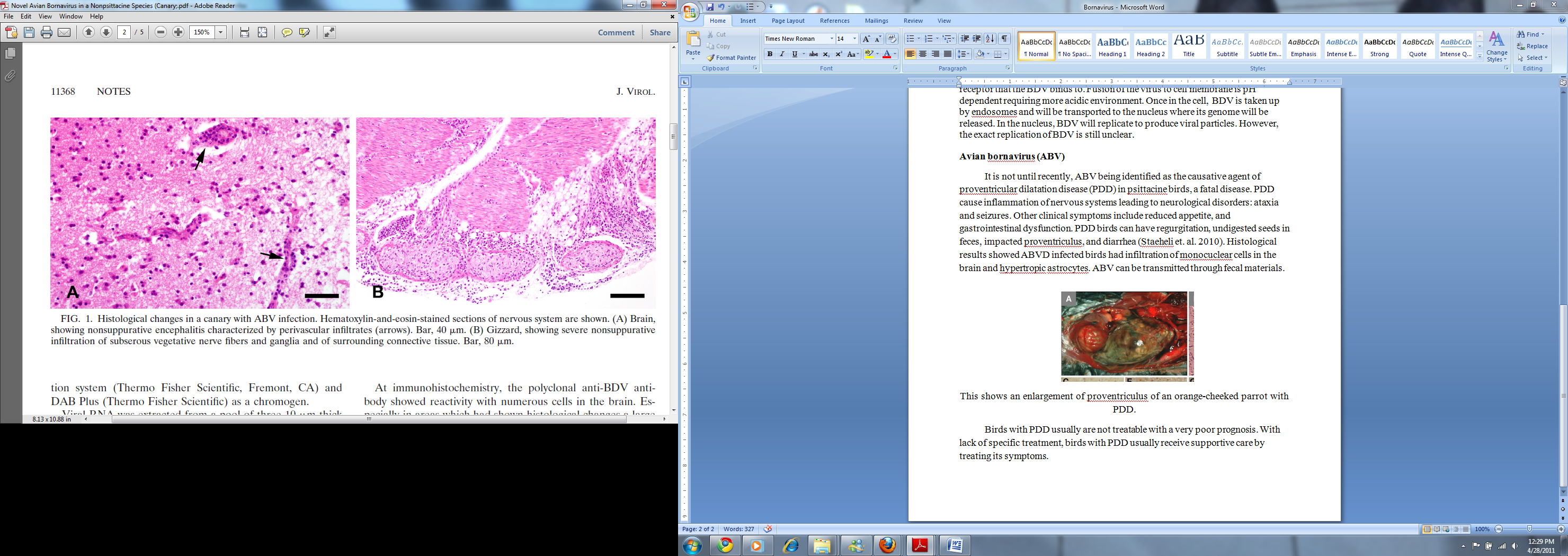
The BDV enter the host cell through endocytosis. Studies showed that only glycoprotein 84 was found in infected cells, thus, it was assumed being used as a receptor that the BDV binds to. Fusion of the virus to cell membrane is pH dependent requiring more acidic environment. Once in the cell, BDV is taken up by endosomes and will be transported to the nucleus where its genome will be released. In the nucleus, BDV will replicate to produce viral particles. However, the exact replication of BDV is still unclear.

**Avian bornavirus (ABV)**

It is not until recently, ABV being identified as the causative agent of proventricular dilatation disease (PDD) in psittacine birds, a fatal disease. PDD cause inflammation of nervous systems leading to neurological disorders: ataxia and seizures. Other clinical symptoms include reduced appetite, and gastrointestinal dysfunction. PDD birds can have regurgitation, undigested seeds in feces, impacted proventriculus, and diarrhea (Staeheli et. al. 2010). Histological results showed ABVD infected birds had infiltration of monocuclear cells in the brain and hypertropic astrocytes. ABV can be transmitted through fecal materials.

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This shows an enlargement of proventriculus of an orange-cheeked parrot with PDD.



Shows infiltration of mononuclearcells indicated with black arrows

Diagnostic tests used to detect ABV are western blot and PCR. However, often diagnosis of PDD usually is made postmortem. Birds with PDD usually are not treatable with a very poor prognosis. With lack of specific treatment, birds with PDD usually receive supportive care by treating its symptoms.

Reference

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**Pictures**

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