



**Figure 1. Ultrastructure of a *Toxoplasma gondii* tachyzoite.** The conoid defines the apical end of the parasite and is thought to be associated with the penetration of the host cell. Micronemes, rhoptries and dense granules are the three major secretory organelles, found predominately at the apical end of the parasite. Microneme proteins are released very early in the invasion process, facilitating host-cell binding and gliding motility. Rhoptry proteins are also released during invasion, and can be detected within the lumen and membrane of the newly generated parasitophorous vacuole (PV). Dense-granule proteins are released during and after the formation of the PV, modifying the PV environment for intracellular survival and replication of the parasite. The apicoplast is a plastid-like four-membrane organelle containing a 35 kb circular DNA. Most of the proteins functioning within the organelle are encoded by the nucleus, and are specifically targeted to the apicoplast. This targeting involves the secretory pathway, including the rough endoplasmic reticulum (ER) and a Golgi body situated immediately apical to the nucleus. Targeted proteins have a bipartite N-terminal extension, consisting of an ER signal sequence followed by a plastid transit peptide. *T. gondii* cells have a single nucleus and a single mitochondrion. It is hypothesised that reliance on the mitochondrion for cellular metabolism differs according to the life-cycle stage of the parasite (**fig001jac**).