

# Peroxisomes in *Toxoplasma gondii*?

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The metabolism of fatty acids and cholesterol is essential to all eukaryotic organisms and occurs in various organelles, including peroxisomes. Other than lipid metabolism, peroxisomes contain many enzymes involved in several different metabolic processes. One key enzyme found in most peroxisomes is catalase. Catalases take part in the neutralization of hydrogen peroxide, thereby preventing toxic build up within cells. This enzyme has overtime become a key identifier of peroxisomes in many organisms. However, this is controversial when it comes to *Toxoplasma gondii*. The use of catalase as a marker for peroxisomes in this apicomplexan protozoan parasite has been disputed, and in some cases lead to the belief that the *T. gondii* does not maintain these organelles. In this research project we are taking a different approach to answer this question of *T. gondii* peroxisomes. Through evolution *T. gondii* has maintained, within its genome, many of the genes encoding peroxisomal proteins, named peroxins (PEX). Here we investigate the presence of peroxisomes within *T. gondii* using PEX proteins. The experimental approach taken involves the characterization of TgPEX5 and TgPEX7 proteins and their associated ligands TgSCP2 and TgThiolase respectively. TgSCP2 with a C-terminal Peroxisomal Targeting Signal 1 (PTS1), binds TgPEX5, whilst TgThiolase with an N-terminal PTS2, binds TgPEX7. Using molecular biology, reverse genetics and proteomics within the tachyzoite and bradyzoite stages of this parasite, we aim to prove or refute the presence of peroxisomes within *T. gondii*.