

Tuesday Colloquium

GETTING PROTEINS TO THEIR FINAL DESTINATIONS specific trafficking and randomness in the malarial parasite

By

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The malaria parasite has an organelle (the apicoplast) that arose from engulfment of a photosynthetic ancestor. The apicoplast is essential for parasite growth and has many proteins that are potential drug targets. Hence, it is of interest to understand how these apicoplast proteins get to their final destination in the organelle; many such proteins have been shown to enter the endoplasmic reticulum (ER) and then go directly to the apicoplast. I will talk about another apicoplast protein, glutathione peroxidase that takes a circuitous route to the apicoplast, via the ER and the Golgi. Glutathione peroxidase also shows an interesting property of being trafficked to the apicoplast and the mitochondrion in a random fashion in individual parasite cells: in some cells the protein is only in the apicoplast, in others it is only in the mitochondrion and in yet others it is in both organelles. How does glutathione peroxidase take its different route to the final destination? Why is the protein randomly localized in two organelles? What does this protein do once it reaches the apicoplast? We will explore these questions in the context of *P. falciparum* glutathione peroxidase and in a broader sense of biological trafficking and randomness.



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