**Teaching Notes: Maria vs Malaria**

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**Abstract**:

The case discusses an environmental scientist Maria’s search for an antimalarial drug treatment after she contracts Malaria during her research trip to the Amazon Rainforest. The case begins with her confirming that her symptoms were from Malaria via rapid diagnostic and then her doctors identifying the specific Malaria parasite to be *Plasmodium falciparum.* Through information she received from her colleague at the Center for Disease Control (CDC) and her own research, she starts focusing on a newly identified Lactate Dehydrogenase inhibitor to determine if it could be used as a safe and effective treatment for Malaria. The case explores the structure-function relationship of the critical metabolic enzyme Lactate Dehydrogenase and exemplifies how small molecular differences between the active sites of the same enzyme from two different organisms (in this case *Plasmodium Falciparum*and human)could be leveraged to develop selective competitive inhibitors of the enzyme to provide safe and effective drug treatments.

**Molecules explored**:

The primary molecule studied in this case is Lactate Dehydrogenase. Visualization and exploration of both the parasitic and human structures of this enzyme are carried out throughout the case. The other two important molecules visualized are the coenzyme NADH (Nicotinamide adenine dinucleotide) and an Azole competitive inhibitor