

ADVANCEMENT OF CHAGAS DISEASE TREATMENT THROUGH THE IDENTIFICATION OF POTENTIAL NATURAL PRODUCT TARGETS IN THE *TRYPANOSOMA CRUZI* PROTEOME

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RATIONALE

Chagas disease, (American Trypanosomiasis), is a tropical disease linked to *Trypanosoma cruzi*, a protozoan parasite infection which can be spread via triatomine insects and contact with bodily fluids. Approximately 8-10 million people in Latin American countries have Chagas which is most prevalent in rural areas. Current drugs, Nifurtimox and Benznidazole, are effective treatments for the disease in acute phases, but are limited in the chronic stages and display detrimental side effects. Further research and annotation of the *T. cruzi* proteome is critical in polypharmaceutical advancement or repositioning of existing drugs .

PROPOSED RESEARCH

- Identification of natural products that might be effective against Chagas through the screening of the natural based drug library against the surface proteins Transialidase and GP63 of the *T. Cruzi* proteome.
- Search for similar binding sites across the *T. Cruzi* proteome and determine if identified natural products display similar affinity

PROGRESS

- Discussed project details with USM mentor
- Compiled list of available PDB crystals structures based type of structure, resolution, missing residues and etc.
- Preparation of conclusion to justify selected structures
- Read papers on the proven and proposed roles of Transialidase and GP63.
- Gather information on gp63 structure homology between Leishmania and T. Cruzi species since no crystal structures available

TENTATIVE PLANS

- Compare active site bounded and unbounded conformations of selected crystal structures using VMD
- Find structures of known inhibitors and look at interactions between ligand and protein
- Continue reading literature on roles of proteins
- Review tutorials of Autodock 3 and Autodock Vina
- Prepare structure files from the natural products library and begin docking

CULTURAL ASPECT



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