



Challenges Associated with using DNA Analysis in Investigating Ancient Human Remains

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DESCRIPTION

Neglected tropical trypanosomatid diseases are a group of parasitic diseases that are caused by the microorganisms *Trypanosoma* and *Leishmania* which can affect both humans and animals. These diseases can be transmitted directly through contact with infected individuals, or indirectly through bites from various arthropod vectors. Symptoms of these infections include skin lesions, fever, joint pain, lymphadenopathy and more depending on the specific infection. As with many neglected tropical diseases, they disproportionately affect low-income populations in developing countries as they lack access to proper treatments. This has led to a need for more effective therapies to treat these infections. Positive approach is drug targeting, which involves using drugs that specifically target certain molecules within the microorganism responsible for causing the infection. Drug targeting works by focusing on molecules essential to an organism's survival or its ability to cause disease. It is used to create more effective treatments that have fewer side effects than traditional therapies. By targeting specific molecules such as enzymes and receptors, scientists are able to disrupt the process of infection or even kill off the organisms entirely. This approach can be a powerful tool in combating neglected tropical trypanosomatid diseases as it allows researchers to create medications that are tailored specifically for each type of disease.

The use of drug targeting strategies has enabled researchers to develop novel treatments for NTTDs that are more targeted and effective than traditional treatments. The effectiveness of these treatments depends on their ability to achieve optimal levels of drug concentrations at the target site within the body while minimizing off-target effects that could result in toxic side-effects or even resistance development over time. For this reason, researchers must carefully consider both efficacy and safety when designing drug targeting strategies for NTTDs. Neglected tropical trypanosomatid diseases, such as Chagas disease, leishmaniasis, and African sleeping sickness, pose a significant health burden in many parts of the world. In an effort to combat these diseases,

researchers are actively exploring new treatments that target the underlying cause of the disease: the parasitic trypanosomatids that cause infection. Drug targeting is an important approach to potentially treating these persistent illnesses. Drug targeting refers to the process of developing drugs or therapy with specific targets within a patient's body for treating a medical condition. By targeting specific areas or molecules within the body, drug targeting can help reduce side effects and improve efficacy

Drug targeting is an emerging approach that shows positive in combating these illnesses. By directly targeting specific molecules associated with a disease, drug targeting can help physicians pinpoint the best possible treatment while minimizing potential side effects. This makes it a valuable tool in combating neglected tropical trypanosomatid diseases. Drug targeting involves designing drugs that bind to certain proteins, enzymes, or receptors within the body and performing actions necessary to stop or prevent disease progression. This differs from traditional drug therapies which focus on inhibiting or stimulating general biological pathways, often leading to non-specific effects or side effects. Drug targeting allows physicians to target the source of the disease rather than just its symptoms; by doing so they can more effectively treat their patients while reducing potential side effects. Another benefit of drug targeting is that it can minimize toxicity levels in a treatment and potentially reduce dosing requirements. Neglected Tropical Trypanosomatid Diseases (NTTDs) are a group of serious and neglected parasitic infections found mainly in rural and remote regions of the world. Trying to address this issue is challenging due to the lack of resources, poverty, and limited access to medical care. Drug targeting is an important tool for efforts to combat these diseases. It involves the identification and selection of drug targets that can effectively address the disease-causing organisms and can be used as an effective treatment. However, there are numerous challenges with implementing drug targeting for NTTDs. First, NTTDs have complex lifecycles with multiple stages, each with different pathways and mechanisms of action. This makes it difficult to identify relevant drug targets that will be effective against all

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Received: 02-Oct-2023, Manuscript no: JTD-23-23654, **Editorial assigned:** 06-Oct-2023, PreQC no: JTD-23-23654 (PQ), **Reviewed:** 20-Oct-2023, QC no: JTD-23-23654, **Revised:** 27-Oct-2023, Manuscript no: JTD-23-23654 (R), **Published:** 03-Nov-2023, DOI: 10.35241/2329-891X.23.11.406

Citation: Emman O (2023) Challenges associated with using DNA analysis in investigating ancient human remains. *J Trop Dis*. 11:406

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stages of the parasite's lifecycle. Additionally, many potential targets may only be present in certain stages or may have varying levels of expression in different cells, making them hard to target consistently. Another challenge is finding compounds that can interact specifically with the drug target. There can be thousands of potential compounds that need to be screened before the most effective one is identified, which can take significant time and resources. Furthermore, many compounds that might

initially appear promising may end up being ineffective or too toxic for use in humans or animals upon further testing. Finally, there are various species-specific differences between different NTTDs that must be taken into account when developing new treatments; what works for one species may not work for another. This means efforts must be made to ensure treatments are tailored towards each individual species in order to find an effective solution.