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Lassa fever vaccine prospects: identifying immunodominant multi-epitopes as vaccine candidate

The recent article by Rowaiye et al. [1] titled “Identifying immunodominant multi-epitopes from the envelope glycoprotein of the Lassa mammarenavirus as vaccine candidate for Lassa fever” is highly commendable. Amidst the growing Lassa fever epidemic in West Africa, this research marks a substantial stride in the ongoing battle against Lassa fever, a critical public health concern that affects both rural residents and the dedicated medical professionals serving them [2].

The urgency of this research cannot be overstated. The Lassa fever epidemic continues to cast a long shadow over the lives and well-being of individuals in West Africa [3]. With the ecology of the rodent host and the conditions prevailing in the endemic area, the development of a vaccine is an indispensable measure for effective control. Although intravenous ribavirin treatment is effective, its limitations in terms of early administration and widespread availability underscore the urgency for alternative solutions [2]. The authors’ meticulous efforts to design a vaccine candidate from the envelope glycoprotein of 26 different strains of the Lassa mammarenavirus. The bioinformatics approach used to synthesize 12 immunodominant epitopes is aimed at addressing the complexity of the virus-host interaction. The resulting vaccine candidate is predicted to have good physicochemical and immunological properties. Moreover, it holds the promise of inciting a significant immune response against Lassa fever infection through its predicted binding to the immune receptor [1]. This is a significant scientific achievement and heralds a breakthrough in the endeavor to curtail the transmission of the Lassa fever virus.

Navigating the forthcoming stages of *in-vitro* and *in-vivo* evaluation for the vaccine candidate presents a notably formidable challenge. The pursuit of an effective Lassa fever vaccine has been a sustained effort in recent years, yet, regrettably, no vaccine candidate has completed clinical trials thus far [2,4]. A prior study highlighted that the hurdles posed by economic and political factors outweigh even the practical and scientific problems. The landscape of vaccine development is beset with escalating costs and increasing complexity associated with conducting clinical trials. Furthermore, ethical concerns surrounding the Lassa fever vaccine undergoing phase III and IV trials in Africa have given rise to contentious debates, substantially adding considerably to the cost of trials. This prevailing reality demonstrates the harsh truth that vaccines are developed for wealthy countries where the return on investment can be projected with greater accuracy. Paradoxically, while vaccine development costs soar, the economies of many nations in need of these vaccines continue to weaken. This unfortunate circumstance further diminishes the hope of tailored vaccines that could address their unique healthcare challenges. Overcoming these economic barriers is paramount for

equitable access to life-saving vaccines worldwide [2].

In conclusion, the journey towards a Lassa fever vaccine is riddled with multifaceted challenges that demand collaborative efforts from all stakeholders. As we navigate through this intricate landscape, it becomes imperative to address not only the scientific hurdles but also the economic and political barriers to ensure that vaccines become accessible to those who need them the most.

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