The TECHIMMUNE Difference

We are developing what we believe could be a pan coronavirus vaccine. The concept is to target conserved T cell antigens to provide an added benefit on top of neutralizing antibodies against Spike. We have established preclinical proof of concept as follows:

1. Identification of conserved antigens of the Coronavirus (CoV) genome

The genome sequences of >9 million CoV strains (human and animal) were compared resulting in the identification of five conserved regions of the CoV genome. These regions are composed of ten highly conserved antigens, making them potential targets for cross-protective immune responses.

2. Recognition of TechImmune's proprietary antigens by the human immune system

These conserved antigens were validated as human vaccine targets using blood samples from COVID-19 patients. Several important relationships between immune responses and disease outcome in these individuals were identified. Specifically, protection from COVID-19 disease correlated with: 1) higher quality and quantity of lymphocytes, and 2) higher levels of antigen-specific T cell responses directed against TechImmune's proprietary antigens (both CD4 and CD8 T cells). These data suggest that CD4 and CD8 T cell responses against the TechImmune antigens conferred protective immunity in humans against COVID-19.

3. Proof of concept in animal models for protective immunity conferred by TechImmune's proprietary antigens

Animal models (hamsters, transgenic mice) were used to demonstrate proof of concept for the TechImmune vaccine. Several prototype vaccines have demonstrated the protective effect of the TechImmune antigens, the role of T cell responses in this protection, and the added benefit of these T cell responses with antibodies against the spike protein. In summary:

- TechImmune T cell antigens together with the spike protein conferred strong levels of protection against 6 variants of concern,
- T cell depletion studies demonstrated the important role of both CD4 and CD8 T cells responses in protection,
- TechImmune T cell antigens alone conferred protective immunity,

- Protection induced by TechImmune T cell antigens was additive with anti-spike antibodies,
- Multiple T cell antigens provided additive benefit,
- Inclusion of T cell antigens enhanced protection against the Delta variant and subsequent reinfection with the Omicron variant by preventing morbidity (weight loss) and reducing virus replication, suggesting the possibility of protecting individuals from disease as well as a population benefit of reducing transmission,
- Delivery of TechImmune antigens by both viral vector and mRNA technologies conferred strong protection.