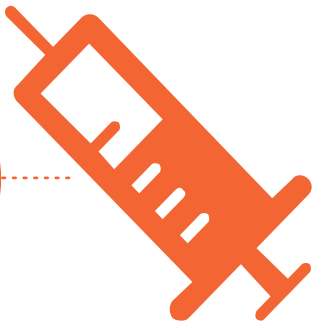
mRNA: Disrupting the Field of Vaccinology

Why mRNA?

- Rapidly progressing, cutting-edge platform for the development of new vaccines
- Potential to expand the range of diseases to be prevented or treated
- Promises to significantly speed up development and manufacturing[1]



What is it?

Two key types of mRNA technologies we are researching

- **Self-amplifying mRNA (SAM) vaccines**, through GSK's own platform [3]
- **Non-replicating mRNA-based vaccines**, through a collaboration with CureVac [4]

- mRNA enables protein synthesis in the human body, carrying the information required for cells to produce proteins
- By using mRNA technology in vaccines, specific proteins, or antigens, can be produced by the body's own cells, enabling the human immune system to prevent or fight disease [2]

How does it work?

- mRNA is 'packaged' into a delivery vehicle that allows the mRNA to remain stable until it enters a cell
- Once the mRNA enters a cell, it instructs the cell to produce a protein that will eventually trigger a protective immune response

The SAM platform potentially facilitates a large amount of antigen production from a small dose of vaccine and should trigger prolonged immunity.[4,5]

In contrast to GSK's SAM platform, CureVac's mRNA platform can be tailored to induce varying degrees of immune responses against specific protein antigens of choice[6]

Why is this important?

Production may be easier to scale up and more reproducible, allowing multiple global sites to act quickly in the case of pandemic responses

Production of mRNA vaccines is typically more flexible than traditional methods, allowing facilities to be repurposed for different pathogens/ diseases quickly

This technology has the potential for a fast response and could help address rapid emergence of acute viral diseases, such as Ebola, Zika and COVID-19 [2]

1. Pardi et al Nat Rev Drug Discov. 2018 Apr;17(4):261-279
2. https://www.phgfoundation.org/briefing/rna-vaccines
3. https://www.gsk.com/en-gb/behind-the-science/innovation/gsk-s-sam-technology-could-revolutionise-vaccines/
4. Widge et al New England Journal of Medicine, 2021 Jan 384(1):80
5. Maruggi et al Mol Ther. 2019 Apr 10; 27(4): 757–772
6. https://www.curevac.com/en/technology/
7. Hekele et al Emerg Microbes Infect. 2013 Aug; 2(8): e52.