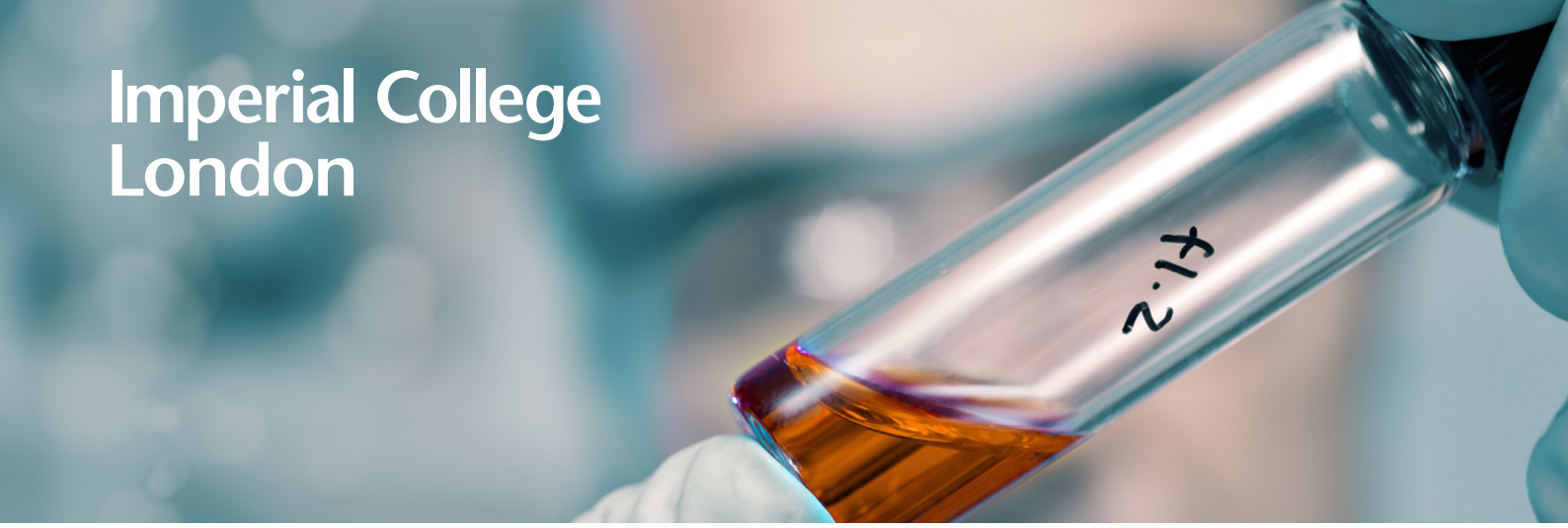
Imperial College London



Thermal stabilisation of vaccines

Technology overview

Vaccination is an effective method to prevent and treat infectious diseases which kill more than 17 million people every year, over half of them in underdeveloped remote areas. However, vaccines and other protein based therapeutics are prone to degradation and susceptible to aggregation at room temperature, hindering their bioavailability and safety. These biomolecules should be stored at -20 – 8 °C from manufacturing to administration, commonly referred to as 'cold-chain'. This means that resource-limited areas, with little or no refrigeration facilities, are unable to benefit fully from these therapeutic antibodies and vaccines.

Scientists at Imperial have developed a novel methodology for stabilising therapeutic proteins. The novel aspect of the process is using surface modification of proteins for a new method of storage that will circumvent the requirement for cold-chain storage. The method involves the modification of proteins to yield a solvent-free protein-rich biofluid. The protein will be shipped in the solvent-free form in a desiccated environment and reconstituted before being administered.

Taking advantage of the thermal stability imparted by the modifications will allow for storage at room temperature. This will effectively break the requirement for the cold-chain, allowing for significant reduction in the costs of delivering therapeutic proteins and vaccines, particularly to resource limited settings.

Intellectual Property

UK Priority Application (Number: 1908914.3)

Benefits

- The technique has potential to be used as a storage technology for temperature-sensitive therapeutic proteins and nucleic acids.
- Long-term storage and widespread dissemination of life-saving vaccines worldwide is possible.
- Reduction of up to 80% in the cost of vaccination programmes that amounts to $200 – 300 million per year.
- The method offers high level of stability even in the absence of refrigeration.

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