mRNA vaccine delivery

https://commons.wikimedia.org/wiki/File:Instilling_nasal_medication.jpg
https://www.pexels.com/photo/person-holding-white-medication-pills-8637069/

The technology

The COVID-19 pandemic has driven the rapid development of vaccines to treat the infection. A number of different types of vaccine have been deployed world-wide in treating the infection such as genetic (mRNA), viral vector, Inactivated and attenuated virus vaccines.

The mRNA vaccine has not only been effective against COVID, but also against many other serious medical conditions. Disadvantages of mRNA vaccines are that they have to be manufactured and distributed via a refrigerated supply chain and administered by injection under the supervision of medical professionals.

Technical solutions would be mRNA vaccines which are thermally stable, suitable for treating many medical conditions and capable of being administered orally or nasally.

The company

As a group you have been selected to form a team. Within the team you will fulfil the roles of business development executive[1], R&D manager[2] and technology analyst[3]. The team reports to the CEO.

Your CEO is mostly interested in supplying mRNA vaccines into low- and middle-income countries in Africa and South America in the future. Your company has experience in manufacturing mRNA vaccines and complying with the relevant regulatory affairs. Your company owns IP rights in a portfolio covering nearly all technology for manufacturing/ distributing known mRNA vaccines but not for thermally stable mRNA vaccines nor vaccines for oral or nasal delivery.

You begin a patent search looking for third parties owning patent applications for different thermally stable, oral or nasal vaccines. From the patent databases you want to identify relevant technical solutions, preferably those that are freely available in the countries in which you can manufacture and plan to sell your mRNA product. Alternatively, you will have to consider a technical solution for which you might need to acquire the associated ownership rights (buy the patents) or usage rights (in-licensing).

1. The business development manager, identifies new business opportunities in order to generate revenue, improve profitability and help the business grow
2. The R&D manager is responsible for conducting research, developing new products, processes, and technologies, and improving existing products.
3. The competitive intelligence analyst performs market research to provide information to executives or management who use it to craft a new sales project or business strategy

Types of COVID vaccine

https://www.immunology.org/public-information/vaccine-resources/covid-19/covid-19-vaccine-infographics/types-covid19-vaccines

#COVID vaccine patents

https://www.epo.org/news-events/in-focus/fighting-coronavirus/vaccines-and-therapeutics.html

mRNA Intellectual property landscape

https://www.nature.com/articles/s41587-021-00912-9

mRNA delivery

https://www.frontiersin.org/articles/10.3389/fbioe.2021.718753/full

COVID oral vaccine

https://www.rsb.org.uk/biologist-covid-19/why-an-oral-vaccine-could-be-key-to-fighting-covid-19