

GSK welcomes partners with innovative technologies to accelerate vaccine R&D

Vaccination saves two to three million lives annually. GSK will continue delivering proven vaccines, expand their availability to populations in need, and create new vaccines to protect against endemic and emerging diseases. To those who possess novel technologies that can innovate vaccine creation, GSK ventures to be your partner of choice.

GSK's vaccine portfolio. GSK's portfolio of more than 20 marketed vaccines, one of the industry's broadest, protects people against diseases such as meningitis, shingles, polio, measles, hepatitis, rotavirus, whooping cough, influenza, malaria, and others. In 2022, GSK's 12 manufacturing sites in eight countries produced and delivered more than 500 million vaccine doses—one and a half million vaccine doses daily. Each year, about 40% of the world's children receive a GSK vaccine.

Clinical vaccine pipeline. GSK's clinical pipeline of 21 vaccine indications against 15 pathogens leverages a variety of technologies (Table 1). In addition to established platform technologies, GSK is building new platforms such as the Multiple Antigen-Presenting System (MAPS) and mRNA, key to addressing the most complex diseases.

Table 1 | GSK vaccines in clinical development

Pathogen	Technology
Influenza viruses	mRNA
SARS-CoV-2	mRNA (and protein nanoparticle-adjuvanted)
Measles, mumps, rubella, and varicella	Live attenuated
Varicella virus (new strain)	Live attenuated
Respiratory syncytial virus	Protein—adjuvanted
Human papillomavirus	Protein—adjuvanted
Cytomegalovirus	Protein—adjuvanted
Pneumococcus	MAPS
<i>Neisseria gonorrhoeae</i>	GMMA
Shigella	Bioconjugated (tetravalent) or GMMA
Salmonella (non-typhoidal)	Bivalent GMMA or GMMA and typhoid conjugate
<i>Klebsiella pneumoniae</i>	Protein—bioconjugated—adjuvanted
<i>Clostridioides difficile</i>	Protein—adjuvanted
<i>Neisseria meningitidis</i>	Protein—conjugated and unconjugated
<i>Plasmodium falciparum</i>	Protein—adjuvanted

GMMA, Generalized Modules for Membrane Antigens; MAPS, Multiple Antigen-Presenting System.

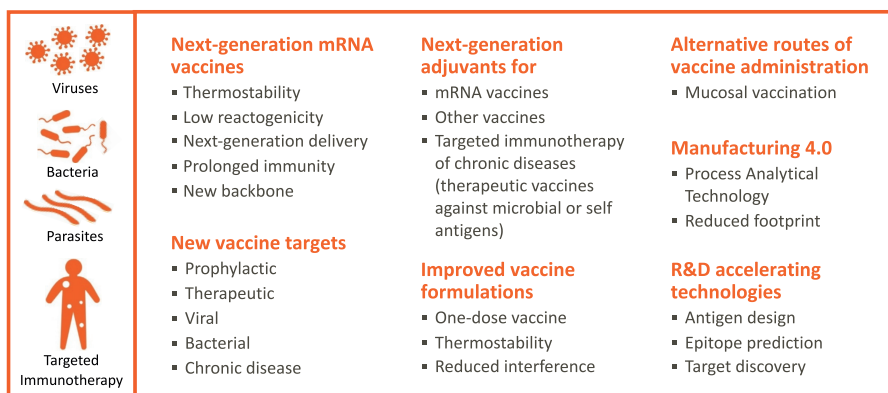


Fig. 1 | Vaccine areas of interest for partnership with GSK.

Antimicrobial resistance (AMR). Emergent AMR is a growing threat and GSK is recognized as an industry leader in the fight against this global problem. GSK is responding to AMR with bacterial vaccine programs that use platform technologies such as Generalized Modules for Membrane Antigens (GMMA), adjuvants, MAPS, or bioconjugation, to research and develop new vaccines designed to protect against enteric diseases such as shigellosis, invasive non-typhoidal salmonellosis and typhoid and paratyphoid fever, and other diseases including Group A Streptococcal (GAS) disease, and respiratory diseases such as pneumonia caused by *Streptococcus pneumoniae*.

GSK vaccines for global health. GSK is developing vaccines that aim to prevent and treat infectious diseases, especially those with AMR potential, that disproportionately impact people in low-income and lower middle-income countries. GSK addresses these countries' needs through the GSK Vaccines Institute for Global Health (GVGH) and with its partners Gavi, the Vaccine Alliance, and UNICEF. For example, working with its partners, GSK has committed to supply up to 18 million doses of its malaria vaccine for use in Sub-Saharan Africa. In 2022, GSK progressed 12 Global Health pipeline assets to address World Health Organization (WHO) priority diseases.

Vaccines for future pandemic preparedness. In 2022, GSK concluded a series of contracts to provide at least 200 million doses of pandemic influenza vaccine to governments around the world, including its stockpile contracts with the United States and Canada, and an agreement with Europe for the reservation and future production and supply of pandemic

influenza vaccines. Through partnership with the Biomedical Advanced Research and Development Authority (BARDA), GSK continues to manufacture and assess the safety and immunogenicity of pandemic influenza vaccine candidates.

Partnering for novel therapeutic targets for chronic diseases. To modify the course of chronic, progressive, relapsing or recurrent diseases, GSK's mission is to explore, identify and develop active immunization strategies against microbial agents or self-antigens. For this mission it seeks partners with novel antigens involved in the etiology and pathogenicity of infectious diseases and non-infectious diseases focused on diseases of immune dysregulation.

Partnering for novel vaccine R&D technologies. GSK's 2,000 in-house vaccine R&D scientists engaged in more than 150 scientific collaborations in 2022, producing more than 200 publications—partnerships are key to the growth of GSK. More than two-thirds of the vaccines in its clinical pipeline come from in-licensing or other alliances with external partners. GSK welcomes partnerships on projects that span discovery to late-phase development, to accelerate vaccine development, and strengthen supply (Fig. 1). Ultimately, uniting forces will help people around the world. Ahead together.

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