

SOA21

Develop tools such as vaccine platforms and expression systems, immunological toolboxes and delivery system (OO8 Action 2)

Priority area	Operational objective
Treatment and Vaccines (for farmed animals)	Develop new vaccines or improve existing ones, including adjuvants and immune modulators.
Key words	Partner participation
Vaccine antigens and platforms, vaccine delivery and formulation, vaccine response monitoring tools, adjuvants	DTU, AU, UCPH, SSI, ANSES, INRAE, NVI, SVA, IVI, WR, SURREY, APHA, ISS, IZS Teramo, IZSLER, AGES, FLI, CSIS, EULS
Project summary	
Prevention is better than cure, and vaccine based disease prophylaxis represents a key element in sustainable animal farming with high animal health and welfare. For a range of infectious diseases in farmed animals, vaccines are either not available or insufficient. This project aims at developing/improving/consolidating a range of new vaccine technologies along with tools to evaluate/predict protective efficacy of vaccines for use in animal husbandry including aquaculture.	
Project objectives	Outcomes and impacts
<ul style="list-style-type: none"> • Identify and improve vaccine antigens <ul style="list-style-type: none"> ○ Implement vaccine platforms such as: <ul style="list-style-type: none"> ○ Nano and microparticle based vaccines ○ Nucleic acid vaccines ○ Extracellular vesicle and yeast based vaccines ○ Viral vector and reverse genetic vaccines ○ Mycoplasma based vaccines • Develop, improve and evaluate delivery strategies, adjuvants and formulations for vaccines • Develop tools to evaluate the host response to vaccine and vaccine adjuvants including: <ul style="list-style-type: none"> ○ Tools to characterize protective immune response ○ In vitro immune assays for monitoring host immune response to vaccination ○ Profiling bioinformatics to identify immune signatures of potent vaccines ○ Assays correlating with vaccine-induced immunity and vaccine efficacy. ○ Develop tools for studying interaction between bacterial vector vaccines and gut microbiota. 	<ul style="list-style-type: none"> • New and improved veterinary vaccines and vaccine adjuvants • New tools for evaluation and monitoring vaccine induced immune responses and correlates of protection • Tools for future improved disease prophylaxis in farmed animal, which will contribute to improved animal welfare, sustainable animal production and green transition.

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