

Why do research and innovation on animal health matter?

Animal production is under constant pressure due to new and re-emerging pathogens resulting from natural evolution of micro-organisms, and anthropogenic factors such as globalisation, trade development, damages to ecosystems and climate change. Transmissible animal diseases can have devastating impacts on agricultural sustainability as they entail production losses (up to 20% according to [OIE](#)), generate trade disruptions and affect the whole economy, as experienced with epidemic diseases like avian influenza, African swine fever or endemic diseases (e.g. bovine tuberculosis). These pathogens can have a serious impact on human health and food safety, when agents causing the diseases can be transmitted between animals and humans ('zoonoses'), or through the inappropriate use of antimicrobials leading to resistance (estimated to be responsible for 33,000 human deaths per year in the EU alone); which makes [One Health](#) an important approach. The Farm to Fork strategy set an ambitious target for reducing the sales of antimicrobials in livestock production by 50% by 2030. Diseases are also detrimental to animal welfare and their control is key to improving overall production efficiency. Honeybee health is critical not only for apiculture but also for ecosystem services (pollination).

Research and Innovation are key enablers for keeping healthy livestock in a challenging environment, while contributing to sustainable farming systems, food security and public health. Fighting diseases and developing practices that would prevent their occurrence in the first place requires integrated approaches, an increased generation and management of data and the development of a range of tools for prevention, monitoring, control along with risk management strategies. This includes ensuring prudent use of antimicrobials and seeking alternatives to antimicrobials. The research and innovation ecosystem will be further consolidated through a Horizon Europe partnership on animal health and welfare, to be tentatively launched in 2024.

Animal health under Horizon 2020 and Horizon Europe



CORDIS search keywords

host-pathogen interaction, emerging and endemic diseases, surveillance, diagnostics, vaccines, anti-microbial resistance, biosecurity, coordination



Nb of projects

25 Horizon 2020
12 Horizon Europe



EU contribution

€ 200 million
€ 112 million

Success stories dedicated to animal health

Understanding diseases

It is a prerequisite for designing tools and measures to assess risks, prevent or respond to diseases. DELTA-FLU, PALE-Blu, PIGSs, DEFEND filled gaps in our understanding of respectively avian influenza (AI); blue tongue; Streptococcus suis; African swine fever (ASF) and lumpy skin disease(LSD). Kappa-Flu and WiLiMan-ID are addressing respectively highly pathogenic AI, and 5 priority diseases (AI; ASF; African horse sickness (AHS); West Nile fever; Chronic wasting disease). HoloRuminant and 3D-Omics study the animal microbiome. COMBAT and PREPARE4VBD address vector-borne diseases. HE-Farm and BioSecure focus on biosecurity (technologies, quantification of risks).

Surveillance and diagnostics

Diagnostics enable detecting/quantifying presence of micro-organisms or markers of their presence, measuring the immunity of animals, detecting whether animals were vaccinated or not, etc. They support surveillance schemes and drive treatment decisions. SWINOSTICS and VIVALDI developed ready-to-use field diagnostic tests for several viruses and bacteria. DECIDE is developing data-driven decision support tools for the early detection of disease emergence, focusing on respiratory and gastrointestinal syndromes in pigs, poultry and cattle.

Vaccines

Vaccines are a key component of the tools to prevent infectious diseases from occurring in an animal/herd and they reduce the risk of disease spread. For diseases for which antimicrobials are used, vaccines contribute to the fight against antimicrobial resistance (AMR). SAPHIR aimed to develop vaccine strategies against six pathogens responsible for high economic losses in livestock, e.g. porcine respiratory and reproductive syndrome (PRRS). The efforts of PIGSs on Streptococcus suis, of PARAGONE on several helminth parasites of ruminants improved the understanding of pathogenicity of these organisms and of ways of stimulating immune response to vaccine antigens. DEFEND is studying virally-vectored vaccine against ASF and works on optimising LSD vaccine strategies. VACDIVA is developing live-attenuated vaccines against ASF and related tests, for use in pigs and/or in wild boar. REPRODIVAC is targeting abortifacient diseases, including PRRS and Q fever, while SPIDVAC is addressing AHS, peste des petits ruminants and foot-and-mouth disease.

One Health and Antimicrobial resistance

While the projects mentioned above contribute indirectly to the fight against AMR, other projects are addressing practices to reduce the use of antimicrobials (DISARM, ROADMAP, HealthyLivestock), or the development of alternatives to traditional antimicrobials (AVANT, NeoGIANT). The One Health European Joint Programme co-fund action OH EJP developed activities on AMR, mainly on detection, surveillance and risk assessment.

European and international Coordination

The ERA-NET ICRAD is a co-fund action bringing together research funding organisations to coordinate public research programmes. Since 2019, ICRAD funded 29 transnational projects addressing various diseases, including zoonoses; vaccine strategies; diagnostic technologies etc. OH EJP is addressing food-borne zoonoses, AMR and emerging zoonotic threats. At international level, the EU facilitated the setting up of STAR-IDAZ International Research Consortium (IRC), with SIRCAH supporting its secretariat. It is a network of research funders and centres seeking to coordinate research at international level on priority diseases and issues. The IRC notably drafted disease roadmaps and commissioned research reviews on animal influenza (2021) and ASF (2022).

Bees

The POSHBEE project provided a pan-European quantification of the exposure to chemicals and how chemicals alone, in mixtures and in combination with pathogens and nutrition, affect bee health. B-GOOD generated a mainly automated data stream of components related to bee health. Both projects provided technical innovations. BeeGuards and BETTER-B will address various factors impacting resilience of beekeeping.

Horizon 2020 and Horizon Europe projects on animal health

Follow the **CORDIS** link for more information on the start-end date, EU contribution, coordinator and results.

List sorted by ascending start date.

Website	Project	CORDIS
SAPHIR	Strengthening Animal Production and Health through the Immune Response	633184
PARAGONE	vaccines for animal parasites	635408
HONOURS	Host switching pathogens, infectious outbreaks and zoonosis; a M Training Network	721367
PALE-Blu	Understanding pathogen, livestock, environment interactions involving bluetongue virus	727393
DELTA-FLU	Dynamics of avian influenza in a changing world	727922
PIGSS	Program for Innovative Global Prevention of Streptococcus suis	727966
VETBIONET	Veterinary Biocontained facility Network for excellence in animal infectiology research and experimentation	731014
SWINOSTICS	Swine diseases field diagnostics toolbox	771649
VIVALDI	Veterinary Validation of Point-of-Care Detection Instrument	773422
HealthyLivestock	Tackling Antimicrobial Resistance through improved livestock Health and Welfare	773436
DEFEND ^{MA}	Addressing the dual emerging threats of African Swine Fever and Lumpy Skin Disease in Europe	773701
One Health EJP	Promoting One Health in Europe through joint actions on foodborne zoonoses, antimicrobial resistance and emerging microbiological hazards	773830
PoshBee ^{MA}	Pan-european assessment, monitoring, and mitigation Of Stressors on the Health of BEEs	773921
DISARM ^{MA}	Innovative network for the management of antibiotic resistance in livestock farming	817591
B-GOOD ^{MA}	Giving Beekeeping Guidance by cOMputatiOnal-assisted Decision making	817622
ROADMAP ^{MA}	Rethinking Of Antimicrobial Decision-systems in the Management of Animal Production	817626
PHAGOVET	A cost-effective solution for controlling Salmonella and Escherichia coli in poultry production	820523
DIGDEEP	Digging deeper into genes to track infectious disease outbreaks	842621
RAID	Veterinary Decision Support System by Rapid Bacterial Infection Detection	859156
ICRAD ERA-NET	International coordination of research on infectious animal diseases	862605
AVANT ^{MA}	Alternatives to Veterinary ANTImicrobials	862829
VACDIVA ^{MA}	A safe DIVA vaccine for African Swine Fever control and eradication	862874
MOOD	MONitoring Outbreak events for Disease surveillance in a data science context	874850
HoloRuminant	Understanding microbiomes of the ruminant holobiont	101000213
3D-omics	Three-dimensional holo'omic landscapes to unveil host-microbiota interactions	101000309
PREPARE4VBD	A Cross-Disciplinary Alliance to Identify, PREdict and prePARE for Emerging Vector-Borne Diseases	101000365
COMBAT	CONtrolling and progressively Minimizing the Burden of Animal Trypanosomosis	101000467
DECIDE ^{MA}	Data-driven control and prioritisation of non-EU-regulated contagious animal diseases	101000494
NETPOULSAFE ^{MA}	Networking European poultry actors for enhancing the compliance of biosecurity measures for a sustainable production	101000728
NeoGIANT ^{MA}	The power of grape extracts: antimicrobial and antioxidant properties to prevent the use of antibiotics in farmed animals	101036768
ISIDORE	Integrated Services for Infectious Disease Outbreak Research	101046133
BCOMING	Biodiversity Conservation to Mitigate the risks of emerging infectious diseases	101059483
SPIDVAC	Improved control of priority animal diseases: Novel vaccines and companion diagnostic tests for African horse sickness, peste des petits ruminants and foot-and-mouth disease	101059924
REPRODIVAC	Next-generation vaccines and diagnostics to prevent livestock reproductive diseases	101060813
SIRCAH 2	Support for the International Research Consortium on Animal Health	101082377
WiLiMan-ID	Ecology of Wild-life, Livestock, huMan and Infectious Diseases in changing environments	101083833
BioSecure ^{MA}	Enhanced and cost-effective biosecurity in livestock production	101083923
HE-FARM ^{MA}	Healthy environmental-friendly and resilient farm to fork	101084097
Kappa-Flu	Ecology and biology of HPAIV H5	101084171
E4Warning	Eco-Epidemiological Intelligence for early Warning and response to mosquito-borne disease risk in Endemic and Emergence settings	101086640



Relevant sources of information supporting animal health

A **results pack** on animal health was published in autumn 2022, showcasing 12 EU-funded projects. Other instruments and other programs, like the ‘European Innovation Partnership for Agricultural productivity and sustainability’ (**EIP-AGRI**), Partnerships and EU missions also help maximise the adoption and development of animal health.

Animals and health under EIP-AGRI activities – Focus Groups and Operational Groups

- Focus Group “Animal husbandry - Reduction of antibiotic use in the pig sector”
- Focus Group “Reducing antimicrobial use in poultry farming”
- Focus Group “Bee health and sustainable beekeeping”

COST Actions

- **ASF-STOP** - Understanding and combating African Swine Fever in Europe
- **ENOVAT** - European Network for Optimization of Veterinary Antimicrobial Treatment
- **HARMONY** - Novel tools for test evaluation and disease prevalence estimation
- **BETTER** - Biosecurity Enhanced Through Training Evaluation and Raising Awareness
- **ESFLU** - European Swine Influenza Network
- **OneHealthDrugs** - Health drugs against parasitic vector borne diseases in Europe and beyond

In the pipeline and future funding opportunities

- HORIZON-CL6-2023-FARM2FORK-01-2: European partnership on animal health and welfare – Co-fund Action – 1 project - €60 Million for 2023-2024 – *indicative total EU contribution for whole duration of partnership 180 M€*
- HORIZON-CL6-2023-FARM2FORK-01-5: Advancing vaccine development for African swine fever: €12 Million



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