



Overview

The STAR-IDAZ International Research Consortium (IRC) of research funders and programme owners, aims to maximise the impact of animal disease research funding through coordination and cooperation.

Objectives

The overall objective of the STAR-IDAZ IRC is to coordinate research at the international level to contribute to new and improved animal health strategies for at least 30 priority diseases/infections/issues.

Deliverables

The deliverables include; candidate vaccines; diagnostics; therapeutics and other animal health products; procedures; and key scientific information/tools to support risk analysis and disease control.

SIRCAH (secretariat)

The Secretariat supports the STAR-IDAZ IRC Executive Committee, Scientific Committee and Working Groups,

- Contributes to policies and guidelines and helps coordinate and disseminate international research
- Assists in research gap analysis and runs foresight exercises
- Facilitates intra-group communication and working
- Collects and disseminates pertinent information and results to funded researchers via website, newsletters, communication materials and conferences.

Scientific Committee

The Scientific Committee brings expertise and representation from academia, livestock and animal health industry, and risk assessment/regulatory bodies.

- Identifies need for and missions of Working Groups and assesses their progress
- Supports gap analysis and research prioritisation with Secretariat.
- Proposes research priorities, policies and guidelines
- Considers the scientific merit of proposals
- Acts as a scientific coordinating body and exchange for best practice
- Makes funding recommendations to the Executive Committee

Working Groups

The working groups comprise relevant science experts including representatives from funded projects, livestock industries and other stakeholders. Composition is geographically balanced.

- Map and report national, regional or international initiatives
- Point out the challenges to be overcome (gap analysis)
- Recommend research objectives or solutions to resolve gaps
- Ensure synergies across research projects
- Agree good research practice
- Promote scientific excellence and enabling environment
- Liaise with other Working Groups
- Adopt STAR-IDAZ IRC policies and guidelines
- Report to the Scientific Committee

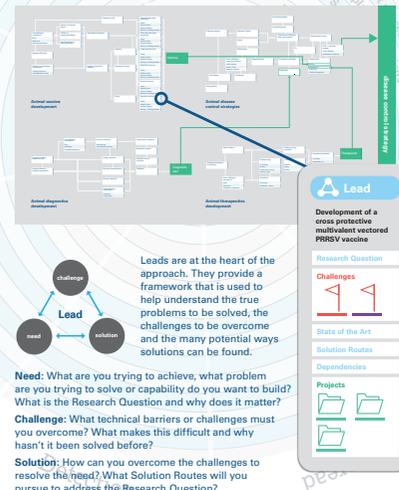


IRC Executive Committee

Animal Disease Control System Solution Engine

The Animal Disease Control SSE provides a common platform for the STAR-IDAZ community to collaborate and deliver its strategic objectives by supporting more efficient, effective and focussed research that can deliver real impact to society.

Research Roadmaps



The IRC Executive Committee comprises one representative per Partner Organisation, the Chair of the Scientific Committee and the STAR-IDAZ Chairperson.

- Agrees Governance, Policies and Guidelines, including deciding on the Working Groups
- Coordinates research funding strategies
- Promotes support from the livestock and animal health industries and from donors

25 partner organizations
16 member countries
50 associated countries
\$2.5B research investment

Research Community

The research community comprises all those people and organisations who can contribute towards tackling the overall problem.

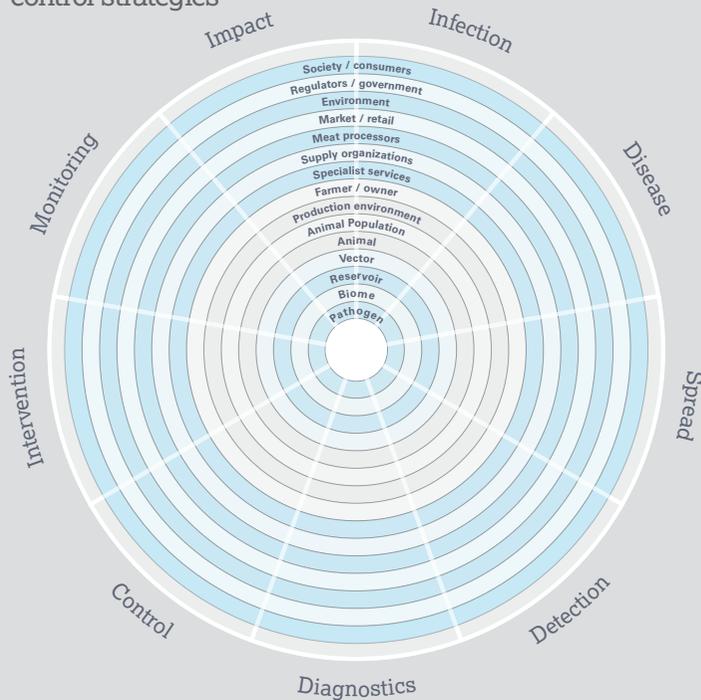
- Research scientists
- Domain and industry experts
- Capability specialists

Projects



Funded projects help overcome a particular challenge, through a number of maturity levels until a solution is reached. A key part of a project is identifying the areas of knowledge and capability that can help accelerate it and sharing the primary and secondary impacts for the benefit of the community. It's important that a portfolio approach is taken in choosing which projects to fund balancing opportunity, resources and risk.

Animal disease control strategies



Actors

- Set of participants involved in the system
- Pathogen**
A micro-organism or other agent that causes disease
 - Biome**
The habitat and other similar organisms with which the pathogen cohabits
 - Reservoir**
The place in which the pathogen is generally found
 - Vector**
The means of transference of the pathogen from the reservoir to the animal
 - Animal**
The individual animal that becomes diseased as a result of the pathogen
 - Animal population**
The population of animals that live with the diseased animal
 - Production environment**
The context and habitat in which the population of animals live
 - Farmer / owner**
The person / organization that has responsibility for and benefits from the population of animals
 - Specialist services**
Externally provided specialist services like veterinary

- Supply organizations**
Suppliers and manufacturers of external inputs to the production environment e.g. feed and pharma
- Meat Processors**
Transporters, receivers and processors of the animals
- Market / retail**
Channel or supply chain into which the meat products are provided
- Environment**
The natural environment that is affected by the system
- Regulators / government**
The bodies that regulate and control the behavior of the actors in the system
- Society / consumers**
Those that consume the results of the animal production

Capabilities

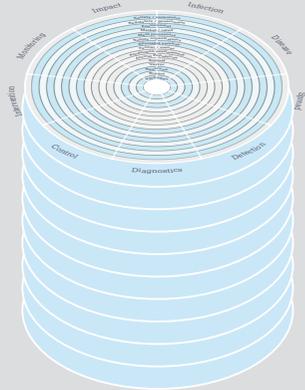
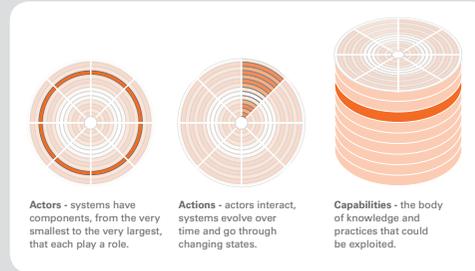
- Growing Body of knowledge, assets and resources brought to bear on the solution
- Enabling technologies (fundamental & applied)**
Science & technology expertise that is brought to and developed in the domain
 - Sensing & measurement**
Sensing systems and approaches for gathering data
 - Data analysis**
Interpreting, understanding and building meaning from data
 - Multi-scale modelling**
In-silico modelling of systems from micro to macro scales

Actions

- Activities throughout the end to end lifecycle
- Infection**
Establishment of the pathogen in the animal
 - Disease**
Pathogen's growth results in disease
 - Detection**
Symptoms become apparent

- Diagnosis**
Identification of the disease
- Control**
Design of control strategy for the control of the disease in the animal and population and their causes
- Intervention**
Carrying out the control strategy
- Monitoring**
Monitoring of the impact of the control strategy on the population
- Impact**
Resulting direct and indirect impacts of the disease and control strategy

- Testing, trialing and evaluating**
Processes and platforms to evaluate solutions from lab to field
- Failure & root cause analysis**
Systematically understanding failures and their causes
- Economics & impact modelling**
Understanding the full impacts of possible changes in the system
- Policies, guidelines & standards**
Defined frameworks that govern the behavior of the actors in the system
- Infrastructure, people & labs**
Physical resources that are needed to carry out specialist tasks
- Collaborative & creative ways of working**
Defined ways in which problem and solution finders and owners in the system work together to create value
- Human factors**
Research and understanding of human behavior and performance
- Knowledge repository**
A common place where system knowledge can be shared



Anti bacterial resistance



Actors

- Set of participants involved in the system
- Antibacterial compounds**
The compounds used as anti-bacterials that give rise to resistance mechanisms (e.g. antibiotics, chemical stressors)
 - Resistance mechanisms**
The ways in which bacteria develop and transfer resistance (e.g. mutation, horizontal transfer, active transport)
 - Bacteria**
Individual micro-organisms
 - Micro-biome**
Community of symbiotic and pathogenic micro-organisms including the bacteria
 - ABR Reservoir**
Distinct area (e.g. container) where the micro-biome can be found (e.g. animals, rivers)
 - Transmission route**
The means by which the resistant bacteria is transferred from the reservoir to the host (e.g. carnivals, aerosol, food, water, human infrastructure)
 - Host**
Individual who is infected by the resistant bacteria
 - Health professionals**
Health care professionals at the 'front line'
 - Pharma and health industry**
Pharma, diagnostic, manufacturers, distributors, chemical companies that create and supply the anti-bacterial compounds
 - Reservoir owners**
Public and private individuals, institutes, companies responsible for designing and operating potential reservoirs (e.g. farmers, hospital operators)

Capabilities

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- Enabling technologies (fundamental & applied)**
Science and technology expertise that is brought to and developed in the domain
 - Sensing and measurement**
Sensing systems and approaches for gathering data
 - Data analysis**
Interpreting, understanding and building meaning from data
 - Multi-scale modelling**
In-silico modelling of systems from micro to macro scales
 - Testing, trialing and evaluating**
Processes and platforms to evaluate potential solutions from lab to field
 - Health economics and modelling**
Understanding financial and social costs of changes to the system
 - Policy, guidelines and standards**
Defined ways in which problem and solution finders can work together to create value
 - Collaborative and creative ways of working**
Defined ways in which problem and solution finders can work together to create value
 - Knowledge repository**
A common place to store and share system knowledge

Actions

- Activities throughout the end to end lifecycle
- Resistance**
The emergence of microbes with resistance mechanisms
 - Spread**
The proliferation and evolution of microbes with resistance mechanism
 - Infection**
The invasion of the host by resistant microbes
 - Growth**
The multiplication of the resistant microbe population in the host
 - Response**
The triggering and action of the host's immune system
 - Diagnosis**
The identification of the infection causing microbe in the host
 - Treatment**
The therapy administered to the host to counteract or mitigate the infection, reduce illness and potential for death
 - Mitigation**
The prevention and limitation of the emergence of resistance mechanisms

Animal vaccine development



Actors

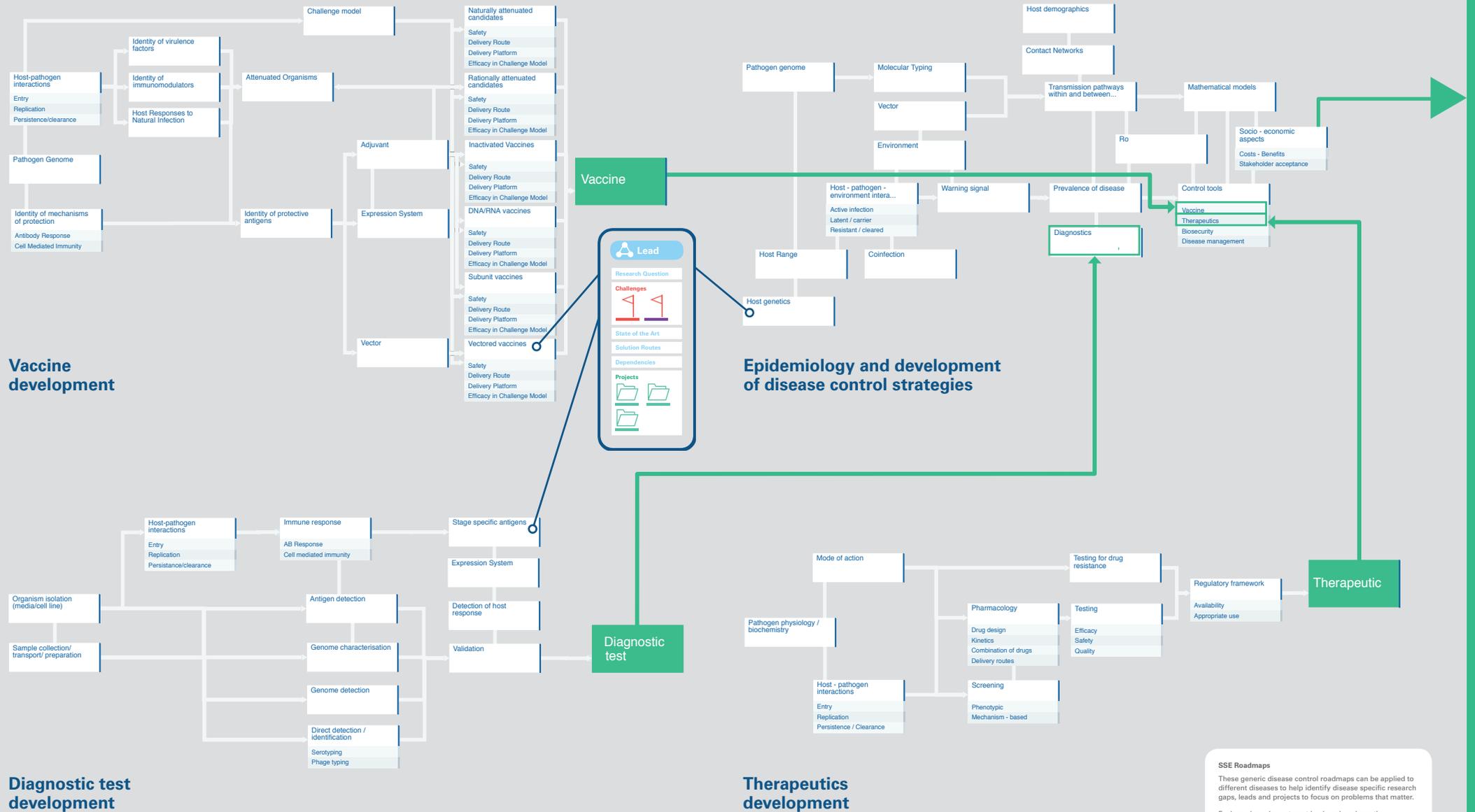
- Set of participants involved in the system
- Pathogen**
A micro-organism or other agent that causes disease
 - Vector / Reservoir**
The carrier or means of transference to the animal
 - Animal**
Intended recipient of the vaccine
 - Immuniser**
Deliverer or delivery system of the vaccine
 - Customers**
Buyers of vaccine systems or those economically impacted by the effect of the pathogen
 - Society**
Those affected by the vaccine system or potentially impacted by the disease

Actions

- Activities throughout the end to end lifecycle
- Identifying opportunity**
Discovering or isolating the pathogen/antigen to be targeted and assessing potential viability (commercial, scientific & political)
 - Characterising pathogen**
Understanding the characteristics of the pathogen and associated mechanisms
 - Identifying protective elements**
Finding promising targets and protective immunogens
 - Design vaccine**
Creating and evaluating potential vaccine candidates and associated business models
 - Testing and trialing**
Testing vaccine candidates and delivery mechanisms
 - Scaling up**
Scaling up of the vaccine and delivery system
 - Licensing**
Regulatory approval and commercial licensing
 - Using**
Distribution and use of the vaccine and delivery system
 - Pathogen evolving**
The continued evolution of the pathogen

Capabilities

- Growing Body of knowledge, assets and resources brought to bear on the solution
- Enabling technologies (fundamental & applied)**
Science & technology expertise that is brought to and developed in the domain e.g. immunology
 - Sensing & measurement**
Sensing systems and approaches for gathering data
 - Data analysis**
Interpreting, understanding and building meaning from data
 - Multi-scale modelling**
In-silico modelling of systems from micro to macro scales
 - Testing, trialing and evaluating**
Processes and platforms to evaluate solutions from lab to field
 - Failure & root cause analysis**
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SSE Roadmaps
These generic disease control roadmaps can be applied to different diseases to help identify disease specific research gaps, leads and projects to focus on problems that matter. Each roadmap has a target lead, and explores the dependant leads that need to be solved.