



High-throughput *in vitro* systems
Genome-to-phenotype combining *in vitro* models and genome editing

A diagram showing a DNA double helix being edited by a CRISPR-Cas9 system, with a petri dish containing various colored cells representing different cell lines or tissues.

Pangenomes and comparative genomics
To fully discover, preserve and utilize genomic biodiversity

Illustrations of a blue fish, a brown fish, and a silver fish, representing different species or breeds used in comparative genomics.

FAANG_{GTEX} project
Large cohorts of animals to characterise genotype-to-expression in many tissues and cell types

A diagram showing a DNA double helix with two genes labeled "Gene" and their corresponding mRNA transcripts, representing the connection between genotype and expression.

Healthier & improved animals

A central circular hub with four quadrants: "Genome editing" (top-left), "Genomic selection" (top-right), "Fundamental biology" (bottom-left), and "Genome-enabled management" (bottom-right). The center contains an illustration of a cow, a pig, and a chicken in a field, with the text "Healthier & improved animals" above them.

Chromatin accessibility
Hypersensitive Sites

DNA Methylation
CH₃

Histone modifications
CH₃ CO

Transcriptome
RNA polymerase

A diagram of a DNA double helix wrapped around histone cores. It shows various modifications: CH₃ on DNA (DNA Methylation), CH₃ and CO on histones (Histone modifications), and RNA polymerase transcribing the DNA into a transcriptome.

FAANG_{SingleCell} Atlases
Build tissue and life stage specific functional maps at single-cell resolution

Illustrations of various cell types, including neurons, muscle cells, and a cell with a nucleus, representing single-cell resolution data.

***In vitro* biorepositories**
Organoids and iPSCs representing species, breed and population diversity

Illustrations of a petri dish with organoids, a brain, and a kidney, representing different types of *in vitro* models.

Large phenotype collections
Data from many animals raised in well-defined environments

An illustration of a cow in a field with a laptop computer, representing the collection of phenotypic data from animals in controlled environments.