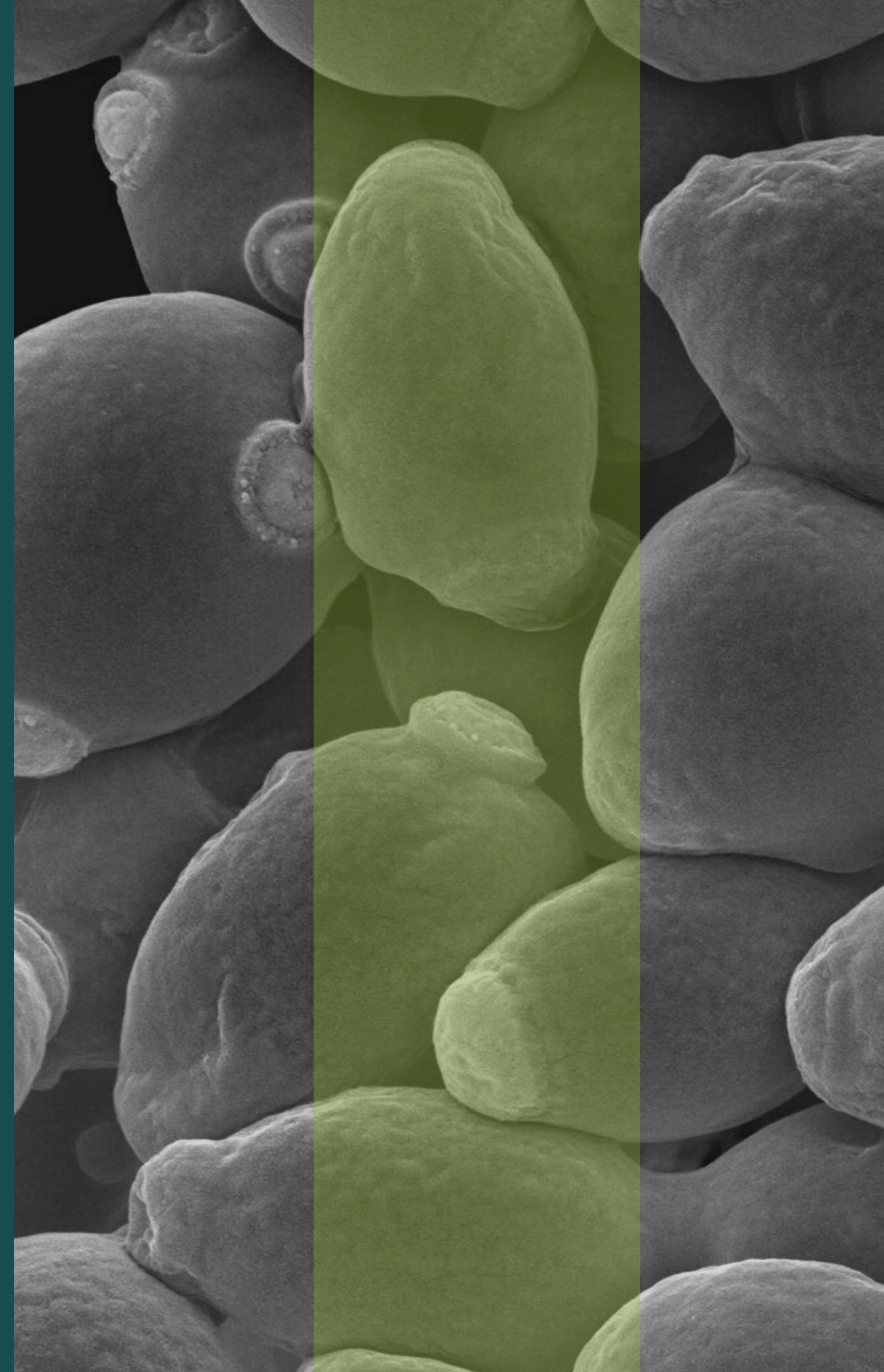




The next generation of Animal Growth Promoters (AGPs) free of antibiotics



Our purpose

We believe that with a functional nutrition and in balance with nature, the best results in production and quality of life of the different animal species are achieved.



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



The General Problem

In 2050 bacterial resistance could kill more people than cancer (WHO, 2015).

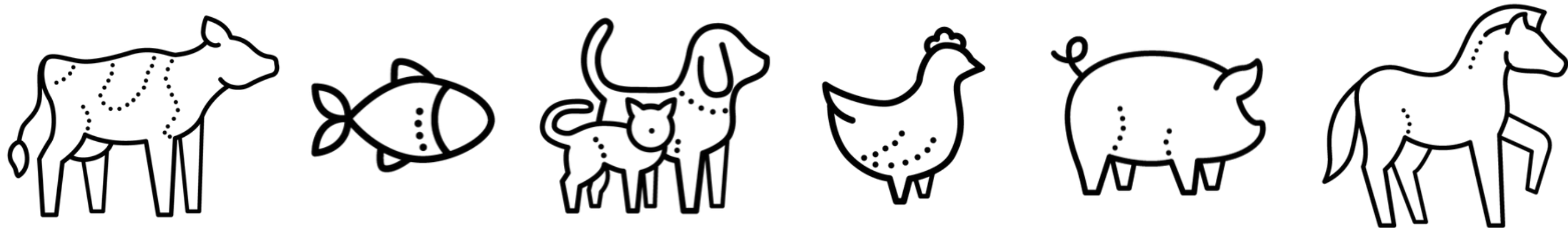
In some countries approximately 80% of total consumption of medically important antibiotics is in the animal sector

By 2030 world population is projected to grow about 8.3 billion, demand for food will grow (FAO, 2015)

How can we produce more animal protein without side effects in a sustainable way?

Solution

Feed additives that work as Animal Growth Promoters (AGPs) designed after understanding the relation between gut microbiota and other multiple variables for maximizing the benefits without using antibiotics.



The Technical Problem

Gut microbiota plays a key role but is highly variable so it is too hard to understand the interaction between microbiome and external variables such as **production, mortality**.
antibiotics etc,

How can the animal nutrition companies increase the thermal and digestive protection of the natural feed additives, such as probiotics or phygenics, to include in pellet or extruded animal feed compound?

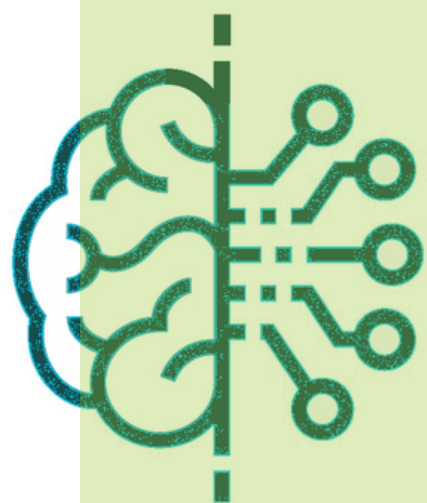
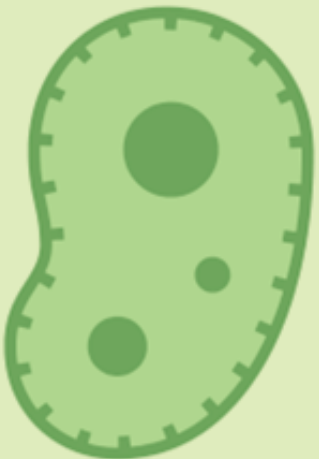


Our Uniqueness

Unveiling the black box to curb the AMR

Unique biotech & AI platform to design and produce special formulations of the next generation of animal growth promoters free of antibiotics.

Besides, feed additives with the highest thermal protection to put in animal feed to remodel the intestinal microbiota of the different species.

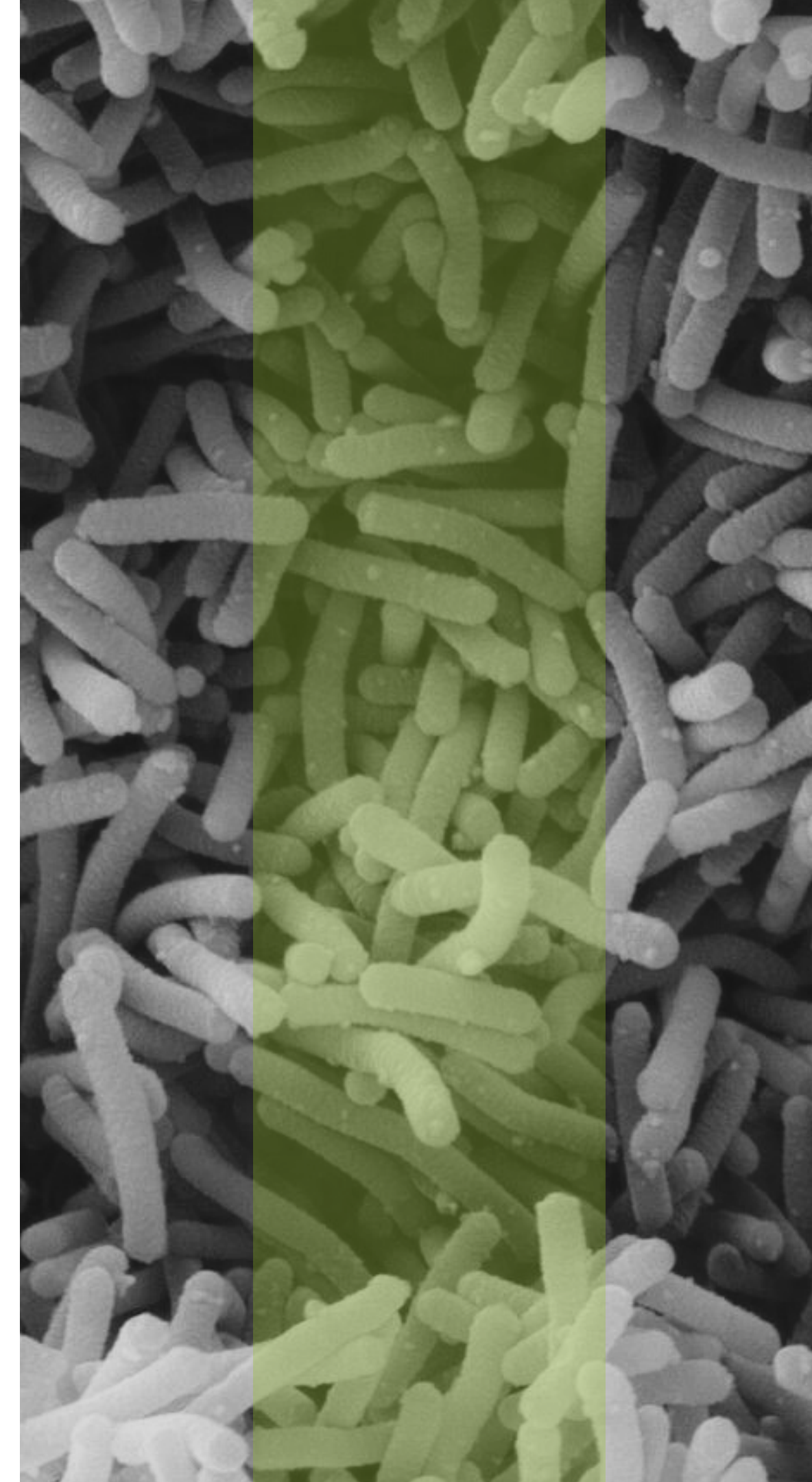


Our Technology

The encapsulation method: is a mix of technics according to the nature of the molecule.

We have successfully encapsulated lactic acid bacteria such as *Lactobacillus* spp., *Enterococcus* spp., and *Bifidobacterium* spp. as well as live yeast and phytochemicals as cinnamon oil, *Thymus vulgaris*, among others.

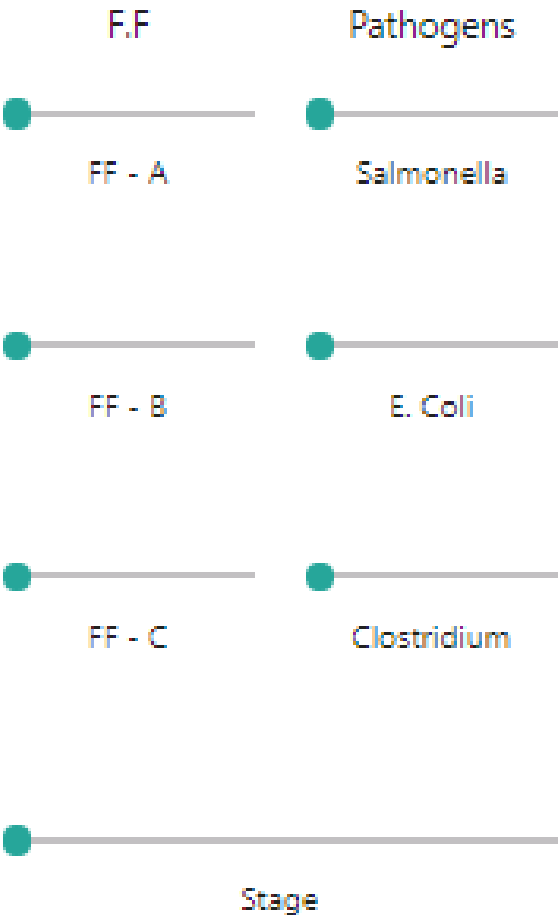
The active compounds: Fortcell Feed® uses different natural microbiota modifiers such as: probiotics, prebiotics, phytochemicals and even peptides.



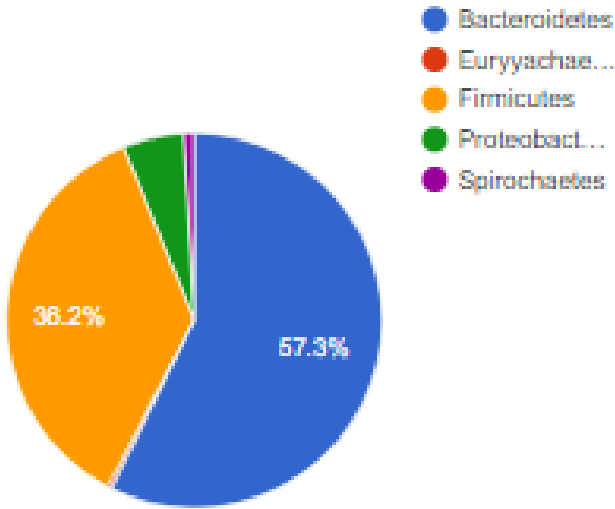
Breed

Option #1

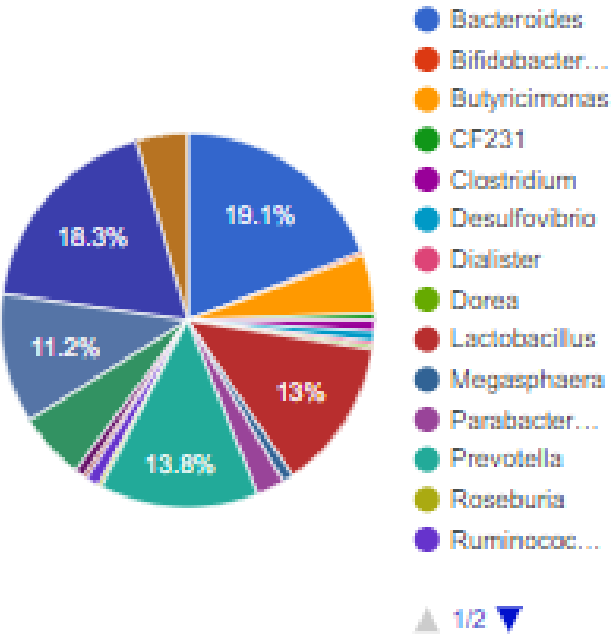
Microbiota modifying agents



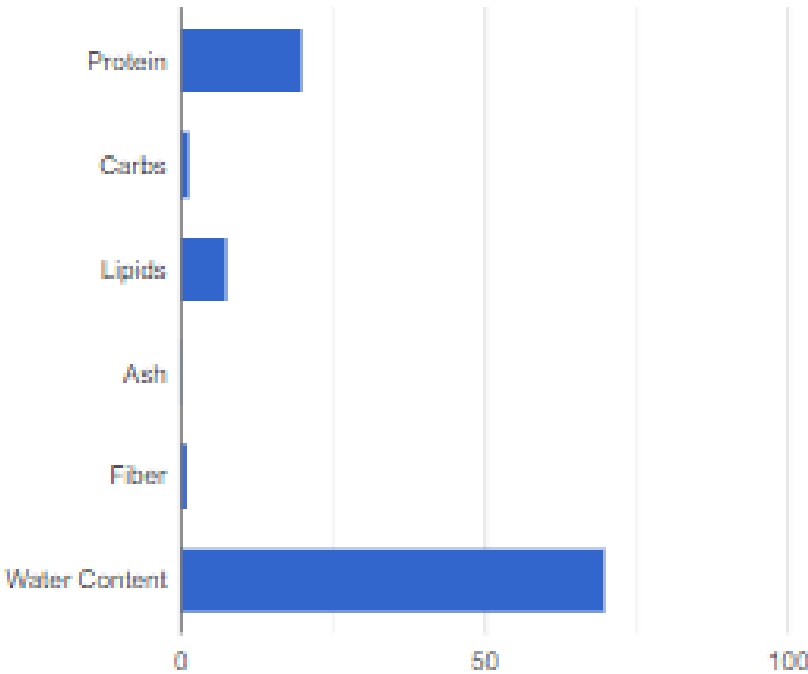
Filum



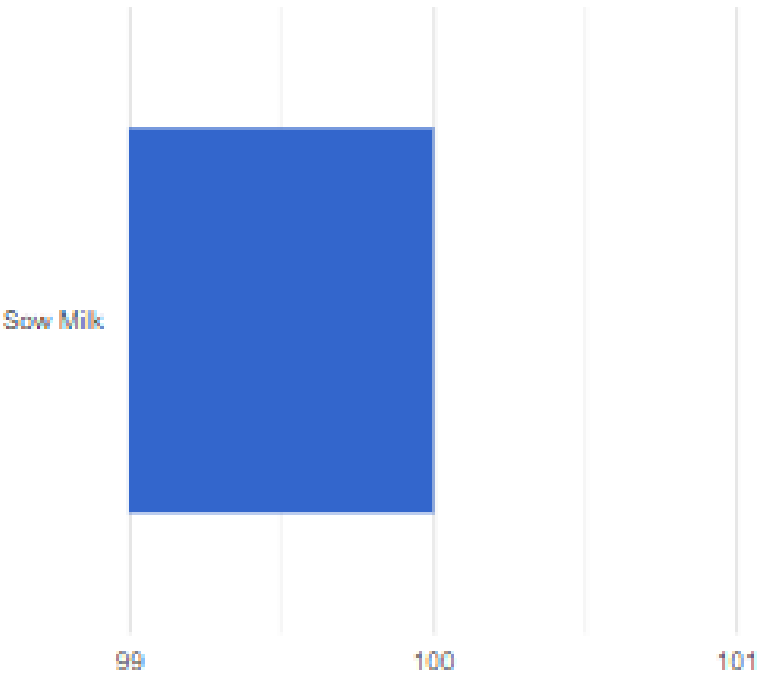
Genus



Diet



Raw Materials



Output

1.5

Conversion

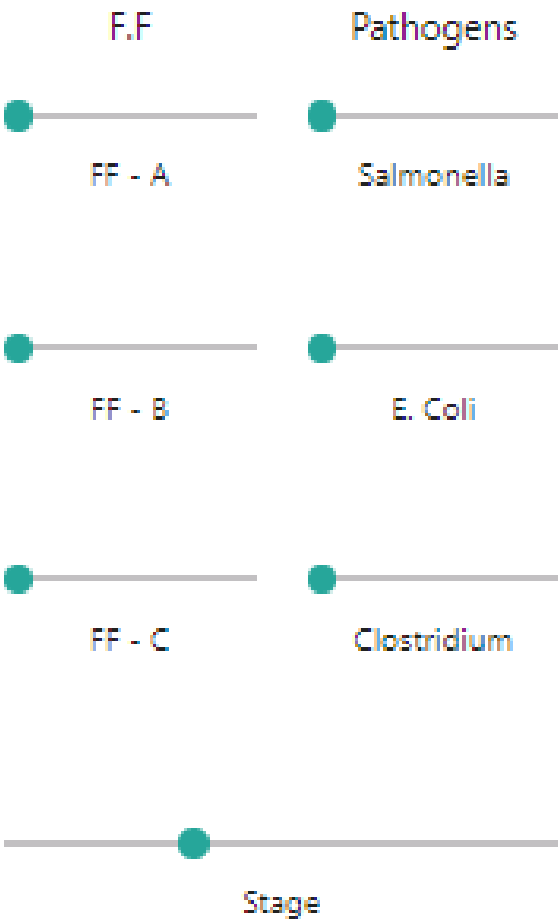
0.82%

Mortality

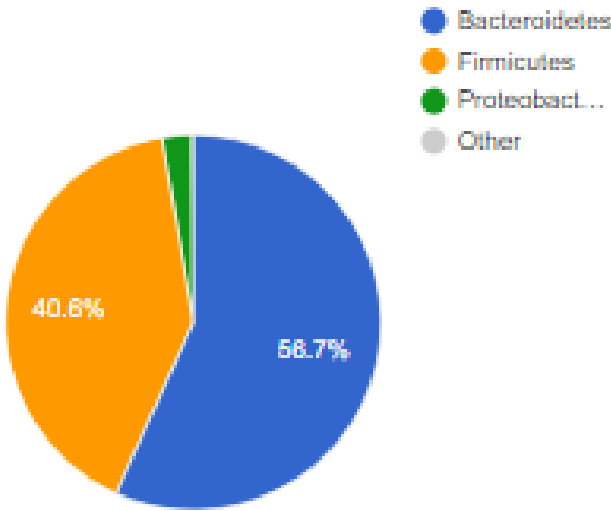
Breed

Option #1

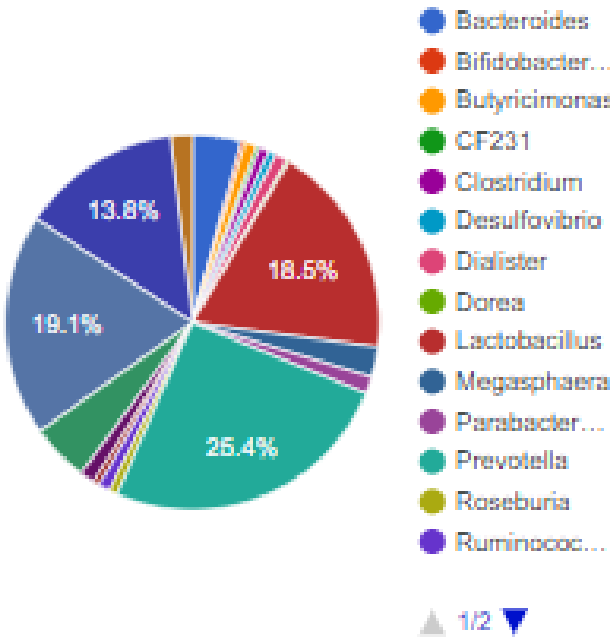
Microbiota modifying agents



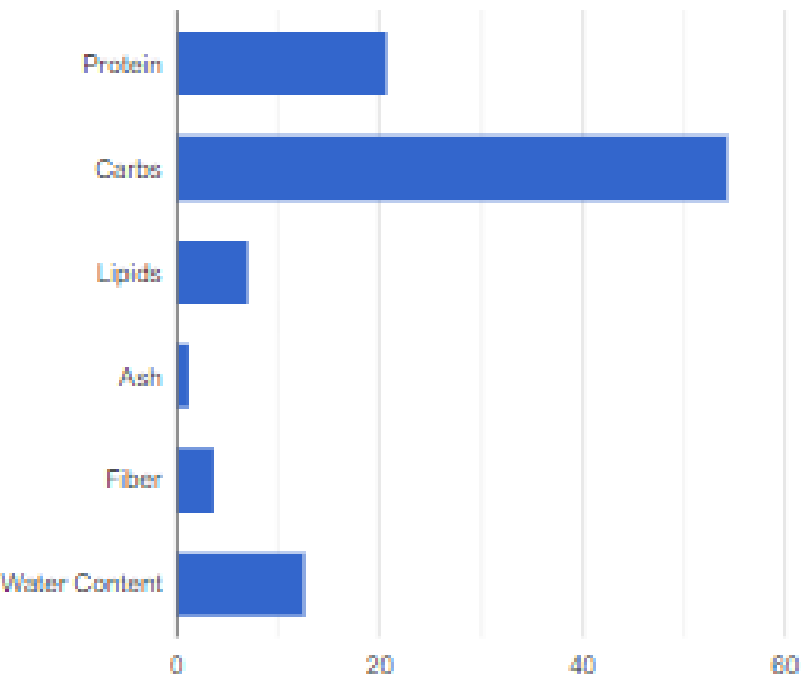
Fillum



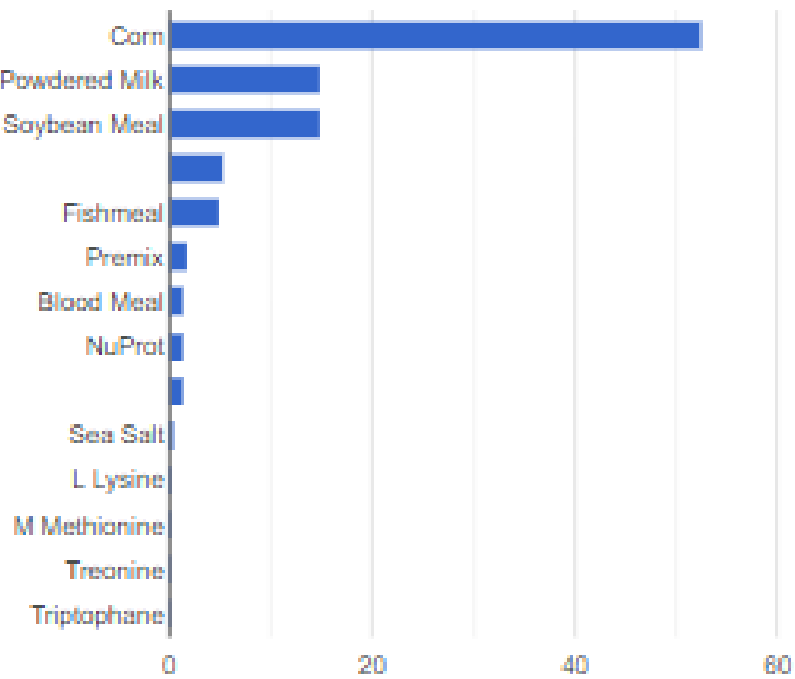
Genus



Diet



Raw Materials



Output

12.31

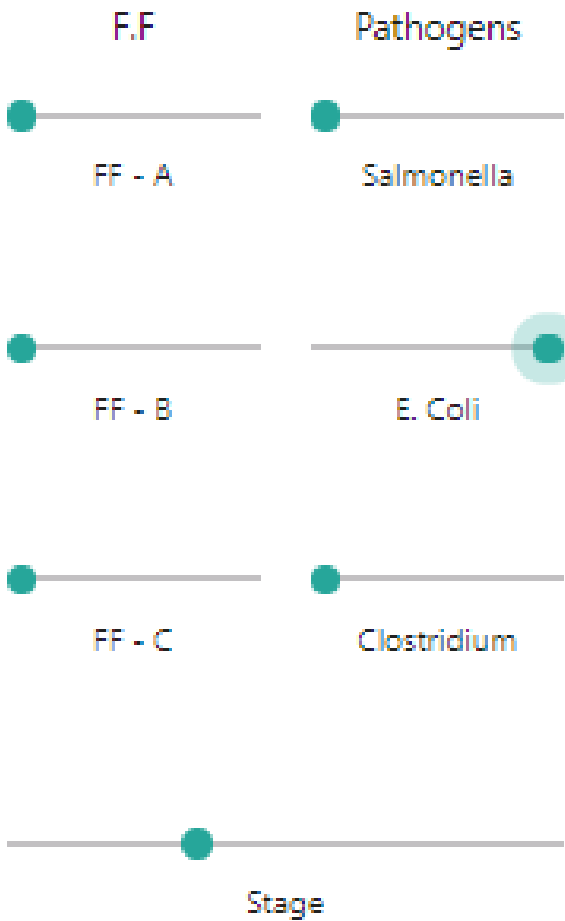
Conversion

6.72%

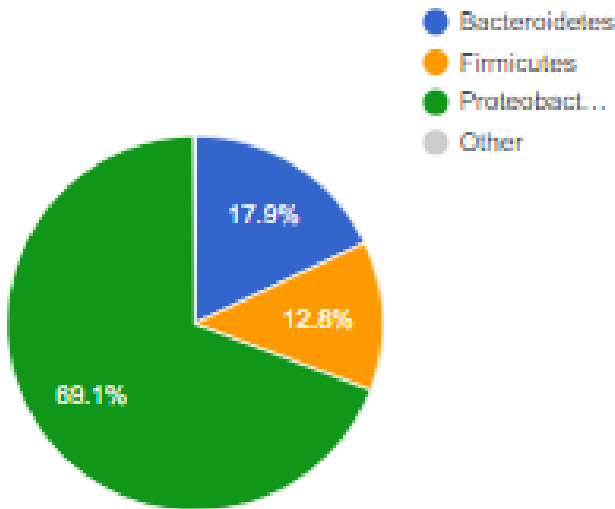
Mortality

Breed
Option #1

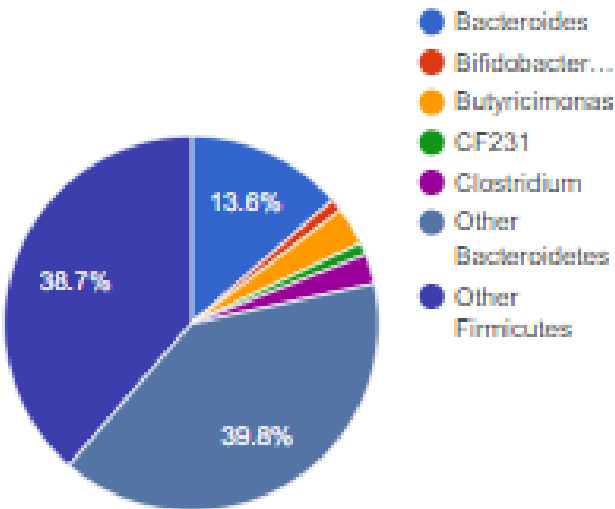
Microbiota modifying agents



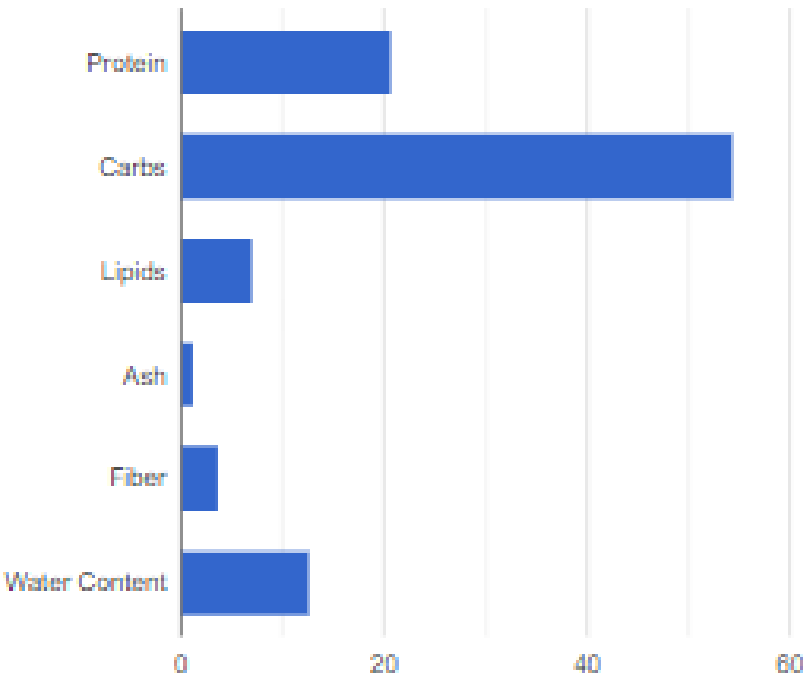
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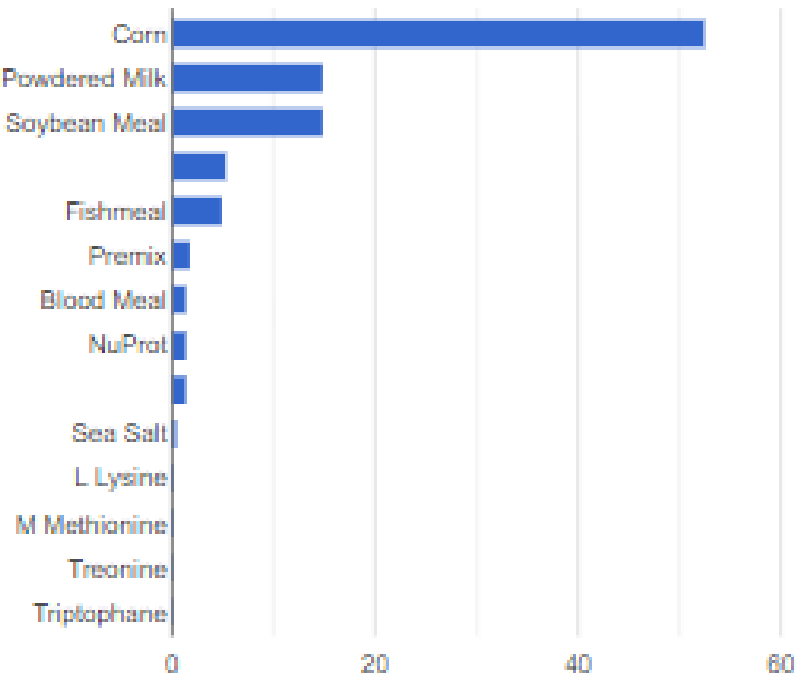
Genus



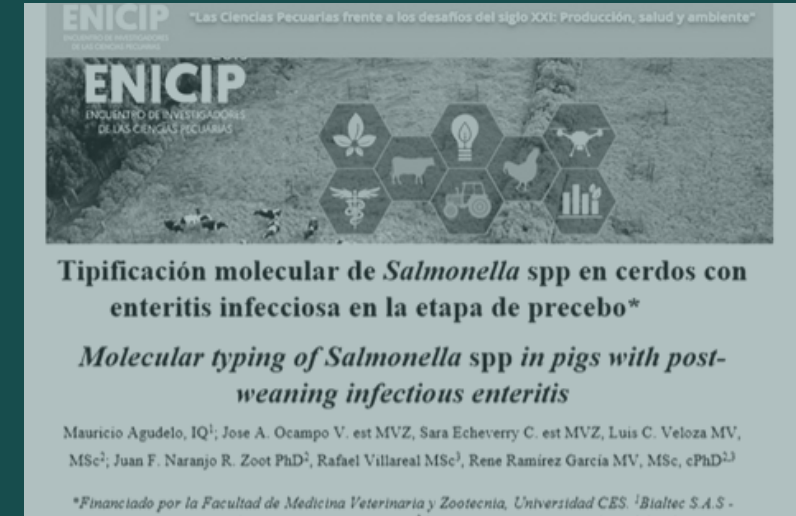
Diet



Raw Materials



Animal trial work to date



OUR OWN TESTS

25.500 birds

3.000 pigs*

*See results at "Test Dossier"

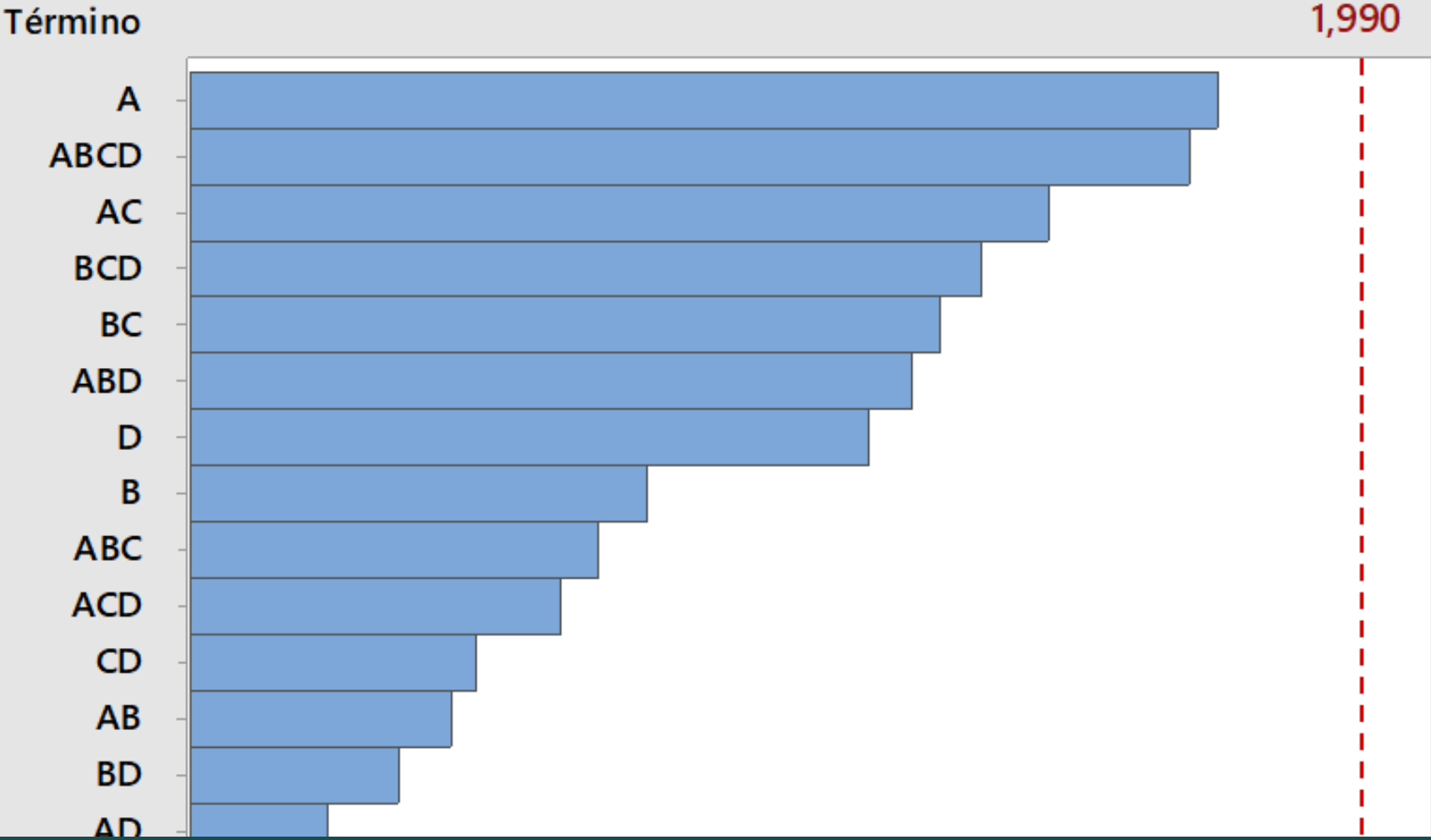
RESEARCH

We have done 2 papers: one for swine and one for cattle. Coming up another 2 for swine.

TESTS BY CLIENTS

7 of the Top 10 Colombian market players tested our products before purchase.

Diagrama de Pareto de efectos estandarizados
(la respuesta es Halo competencia (mm); $\alpha = 0,05$)

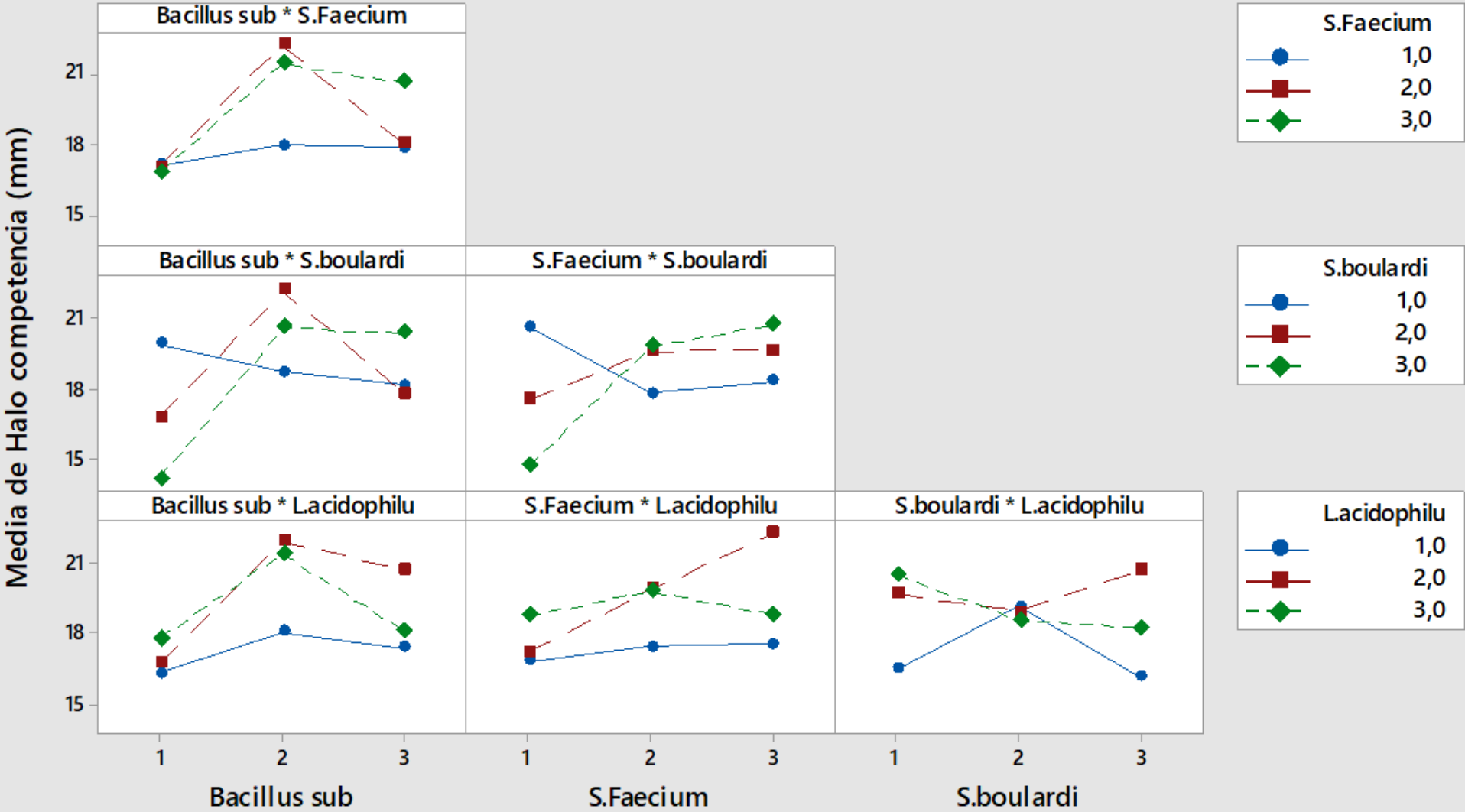


Factor	Nombre
A	
B	
C	
D	

In vitro growth inhibition of *salmonella* spp. enterica

180 samples were run and analyzed under a statistical software

Gráfica de interacción para Halo competencia (mm)
Medias ajustadas





Tipificación molecular de *Salmonella* spp en cerdos con enteritis infecciosa en la etapa de precebo*

Molecular typing of Salmonella spp in pigs with post-weaning infectious enteritis

Mauricio Agudelo, IQ¹; Jose A. Ocampo V. est MVZ, Sara Echeverry C. est MVZ, Luis C. Veloza MV, MSc²; Juan F. Naranjo R. Zoot PhD², Rafael Villareal MSc³, Rene Ramírez García MV, MSc, cPhD^{2,3}

*Financiado por la Facultad de Medicina Veterinaria y Zootecnia, Universidad CES. ¹Bialtec S.A.S - Ingeniería especializada y Biotecnología en Nutrición. ²Grupo de investigación INCA – CES, Facultad de Medicina Veterinaria y Zootecnia, Universidad CES, Medellín, Colombia. ³Grupo de Investigación en Ciencias Básicas. Facultad de Medicina. Universidad CES.

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Antecedentes: la *Salmonella* entérica sub especie entérica es una importante bacteria zoonótica responsable de la salmonelosis en humanos y en animales, además es una de las bacterias patógenas con mayor distribución en todo el mundo. Los cerdos pueden ser afectados por muchos serovares de *Salmonella* y la presencia de algunos serovares está relacionada con la distribución geográfica de la producción porcina. La carne de cerdo tiene un papel importante en la transmisión de salmonelosis en alimentos han sido relacionados con brotes de salmonelosis en humanos en el mundo. **Objetivo:** el objetivo de esta investigación fue realizar el aislamiento, identificación y tipificación molecular de *Salmonellas* spp relacionadas con enteritis infecciosa en la etapa de precebo en cerdos provenientes de una granja comercial. **Métodos:** se obtuvieron muestras de hisopados de cerdos diarreicos en la etapa del precebo, se emplearon medios selectivos con selenito y las muestras fueron cultivadas en agar Hektoen y Mac Conkey, se realizó el repique de las colonias obtenidas y fueron sometidas a ruta bioquímica. **Resultados:** todas las colonias compatibles con bacterias del género *Salmonella* spp fueron sometidas a pruebas moleculares de PCR convencional para el gen 16S de RNA ribosomal y los amplicones generados en las muestras positivas fueron secuenciados. El análisis filogenético fue realizado empleando MEGA7. Un total de 4 colonias (4/15, 26,6 %) fueron positivas para la presencia de *Salmonella* entérica. Este trabajo es la primera etapa de un estudio que pretende diseñar mezclas probióticas para el tratamiento de esta enfermedad. **Conclusiones:** esta investigación confirmó la presencia de *Salmonella enterica* subsp. *enterica* serovar Heidelberg, *Salmonella enterica* subsp. *enterica* serovar Paratyphi, *Salmonella enterica* subsp. *enterica* serovar Typhimurium tipificada mediante técnica de diagnóstico molecular en cerdos en precebo.

Palabras clave: ADN, bacterias, diagnóstico.

Keywords: bacteria, diagnosis, DNA.

TESTS FOR SWINE



Metagenomic

Sampling criteria were established for the identification of enteric pathogenic microorganisms, related to diarrheal diseases in nursery and growing stage piglets in a commercial swine farm with current health plans.

The isolation of enteric pathogens was carried out from individuals with diarrheal clinical pictures compatible with infectious enteritis. They were cultured in selective media for *Salmonella* sp. using means of transport with selenite.

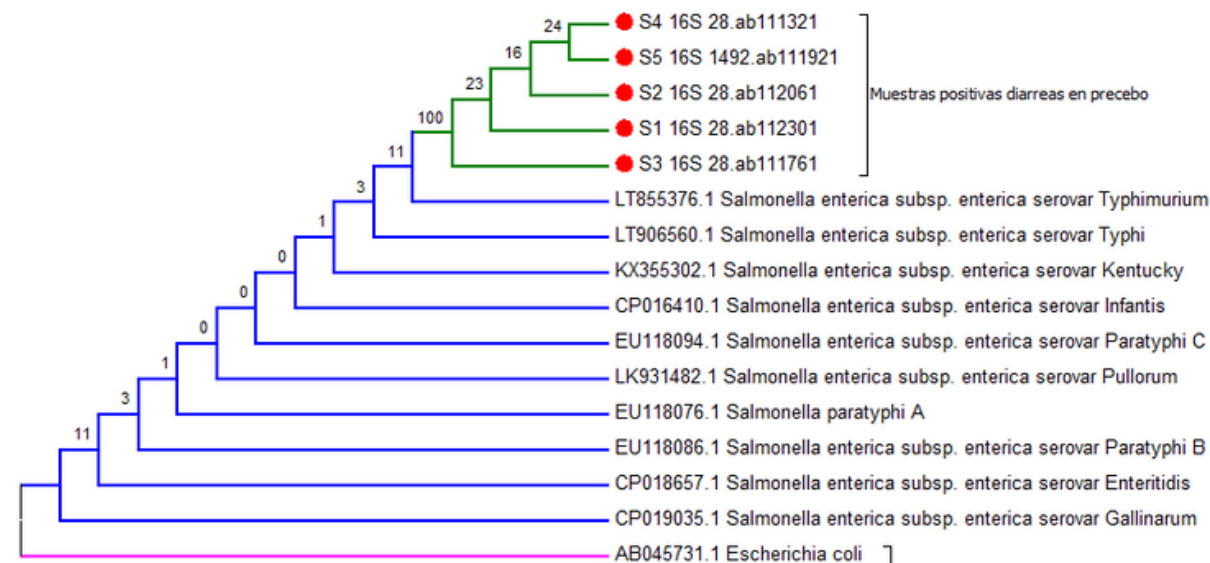


FIGURE 1 Phylogenetic tree of 16S rRNA sequences from *Salmonella* spp in infected animals. A. Molecular phylogenetic analysis. Evolutionary relationships were inferred using the Neighbor-Join method. Evolutionary distances calculated using the Kimura 2 method. This analysis includes 16 nucleotide sequences with a total of 411 positions. Evolutionary analyzes were perform

***COMING UP
NEXT***

DNA Sequence under
different conditions



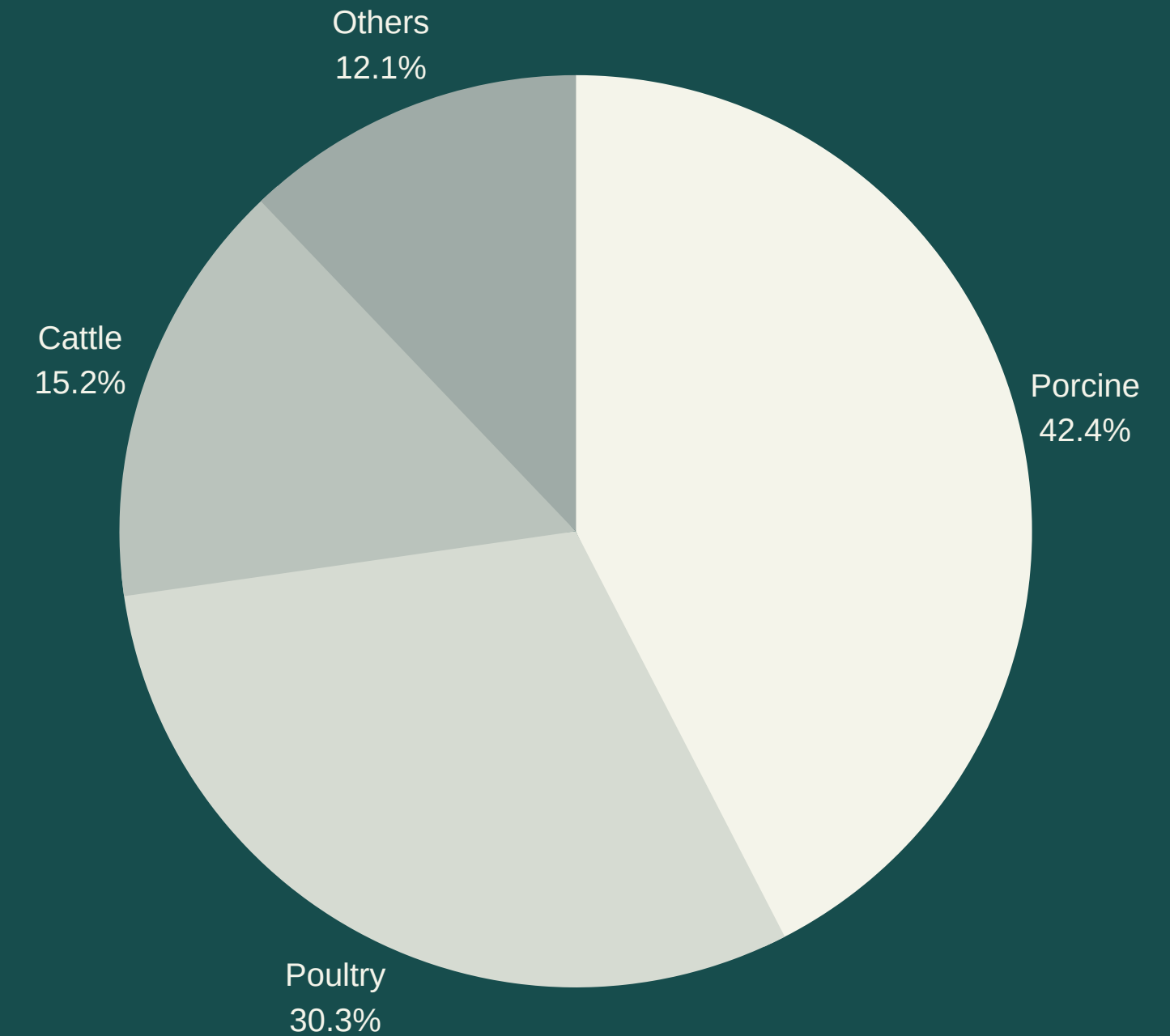
We want to create the
animal microbiome project
AMP

Our tests and research efforts
will focus in swine due to is the
meior consumer of antibiotic
growth promoters

Current Market Size

***\$8.8 BILLION US DOLLAR,
WITH A GROWTH OF 4.4%
PER YEAR***

EU has restrictions in the use of antibiotics by law.

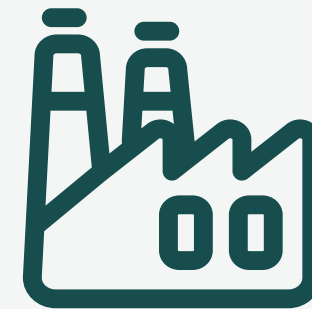


PRODUCTS

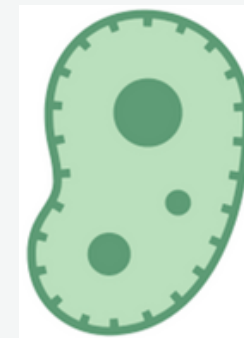
SERVICES & TECHNOLOGIES



AI platform to design feed specialties



Biotech facilities to produce feed specialties



Encapsulated specialties

Local partners

CES UNIVERSITY

Faculty of Veterinary Medicine and its INCA research group.

NATIONAL CENTER FOR GENOMIC SECUENCING

From University of Antioquia.

ARTIFICIAL INTELLIGENCE RESEARCH GROUP - INGYSOFT

Department of Systems Engineering from University of Antioquia.

BIOPROCESSES RESEARCH GROUP

Department of Chemical Engineering from University of Antioquia.

Partnering model



Artificial Intelligence platform of intestinal microbiota.

Microencapsulation and encapsulation technology.

Production and fermentation *know how* and pilot facility.

Products in Colombia with ICA certification.

ANH Company

Leader in innovative feed specialties, premixes and nutritional services for the animal nutrition industry.

Tests *in vivo* and *in vitro*.

Registers (EFSA).

Sales and marketing.

→ Cientific and technical support ←

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**FOR QUESTIONS
OR CONCERNS**