



Enviva® PRO

Give your birds  
the best gut protection

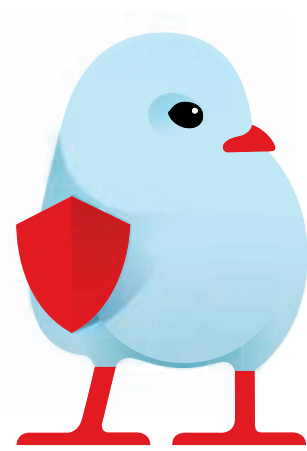
# The battle of the gut

Unpredictable pathogens are on the rise due to the reduction or elimination of antibiotics in poultry production. Daily exposure to pathogens such as *Escherichia coli*, *Clostridium perfringens* and *Salmonella* can lead to poor flock performance and liveability. The energy that birds could direct toward growth must now be used to maintain health and overcome these challenges.

A healthy and mature gut can help keep these pathogens from wreaking havoc on a bird's health and performance.

Today's accelerated live production schedule leaves little time for microbiota development—increasing the risk of reductions in body weight gain, and rising feed conversion and mortality rates. Natural mechanisms to fortify the gut exist and have powerful results.

**Finding the right weapon to help birds win the battle of the gut is crucial**



## A healthy gut from the start

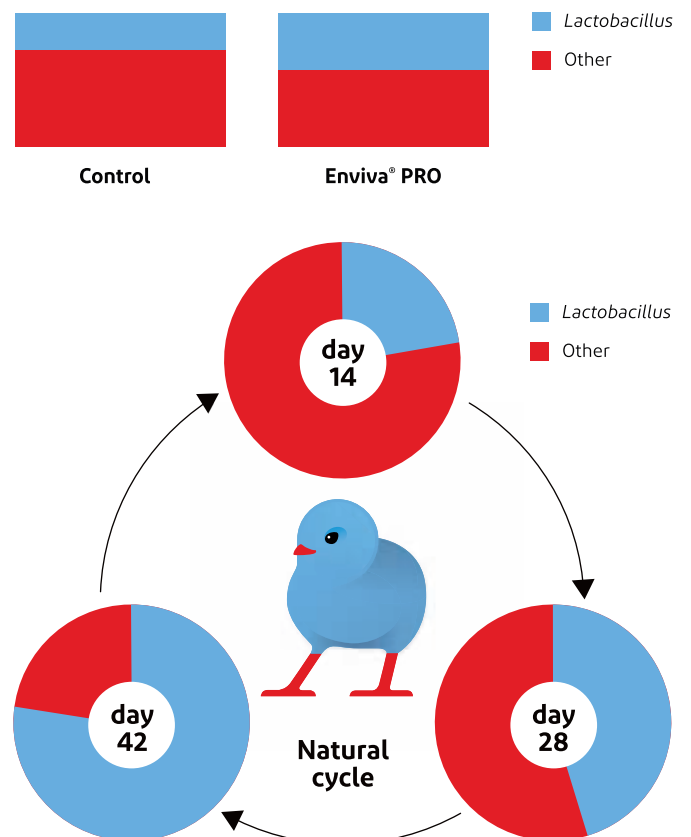
Feeding probiotics from day one helps to quickly establish a positive microbiota and guards against colonization by coliforms - enhancing both production and animal welfare.

But not all probiotic strains have the same mode of action, work effectively against the same challenges, or defend birds in the same way. This is why it is beneficial to use a similarly diverse probiotic, with different strains.

The three-strain *Bacillus* probiotic, Enviva® PRO, strengthens the gut structure, slows the growth of diverse non-beneficial bacteria and encourages the growth of beneficial bacteria, contributing to a healthier gut from day one.

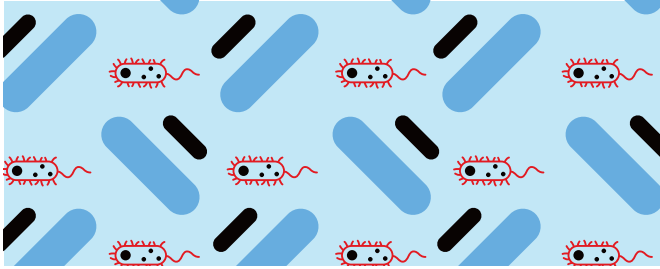
**Getting a strong start is key, as the first 21 days is a critical time for gut development. The microbiota becomes relatively stable at 3-4 weeks post hatch**

Enviva® PRO drives gut maturation, delivering a more mature gut at 14 days of age

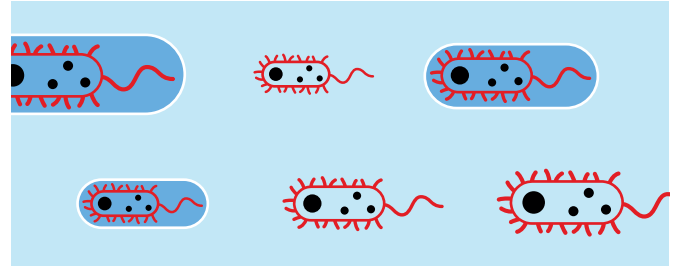


# Three strains of *Bacillus*, six modes of action

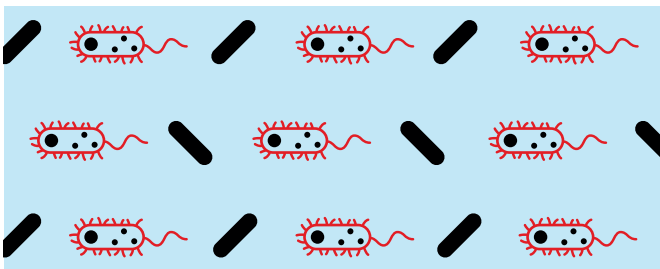
As the primary system for converting feed into protein, a chicken's gut links directly to nearly all growth and production parameters. The multiple strains of *Bacillus* in Enviva® PRO work in six unique but complementary ways to support health and performance.



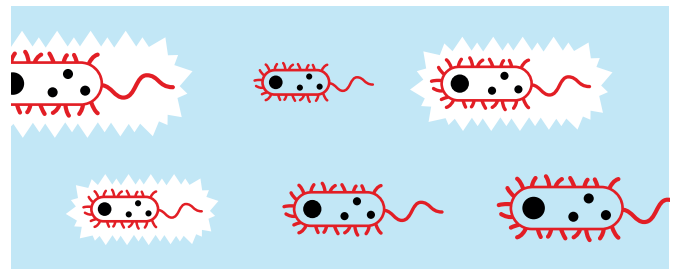
1. Supports the development of a positive microbiota, including an increase in beneficial bacteria such as *Lactobacillus*



4. Promotes immune development for a more mature gut by 21 days of age - allowing birds to focus their energy on growth instead of fighting challenges

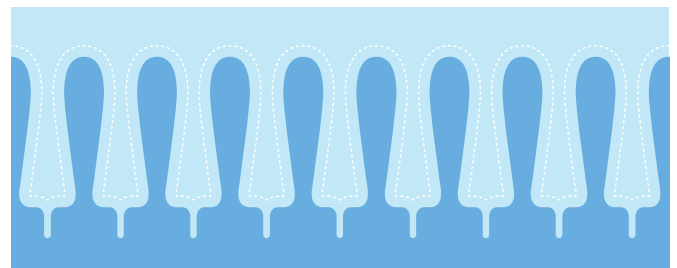
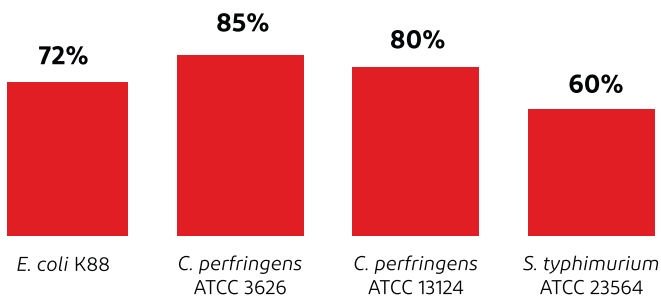


2. Inhibits the colonization of non-beneficial bacteria (competitive exclusion), including *E. coli* and *C. perfringens*

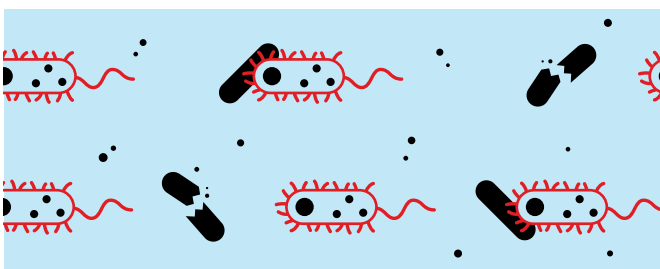


5. Reduces the risk of prolonged inflammation during challenge

**Percent inhibition of non-beneficial bacteria adhesion versus unsupplemented control (*in vitro*)**

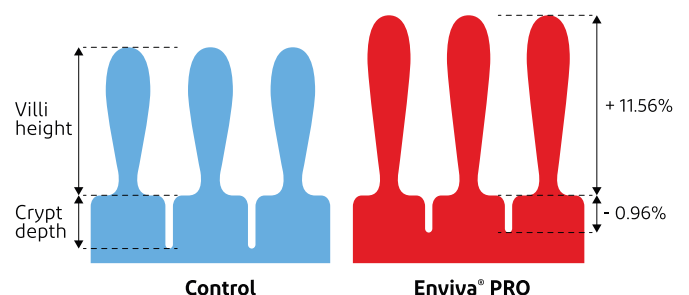


6. Strengthens the gut structure, which serves as the front line of a bird's health defense. Enviva® PRO has been shown to improve several key indicators of a healthy gut, including villi height to crypt depth ratios, for maximum surface area for nutrient absorption



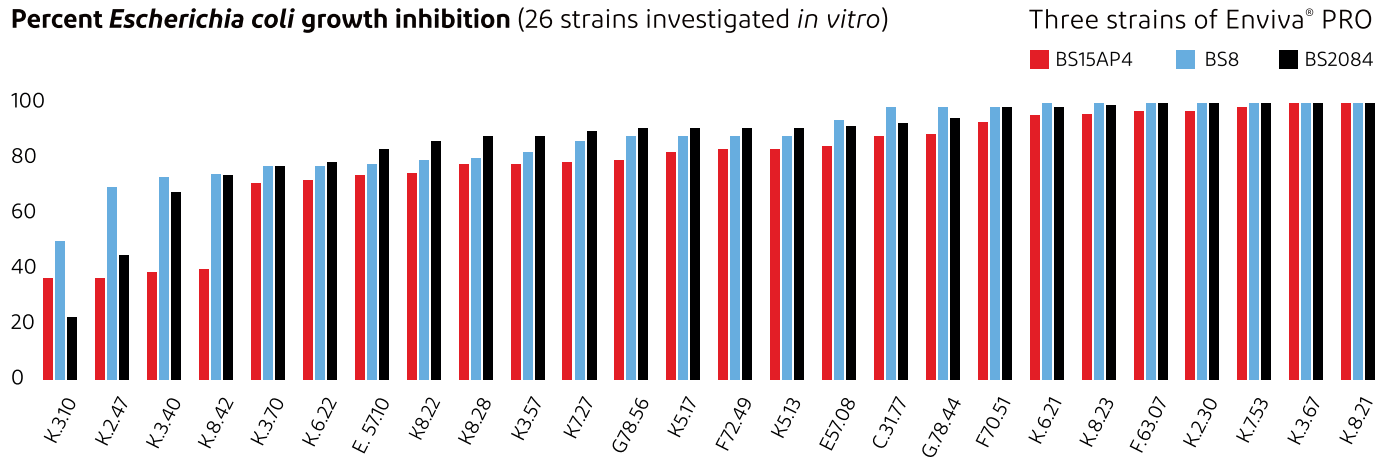
3. Inhibits growth of non-beneficial bacteria, such as *E. coli*, *Clostridium* and *Salmonella*

**Villi height: crypt depth ratio (ileum: 42 days)**



# Superior coverage for diverse challenges

The diverse and unpredictable health challenges in today's production environment demand superior coverage. The three-strains of *Bacillus* in Enviva® PRO have been shown to offer the extended coverage necessary to address distinct health challenges across varied global production environments, including a panel of *E. coli* challenges that represents diversity of the strain.



**Enviva® PRO inhibits all *E. coli* strains by up to 87%**

# Accelerate immune development, accelerate growth

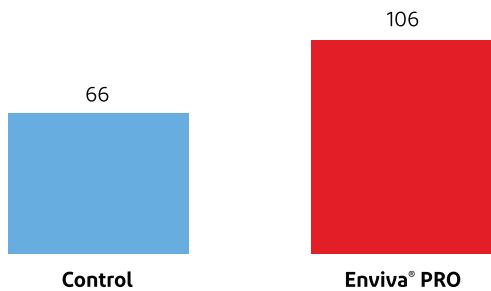
By increasing the number of antibody-producing cells at 21 days, Enviva® PRO accelerates immune development, helping birds focus their energy on converting feed to protein. As a challenge enters the bird, the immune system is now primed to fight.

Challenged birds lose more energy in excreta and spend more energy on maintenance, which means less energy is available for growth.

**The lower the lesion score, the:**

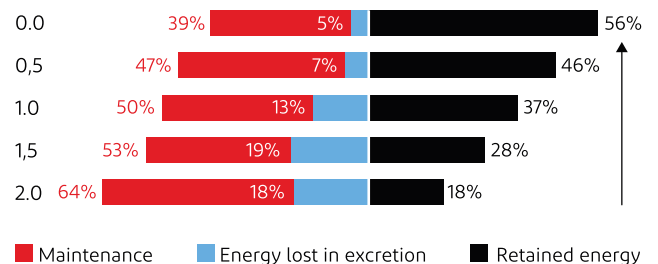
- greater the retained energy
- lower the maintenance costs and less energy lost in excretion

Average number of antibody producing cells (duodenal Siga+ B cells) at 21 days



Enhance FCR by increasing antibody-producing cells

Lesion score      Energy allocation (kcal/bird/day)



Energy partitioning of 28-34-day old broiler challenged with oocysts of three *Eimeria* species

**Immune response accounts for around 25% of performance loss during challenge**

# Proven performance, higher returns

Analysis of more than 80,000 guts from over 500 farms proves that Enviva® PRO consistently delivers enhanced performance - improving FCR by 5 points on average. Through this ongoing analysis, we continue to validate that Enviva® PRO is the best defense for your birds.

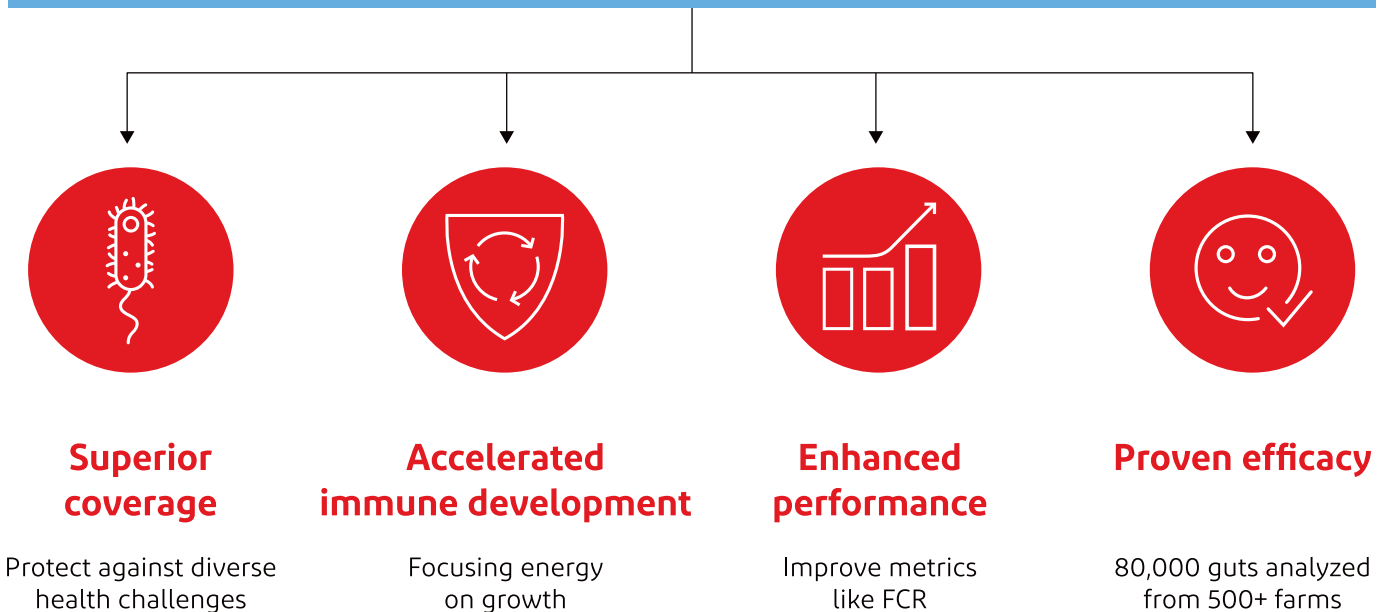
Enviva® PRO showed on average a 5 point improvement in FCR



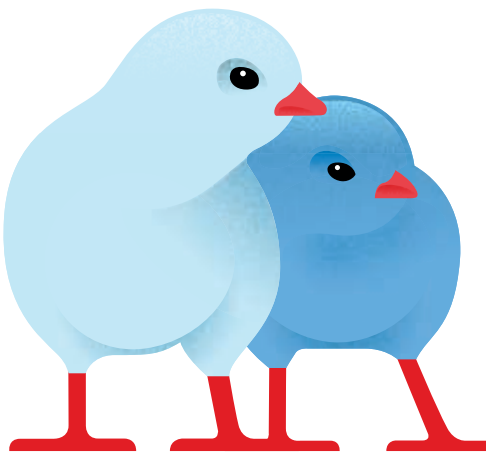
FRCc = Feed conversion corrected by 3 points per 100g difference in bodyweight.  
 Meta-analysis: point change in FRCc over 15 trials

## In the battle of the gut, Enviva® PRO is the best defense for your birds.

### Promoting a healthy gut from day one



**All this to allow you to maximize your profit**



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