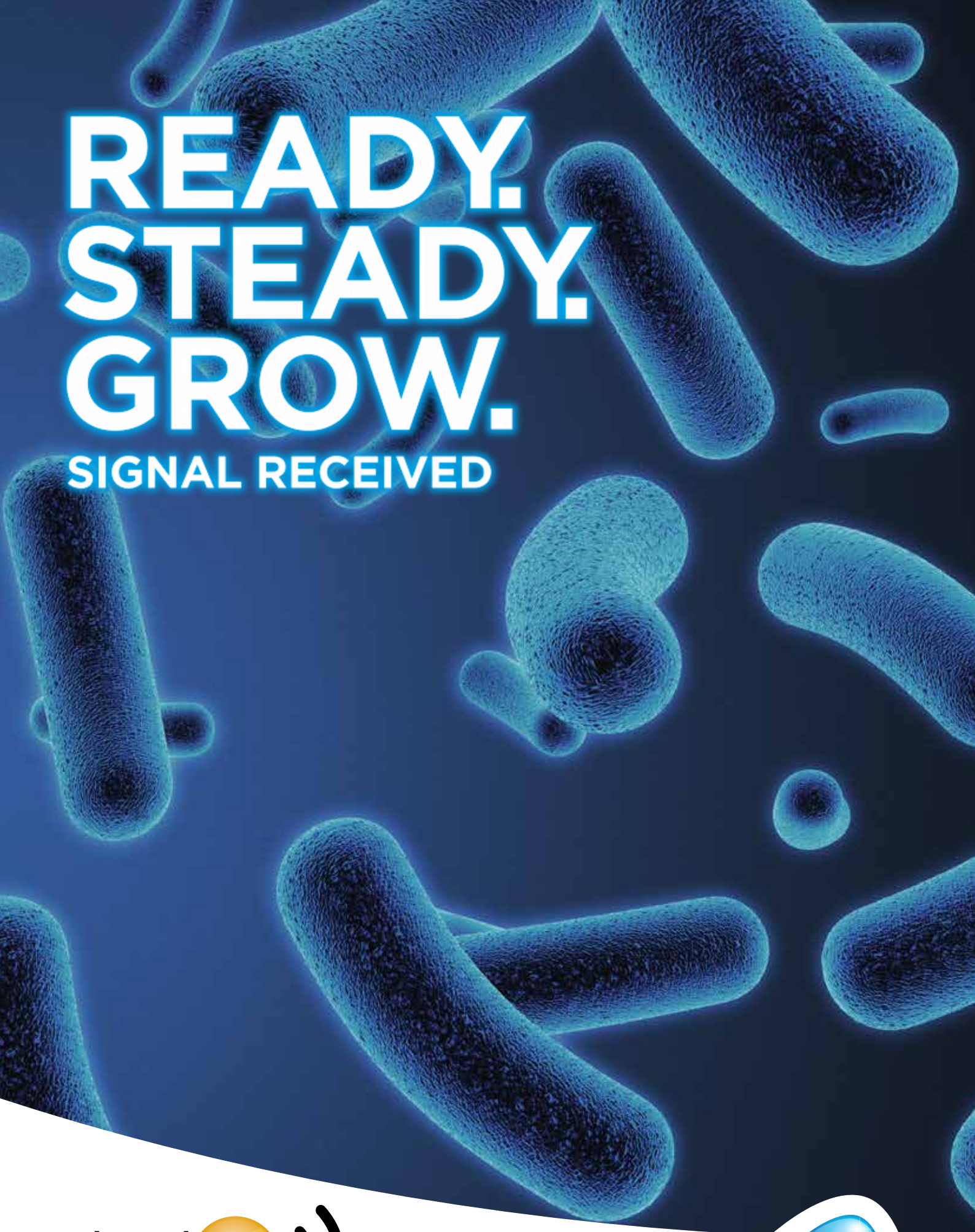


signis®

DUAL ACTIVATION OF THE MICROBIOME

ABVista

www.abvista.com

GUT HEALTH. A NEW PARADIGM IN MONOGASTRIC NUTRITION

As the global feed industry continues to reduce the usage of antibiotics the industry is turning to new tools to address the challenges that arise from such a shift.

Increasing attention is now given, not only to the nutrition provided directly to the animal, but to that of the gut microbiome as well.

STIMULATION OF THE MICROBIOME IS AN EMERGING PRACTICE FOR NUTRITIONISTS

- The microbiome is a dense and complex community of microorganisms
- The microbiome plays a crucial role in animal physiology
  - Extraction of energy from undigested nutrients
  - Gut health
  - Development & maintenance of the immune system

To effectively put these practices in place it is first important to understand what the establishment of the microbiome depends on:

What you feed the microbiome – fibre

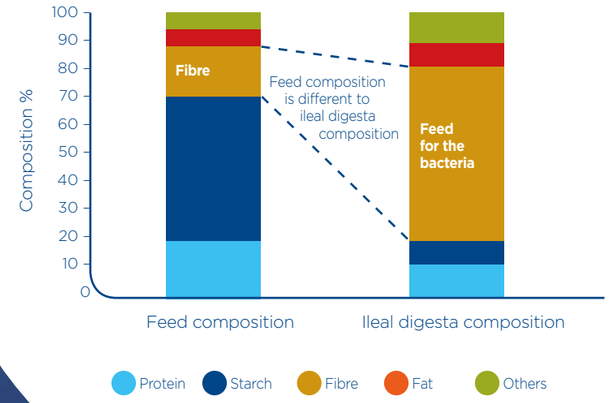
Adaptation of the microbiome over time – age related

FIBRE; IT'S WHAT'S FOR DINNER

What you feed the microbiome is not the same as what you feed the animal. The majority of what arrives in the ileal digesta for bacteria to ferment is fibre.

Increasing understanding of fibre is presenting a new perspective on the valuable role it can play in gut health and therefore, within performance-enhancing nutritional strategies.

ILEAL DIGESTA AND FEED COMPOSITION DIFFER



Adapted from reference 1.

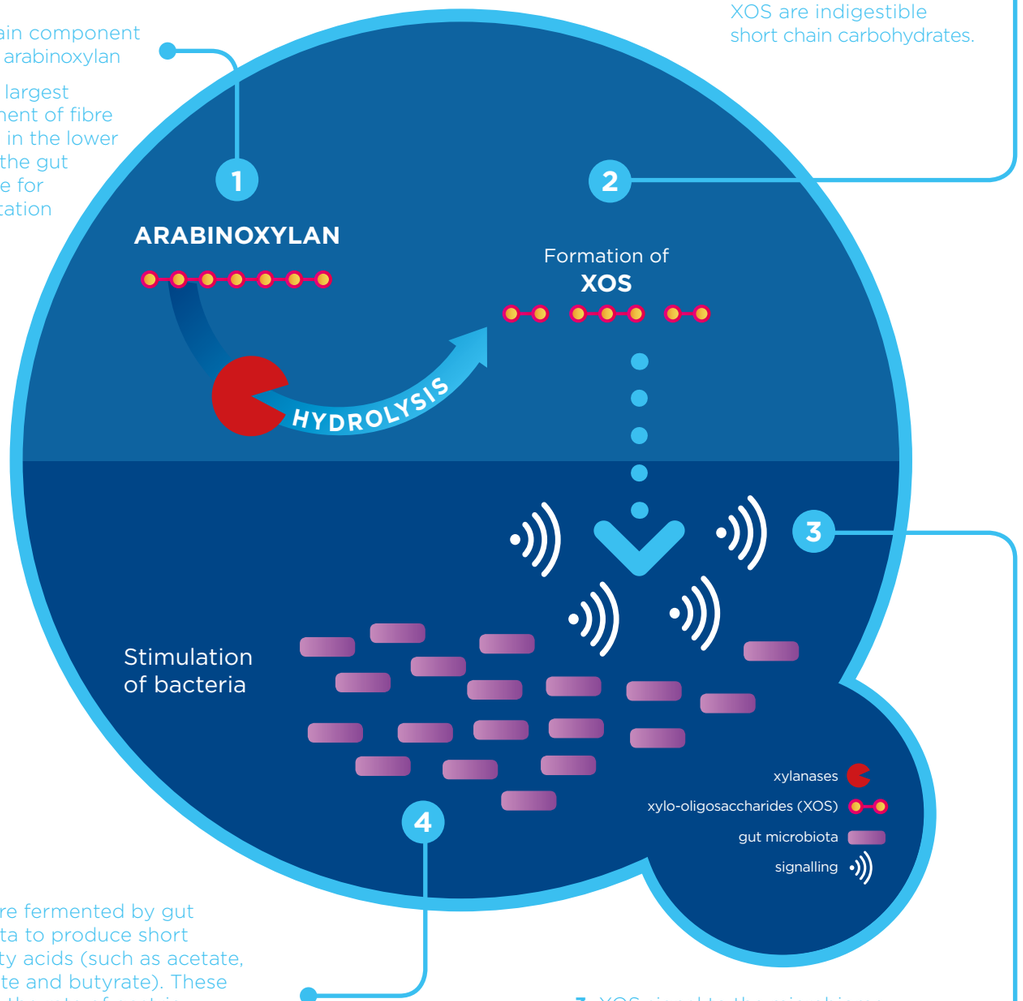
THE BENEFICIAL ROLE OF FIBRE BREAKDOWN PRODUCTS

XYLO-OLIGOSACCHARIDE SIGNALLING RESULTS IN ADAPTIVE CHANGES TOWARDS A GREATER CAPACITY TO DEGRADE FIBRE.

1. The main component of fibre is arabinoxylan

- It is the largest component of fibre arriving in the lower part of the gut available for fermentation

2. Arabinoxylan is broken down by xylanases into smaller, more beneficial fibre fragments called xylo-oligosaccharides (XOS). XOS are indigestible short chain carbohydrates.

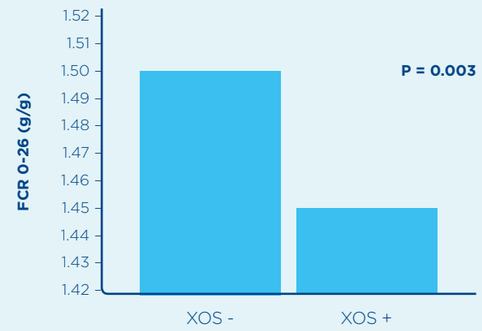


4. XOS are fermented by gut microbiota to produce short chain fatty acids (such as acetate, propionate and butyrate). These influence the rate of gastric emptying, thus improving digestion and nutrient uptake. They also play a role in improved gut function and modulation of the immune system

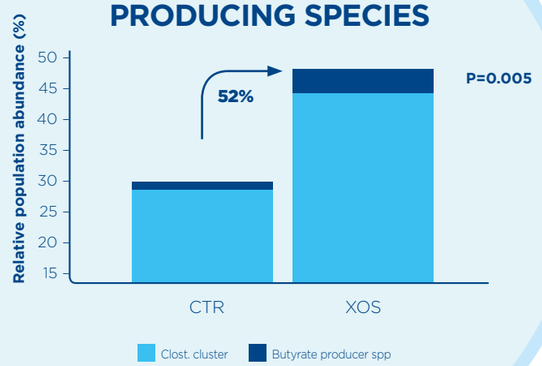
3. XOS signal to the microbiome to develop its ability to ferment fibre as fast as possible, leading to the production of microbial xylanase and a greater capacity to degrade fibre

XOS INFLUENCES PERFORMANCE AND MICROBIOME DEVELOPMENT

XOS SUPPLEMENTATION IMPROVED FCR IN 26 DAY OLD BROILERS



XOS INCREASE BUTYRATE PRODUCING SPECIES



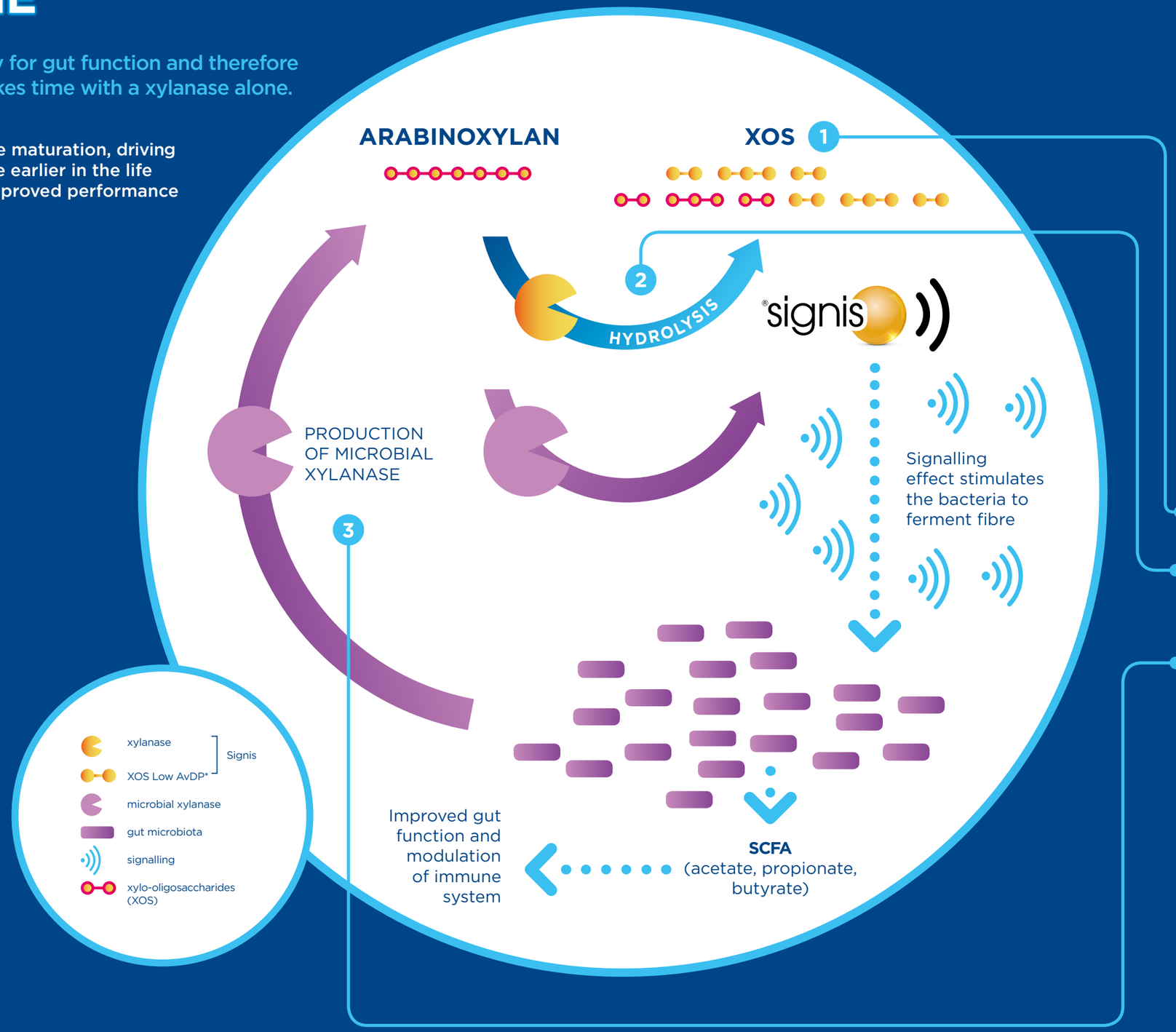
Adapted from reference 2

It takes time to train the microbiome towards a greater capacity to degrade fibre. Any strategy to speed up the development of the microbiome would be expected to increase the performance of animals across their lifetime.

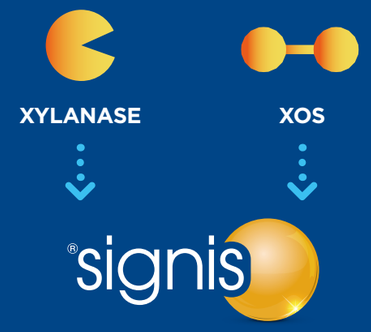
SIGNIS ACCELERATES THE DEVELOPMENT OF A FIBRE DEGRADING MICROBIOME

Microbiome adaptation is key for gut function and therefore animal performance but it takes time with a xylanase alone.

Signis speeds up the microbiome maturation, driving for a fibre fermenting microbiome earlier in the life cycle of the animal leading to improved performance and reduced production cost.



Signis is a combination of a xylanase and fermentable xylo-oligosaccharide (XOS)



Signis synergistic dual action enables improved fermentation of fibre sources that otherwise would be untouched.

1. XOS portion signals to the microbiome to develop its ability to ferment fibre as soon as possible

2. Xylanase portion hydrolyses fibre, increasing fibre fermentability and roughening the fibre surface for bacterial attachment

3. Gut bacteria produce their own xylanase which further degrades fibre

88%

of trials gave a positive outcome demonstrating that Signis consistently delivers.[4]

XOS within Signis has been selected for its beneficial effect on hind-gut fermentation:

- Low average degree of polymerisation (shorter chain length) which is shown to influence the growth of bifidobacteria and increase butyrate production[3]
- Corn-derived
- Produced by a unique patented process

*Average degree of polymerisation

SIGNIS ACCELERATES THE DEVELOPMENT OF A FIBRE DEGRADING MICROBIOME

References available on request

1. AB Vista Data on File, 2018. (Ileal digesta)
2. De Maesschalck *et al.*, 2015.
3. Riviére *et al.*, 2016.
4. AB Vista Data on File, 2018. (Trial results)

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