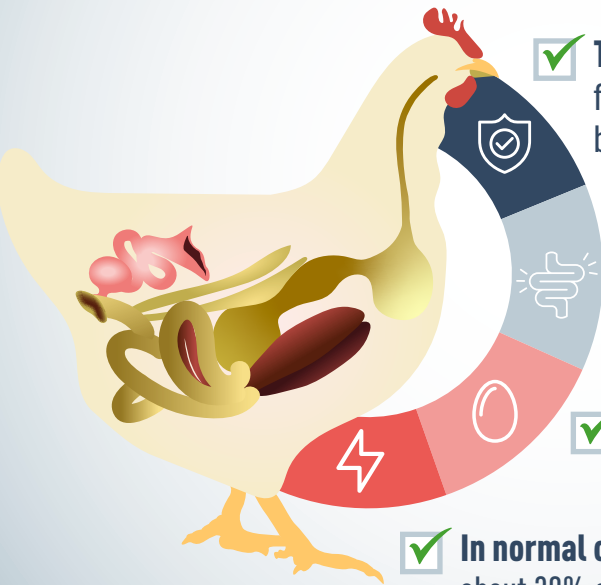




Gut Development

Always keep in mind:



The Gut protects the bird from external threats by a thin barrier and the immune system.



More than 50% of the whole immune system structures are located along the gut.



The success of the egg production is based on a good gut health.



In normal conditions the gut uses about 30% of the total energy consumed by a birds.



Parts and functionality

Upper part

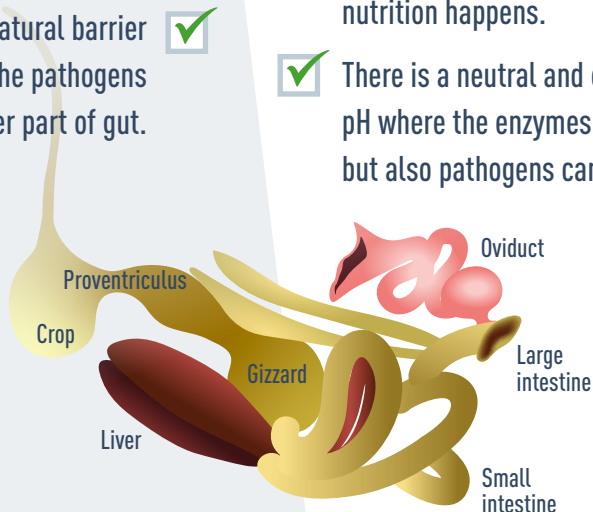
Starts the digestion at low pH.

Low pH creates a natural barrier
for reducing the pathogens
accessing the lower part of gut.

Lower part

Digestion and absorption of the
nutrition happens.

There is a neutral and even basic
pH where the enzymes can work
but also pathogens can grow.





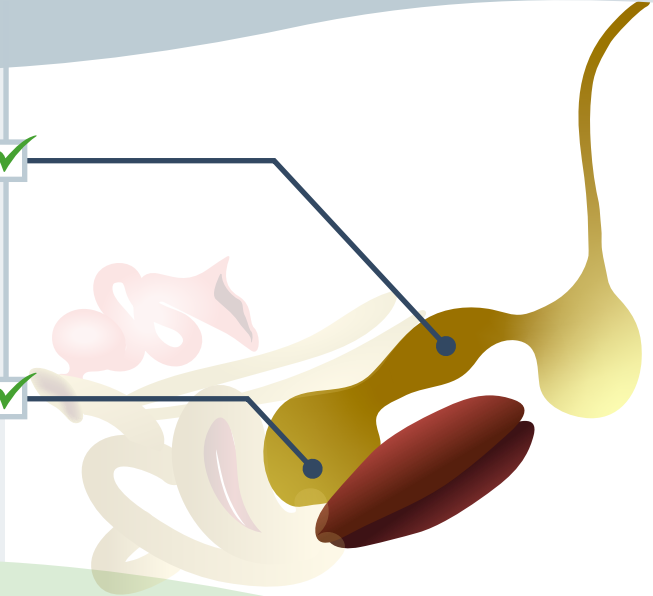
Upper part

Proventriculus and Gizzard

The **proventriculus** is the glandular stomach where digestion primarily begins with the secretion of Hydrochloric acid.



The **gizzard** is a muscular stomach that work as a mill to grind to smaller particles.



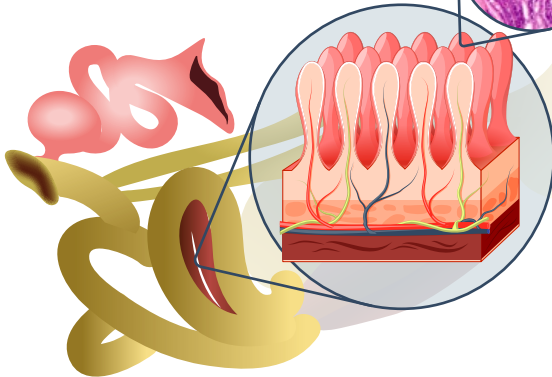
Gizzard size and activity will increase as the diet has more coarse particles and/or it has more fiber.



Lower part

Small and large intestine

- + The gut of layers is more mature than broilers.
- + As the layer hen gets older there will be a lack of efficiency.



Small intestine: Duodenum, Jejunum and Ileum is where the nutrients pass through a thin cellular line, called intestinal mucosa. This consist in a line of enterocyte, organized in vellus form, with very good irrigation to carry the nutrients inside the body from the lumen of the gut.



Large intestine: The large intestine stores undigested waste material and absorbs water from the material.

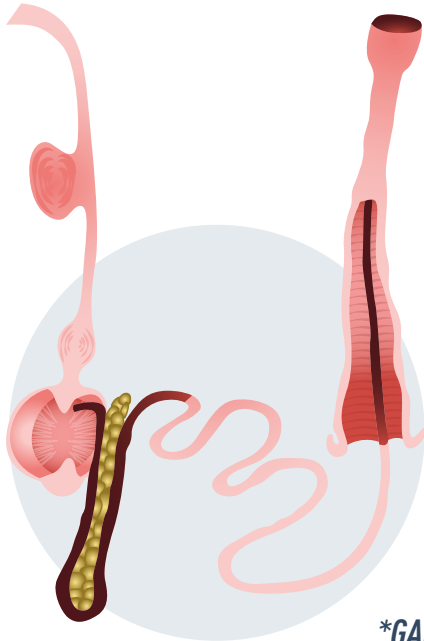


Gut Immune system

More than 50% of the immune system is located in the intestine.



The role of GALT* is to manage the immune response to the massive antigen exposure experienced by the gut while maintaining a potent adaptive immune response to protect the host from mucosal pathogens.



KEY LYMPHOID TISSUE:
Peyer's patches and tonsils are lymphatic nodules that activate B lymphocyte to protect the mucosa.

**GALT: Gut Associated Lymphoid Tissue*

Bibliography



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