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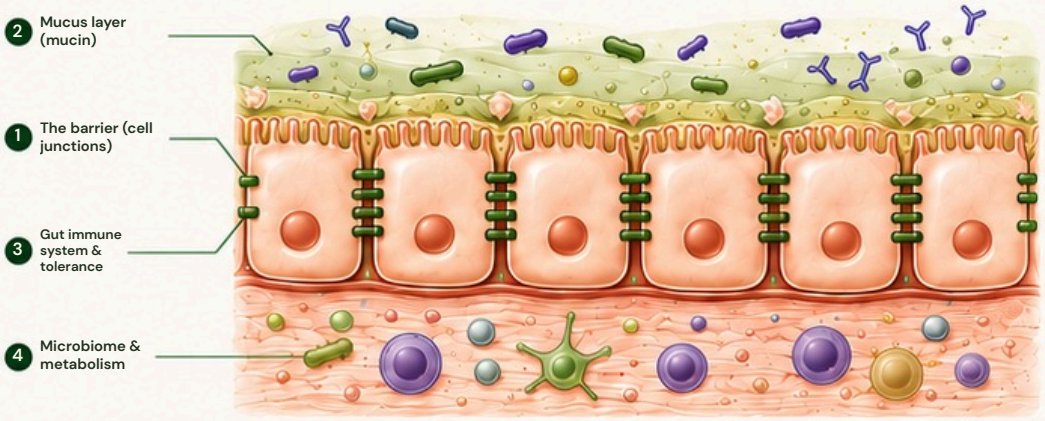
UNDERSTAND THE GUT – STRENGTHEN IMMUNITY

Gut & immune system: the foundation of canine health

THE HEALTHY GUT – "THE SEALED FORTRESS"



1 THE BARRIER

The gut cells sit close together, joined like a zip.

Function: nutrients get in, germs and harmful substances stay out.

Renewal: the cell layer rebuilds itself within a few days.

2 THE MUCUS LAYER

A protective mucus over the cells.

Function: it keeps bacteria at a distance.

Building material: for the mucus the body needs protein building blocks such as the amino acid threonine.

3 IMMUNE SYSTEM & TOLERANCE

Calm, "trained" immune cells beneath the gut lining.

A large share of the body's immune cells sits in the gut. Here they learn to tell harmless things like food from pathogens.

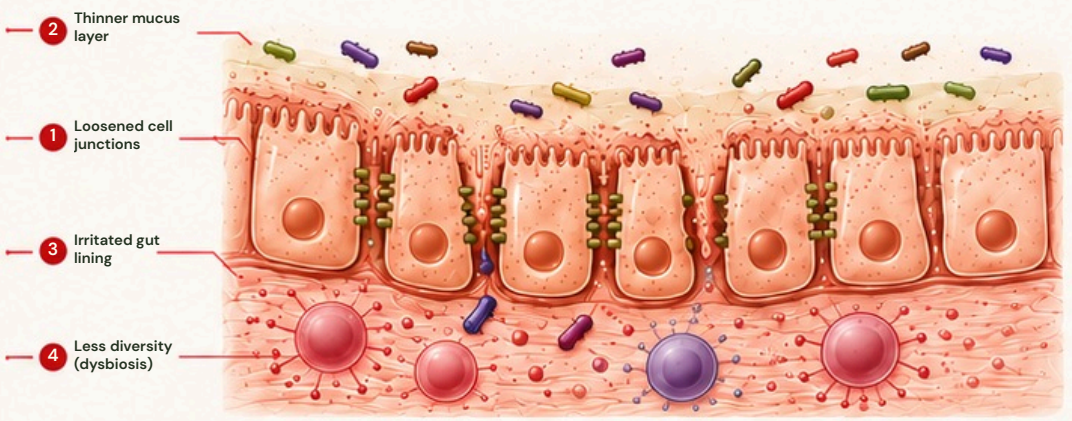
Protection: antibodies (IgA) intercept germs at the border.

4 MICROBIOME & METABOLISM

A colourful variety of beneficial bacteria.

Energy: from fibre they produce butyrate (butyric acid), an important energy source for the gut cells.

THE GUT OUT OF BALANCE – "THE WEAKENED BARRIER"



1 BARRIER LOOSENED

The cell junctions are looser.

The gut wall becomes more permeable (often called "leaky gut").

Inflammation and an imbalance of gut bacteria are associated with this.

2 BACTERIAL COMPONENTS

Components of bacteria reach the gut wall more easily.

There they can activate the immune system.

In studies this is associated with inflammation in the body.

3 DEFENCES ON ALERT

Activated immune cells release messenger substances.

If tolerance is missing, the defences also react to harmless things, such as food protein.

Food allergies and persistent gut inflammation are associated with this.

4 LESS DIVERSITY

One-sided gut flora (dysbiosis).

Then less butyrate is often produced and the gut cells get less energy.

Measurable: an inflammation marker in the stool (calprotectin) can give the veterinary practice clues.

THE PATH TO SUPPORTING GUT HEALTH

AMINO ACIDS
Glutamine: energy source for the gut cells.
Threonine: building block of the protective mucus.

+

PRE-, PRO- & SYNBIOTICS
Fibre, live bacteria and their combination can promote the production of butyrate.

+

PREBIOTICS fibre + **PROBIOTICS** live bacteria + **SYNBIOTICS** combination = **BUTYRATE** energy for the gut cells

This flyer is for general information and does not replace a veterinary diagnosis or treatment. Explainer video, gut health study comparison and nutrient & feeding plan at

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UNDERSTAND THE GUT – STRENGTHEN IMMUNITY

The gut – engine of the whole dog

Health starts in the gut and has an effect throughout the body.

1 THE COMMAND CENTRE

A large share of the body's immune cells sits in the gut. Here the defences learn to distinguish between harmless and dangerous.

2 THE MESSENGER FACTORY

Gut bacteria produce messenger substances such as short-chain fatty acids. Via blood and nerves they communicate with other organs, for example brain and skin.

THE PICTURE BEHIND IT: THE ENGINE

- The gut is the engine.
- Food and microbiome supply the fuel.
- The immune system is the maintenance team.
- The other organs are the vehicle parts.

WHEN THE BALANCE TIPS

The domino effect



1 THE BEGINNING

An imbalance of gut bacteria (dysbiosis), for example after antibiotics, can weaken the beneficial bacteria and the protective barrier.

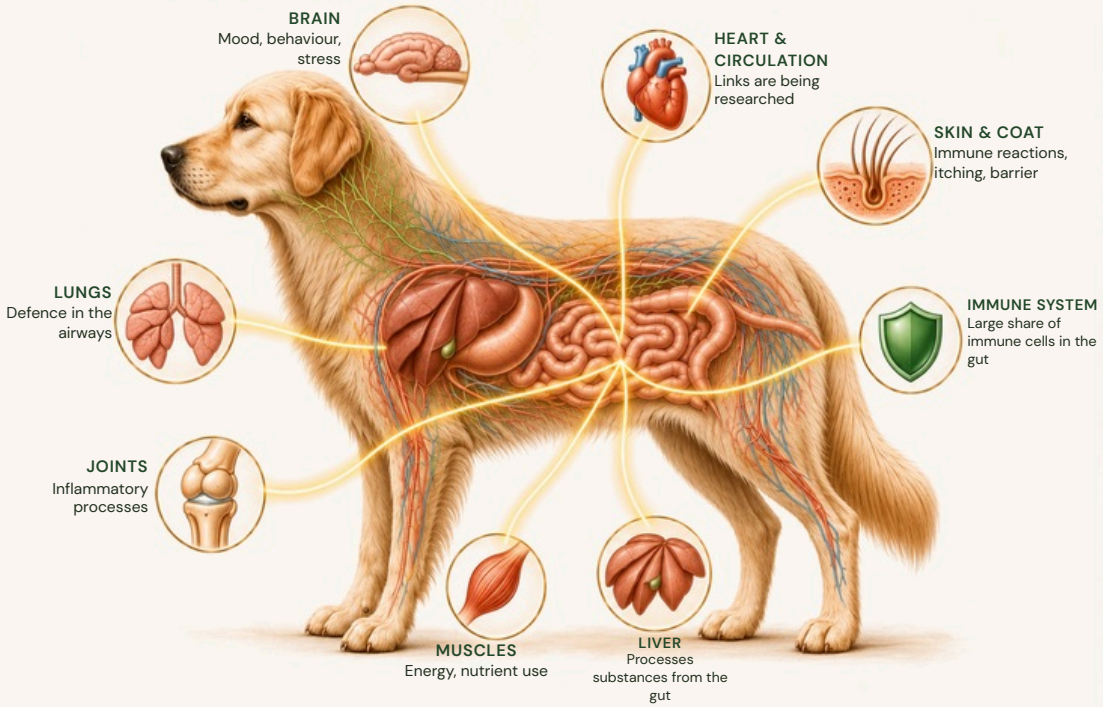
2 POSSIBLE EFFECTS IN THE BODY

SKIN & COAT
If tolerance is missing, the defences also react to harmless things. Possible effects: itching, allergic skin inflammation.

ENERGY & MUSCLES
With persistent gut inflammation, nutrient absorption can suffer. Possible effects: less energy, weight loss.

THE BLOOD
Through a more permeable gut wall, bacterial components can enter the blood. This is associated with inflammation throughout the body.

Persistent complaints belong at the veterinary practice, even if they seem harmless at first.



THE PATH TO STABLE GUT HEALTH

Support step by step

1 CREATE THE BASIS

Fresh, minimally processed food with fibre. If a food allergy is suspected: elimination diet for at least 8 weeks, accompanied by the veterinary practice.

2 SUPPORT THE BARRIER

Protein building blocks such as glutamine and threonine supply energy and material for gut cells and mucus.

3 PROMOTE IMMUNE BALANCE

Butyrate from fibre nourishes the gut cells and supports balanced defences.

4 STRENGTHEN THE MICROBIOME

Fibre (prebiotics) and suitable probiotics promote beneficial bacteria.

A strong gut. A balanced immune system.

THE BIOTICS QUARTET

Prebiotics, probiotics, parabiotics and postbiotics act on the gut flora and the immune system.

DID YOU KNOW?



ANTIBIOTICS CHECK

Antibiotics can change the gut flora for weeks. So use them only after careful veterinary consideration.



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Explainer video, study comparison & feeding plan

This flyer is for general information and does not replace a veterinary diagnosis or treatment. It is suitable as a basis for a conversation at the veterinary practice.

The links to heart, lungs, joints and muscles are being researched; in dogs the evidence is still limited.

Sources (selection): elimination diet: Olivry et al. 2015, doi:10.1186/s12917-015-0541-3 · gut flora and skin: Thomsen et al. 2023, doi:10.1186/s40168-023-01671-2 · butyrate: Furusawa et al. 2013, doi:10.1038/nature12721 · antibiotics: Pilla et al. 2020, doi:10.1111/jvim.15871