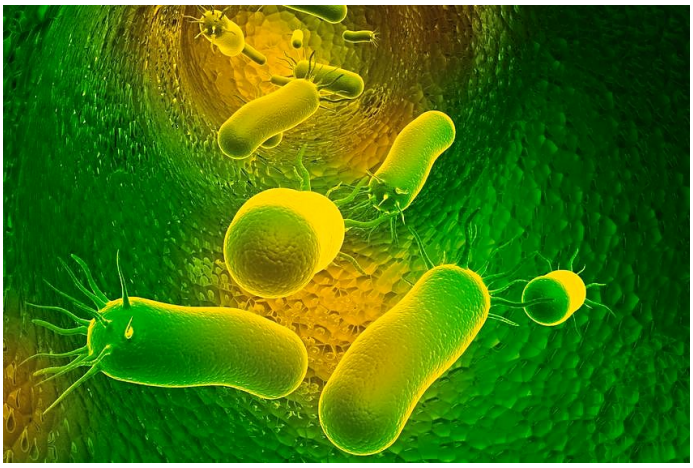
# IMMUNITY STARTS IN THE GUT

**A key element to maintaining a healthy immune system and being able to fight off infections resides in keeping a healthy balance of bacteria in our gut.**



WHEN we talk about **immunity**, words like "white blood cells", "vaccination" and "antibodies" often come up.
These are the main factors in our immune system that fight off invading germs like bacteria and viruses.
But did you know that our gut also plays a major role in **immunity** and the immune system?
We speak to Nutrition Society of Malaysia (NSM) president and Probiotics Education Programme (PEP) chairman Dr Tee E Siong to find out more about this topic.
Question: What is the immune system?Answer: One way to define the immune system is as a complex cell and tissue system that protects us from invading pathogens (i.e. bacteria, viruses, fungi and parasites causing infection/illness) and toxic environmental agents.

The immune system serves to distinguish between body cells (self) and foreign materials (non-self).
Body cells are labelled as "friends" and left alone, while harmful foreign materials are treated as "enemies" by the immune system.
The system then instructs certain immune cells to take action and eliminate the "enemies" from our body.

Many factors influence how our immune system works, and one of them is the health of our gut.
Q: What is the link between gut health and our immune system?A: People often relate the gut or gastrointestinal tract with the transport and digestion of food, as well as nutrient absorption for the body.
The link between the gut and the immune system may be less obvious to most people, but it actually plays a vital role in health, especially immune health.
Indeed, 80% of the immune system is in the gut, particularly the specialised immune tissues called Peyer's patches that are found on the wall of small intestines.
Peyer's patches play an important role in **immunity**: they identify harmful bacteria within the gut and trigger the formation of antibodies to help fight the pathogens.

They are vital to the immune system as many pathogens enter the body via the lining of the intestinal tract.
Apart from that, the gut is also home to trillions of microbes, including around 1,000 species of both beneficial and harmful bacteria.
This entire population of microorganisms forms an important ecosystem in our body called the gut microbiota.

The gut microbiota not only plays an important role in ensuring that the digestive system functions efficiently, but also a crucial role in maintaining a healthy immune system. It also has to be balanced, ideally consisting of approximately 85% good bacteria and 15% bad bacteria, in order to function optimally.
There is mutual regulation and interaction between the gut microbiota and our immune system in keeping us healthy.
The immune system promotes the growth of beneficial bacteria and helps maintain a stable microbial community.
Meanwhile, a healthy gut microbiota produces

molecular signals that support the development of immune cells and con-

tributes to the fine-tuning of immune responses.
Q: How do beneficial bacteria positively affect the immune system?A: Beneficial bacteria living in the gut build a complex barrier against pathogenic bacteria and maintain the gut lining, thus reducing the opportunity for harmful pathogens to make their way into the body.
These "good" bacteria release antibacterial molecules and produce beneficial by-pro-ducts, which inhibit the growth of some harmful bacteria.
On the contrary, dysbiosis – imbalance of the gut microbiota where there is an in-
crease in the number of bad bacteria – can raise the risk of infections.

Dysbiosis disrupts the ability of beneficial bacteria to resist colonisation by other po-
tentially harmful microbes, thus increasing the chance of invasion by various pathogens.
Dysbiosis has also been linked to various digestive disorders, such as irritable bowel syndrome (IBS), constipation, diarrhoea and others.
Q: How can I maintain a healthy ba-
lance of beneficial bacteria in my gut?A: One way to maintain gut health is by eating a balanced diet containing a diverse range of foods from different food groups.

This is important to help maintain the diversity of your gut microbiota.
Another way is to ensure you eat lots of fibre, which you can get from whole grains, beans, fruits and vegetables.
You can think of fibre as a "bulking agent" to keep your digestive tract functioning normally and your bowel movements regular.
In addition, many high-fibre foods such as barley, asparagus, apples, onions, garlic, beetroot, green peas, oats, cashews, artichokes, mushrooms and wheat, contain prebiotics, which can stimulate the growth of beneficial bacteria.
Besides the above, avoid foods high in fat and sugar (e.g. fried foods, soft drinks, etc.) to help maintain beneficial gut bacteria and reduce the risk of other diseases.

You should also aim to drink at least six to eight glasses of water daily; this not only helps with food digestion and bowel movement, but also promotes a healthy balance of gut microbiota.
Try to maintain a physically-active lifestyle by exercising regularly, as this can also help enhance the level of beneficial bacteria in your gut.
Research has shown that individuals living a sedentary lifestyle have a less diverse gut microbiota.
Even simple exercises can make a diffe-

rence; aim for 150 minutes of exercise a week.
Also reduce unnecessary antibiotic use and get enough sleep.
Excessive use of antibiotics and poor sleep can negatively disrupt the gut microbiota.
Q: Is there a more direct way to improve gut microbiota balance?A: Yes, the balance of gut microbiota can be directly improved through the consumption of foods containing probiotics.
Probiotics are defined as live bacteria that can bring health benefits when consumed adequately.

Among the most common types are the Lactobacillus and Bifidobacterium groups.
Probiotics can be incorporated into your daily diet to help increase beneficial bacteria in the gut.
They are known to help restore the natural balance of gut microbiota that has been disrupted by either illness or lifestyle factors.
They can also reduce the growth of harmful bacteria.
You can consume probiotics from probio-tic-rich foods such as cultured milk drinks and yoghurt, which contain probiotic cultures.

Probiotics are also available as supplements.
Make sure to check the label for the term "probiotic cultures" when purchasing these products.
Q: What is your take home message to readers?A: Before we part ways, do keep in mind the important role that the gut and gut microbiota play in maintaining our general well-being and **immunity** against infections.
Remember that our lifestyle and beha-viour can have a serious impact on the
balance of gut microbiota.

It is crucial to continue making simple positive changes in our life one step at a time, so that we can sustain a healthy gut microbiota and boost our **immunity**.
This article is contributed by NSM's PEP and supported by Yakult Malaysia. For more information, visit www.nutriweb.org.my/probiotics. The information provided is for educational purposes only and should not be considered as medical advice.