The secret life of the microbes living inside us

In and on the human body lives a collection of microbes involved in a range of body functions, such as producing nutrients for cells that support the immune system. What is the science behind it? Samantha Boh gets the answers from cell biologist Sven Pettersson, professor of metabolic disorders at Nanyang Technological University's Lee Kong Chian School of Medicine.

Q What is a microbe?
A It is a micro-organism, more commonly called a bug, that lives inside you. Collectively, they are referred to as the microbiome.

Q About 1.5kg of microbes reside in a person and they can perform an estimated 19,000 different functions. Of these, 5,000 are unknown.

Q How do microbes interact with the human body?
A Microbes respond to, for instance, your lifestyle, what you eat and the social life you lead. While your genome, your proteins, your organs and so on are fixed, microbes change every four to five days.

Q What goes on during this period?
A Researchers, for instance, have found that studies on animals show microbes and their products have an impact on the regulation of hormones which control physiology and a body's function. These findings are far from conclusive but they indicate there is something much bigger in microbes that awaits discovery.

Q Studying how microbes respond to exercise
A Singapore scientists are seeking to establish if exercise can change the collection of microbes living in the human body. The team at Nanyang Technological University's Lee Kong Chian School of Medicine is conducting the study to healthy adults aged 65 and older. The other half will be seniors who do not want to exercise.

Q It is expected to be completed by the first year.
A A further study comparing microbes and their products in people who exercise and those who do not is yet to be completed.

Q One is that the microbes developing inside a person seem to be involved in virtually all aspects of physiology and a body's function.
A For instance, a small number of microbes reportedly sit on the spinal cord but researchers do not know if they affect development.

Q They do not appear to directly contribute to developmental programming but they may contribute indirectly by being involved in the metabolic circuit required for developmental programming.
A This means they may be part of the machinery a pregnant woman relies on to help the baby grow.

Q The other certainty is that microbes are important in the metabolic process. Whatever a person does and eats, microbes will respond accordingly and this can be good or bad.

Q Microbes also seem to be important in the first 1,000 days of a newborn's life when the baby is growing rapidly.
A What goes on during this period is not well understood but it is becoming a major focus because mounting evidence shows a baby that encounters stressful conditions during this period may pay a price later in life.

Q For instance, if you are not exposed to microbes when young, it could affect the building up of your immune system.