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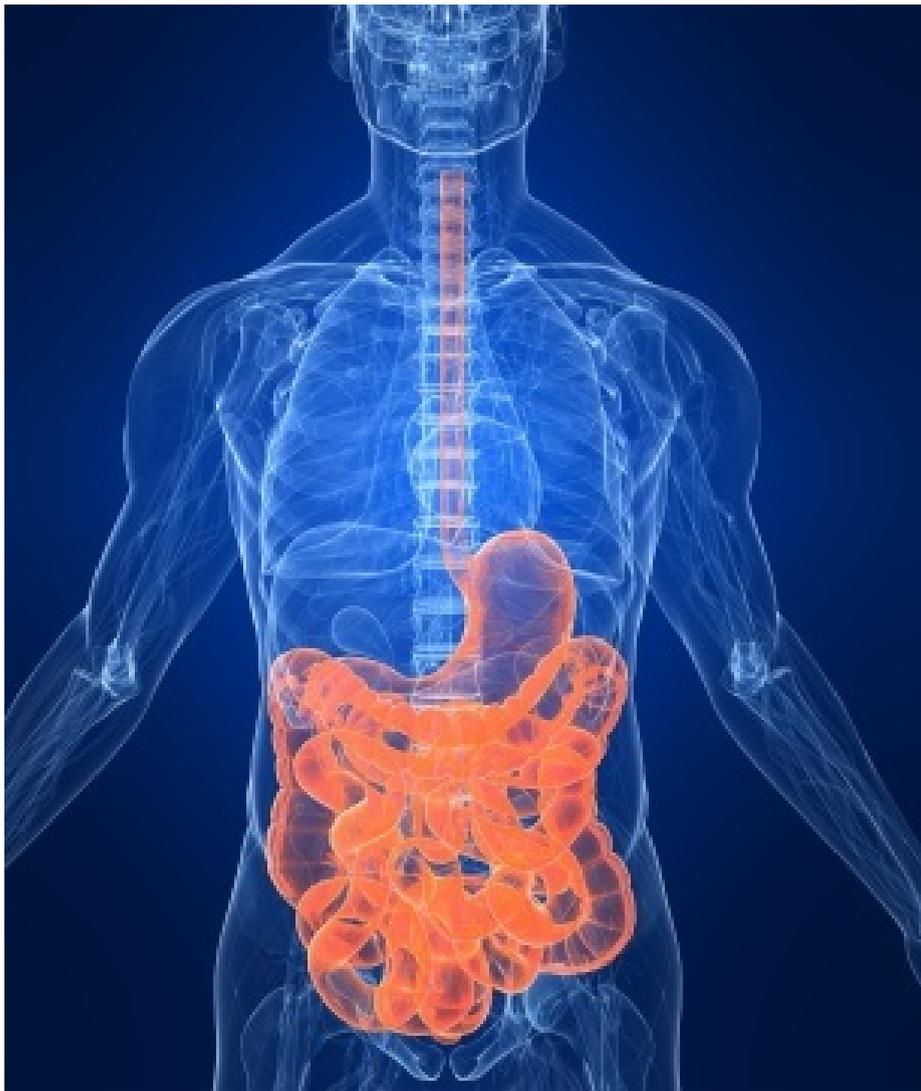
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Gut instinct: the inside story

By Marnie McKimmie
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Gut instinct: the inside story

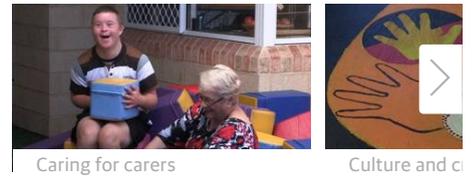
With a combined weight of a whopping 1kg or more, consisting of up to 1000 different species and playing a crucial role in digestion and nutrient absorption, deep inside us our gut bacteria silently gets on with its work.

But it is only now that medical scientists are starting to realise how

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much influence the mix of these microscopic organisms has on the body as a whole. Outnumbering human cells, it is now believed they affect physical health, particularly immune system development and regulation and energy metabolism, and there is even some speculation there might be a link with mental health.

For starters, there is increasing evidence to suggest that gut microorganisms and their metabolic products can influence gut hormones, inflammation, and gut motility.

And studies are now looking at the role gut bacteria possibly plays in increasing susceptibility to, or impacting on the course of, such diseases as rheumatoid arthritis, diabetes, Inflammatory Bowel Disease - Ulcerative Colitis and Crohn's disease - and even colon cancer. Bigger-than-normal populations of specific gut bacteria may trigger the development of such diseases as rheumatoid arthritis and possibly fuel disease progression in people genetically predisposed, according to US-based Mayo researchers. Hormones and changes related to aging may then further modulate the gut immune system and exacerbate inflammatory conditions.

Other diseases and disorders researchers have associated with the mix of bacteria and changes in the human gut include asthma and allergy, Celiac disease, and Irritable Bowel Syndrome, report University of California researchers in the Expert Review of Anti-infective Therapy journal.

And the bacteria in our gut may also be making us more prone to gaining weight, with certain gut bacteria possibly ensuring we get more energy out of what we eat, resulting in this unexpended excess energy being deposited as body fat.

Comparing obese and lean people, the bacteria in their gut is distinctly different, researchers conducting a US study of twins reported in the scientific journal Nature in 2009. Other studies have found that when obese people were put on a diet and lost weight, their bacteria profile gradually came to match that of those who were lean.

Gut microbes could also be a major regulator of bone mass in mice, Swedish researchers reported in the Journal of Bone and Mineral Research. They suggested this could be a focus in the search for a novel therapeutic target for osteoporosis. Even how happy we are has been linked back to gut bacteria. Irish scientists have shown that brain levels of serotonin, the "happy hormone", may be regulated by the amount of bacteria in the gut during early life. Their mouse-model-based research from the University College Cork was published earlier this year in the journal Molecular Psychiatry.

Searching for further influence, WA's Telethon Institute for Child Health Research recently investigated whether there was any link between gut bacteria and autism. However, their studies suggested that any relationship was complex, and far more research was needed before conclusions could be drawn.

Australian-based Gut Foundation Associate Professor Terry Bolin is among those who acknowledge their influence on the body as a whole has been underestimated and says they could almost be regarded as another organ.

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