BRAC UNIVERSITY
Inspiring Excellence

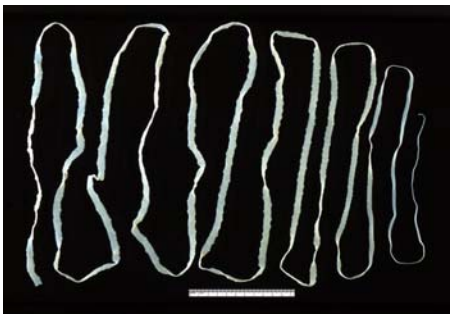
PHARMA HIGHLIGHTS

ISSUE 29|February 2017

Doctors Pull 6ft Tapeworm from Man's Mouth

Imagine the feeling of having a 6-feet long worm being pulled out of your mouth! This was exactly the scenario for a 48-year-old man in India who went to see a doctor because of unexplained stomach pains. Most likely, the man contracted the tapeworm through the consumption of pork contaminated with larvae. It took around 1 hour and 15 minutes to pull out the worm. Afterwards, he was sent home with a prescription of medications intended for the further removal of any eggs which still might be inside his system, posing as a potential threat for another infestation.

The tapeworm, classified as *Taenia solium*, was found to be a length of a shuddering 6.1 feet (1.88 meters), according to the measurement of the doctors at the end of the operation. However the title of record holder for hosting the longest tapeworm belongs to Sally Mae Wallace from whom doctors removed a tapeworm that was 37 feet in length. Human infections by these wriggly, squirmy parasites are not that infrequent, especially in developing parts of the world where there is the prevalence of poor sanitation. Fortunately, in most of the cases the patients can be treated by prompt removal and use of anti-parasitic drugs before a subsequent infection.

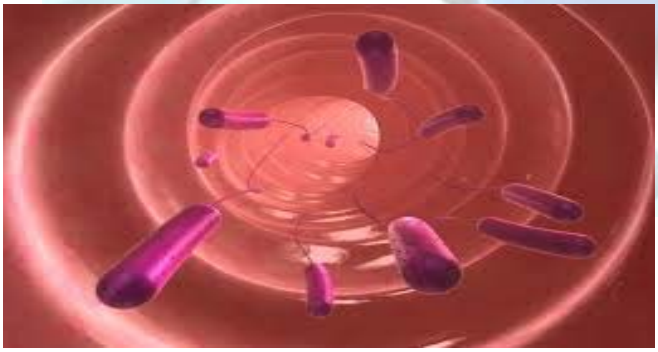


Source: https://www.labroots.com/trending/clinical-and-molecular-dx/5181/doctors-pull-6ft-tapeworm-man-s-mouth

A Diet that shifts Colon Cancer Bacteria in Your Favor

The importance of the microbiome has only been fully realized and appreciated in recent years. The microbiome plays the most important role in the gut, influencing a variety of cancers, for example colorectal or colon cancer by influencing processes such as digestion and immune responses. However, scientists have recently identified a specific bacteria that mediates this cancer risk, and a diet that may hold off this bacteria.

The bacteria *Fusobacterium nucleatum* has shown evidence of influencing colon cancer by suppressing the body's immune system. Interestingly, what we eat may affect the growth of this bacteria. Given this, researchers at the Dana-Farber Cancer Institute of the Harvard T.H. Chan School of Public Health in Boston, Massachusetts, asked whether a diet can reduce the bacteria and, thereby, reduce colon cancer risks.



The team, led by Shuji Ogino, focused on what they termed a "prudent diet" versus a "Western diet." A prudent diet is defined as "rich in whole grains and dietary fiber," whereas a Western diet is "rich in red and processed meat, refined grains, and desserts.

They tested their hypothesis on over 137,000 people in a prospective cohort study. After 26 to 32 years of follow-up, they identified 1,019 cases of colon cancer. Sample of these tissues were analyzed for the association of either diets to the presence of *F. nucleatum*. The team found that people with prudent diets had a lower risk of F. nucleatum-positive cancers, as compared to those who had a Western diet. Importantly, the prudent diet did not affect the risk of F. nucleatum-negative cancers. These results show that what we eat directly mediates the presence of at least one type of bacteria associated with colon cancer; however, other risk factors still remain to be discovered.

Source:https://www.labroots.com/trending/cancer/5187/diet-shifts-colon-cancer-bacteria-favor

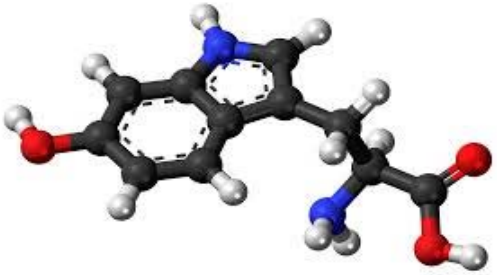
Mapping Serotonin Dynamics in the Brain

There are numerous research works showing the importance of serotonin in mood balance and feelings of well-being, which is why many psychiatric medications to treat depression are designed to interact

with this neurotransmitter. One of the challenges to monitoring and trying to regulate serotonin has been that the mechanics of it were not easily seen by imaging or other testing. The work recently completed by the MIT team has shown for the first time, in 3D, a real time map of serotonin making its way around the brain.

Before this research, the only way to really know how serotonin was moving through brain tissue was by literally poking a probe into the brain and taking tiny chemical samples from the tissue. This is not something most patients want to go through. The method the MIT researchers came up involved creating a protein that would chemically bond to serotonin as it traveled through the brain.

Using this as a sensor, the team was able to map where it went. Once serotonin was reabsorbed, the sensing protein would detach. This protein would also emit a signal and when injected into the brain, along with serotonin. That



signal could be picked up and imaged by a functional MRI scan. The signal only fired when the protein was detached from the serotonin. The MRI images contained pixels, which were then converted to voxels (which are pixels in 3D) using a mathematical model. Over 1,000 voxels were detected in the work, and the model was used to create a 3D map of the where, when and how the serotonin was moving and being absorbed.

Source: https://www.labroots.com/trending/neuroscience/5185/mapping-serotonin-dynamics-brain

Vitamin A and Alzheimer's: Is There a Link?

Alzheimer's disease slowly destroys the memory banks of the brain and causes significant cognitive decline. Symptoms start to appear, on average, when a person hits their mid-60s but first onset can be earlier. When symptoms appear later, many brush forgetfulness and confusion as normal age related problems. Trends on incidence of this disease are moving upwards. Role of genetics and connections to

diet, vascular health, lifestyle habits and exposure to pollutants are significant along with presence of amyloid plaques in the brain. The University of British Columbia conducted new study which is among the few research projects to suggest an initiation of this disease as early as before or right after birth. The research points to certain biochemical reactions that cause Alzheimer's disease that begin in the womb or just after birth, if a fetus or newborn does not get enough vitamin A. Further study also suggests that newborns who have low levels of Vitamin A could be given supplements to reduce the damage done by low levels during gestation.

When trying to reverse the damage caused by Vitamin A deficiency, the study showed some possibility for cognitive function to rebound. Mice that were deprived during gestation but given Vitamin A supplements at birth did better than the mice who were equally deficient both in the uterus and after birth.

Source: https://www.labroots.com/tranding/neuroscience/5175/vitamin-alzheimer-s-link

FDA Facilitates Research on Earlier Stages of Alzheimer's Disease

In the last 20 years, FDA has approved five drugs for the Alzheimer's disease—the most recent one in 2003. As a result, the options are quite limited. Most of the time, the drugs alone cannot be of much benefit and more may need to be done. A recent development, FDA scientists released a draft guidance that may help companies conduct clinical trials focused on finding a more treatable stage of the disease. Research shows that a patient's brain start changing long before the onset of actual symptoms. So some researchers said that more beneficial results will be obtained if the disease can be diagnosed at an early stage and the treatment can be started right away. For that reason, the development of drugs for the treatment of Alzheimer's disease has increasingly focused on the stages before the onset of overt dementia. A 2013 FDA draft guidance responded to this development by discussing the design of clinical trials for drugs for Alzheimer's patients who are still in the very early stages of the disease, when only subtle symptoms are present. The guidance may help researchers design clinical trials for early stage Alzheimer's therapies.

Source: http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm519875.htm?source=govdelivery&utm_medium=email&utm_source=govdelivery