The Gut Microbiota For Health Newsletter **#73**

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Edito

Dear Friends,

Can an algorithm come up with a personally-tailored diet to keep you healthier? In a Gut Microbiota for Health exclusive interview below, Eran Elinav of Israel describes how he and his colleagues made use of gut microbiota measurements to generate personalized diets that successfully lowered participants' blood glucose responses.

The not-to-be-missed literature selections this week include one on the microbiota's role in beige fat development, and another on how the antidiabetic medication metformin affects the gut microbiota. We also include a selection from Paul Enck on the gut-brain axis, presenting data that associates gut microbiota composition with aspects of brain structure and cognitive performance.

Wishing you a happy and healthy holiday!

The GMFH publishing team

#GMFH2016:
Registration now open!

Read the editorial from Gail Hecht, Chair of the Scientific Committee of the 2016 Gut Microbiota for Health World Summit.

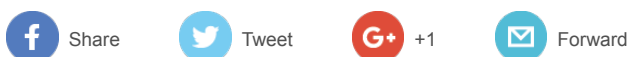Visit the Summit Registration website for information and registration!

#GMFH2015: Download the Summit Report!

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'Algorithm diet' for controlling blood glucose incorporates gut microbiome data

Eran Elinav and Eran Segal, of the Weizmann Institute of Science in Rehovot (Israel), led a recent study that challenged some long-held assumptions about glycemic responses. In a cohort of 800 people, the researchers observed highly personalized glycemic responses, with individuals reacting very differently to identical foods. By combining gut microbiota measurements with other personal data, the researchers developed a machine-learning algorithm that accurately predicted a participant's personalized postprandial glycemic responses (PPGR).

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Written by K. Campbell

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Depleting mouse microbiota increases beige fat

In a *Nature Medicine* paper, Suárez-Zamorano, *et al.* studied brown adipose tissue (BAT) -- a kind of fat that, in contrast to white adipose tissue (WAT), promotes a lean phenotype and improves insulin sensitivity. Brown-like fat cells that are generated in WAT in response to cold or exercise are called beige cells.
Researchers showed that depleting the microbiota in mice, whether they were germ-free or treated with antibiotics, led to an increase in functional beige fat.

[Read more](#)

Written by P. Enck

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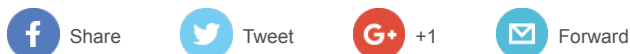
Metformin affects gut microbiota of individuals with type 2 diabetes

Researchers have not controlled for treatments in many previous studies that aimed to discover the gut microbial signature of various diseases.

A new study from the MetaHIT consortium examined 784 human gut metagenomes and showed that metformin, a widely-used antidiabetic medication, affects the microbiota of those with type 2 diabetes mellitus (T2D).

In untreated T2D, researchers saw a distinct signature in the gut microbiota, with a depletion of taxa that produce butyrate.

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Written by K. Campbell

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Association of gut microbiota with brain structure and function in humans

In a cross-sectional study, Fernandez-Real, *et al.*, investigated associations between gut microbiota, brain microstructure, and cognitive performance of obese (n=20) and non-obese (n=19) participants aged 30-65. Combined data from participants' brains (magnetic resonance imaging) and gut microbiota discriminated obese individuals from non-obese individuals with an accuracy of 0.81. Interestingly, across all participants, the relative abundance of Actinobacteria was linked to brain structural differences in the thalamus, hypothalamus, and amygdala, and also with scores on cognitive tests that measured speed, attention, and cognitive flexibility.

Read more

Written by P. Enck

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