

3D Printed Pill

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Why in news?

- The 3D printed pill is a new invention which will be able to analyze gut microbes.

What is this?

- Scientists have created an ingestible 3D printed pill that can measure intestinal bacteria in an invasive manner in the gastrointestinal system (GI).
- A 3D printer with microfluidic channel creates this biocompatible Pill.
- Different levels in the GI tract can now be investigated which was until now not possible.
- The current method is based on the use of DNA sequencing technologies for studying gut bacteria known as the microbiome (the intestinal microbiome contains common gut genomes, including bacteria, archaea, viruses and fungi).
- Pills were primarily tested on pigs and primates, showing that the intestinal lumen and its upstream microbiome can be accurately sampled in vivo.
- It can also help to diagnose and treat microbiome disorders.
- The pill will improve our understanding of the role of spatial distribution in the microbiome profile to advance novel treatments and therapies for a number of diseases and conditions
- the surface of the pill is coated with a pH sensitive coating, so that it does not absorb any samples until it reaches the small intestine (where by reaction, the coating dissolves)
- There are two chambers divided by a semipermeable membrane.

- One cavity is lined with calcium, the other cavity is helical. The salt room allows the membrane to spread osmotically, which forces the bacteria into the helical channels.
- A strong magnet is also present in the tablet. The researchers can also obtain a spatial diversity of the intestinal microbiome using a magnet outside the body.
- It is unusually easy to use with the design of this device, which poses little risk and does not give so much information to the subject.