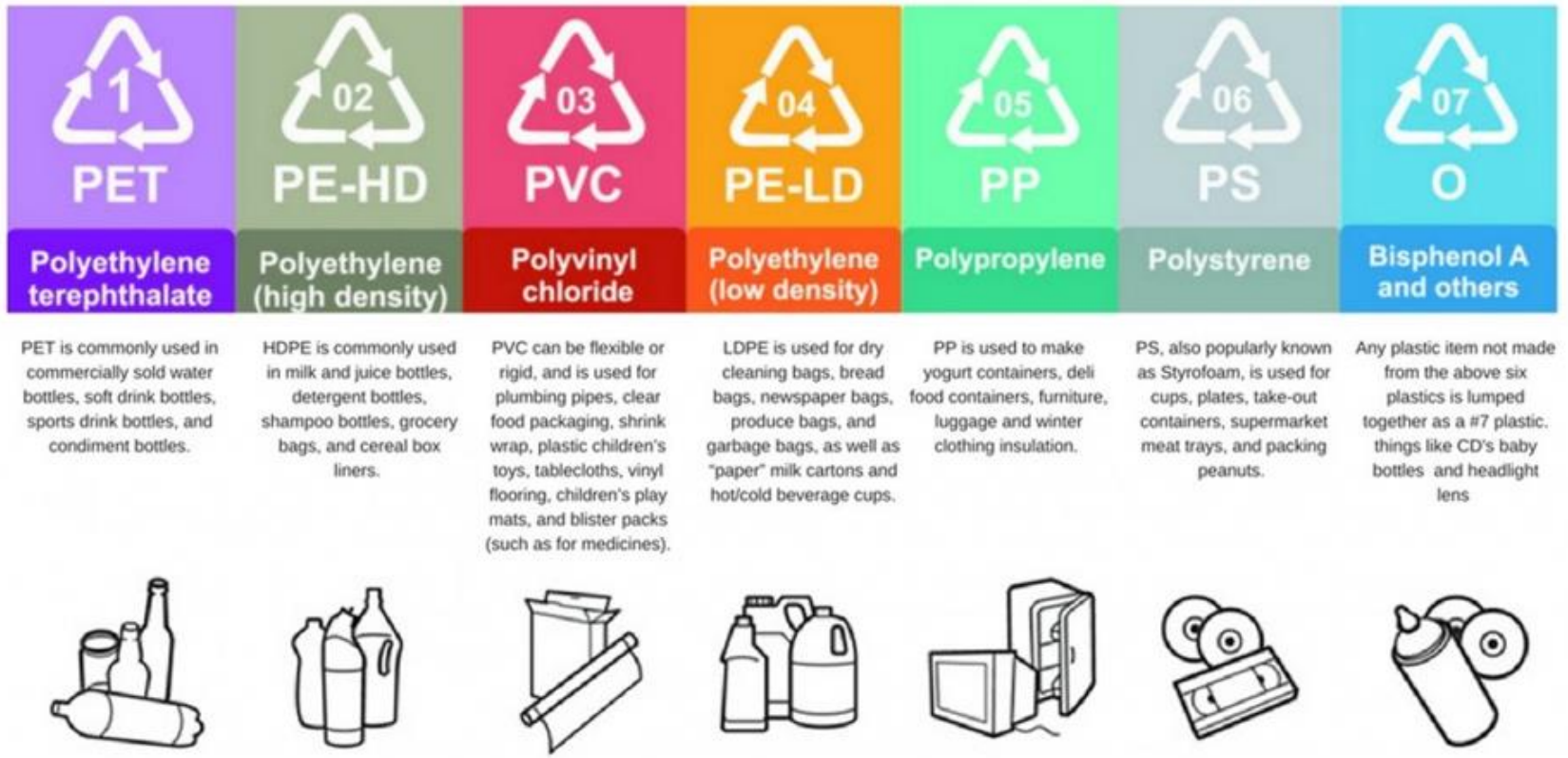

PLASTIC CHALLENGE
Hackathon 2021
Plastic Feeders
For a plastic-free Ecosystem
EU GREEN WEEK 2021 PARTNER EVENT
ZERO POLLUTION
#EUGreenWeek
for healthier people and planet

What’s the base? Part 1…

Plastics are different polymers, made of Carbon, Hydrogen, Oxygen and Nitrogen.

Sometimes, they contain other elements, like Chlorine, in PVC.

However, the often used plastics are made only of C, H, N, O elements, these being the major constituents of Life.

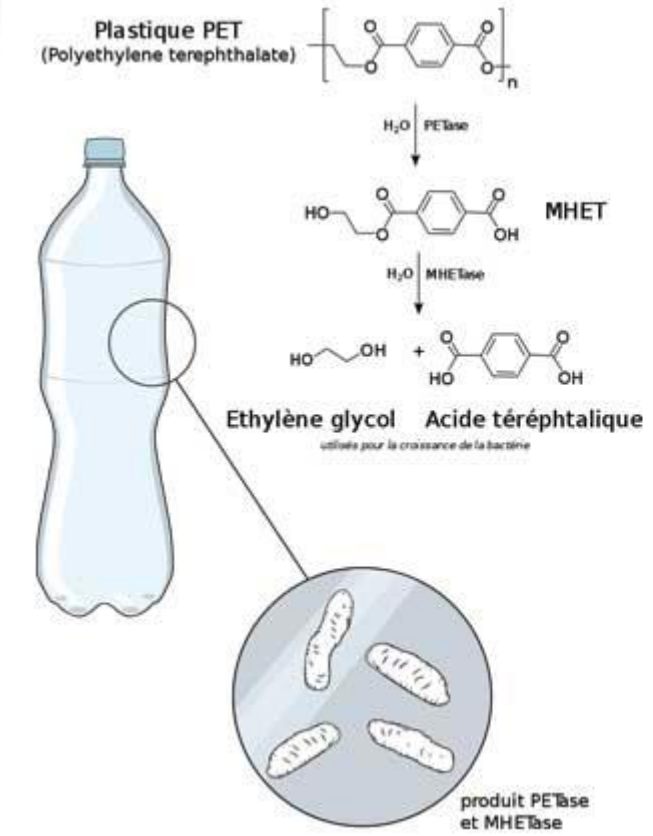


What's the Base? Part 2…

Some organisms, like *Ideonella sakaiensis*, are able to degrade PET

Other microorganisms have the ability to feed themselves on PE, PS, PU and other polymers

Virtually, every type of polymer, that contain only C, H, N and O, could be degraded biologically.

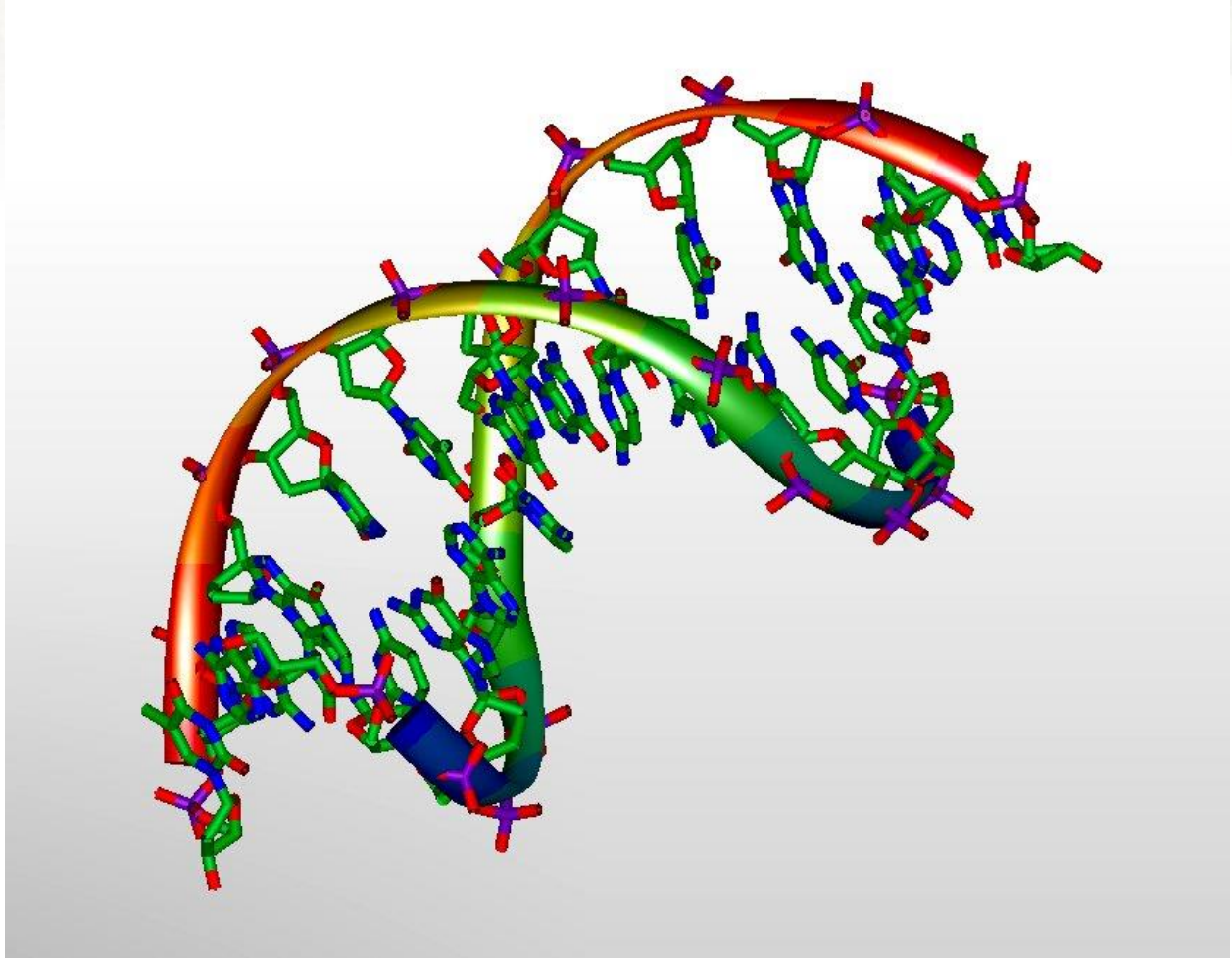


Genetic engineering, the key of Change

The ability to feed on plastic could be transferred to other organisms, through genetic manipulations.

New organisms could just degrade plastic, faster and in different conditions, or to produce another, valorous products.

Saccharomyces cerevisiae, a yeast, could produce bioethanol from plastic if modified.
Another fungus, *Agaricus bisporus* (Champignon) is a perfect food for animals and human. Modified, it would grow on plastic and not on fertilizer.



Investments and gains

As a new idea, the costs of Research start above 1M Euro. The idea of using the mushroom to feed people, coud increase Research-costs, in order to develop an Consumer-safe product. Ecological impact should also be monitored.

On the other hand, prices per ton of Champignon are up to 15-time bigger than prices per pure plastic weight. At the same time, due to the low dry-biomass content in the mushrooms(2-3%), one ton of plastic could be converted in substantially more mushrooms.

While plastic is a contaminant of the ecosystem, mushroom are safe!

Research to be conducted

As a product designed for human use, research of safety should be done. Only this way, the product could enter the food market.

Some other genes, as ability to fix nitrogen or to live in diverse conditions, could help the organism to become more suitable for international agricultural use.

About us

Plastic Feeders is an idea developed by the PolyMore Team, a Romanian Start-up concerned about plastic recycling and Circular Economy

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