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[Mushrooms Gene Decoding Will Lead to Better and Cheaper Biofuels](#)

And less toxic metal contamination

Mushrooms are yummy but sometimes they can be more than that. That's why a team at the University of Warwick is co-ordinating a global effort to achieve the genome sequencing of the most important mushrooms for the westerners: button or common mushroom (*Agaricus bisporus*). Decoding the genetic make up of the mushrooms could lead to the processing of biofuels, support the effort to manage global carbon and help cleanse heavy metals from contaminated soils. The *Agaricus* mushrooms are highly efficient "secondary decomposers" of plant material like dead leaves and litter, breaking apart the material that is too tough for other fungi and bacteria to attack. The main problem with the chemical is the lignin, abundant in dead plant material and whose degradation by fungi and bacteria is not clearly understood. By mapping the genes of the mushroom, researchers hope to detect the genes responsible for this process. This data will be extremely important to researchers and engineers looking to increase the number of plant materials to be used for achieving biofuels, but also the process' effectiveness. The mushroom is also important for understanding the carbon cycling. Carbon is stored in soils as plant organic matter. 1-2 gigatons of carbon are annually retained in pools on land in the temperate and boreal regions of the earth, representing 15-30% of the yearly global emissions of carbon from fossil fuels and industrial activities. Understanding the role of the fungi in the general carbon cycling in the forests and other ecosystems is crucial for optimizing carbon management. Still, some *Agaricus* species can hyper-accumulate toxic metals in soils at much higher levels than other fungi genera. Understanding this process would improve the use of these fungi for the bioremediation of contaminated soils. *Agaricus bisporus* is the world's most widely cultivated mushroom species and from this research the most benefited categories will be the growers and consumers, due to improved qualities like disease resistance, taste and productivity. *Agaricus bisporus* possesses about 35 megabases of genetic information coding for around 11,000 genes. About 90% of the genome will be completed within 3 years.