

## Cultivation and domestication of edible mushrooms

### 食用菌的栽培与驯化

*Termitomyces* mushrooms (‘jizong’ in Chinese) are highly popular in tropical regions of Asia and Africa because of their nutritious value, medicinal properties and delicious taste. Many previous attempts have been made to cultivate *Termitomyces*, but many challenges remain. We will carry out experiments employing molecular tools to deepen our understanding of the life cycle of *Termitomyces*. We will especially focus on ecological mechanisms underlying the co-evolution between termites and the fungus. Our final goal is to develop successful cultivation techniques for the domestication of *Termitomyces*.



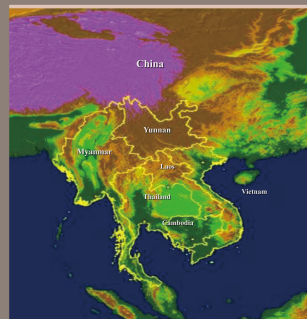
## Fungal research in the Greater Mekong Subregion (GMS)

### 大湄公河次区域真菌研究

We aim to accurately identify major fungal groups in the GMS, ranging from alpine to tropical rainforests. This information will help us understand how fungi will be affected by climate change. Key aspects of the work include identifying new species, understanding drivers behind fungal distribution, predicting climate change impacts on different fungal groups, modeling distribution and creating scalable impact models of fungal biogeography.

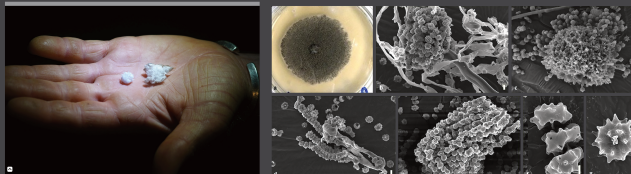


Bioluminescent mushrooms of northeastern India.



## Biodegradation of plastics using fungi 真菌在塑料生物降解中的作用

We are currently working to identify gaps in the fungal-degrading plastic literature. Insects inoculated with gut fungi could play a crucial role in the degradation process. Leveraging our “Insects as feed” industrial-scale waste processing site, we hope to develop a method to successfully degrade unsorted plastic wastes using inoculated insects. Main challenges include slow microbial degradation pathways in plastics (some have none at all), a lack of understanding of the role fungal enzymes play as decomposers, difficulty in ensuring industrial conditions and no clear economic incentive.



Fungus discovered growing on styrofoam in a cave outside Kunming

## The use of fungi in Rural Revitalization 真菌与乡村振兴

The cultivation of edible and medicinal mushrooms creates alternative sources of income and bolsters household protein intake in rural and impoverished communities. With sustainable rural development in mind, the Centre for Mountain Futures has conducted mushroom cultivation training at the village level across China, India, Nepal and Myanmar. Three goals were targeted: 1) introduce economically valuable mushroom species to smallholder farmers; 2) impart technical knowledge about mushroom cultivation to increase yield and minimize challenges; and 3) introduce readily available and affordable raw materials usable as mushroom-growing substrate to rural communities new to mushroom cultivation. These cultivation techniques can be used in concert with agroforestry practices in which medicinal plants and mushrooms are grown alongside multipurpose trees to create sustainable economic and ecological systems.



Dr. Samantha Karunanaraina explains how to cultivate Ganoderma to Honghe farmers