Inorganic phosphate solubilizing fungi

Fungi have been collected from air and soil samples in Yunnan, China, and screened for the ability to solubilize inorganic phosphate (Trialsicum phosphate (TCP)) in vitro. Of particular interest is that the fungal isolate KMUC 18-0159
(Aaspergillus hydrea sp. nov.) collected from an air environment in a highly efficient strain in solubilizing phosphate. This isolate also shows the greatest drop in pH in Pikovskaya broth containing TCP, suggesting that it might produce organic acids.

Fungal diversity of karst systems

Cave ecosystems are unique windows into microbial and fungal life inhabiting the subsurface of the Earth. These subterranean systems are reservoirs of undiscovered species. These caves, and the animals inhabiting them, can also be sources of pathogens and disease. We are exploring unique cave systems in China and describing the fungi associated with these subterranean systems using morphological and multigene phylogenetic data. In addition, we are examining the role of fungi in cave ecosystems the potential for both to act as vectors for pathogenic fungal strains that could affect humans, animals and crops.

Edible and deadly mushrooms

Ranging from alpine meadows to tropical rain forests, the Greater Mekong Subregion (GMS) is renowned for its macrofungi diversity. We are working on publishing an macrofungi in the GMS region via scientific articles, publications, posters, videos, blogs and other media formats. Identifying edible, poisonous and medicinal macrofungi is a critical component of this work. Our notable publications include “The world’s deadliest mushrooms” and “Cataloging and defining the global list of wild edible macrofungi”.

Fungi associated with agarwood production

Agarwood is a valuable, aromatic, dark resinous heartwood of Aquilaria species. Its resin is widely used in perfumes, traditional medicine and cooking.

We are examining the micro-fungi associated with agarwood. Micro-fungi will be isolated from fresh agarwood trees and confirmed. They will be cross-checked with other Aquilaria trees for the ability to increase dark resins. Isolated micro-fungi will also be screened for volatile organic compounds.

Studies in fungal systematics and biogeography

Primary plants and their fungal associations

Secondary plants and their fungal associations

Microfungi growing on forms in the Greater Mekong Subregions are being surveyed. Samples have been collected from Baksan, Honghe, Kunming, Lijiang, and Xishuangbanna in Yunnan, China and in Thailand from 2017-2019. New species are being prepared for publication.