

東吳大學 103 學年度博士班招生考試試題

第 1 頁，共 1 頁

系級	微生物學系博士班	考試時間	100 分鐘
科目	生物文獻閱讀測驗	本科總分	100 分

1. Please translate the title of the following references into Chinese, and how could you obtain printed copies or pdf files of these references:
 - a. Compositions for giving the skin a coloration similar to that of a natural tan, based on a pigment of the *Monascus* type, and uses thereof. US Patent No. 6,740,313. (10 分)
 - b. Flechard M, Cortes MA, Reperant M, Germon P. 2012. New role for the *ibeA* gene in H₂O₂ stress resistance of *Escherichia coli*. J. Bacteriol. 194:4550-4560. (10 分)
 - c. Chia-Wei Hung. 2010. Studies on the Pathogenesis and Pathology of *Scylla serrata* (鋸緣青蟹) infected by *Vibrio alginolyticus* and *Vibrio parahaemolyticus*. Master's thesis, National Taiwan Ocean University. (10 分)

2. When you are assigned to discover a new cytotoxin from a fish pathogenic *Vibrio* species which has not been published in any journal.
 - a. Please discuss on your experimental approach. (15 分)
 - b. How do you search and collect appropriate research literatures before you initiate your laboratory work? (15 分)

3. Translate the following abstract into Chinese. (40 分)

We investigated whether an intact extraradical mycelium (ERM, 根外菌絲) is more effective than other forms of propagule (繁殖體) from indigenous arbuscular mycorrhizal fungi (AMF, 叢枝菌根真菌) in providing protection against stress to a host plant. The response of wheat (*Triticum aestivum* L.) to Mn toxicity was studied in a two-phase greenhouse experiment. In Phase 1, four Mn tolerant species from the natural vegetation, ranging from strongly mycotrophic to non- or weakly mycotrophic, were grown to develop different amounts of ERM. Wheat was then planted (Phase 2) with the ERM fragmented by sieving (Disturbed Treatment) or kept intact with no prior soil disturbance (Undisturbed Treatment). The growth of wheat was doubled by earlier and faster mycorrhizal colonization (AC) in the presence of an intact ERM at planting. There was a positive correlation between plant growth and the reduction of Mn and enhancement of P and S uptake into shoots. However, the growth of plants in undisturbed soil was significantly affected by the ERM developer species, which was not explained by differences in AC. Colonization starting from an intact ERM greatly enhanced the potential of AMF for protection against Mn toxicity. However, the degree of protection depended on the plant previously grown to develop the ERM, suggesting that there may be functional diversity within the ERM developed by mycotrophic plants of the natural vegetation.