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Maintenance of microorganisms and the main function of Korean Collection for Type Cultures

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The ability to preserve microorganisms has been a major achievement in microbiology over the last century (1). Although a number of excellent preservation techniques have been developed, they must be carefully applied if contamination, loss of viability and genetic change are to be prevented. Industrial laboratories need to maintain production strains in addition to generating banks of microorganisms for screening purposes. Medical laboratories need reference strains both for routine testing in pathology laboratories and for research. Taxonomists must maintain large numbers of cultures for comparative studies and research laboratories need pure cultures for a wide range of purposes.

The Korean Collection for Type Cultures (KCTC) was officially founded as a national gene bank in 1985 and in the same year gained membership of the World Federation of Culture Collections (2). The research activities of KCTC primarily encompass the collection, preservation and provision of authentic microorganisms and cell-lines. In addition, emphasis is placed upon research into microbial phylogenetics, development of molecular data handling techniques and the construction of a microbial taxonomic database and bioinformatics network.

The KCTC collects cultures of applied, biotechnological, taxonomical, educational and general interest from scientists and institutions. For the collection of the cultures, the KCTC exchanges strains with other culture collections in the world. The KCTC accepts cultures of strains of newly described species, strains of unlisted species and new strains with properties of special interest. The KCTC also directly requests to the original author(s) who published the results in the authentic scientific paper(s). The KCTC also originally screens and isolates microorganisms from various environments (3, 4). For the safety deposit of cultures, strains are usually maintained in liquid nitrogen, freeze-drying or storage at -80°C (5). Some cultures are also maintained by serial transfer on an agar slant. The KCTC has studied methods to maintain high viability of cultures and to preserve the stability of desired characteristics and has developed excellent preservation apparatus and techniques. The KCTC was

recognized as a depository organization for patent applications in 1990. So the KCTC holds the status of an International Depository Authority for patent cultures. Deposition and distribution of these patent cultures is carried out according to the Rules of the Budapest Treaty.

As a result of our strengths in microbial systematics, it is now possible for us to accept the strong demand for the microbial classification and identification services. In 1995, there were 829 microbial strains submitted for classification and identification by national institutes, universities and industry. Greatest demand has been in those areas where the characterisation system, BIOLOG (95 carbon utilization test) and determination of cellular fatty acid composition have been the most appropriate methods to apply. In addition, analysis of quinones, polar lipids and DNA G+C mol% have been used for chemotaxonomic purposes. Also, molecular taxonomic methods such as 5S rRNA, 16S rRNA sequence analysis, and multiplex PCR have been used for the determination of relationships between closely related bacteria (6). For the identification of streptomycetes, test strains were examined for diagnostic features recommended by computer-assisted identification of unknown streptomycetes.

KCTC wishes to maintain its prominent role as a service culture collection. We envisage our microbial classification and identification services to continue on their forward progress by our efforts towards the development of standard taxonomic methods and the accumulation of taxonomic databases.

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