



University of Pretoria Yearbook 2022

Genetic manipulation of microbes 364 (MBY 364)

Qualification	Undergraduate
Faculty	Faculty of Natural and Agricultural Sciences
Module credits	18.00
NQF Level	07
Programmes	BSc (Biochemistry) BSc (Biotechnology) BSc (Genetics) BSc (Human Genetics) BSc (Human Physiology) BSc (Microbiology) BSc (Plant Science) BScAgric (Plant Pathology)
Prerequisites	MBY 251 and GTS 251
Contact time	1 practical per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Semester 2

Module content

Isolation of clonable DNA (genomic libraries, cDNA synthesis) cloning vectors (plasmids, bacteriophages, cosmids) plasmid incompatibility and control of copy number. Ligation of DNA fragments, modification of DNA end and different ligation strategies. Direct and indirect methods for the identification of recombinant organisms. Characterization (polymerase chain reaction, nucleic acid sequencing) and mutagenesis of cloned DNA fragments. Gene expression in Gram negative (*E.coli*) Gram positive (*B.subtilis*) and yeast cells (*S.cerevisea*). Use of *Agrobacterium* and baculoviruses for gene expression in plant and insect cells respectively. Applications in protein engineering, diagnostics and synthesis of useful products.

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