

University of Pretoria Yearbook 2016

Genetic manipulation of microbes 364 (MBY 364)

Qualification	Undergraduate
Faculty	Faculty of Natural and Agricultural Sciences
Module credits	18.00
Programmes	BSc Biochemistry BSc Biotechnology BSc Genetics BSc Human Genetics BSc Human Physiology BSc Microbiology BSc Plant Science BScAgric Plant Pathology
Prerequisites	BCM 251 and CMY 127 and MBY 161
Contact time	2 lectures per week, 1 practical per week
Language of tuition	English
Academic organisation	Microbiology and Plant Path
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.cerevisiae). 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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