

University of Pretoria Yearbook 2018

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, CMY 127, GTS 251, GTS 261 and MBY 251

Contact time 1 practical per week, 2 lectures per week

Language of tuition Module is presented in English

Department Microbiology and Plant Pathology

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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