

University of Pretoria Yearbook 2021

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.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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