

# 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.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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