

University of Pretoria Yearbook 2017

Genetic manipulation of microbes 364 (MBY 364)

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| 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 | 2 lectures per week, 1 practical per week |
| Language of tuition | Module is presented in 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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