BIOENGINEERING AND BIOMEDICAL ENGINEERING
RESEARCH SEMINAR

STRATEGIES FOR IMPROVING PRODUCTION LEVELS OF HIV-1 VIRUS-LIKE PARTICLES BY TRANSIENT TRANSFECTION IN MAMMALIAN SUSPENSION CULTURES

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A new promising field in vaccine development has emerged that allows for the generation of safer products in faster production systems based on cell culture technology to produce recombinant vaccines. Among recombinant vaccines, virus-like particles (VLPs) are non-infectious and non-replicating particles, displaying intact and biochemically active antigens. Production of high yields of VLPs is a key factor for a viable vaccine. Our research is mainly focused on the optimization of the production of human immunodeficiency virus type 1 (HIV-1) VLPs using mammalian cells. HIV-1 Gag VLPs have shown great promise as platforms for the presentation of envelope antigens. However, the complexities associated with their manufacturing have hindered their evaluation beyond early pre-clinical testing. The selected production method was transient gene expression (TGE) as it is particularly attractive when a large number of product variants need to be tested and/or in cases where the expression of cytotoxic genes compromises the generation of stable cell clones, which is the case for HIV-1 VLPs. As an early bioprocessing modality, a number of opportunities exist for improving TGE in order to increase the productivity of transfected suspension mammalian cells. By exploring different alternatives we have developed a robust and scalable production process to generate VLPs in enough quantity and quality for preclinical and eventually clinical testing.

DECEMBER 11
1:00-2:00 PM
MACDONALD 267
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