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Generation and Mitigation of Cell Debris in a Manufacturing Scale Disc Stack Centrifuge

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Generation and Mitigation of Cell Debris in a Manufacturing Scale Disc Stack Centrifuge

A Major Qualifying Project Report

submitted to the Faculty

of the

WORCESTER POLYTECHNIC INSTITUTE

In partial fulfillment of the requirements for the

Degree of Bachelor of Science

by

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Kayla Sica

Date: April 25, 2018

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In partnership with Amgen, a study was conducted to understand centrifugation utilizing a disc stack centrifuge, specifically looking to identify and quantify the amount of extracellular matrix (ECM) fragments that are generated and understand why they are created. This stemmed from issues that occurred during large-scale manufacturing runs, such as filter fouling and low yield. Detailed testing in search of quantifying and identifying general free particles in the supernatant was completed. Additionally, data from production harvests was analyzed to determine possible correlations between centrifugation parameters to explain issues that occurred during processing.

This MQP contains information deemed confidential to the business interest of the industrial sponsor. Please contact Stephen Kmiotek at sjkmiotek@wpi.edu for additional information.