INCREASING EFFICIENCY IN CELL LINE DEVELOPMENT THROUGH AUTOMATED WORKFLOWS

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Automated workflows in clinical and commercial cell line development (CLD) increase efficiency, consistency and create flexible resourcing. We have leveraged our targeted integration host to develop a consistent CLD process, which is automatable. We had previously developed automated single-cell cloning (SCC) and hit-picking workflows based on plate imaging to produce clonally-derived cell lines. We have augmented the SCC workflow with the addition of single-cell deposition using the Cytena Single-Cell Printer (SCP). With the implementation of the SCP, we gained significant efficiencies when compared to limited dilution SCC by processing and imaging 10-times fewer plates and storing 10-times fewer images. We have also developed custom seed train automation, which can passage seed train cultures and set-up and sample fed-batch cultures in an unattended operation. We will discuss details on the SCP implementation as well as the automated CLD workflow from transfection, bulk selection, SCC, hit-picking, clone scale-up, seed train passage and fed-batch cultures. We believe that with a very limited staff, we can generate 50 – 200 cell lines per year with our automated CLD workflow.