

# Automating iPSC expansion

## with the Quantum Flex™ Cell Expansion System

Induced pluripotent stem cells (iPSCs) are undifferentiated cells produced by reprogramming adult cells to an embryonic-like pluripotent state, giving them the ability to self-renew and produce progeny that differentiate into cell types from all germ layers.

### Challenges in manual iPSC expansion

It is challenging to generate high quantities of high-quality iPSCs using traditional cell culture methods. Challenges include:

Operator induced variability

Limited throughput

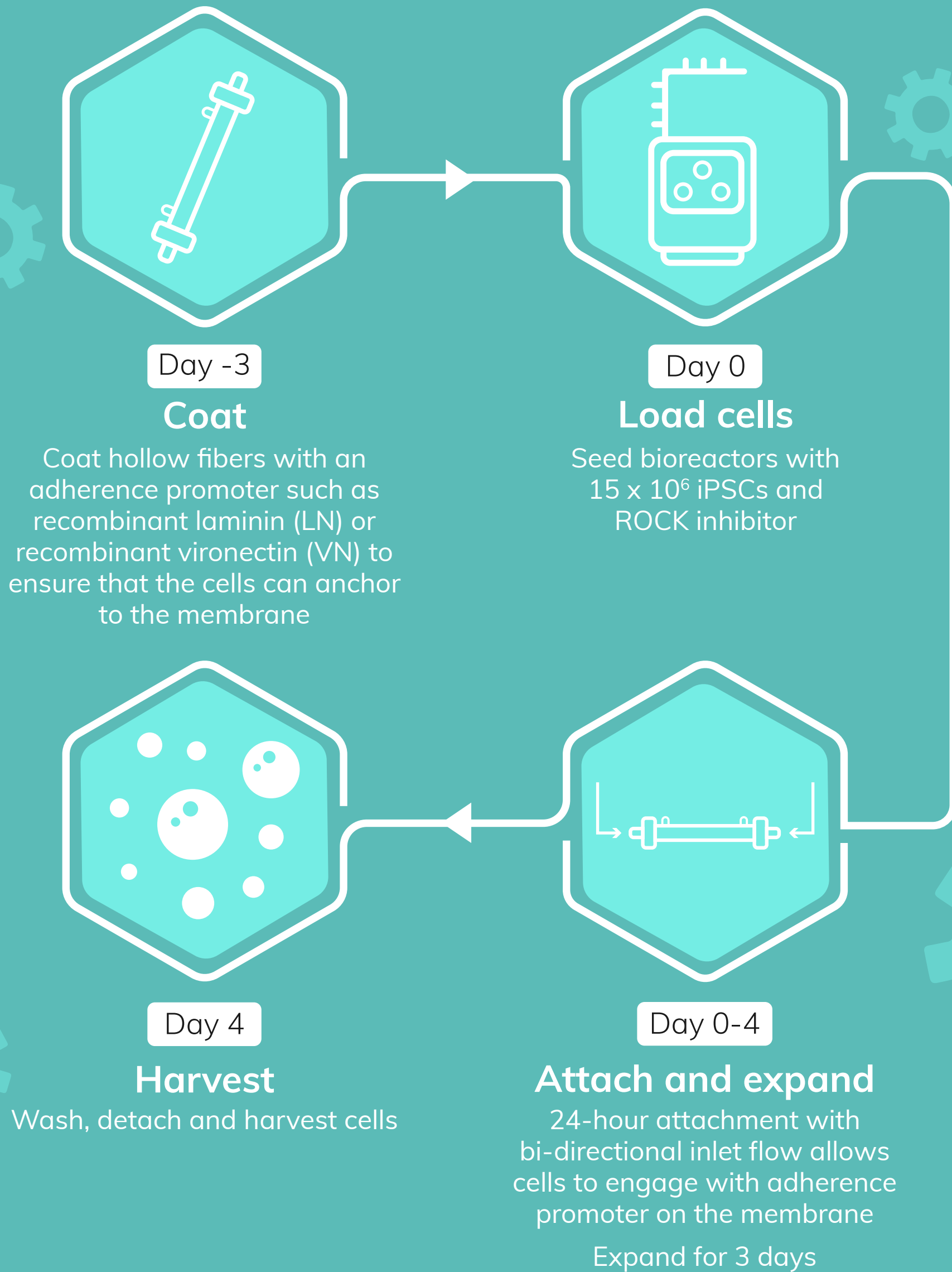
Open events increase contamination risk

Manual processing is labor intensive

### Automating iPSC expansion

iPSC expansion in the Quantum Flex hollow-fiber bioreactor provides an alternative to manual expansion

### Quantum Flex workflow

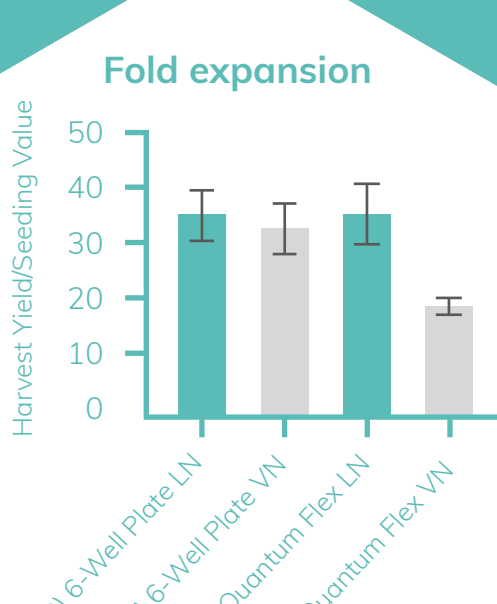


### Results in the Quantum Flex small hollow-fiber bioreactor

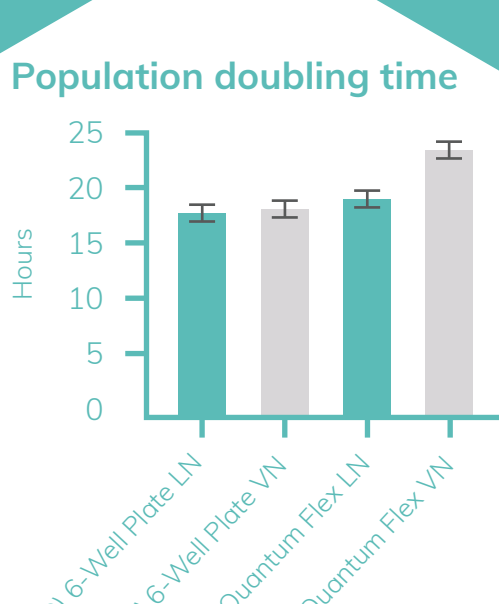
15 million iPSCs can be expanded to between 250 and 500 million in 4 days

Harvest viability > 95% with a harvest efficiency of > 98.4%

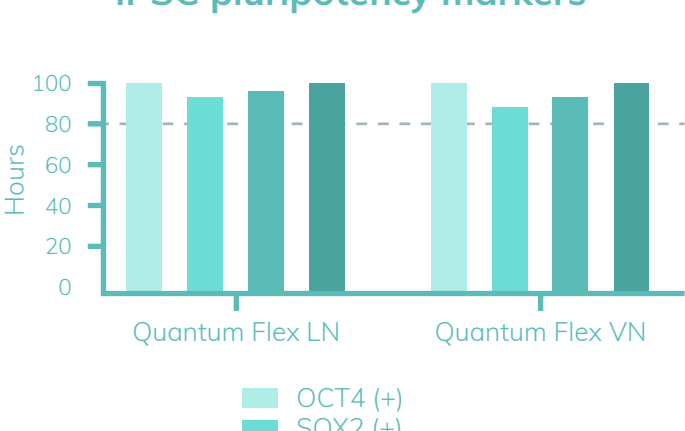
17-fold expansion in VN-coated fibers and 34-fold expansion in LN-coated fibers



Doubling times of 19 to 23 hours in LN- and VN-coated fibers, respectively



#### iPSC pluripotency markers



iPSC pluripotency markers are expressed at high rates (~90%) on Quantum Flex-expanded iPSCs regardless of coating