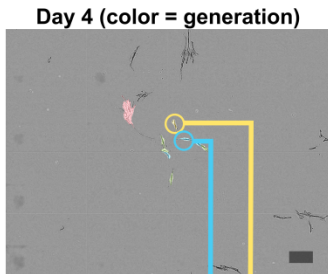
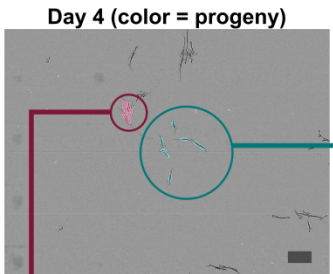


Figure S1: In-depth profiles of every colony studied at the single cell level. **Top left:** phase contrast image of the colony at after four days of growth. Cells in images were color-coded *post hoc* to match the progeny they belong to (see figure key). **Top center:** phase contrast image of the colony at Day 4, with cells color-coded by their generation. **Top right:** glyph representing cell area, generation, relative location in colony, and proliferative capacity of the progeny/progenies that formed the colony (see Figure 4). Filled circles represent individual cells at Day 4, with the size of the circles representing the relative cell spread area and their color representing the generation they belong to. The outer rings represent the number and proliferative capacity of the originating progeny; solid line (–) = fast proliferator, dotted line (...) = moderate proliferator, dashed line (- -) = slow proliferator. Cells that didn't divide by Day 10 are marked (/). Glyphs were enlarged from Figure 4 for added detail; scale bar is relative only to other glyphs and does not represent an absolute length. **Middle:** lineage trees of colony-originating cells for the first four days of development. Width of lineage lines represents cell spread area at each 15-minute time point. Cells that did not divide by Day 10 and cells whose lifetime differed from their twin more than one standard deviation from the pooled average of all 1384 cells (0.27 days) are indicated (see key). **Bottom:** phase contrast images of the colony at Days 4, 7, and 10. Images underwent a process of background flattening and brightness/contrast adjustment (see methods). Transparent red dots were placed on the Day 7 phase contrast images for single-cell-derived colonies and mark cells that do not belong to the originating progeny. Scale bars = 250 μm .

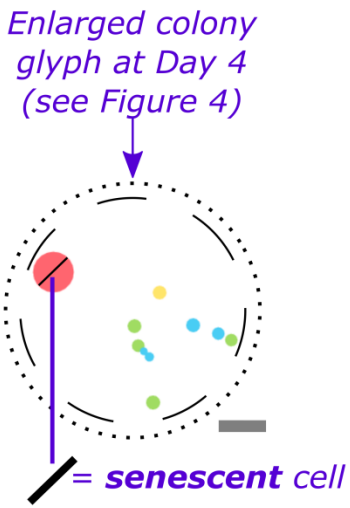
In-depth profile of all colonies studied (KEY)

Colony V ← Colony name

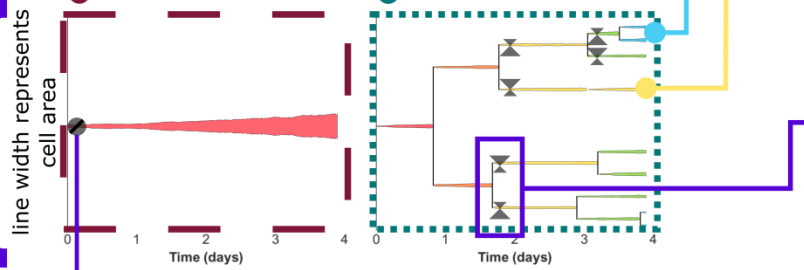
Cells are color-coded by the **progeny** they belong to



Cells are color-coded by the **generation** they belong to



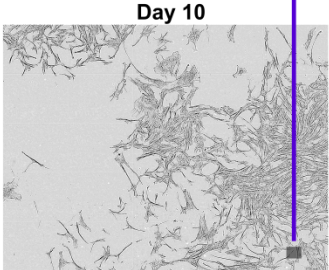
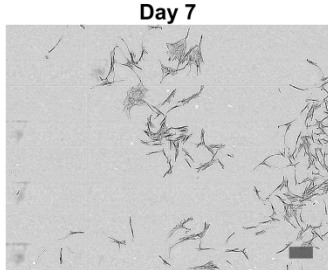
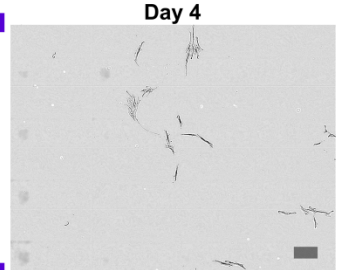
Lineage trees of colony-contributing progenies analyzed



twin with **longer** lifetime
= **asynchronous twins**
twin with **shorter** lifetime

= senescent cell

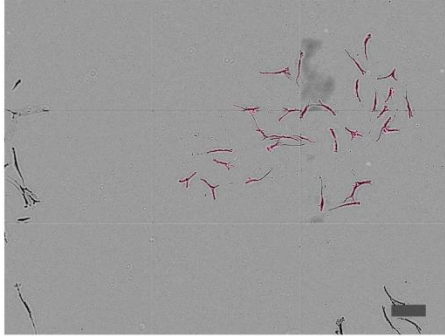
Phase contrast images at Days 4, 7, and 10 (adjusted for brightness and contrast)



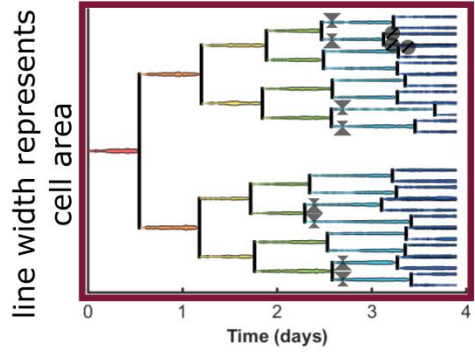
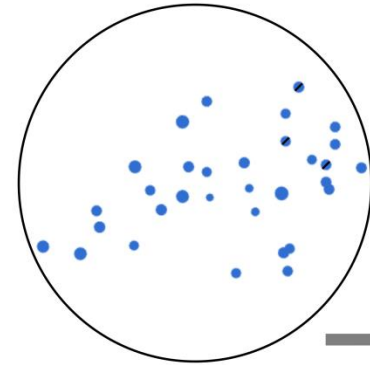
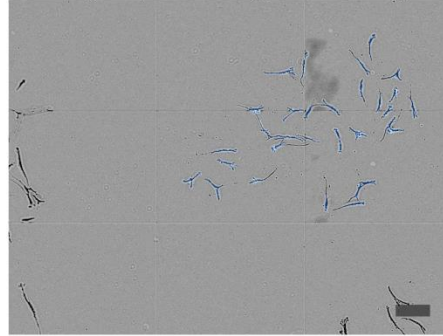
scale bars are 250 μm

Colony A

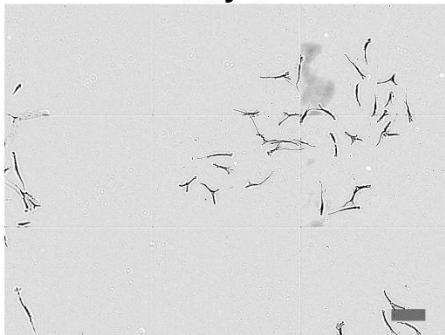
Day 4 (color = progeny)



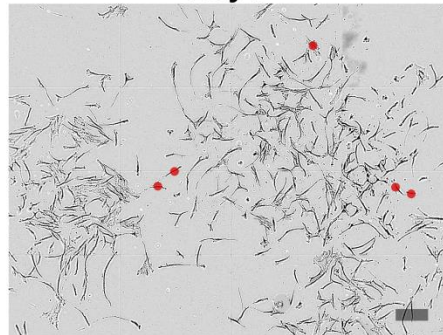
Day 4 (color = generation)



Day 4



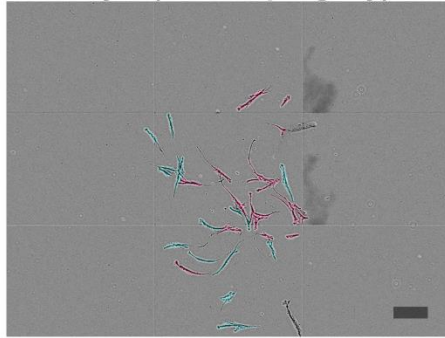
Day 7



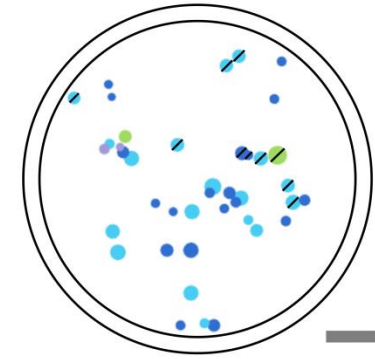
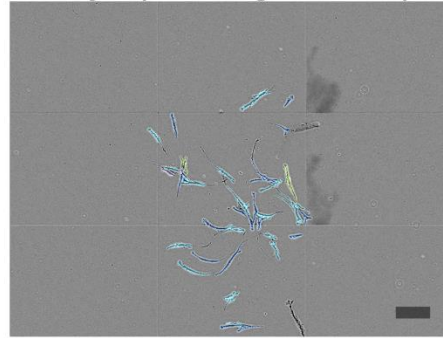
(Day 10 image not taken)

Colony B

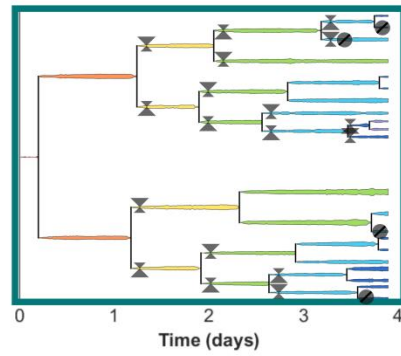
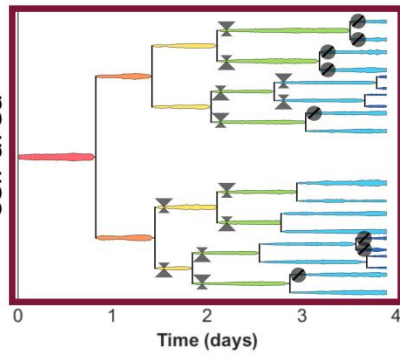
Day 4 (color = progeny)



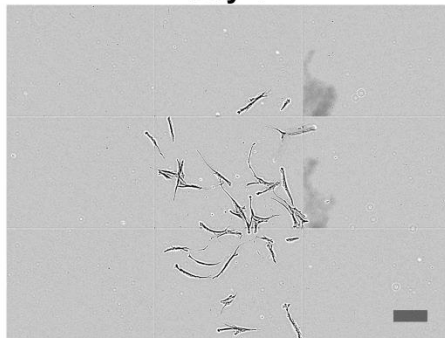
Day 4 (color = generation)



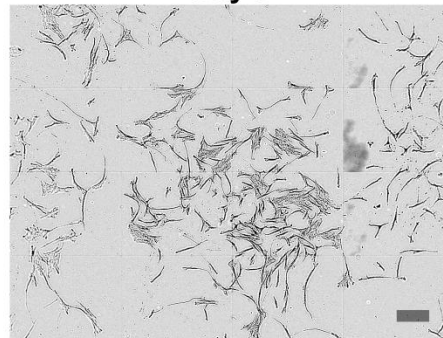
line width represents cell area



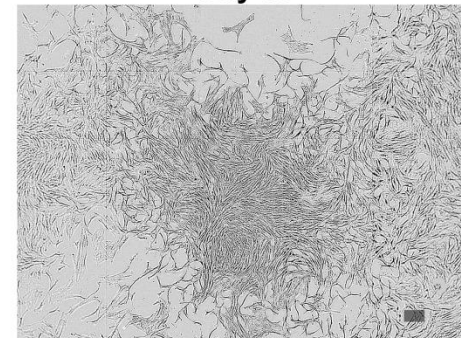
Day 4



Day 7

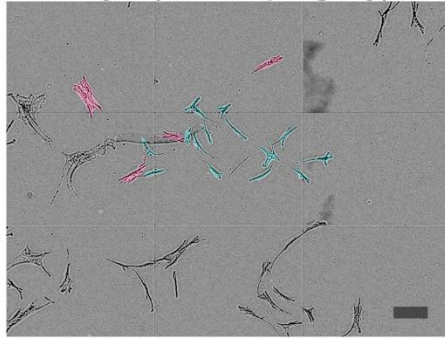


Day 10

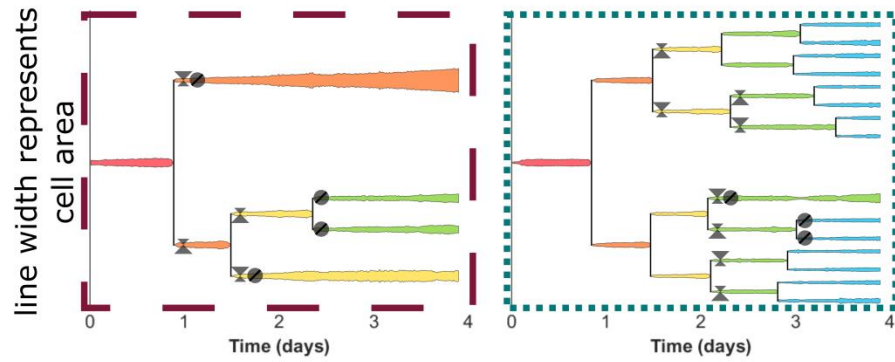
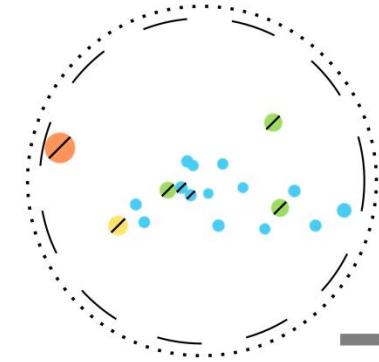
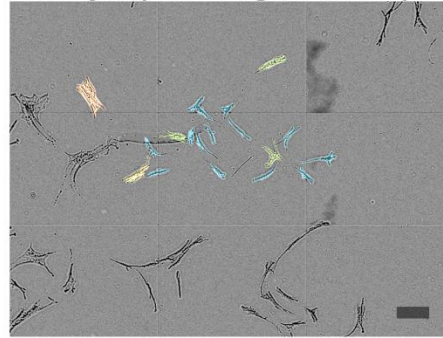


Colony C

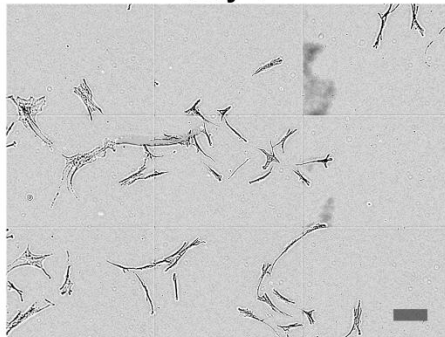
Day 4 (color = progeny)



Day 4 (color = generation)



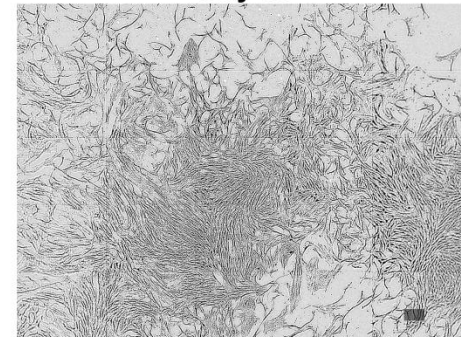
Day 4



Day 7

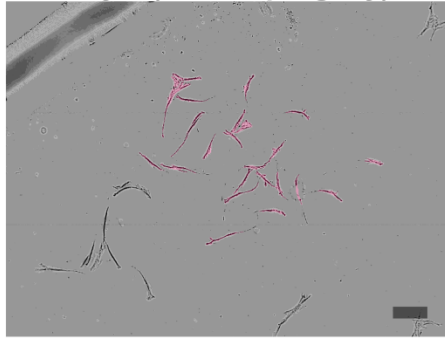


Day 10

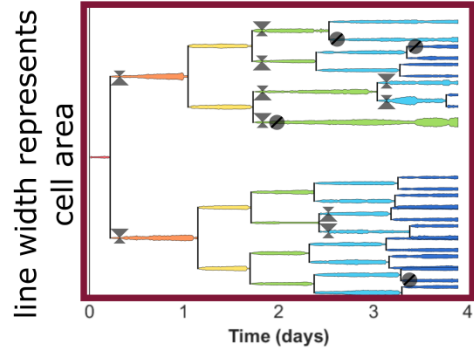
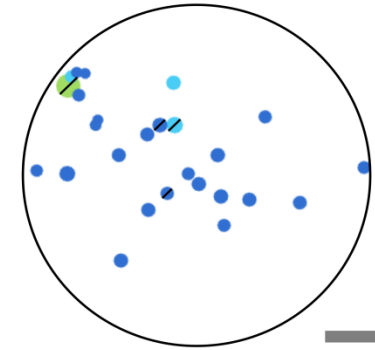
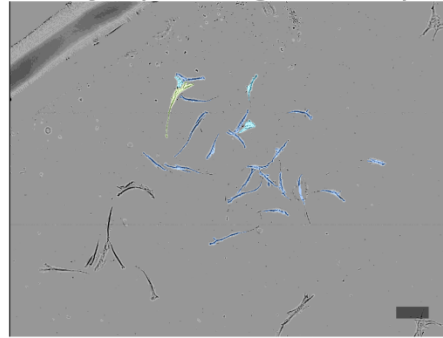


Colony D

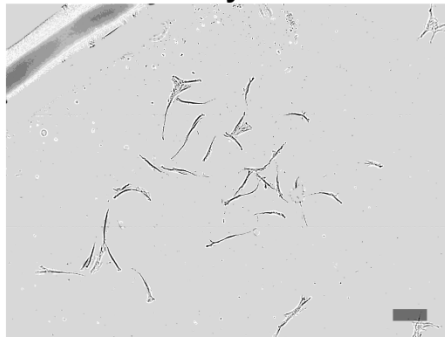
Day 4 (color = progeny)



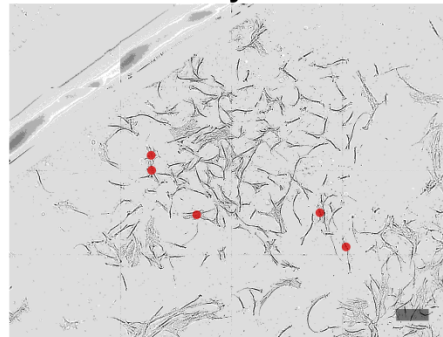
Day 4 (color = generation)



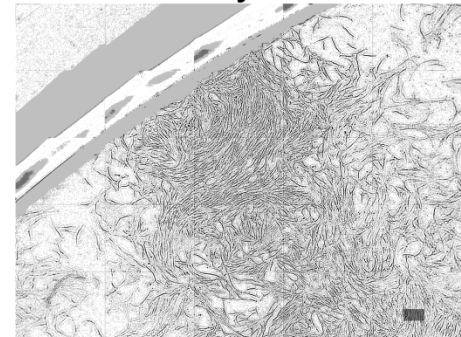
Day 4



Day 7

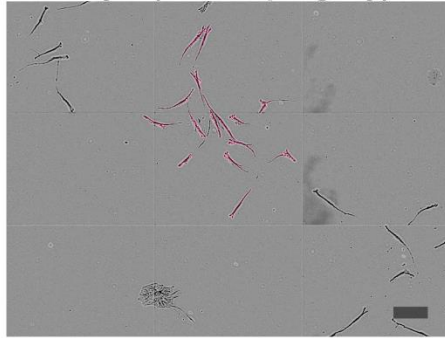


Day 10

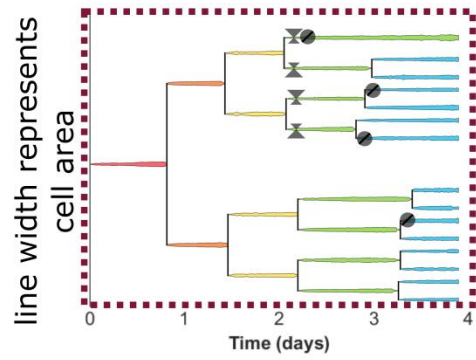
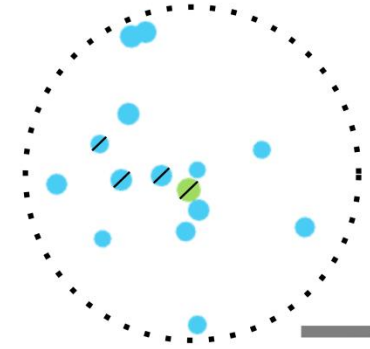
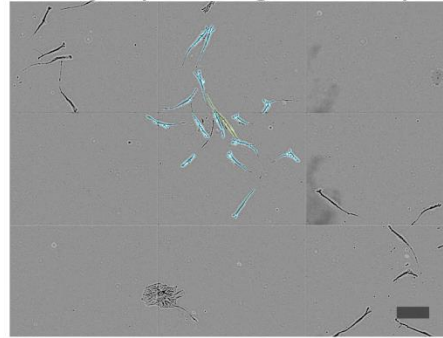


Colony E

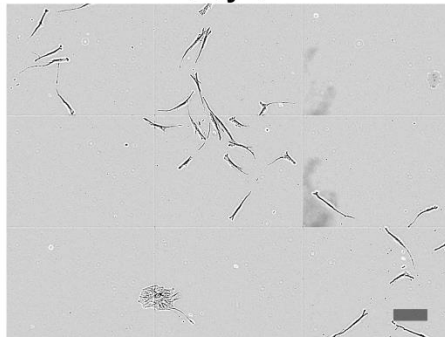
Day 4 (color = progeny)



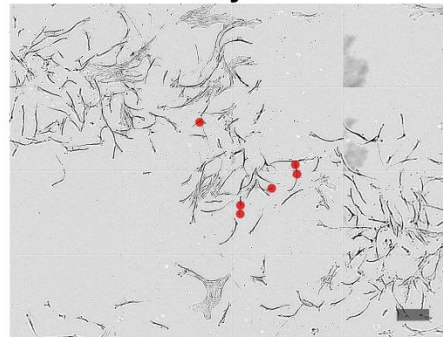
Day 4 (color = generation)



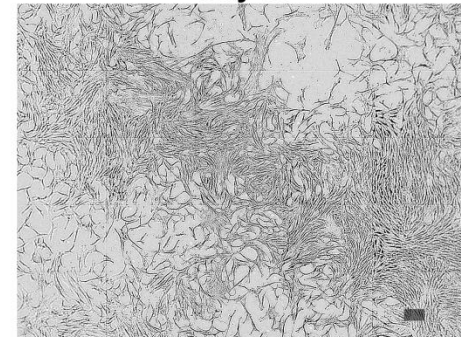
Day 4



Day 7

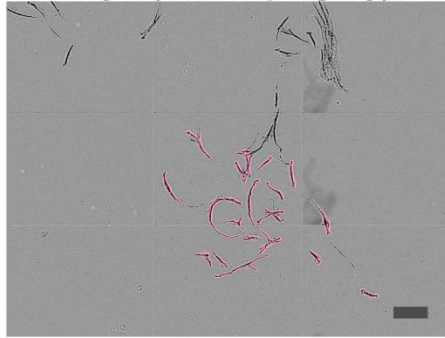


Day 10

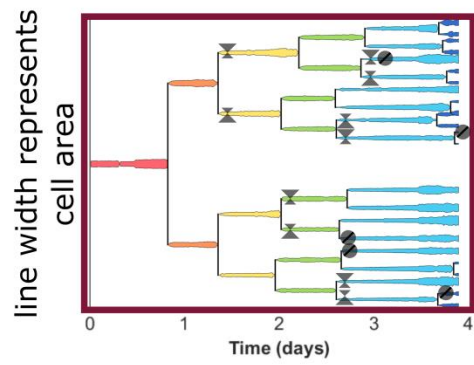
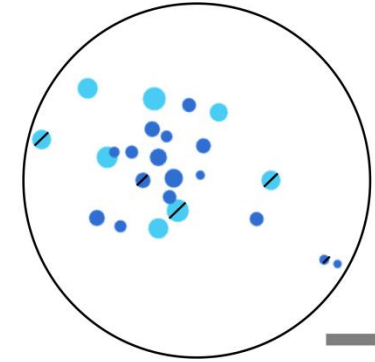
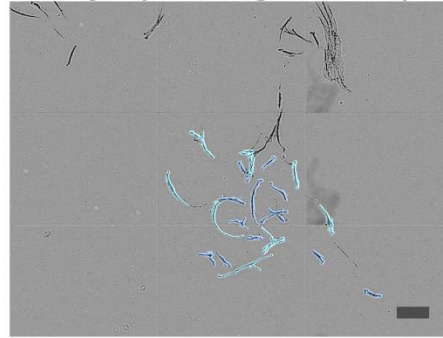


Colony F

Day 4 (color = progeny)



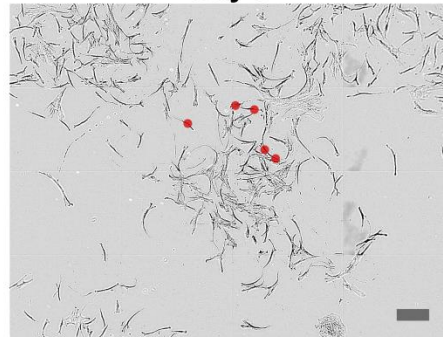
Day 4 (color = generation)



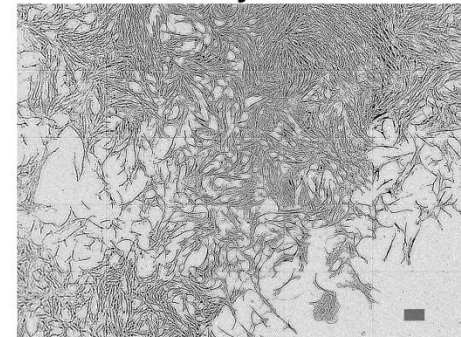
Day 4



Day 7

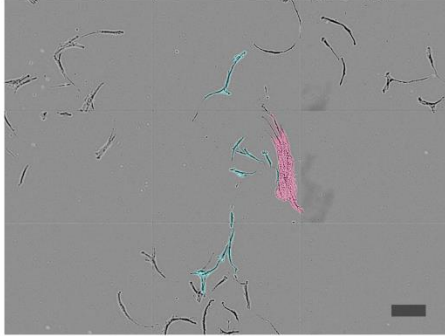


Day 10

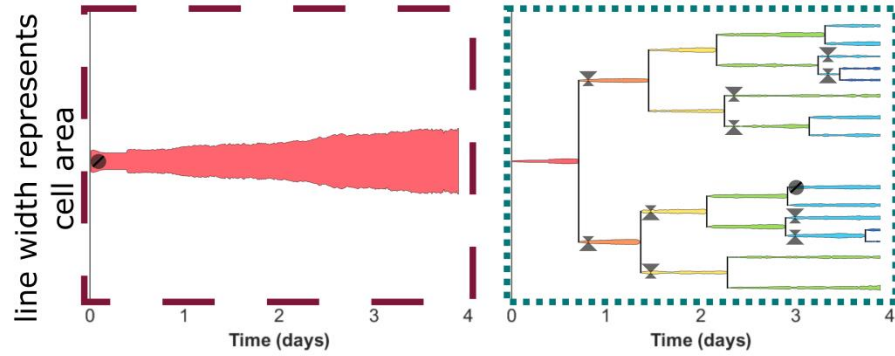
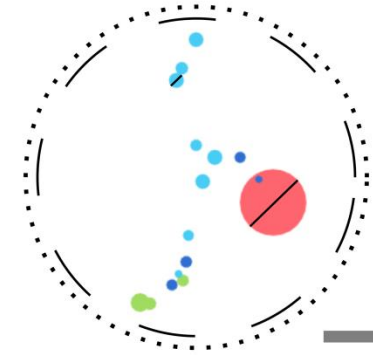
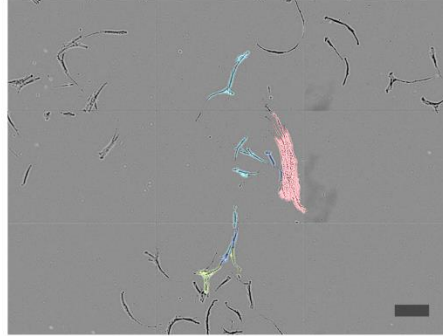


Colony G

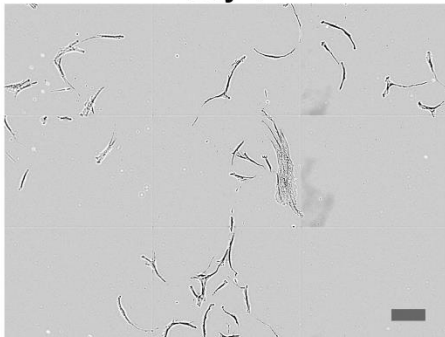
Day 4 (color = progeny)



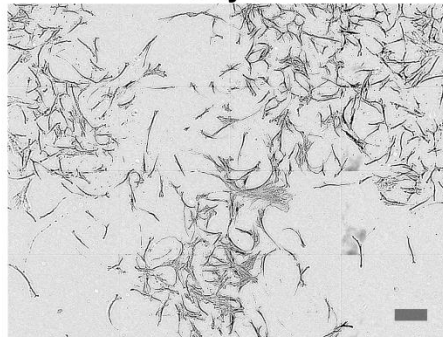
Day 4 (color = generation)



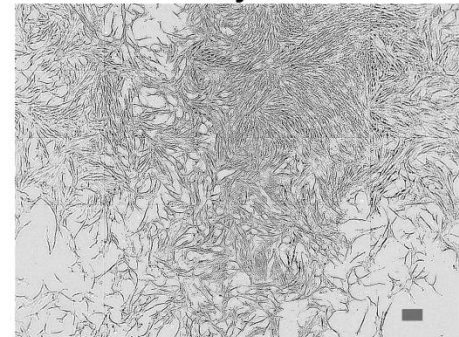
Day 4



Day 7

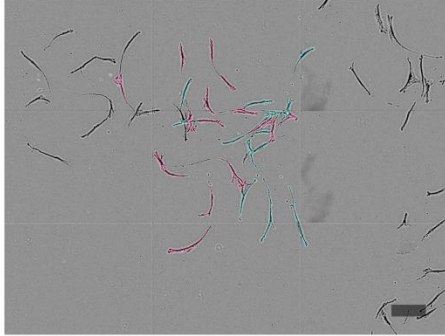


Day 10

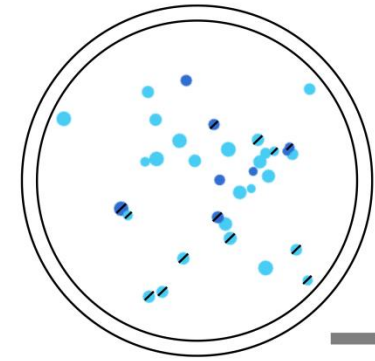
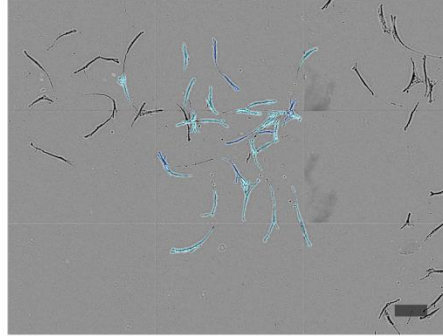


Colony H

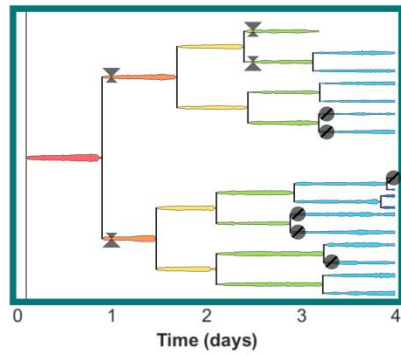
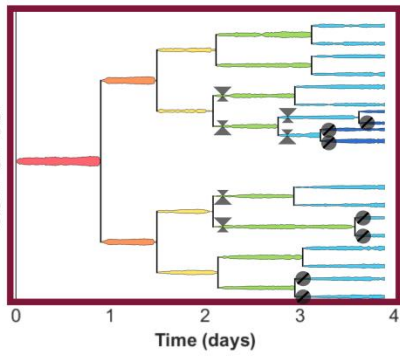
Day 4 (color = progeny)



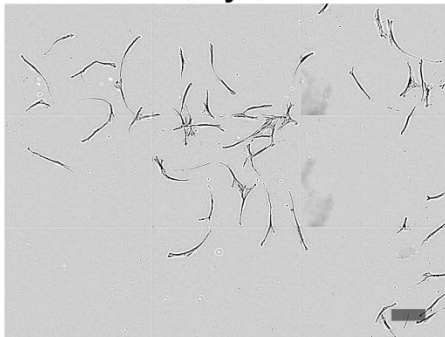
Day 4 (color = generation)



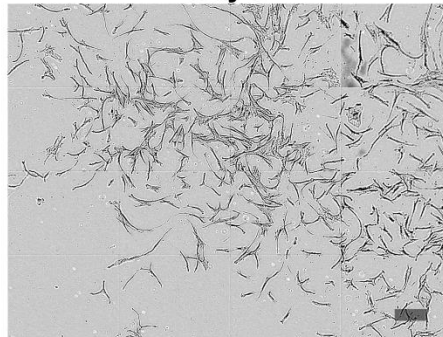
line width represents cell area



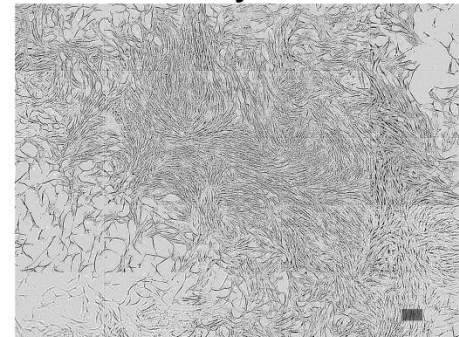
Day 4



Day 7

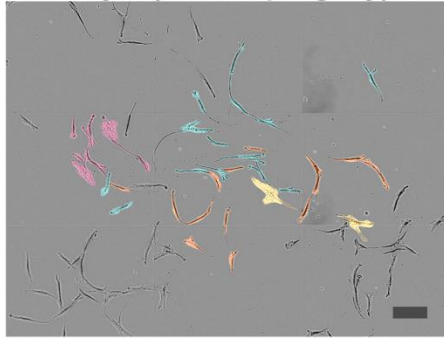


Day 10

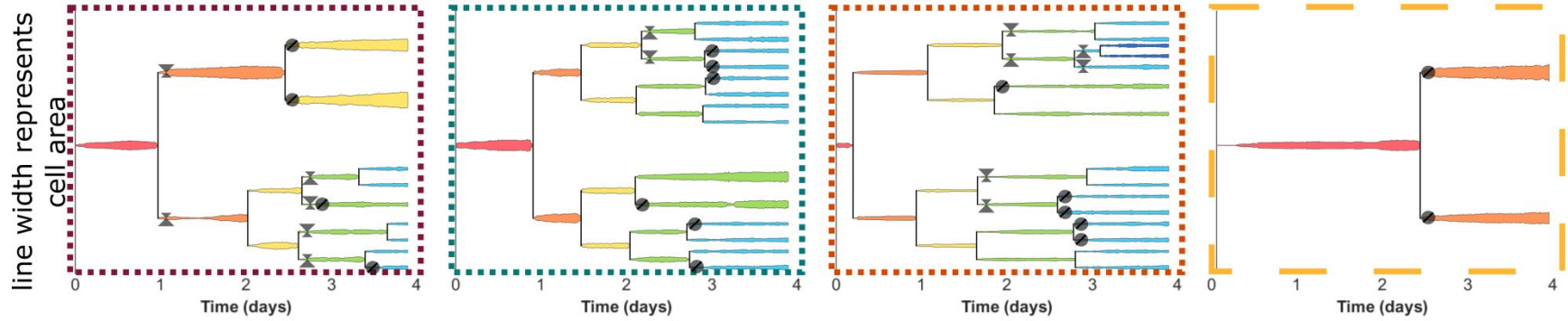
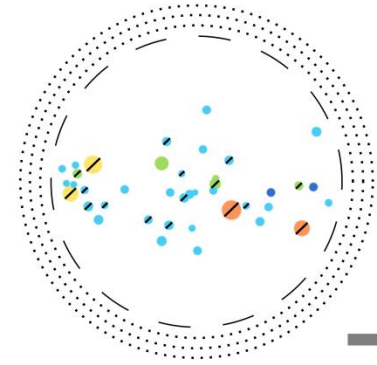
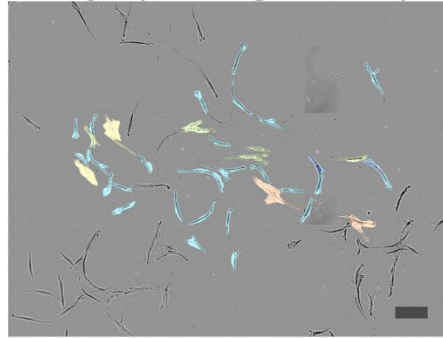


Colony I

Day 4 (color = progeny)



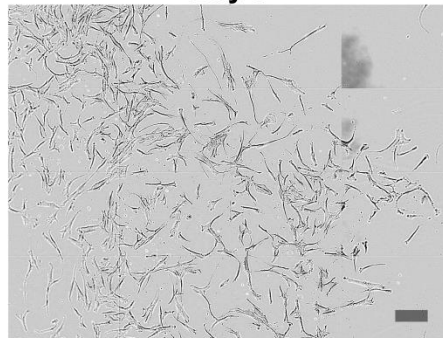
Day 4 (color = generation)



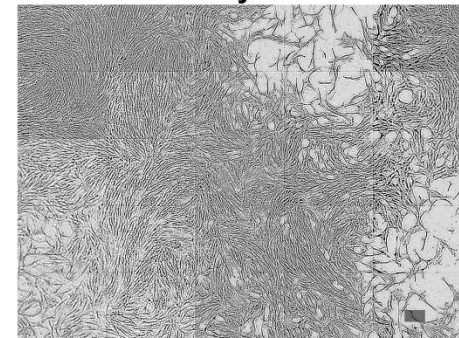
Day 4



Day 7

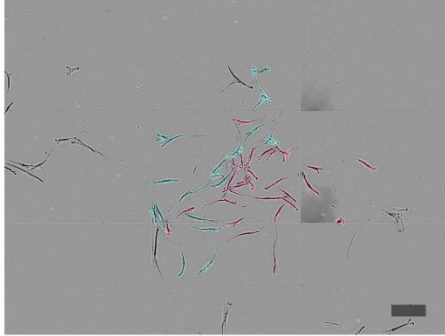


Day 10

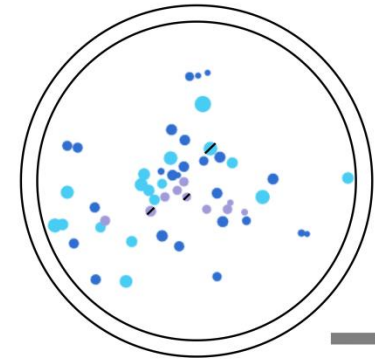
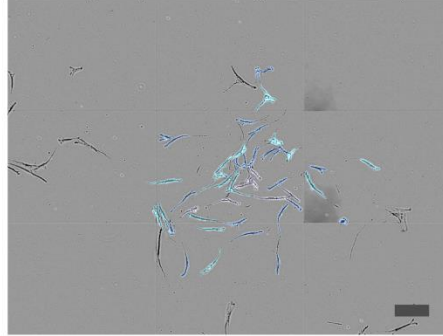


Colony J

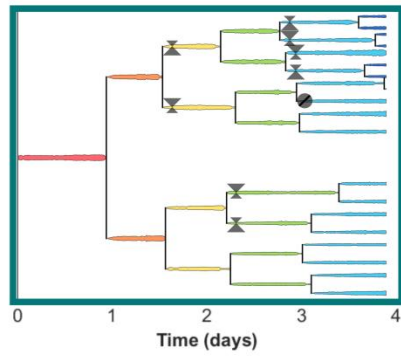
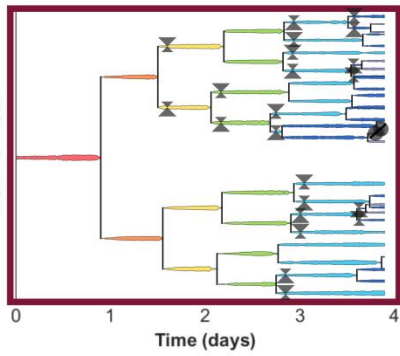
Day 4 (color = progeny)



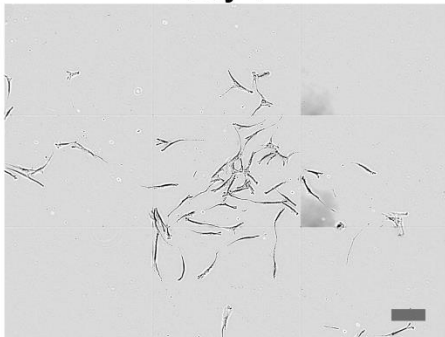
Day 4 (color = generation)



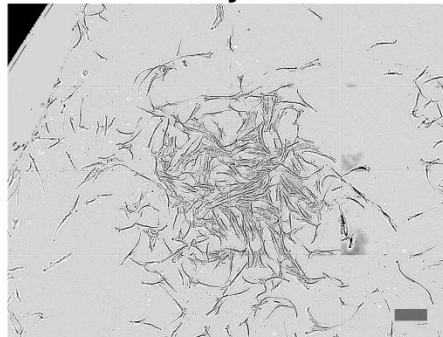
line width represents cell area



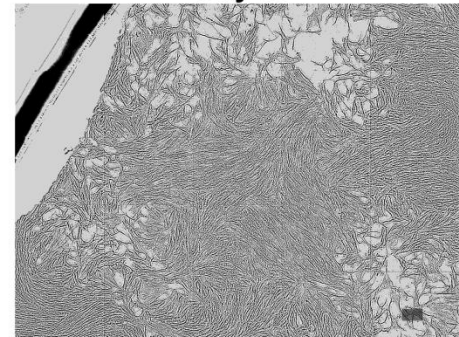
Day 4



Day 7

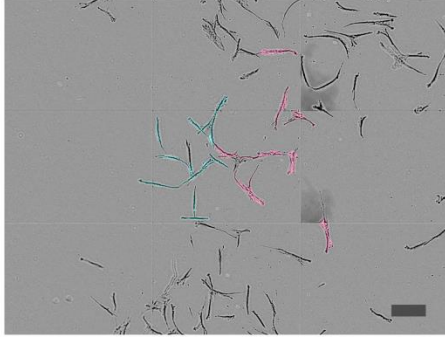


Day 10

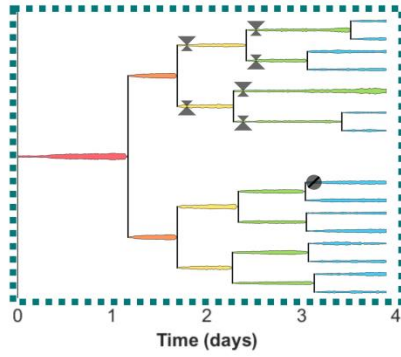
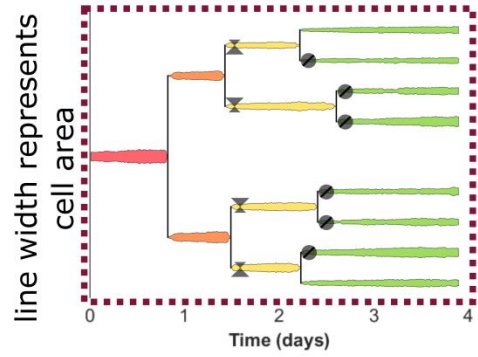
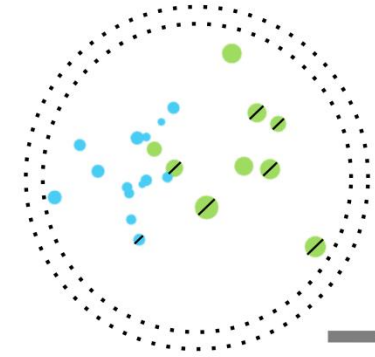
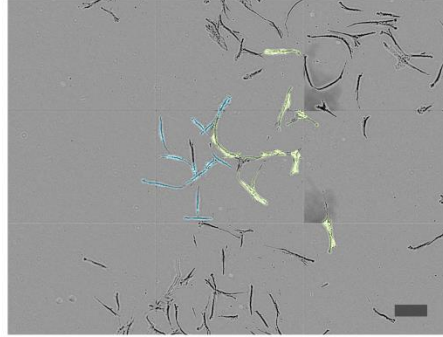


Colony K

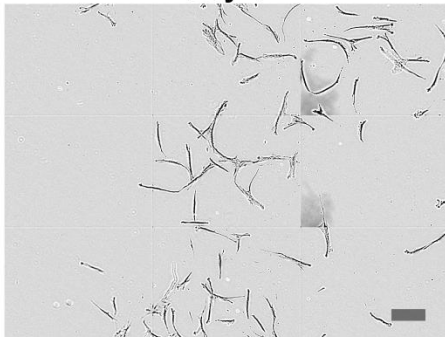
Day 4 (color = progeny)



Day 4 (color = generation)



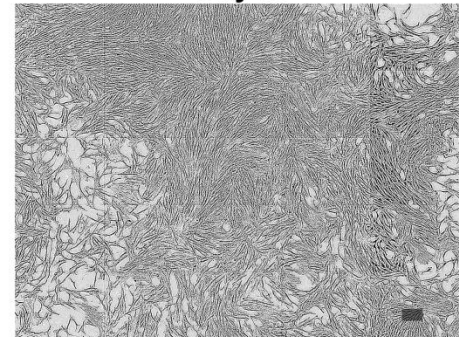
Day 4



Day 7

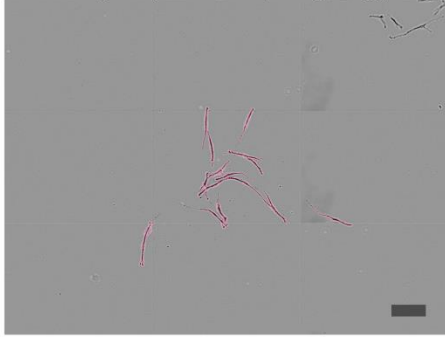


Day 10

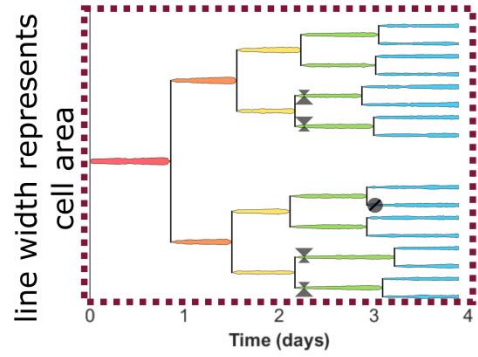
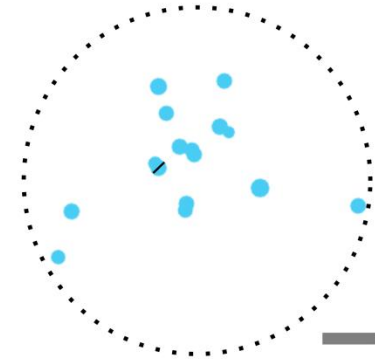
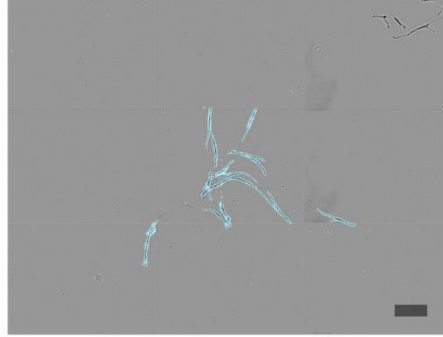


Colony L

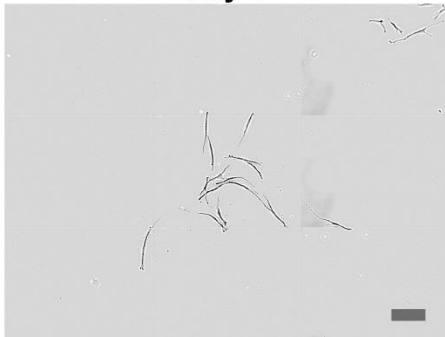
Day 4 (color = progeny)



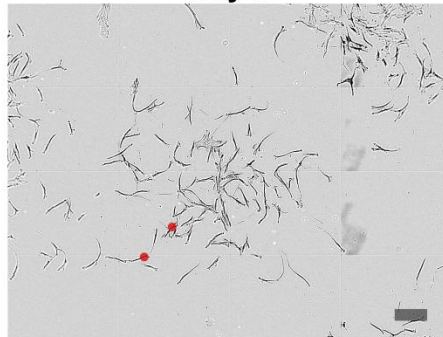
Day 4 (color = generation)



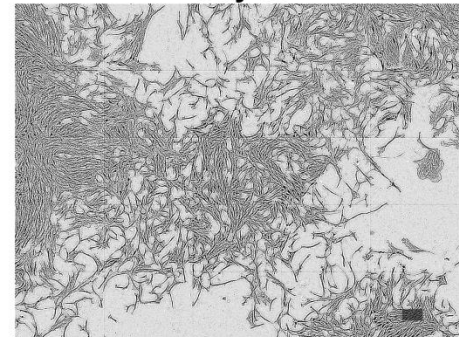
Day 4



Day 7

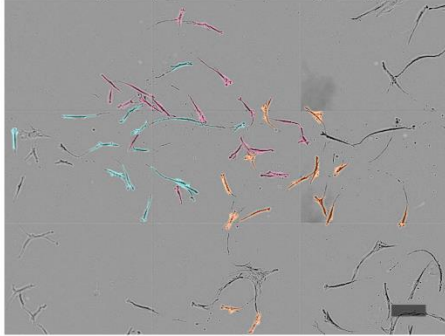


Day 10

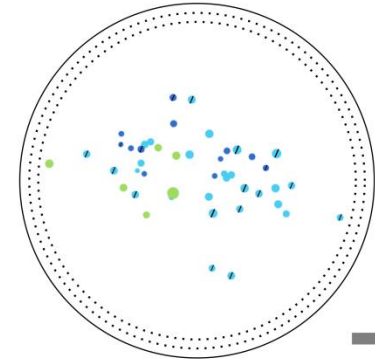
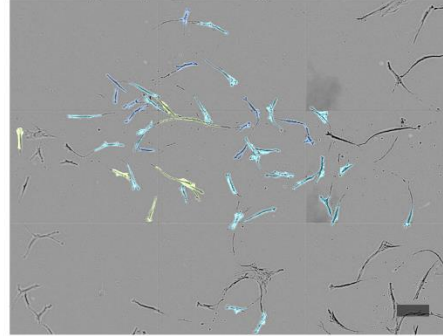


Colony M

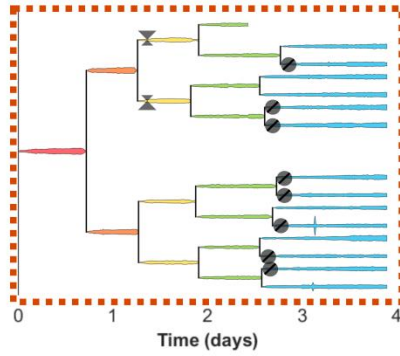
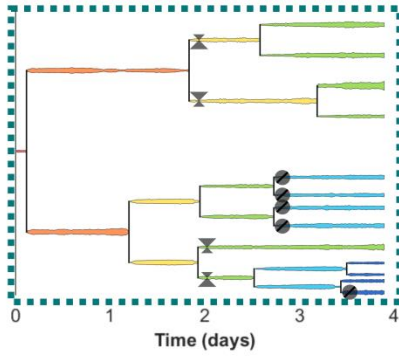
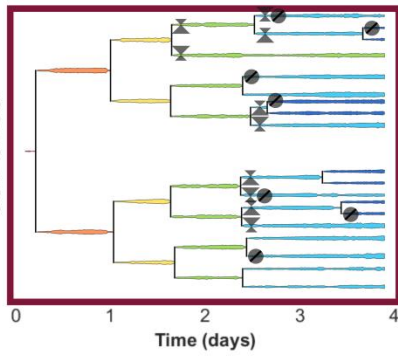
Day 4 (color = progeny)



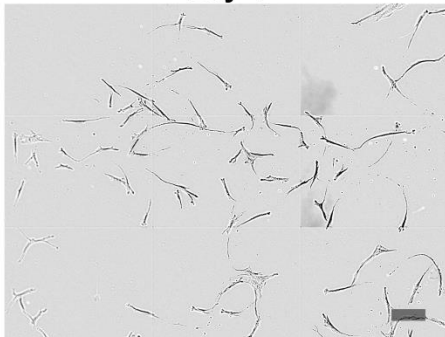
Day 4 (color = generation)



line width represents cell area



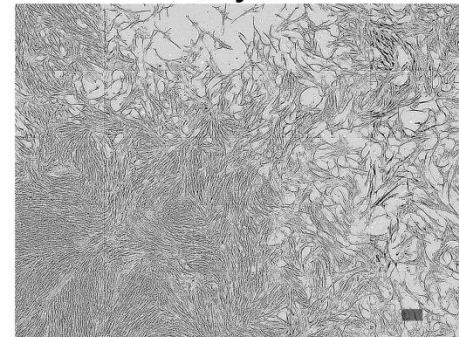
Day 4



Day 7

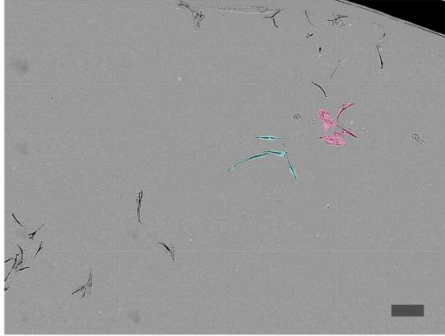


Day 10

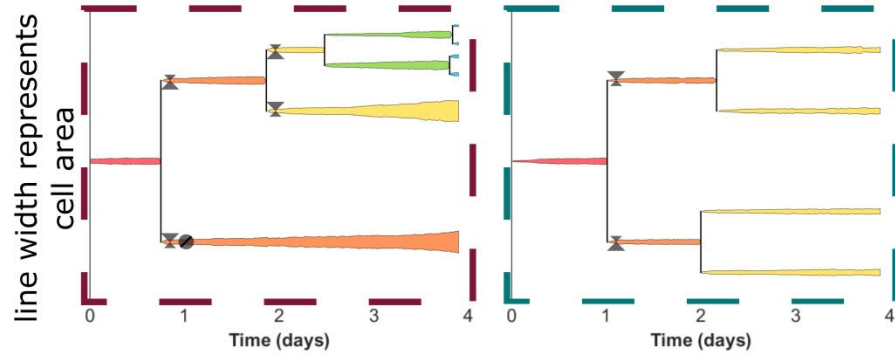
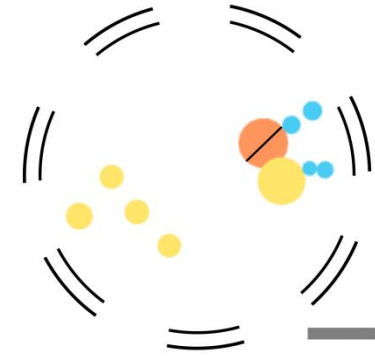
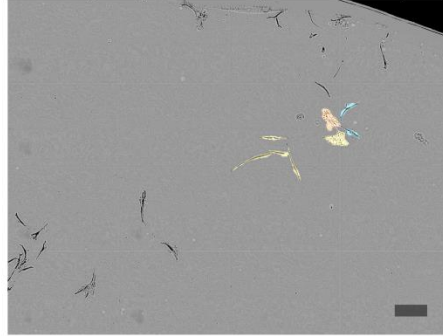


Colony N

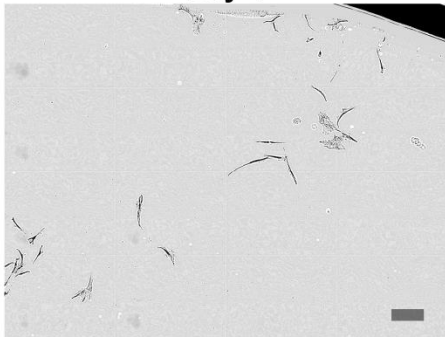
Day 4 (color = progeny)



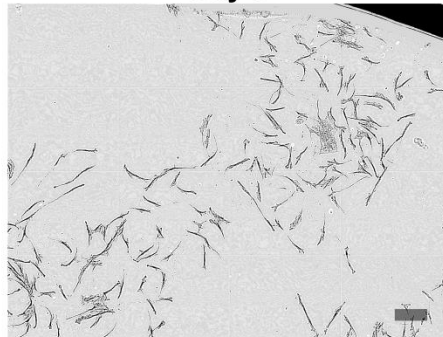
Day 4 (color = generation)



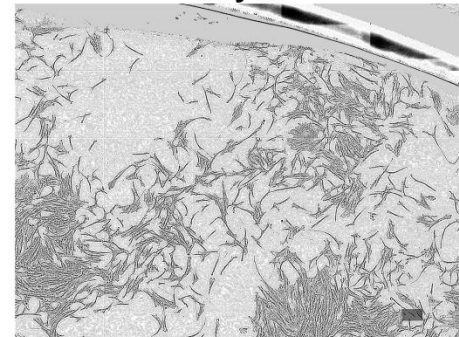
Day 4



Day 7

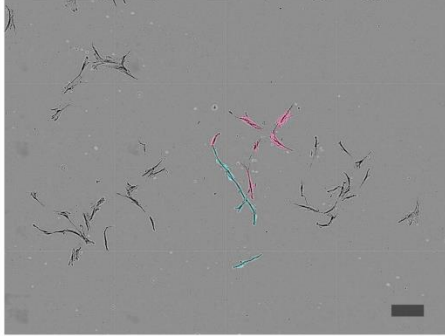


Day 10

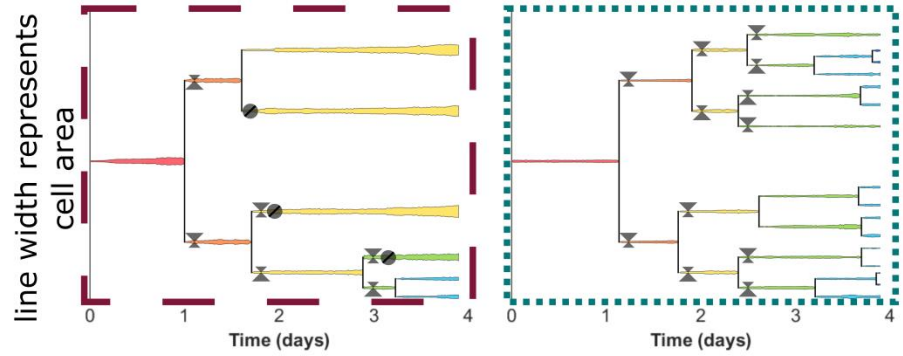
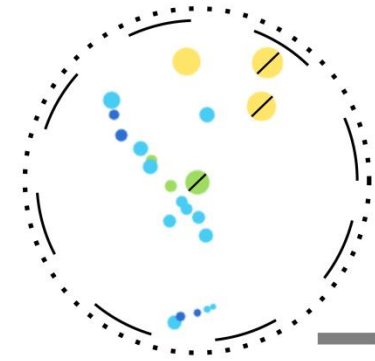
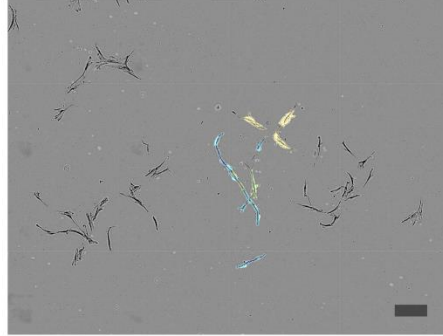


Colony O1

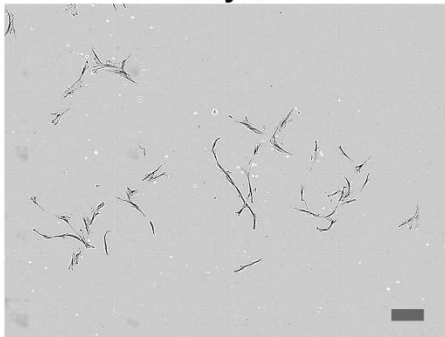
Day 4 (color = progeny)



Day 4 (color = generation)



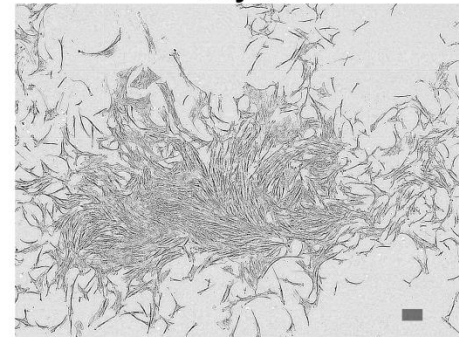
Day 4



Day 7

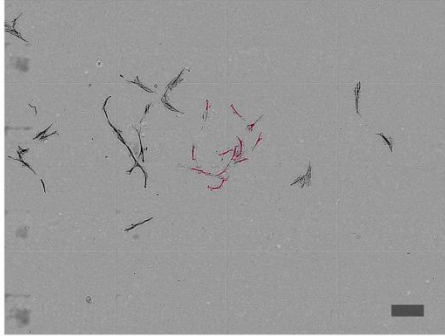


Day 10

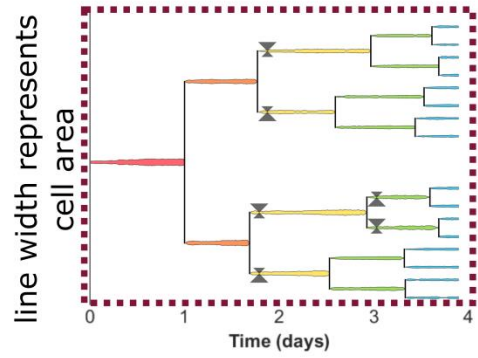
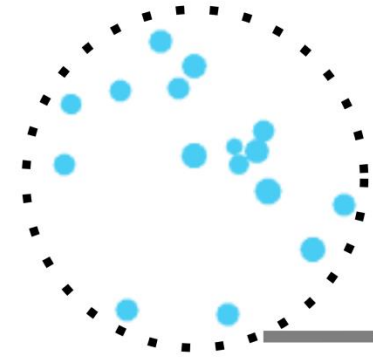
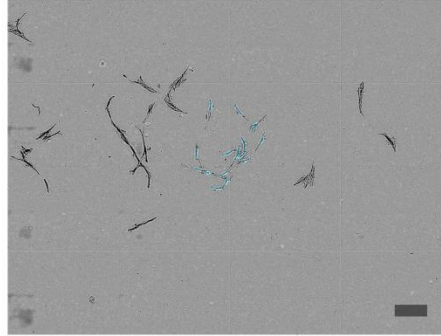


Colony O2

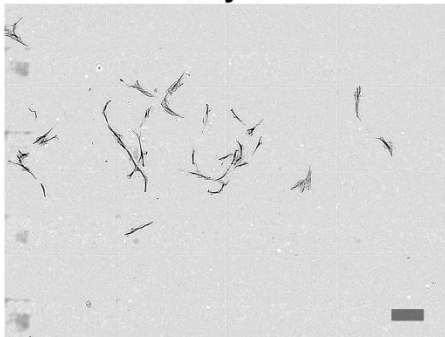
Day 4 (color = progeny)



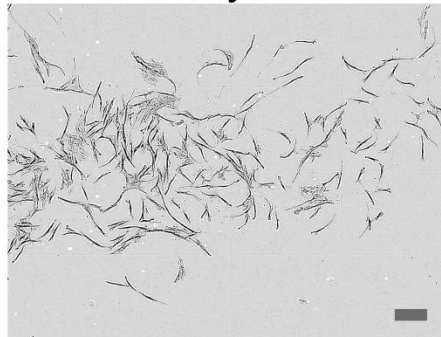
Day 4 (color = generation)



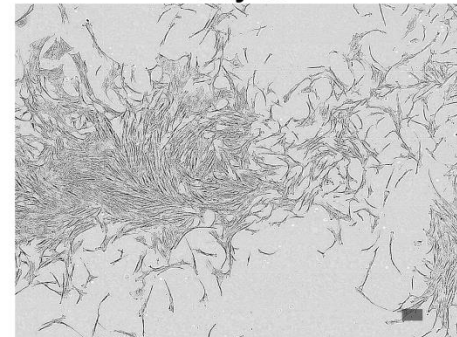
Day 4



Day 7

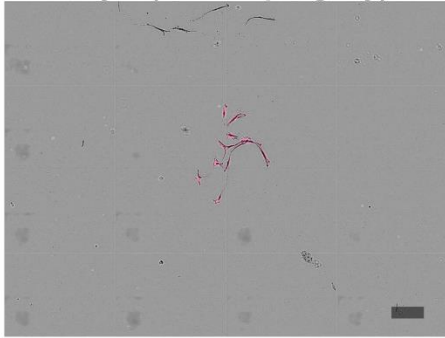


Day 10

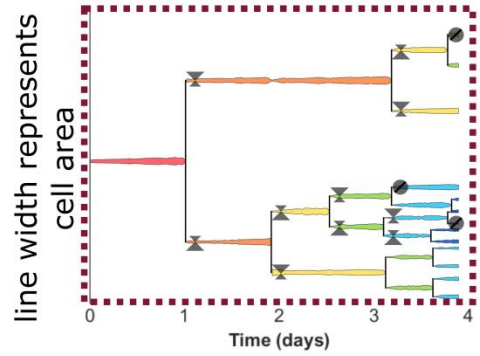
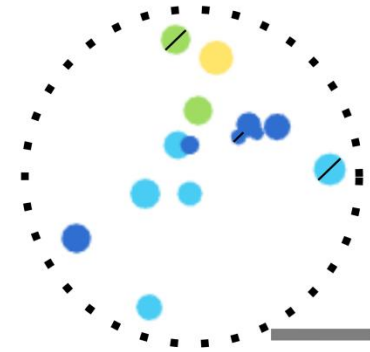
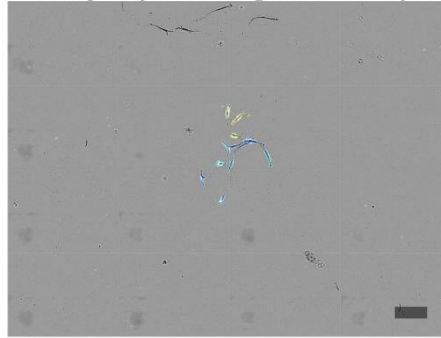


Colony P

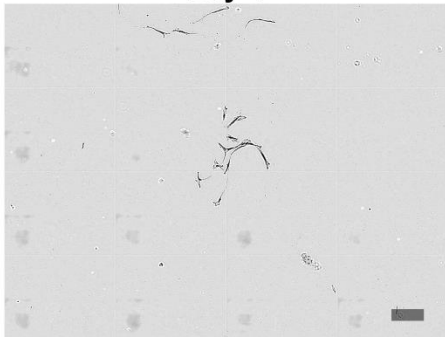
Day 4 (color = progeny)



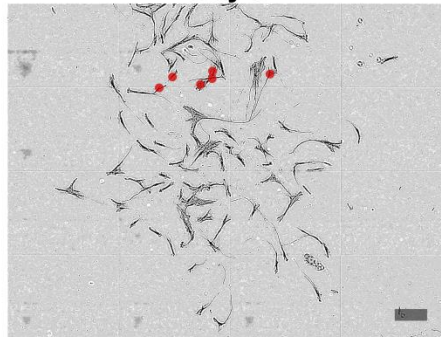
Day 4 (color = generation)



Day 4



Day 7

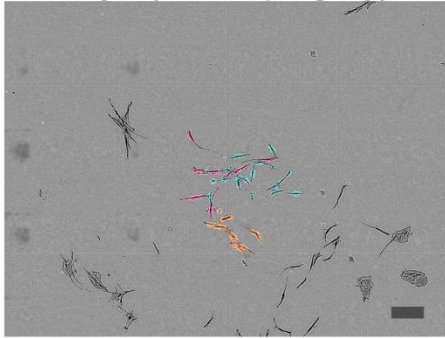


Day 10

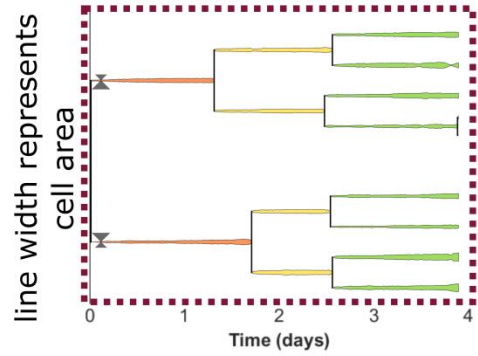
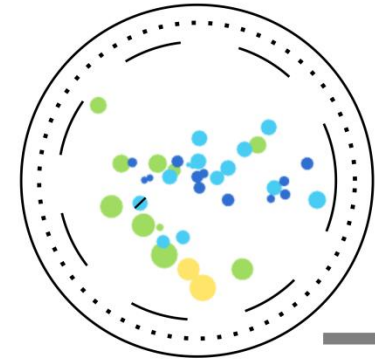
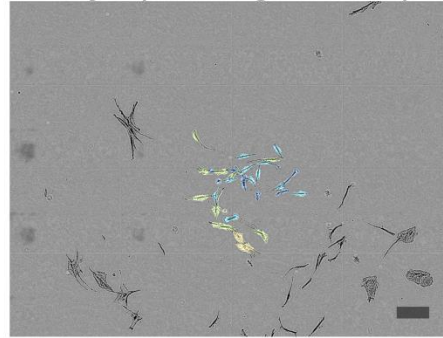


Colony Q1

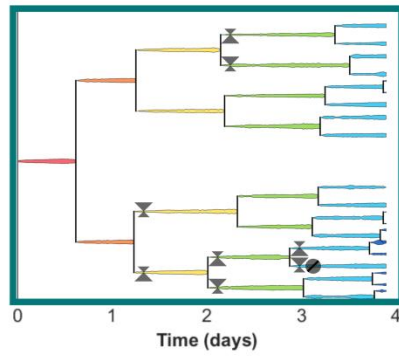
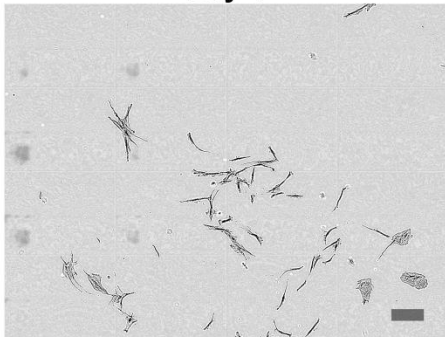
Day 4 (color = progeny)



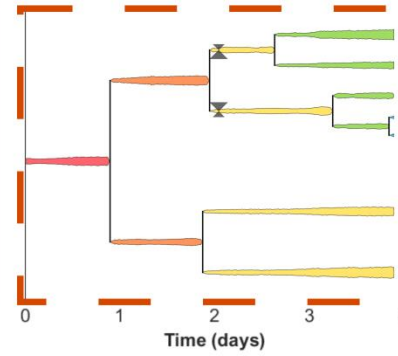
Day 4 (color = generation)



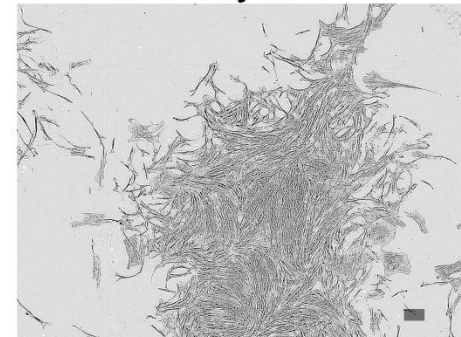
Day 4



Day 7

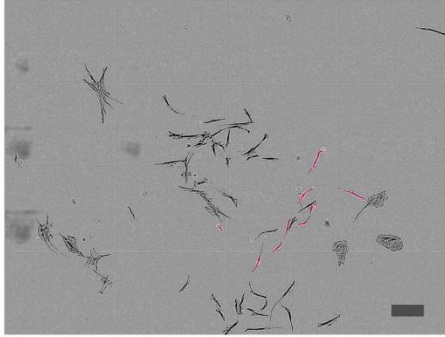


Day 10

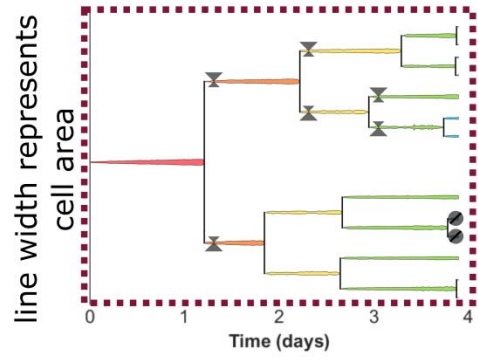
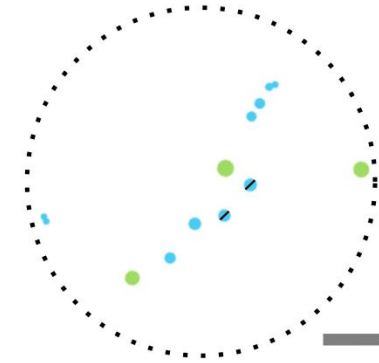
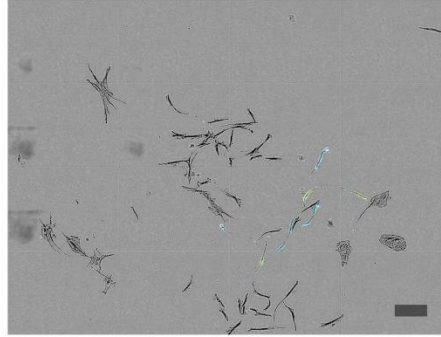


Colony Q2

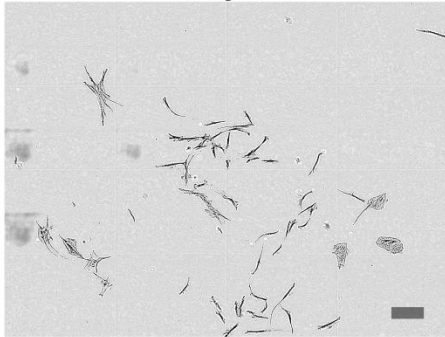
Day 4 (color = progeny)



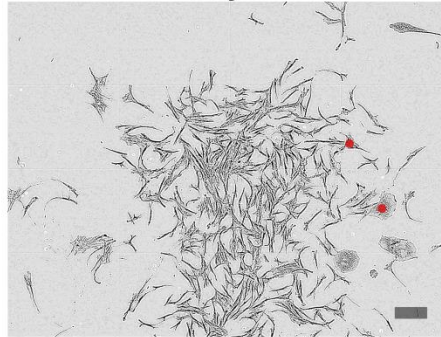
Day 4 (color = generation)



Day 4



Day 7

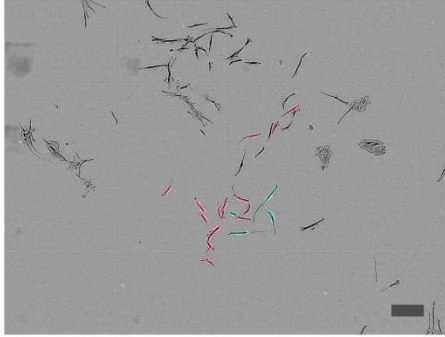


Day 10

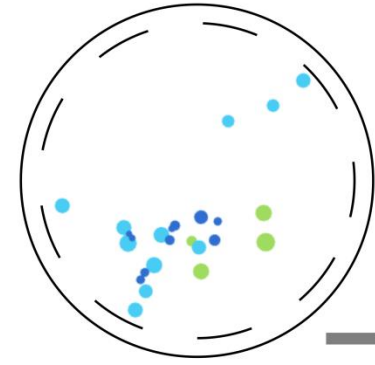
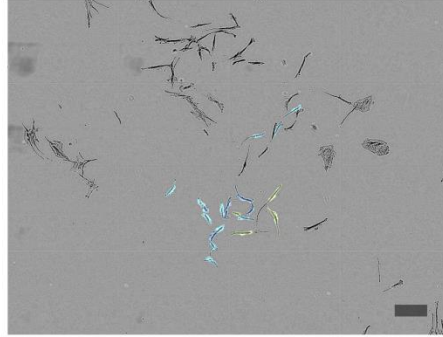


Colony R

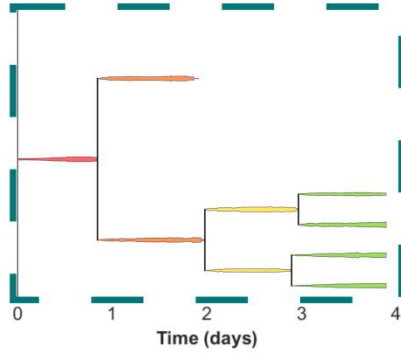
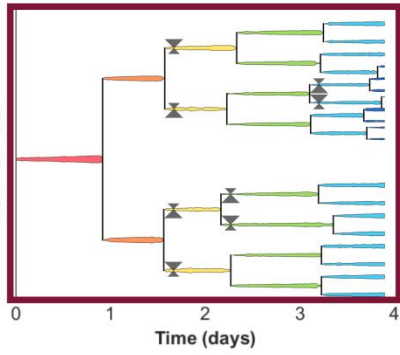
Day 4 (color = progeny)



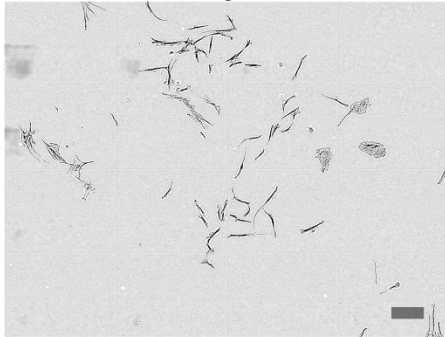
Day 4 (color = generation)



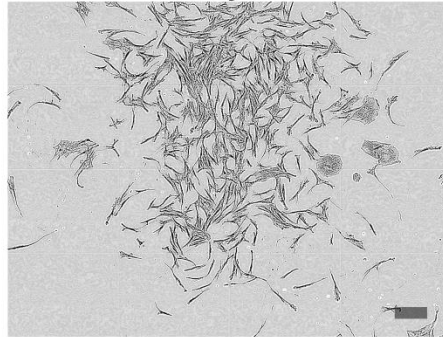
line width represents cell area



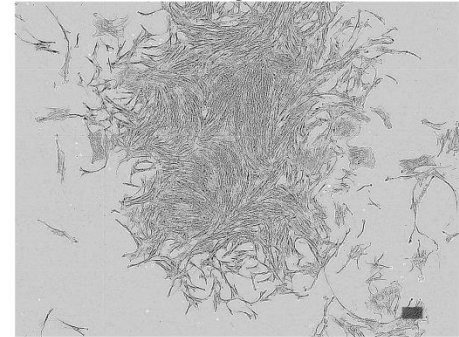
Day 4



Day 7

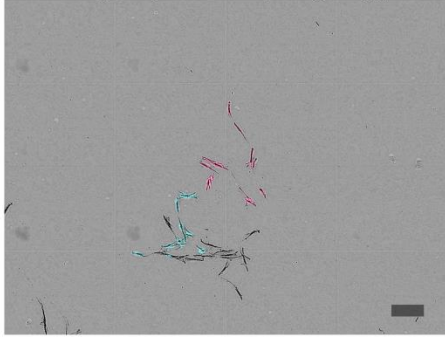


Day 10

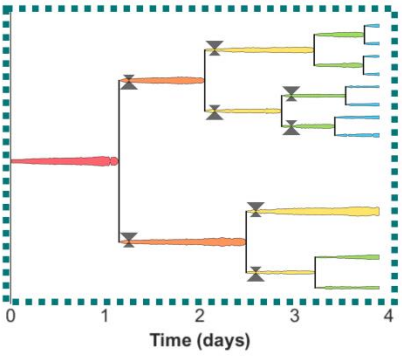
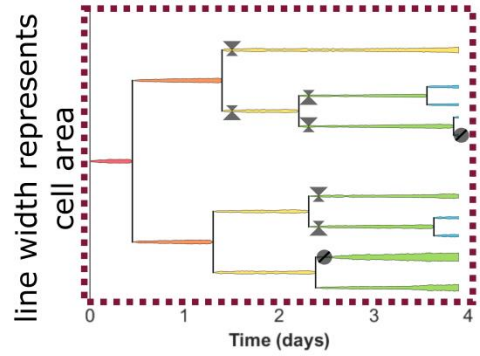
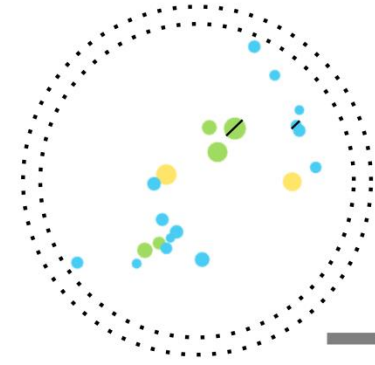
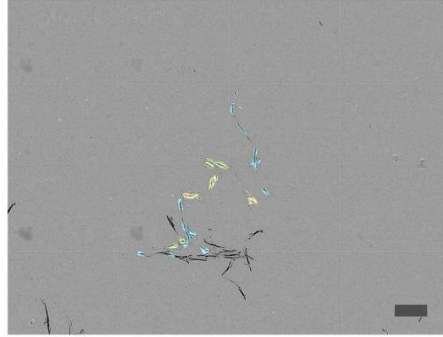


Colony S

Day 4 (color = progeny)



Day 4 (color = generation)



Day 4



Day 7

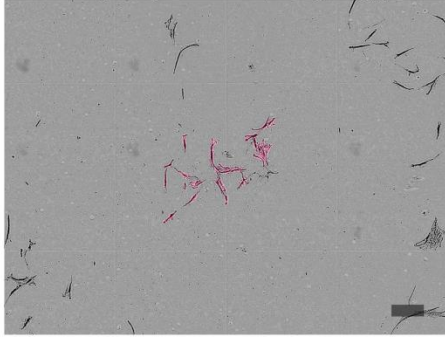


Day 10

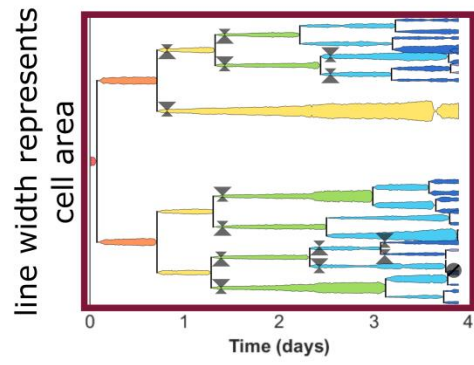
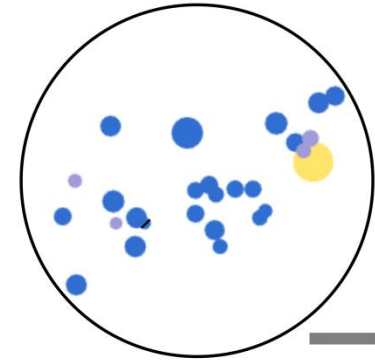
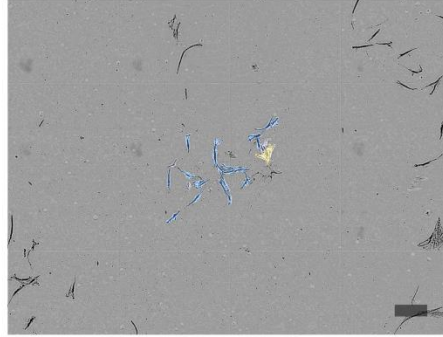


Colony T

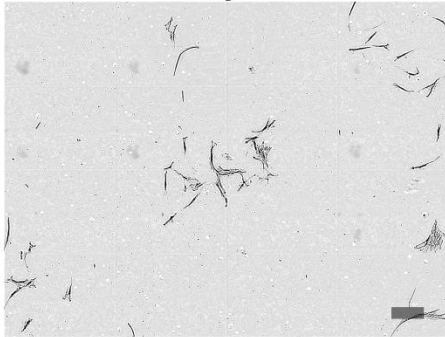
Day 4 (color = progeny)



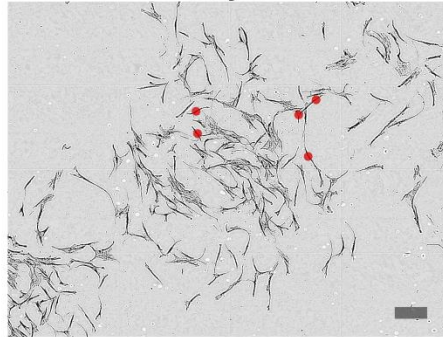
Day 4 (color = generation)



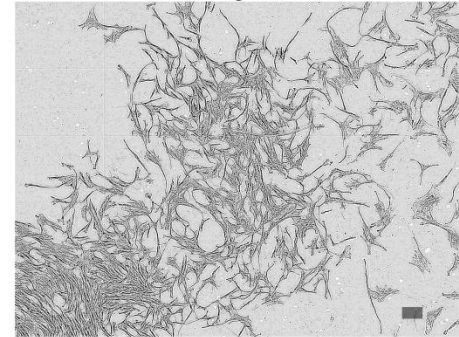
Day 4



Day 7



Day 10

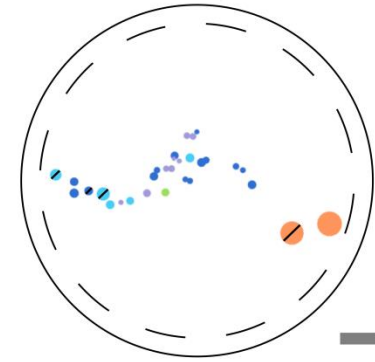
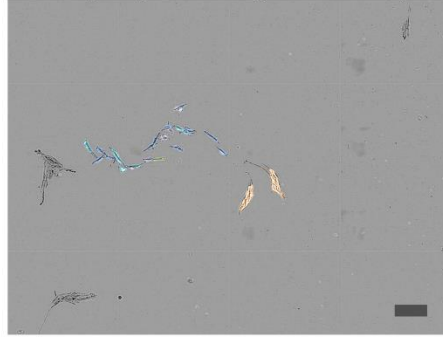


Colony U

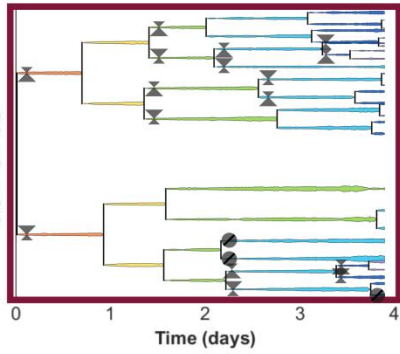
Day 4 (color = progeny)



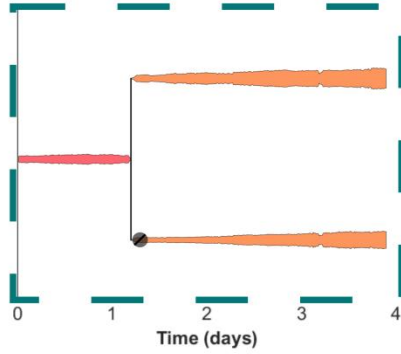
Day 4 (color = generation)



line width represents cell area



Day 4



Day 7

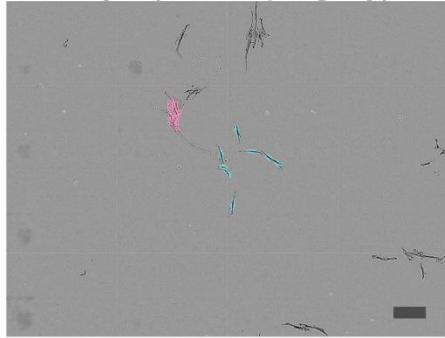


Day 10

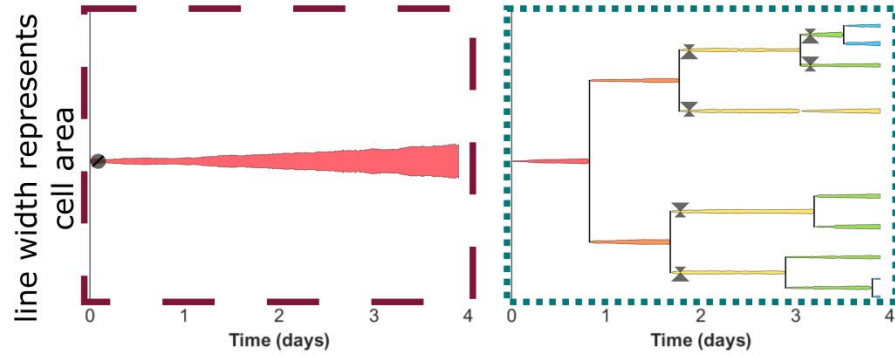
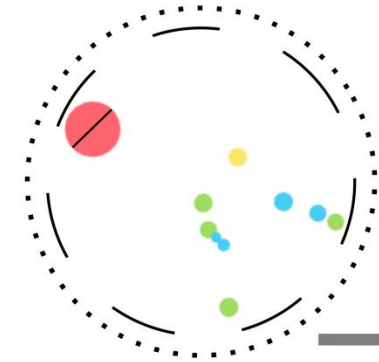
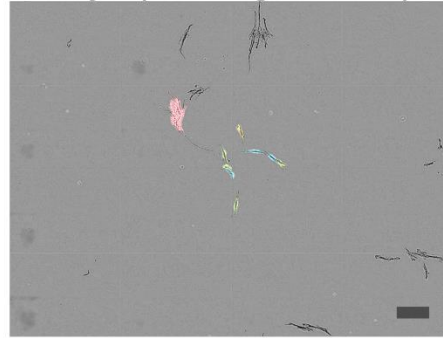


Colony V

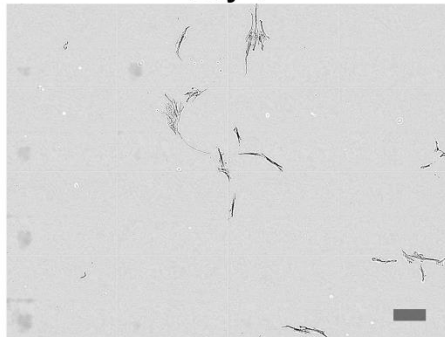
Day 4 (color = progeny)



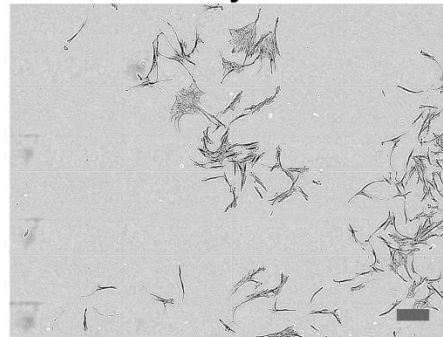
Day 4 (color = generation)



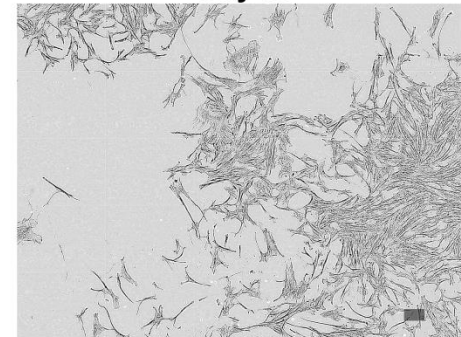
Day 4



Day 7

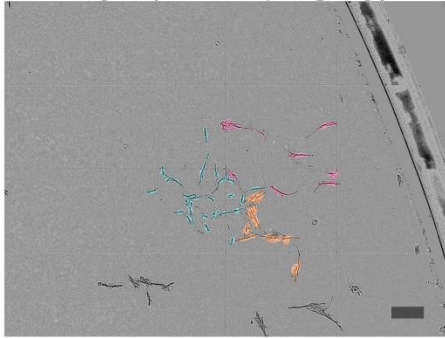


Day 10

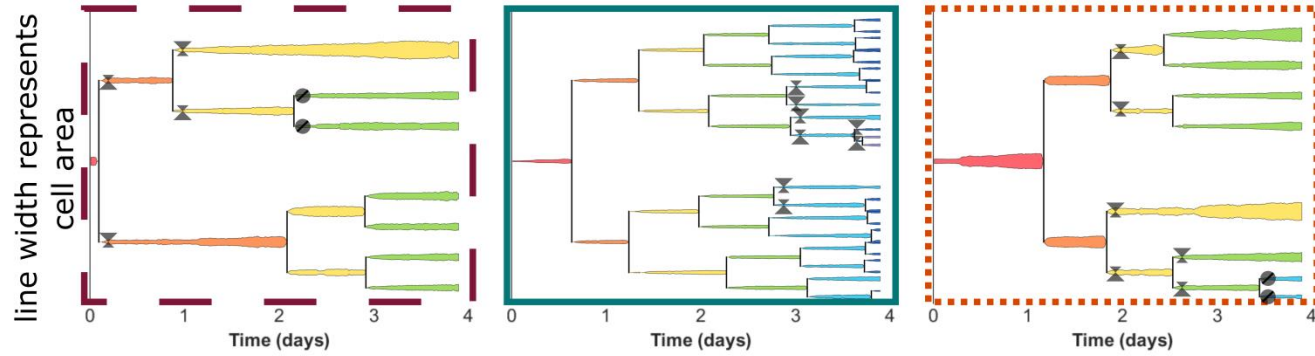
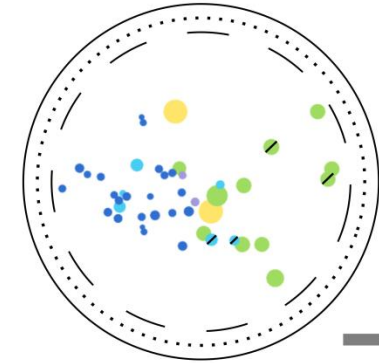
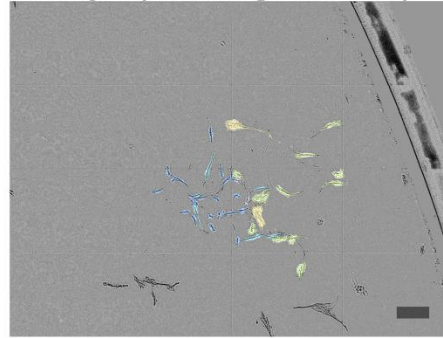


Colony W

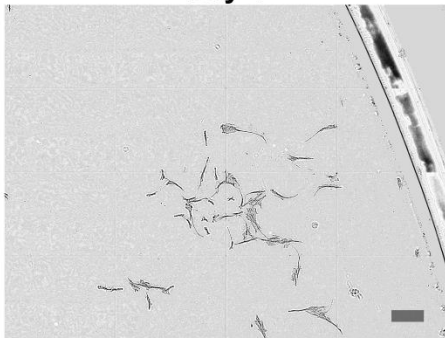
Day 4 (color = progeny)



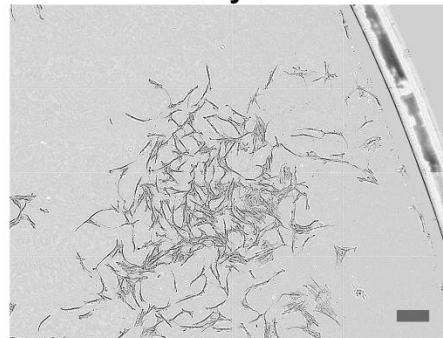
Day 4 (color = generation)



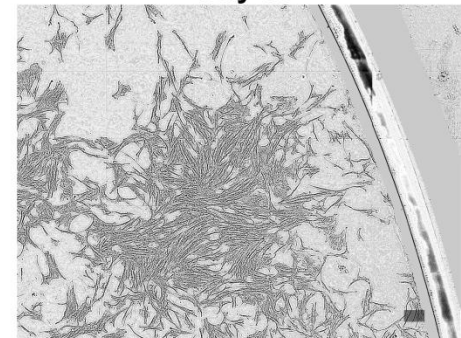
Day 4



Day 7

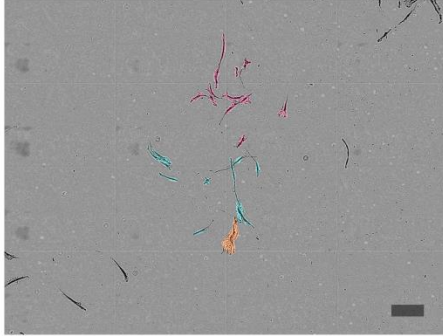


Day 10

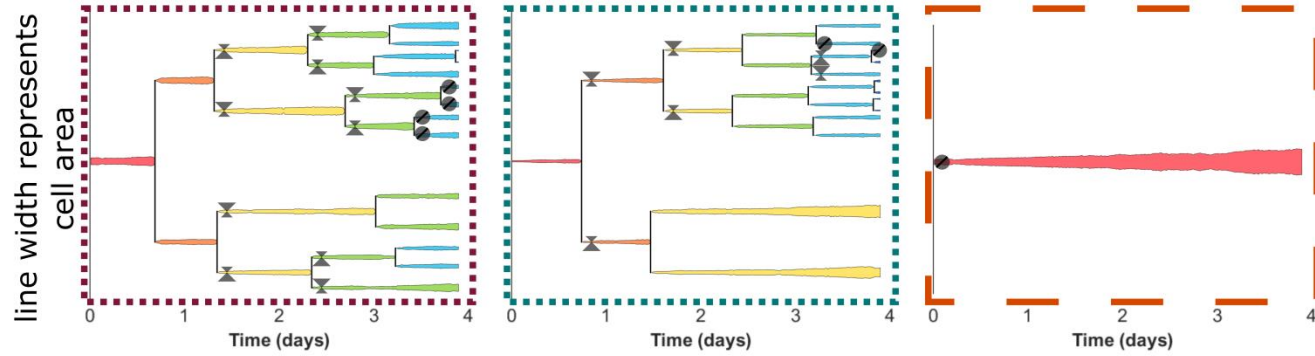
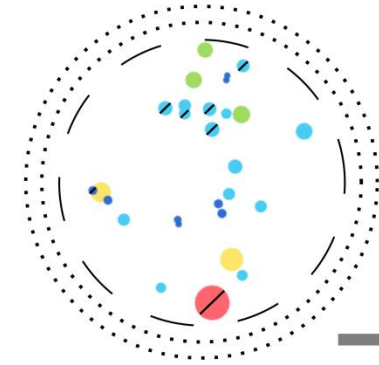
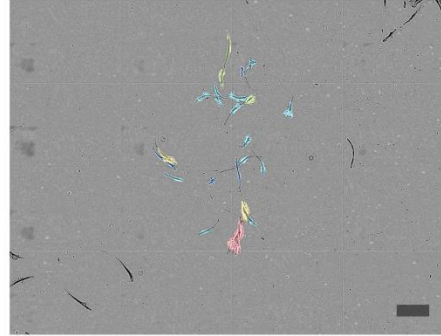


Colony X

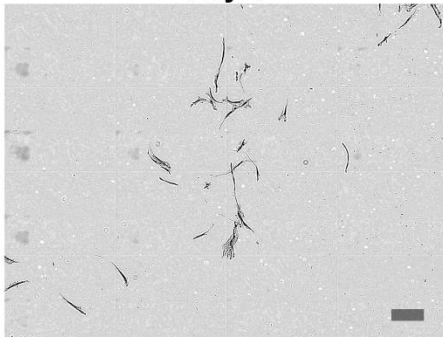
Day 4 (color = progeny)



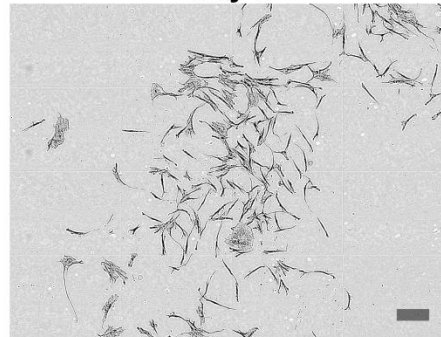
Day 4 (color = generation)



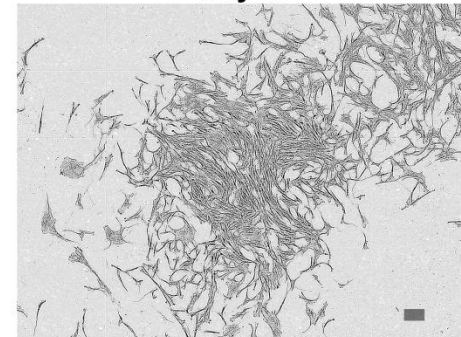
Day 4



Day 7

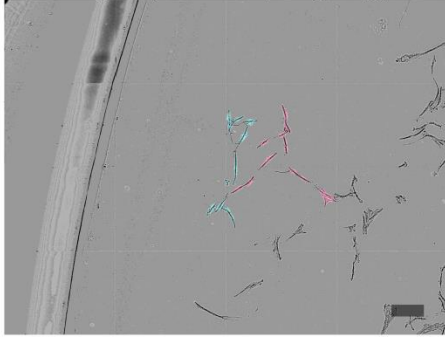


Day 10

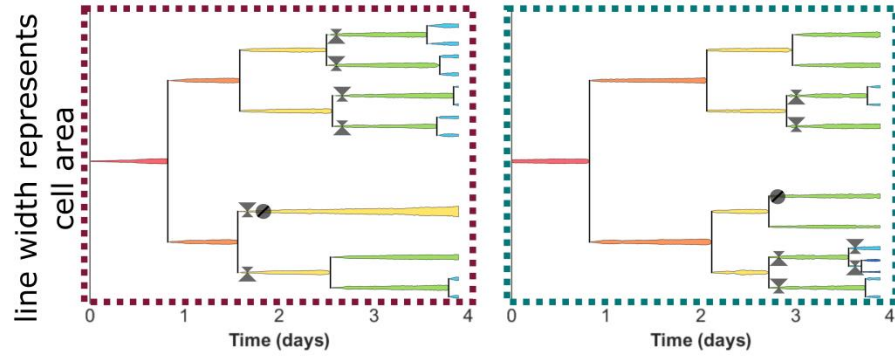
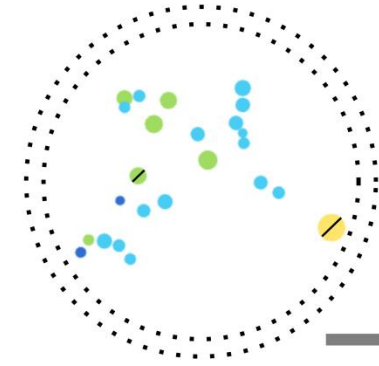
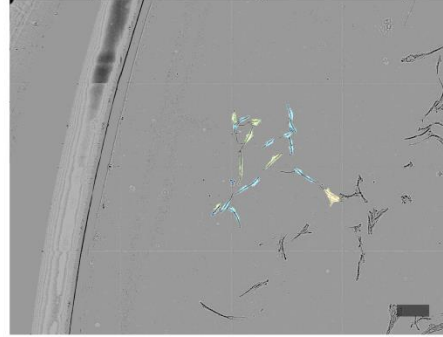


Colony Y

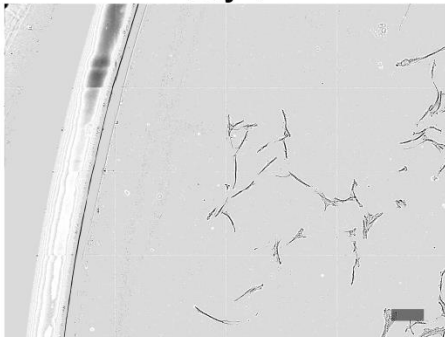
Day 4 (color = progeny)



Day 4 (color = generation)



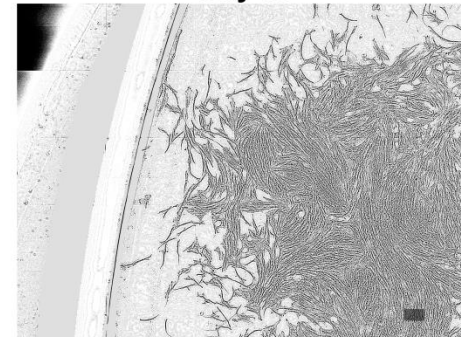
Day 4



Day 7

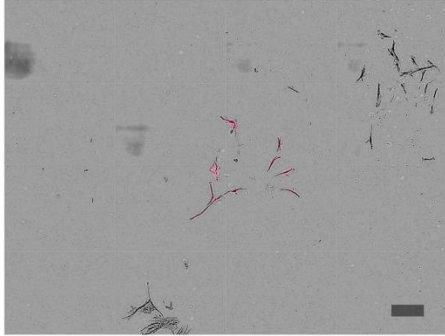


Day 10

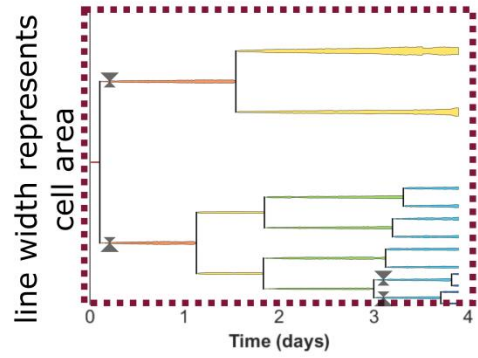
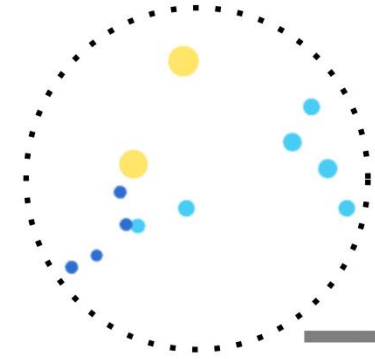
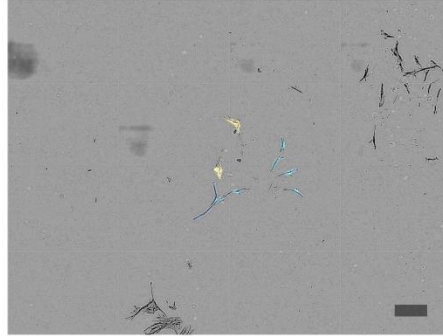


Colony Z

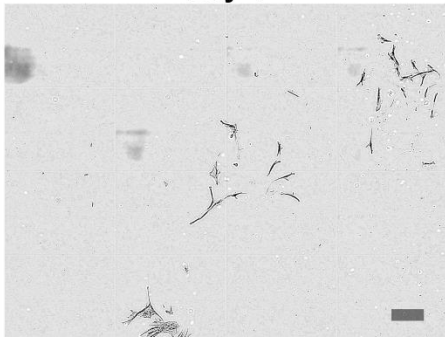
Day 4 (color = progeny)



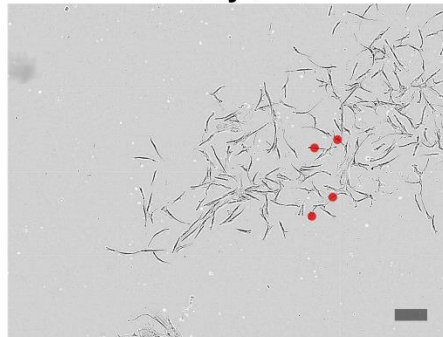
Day 4 (color = generation)



Day 4



Day 7



Day 10

