

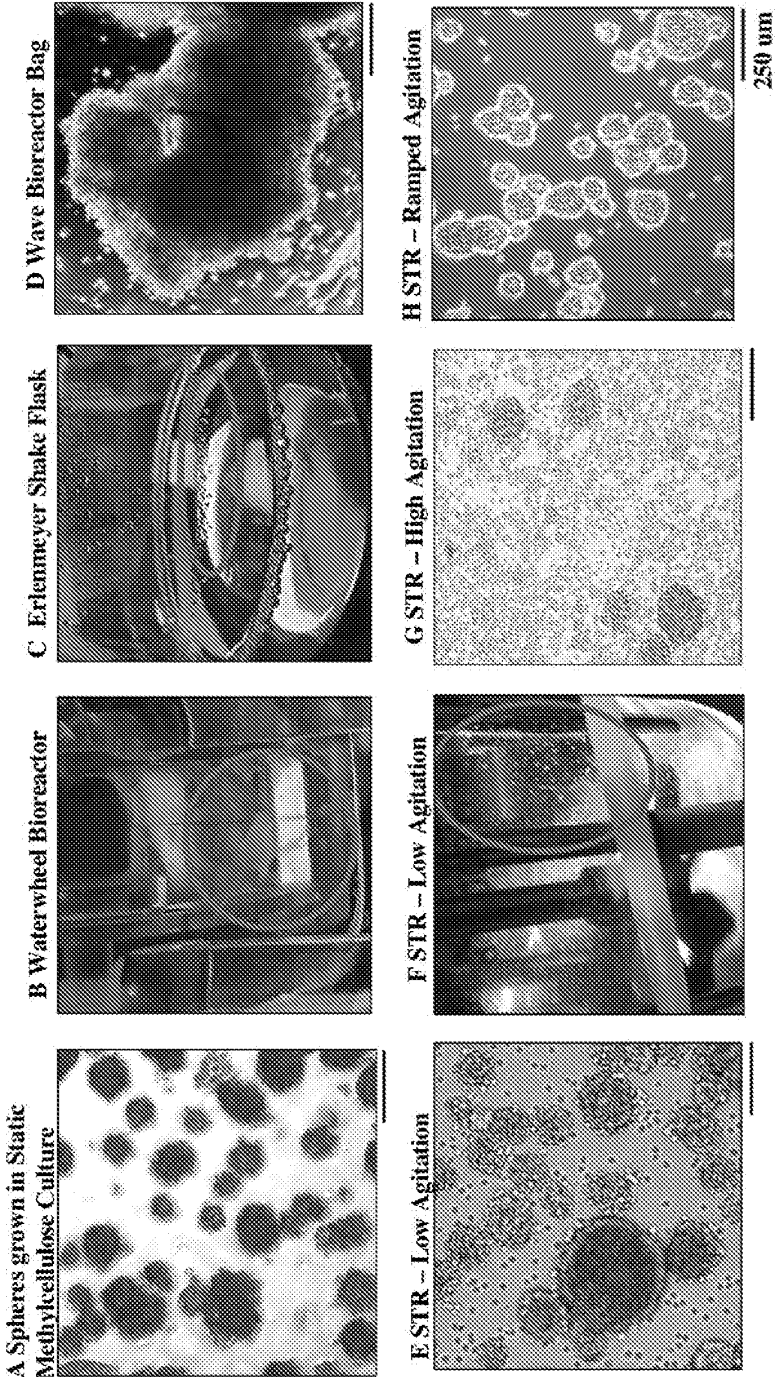


FIG. 1

A Computational Fluid Dynamic derived models of Hydrodynamic conditions with RPM increase

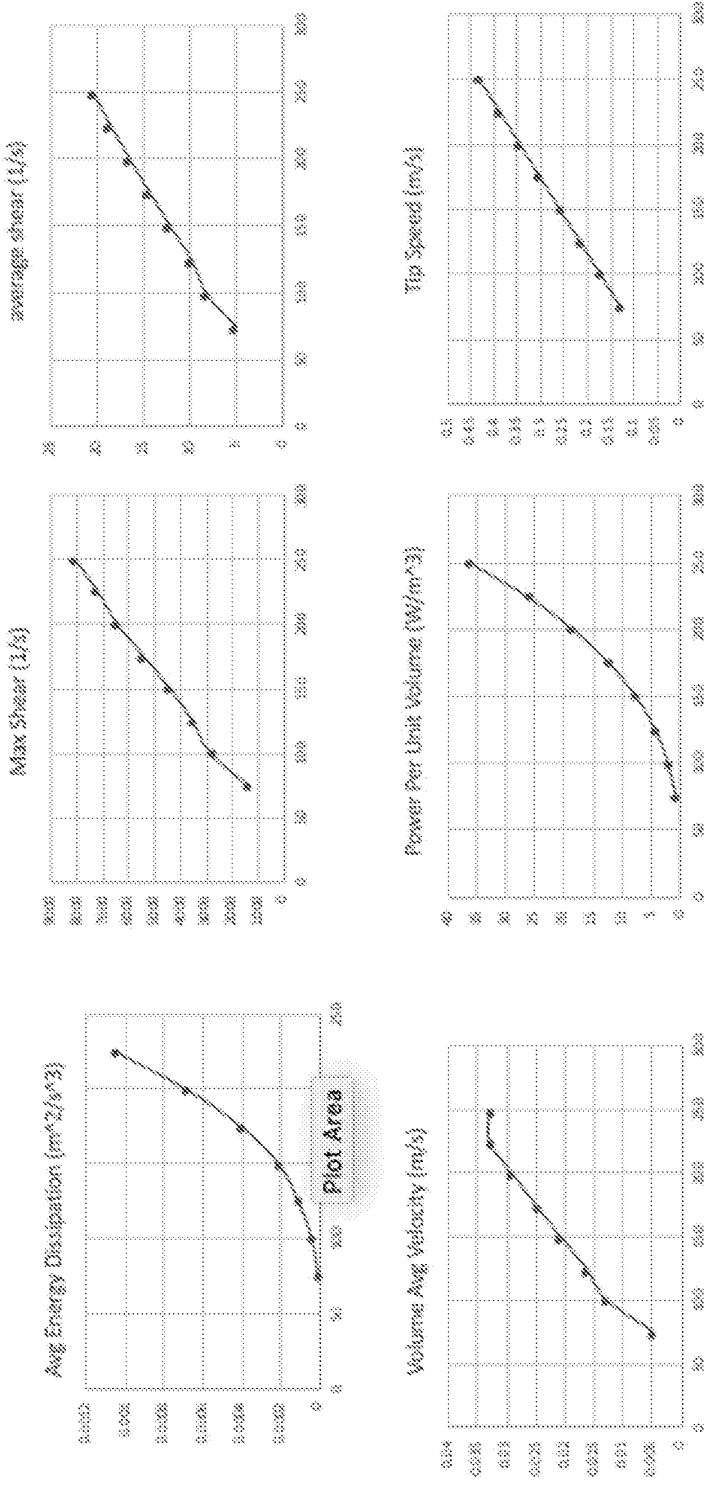


FIG. 2

B AggreCan Correlation to Hydrodynamic Conditions

AggreCan Correlation to Hydrodynamic Conditions	
Hydrodynamic Condition	P Value (ANOVA)
Max Shear Rate (1/s)	0.012
Average Shear Rate (1/s)	0.014
Tip Speed (m/s)	0.016
Volume Avg Velocity (m/s)	0.021
Power Per Unit Volume (W/m ³)	0.023
Avg Energy Dissipation (m ² /s ³)	0.030

FIG. 2 continued

B Shear Forces at Low, Medium, and High RPM

Contour-J volume fraction (cells)

4.81e-01

3.85e-01

2.88e-01

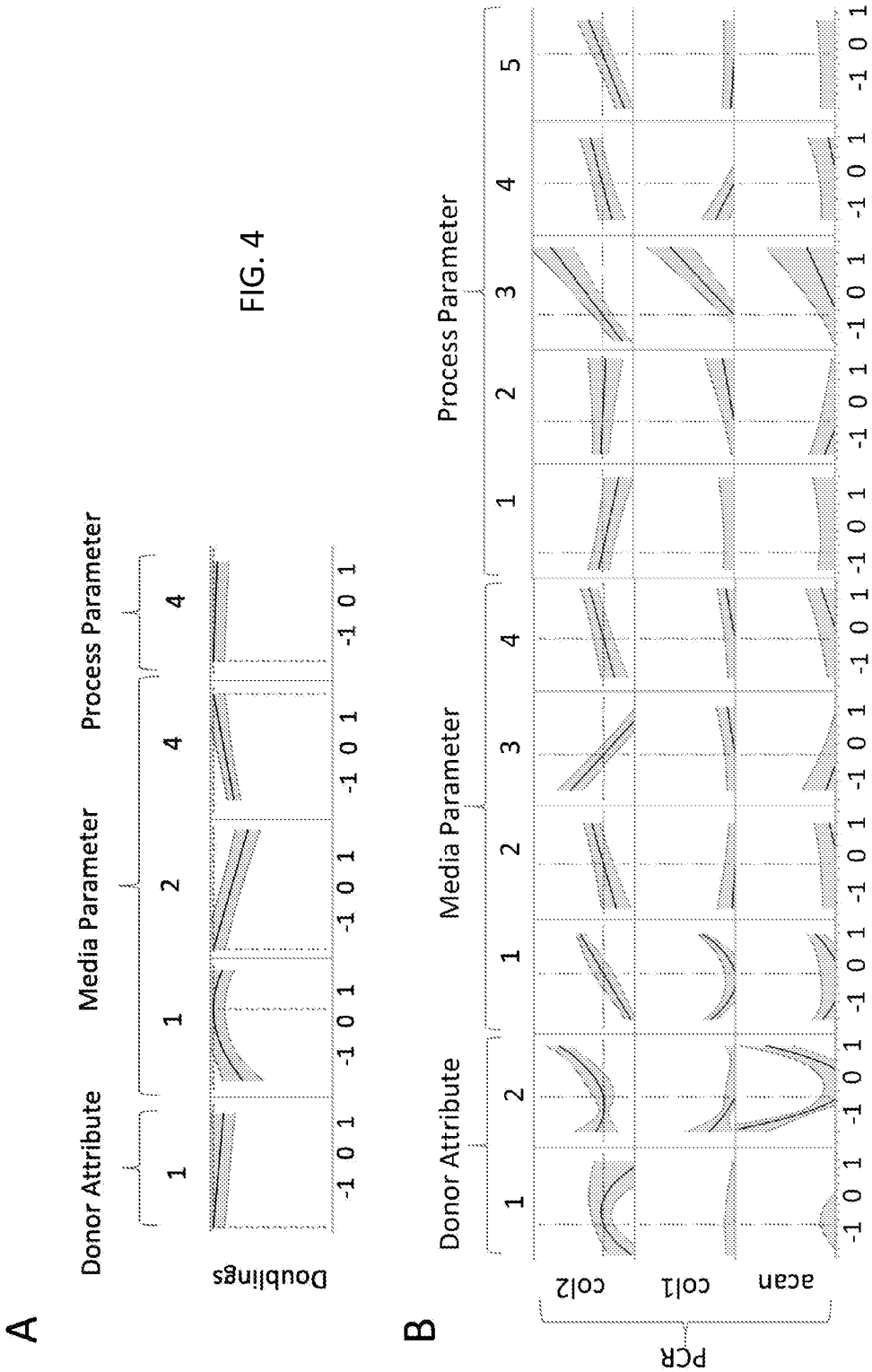
1.92e-01

9.61e-02

1.78e-12

Figure 1 is a 3x3 grid of bar charts showing the RPM in STR for three genes (RPM1, RPL10, RPL13) across three culture conditions (Low, Medium, High) and three dynamic time points (0, 1, 2). The y-axis is RPM in STR (0-100). The x-axis is Days in Culture (0, 1, 2). The legend indicates Low (solid black), Medium (dashed), and High (dotted) conditions. RPM1 shows a significant increase in RPM over time, especially in the High condition. RPL10 and RPL13 show relatively stable RPM across all conditions and time points.

FIG. 3



A

Image	Donor Attribute 1	Donor Attribute 2	Process Parameter 1	Process Parameter 2
A	-1	-1	≤ -0.33	≤ -0.57
B	-1	1	≤ -0.11	≤ -0.72
C	1	-1	≤ -0.56	≥ -0.59
D	1	1	≤ -0.11	≤ -0.72
Ranges	-1 to 1	-1 to 1	-1 to ≤ -0.56	-0.72 to -0.49

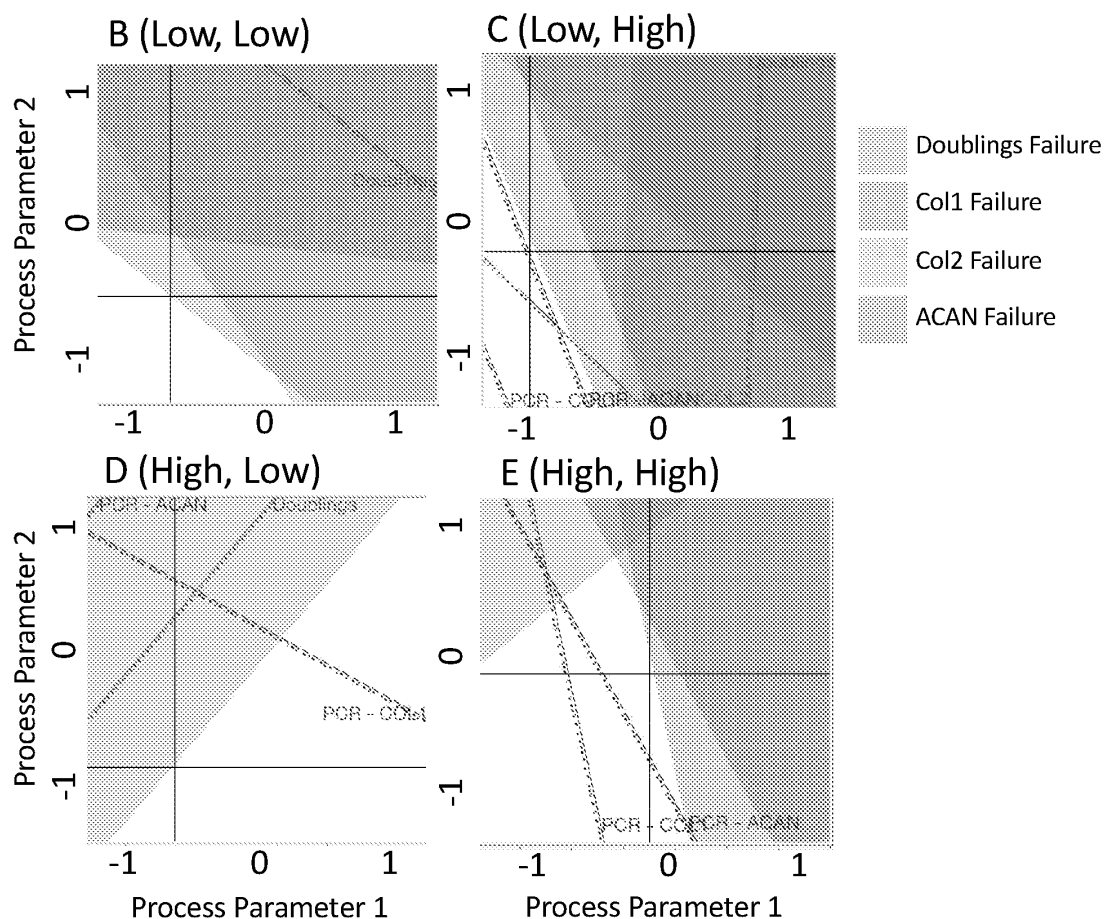


FIG. 5

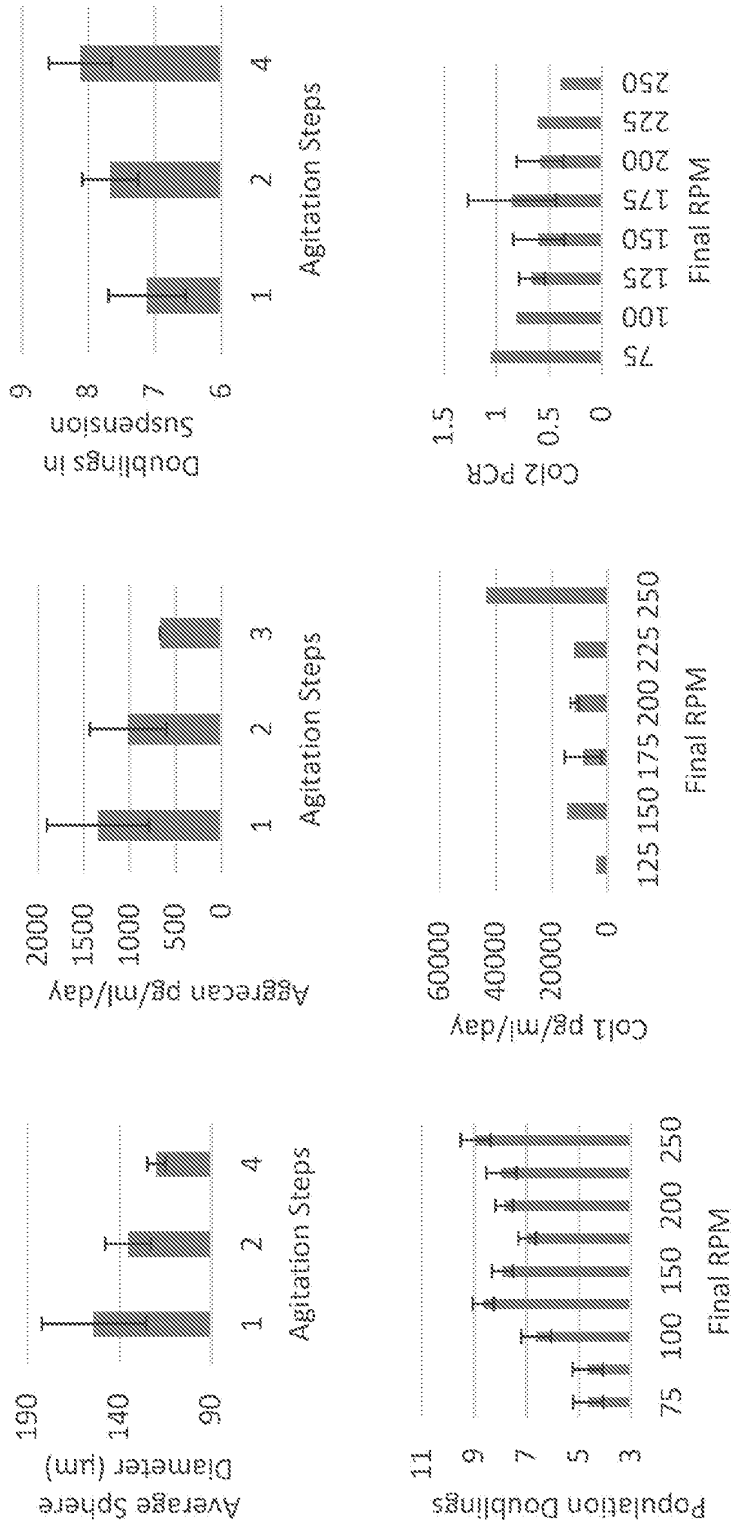


FIG. 6

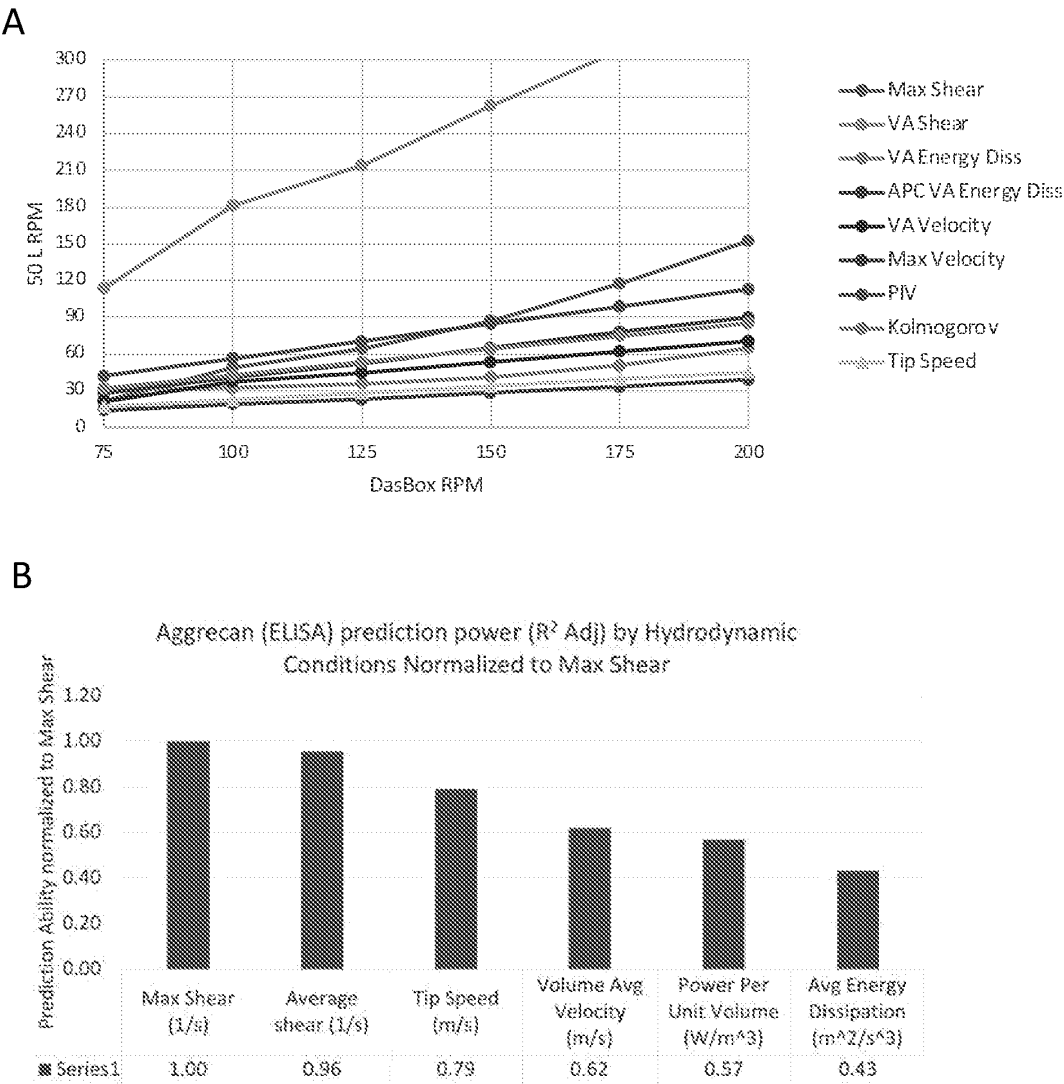


FIG. 7

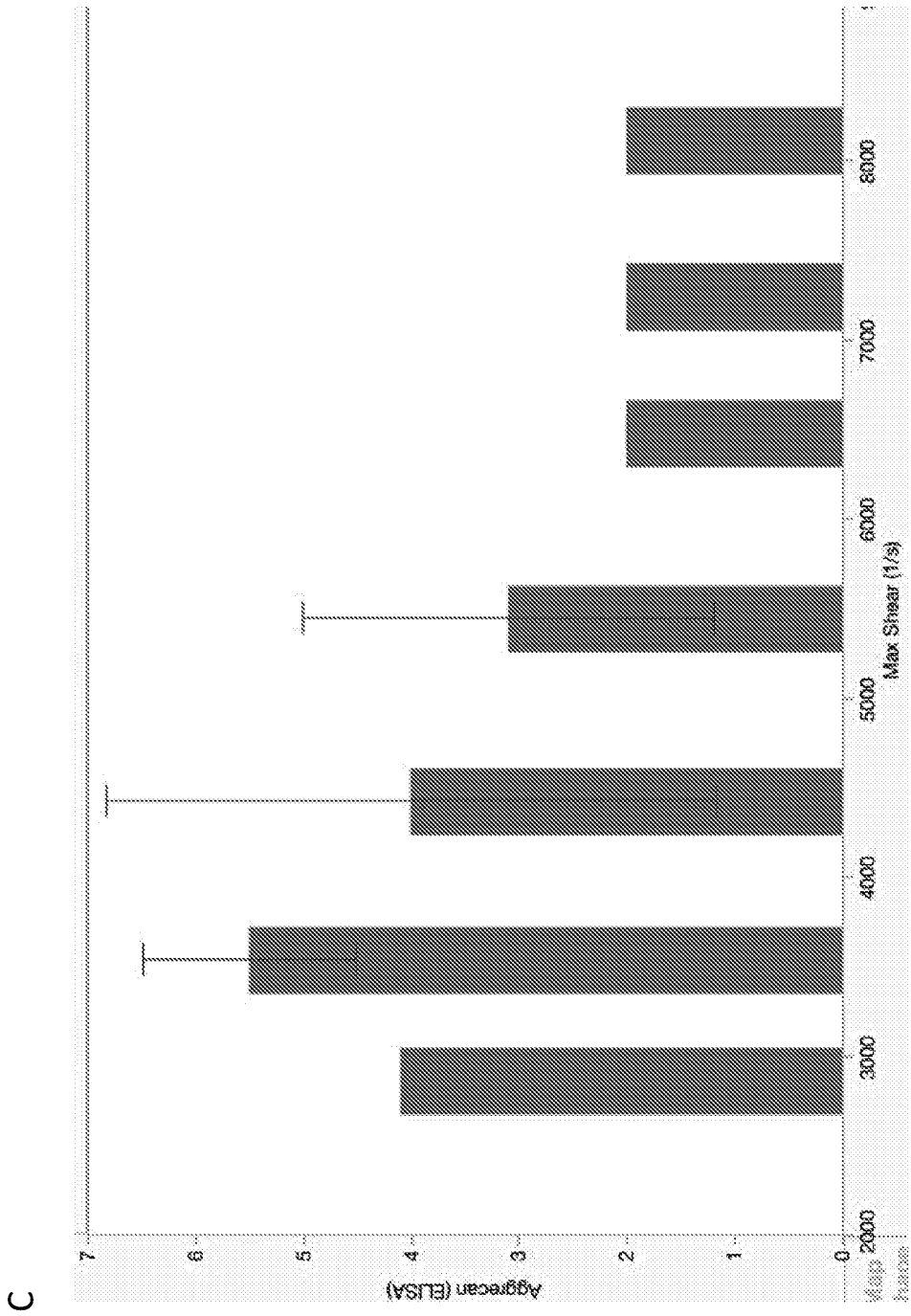


FIG. 7 continued

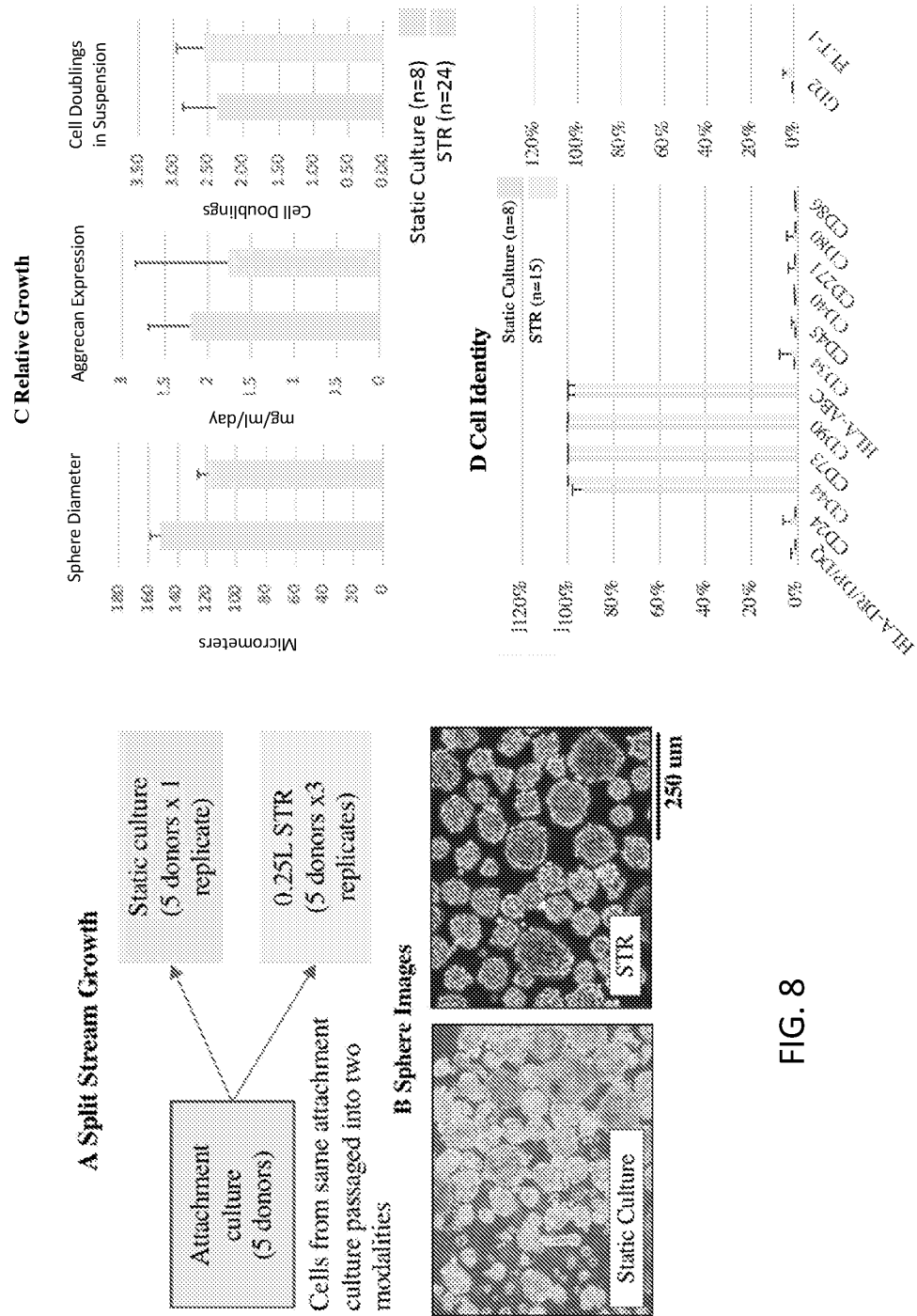


FIG. 8

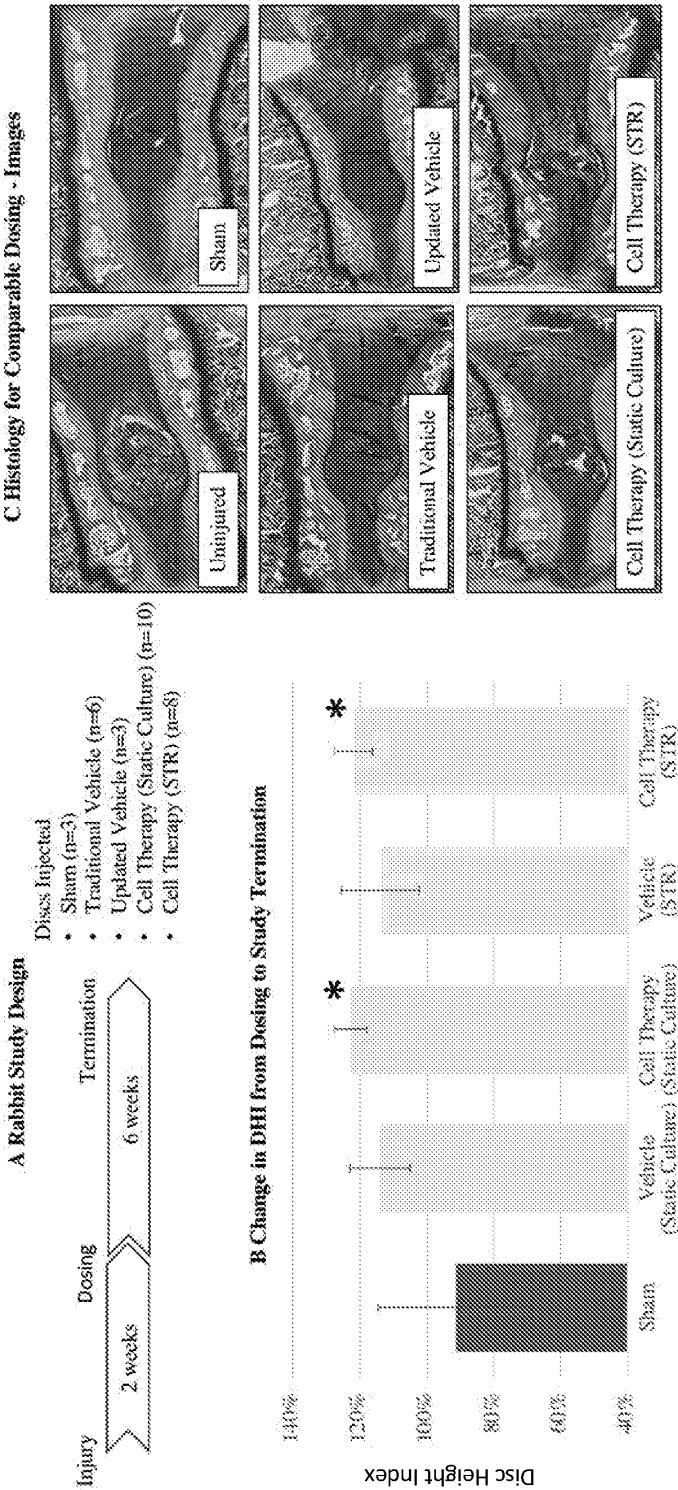


FIG. 9

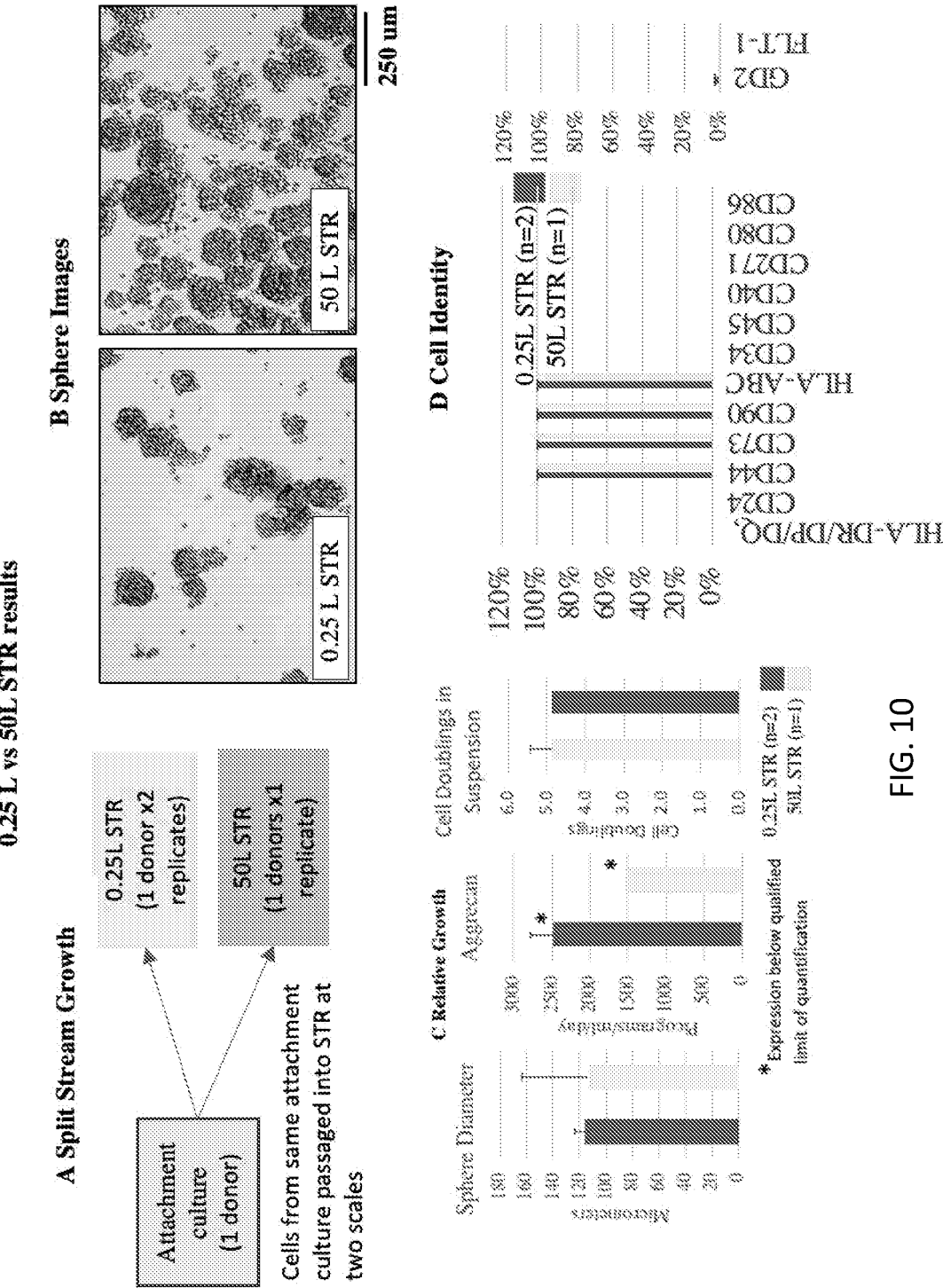


FIG. 10

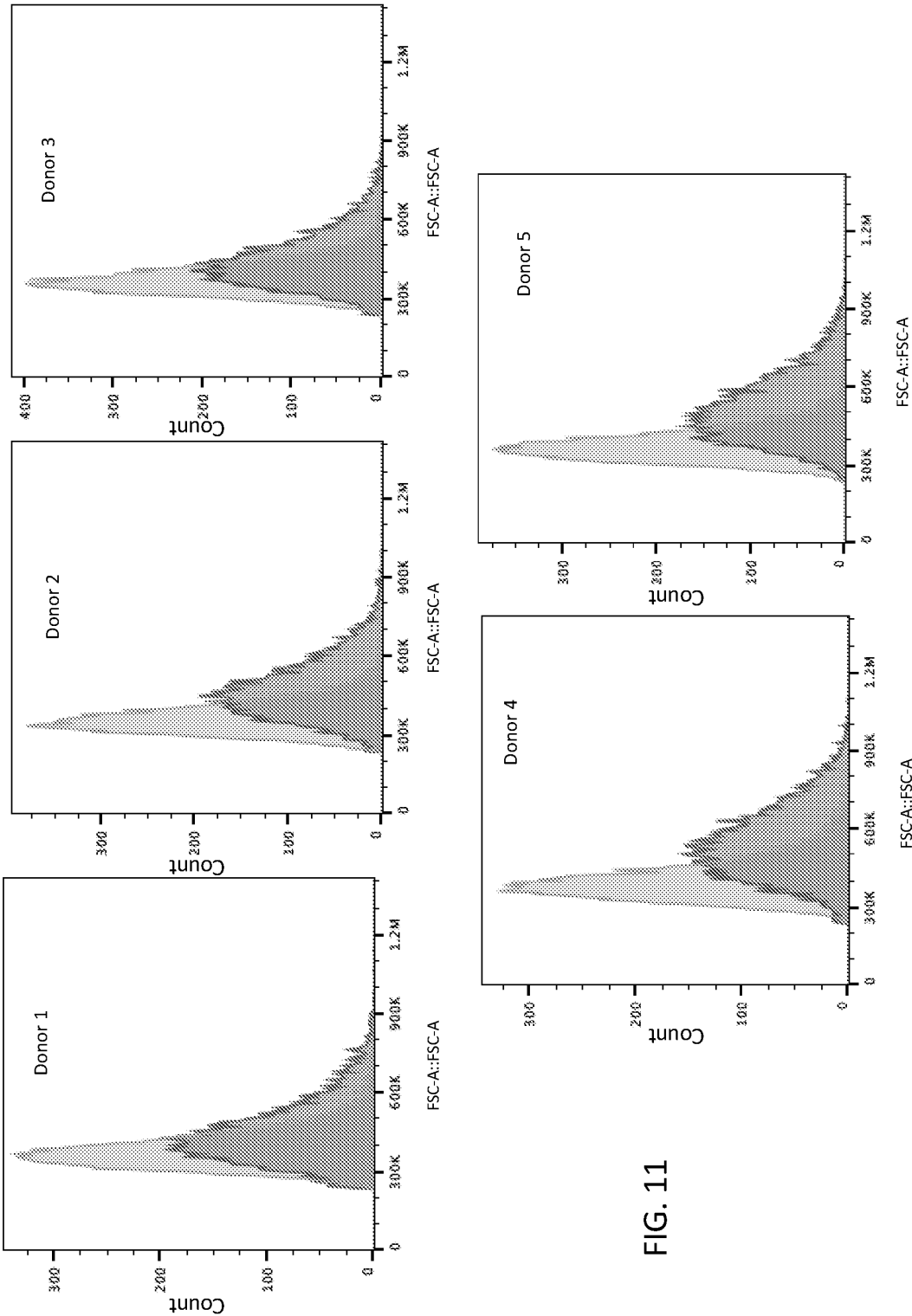


FIG. 11

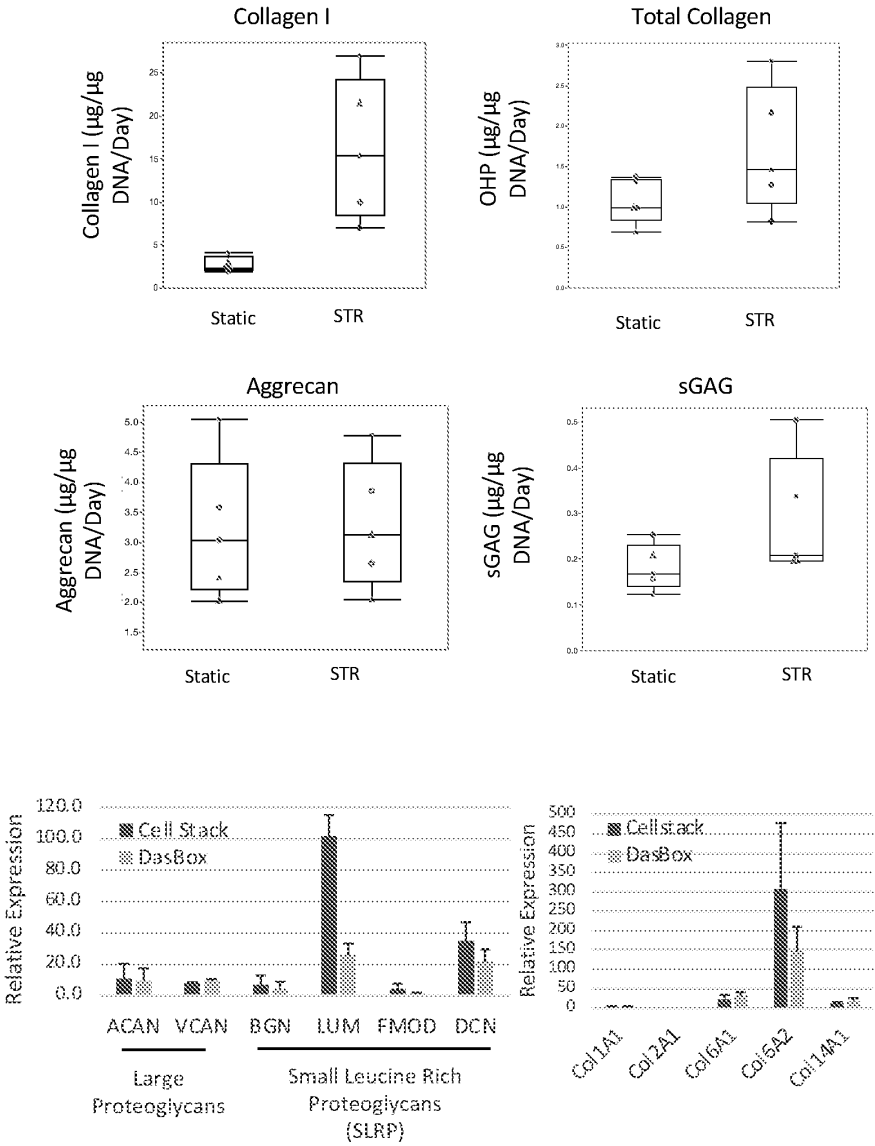


FIG. 12

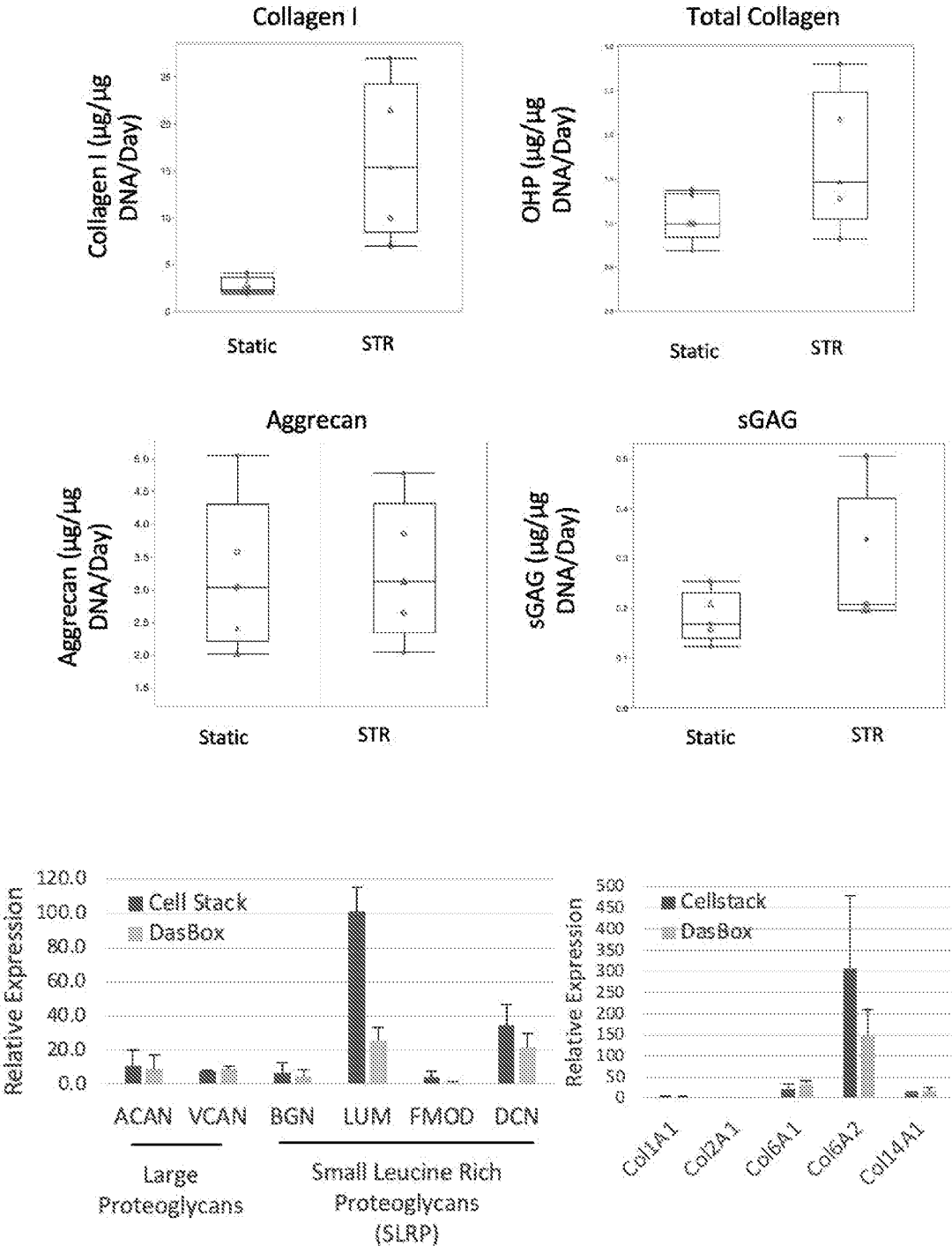


FIG. 12

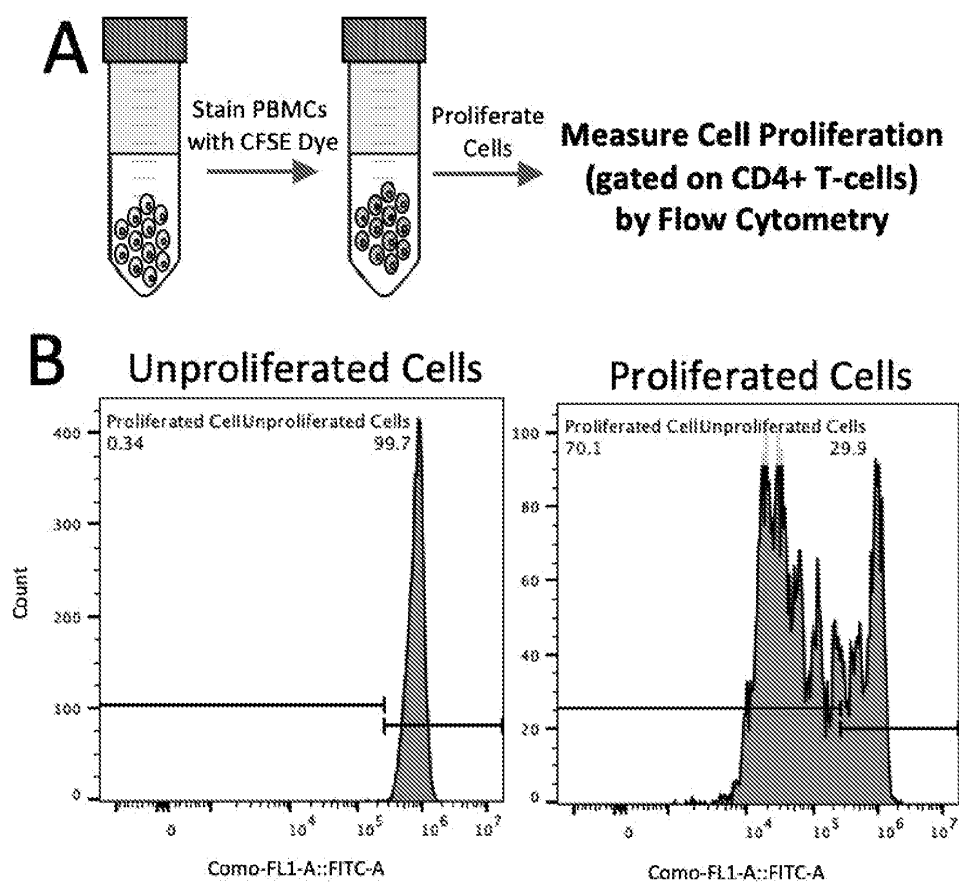


FIG. 13

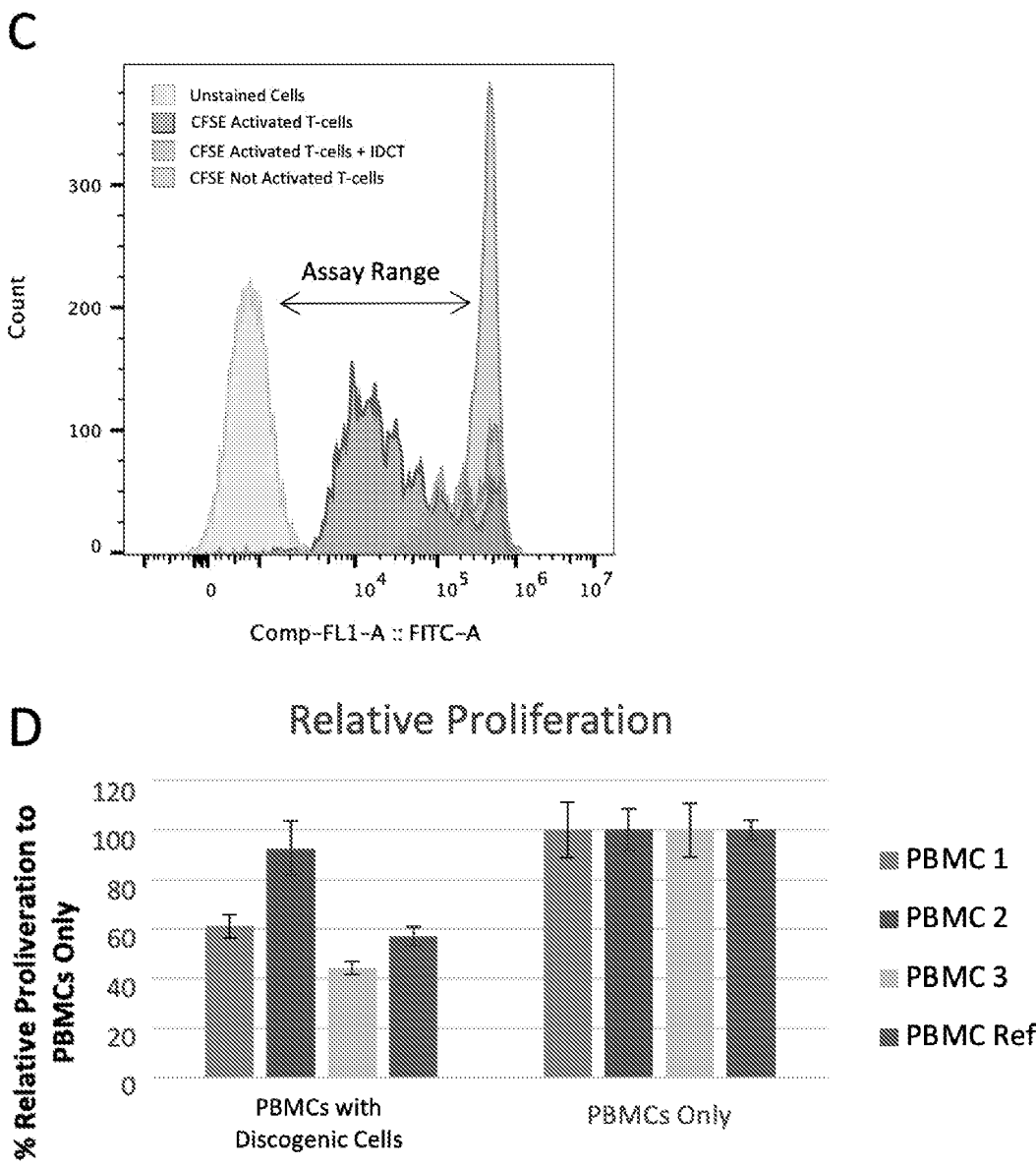


FIG. 13 continued