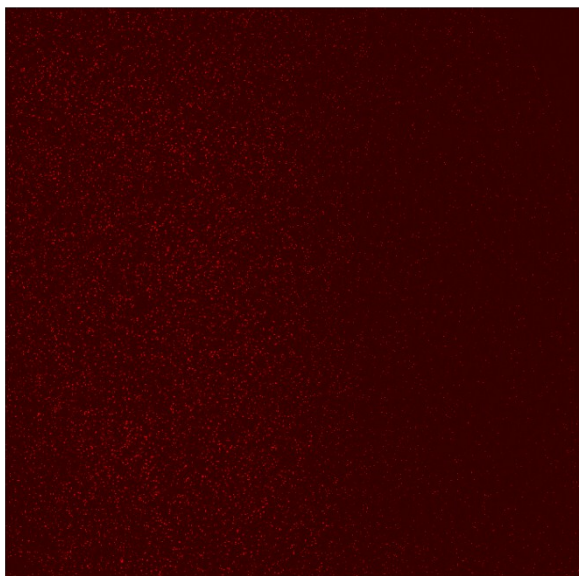


Lab on a Chip

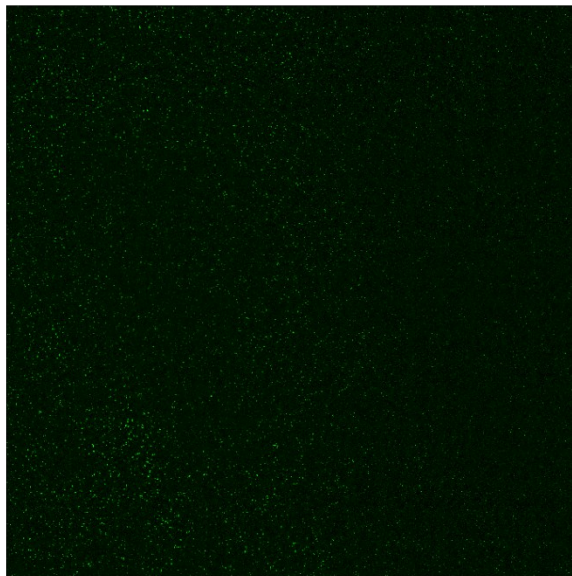
Supplementary Information

Supplementary Figure 1: Raw images of cell-laden hydrogel after 48 hours of growth showing (a) chlorophyll fluorescence (b) BODIPY 493/503 stained lipid bodies

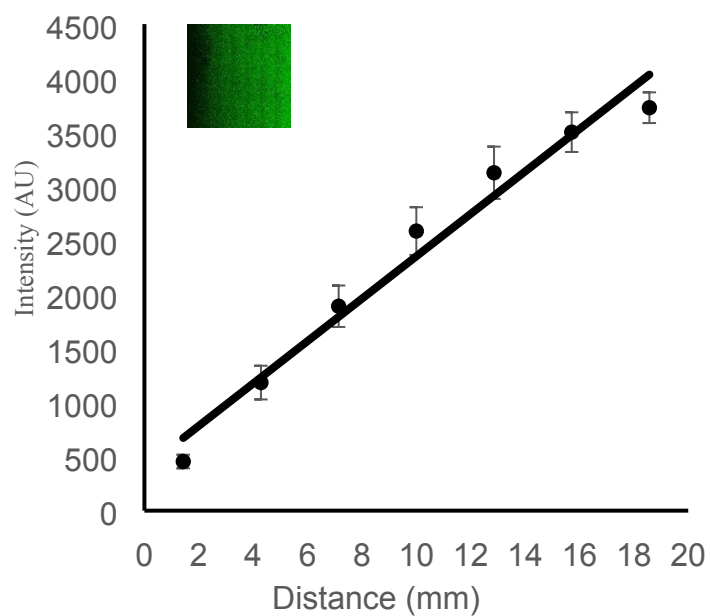
(a)



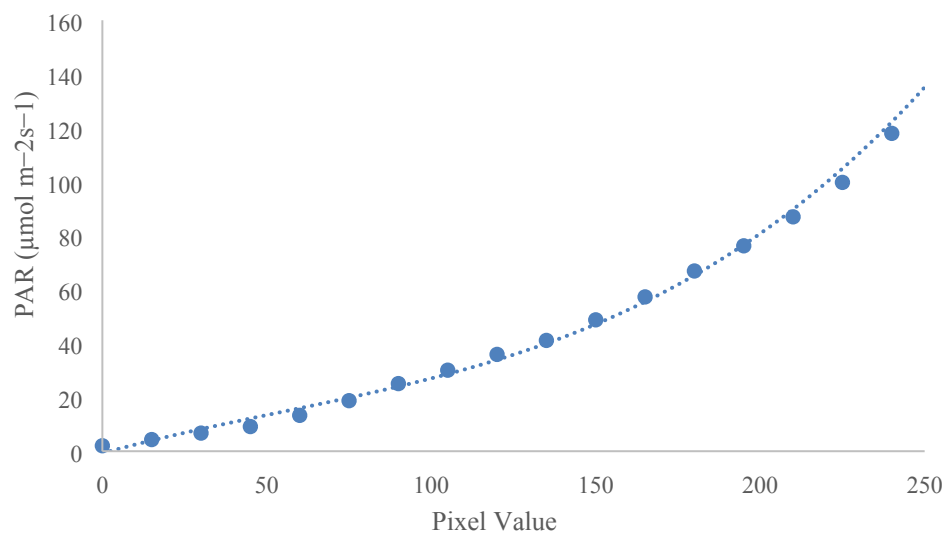
(b)



Supplementary Figure 2: Fluorescein characterization of gradient generator at approximately 100hrs. Note that the diffusion coefficient of fluorescein is approximately a quarter of that of ammonium.



Supplementary Figure 3: Light Intensity dependence of pixel value. This curve is used to select the appropriate pixel value to obtain the desired light intensity.



Calculations for diffusion time:

$$t \approx \frac{x^2}{2D} = \frac{(20\text{cm})^2}{2\left(\frac{\sim 2\text{cm}^2 \times 10^{-5}}{\text{s}}\right)} \approx 28 \text{ hours}$$

Supplementary Figure 4: Smoothed growth data.

