

# Single Cell Analysis of [18F]Fluorodeoxyglucose Uptake by Droplet Radiofluidics

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## Supplemental Information

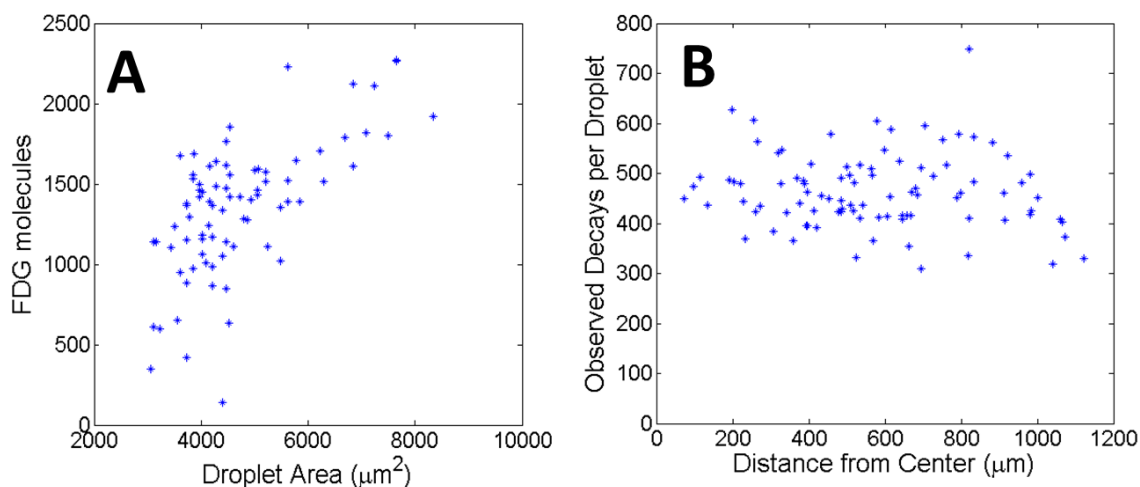
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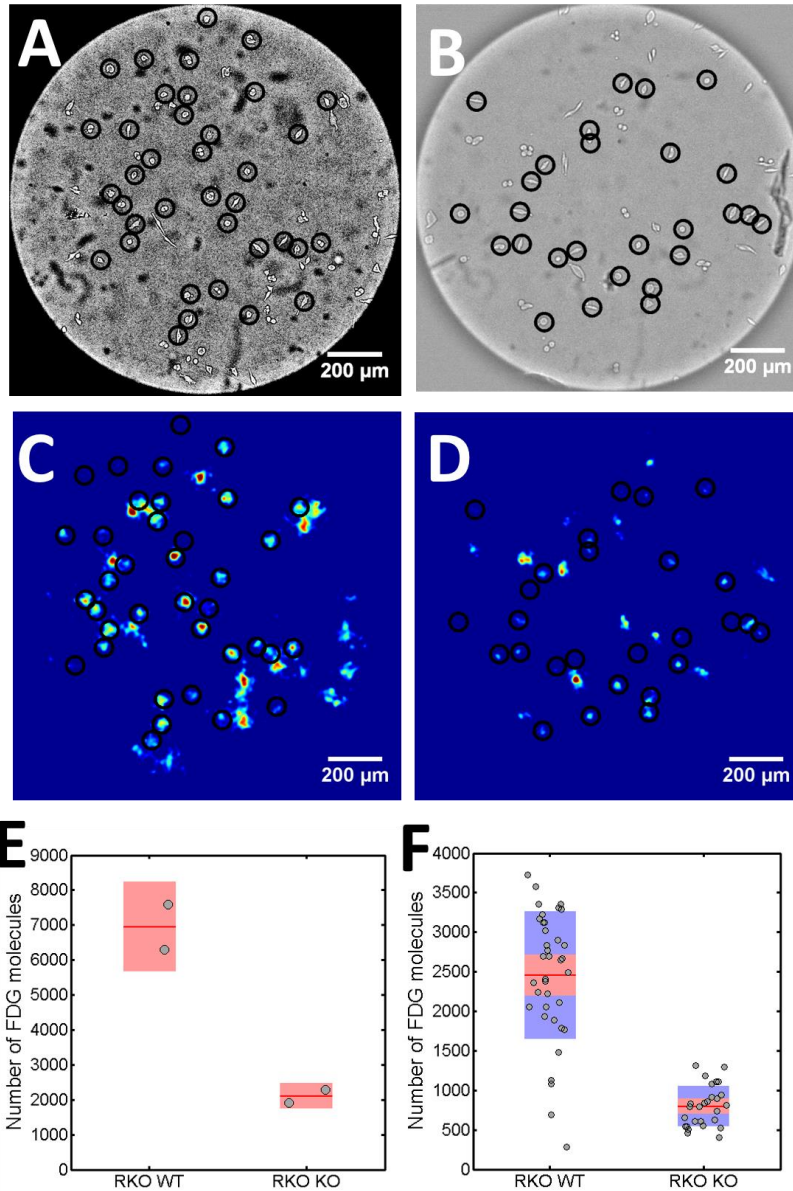
## Movie Caption:

**Movie S-1.** Video visualizing droplet radiofluidics. The droplets contain either a fluorophore (green droplets) or a radioactive glucose analog, FDG (clear droplets). The captured visible light from individual beta particles that enter the scintillator are shown in red and overlaid on a bright-field image of the droplet array. Most detected beta particles coincide with the FDG filled droplets (clear droplets). Images were acquired every 200ms and the video is in real time.

## Figures:



**Figure S-1. a)** Number of radioactive  $^{18}\text{F}$ -fluorodeoxyglucose (FDG) molecules determined by radioluminescence with respect to the droplet area. The number of molecules generally increases with the droplet area. Some of the smaller droplets show low number of FDG molecules. Small droplets have a spherical shape in the anchors and thus less contact with the scintillator substrate below. **b)** Observed decays per drop as a function of the distance of the droplet from the center of the image for droplets of uniform size. The flat distribution shows the uniform sensitivity of the imaging system.



**Figure S-2.** Analysis of adherent colon cancer cells with wild-type (RKO WT) and glucose transporter 1 knockout (RKO KO). **a)** Bright field image with control WT RKO cells circled. **b)** Bright field image with control RKO knockout cells circled. **c)** Radioluminescence image with position of RKO WT control cells circled. **d)** Radioluminescence image with position of RKO knockout cells circled. **e)** Bulk cell uptake measurements using a gamma counter (duplicates). **f)** Analysis of number of FDG molecules for single cells for the control and knockout using conventional radioluminescence microscopy. The average value is indicated by a red line. The standard deviation and the 95% confidence interval are indicated by a blue and red bar, respectively. Bulk cell measurements using a gamma counter detects more FDG molecules than RLM microscopy because of greater collection efficiency.