

SUPPLEMENTARY MATERIALS

Optimization of artificial urine formula for *in vitro* cellular study compared with native urine

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Supplementary Figure S1: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **complete (serum-containing) medium (control)**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

Supplementary Figure S2: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **native (normal) human urine Pool 1**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

Supplementary Figure S3: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **native (normal) human urine Pool 2**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

Supplementary Figure S4: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **native (normal) human urine Pool 3**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

Supplementary Figure S5: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **AU-Siriraj without FBS supplement**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

Supplementary Figure S6: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **AU-Siriraj supplemented with 0.625% FBS**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

Supplementary Figure S7: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **AU-Siriraj supplemented with 1.25% FBS**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

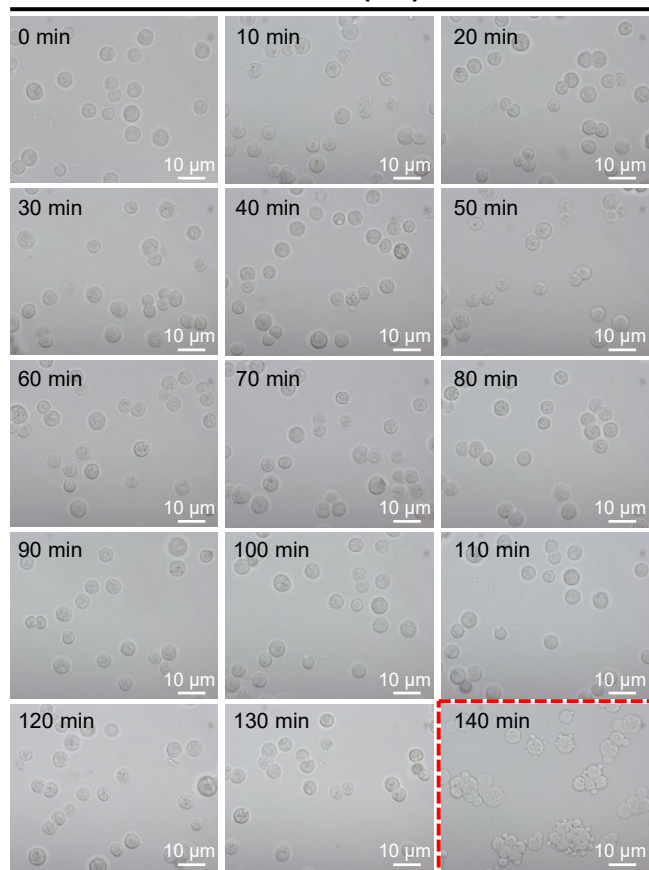
Supplementary Figure S8: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **AU-Siriraj supplemented with 2.5% FBS**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

Supplementary Figure S9: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **AU-Siriraj supplemented with 5% FBS**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

Supplementary Figure S10: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **AU-Siriraj supplemented with 10% FBS**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

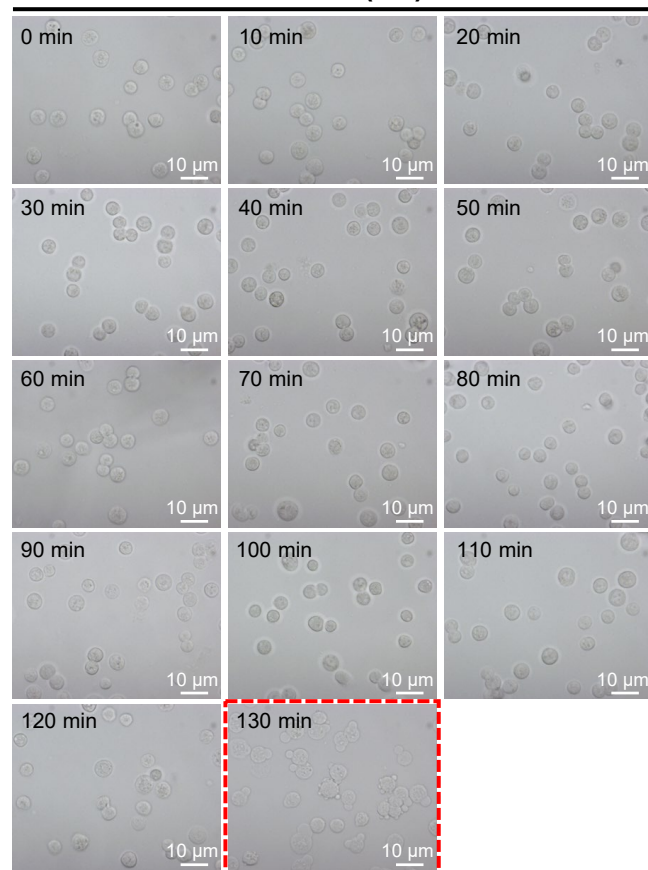
(A)

Control (N1)



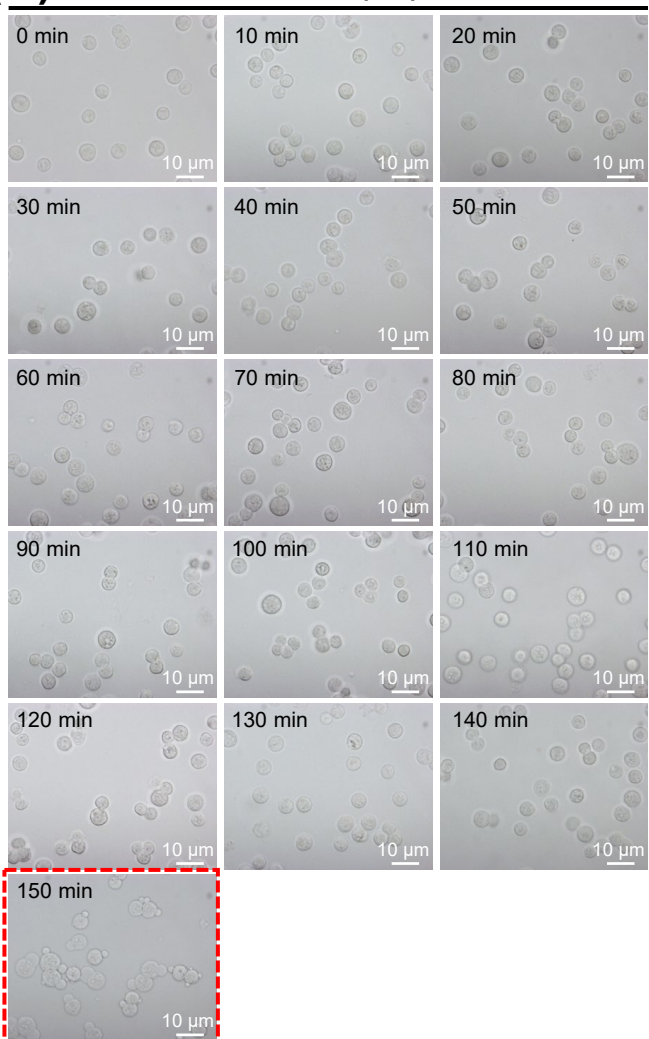
(B)

Control (N2)



(C)

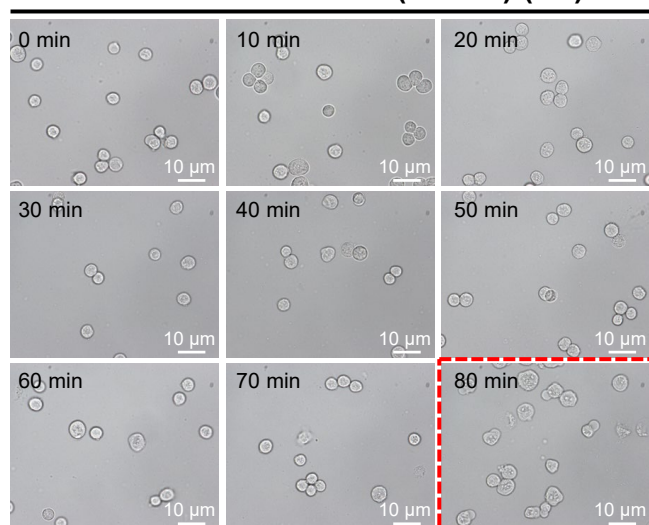
Control (N3)



Supplementary Figure S1: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **complete (serum-containing) medium (control)**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

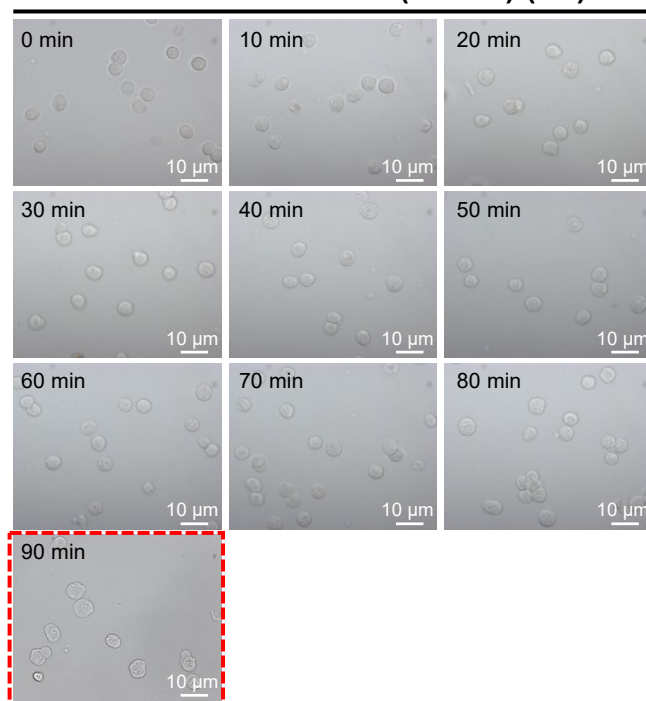
(A)

Normal human urine (Pool 1) (N1)



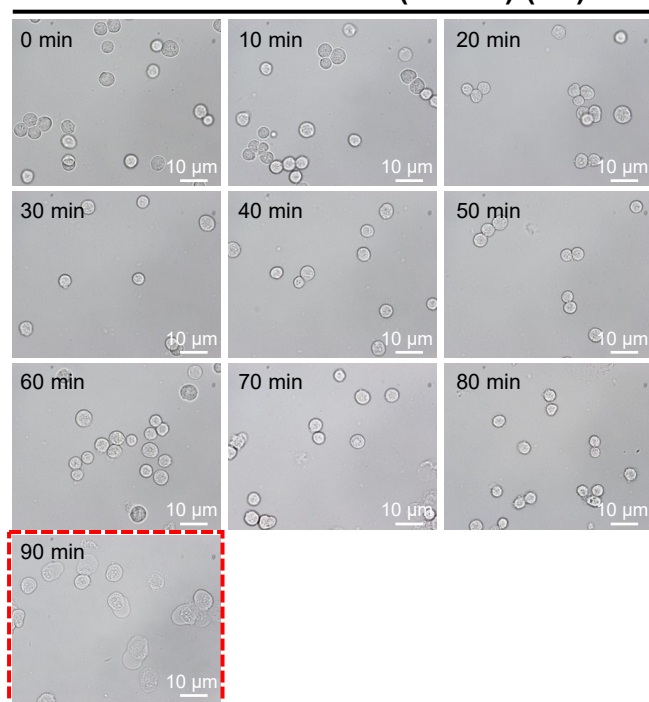
(B)

Normal human urine (Pool 1) (N2)



(C)

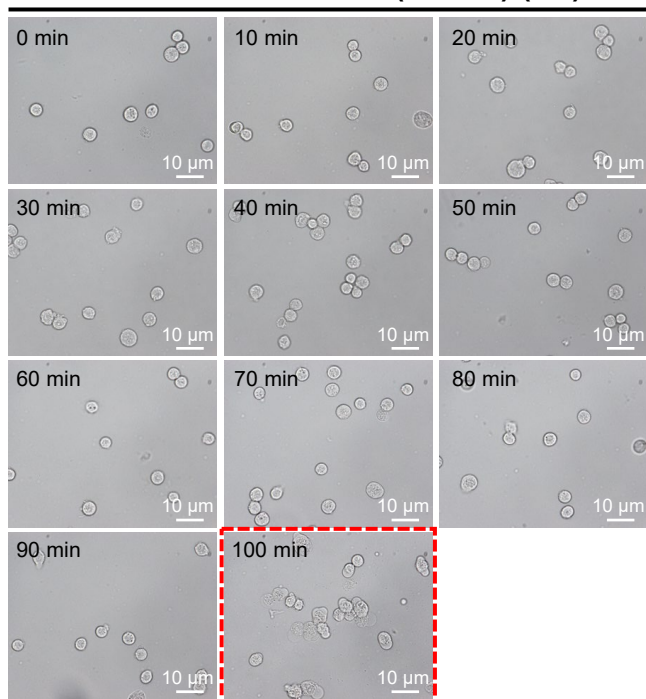
Normal human urine (Pool 1) (N3)



Supplementary Figure S2: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **native (normal) human urine Pool 1**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

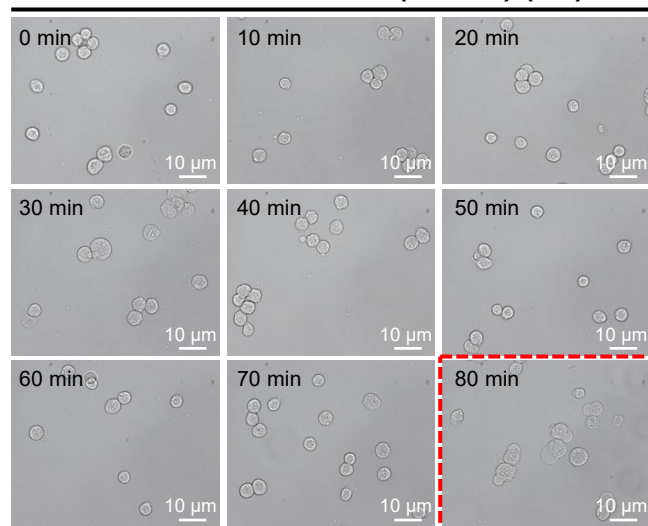
(A)

Normal human urine (Pool 2) (N1)



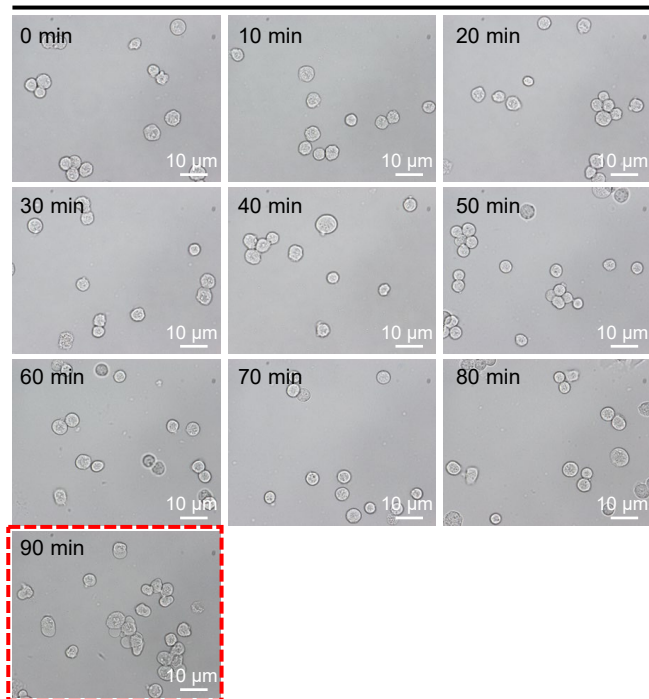
(B)

Normal human urine (Pool 2) (N2)



(C)

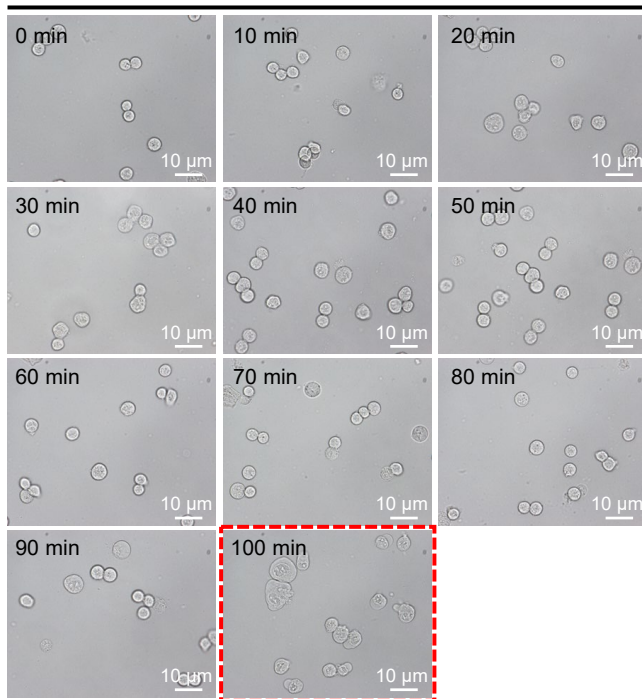
Normal human urine (Pool 2) (N3)



Supplementary Figure S3: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **native (normal) human urine Pool 2**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

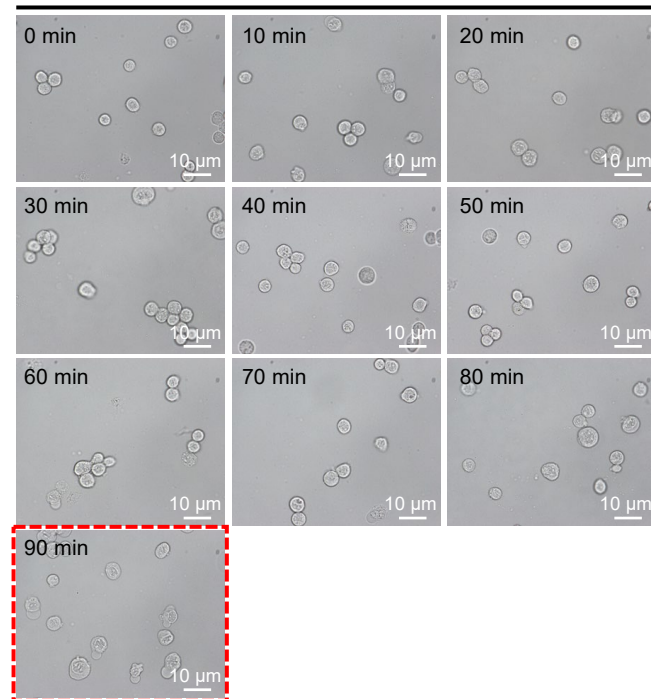
(A)

Normal human urine (Pool 3) (N1)



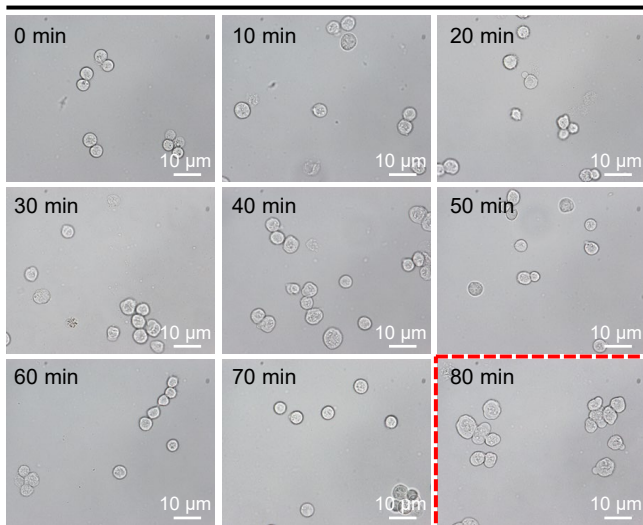
(B)

Normal human urine (Pool 3) (N2)



(C)

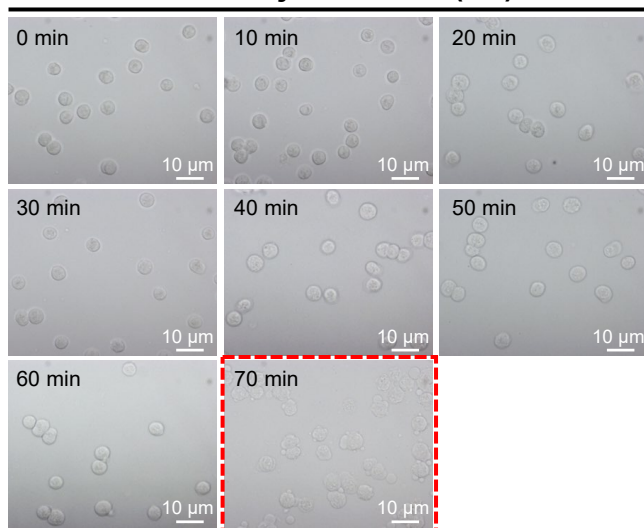
Normal human urine (Pool 3) (N3)



Supplementary Figure S4: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the **native (normal) human urine Pool 3**. **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

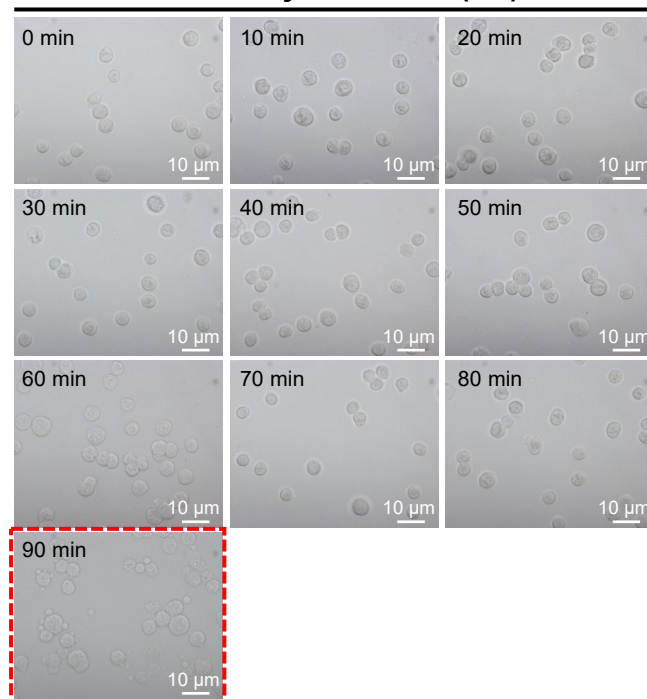
(A)

AU-Siriraj + 0% FBS (N1)



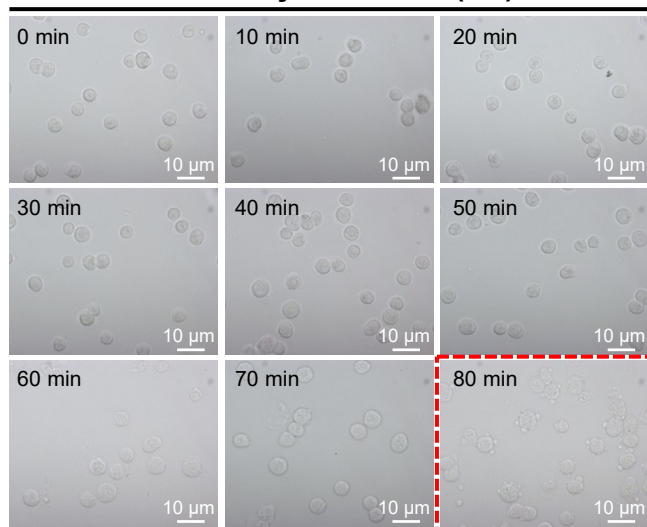
(B)

AU-Siriraj + 0% FBS (N2)



(C)

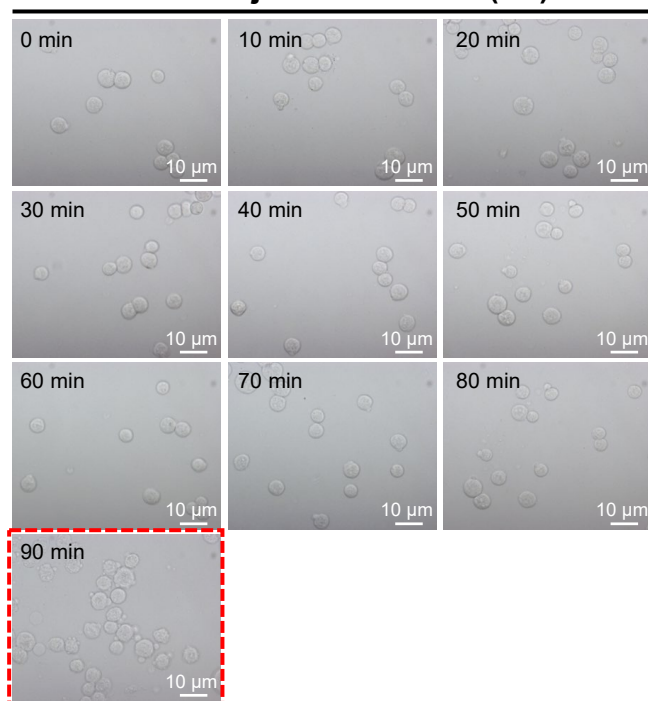
AU-Siriraj + 0% FBS (N3)



Supplementary Figure S5: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the AU-Siriraj without FBS supplement. (A)-(C): Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

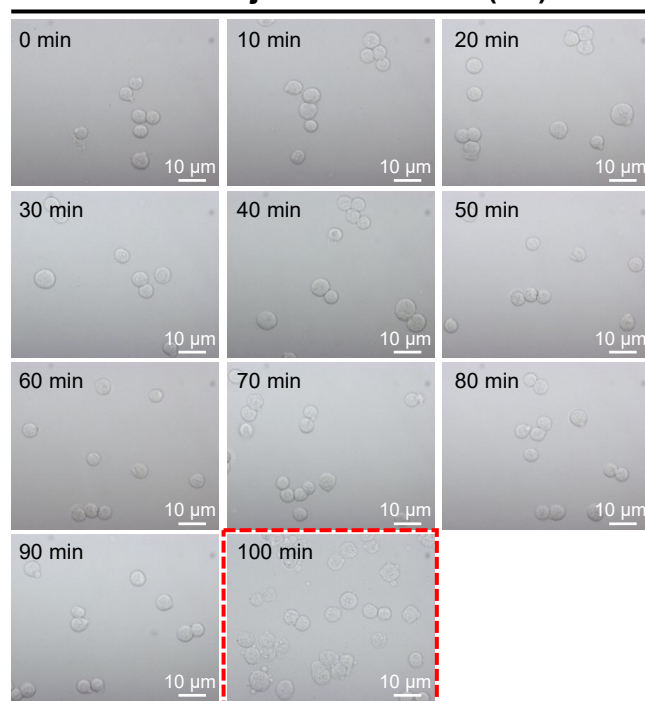
(A)

AU-Siriraj + 0.625% FBS (N1)



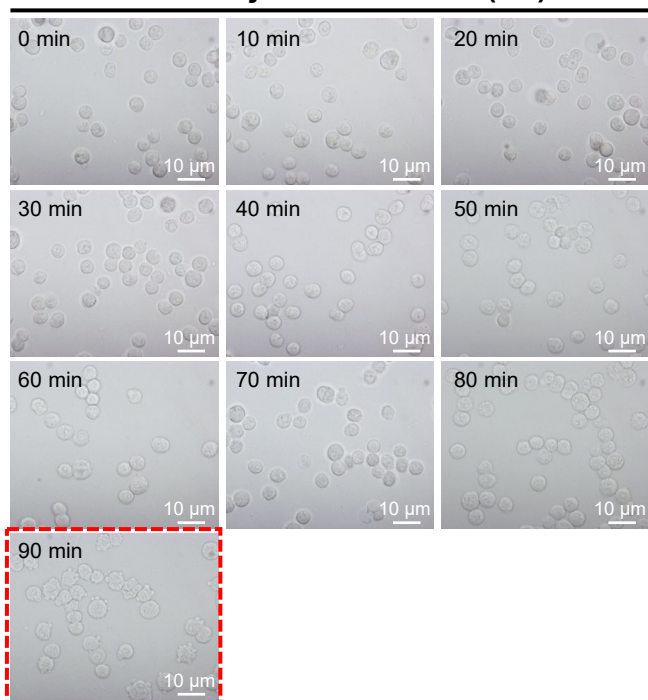
(B)

AU-Siriraj + 0.625% FBS (N2)



(C)

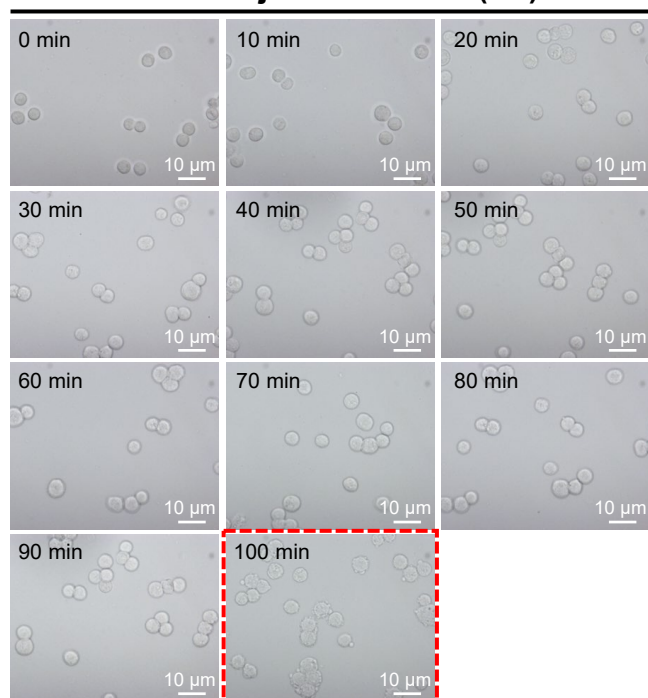
AU-Siriraj + 0.625% FBS (N3)



Supplementary Figure S6: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the AU-Siriraj supplemented with 0.625% FBS. (A)-(C): Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

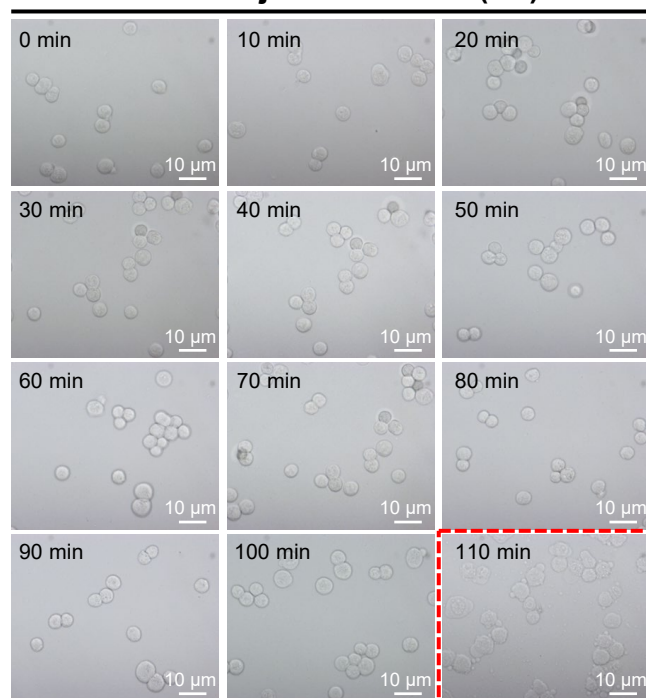
(A)

AU-Siriraj + 1.25% FBS (N1)



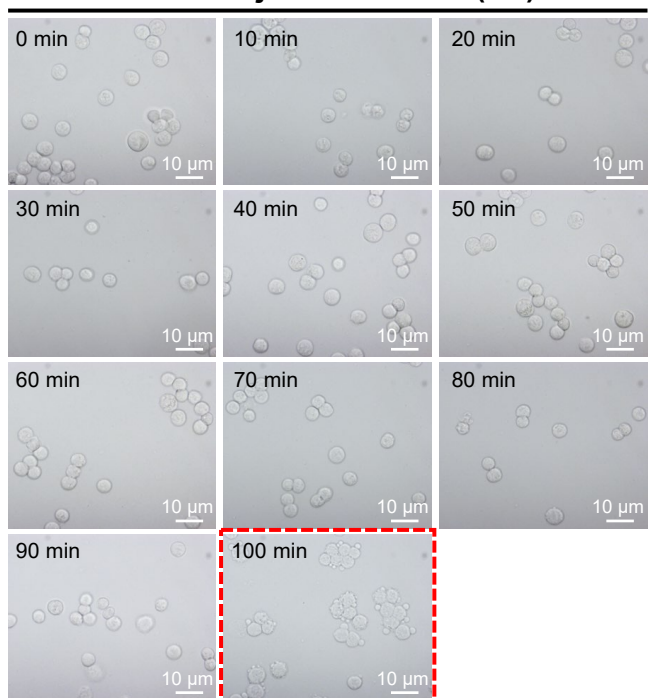
(B)

AU-Siriraj + 1.25% FBS (N2)



(C)

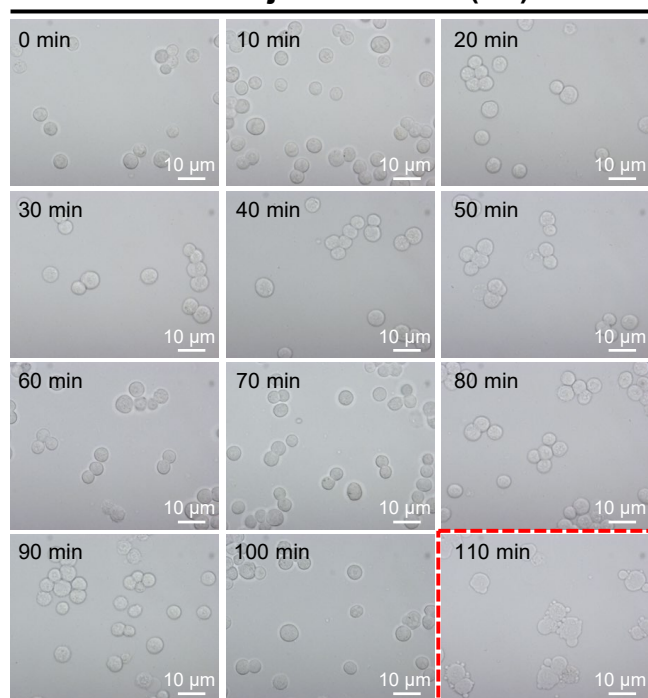
AU-Siriraj + 1.25% FBS (N3)



Supplementary Figure S7: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the AU-Siriraj supplemented with 1.25% FBS. (A)-(C): Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

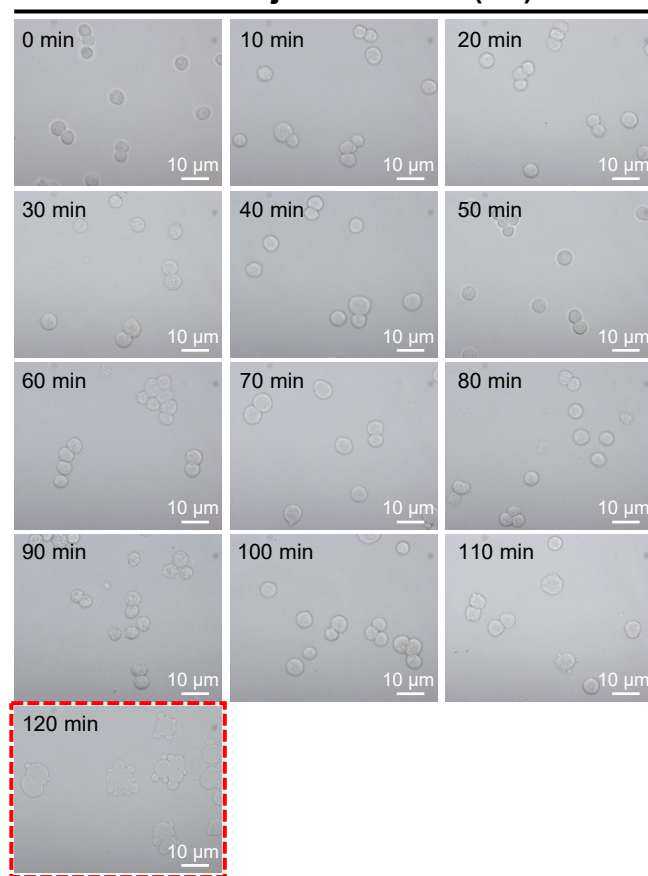
(A)

AU-Siriraj + 2.5% FBS (N1)



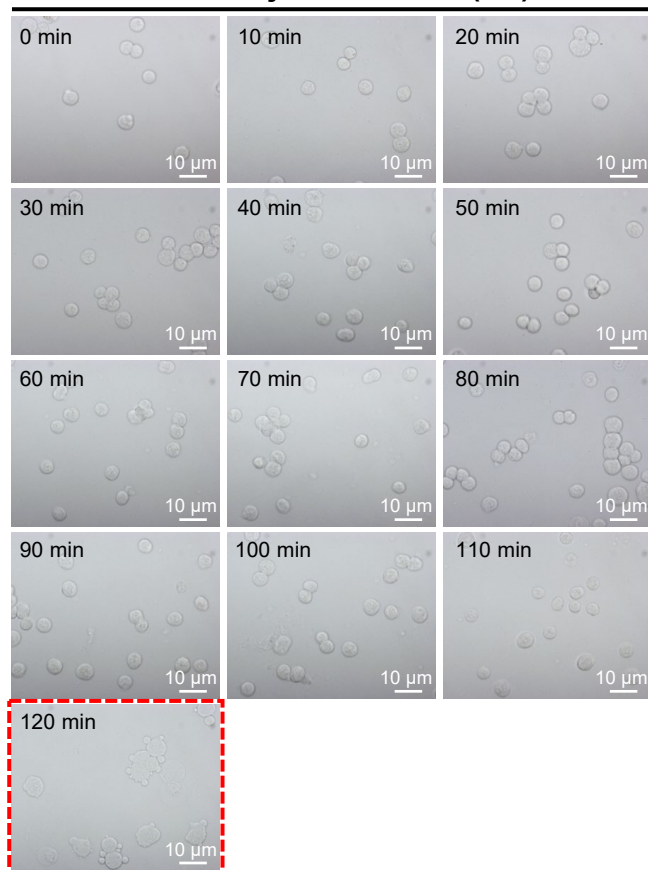
(B)

AU-Siriraj + 2.5% FBS (N2)



(C)

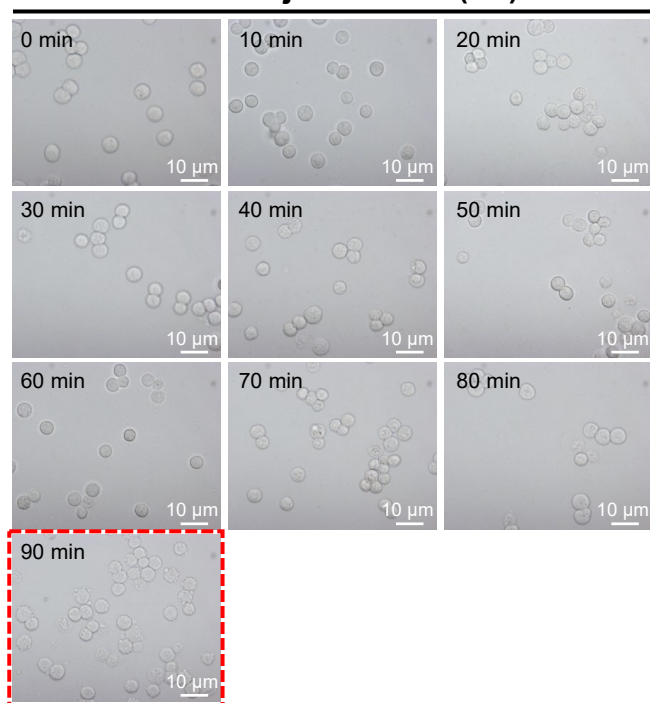
AU-Siriraj + 2.5% FBS (N3)



Supplementary Figure S8: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the [AU-Siriraj supplemented with 2.5% FBS](#). (A)-(C): Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

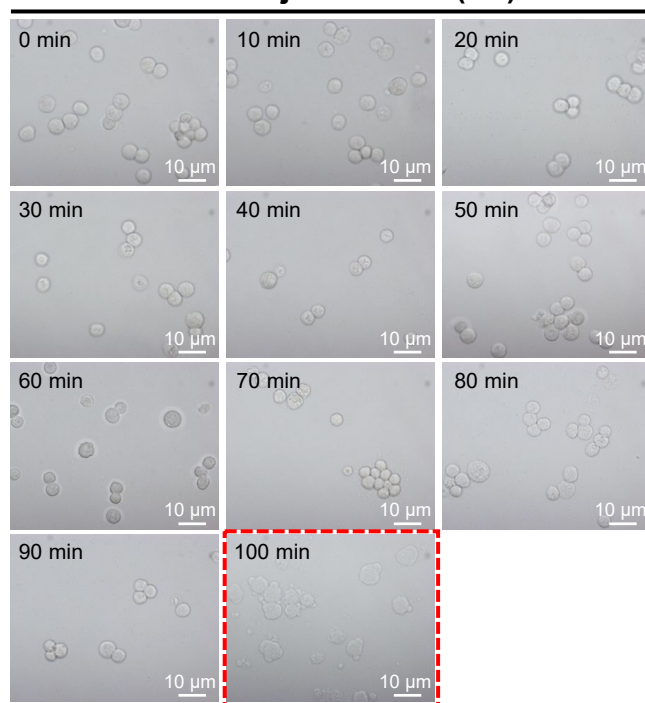
(A)

AU-Siriraj + 5% FBS (N1)



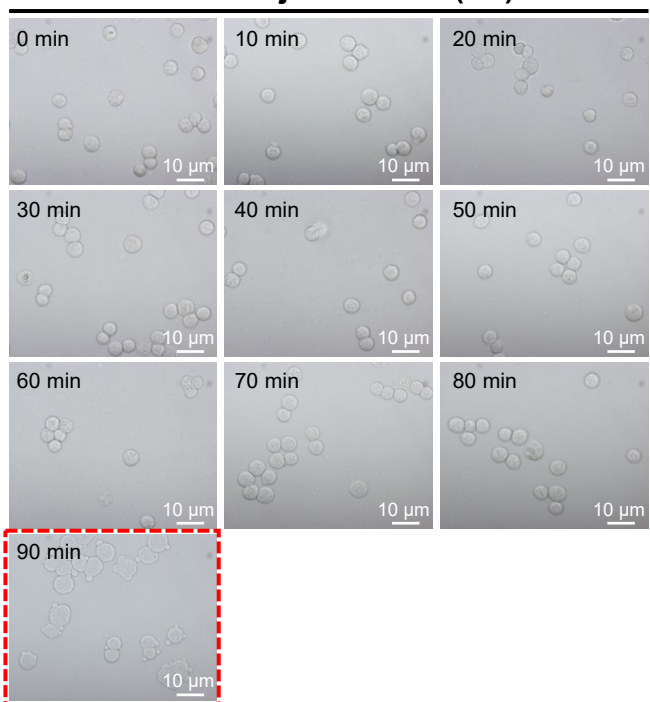
(B)

AU-Siriraj + 5% FBS (N2)



(C)

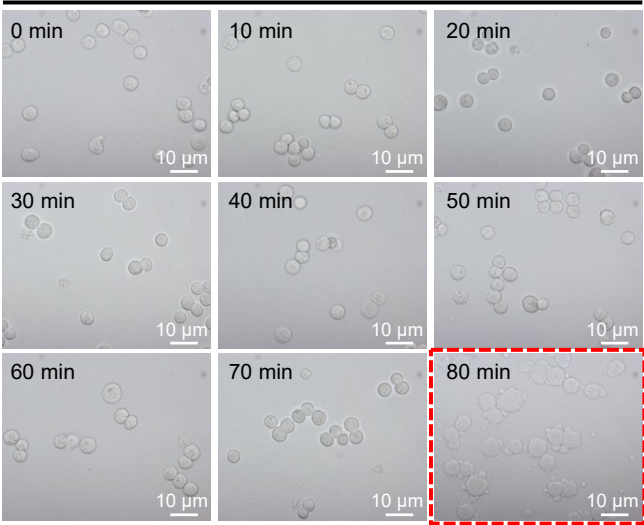
AU-Siriraj + 5% FBS (N3)



Supplementary Figure S9: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the AU-Siriraj supplemented with 5% FBS. (A)-(C): Raw data of all triplicates are shown. The T_D of each replicate (as shown in Figure 2) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.

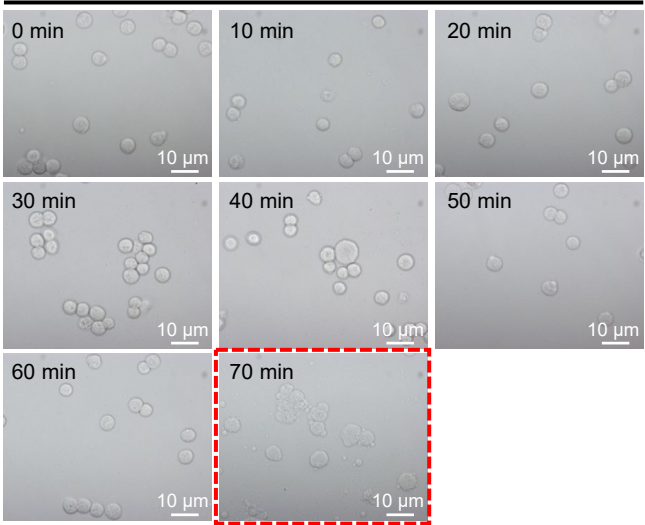
(A)

AU-Siriraj + 10% FBS (N1)



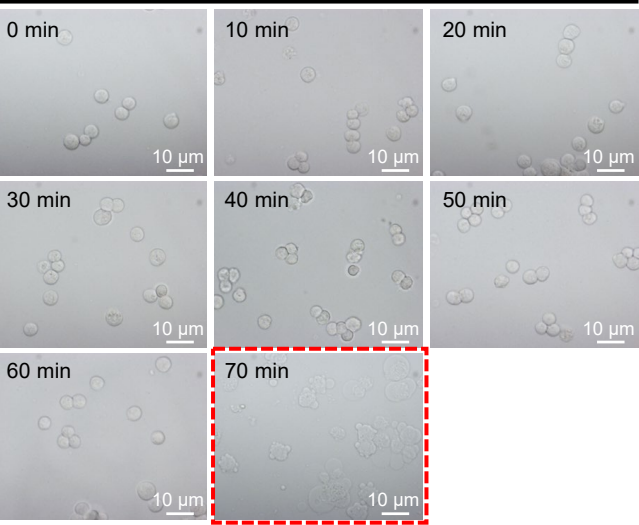
(B)

AU-Siriraj + 10% FBS (N2)



(C)

AU-Siriraj + 10% FBS (N3)



Supplementary Figure S10: Serial monitoring of time to deformation (T_D) of floating MDCK cells incubated with the [AU-Siriraj supplemented with 10% FBS](#). **(A)-(C):** Raw data of all triplicates are shown. The T_D of each replicate (as shown in **Figure 2**) (when cells had bleb formation or shape distortion) is highlighted with the red dashed box. Original magnification = 400X for all panels.