Supporting Information for:

Conjugation of carboxyl methyl cellulose and dopamine for cell sheet harvesting

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Contents:

1. Single Cell areas from LIVE/DEAD® assay using ImageJ software (NIH)
2. **Table S1.** Oligonucleotide sequences of the primer pairs used for RT-PCR
3. **Table S2.** Antibodies list for IF staining
4. **Figure. S1. TOF-SIMS data** (a) ion spectra of the coated CMC-DA surface and non-coated surface. (b) The negative ion depth profile during sputter time 150s
5. **Figure. S2.** Distribution of cell areas from the detached single hMSCs with cellulase or trypsin/EDTA.
6. **Figure. S3.** The normalized cell viability of the cellulase with various concentrations (0, 10, 20, 50, 100 U/ml in medium) after 1hr in cultured cells.
7. **Movie. S1.** The detachment process of the hMSC sheets 10 min after 50 U/ml cellulase treatment (The file was uploaded separately: Electronic supplementary information)
8. **Figure. S4.** Transparency of hCLE sheet with various diameter.
9. **Figure. S5.** The permeability of a CMC-DA-coated transwell membrane with DMEM medium.
10. **Figure. S6. Degradation of CMC-DA.** The CMC-DA-coated surface was treated with 100 U/ml cellulase for 3 hours, and then we checked the glucose concentration over time using a glucose assay kit. The results showed the glucose was increased with time after cellulase treatment.

Single Cell areas from LIVE/DEAD® assay using ImageJ software (NIH)

Digital images of stained cells were captured using confocal microscopy and were processed in ImageJ in the following manner: (*1*) Using *Image ❍ Color ❍ Split Channels,* channels were separated for live and dead fluorescence channels. (2*) Using image → type → 8 bit,* with green channel. (*3*) Using *Image ❍ Adjust ❍ Threshold,* a constant threshold level was set across a set of conditions to ensure that sufficient signal was present to identify viable cells. (*4*) Using *Process ❍ Binary ❍ make binary.* (*5*) Using *Analyze ❍ Analyze Particles* a constant area exclusion filter was applied to ensure that tiny specs signal, likely from debris or instrument artifacts, were excluded from the final counts of live or dead cells. The areas of particle were displayed and analyzed.

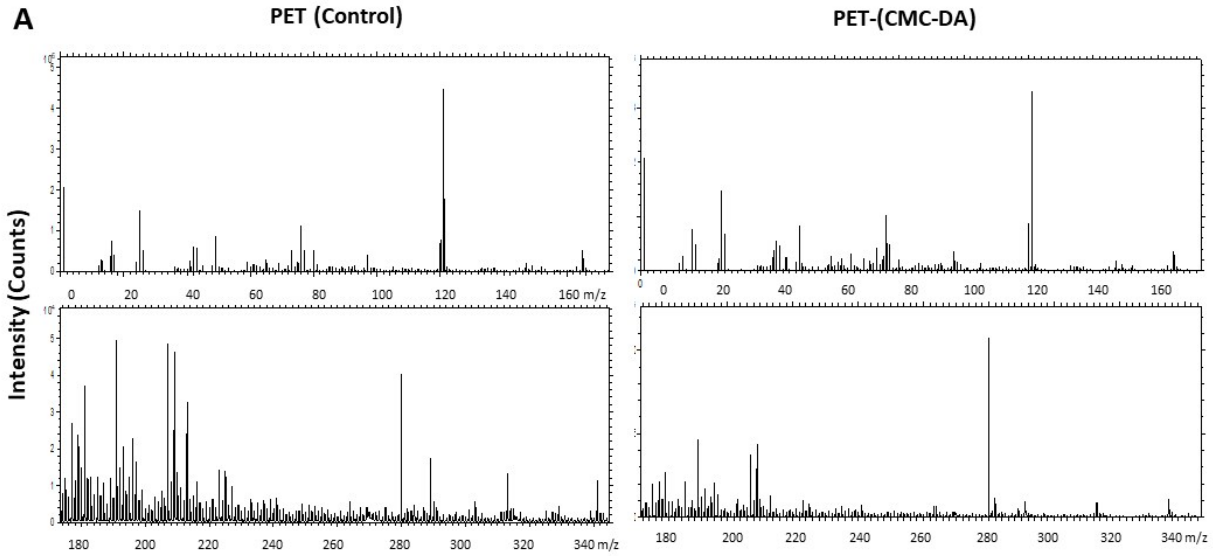
Table S1. Oligonucleotide sequences of the primer pairs used for RT-PCR

Name	Sense Primer	Anti-sense Primer
FAK	TTC-ATT-ATT-TTG-AAA-GCA-ATA-GT	CAA-CCC-AAC-TTC-AAA-GCA-ATT-TC
RhoA	CTC-ATA-GTC-TTC-AGC-AAG-GAC-CAG-TT	ATC-ATT-CCG-AAG-ATC-CTT-CTT-ATT
RhoB	ATG-GCG-GCC-ATC-CGC-AAG-AAG-C	TCA-TAG-CAC-CTT-GCA-GCA-GTT-G
P53	GGAGCACTAAGCGAGCACTG	ATGGCGGGAGGTAGACTGAC
β-Actin	CGT-ACC-ACT-GGC-ATC-GTG	GTG-TTG-GCG-TAC-AGG-TCT-TTG

Table S2. Antibodies list for IF staining

Name	Type	Dilution	Company, No.	Annotation
Collagen I	Rabbit Poly	1:100	Abcam ab34710	Extracellular Matrix
Collagen IV	Rabbit Poly	1:100	Abcam ab6586	Extracellular Matrix
Laminin	Rabbit Poly	1:100	Abcam ab11575	Extracellular Matrix
Phalloidin		1:40	Thermo R415	F-actin
ZO-1	Rabbit Poly	1:100	Thermo 61-7300	Cell junction
P63	Rabbit Mono	1:100	Abcam Ab124762	Epithelial stem cell

Figure. S1. TOF-SIMS data (a) Ion spectra of the coated CMC-DA surface and non-coated surface. (b) The negative ion depth profile during sputter time 150s



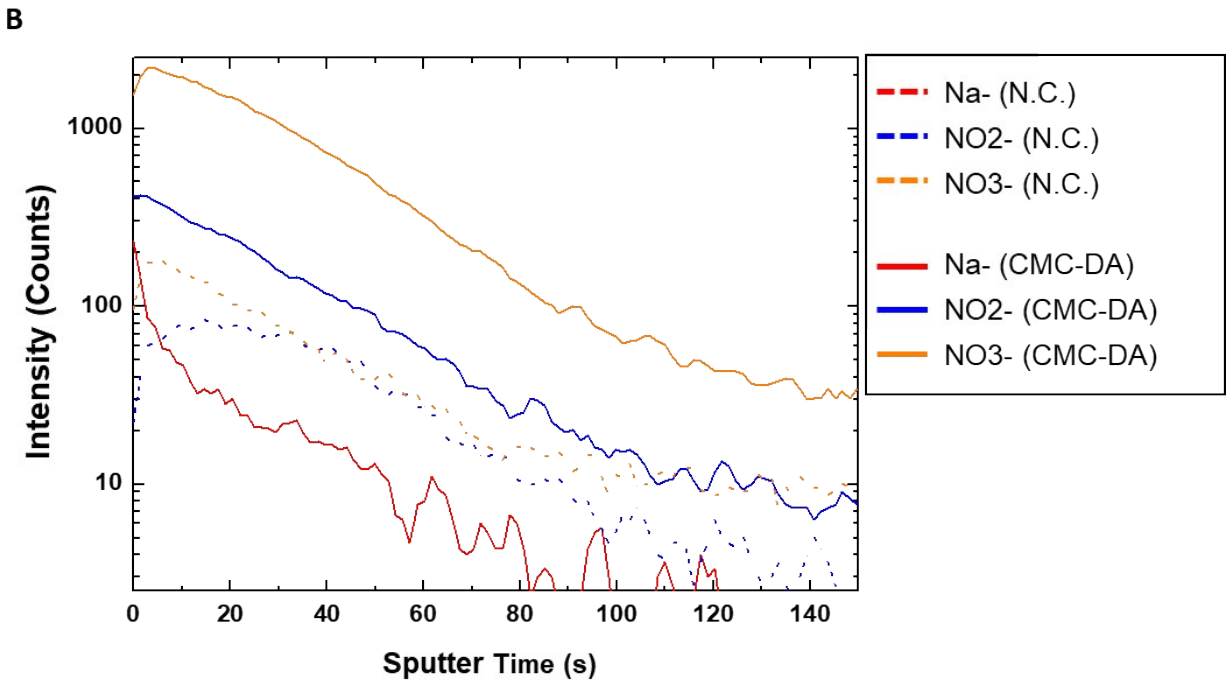


Figure. S2. Distribution of cell areas from the detached single hMSCs with cellulase or trypsin/EDTA.

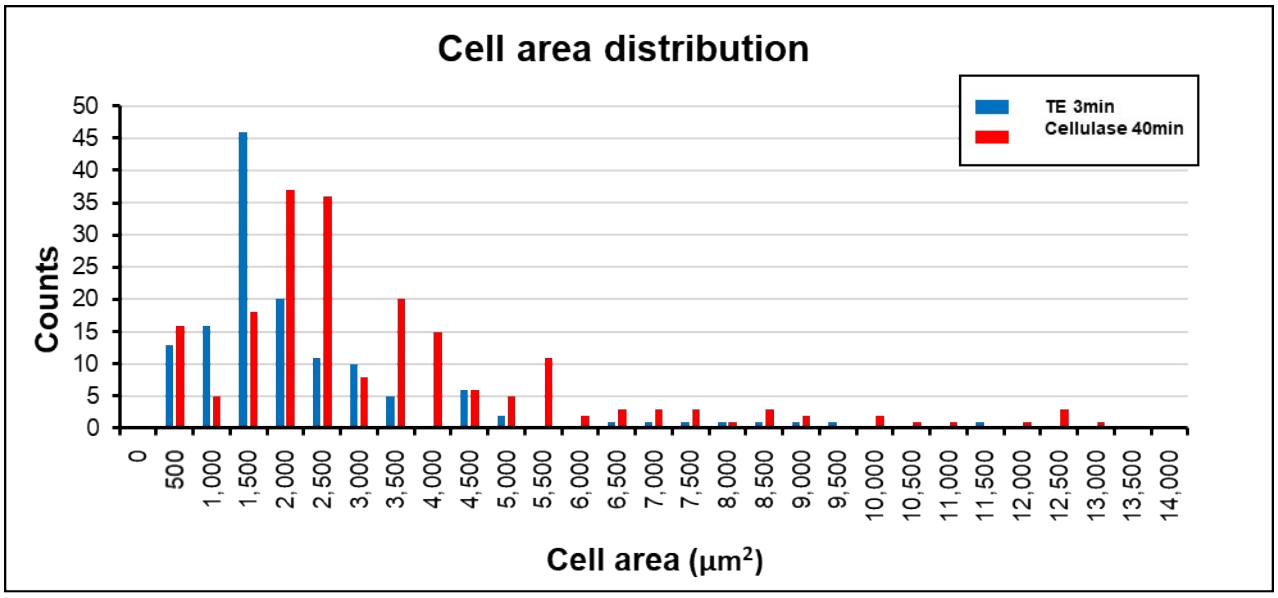
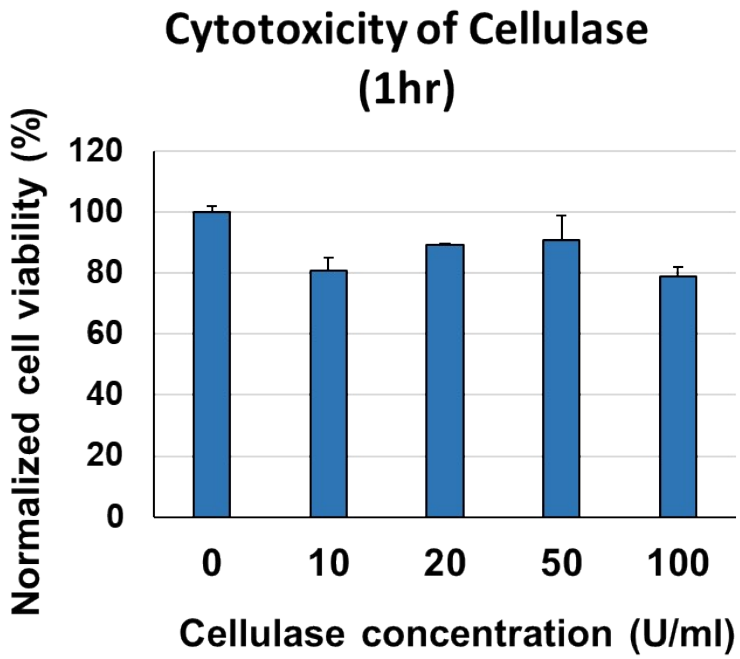


Figure. S3. The normalized cell viability of the cellulase with various concentrations (0, 10, 20, 50, 100 U/ml in medium) after 1hr in cultured cells.



Movie. S1. The detachment process of the hMSC sheets 10 min after 50 U/ml cellulase treatment (The file was uploaded separately: Electronic supplementary information)

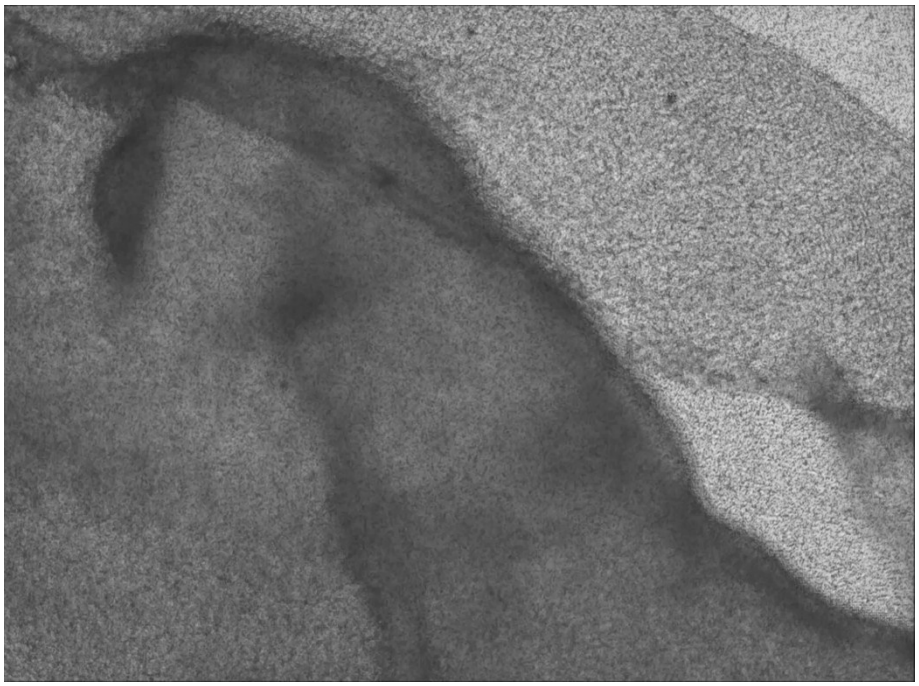


Figure. S4 Transparency of hCLE sheet with various diameter**.**

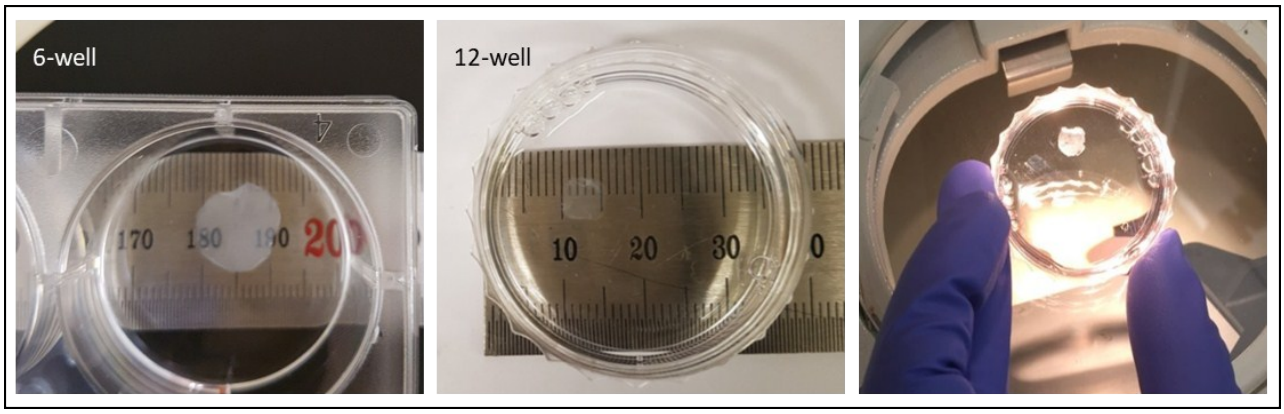
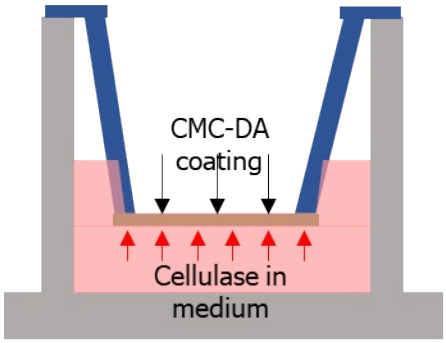
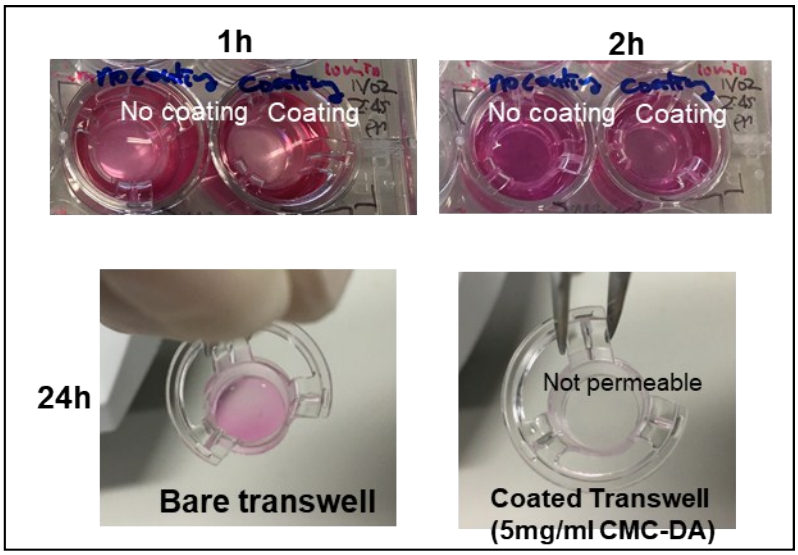


Figure. S5. The permeability of a CMC-DA-coated transwell membrane with DMEM medium.





		Starting time of Permeabilization
CMC-DA Conc.(mg/ml)	0.5	5 min
	1	5 min
	2	60 min
	5	> 24 h

Figure. S6. Degradation of CMC-DA. The CMC-DA-coated surface was treated with 100 U/ml cellulase for 3 hours, and then we checked the glucose concentration over time using a glucose assay kit (Sigma). The results showed the glucose was increased with time after cellulase treatment.