Supporting Information

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Discovery of a Novel Polymer for Xeno-free, Long-term Culture of Human Pluripotent Stem Cell Expansion

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Supporting Information

Routine cell culture

All cell culture experiments were performed in a type II Biological Safety Cabinet, and cells were incubated in a humidified incubator, at 37°C and 5% CO2 (Heracell). Three hPSC lines used in this study, including the hESC line, HUES7 (used between passages 25-35) and the hiPSC cell lines: ReBl- PAT (used between passages 20-30) derived from a skin punch biopsy from a male subject and AT1 (used between passages 20-30) derived from dental pulp of a female subject (as previously described),[1] were routinely maintained on 1:100 Matrigel coating (BD Biosciences, UK) in Essential 8™ medium (E8, LifeTechnologies). In brief, cells were passaged at 70-80% confluency every 3 days by washing once with Ca²⁺/Mg²⁺-free Phosphate Buffer Saline (PBS, Gibco #14190-094), followed by incubation with TrypLE Select (LifeTechnologies) for 2-3 minutes at 37°C, with tapping of flasks to dissociate cells. Afterwards, hPSC were resuspended in E8 supplemented with 10μM Y-27632 (ROCKi, Tocris Bioscience #1254/10) and seeded into new MT-coated flasks at approximately 20000 cells/cm². Medium was changed every day.
Polymer microarray synthesis and preparation

Polymer microarrays were fabricated using methods previously described.\[^{2,3}\] Briefly, polymer microarrays were printed onto polyHEMA (4% w/v Sigma, in ethanol (95% v/v in water)) dip coated glass slides using a XYZ3200 dispensing station (Biodot) and quilled metal pins (946MP6B, Arrayit) under an argon atmosphere maintaining $O_2 < 2000$ ppm, $25^\circ C$ and 35% humidity. Polymerization solutions consisted of monomer (50% v/v) in dimethylformamide with photoinitiator 2,2-dimethoxy-2-phenyl acetophenone (1% w/v), and were polymerized in-situ using UV light irradiation. Three replicates of 284 monomers were printed per slide for the first generation array (see Figure S1 for structures and Table S1 for monomer list). For the second generation array, the polymerisation solutions consisted of major and minor monomers in a 2:1 (v/v) ratio. Three replicates of 342 co-polymers combinations were printed per slide. Monomers were purchased from Sigma, Scientific Polymers and Polysciences and were used as received. Top and bottom array surfaces were sterilised with UV light for 15 minutes and washed with sterile $Ca^{2+}/Mg^{2+}$-free Phosphate Buffer Saline (PBS, Gibco) before culturing with hPSCs.

Microarray screening and data acquisition

$0.75 \times 10^6$ REBl-PAT cells were seeded in E8 medium supplemented with 10μM Y-27632 (ROCKi, Tocris Bioscience) on each array and incubated at $37^\circ C$ with $5\% \ CO_2$ for 24 h and 48 h timepoints at which point array samples were fixed with 4% paraformaldehyde for quantification. Arrays were immunostained for OCT4 expression and counterstained with 4′,6-diamidino-2-phenylindole (DAPI) (see immunostaining methods for full details) before being mounted with Vectashield Antifade mounting medium (Vector Laboratories and imaged using automated fluorescence microscopy (IMSTAR). Attachment was analysed in CellProfiler ver. 2.2.0 (Broad Institute).\[^{4}\] Manual background correction was also applied to images prior to using in-built “identify primary objects” algorithm using a three-class Otsu adaptive thresholding method to identify and quantify nuclei in DAPI and OCT4 channels with manual check for quality control. Assessment of co-polymer
combinations for second generation screen can be readily performed using a synergy ratio (SR). Taking the response of major \((y_1)\) and minor \((y_2)\) monomers alone, normalised to the fraction \((m)\) present in the co-polymer \((y_{12})\), the SR can be calculated using the equation:

\[
SR = \frac{y_{12}}{(m \times y_1) + (m \times y_2)}
\]

A synergistic combination, \(SR > 1\), indicates that the cell response for the co-polymer is greater than the response of the individual monomers. Whilst an additive/counteractive combination, \(SR < 1\), indicates that the cell response for the co-polymers is less than the response of the individual monomers.

**hPSC assessment of polymer candidates coated on 96-well plates**

ReBl-PAT hPSCs were seeded at \(4.5 \times 10^4\) cells/cm\(^2\) on co-polymers selected for scale-up in E8 medium supplemented with Y-27632 where each co-polymer was tested in triplicate wells. Matrigel controls were also included for comparison. Images of five separate fields were obtained per well \((n=3\) independent repeat) using the Operetta high-content imaging system (Perkin Elmer). Images were analysed using Harmony high-content image analysis software (Perkin Elmer) developed with PhenoLOGIC machine learning algorithms to quantify percentage cell coverage (relative to total areas imaged per well) and mean area of colonies (total cell coverage/no. of colonies). Adhered cells at 72 h were fixed in 4% paraformaldehyde and immunostained for OCT4 and fluorescence microscopy using the Operetta and Harmony was used to quantify total and OCT4+ nuclei (5 fields/well).

**Production of polymer coated 6-well plates**

Monomers for polymerisation, consisting of individual monomers or 2 monomers mixed at 2:1 \((v/v)\), were mixed in a 9:1 \((v:v)\) ratio with a 10 wt % solution of photoinitiator 2,2-dimethoxy-2-phenyl acetophenone in isopropyl alcohol and coated onto oxygen plasma treated \((p_i=0.09\) mbar, 100 W, 13.56 MHz RF generator for 10 minutes) tissue culture plastic well-plates. These were then polymerised by exposure to UV light \((365\) nm, 2 x 15 W, 10 cm distance) for 1 h in an argon glovebox.
(<2000 ppm O₂). After polymerization, well-plates were washed three times with isopropanol to remove unreacted polymer, and soaked in dH₂O for 48 h at 37°C. Well-plates were subsequently sterilized with 70% IMS and washed three times with sterile PBS before use.

**Surface chemistry analysis**

The surface chemistry of array slides and 6-well plates was assessed using time-of-flight secondary ion mass spectrometry (ToF-SIMS) and atomic force microscopy (AFM).

**ToFSIMS**

Measurements were taken using a TOF-SIMS 4 (IONTOF GmbH) instrument using a 25kV Bi³⁺ primary ion source with a pulsed target current of ~1pA and analysed using SurfaceLab 6, IONTOF as previously described.²

**AFM**

Hydrated AFM measurements were acquired using a Bruker Dimension FastScan in PeakForce™ mode using SCANASYST-FLUID+ probes. Samples assessed for surface analysis were incubated in ultrapure MilliQ water (18.2 Ohm) and the probes were calibrated using a 2.6 GPa Bruker polystyrene film sample.²

**Protein adsorption analysis**

Sterilized and washed polymer coated 6 well-plates were incubated in E8 medium supplemented with 10μM Y-27632 dihydrochloride for 1 h at 37°C. Plates were washed with dH₂O (18.2 MΩ, ElgaPure LabWater). Proteins were digested in-situ using microwave-assisted techniques using 0.05 μg/μL trypsin (sequencing grade; Promega, UK) in 100mM ammonium bicarbonate (BioUltra,≥99.5%, Sigma-Aldrich) adapted from previously described methods.⁵ Standard methods were used to extract proteins using an extraction solution consisting of acetonitrile (CHROMASOLV®, Riedel-de Haen) and 200 mM ammonium acetate (≥99.0%; Sigma-Aldrich, Gillingham, UK) (1:9 v/v) in LC-MS grade water (CHROMASOLV®, Riedel-de Haen). Samples were analysed by liquid extraction
surface analysis-mass spectrometry (LESA-MS) and introduced to a TriVersa Nanomate (Advion Biosciences, Ithaca, NY) coupled to a Q Exactive plus mass spectrometer (Thermo, San Jose, CA) via nanoelectrospray ionisation (ESI Chip™, Advion Biosciences) using 1.6 kV voltage and 0.6 psi gas pressure (N₂).

**hPSC serial passaging on polymer coated 6-well plates**

hPSCs were seeded at 7x10⁴ cells/cm² in E8 medium supplemented with 10μM Y-27632 dihydrochloride for the initial 24 h of culture. Medium was exchanged every 24 h until cells reached 70-80% confluence at 72 h when cells were fixed or passaged by dissociating with TryPLE select (as described above). hPSCs growth was assessed using an automated cell-viability counter (CEDEX Hi Res Analyser) at each passage (every 72 h). Doubling time ([duration of culture x log₂] / [log₁₀ (final cell concentration/seeding concentration)]) was calculated for hPSCs and was plotted cumulatively. After 5 serial passages HPSC were karyotyped as previously described.[¹]

**Flow cytometry**

hPSCs serially passaged on polymer substrate (≥ 3 passages) were dissociated into single-cell suspension and fixed with 4% paraformaldehyde. Samples were permeabilized with 0.1% Tween-20 in PBS for intracellular markers and incubated with primary antibodies NANOG (1:100, APCH7 conjugated, BD Biosciences, 560109), SOX2 (1:20, Alexa Fluor 647-conjugated, R&D Systems, IC2018R), TRA181 (1:100, PE-conjugated, Invitrogen, 12-8883-82) and SSEA4 (1:20, fluorescein-conjugated, R&D Systems, FAB1435F) diluted in PBS for 1hr at RT. The FC500 flow cytometer (Beckman Coulter) was used to acquire measurements and expression was quantified with Kaluza analysis software (Beckman Coulter).
Attachment blocking

hPSCs were harvested and re-seeded in E8 medium with the addition of integrin blocking antibodies (10μg/ml for each antibody) or RGD-blocking peptides (15μg/ml) for 24 h (see table S2). Cells were washed three times with PBS, fixed with 4% paraformaldehyde and counterstained with DAPI. Fluorescence images acquired using the Operetta (Perkin Elmer) were quantified for total nuclei count per condition in Harmony image analysis software (Perkin Elmer).

Integrin expression by Western Blot

hPSCs serially passaged on polymer (≥ 3 passages) were lysed using RIPA buffer (Cell Signalling Technologies #9806) supplemented with PMSF (Phenylmethylsulfonyl fluoride, Sigma 10837091001). Total lysate protein was determined using Pierce BCA Protein Assay Kit (Thermo Fisher Scientific # 23225) following manufacturer’s instructions. LDS NuPAGE Sample Buffer (4X) with 2.5% 2-mercaptoethanol was added to 30μg of protein lysate and run on NuPAGE NOVEX Bis-Tris Gels with MOPS SDS Running Buffer (Thermo Fisher Scientific #NP0008, #NP0001). Samples were transferred to an Amersham Protran 0.45m nitrocellulose blotting membrane (GE Healthcare Life Science #10600124). Membranes were incubated with following antibodies α5 (#4705), αv (#4711), β1 (#9699), β4 (#14803) and β5 (#3629) integrins (all purchased from Cell Signalling Technology and diluted 1:500), Nanog (clone 7F7.1, Millipore, MABD24, 1:500) and β-actin (Millipore, MA1140, 1:2000). Membranes were developed using West Pico PLUS Chemiluminescent Substrate (Thermo Fisher Scientific #34577) on an LAS-400 Imaging system.

Proteome Profiler Array

Human Phospho-Kinase Array (R&D systems, ARY003B) was performed according to manufacturer’s instructions (www.rndsystems.com) on hPSCs serially passaged on polymer and Matrigel™ in parallel (≥ 3 passages). Array blots were imaged using ImageQuant LAS-4000 (Fujitsu
Life Sciences) and analysed using Image Studio Software (LI-COR, version 5.2.5) where individual total signal intensity was measured by manual gating. All intensity values were normalized to background intensity and HSP60 internal control according to manufacturer’s instructions. Changes were quantified by comparison between Matrigel\textsuperscript{TM} and polymer conditions.

**Tri-lineage differentiation**

hPSCs serially passaged (≥ 3 passages) were harvested and seeded at 2x10\(^4\) – 1x10\(^5\) cell/cm\(^2\) and expanded in E8 medium for 2 days with daily media exchanges. All directed differentiation protocols were performed on hPSCs at day 2. For definitive endoderm differentiation, media was replaced by RPMI supplemented with B27 without insulin (LifeTechnologies 0080085-SA) and CHIR99021 (2μM; STEMCELL Technologies, 72052) for a further 2 days with daily media exchanges. To produce neural progenitors of the ectoderm lineage, media was replaced by Advanced DMEM/F-12 (LifeTechnologies) supplemented with 1% L-glutamine (Life Technologies), 1% CD Lipid Concentrate (Life Technologies) 7.5μg/ml Transferrin (Sigma-Aldrich), 14μg/ml Insulin (Sigma Aldrich), 0.1mM β-mercapto-ethanol, 10μM SB431542 (Tocris) and 1μM Dorsomorphin-1 (Tocris) and 2μM XAV939 (STEMCELL Technologies) for 5 days with daily media exchanges. Differentiation to cardiomyocytes was achieved using methods previously described.\cite{1}

**Immunostaining**

Adherent cells were fixed in 4% paraformaldehyde (Sigma-Aldrich, UK) at room temperature (RT) for 20 minutes and permeabilized with 0.1% Triton-X100 (Sigma-Aldrich, UK) in PBS at RT for 15 minutes. Non-specific binding was blocked with 4% serum (Sigma-Aldrich, UK) in PBS at RT for 1 h. Samples were incubated overnight at 4°C with primary antibodies OCT4 (1:200, Santa Cruz Biotechnology, SC-5279), TRA181 (1:200, Millipore, MAB4381), SSEA4 (1:100, Millipore), FOXA2 (1:500, Sigma-Aldrich 07-633), SOX17 (1:100, R&D AF1924), SOX1 (1:100, R&D AF3369), PAX6 (1:100, R&D AF8150) and cardiac α-actinin (1:800, Sigma-Aldrich A7811) diluted in blocking solution with the addition of 0.1% Triton X-100 for nuclear stains. Samples were washed
with 0.1% Tween-20 (Sigma-Aldrich, UK) and incubated with Alexa Fluor secondary antibodies (Life Technologies) 1:400 in blocking solution for 1 h at RT in the dark. Cells were washed with 0.1% Tween-20 and nuclei were counterstained with 0.5μg/ml DAPI (4’,6-diamidino-2-phenylindole, Sigma-Aldrich D9542).

RNA Extraction, cDNA Synthesis and qPCR

Total RNA was extracted from cell pellets using the NucleoSpin® RNA kit (Machery-Nagel), and reverse transcribed using SuperScript™ III Reverse Transcriptase kit (ThermoFisher), according to manufacturer’s instructions.

Real-time qPCR experiments were performed with GoTaq® qPCR Gene Expression assays (Promega) following manufacturer’s instructions. Briefly, GoTaq® mastermix (A6001) including the primers of interest (hOCT4 (Forward Primer (FP): GCTCGAGAAGGATGGGTGTTCC , Reverse Primer (RP): CGTTGTCATAGTGGCTGTGCT), hNANOG (FP: GCAGAAGCCTGACGAC, RP: AGGTTCAGTCGGGTCA) and hSOX2 (FP: CACTGCCCTCTCAGACATG, RP: TCCCATTTCCCTCAGTTTCT)) was added to a MicroAmp Fast 96 well plate (#4346907). Subsequently, DNA samples (from initial 500 ng of reverse-transcribed RNA) were added to the plate which was thereafter sealed with a film (#4360954). Amplification was performed in ABI 7500 Real-Time PCR system (Applied Biosystems). Normalisation was performed using the house keeping gene hHPRT (FP: TGACACTGGAACAAATACTGCA, RP: GGTCTTTCACCAGCACCGCT) and the ΔΔCT method was applied for quantification. [6]

Statistical tests

Experiments were performed in at least three independent experiments unless otherwise stated. Statistical tests (as stated in text) were performed using GraphPad Prism (version 8.1.2, San Diego CA). Statistical outliers were identified and excluded using the robust regression and outlier remover (ROUT) analysis with Q=1%. [7] Heatmaps were plotted using the heatmap.2 function from the gplots
package version 3.1.0.2 in combination with the RColorBrewer package version 1.1-2. Clustering and dendrograms for heatmaps were produced using the complete method with Euclidean distance measure.\(^8\) Assay suitability of co-polymer screen was determined by applying Z-factor statistical calculation:\(^9\)

\[ Z\text{-factor} = 1 - \frac{3(\sigma_p + \sigma_n)}{\mu_p - \mu_n} \]

where \(\mu\) represents the mean value, \(\sigma\) represents the standard deviation value.

Matrigel was used as the positive (p) sample whilst HEMA (background chemistry) was used as the negative (n) control.

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Figure S1: Monomer structures of materials used for the first generation microarray screen. Each structure has been labelled and full IUPAC names are summarised in table S1.
Figure S2 (a) Total cell number (DAPI count) (b) with outlier data points (denoted in red) were calculated using ROUT analysis (Q=1%) c) and OCT4+ count of REBl-PAT hPSCs on 284 monomer microarray ranked high to low (denoted light to dark, see legend) after 24 h. (See Table S2 for rank order 1-284)
Figure S3: Monomer structures of 19 materials selected for second generation co-polymer screen labelled A-S as referred to in main text.
Figure S4: (a) Synergy of co-polymer combinations were quantified as a ratio of OCT4+ attachment for co-polymer to their corresponding homopolymer components (see supplementary information for methods) clustered by Euclidean distance measure. Synergy ratios (SR) >1 are synergistic combinations (denoted yellow - red), SR values = 1 are additive combinations (denoted in white) and SR values <1 are antagonistic combinations (denoted in grey). All letter IDs mentioned are defined in Figure S2. (b) SR scores were plotted against average total cell number (n=9, where n represents the no. of polymer spots). Data has been defined as synergistic (red), additive (grey) or antagonistic. Data points to the right of dotted line represent high attachment polymers. Highlighted data points (blue) are co-polymer candidates selected for scale-up experiments. All attachment data is summarized in table S3.
Figure S5: Representative images of OCT4 and DAPI stained REBI-PAT attachment on candidate polymers for scale-up on second generation polymer arrayed slides seeded at 0.75 x10⁶ cells/ array at 24 h and 48 h time points in rank order (left to right; quantified from second generation co-polymer array). See Figure S3 for polymer IDs. Scale bar represents 100µm.
Figure S6: Time-lapse representative brightfield images of REBI-PAT attachment on candidate polymers scaled-up on 96 well plates in rank order (top to bottom) at 24 h and 72 h time-points. Scale bar represents 200µm.
Figure S7: TOFSIMS analysis of poly(TCDMDA-blend-BA) surface on poly(styrene) based tissue culture six well-plates. Ions characteristic of polyBA ([C$_4$H$_9$]$^+$ m/z = 57.07, polyTCDMDA ([C$_5$H$_7$]$^+$ m/z = 67.05) and poly(styrene) ([C$_2$H$_7$]$^+$ m/z = 91.06). (N=3, area analysed =3x3mm, constituent monomers shown for references)
Figure S8: Karyograms observed after 5 serial passages on poly (TCDMDA-blend-BA) for (a) hESC HUES7 (46,XY), (b) hiPSC AT1 (46,XX) and (c) hiPSC REBl-PAT (46,XY) cultured in E8 medium.
Figure S9: hPSCs (hiPSC AT1 and REBl-PAT lines and hESC HUES7 line) were assessed for pluripotency markers after 18 days (5 serial passages) on poly(TCDMDA-blend-BA) and compared to Matrigel by (a) flow cytometry (b) quantitative real-time PCR, (c) and immunostaining (ReBl-PAT). Scale bar represents 200μm.
Figure S10: Protein expression of integrin subunits in hiPSC AT1 cells cultured on Matrigel and D:Q (poly(TCDMDA-blend-BA)) for at least three serial passages assessed by western blot analysis. (a) Representative images of Western Blotting bands for integrin subunits $\alpha_v$, $\alpha_\delta$, $\beta_1$, $\beta_4$, $\beta_5$; stem cell marker Nanog, and house-keeping protein $\beta$-actin, (n=3). (b) Quantification of band intensity for integrin expression in AT-1 hiPSCs (n $\geq$ 3), bars show Mean $\pm$ STDEV; black bars show Matrigel control and grey bars show AT-1 on the hit Polymer. Unpaired t-test were performed, and statistical significance is represented as: *P<0.05, **P<0.01, ***P<0.001.
Figure S11: Tri-lineage differentiation of REBI-PAT hPSCs cultured on poly (TCDMDA-blend-BA) for five passages. (a) Definitive endoderm differentiation induced early-stage marker expression of FOXA2 and SOX17 after 2 days. (b) Ectoderm differentiation induced neurogenesis marker expression after 5 days. (c) Mesoderm differentiation induced positive α-actinin expression after 8 days. Scale bars represent 100μm.
Table S1: Full list of monomers included for microarray screens with acronyms and full IUPAC names. Number IDs refer to structures in Figure S1.

| No. | ID   | Acronym                          | Name                                                      |
|-----|------|----------------------------------|-----------------------------------------------------------|
| 1   | 13BDDA | Butanediol-1,3 diacrylate               |
| 2   | THFuA  | Tetrahydrofurfuryl acrylate         |
| 3   | EGDPEA | Ethylene glycol decyclopentenyl ether acrylate |
| 4   | MAAH   | Methacrylic anhydride              |
| 5   | MAPtMA | Methacrylamidopropyltrimethylammonium chloride, |
| 6   | MAEA   | Methacryloxy(ethyl) acetoacetate    |
| 7   | 13BDDMA| 1,3-Butanediol dimethacrylate      |
| 8   | EGDA   | Ethylene glycol diacrylate         |
| 9   | TMPETE | Trimethylolpropane ethoxylate triacrylate |
| 10  | TMCHMA | Trimethylcyclohexyl methacrylate    |
| 11  | TMBpDA | Trimethylolpropane benzole diacrylate |
| 12  | DMAEMA | Dimethylamino-ethyl methacrylate    |
| 13  | BDDA   | Butanediol diacrylate              |
| 14  | SolA   | Solketal acrylate                  |
| 15  | HBOPBA | Hexanediylbis[oxy(2-hydroxy-3,1-propanediyl)] bisacrylate |
| 16  | E3GDA  | Triethylene glycol diacrylate       |
| 17  | DVAd   | Divinyl Adipate                    |
| 18  | PDDMA  | 1,5-Pentanediol dimethacrylate     |
| 19  | TAHTA  | 1,3,5-Triacyroylhexahydro-1,3,5-triazine |
| 20  | CNEA   | Cyanoethyl acrylate                |
| 21  | EGDCMA | Ethylene glycol decyclopentenyl ether methacrylate |
| 22  | OFFA   | Octafluoropentyl acrylate          |
| 23  | DPEPHA | Dipentaerythritol penta/hexa-acrylate |
| 24  | ZBNCTA | Zirconium bromonorbornanelactone carboxylate triacrylate |
| 25  | HEODA  | Hexanediol ethoxylate diacrylate   |
| 26  | HDMPDA | Hydroxy-2,2-dimethylpropyl 3-hydroxy-2,2-dimethyl propionate diacrylate |
| 27  | PETA   | Pentaerythritol triacrylate        |
| 28  | MAEACl | [2-(Methacryloyloxy)ethyl]trimethylammonium chloride solution |
| 29  | DEGDA  | Di(ethylene glycol) diacrylate     |
| 30  | NpMA   | Naphthyl methacrylate              |
| 31  | TBnpMA | Tribromoneopentyl methacrylate     |
| 32  | 14BDDMA | 1,4-Butanediol dimethacrylate      |
| 33  | TMHA   | Trimethylhexyl acrylate            |
| 34  | mMAOEM | mono-2-(Methacryloyloxy)ethyl maleate |
| 35  | DMAPA  | Dimethylamino-propyl acrylate      |
| 36  | DDDMA  | 1,10-Decanediol dimethacrylate     |
| 37  | NGDA   | Neopentyl glycol diacrylate        |
| 38  | TAC    | Tris[2-acryloyloxy]ethyl isocyanurate |
| 39  | tBAEMA | Tert-butylamino-ethyl methacrylate |
| 40  | NpA    | Naphthyl acrylate                 |
| 41  | EGPEA  | Ethylene glycol phenyl ether acrylate |
| 42  | AEMA.C | 2-Aminoethyl methacrylate hydrochloride, |
| 43  | LaA    | Lauryl acrylate                   |
| 44  | BAPODA | Bisphenol A propoxylate diacrylate |
| 45  | APMAM.C| N-(3-Aminopropyl) methacrylamide hydrochloride |
| 46  | HFPDA  | Hexafluoropent-1,5-diyl diacrylate |
| 47  | tBCHA  | Tert-butylcyclohexyl acrylate     |
| 48  | TMPTA  | Trimethylolpropane triacrylate     |
| 49  | DFHA   | Dodecafluoroheptyl acrylate       |


| No. | Monomer Name          | Functional Group and Description                        |
|-----|-----------------------|--------------------------------------------------------|
| 50  | AOHPMA                | Acryloyloxy-2-hydroxypropyl methacrylate               |
| 51  | EGDMA                 | Ethylene glycol dimethacrylate                         |
| 52  | NDDMA                 | 1,9-Nonanediol dimethacrylate                         |
| 53  | PhA                   | Phenyl acrylate                                        |
| 54  | TPGDA                 | Tri(propylene glycol) diacylate                        |
| 55  | BnA                   | Benzyl acrylate                                        |
| 56  | HDDMA                 | 1,6-Hexanediol dimethacrylate                         |
| 57  | FuMA                  | Furfuryl methacrylate                                  |
| 58  | BzHPEA                | Benzoyl-3-hydroxy-phenoxyethyl acrylate                |
| 59  | ExA                   | Epoxidized acrylate                                    |
| 60  | CHMA                  | Cyclohexyl methacrylate                                |
| 61  | TMOPTMA               | 1,1,1-Trimethylolpropane trimethacrylate               |
| 62  | BPAPGDA               | Bisphenol A propoxylate glycerolate diacylate          |
| 63  | iBMA                  | Isobornyl methacrylate                                 |
| 64  | PhMA                  | Phenyl methacrylate                                    |
| 65  | BHMA                  | Benzhydryl methacrylate                                |
| 66  | DEGEEA                | Di(ethylene glycol) ethyl ether acrylate               |
| 67  | BAGDA                 | Bisphenol A glycerolate diacylate                      |
| 68  | SMA                   | Stearyl methacrylate                                   |
| 69  | nEEMA                 | Isocyanatoethyl methacrylate                           |
| 70  | DMPMAm                | N-[3-(Dimethylamino)propyl]methacrylamide              |
| 71  | HFPA                  | Hexafluorosopropyl acrylate                            |
| 72  | BnMA                  | Benzyl methacrylate                                    |
| 73  | HPhOPA                | Hydroxy-3-phenoxypropyl acrylate                       |
| 74  | iOA                   | Isooctyl acrylate                                      |
| 75  | FDA                   | 1,4-Phenylenediacylate                                 |
| 76  | PETA                  | Pentaerythritol tetraacrylate                          |
| 77  | TEGDA                 | Tetra(ethylene glycol) diacylate                       |
| 78  | GIDMA                 | Glycerol dimethacrylate                                |
| 79  | TCIDMDA               | Tricyclodecane-dimethanol diacylate                    |
| 80  | MAHBP                 | 4-Methacryloxy-2-hydroxybenzophenone                   |
| 81  | BTHPhMA               | Benzotrazol-2-yl)-4-hydroxyphenyl)ethyl methacrylate   |
| 82  | NGPDA                 | Neopentyl glycol propoxylate diacylate                 |
| 83  | DMEMAm                | N-[2-(N,N-Dimethylamino)ethyl]methacrylamide           |
| 84  | DEAEA                 | Diethy lamino ethyl acrylate                           |
| 85  | pEGPhEA               | Poly(ethylene glycol) phenyl ether acrylate            |
| 86  | PhEMA                 | 2-Phenylethyl methacrylate                            |
| 87  | pPGDMA                | Poly(propylene glycol) (400) dimethacrylate           |
| 88  | MAAHS                 | Methacrylic acid N-hydroxy succinimide ester          |
| 89  | HPHPBAH               | Hydroxypivalyl hydroxyipivalate bis[6-(acryloyloxy)hexanoate] |
| 90  | PPPhA                 | Pentafluorophenyl acrylate                             |
| 91  | DEAEMA                | Diethylaminoethyl methacrylate                         |
| 92  | TBPhA                 | 2,4,6-Tribromophenyl acrylate                          |
| 93  | PMMA                  | 1-Pyrenylmethy1 methacrylate                          |
| 94  | MAPU                  | 2-methacryloxyethyl phenyl urethane                   |
| 95  | NBMA                  | Norbornyl methacrylate                                 |
| 96  | PhMAm                 | N-Phenylethacrylamide                                  |
| 97  | DEGEHA                | Di(ethylene glycol) 2-ethylhexyl ether acrylate        |
| 98  | HBMA                  | Hydroxybutyl methacrylate                             |
| 99  | pPGMEA                | Poly(propylene glycol) methyl ether acrylate           |
| 100 | iDMA                  | Isodecyl methacrylate                                  |
| 101 | DiPEMA                | 2-Diisopropylaminoethyl methacrylate                  |
| 102 | AEMAm.C               | N-(2-aminoethyl) methacrylamide hydrochloride         |
| No. | Chemical | Name |
|-----|----------|------|
| 103 | HPMAP    | Hydroxypropyl 2-(methacyryloxy)ethyl phthalate |
| 104 | MTEMA    | Methylthioethyl methacrylate |
| 105 | PEDAM    | Pentacyrthritol diacrylate monostearate |
| 106 | MHMB     | Methyl 3-hydroxy-2-methylenebutyrate |
| 107 | EG3DMA   | Tri(ethylene glycol) dimethacrylate |
| 108 | HDFHUA   | Heptadecafluoro-2-hydroxyundecyl acrylate |
| 109 | HPA      | Hydroxypropyl acrylate |
| 110 | NaPhA    | Sodium 3-phenyl-acrylate |
| 111 | ZCea     | Zirconium carboxyethyl acrylate |
| 112 | BPEODA   | Bisphenol A ethoxylate diacrylate |
| 113 | COEA     | 2-Cinnamoyloxyethyl acrylate |
| 114 | DEG DMA  | Diethylene glycol dimethacrylate |
| 115 | OFHMA    | Octafluoro-2-hydroxy-6-(trifluoromethyl)heptyl methacrylate |
| 116 | tBuMA    | Isobutyl methacrylate |
| 117 | GMA      | Glycidyl methacrylate |
| 118 | iDA      | Isodecyl acrylate |
| 119 | SPAK     | Sultopropyl acrylate potassium salt |
| 120 | BFEODA   | Bisphenol F ethoxylate diacrylate |
| 121 | BnPA     | Benzyl 2-n-propyl acrylate |
| 122 | CeEA     | Carbazol-9-yl ethyl acrylate |
| 123 | tBCHMA   | Tertbutycyclohexyl methacrylate |
| 124 | TFPMA    | Tetrafluoropropyl methacrylate |
| 125 | MA       | Methyl acrylate |
| 126 | TDOcA    | Tridecafluorooctyl acrylate |
| 127 | MAETA    | 4-Methacryloxyethyl trimellitic anhydride |
| 128 | DVSeb    | Divinyl sebacate |
| 129 | TMPOTA   | Trimethylolpropane propoxylate triacrylate |
| 130 | BMENBC   | Bis(2-methacryloyloxy) N,N’-1,9-nonylene biscarbamate |
| 131 | nBuMA    | o-Nitrobenzyl methacrylate |
| 132 | oCMA     | n-Octyl methacrylate, |
| 133 | HHUMA    | Hexadecafluoro-2-hydroxy-10-(trifluoromethyl)undecyl methacrylate |
| 134 | MAEP     | Monoacryloyethyl phosphate |
| 135 | CHA      | Cyclohexyl acrylate |
| 136 | tBOA     | Isobornyl acrylate |
| 137 | THFuMA   | Tetrahydrofurfuryl methacrylate |
| 138 | DMAEA    | Dimethylamino-ethyl acrylate |
| 139 | PhEA     | 2-Phenylethyl acrylate |
| 140 | PAHEMA   | Phosphoric acid 2-hydroxyethyl methacrylate ester |
| 141 | BOEMA    | Butoxyethyl methacrylate |
| 142 | HDFDA    | Heptadecafluorodecyl acrylate |
| 143 | HHiPMA   | Hexafluoropropyl methacrylate |
| 144 | BMA      | Butyl methacrylate |
| 145 | DMPAm    | N-[3-(Dimethylamino)propyl]acrylamide |
| 146 | GDIDA    | Glycerol 1,3-diglycerolate diacrylate |
| 147 | EHMA     | Ethylhexyl methacrylate |
| 148 | DFFMOA   | Dodecafluoro-7-(trifluoromethyl)-octyl acrylate |
| 149 | BAC      | N,N’-Bis(acryloyloxy)cystamine |
| 150 | HEAm     | N-Hydroxyethyl acrylamide |
| 151 | mMAOES   | mono-2-(Methacyryloxy)ethyl succinate |
| 152 | BA       | Butyl acrylate |
| 153 | BMAM     | N-Benzylmethacrylamide |
| 154 | FMHPNMA  | Trifluoro-2’-(trifluoromethyl)-2’-hydroxypropyl]-3-norbornyl methacrylate |
| Compound       | Description                                                                 |
|---------------|-----------------------------------------------------------------------------|
| MMA           | Methyl methacrylate                                                         |
| BACOEA        | Butylamino carbonyl oxy ethyl acrylate                                      |
| EOEAl         | Ethoxyethyl acrylate                                                        |
| iBA           | Isobutyl acrylate                                                           |
| SPMK          | 3-Sulfopropyl methacrylate potassium salt                                   |
| DHPA          | 2,3-dihydroxypropyl acrylate                                               |
| F6BMA         | Hexafluorobutyl methacrylate                                               |
| BEBMA         | 1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl 6-(methacryloyloxy)-4-oxohexanoate |
| HDFDMA        | Heptadecafluorodecyl methacrylate                                          |
| TFCAm         | 7-[4-(Trifluoromethyl)coumarin]acrylamide                                   |
| AODMBA        | (R)-α-Acryloyloxy-[β,β-dimethyl-γ-butyrolactone                              |
| PA            | Propargyl acrylate                                                         |
| OFFMA         | Octafluoropentyl methacrylate                                              |
| iBOMAm        | N-(Isobutoxymethyl)acrylamide                                              |
| BAFA          | 1,4-Bis(acryloyl)piperazine                                                |
| DHFNMMA       | Dodecafluoro-2-hydroxy-8-(trifluoromethyl)mononyl methacrylate             |
| F6BA          | Hexafluorobutyl acrylate                                                   |
| MAEPC         | 2-Methacryloyoxyethyl phosphorylcholine                                     |
| pPGNEA        | Poly(propylene glycol) 4-nonylphenyl ether acrylate                        |
| SEMA          | 2-Sulfoethyl methacrylate                                                 |
| VMA           | Vinyl methacrylate                                                         |
| HMA           | Hexyl methacrylate                                                         |
| EBCNA         | Ethyl-cis-cyano-acrylate                                                   |
| THMMAm        | N-[Tris(hydroxymethyl)methyl]acrylamide                                     |
| HA            | Hexyl acrylate                                                             |
| iBMAm         | N-t-butylmethacrylamide                                                     |
| HTFDA         | Hexadecafluoro-9-(trifluoromethyl)decyl acrylate                            |
| AMA           | Allyl methacrylate                                                         |
| EEMA          | Ethoxyethyl methacrylate                                                   |
| EHA           | Ethylhexyl acrylate                                                        |
| PMAm          | N-(Phthalimidomethyl)acrylamide                                             |
| tBMA          | Tert-butyl methacrylate                                                    |
| TMBAm         | N-(1,1,3,3-Tetramethylbutyl)acrylamide                                      |
| DEGMA         | Di(ethylene glycol) methyl ether methacrylate                              |
| TBPMA         | Tribromophenyl methacrylate                                                |
| EGMA          | Ethylene glycol methyl ether methacrylate                                   |
| EEA           | Ethyl 2-ethylacrylate                                                       |
| LMA           | Lauryl methacrylate                                                        |
| MPDSAH        | Methacryloylamino[propyl]dimethyl(3-sulfopropyl)ammonium hydroxide inner salt |
| AnMA          | Anthracenymethacrylate                                                     |
| EBAM          | N,N'-Ethylenebisacrylamide                                                  |
| F7BA          | Heptafluorobutyl acrylate                                                  |
| HFDA          | Heneicosanfluorododecyl acrylate                                           |
| HPMAm         | N-(2-Hydroxypropyl)methacrylamide                                          |
| MEDMSAH       | [2-(Methacryloyloxy)ethyl]dimethyl-(3-sulfopropyl) ammonium hydroxide       |
| PBPhMA        | Pentabromophenyl methacrylate                                              |
| PPPDMA        | PEO(5800)-b-PPO(3000)-b-PEO(5800) dimethacrylate                           |
| iBAm          | N-t-butylacrylamide                                                        |
| CEA           | Carboxyethyl acrylate                                                      |
| HCEA          | Hafnium carboxyethyl acrylate                                              |
|   |   |   |
|---|---|---|
| 206 | TMPDAE | Trimethyl propane diallyl ether |
| 207 | TPhMAm | N-(Triphenylmethyl) methacrylamide |
| 208 | DAAM | N,N-Diallylacrylamide |
| 209 | EMA | Ethyl methacrylate |
| 210 | EPA | Ethyl 2-propylacrylate |
| 211 | HMBMAm | N,N'-Hexamethylenebis(methacrylamide) |
| 212 | TDFOMA | Tridecafluorooctyl methacrylate |
| 213 | DRA | Disperse red 1 acrylate |
| 214 | HPMA | N-(4-Hydroxyphenyl)methacrylamide |
| 215 | MAL | Methacryloyl-L-Lysine |
| 216 | NDMAm | N-Dodecylmethacrylamide |
| 217 | PBBA | Pentabromobenzyl acrylate |
| 218 | pEGMEMA | Poly(ethylene glycol) methyl ether methacrylate |
| 219 | DMMAm | N,N-Dimethylethacrylamide |
| 220 | DYAm | Disperse yellow 7 acrylate |
| 221 | EG4DMA | Tetraethylene glycol dimethacrylate |
| 222 | Mam | Methacrylamide |
| 223 | pPGA | Poly(propylene glycol) acrylate |
| 224 | DOAm | Disperse Orange 3 acrylamide |
| 225 | HPMA | Hydroxypropyl methacrylate |
| 226 | ROMAm | N-(Butoxymethyl)acrylamide |
| 227 | NMEMAm | 2-N-Morpholinoethyl methacrylate |
| 228 | tBA | Tert-butyl acrylate |
| 229 | BMAOEP | Bis[2-(methacryloxyethyl)] phosphate |
| 230 | ECNTA | Ethyl-2-cyano-3-(2-thienyl)acrylate |
| 231 | F7BMA | Heptafluorobutyl methacrylate |
| 232 | NAM | N-Acryloylmorpholine |
| 233 | pEGMEA | Poly(ethylene glycol) methyl ether acrylate |
| 234 | FPPMA | Pentafluoropropyl methacrylate |
| 235 | EGMEA | Ethylene glycol methyl ether acrylate |
| 236 | HMAm | N-(Hydroxymethyl)acrylamide |
| 237 | iPAM | N-Isopropylacrylamide |
| 238 | GMMA | Glycerol monomethacrylate |
| 239 | AAm | Acrylamide |
| 240 | MAAm | N-Methylmethacrylamide |
| 241 | PMA | Propargyl methacrylate |
| 242 | ZrA | Zirconium acrylate |
| 243 | AA | Allyl acrylate |
| 244 | CMAOE | Caprolactone 2-(methacryloyloxy)ethyl ester |
| 245 | DMAm | N,N'-Dimethyleacylamide |
| 246 | EGPhMA | Ethylene glycol phenyl ether methacrylate |
| 247 | HEA | Hydroxyethyl acrylate |
| 248 | MBMAm | N,N'-Methylenebismethacrylamide |
| 249 | NAS | N-Acryloxysuccinimide |
| 250 | tBOCAPAm | N-(t-BOC-aminopropyl)methacrylamide |
| 251 | TEGMA | Tri(ethylene glycol) methyl ether methacrylate |
| 252 | ZnA | Zinc acrylate |
| 253 | HMBAM | N,N'-Hexamethylenebisacrylamide |
| 254 | PBPhA | Pentabromophenyl acrylate |
| 255 | PFPMA | Pentafluoropropyl acrylate |
| 256 | AAcAm | Diacetone acrylamide |
| 257 | AcAPAm | N-[2-(Acryloylamino)phenyl]acrylamide |
| 258 | DHEBAM | N,N'-(1,2-Dihydroxyethylene)bisacrylamide |
| Rank | Polymer ID   | DAPI count | OCT4+ count |
|------|--------------|------------|-------------|
| 1    | 13BDDA       | 60         | 13BDDA 56   |
| 2    | THFuA        | 55         | THFuA 52    |
| 3    | EGDPEA       | 51         | EGDPEA 48   |
| 4    | MAAH         | 49         | MAAH 47     |
| 5    | MAPtMA       | 43         | MAPtMA 40   |
| 6    | TMPETA       | 42         | TMPETA 37   |
| 7    | TMOBDA       | 40         | TMOBDA 36   |
| 8    | BDDA         | 40         | BDDA 37     |
| 9    | MAAE         | 39         | MAAE 38     |
| 10   | 13BDDMA      | 39         | 13BDDMA 38  |
| 11   | TMCHMA       | 38         | TMCHMA 36   |
| 12   | EGDA         | 38         | DMAEMA 36   |
| 13   | DMAEMA       | 37         | DMAEMA 36   |
| 14   | DVAd         | 35         | SolA 32     |
| 15   | E3GDA        | 35         | HBOPBA 31   |
| 16   | SolA         | 35         | E3GDA 31    |
| 17   | PDDMA        | 34         | DVAd 31     |
| 18   | DMEMAm       | 33         | PDDMA 30    |
| 19   | HBOPBA       | 32         | TAHTA 30    |
| 20   | TAHTA        | 31         | CNEA 29     |
| 21   | MAEACI       | 31         | EGDCMA 28   |
| 22   | DMAPA        | 30         | OFPA 28     |
| 23   | CNEA         | 30         | DPEPHA 27   |
| 24   | EGDCMA       | 29         | ZrBNCTA 26  |
| 25   | OFPA         | 29         | HEODA 26    |

Table S2: hPSC attachment on monomer screen at 24 h ranked (high to low) by total cell number (DAPI nuclei count) and OCT4+ nuclei count.
|   | DPEPHA | 29 | 33 | HDMPDA | 26 | 11 |
|---|--------|----|----|--------|----|----|
| 27 | HDMPDA | 28 | 12 | PETrA  | 25 | 26 |
| 28 | HEODA  | 28 | 30 | MAEAC1 | 25 | 22 |
| 29 | PETrA  | 28 | 30 | DEGDA  | 24 | 15 |
| 30 | ZrBNCTA| 27 | 17 | NpMA   | 24 | 13 |
| 31 | DEGDA  | 27 | 17 | TBNpMA | 24 | 14 |
| 32 | NpMA   | 26 | 15 | 14BDDMA| 24 | 24 |
| 33 | tBAEMA | 26 | 51 | TMHA   | 24 | 43 |
| 34 | 14BDDMA| 26 | 26 | mMAOEM | 23 | 15 |
| 35 | TBNpMA | 25 | 15 | DMAPA  | 23 | 30 |
| 36 | NGDA   | 24 | 25 | DDDMA  | 23 | 21 |
| 37 | TMHA   | 24 | 45 | NGDA   | 23 | 24 |
| 38 | mMAOEM | 24 | 16 | TAIC   | 22 | 29 |
| 39 | DMPMAm | 23 | 9  | tBAEMA | 22 | 43 |
| 40 | NpA    | 23 | 22 | NpA    | 21 | 20 |
| 41 | DDDMA  | 23 | 21 | EGPEA  | 21 | 20 |
| 42 | TAIC   | 22 | 29 | AEMA.C | 20 | 22 |
| 43 | EGPEA  | 22 | 20 | LaA    | 19 | 22 |
| 44 | TMPTA  | 22 | 21 | BAPODA | 19 | 16 |
| 45 | AEMA.C | 22 | 24 | APMAm.C| 19 | 30 |
| 46 | HFIPA  | 21 | 20 | HFPDA  | 19 | 12 |
| 47 | DFHA   | 20 | 12 | tBCHA  | 18 | 20 |
| 48 | APMAm.C| 20 | 32 | TMPTA  | 18 | 18 |
| 49 | NDDMA  | 20 | 19 | DFHA   | 18 | 11 |
| 50 | tBCHA  | 20 | 21 | AOHPMA | 17 | 21 |
| 51 | BAPODA | 20 | 16 | EGDMA  | 17 | 20 |
| 52 | LaA    | 19 | 22 | NDDMA  | 17 | 16 |
| 53 | HFPDA  | 19 | 12 | PhA    | 17 | 24 |
| 54 | BzHPEA | 19 | 19 | TPGDA  | 17 | 21 |
| 55 | TPGDA  | 19 | 21 | BnA    | 17 | 15 |
| 56 | BnA    | 19 | 17 | HDDMA  | 17 | 13 |
| 57 | PhA    | 18 | 25 | FuMA   | 17 | 27 |
| 58 | HDDMA  | 18 | 15 | BzHPEA | 17 | 16 |
| 59 | pEGDMA | 18 | 17 | ExA    | 16 | 26 |
| 60 | EGDMA  | 18 | 21 | CHMA   | 16 | 16 |
| 61 | FuMA   | 18 | 29 | TMOPTMA| 16 | 11 |
| 62 | PhMA   | 18 | 21 | BPAPGDA| 16 | 26 |
| 63 | AOHPMA | 18 | 21 | IBMA/tBAEMA| 16 | 27 |
| 64 | CHMA   | 17 | 16 | PhMA   | 15 | 19 |
| 65 | BAGDA  | 17 | 25 | BHMA   | 15 | 19 |
| 66 | ExA    | 16 | 26 | pEGDMA | 15 | 15 |
| 67 | BHMOPhP| 16 | 12 | DEGEEA | 15 | 22 |
| 68 | TMOPTMA| 16 | 12 | BAGDA  | 15 | 22 |
| 69 | IBMA/tBAEMA| 16 | 27 | ODA   | 15 | 8  |
| 70 | ODA    | 16 | 9  | iCEMA  | 14 | 12 |
| 71 | BHMA   | 16 | 19 | BHMOPhP| 14 | 11 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 72 | BPAPGDA | 16 | 27 | DMPMAm | 14 |
| 73 | GPOTA | 16 | 9 | GPOTA | 14 |
| 74 | iBMA | 15 | 29 | HFIPA | 14 |
| 75 | BnMA | 15 | 14 | iBMA | 13 |
| 76 | DEGEEA | 15 | 22 | BnMA | 13 |
| 77 | iCEMA | 15 | 12 | HPhOPA | 13 |
| 78 | NGPDA | 15 | 18 | iOA | 13 |
| 79 | DMA | 15 | 19 | PDA | 13 |
| 80 | MAHBp | 15 | 7 | PETA | 13 |
| 81 | HDMA | 14 | 26 | TEGDA | 13 |
| 82 | PETA | 14 | 8 | GDMA | 13 |
| 83 | DEAEA | 14 | 20 | HDMA | 13 |
| 84 | HPhOPA | 14 | 20 | TCDMDA | 13 |
| 85 | PHPMA | 14 | 17 | MAHBp | 12 |
| 86 | TCDMDA | 14 | 19 | BTHPhMA | 12 |
| 87 | PDA | 14 | 10 | DMA | 12 |
| 88 | GDMA | 13 | 10 | NGPDA | 12 |
| 89 | iOA | 13 | 12 | DMEMAm | 12 |
| 90 | TEGDA | 13 | 19 | DEAEA | 12 |
| 91 | MAAHS | 13 | 23 | pEGPhEA | 12 |
| 92 | HHPBBAH | 13 | 10 | PhEMA | 12 |
| 93 | BTHPhMA | 13 | 11 | pPGDMA | 12 |
| 94 | TBPhA | 13 | 13 | MAAHS | 12 |
| 95 | HEODA/EEMA | 12 | 22 | PPDDA | 11 |
| 96 | PhEMA | 12 | 20 | PHPMA | 11 |
| 97 | pEGPhEA | 12 | 18 | HEODA/EEMA | 11 |
| 98 | PPDDA | 12 | 15 | HHPBBAH | 11 |
| 99 | pPGDMA | 12 | 13 | PFPhA | 11 |
| 100 | iDMA | 12 | 20 | DEAEAMA | 11 |
| 101 | HBMA | 11 | 34 | TBPhA | 11 |
| 102 | PFPhA | 11 | 9 | PMMA | 11 |
| 103 | DEGEEA | 11 | 16 | MAPU | 10 |
| 104 | MAPU | 11 | 14 | NBMA | 10 |
| 105 | NBMA | 11 | 15 | PhMAm | 10 |
| 106 | PhMAm | 11 | 15 | DEGEEA | 10 |
| 107 | PMMA | 11 | 15 | HBMA | 10 |
| 108 | DEAEMA | 11 | 13 | pPGMEA | 10 |
| 109 | pPGMEA | 11 | 15 | iDMA | 10 |
| 110 | HPA | 10 | 17 | DiPEMA | 10 |
| 111 | PEDAM | 10 | 24 | AEMAm.C | 9 |
| 112 | MTEMA | 10 | 13 | HPMAP | 9 |
| 113 | DiPEMA | 10 | 11 | BPDMA | 9 |
| 114 | AEMAm.C | 10 | 16 | MTEMA | 9 |
| 115 | HPMAP | 10 | 12 | PEDAM | 8 |
| 116 | EG3DMA | 9 | 15 | MHMB | 8 |
| 117 | BPDMA | 9 | 10 | EG3DMA | 8 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 118 | HDFHUA | 9 | 15 | HDFHUA | 8 | 14 |
| 119 | COEA | 9 | 12 | HPA | 8 | 16 |
| 120 | DEGDMA | 9 | 9 | NaPhA | 8 | 8 |
| 121 | DMPAm | 9 | 12 | ZrCEA | 8 | 8 |
| 122 | IDA | 9 | 11 | BPEODA | 8 | 9 |
| 123 | MHMB | 9 | 8 | COEA | 8 | 11 |
| 124 | BPEODA | 9 | 10 | DEGDMA | 8 | 8 |
| 125 | NaPhA | 8 | 8 | OFHMA | 8 | 8 |
| 126 | iBuMA | 8 | 10 | iBuMA | 7 | 9 |
| 127 | SPAK | 8 | 6 | GMA | 7 | 14 |
| 128 | ZrCEA | 8 | 8 | iDA | 7 | 9 |
| 129 | OFHMA | 8 | 8 | SPAK | 7 | 6 |
| 130 | TDFoCA | 8 | 8 | BPEODA | 7 | 7 |
| 131 | GMA | 7 | 14 | BnPA | 7 | 7 |
| 132 | MA | 7 | 10 | CzEA | 7 | 7 |
| 133 | TFPMA | 7 | 10 | tBCHMA | 7 | 6 |
| 134 | BPEODA | 7 | 7 | TFPMA | 7 | 10 |
| 135 | BnPA | 7 | 7 | MA | 7 | 9 |
| 136 | MAETA | 7 | 9 | TDFoCA | 7 | 7 |
| 137 | tBCHMA | 7 | 7 | MAETA | 6 | 9 |
| 138 | CzEA | 7 | 7 | DVSeb | 6 | 6 |
| 139 | SMA | 7 | 10 | TMPoTA | 6 | 12 |
| 140 | BMENBC | 7 | 2 | BMENBC | 6 | 2 |
| 141 | DVSeb | 7 | 6 | NBnMA | 6 | 18 |
| 142 | HFHUMA | 7 | 5 | nOcMA | 6 | 9 |
| 143 | PAHEMA | 7 | 7 | SMA | 6 | 9 |
| 144 | HDFDA | 6 | 8 | HFHUMA | 6 | 5 |
| 145 | TMPoTA | 6 | 12 | MAEP | 6 | 8 |
| 146 | nOcMA | 6 | 9 | CHA | 5 | 8 |
| 147 | IBOA | 6 | 7 | IBOA | 5 | 6 |
| 148 | NBnMA | 6 | 18 | THFuMA | 5 | 7 |
| 149 | PhEA | 6 | 14 | DMAEA | 5 | 11 |
| 150 | BOEMA | 6 | 8 | PhEA | 5 | 12 |
| 151 | BMA | 6 | 10 | PAHEMA | 5 | 5 |
| 152 | THFuMA | 6 | 7 | BOEMA | 5 | 7 |
| 153 | CHA | 6 | 9 | HDFDA | 5 | 5 |
| 154 | MAEP | 6 | 8 | HFIPMA | 5 | 7 |
| 155 | GDGDGA | 5 | 5 | BMA | 5 | 8 |
| 156 | HEAm | 5 | 7 | DMPAm | 5 | 6 |
| 157 | DMAEA | 5 | 11 | GDGDGA | 5 | 4 |
| 158 | BMAM | 5 | 6 | EHMA | 4 | 4 |
| 159 | HFIPMA | 5 | 7 | DFFMOA | 4 | 7 |
| 160 | DFFMOA | 5 | 8 | BAC | 4 | 5 |
| 161 | BACoEA | 5 | 6 | HEAm | 4 | 6 |
| 162 | EHMA | 4 | 4 | mAoES | 4 | 4 |
| 163 | BAC | 4 | 5 | BA | 4 | 8 |
|   |   |   |   |   |
|---|---|---|---|---|
| 164 | mMAOES | 4 | 4 | BMAM | 4 | 6 |
| 165 | pPGDA | 4 | 5 | FMHPNMA | 4 | 4 |
| 166 | BA | 4 | 8 | MMA | 4 | 6 |
| 167 | MMA | 4 | 6 | CHPMA | 4 | 7 |
| 168 | FMHPNMA | 4 | 4 | pPGDA | 4 | 4 |
| 169 | SPMAK | 4 | 7 | BACOEAE | 4 | 5 |
| 170 | CHPMA | 4 | 7 | EOEAE | 4 | 6 |
| 171 | DHPA | 4 | 6 | iBA | 4 | 3 |
| 172 | PMAm | 4 | 6 | SPMAK | 3 | 6 |
| 173 | OFPMA | 4 | 7 | DHPA | 3 | 6 |
| 174 | EOEAE | 4 | 6 | F6BMA | 3 | 3 |
| 175 | iBA | 4 | 3 | pFDA | 3 | 3 |
| 176 | pFDA | 4 | 3 | IBESMA | 3 | 4 |
| 177 | TFCam | 4 | 5 | HDFDMA | 3 | 4 |
| 178 | F6BMA | 3 | 3 | TFCam | 3 | 5 |
| 179 | IBESMA | 3 | 4 | AODMBA | 3 | 4 |
| 180 | HDFDMA | 3 | 4 | PA | 3 | 6 |
| 181 | PA | 3 | 7 | OFPMA | 3 | 5 |
| 182 | EbCNA | 3 | 7 | iBOMAm | 3 | 2 |
| 183 | AODMBA | 3 | 4 | BAPA | 3 | 3 |
| 184 | pPGNEA | 3 | 6 | DFHNMA | 3 | 3 |
| 185 | iBOMAm | 3 | 2 | F6BA | 3 | 4 |
| 186 | HMA | 3 | 6 | MAEPC | 3 | 5 |
| 187 | SEMA | 3 | 5 | pPGNEA | 3 | 6 |
| 188 | BAPA | 3 | 3 | SEMA | 3 | 5 |
| 189 | DFHNMA | 3 | 3 | VMA | 3 | 2 |
| 190 | F6BA | 3 | 4 | HMA | 2 | 5 |
| 191 | MAEPC | 3 | 5 | EbCNA | 2 | 6 |
| 192 | EEMA | 3 | 5 | THMMAm | 2 | 4 |
| 193 | tBMAm | 3 | 3 | HA | 2 | 3 |
| 194 | VMAM | 3 | 2 | tBMAm | 2 | 3 |
| 195 | HA | 2 | 3 | HTFDA | 2 | 3 |
| 196 | EHA | 2 | 6 | AMA | 2 | 4 |
| 197 | THMMAm | 2 | 4 | EEMA | 2 | 5 |
| 198 | AMA | 2 | 4 | EHA | 2 | 5 |
| 199 | EGMMMA | 2 | 4 | FuMA/tBAEMA | 2 | 2 |
| 200 | HTFDA | 2 | 3 | PMAm | 2 | 3 |
| 201 | DEGMA | 2 | 3 | tBMA | 2 | 4 |
| 202 | FuMA/tBAEMA | 2 | 2 | TMBAm | 2 | 4 |
| 203 | tBMA | 2 | 4 | DEGMA | 2 | 3 |
| 204 | TMBAm | 2 | 4 | TBPMA | 2 | 3 |
| 205 | TBPMA | 2 | 3 | EGMMA | 2 | 3 |
| 206 | HDFA | 2 | 3 | EEA | 2 | 2 |
| 207 | LMA | 2 | 2 | LMA | 2 | 2 |
| 208 | tBAm | 2 | 4 | MPDSAH | 2 | 2 |
| 209 | AnMA | 2 | 2 | AnMA | 2 | 2 |
|   | EEA   | 2   | 2   | EBAM   | 1   | 2   |
|---|-------|-----|-----|--------|-----|-----|
| 211 | MPDSAH | 2   | 2   | F7BA   | 1   | 2   |
| 212 | EBAM   | 2   | 2   | HFDA   | 1   | 3   |
| 213 | PPPhMA | 2   | 3   | HPMAm  | 1   | 3   |
| 214 | F7BA   | 1   | 2   | MEDMSAH| 1   | 2   |
| 215 | HPMAm  | 1   | 3   | PPPhMA | 1   | 2   |
| 216 | MEDMSAH| 1   | 2   | PPPhMA | 1   | 3   |
| 217 | PBPhMA | 1   | 2   | HBA    | 1   | 3   |
| 218 | TMPDae | 1   | 4   | PPPDMA | 1   | 2   |
| 219 | DAAM   | 1   | 2   | tBAm   | 1   | 3   |
| 220 | HBA    | 1   | 3   | CEA    | 1   | 3   |
| 221 | MAL    | 1   | 2   | HFCEA  | 1   | 3   |
| 222 | NDMAm  | 1   | 2   | TmpDae | 1   | 4   |
| 223 | PPPDMA | 1   | 2   | TPhMAm | 1   | 2   |
| 224 | CEA    | 1   | 3   | DAAM   | 1   | 1   |
| 225 | HFCEA  | 1   | 3   | EMA    | 1   | 3   |
| 226 | PBBA   | 1   | 4   | EPA    | 1   | 2   |
| 227 | TPhMAm | 1   | 2   | HMBMAm | 1   | 3   |
| 228 | EMA    | 1   | 3   | TDFOMA | 1   | 2   |
| 229 | EPA    | 1   | 2   | DRA    | 1   | 2   |
| 230 | DYA    | 1   | 3   | HPhMA  | 1   | 2   |
| 231 | HMBMAm | 1   | 3   | MAL    | 1   | 2   |
| 232 | pEGMEMA| 1   | 2   | NDMAm  | 1   | 1   |
| 233 | TDFOMA | 1   | 2   | PBBA   | 1   | 3   |
| 234 | DRA    | 1   | 2   | pEGMEMA| 1   | 2   |
| 235 | HPPhMA | 1   | 2   | DMMAm  | 1   | 2   |
| 236 | pPGA   | 1   | 1   | DYA    | 1   | 2   |
| 237 | DHEBAM | 1   | 3   | EG4DMA | 1   | 1   |
| 238 | DMMAm  | 1   | 2   | Mam    | 1   | 2   |
| 239 | EG4DMA | 1   | 1   | pPGA   | 1   | 1   |
| 240 | Mam    | 1   | 2   | DOAm   | 1   | 1   |
| 241 | DOAm   | 1   | 1   | HPMA   | 1   | 1   |
| 242 | HPMA   | 1   | 1   | BOMAm  | 1   | 2   |
| 243 | BOMAm  | 1   | 2   | NMEMAm | 1   | 1   |
| 244 | NMEMAm | 1   | 1   | tBA    | 1   | 1   |
| 245 | tBA    | 1   | 1   | BMAOEP | 1   | 2   |
| 246 | BMAOEP | 1   | 2   | ECNTA  | 1   | 1   |
| 247 | ECNTA  | 1   | 1   | F7BMA  | 1   | 2   |
| 248 | EGMEA  | 1   | 1   | NAM    | 1   | 2   |
| 249 | F7BMA  | 1   | 2   | pEGMEA | 1   | 1   |
| 250 | NAM    | 1   | 2   | pPFPMA | 1   | 1   |
| 251 | pEGMEA | 1   | 1   | EGMEA  | 1   | 1   |
| 252 | pPFPMA | 1   | 1   | HMAm   | 1   | 2   |
| 253 | ZnA    | 1   | 1   | iPAM   | 1   | 1   |
| 254 | HMAm   | 1   | 2   | GMMA   | 1   | 1   |
| 255 | iPAM   | 1   | 1   | AAm    | 0   | 1   |
|    |    |    |    |    |    |
|----|----|----|----|----|----|
| 256 | ZrA | 1  | 1  | MMAm | 0  | 1  |
| 257 | GMMA | 1  | 1  | PMA  | 0  | 1  |
| 258 | AAm | 0  | 1  | tBEMAm | 0  | 1  |
| 259 | MMAm | 0  | 1  | ZrA  | 0  | 1  |
| 260 | PMA | 0  | 1  | AA   | 0  | 1  |
| 261 | tBEMAm | 0  | 1  | CMAOE | 0  | 1  |
| 262 | AA | 0  | 1  | DMAm  | 0  | 1  |
| 263 | CMAOE | 0  | 1  | EGPhMA | 0  | 1  |
| 264 | DMAm | 0  | 1  | HEA   | 0  | 1  |
| 265 | EGPhMA | 0  | 1  | MBMAm | 0  | 1  |
| 266 | HEA | 0  | 1  | NAS   | 0  | 1  |
| 267 | MBMAm | 0  | 1  | tBOCAPAm | 0  | 1  |
| 268 | NAS | 0  | 1  | TEGMA | 0  | 1  |
| 269 | tBOCAPAm | 0  | 1  | ZnA  | 0  | 1  |
| 270 | TEGMA | 0  | 1  | HMBAM | 0  | 1  |
| 271 | HMBAM | 0  | 1  | PBPhA | 0  | 1  |
| 272 | PBPhA | 0  | 1  | PFPA  | 0  | 1  |
| 273 | PFPA | 0  | 1  | AAcAm | 0  | 0  |
| 274 | pEGDA | 0  | 0  | AcAPAm | 0  | 0  |
| 275 | AAcAm | 0  | 0  | DHEBAM | 0  | 0  |
| 276 | AcAPAm | 0  | 0  | EA   | 0  | 0  |
| 277 | EA | 0  | 0  | EaNIa | 0  | 0  |
| 278 | EaNIa | 0  | 0  | GA   | 0  | 0  |
| 279 | GA | 0  | 0  | MAA  | 0  | 0  |
| 280 | MAA | 0  | 0  | MBAm  | 0  | 0  |
| 281 | MBAm | 0  | 0  | MOPAm | 0  | 0  |
| 282 | MOPAm | 0  | 0  | NPhPMA | 0  | 0  |
| 283 | NPhPMA | 0  | 0  | pEGDA | 0  | 0  |
| 284 | pEGMA | 0  | 0  | pEGMA | 0  | 0  |
Table S3 hPSC attachment on co-polymer arrays after 24 h ranked (high-low) by OCT4+ nuclei count

| Rank order* | Letter ID | Polymer ID               | Average OCT4 count | STDEV |
|-------------|-----------|--------------------------|-------------------|-------|
| 1           | D:O       | TCDMDA:MAETA             | 164               | 80    |
| 2           | P:E       | THFuA:EG4DMA             | 153               | 153   |
| 3           | F:G       | BDDA:EGDA                | 151               | 90    |
| 4           | H:Q       | GDMA:BA                  | 135               | 119   |
| 5           | P:B       | THFuA:NGDA               | 134               | 127   |
| 6           | P:C       | THFuA:BHMOPhP            | 131               | 122   |
| 7           | P:H       | THFuA:GDMA               | 129               | 108   |
| 8           | O:D       | MAETA:TCDMDA             | 124               | 96    |
| 9           | G:F       | EGDA:BDDA                | 123               | 85    |
| 10          | H:F       | GDMA:BDDA                | 123               | 87    |
| 11          | B:J       | NGDA:mMAOES              | 122               | 70    |
| 12          | D:G       | TCDMDA:EG4DMA            | 120               | 74    |
| 13          | F:P       | BDDA:THFuA               | 117               | 96    |
| 14          | H:D       | GDMA:TCDMDA              | 117               | 94    |
| 15          | M:C       | EGDPEA:BHMOPhP           | 115               | 87    |
| 16          | P         | THFuA                    | 112               | 154   |
| 17          | C         | BHMOPhP                  | 112               | 141   |
| 18          | D:N       | TCDMDA:FuMA              | 112               | 103   |
| 19          | I:B       | DEAMEA:NGDA              | 111               | 90    |
| 20          | L:D       | HEMA:TCDMDA              | 110               | 91    |
| 21          | D:P       | TCDMDA:THFuA             | 110               | 57    |
| 22          | L:E       | HEMA:EG4DMA              | 109               | 145   |
| 23          | E:A       | EG4DMA:HBOPBA            | 104               | 71    |
| 24          | D:Q       | TCDMDA:BA                | 104               | 102   |
| 25          | H:R       | GDMA:TDFOMA              | 103               | 106   |
| 26          | D         | TCDMDA                   | 102               | 85    |
| 27          | D:B       | TCDMDA:NGDA              | 102               | 125   |
| 28          | F:J       | BDDA:mMAOES              | 101               | 54    |
| 29          | M:E       | EGDPEA:EG4DMA            | 101               | 101   |
| 30          | P:N       | THFuA:FuMA               | 100               | 89    |
| 31          | D:J       | TCDMDA:mMAOES            | 98                | 46    |
| 32          | H:C       | GDMA:BHMOPhP             | 98                | 64    |
| 33          | H:N       | GDMA:FuMA                | 98                | 41    |
| 34          | F:O       | BDDA:mMAOES              | 98                | 51    |
| 35          | O:B       | MAETA:NGDA               | 98                | 127   |
| 36          | G         | EGDA                     | 97                | 86    |
| 37          | F:K       | BDDA:tBAEMA              | 95                | 141   |
| 38          | L:B       | HEMA:NGDA                | 95                | 145   |
| 39          | B:F       | NGDA:BDDA                | 94                | 83    |
| 40          | H:B       | GDMA:NGDA                | 94                | 74    |
| 41          | B:H       | NGDA:GDMA                | 94                | 68    |
| 42          | B:L       | NGDA:HEMA                | 94                | 52    |
|   | O:A | MAETA:HBOPBA |   |   |
|---|-----|-------------|---|---|
| 43 | O:A | MAETA:HBOPBA | 93 | 132 |
| 44 | N:F | FuMA:BDDA | 93 | 93 |
| 45 | R:G | TDFOMA:EGDA | 92 | 192 |
| 46 | P:F | THFuA:BDDA | 90 | 88 |
| 47 | H:G | GDMA:EGDA | 90 | 50 |
| 48 | O:H | MAETA:GDMA | 90 | 83 |
| 49 | I:E | DEAMEA:EG4DMA | 90 | 79 |
| 50 | N | FuMA | 90 | 96 |
| 51 | F:E | BDDA:EG4DMA | 88 | 66 |
| 52 | O:H | MAETA:GDMA | 90 | 83 |
| 53 | D:C | TCDMDA:BHMOPhP | 87 | 74 |
| 54 | N:D | FuMA:TCDMDA | 86 | 85 |
| 55 | A:B | HBOPBA:NGDA | 86 | 107 |
| 56 | P:D | THFuA:TCDMDA | 85 | 65 |
| 57 | H:K | GDMA:tBAEMA | 85 | 57 |
| 58 | M:B | EGDEPA:NGDA | 84 | 73 |
| 59 | G:C | EGDA:BHMOPhP | 83 | 109 |
| 60 | N:I | FuMA:DEAEMA | 82 | 82 |
| 61 | P:R | THFuA:TDFOMA | 82 | 67 |
| 62 | N:C | FuMA:BHMOPhP | 82 | 72 |
| 63 | F:H | BDDA:GkDMA | 81 | 68 |
| 64 | G:D | EGDA:TCDMDA | 80 | 80 |
| 65 | R:B | TDFOMA:NGDA | 80 | 173 |
| 66 | D:F | TCDMDA:BDDA | 79 | 45 |
| 67 | B:D | NGDA:TCDMDA | 78 | 97 |
| 68 | H:P | GDMA:THFuA | 78 | 72 |
| 69 | M:Q | EGDEPA:BA | 78 | 98 |
| 70 | M:I | EGDEPA:DEAEMA | 77 | 89 |
| 71 | A:G | HBOPBA:EGDA | 76 | 74 |
| 72 | C:D | BHMOPhP:TCDMDA | 76 | 83 |
| 73 | H:A | GDMA:HBOPBA | 73 | 64 |
| 74 | B:O | NGDA:MAETA | 72 | 45 |
| 75 | N:H | FuMA:GDMA | 72 | 48 |
| 76 | N:E | FuMA:EG4DMA | 72 | 47 |
| 77 | F:M | BDDA:EGDEPA | 70 | 82 |
| 78 | F | BDDA | 70 | 68 |
| 79 | M:R | EGDEPA:hTDFOMA | 69 | 116 |
| 80 | O:F | MAETA:BDDA | 68 | 57 |
| 81 | B:I | NGDA:DEAEMA | 68 | 40 |
| 82 | P:Q | THFuA:BA | 68 | 107 |
| 83 | I:D | DEAMEA:TCDMDA | 68 | 38 |
| 84 | G:O | EGDA:MAETA | 67 | 75 |
| 85 | B:M | NGDA:EGDEPA | 67 | 75 |
| 86 | H:E | GDMA:EG4DIMA | 66 | 54 |
| 87 | L:M | HEMA:EGDEPA | 65 | 68 |
| #  | A:C   | HBOPBA:BHMOPhP | #  | #      |
|----|-------|----------------|----|--------|
| 88 |       | 65             | 90 | 63     |
| 89 | F:D   | BDDA:TCDMDA    | 65 | 64     |
| 90 | F:I   | BDDA:DEAEMA    | 65 | 45     |
| 91 | H:O   | GDMA:MAETA     | 64 | 80     |
| 92 | O:E   | MAETA:EG4DMA   | 63 | 55     |
| 93 | M:F   | EGDPEA:BDDA    | 62 | 69     |
| 94 | J:B   | mMAOES:NGDA    | 62 | 110    |
| 95 | D:L   | TCDMDA:HEMA    | 62 | 51     |
| 96 | B     | NGDA           | 62 | 75     |
| 97 | F:B   | BDDA:NGDA      | 62 | 51     |
| 98 | H:I   | GDMA:DEAEMA    | 61 | 76     |
| 99 | C:B   | BHMOPhP:NGDA   | 61 | 74     |
| 100| D:M   | TCDMDA:EGDPEA  | 61 | 74     |
| 101| F:L   | BDDA:HEMA      | 60 | 58     |
| 102| D:A   | TCDMDA:HBOPBA  | 60 | 48     |
| 103| E:F   | EG4DMA:BDDA    | 59 | 63     |
| 104| G:A   | EGDA:HBOPBA    | 59 | 129    |
| 105| B:G   | NGDA:EGDA      | 59 | 71     |
| 106| N:Q   | FuMA:BA        | 59 | 127    |
| 107| H:M   | GDMA:EGDPEA    | 59 | 45     |
| 108| O:G   | MAETA:EGDA     | 59 | 64     |
| 109| E:B   | EG4DMA:NGDA    | 58 | 64     |
| 110| M:H   | EGDPEA:GDMA    | 57 | 76     |
| 111| E:G   | EG4DMA:EGDA    | 57 | 56     |
| 112| A     | HBOPBA         | 56 | 43     |
| 113| A:F   | HBOPBA:BDDA    | 56 | 58     |
| 114| D:H   | TCDMDA:GDMA    | 56 | 52     |
| 115| N:K   | FuMA:tBAEMA    | 56 | 38     |
| 116| F:C   | BDDA:BHMOPhP   | 56 | 56     |
| 117| A:D   | HBOPBA:TCDMDA  | 56 | 53     |
| 118| F:R   | BDDA:TDFOMA    | 55 | 46     |
| 119| G:J   | EGDA:mMAOES    | 55 | 67     |
| 120| D:I   | TCDMDA:DEAEMA  | 55 | 49     |
| 121| P:G   | THFuA:EGDA     | 55 | 73     |
| 122| L:A   | HEMA:HBOPBA    | 55 | 56     |
| 123| A:E   | HBOPBA:EG4DMA  | 55 | 70     |
| 124| M:D   | EGDPEA:TCDMDA  | 54 | 53     |
| 125| M:K   | EGDPEA:tBAEMA  | 54 | 71     |
| 126| Q:D   | BA:TCDMDA      | 54 | 63     |
| 127| I:F   | DEAMEA:BDDA    | 54 | 70     |
| 128| J:D   | mMAOES:TCDMDA  | 53 | 37     |
| 129| K:O   | tBAEMA:MAETA   | 53 | 41     |
| 130| R:F   | TDFOMA:BDDA    | 53 | 65     |
| 131| M:A   | EGDPEA:HBOPBA  | 53 | 45     |
| 132| A:H   | HBOPBA:GDMA    | 52 | 84     |
| 133| Q:B   | BA:NGDA        | 52 | 52     |
|   |   |   |   |   |
|---|---|---|---|---|
| 134 | B:C | NGDA:BHMOPhP | 52 | 25 |
| 135 | E:C | EG4DMA:BHMOPhP | 52 | 51 |
| 136 | I:H | DEAMEA:GDMA | 51 | 122 |
| 137 | O:M | MAETA:EGDPEA | 51 | 62 |
| 138 | C:J | BHMOPhP:mMAOES | 49 | 52 |
| 139 | C:L | BHMOPhP:HEMA | 48 | 84 |
| 140 | C:F | BHMOPhP:BDDA | 48 | 61 |
| 141 | M:O | EGDPEA:MAETA | 48 | 89 |
| 142 | C:E | BHMOPhP:EG4DMA | 47 | 49 |
| 143 | D:E | TCDMDA:EG4DMA | 47 | 50 |
| 144 | E:J | EG4DMA:mMAOES | 47 | 56 |
| 145 | K:M | tBAEMA:EGDPEA | 47 | 74 |
| 146 | R:A | TDFOMA:HBOPBA | 46 | 77 |
| 147 | G:R | EGDA:TDFOMA | 45 | 106 |
| 148 | C:O | BHMOPhP:MAETA | 45 | 57 |
| 149 | Q:G | BA:EGDA | 45 | 53 |
| 150 | P:M | THFuA:EGDPEA | 45 | 42 |
| 151 | I:G | DEAMEA:EGDA | 44 | 37 |
| 152 | I:Q | DEAMEA:BA | 44 | 62 |
| 153 | M:L | EGDPEA:HEMA | 44 | 41 |
| 154 | C:G | BHMOPhP:BA | 44 | 40 |
| 155 | G:E | EGDA:EG4DMA | 43 | 51 |
| 156 | E:D | EG4DMA:TCDMDA | 43 | 47 |
| 157 | B:S | NGDA:HMAm | 42 | 71 |
| 158 | I:N | DEAMEA:FuMA | 42 | 44 |
| 159 | O:N | MAETA:FuMA | 41 | 51 |
| 160 | N:A | FuMA:HBOPBA | 41 | 37 |
| 161 | O:Q | MAETA:BA | 41 | 41 |
| 162 | H:L | GDMA:HEMA | 40 | 30 |
| 163 | E | EG4DMA | 40 | 49 |
| 164 | H | GDMA | 40 | 38 |
| 165 | E:S | EG4DMA:HMAm | 40 | 59 |
| 166 | F:S | BDDA:HMAm | 40 | 51 |
| 167 | G:B | EGDA:NGDA | 38 | 41 |
| 168 | Q:C | BA:BHMOPhP | 38 | 47 |
| 169 | L:G | HEMA:EGDA | 37 | 50 |
| 170 | P:A | THFuA:HBOPBA | 36 | 31 |
| 171 | B:E | NGDA:EG4DMA | 36 | 25 |
| 172 | O:P | MAETA:THFuA | 36 | 32 |
| 173 | N:B | FuMA:NGDA | 36 | 40 |
| 174 | A:J | HBOPBA:mMAOES | 35 | 45 |
| 175 | P:S | THFuA:HMAm | 35 | 28 |
| 176 | L:O | HEMA:MAETA | 34 | 47 |
| 177 | Q:A | BA:HBOPBA | 34 | 48 |
| 178 | R:H | TDFOMA:GDMA | 34 | 54 |
| 179 | M:N | EGDPEA:FuMA | 34 | 76 |
|   |   |   |   |   |
|---|---|---|---|---|
| 180 | D:S | TCDMDA:HMAm | 34 | 35 |
| 181 | K:A | tBAEMA:HBOPBA | 34 | 79 |
| 182 | H:J | GDMA:mMAOES | 33 | 58 |
| 183 | C:S | BHMOPhP:HMAm | 33 | 67 |
| 184 | E:H | EG4DMA:GDMA | 33 | 53 |
| 185 | R:D | TDFOMA:TCDMDA | 33 | 26 |
| 186 | L:I | HEMA:DEAEMA | 32 | 39 |
| 187 | N:P | FuMA:THFuA | 32 | 31 |
| 188 | K:B | tBAEMA:NGDA | 32 | 39 |
| 189 | K:E | tBAEMA:EG4DMA | 31 | 46 |
| 190 | P:O | THFuA:MAETA | 31 | 40 |
| 191 | O | MAETA | 31 | 15 |
| 192 | Q:O | BA:MAETA | 31 | 25 |
| 193 | B:A | NGDA:HBOPBA | 31 | 50 |
| 194 | B:P | NGDA:THFuA | 30 | 34 |
| 195 | K:L | tBAEMA:HEMA | 30 | 23 |
| 196 | R:N | TDFOMA:FuMA | 29 | 21 |
| 197 | K:P | tBAEMA:THFuA | 29 | 24 |
| 198 | Q | BA | 29 | 59 |
| 199 | E:O | EG4DMA:MAETA | 29 | 39 |
| 200 | O:S | MAETA:HMAm | 29 | 20 |
| 201 | C:I | BHMOPhP:DEAEMA | 28 | 57 |
| 202 | K:F | tBAEMA:BDDA | 28 | 38 |
| 203 | Q:R | BA:TDFOMA | 28 | 37 |
| 204 | S:F | HMAm:BDDA | 28 | 67 |
| 205 | Q:H | BA:GDMA | 27 | 48 |
| 206 | N:G | FuMA:EGDA | 27 | 32 |
| 207 | Q:F | BA:BDDA | 27 | 27 |
| 208 | A:I | HBOPBA:DEAEMA | 26 | 40 |
| 209 | N:L | FuMA:HEMA | 26 | 34 |
| 210 | K:Q | tBAEMA:BA | 26 | 23 |
| 211 | J:E | mMAOES:EG4DMA | 26 | 23 |
| 212 | E:Q | EG4DMA:BA | 26 | 46 |
| 213 | R:E | TDFOMA:EG4DMA | 25 | 24 |
| 214 | A:S | HBOPBA:HMAm | 25 | 30 |
| 215 | J:F | mMAOES:BDDA | 25 | 34 |
| 216 | C:Q | BHMOPhP:BA | 24 | 40 |
| 217 | K:C | tBAEMA:BHMOPhP | 23 | 25 |
| 218 | J:G | mMAOES:EGDA | 23 | 31 |
| 219 | A:N | HBOPBA:FuMA | 23 | 52 |
| 220 | P:J | THFuA:mMAOES | 22 | 25 |
| 221 | Q:N | BA:FuMA | 22 | 25 |
| 222 | I:C | DEAMEA:BHMOPhP | 22 | 27 |
| 223 | I:A | DEAMEA:HBOPBA | 21 | 20 |
| 224 | Q:M | BA:EGDPEA | 21 | 40 |
| 225 | A:M | HBOPBA:EGDPEA | 21 | 36 |
|   |   |   |
|---|---|---|
| E:K | EG4DMA:tBAEMA | 21 |
| R:P | TDFOMA:THFuA | 21 |
| I:K | DEAMEA:tBAEMA | 21 |
| I:M | DEAMEA:EGDPEA | 21 |
| C:N | BHMOPhP:FuMA | 20 |
| H:S | GDMA:HMAm | 20 |
| Q:P | BA:THFuA | 20 |
| E:M | EG4DMA:EGDPEA | 20 |
| L:S | HEMA:HMAm | 19 |
| S:G | HMAm:EGDA | 19 |
| G:M | EGDA:EGDPEA | 19 |
| D:K | TCDMDA:tBAEMA | 19 |
| C:H | BHMOPhP:GDMA | 19 |
| S:N | HMAm:FuMA | 18 |
| F:A | BDDA:HBOPBA | 18 |
| Q:L | BA:HEMA | 18 |
| P:L | THFuA:HEMA | 18 |
| G:S | EGDA:HMAm | 18 |
| M:P | EGDPEA:THFuA | 18 |
| J | mMAOES | 18 |
| P:I | THFuA:DEAEMA | 18 |
| S:E | HMAm:EG4DMA | 18 |
| J:A | mMAOES:HBOPBA | 17 |
| I:O | DEAMEA:MAETA | 17 |
| K:G | tBAEMA:EGDA | 17 |
| L:F | HEMA:BDDA | 17 |
| K:R | tBAEMA:TDFOMA | 17 |
| I:L | DEAMEA:HEMA | 17 |
| A:P | HBOPBA:THFuA | 17 |
| L:P | HEMA:THFuA | 17 |
| B:Q | NGDA:BA | 16 |
| E:I | EG4DMA:DEAEMA | 16 |
| R:M | TDFOMA:EGDPEA | 16 |
| K:N | tBAEMA:FuMA | 16 |
| I:R | DEAMEA:TDFOMA | 16 |
| R:J | TDFOMA:mMAOES | 16 |
| B:K | NGDA:tBAEMA | 16 |
| M:S | EGDPEA:HMAm | 16 |
| C:A | BHMOPhP:HBOPBA | 16 |
| M:G | EGDPEA:EGDA | 16 |
| R:S | TDFOMA:HMAm | 16 |
| E:N | EG4DMA:FuMA | 16 |
| S:D | HMAm:TCDMDA | 16 |
| L:C | HEMA:BHMOPhP | 16 |
| A:O | HBOPBA:MAETA | 15 |
| L:H | HEMA:GDMA | 15 |
|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 272 | M | EGDPEA | 15 | 18 |
| 273 | K | tBAEMA | 15 | 8 |
| 274 | S:M | HMam:EGDPEA | 15 | 7 |
| 275 | J:P | mMAOES:THFuA | 15 | 18 |
| 276 | K:H | tBAEMA:GDMA | 14 | 14 |
| 277 | G:I | EGDA:DEAEMA | 14 | 19 |
| 278 | R:K | TDFOMA:tBAEMA | 14 | 12 |
| 279 | G:H | EGDA:GDMA | 14 | 15 |
| 280 | A:Q | HBOPBA:BA | 13 | 23 |
| 281 | K:I | tBAEMA:DEAEMA | 13 | 10 |
| 282 | S:K | HMam:tBAEMA | 13 | 27 |
| 283 | P:K | THFuA:tBAEMA | 13 | 23 |
| 284 | J:M | mMAOES:EGDPEA | 13 | 11 |
| 285 | B:N | NGDA:FuMA | 13 | 11 |
| 286 | O:R | MAETA:TDFOma | 13 | 13 |
| 287 | R:O | TDFOMA:MAETA | 12 | 9 |
| 288 | G:K | EGDA:tBAEMA | 12 | 19 |
| 289 | R:L | TDFOMA:HEMA | 12 | 10 |
| 290 | R:Q | TDFOMA:BA | 11 | 13 |
| 291 | S:C | HMam:BHMOPhP | 11 | 11 |
| 292 | L:N | HEMA:FuMA | 11 | 8 |
| 293 | R | TDFOMA | 11 | 11 |
| 294 | I | DEAEMA | 11 | 12 |
| 295 | O:L | MAETA:HEMA | 11 | 13 |
| 296 | G:L | EGDA:HEMA | 10 | 12 |
| 297 | S:O | HMam:MAETA | 10 | 11 |
| 298 | C:P | BHMOPhP:THFuA | 10 | 9 |
| 299 | L:Q | HEMA:BA | 10 | 9 |
| 300 | N:R | FuMA:TDFOma | 10 | 14 |
| 301 | N:M | FuMA:EGDPEA | 10 | 13 |
| 302 | N:S | FuMA:HMam | 10 | 10 |
| 303 | K:D | tBAEMA:TCDMDA | 10 | 9 |
| 304 | S:J | HMam:mMAOES | 9 | 7 |
| 305 | J:N | mMAOES:FuMA | 9 | 16 |
| 306 | J:C | mMAOES:BHMOPhP | 9 | 9 |
| 307 | I:J | DEAMEA:mMAOES | 9 | 10 |
| 308 | S:L | HMam:HEMA | 9 | 7 |
| 309 | O:I | MAETA:DEAEMA | 9 | 16 |
| 310 | S:B | HMam:NGDA | 9 | 8 |
| 311 | S:I | HMam:DEAEMA | 9 | 5 |
| 312 | I:S | DEAEMA:HMam | 9 | 8 |
| 313 | M:J | EGDPEA:mMAOES | 9 | 8 |
| 314 | C:M | BHMOPhP:EGDPEA | 8 | 12 |
| 315 | S:H | HMam:GDMA | 8 | 6 |
| 316 | A:K | HBOPBA:tBAEMA | 8 | 13 |
| 317 | G:N | EGDA:FuMA | 8 | 7 |
|   |   |   |   |   |
|---|---|---|---|---|
|   | S:P | HMAm:THFuA | 8 | 14 |
| 318 | L:K | HEMA:tBAEMA | 8 | 6 |
| 319 | K:S | tBAEMA:HMAm | 8 | 6 |
| 320 | E:L | EG4DMA:HEMA | 8 | 16 |
| 321 | R:C | TDFOMA:BHMOPhP | 8 | 10 |
| 322 | J:K | mMAOES:tBAEMA | 8 | 7 |
| 323 | Q:K | BA:tBAEMA | 8 | 6 |
| 324 | S:A | HMAm:HBOPBA | 8 | 9 |
| 325 | Q:J | BA:mMAOES | 7 | 13 |
| 326 | L | HEMA | 7 | 6 |
| 327 | Q:S | BA:HMAm | 7 | 12 |
| 328 | O:K | MAETA:tBAEMA | 7 | 10 |
| 329 | R:I | TDFOMA:DEAEMA | 7 | 5 |
| 330 | A:L | HBOPBA:HEMA | 7 | 7 |
| 331 | O:J | MAETA:mMAOES | 6 | 9 |
| 332 | L:J | HEMA:mMAOES | 6 | 7 |
| 333 | E:R | EG4DMA:TDFOMA | 6 | 15 |
| 334 | F:Q | BDMA:BA | 6 | 8 |
| 335 | E:P | EG4DMA:THFuA | 6 | 9 |
| 336 | K:J | tBAEMA:mMAOES | 6 | 8 |
| 337 | F:N | BDMA:FuMA | 6 | 7 |
| 338 | N:O | FuMA:MAETA | 6 | 8 |
| 339 | G:P | EGDA:THFuA | 6 | 5 |
| 340 | Q:I | BA:DEAEMA | 6 | 5 |
| 341 | O:C | MAETA:BHMOPhP | 5 | 7 |
| 342 | J:H | mMAOES:GDMA | 5 | 8 |
| 343 | J:O | mMAOES:MAETA | 5 | 8 |
| 344 | L:R | HEMA:TDFOMA | 5 | 6 |
| 345 | S:R | HMAm:TDFOMA | 4 | 4 |
| 346 | N:J | FuMA:mMAOES | 4 | 6 |
| 347 | S:Q | HMAm:BA | 4 | 4 |
| 348 | G:Q | EGDA:BA | 4 | 5 |
| 349 | J:L | mMAOES:HEMA | 3 | 4 |
| 350 | J:S | mMAOES:HMAm | 3 | 6 |
| 351 | I:P | DEAMEA:THFuA | 3 | 3 |
| 352 | J:I | mMAOES:DEAEMA | 3 | 4 |
| 353 | D:R | TCDMDA:TDFOMA | 3 | 4 |
| 354 | J:Q | mMAOES:BA | 2 | 3 |
| 355 | J:R | mMAOES:TDFOMA | 2 | 3 |
| 356 | S | HMAm | 2 | 3 |
| 357 | C:K | BHMOPhP:tBAEMA | 2 | 1 |
| 358 | C:R | BHMOPhP:TDFOMA | 2 | 3 |
Table S4: Integrin blocking antibodies and peptides.

| Product Name | Cat. No. | Description |
|--------------|----------|-------------|
| **Integrin-blocking antibodies (R&D Systems)** | | |
| Anti - α2(CD49b) | MAB1233 | Binds to α2 integrin receptor |
| Anti - α5(CD49e) | MAB1864 | Binds to α5 integrin receptor |
| Anti - α6 (CD49f) | MAB1350 | Binds to α6 integrin receptor |
| Anti - αvβ3 | MAB3050 | Binds to αvβ3 integrin receptor |
| Anti - αvβ5 | MAB2528 | Binds to αvβ5 integrin receptor |
| Anti - β1 | MAB17782 | Binds to β1 integrin receptor |
| **Integrin-blocking peptides (BACHEM)** | | |
| H-1830 | 4009173 | RGD: Linear peptide (Mw:346.35 Da) |
| H-4088 | 4027886 | c(RADfV): Control peptide for H-2574.(Mw: 588.66 Da) |
| H-2574 | 4026200 | c(RGDFV): Binds αvβ3 and αvβ5 integrin receptors. (Mw: 574.64 Da) |
| H-7232 | 4070810 | C(RADfC): Control peptide for H-7226. (Mw:592.68 Da) |
| H-7226 | 4069272 | c(RGDfC): Binds αvβ3 integrin receptors. (Mw: 578.64 Da) |
| H-3164 | 4030598 | GRGDsP: Inhibits binding to fibronectin. (Mw: 587.59 Da) |