

Table S1. DATA COMET.

[illegible]

Table S2: DATA MNs.

| HS27 ctrl | | | | HS27 Silica | | | | HS27 Silica + O ₂ | | | | HS27 ctrl | | | | | | | |
|-----------|-------------|--------------|------|-------------|-------------|--------------|---|------------------------------|---|-------------|--------------|-----------|-----|-------------|--------------|------|----|------|----|
| 48h | | 72h | | 48h | | 72h | | 48h | | 72h | | 48h | | 72h | | | | | |
| | biocultured | microculture | | | biocultured | microculture | | | | biocultured | microculture | | | biocultured | microculture | | | | |
| glass 1 | 905 | 6 | 1775 | 6 | glass 1 | 419 | 4 | 228 | 3 | glass 1 | 527 | 6 | 554 | 5 | glass 1 | 872 | 12 | 1475 | 24 |
| glass 2 | 823 | 4 | 1183 | 4 | glass 2 | 528 | 6 | 504 | 5 | glass 2 | 621 | 7 | 765 | 4 | glass 2 | 963 | 15 | 1283 | 21 |
| glass 3 | 1022 | 7 | 983 | 5 | glass 3 | 812 | 7 | 693 | 6 | glass 3 | 437 | 4 | 542 | 3 | glass 3 | 1128 | 18 | 1421 | 19 |
| glass 4 | 1314 | 9 | 1367 | 7 | glass 4 | 812 | 9 | 761 | 7 | glass 4 | 769 | 9 | 679 | 5 | glass 4 | 1423 | 21 | 1329 | 19 |
| glass 5 | 832 | 4 | 891 | 3 | glass 5 | 762 | 8 | 734 | 7 | glass 5 | 678 | 6 | 701 | 4 | glass 5 | 750 | 11 | 1091 | 17 |
| glass 6 | 1131 | 7 | 1286 | 4 | glass 6 | 692 | 7 | 811 | 8 | glass 6 | 595 | 6 | 789 | 5 | glass 6 | 1192 | 16 | 1127 | 18 |

| HS27 ctrl | | HS27 Silica | | HS27 Silica + O ₂ | | HS27 ctrl | | |
|-------------------------------------|-----------|-------------------------------------|---------|-------------------------------------|-----------|-------------------------------------|--------------|-----------|
| microculture/1000 biocultured cells | | microculture/1000 biocultured cells | | microculture/1000 biocultured cells | | microculture/1000 biocultured cells | | |
| 48h | 72h | 48h | 72h | 48h | 72h | 48h | 72h | |
| glass 1 | 6.0301508 | 3.3828917 | glass 1 | 9.5465304 | 8.7719208 | glass 1 | 13.781468 | 16.271186 |
| glass 2 | 4.8020573 | 3.3812340 | glass 2 | 11.363636 | 9.6206349 | glass 2 | 11.2721471 | 5.2287682 |
| glass 3 | 6.8492151 | 5.08847 | glass 3 | 11.437308 | 8.6582087 | glass 3 | 9.15331878 | 5.5302554 |
| glass 4 | 6.8492151 | 5.1207023 | glass 4 | 11.083744 | 9.1984231 | glass 4 | 11.71875 | 7.3637703 |
| glass 5 | 4.2918455 | 3.3673034 | glass 5 | 10.498688 | 9.5367847 | glass 5 | 8.87539645 | 5.7061341 |
| glass 6 | 6.7896247 | 3.1950577 | glass 6 | 10.115907 | 9.864365 | glass 6 | 10.03344482 | 6.5018006 |
| MEAN | 5.5436697 | 3.9138749 | MEAN | 10.674354 | 6.3352344 | MEAN | 10.1247655 | 6.3301547 |
| SD | 1.1164382 | 0.8338618 | SD | 1.7501757 | 0.5386701 | SD | 1.25394617 | 1.0001844 |
| SE | 0.500054 | 0.411769 | SE | 0.3373004 | 0.214462 | SE | 0.5003291777 | 0.4070074 |

| HS27 | | | | Chr1 HS27 vs Tr1 HS27 | | | | | | | |
|-------|-------------|------------|-----------|-----------------------|-----------|-----------|-------------|------|-------|----------|-------|
| | 4th | 7th | | Chr1 | Sitca | Sitca+O3 | Catch | Chr1 | Sitca | Sitca+O3 | Catch |
| CTRL | 5.9450607 | 3.9159749 | | | | | | | | | |
| SL | 10.674354 | 8.3202044 | | | | | | | | | |
| SL+O3 | 10.212477 | 8.3307547 | | | | | | | | | |
| SE | 14.62094 | 5.190037 | | | | | | | | | |
| SE | 0.006404 | 0.4131789 | | | | | | | | | |
| SE | 0.3073096 | 0.2414022 | | | | | | | | | |
| SE | 0.5032019 | 0.4403794 | | | | | | | | | |
| SE | 0.4488263 | 0.541931 | | | | | | | | | |
| | | | | 4th | 4th | 4th | 7th | 7th | 7th | 7th | |
| | 0.63031594 | 0.5465394 | 0.1221465 | 13.781469 | 3.3802181 | 8.7715298 | 7.645259939 | 7.62 | | | |
| | 4.86527315 | 11.3636 | 11.27242 | 15.576329 | 3.3812342 | 9.9206349 | 5.22875817 | 16.1 | | | |
| | 6.949315068 | 11.437308 | 11.532181 | 15.59744601 | 5.1080743 | 8.8580087 | 5.530583351 | 16.1 | | | |
| | 6.949315068 | 11.3837444 | 11.71878 | 14.73755446 | 5.1209763 | 9.1984421 | 7.38377025 | 14.1 | | | |
| | 4.91248404 | 10.46968 | 8.8757396 | 14.3042519 | 3.3870304 | 9.9367495 | 5.700134694 | 16.1 | | | |
| | 6.799247233 | 10.11567 | 10.033445 | 13.42218179 | 3.1959577 | 8.3637943 | 5.80190585 | 15.0 | | | |

| | | | | | | |
|--------|----------|-----------|-------------|-----------|-------------|-------------|
| T-Test | 5.32E-06 | 5.192E-05 | 6.02240E-08 | 2.174E-07 | 0.001491383 | 5.96772E-09 |
|--------|----------|-----------|-------------|-----------|-------------|-------------|

Table S3: DATA MTS.

MTS_HS27

| CTRL | 0 | 24h | 48h | 72h |
|------|---|-------------|-----------|-----------|
| | | 0.401199996 | 0.5019 | 0.46095 |
| | | 0.402999997 | 0.6527 | 0.516666 |
| | | 0.401800007 | 0.50529 | 0.51899 |
| | | 0.366299987 | 0.456177 | 0.65219 |
| | | 0.401199996 | 0.555736 | 0.54995 |
| | | 0.402999997 | 0.62253 | 0.573722 |
| | | 0.401800007 | 0.4927 | 0.49131 |
| | | 0.366299987 | 0.650889 | 0.418566 |
| | | 0.3577 | 0.543778 | 0.46435 |
| mean | | 0.389144442 | 0.5535222 | 0.5162993 |
| SD | | 0.019453288 | 0.0727539 | 0.0696796 |
| SE | | 0.006877776 | 0.0257224 | 0.0246354 |

| SILICA | 0 | 24h | 48h | 72h |
|--------|-------|-------------|-----------|-----------|
| | | 0.401199996 | 0.518999 | 0.447295 |
| | | 0.402999997 | 0.494278 | 0.447777 |
| | | 0.401800007 | 0.447459 | 0.389624 |
| | | 0.366299987 | 0.451811 | 0.420512 |
| | | 0.422 | 0.604229 | 0.462223 |
| | | 0.408 | 0.436712 | 0.361112 |
| | | 0.428 | 0.451102 | 0.356433 |
| | | 0.4 | 0.455666 | 0.387222 |
| | 0.377 | 0.534229 | 0.342113 | 0.51877 |
| mean | | 0.403787498 | 0.4882761 | 0.4015902 |
| SD | | 0.018387145 | 0.0554939 | 0.0444709 |
| SE | | 0.006949688 | 0.0209747 | 0.0168084 |

| SILICA+O3 | 0 | 24h | 48h | 72h |
|-----------|---|-------------|-----------|-----------|
| | | 0.401199996 | 0.4394 | 0.357 |
| | | 0.402999997 | 0.5291 | 0.4887 |
| | | 0.401800007 | 0.4131 | 0.4273 |
| | | 0.366299987 | 0.45689 | 0.40123 |
| | | 0.401199996 | 0.3482 | 0.3234 |
| | | 0.402999997 | 0.454 | 0.3969 |
| | | 0.401800007 | 0.458 | 0.4254 |
| | | 0.366299987 | 0.48922 | 0.4105 |
| | | 0.397223 | 0.50243 | 0.398223 |
| mean | c | 0.4544822 | 0.4031837 | 0.468357 |
| SD | | 0.015533796 | 0.0528297 | 0.0461086 |
| SE | | 0.005492026 | 0.0186781 | 0.0163018 |

| C+ | 0 | 24h | 48h | 72h |
|------|---|-------------|----------|----------|
| | | 0.391199996 | 0.2114 | 0.1951 |
| | | 0.382999997 | 0.2212 | 0.1864 |
| | | 0.411800007 | 0.2058 | 0.1786 |
| | | 0.366299987 | 0.2219 | 0.1947 |
| | | 0.391199996 | 0.2157 | 0.1752 |
| | | 0.392999997 | 0.2113 | 0.1597 |
| mean | | 0.333785712 | 0.21455 | 0.181617 |
| SD | | 0.014803846 | 0.006271 | 0.013465 |
| SE | | 0.006043645 | 0.00256 | 0.005497 |

| CTRL | 0 | 24h | 48h | 72h |
|--------|---|--------|--------|--------|
| CTRL | | 0.3891 | 0.5535 | 0.5163 |
| SIL | | 0.4038 | 0.4883 | 0.4016 |
| SIL+O3 | | 0.3931 | 0.4545 | 0.4032 |
| C+ | | 0.3338 | 0.2146 | 0.1816 |
| SE | | 0.0069 | 0.0257 | 0.0246 |
| SE | | 0.0069 | 0.0210 | 0.0168 |
| SE | | 0.0055 | 0.0187 | 0.0163 |
| SE | | 0.0022 | 0.0076 | 0.0067 |

NORMALIZED VALUE

| CTRL | 0 | 24h | 48h | 72h |
|-------|---|--------|----------|----------|
| CTRL | | 100 | 142.2408 | 132.6755 |
| SIL | | 100 | 120.9240 | 99.4558 |
| SIL+O | | 100 | 115.6223 | 102.5717 |
| C+ | | 100 | 64.2778 | 54.4112 |
| SE | | 1.7674 | 4.6470 | 4.7715 |
| SE | | 1.7211 | 4.2957 | 4.1855 |
| SE | | 1.3972 | 4.1098 | 4.0433 |
| SE | | 0.6717 | 2.2845 | 3.6644 |

T-Test

| | |
|---------------------|-----------------|
| SIL 24 vsCtrl 24 | 0.048186492 |
| SIL 48 vsCtrl 24 | 0.000732954 ** |
| SIL 72 vsCtrl 24 | 0.032475219 * |
| SIL+O3 24 vsCtrl 24 | 0.00447594 ** |
| SIL+O3 48 vsCtrl | 0.000907095 ** |
| SIL+O3 72 vsCtrl | 0.015098933 |
| C+ vs C 24h | 4.54778E-08 *** |
| C+ vs C 48h | 3.53362E-08 *** |
| C+ vs C 72h | 7.53164E-12 *** |

MTS_A549

| CTRL | 0 | 24h | 48h | 72h |
|------|-------------|---------|---------|---------|
| | 0.93809998 | 1.2627 | 1.6001 | 1.437 |
| | 1.078299999 | 1.3286 | 1.6106 | 1.2636 |
| | 0.930499971 | 1.376 | 1.323 | 1.0379 |
| | 0.902499974 | 1.34544 | 1.2134 | 0.9453 |
| | 0.93387 | 0.978 | 1.3959 | 1.34601 |
| | 1.03452 | 1.2803 | 1.413 | 1.3456 |
| | 0.9856 | 1.262 | 0.956 | 1.2457 |
| | 1 | 0.956 | 1.43498 | 1.3798 |
| | 0.88777 | 1.26665 | 1.6433 | 0.91211 |
| mean | 0.966651103 | 1.2284 | 1.3989 | 1.2126 |
| SD | 0.07880126 | 0.1537 | 0.2188 | 0.1968 |
| SE | 0.03940063 | 0.0887 | 0.0977 | 0.0868 |

| SILICA | 0 | 24h | 48h | 72h |
|--------|-------------|--------|---------|--------|
| | 0.93809998 | 1.208 | 1.104 | 0.932 |
| | 1.078299999 | 1.1696 | 1.1544 | 1.039 |
| | 0.930499971 | 1.183 | 1.00435 | 0.9383 |
| | 0.802499974 | 1.2878 | 0.959 | 1.016 |
| | 0.9387 | 1.1803 | 1.013 | 0.973 |
| | 1.03452 | 1.062 | 1.256 | 0.9134 |
| | 0.9856 | 0.956 | 0.952 | 1.1461 |
| | 1 | 0.954 | 0.961 | 1.1456 |
| | 0.9777 | 1.168 | 1.1746 | 0.8357 |
| | | 1.237 | | |
| mean | 0.960279992 | 1.1299 | 1.0643 | 0.9932 |
| SD | 0.112692675 | 0.0195 | 0.0764 | 0.06 |
| SE | 0.056346338 | 0.0113 | 0.0441 | 0.0347 |

| SILICA+O3 | 0 | 24h | 48h | 72h |
|-----------|-------------|---------|---------|---------|
| | 0.93809998 | 1.1955 | 0.9289 | 1.1656 |
| | 1.078299999 | 1.2949 | 1.3572 | 0.8839 |
| | 0.930499971 | 1.4485 | 1.0647 | 0.7983 |
| | 0.992499974 | 1.4287 | 1.1402 | 1.2091 |
| | 1.19875 | 1.14534 | 0.9948 | 0.98123 |
| | 0.9743 | 1.19832 | 1.1598 | 0.8948 |
| | 0.9823 | 0.92387 | 1.2987 | 1.03872 |
| | 1.2398 | 0.9861 | 1.02398 | 0.89321 |
| | 1.2987 | 1.3211 | 1.29871 | 0.98765 |
| mean | 0.963324992 | 1.2158 | 1.1408 | 0.9836 |
| SD | 0.07880126 | 0.1275 | 0.1791 | 0.2037 |
| SE | 0.03940063 | 0.0736 | 0.0623 | 0.0332 |

| C+ | 0 | 24h | 48h | 72h |
|------|-------------|---------|---------|---------|
| | 0.98809998 | 0.8221 | 0.7256 | 0.5606 |
| | 1.078299999 | 0.8191 | 0.6915 | 0.5588 |
| | 0.930499971 | 0.8032 | 0.7481 | 0.5374 |
| | 0.992499974 | 0.78956 | 0.6806 | 0.5656 |
| | 1.19875 | 0.77636 | 0.6671 | 0.617 |
| | 0.9743 | 0.7823 | 0.6882 | 0.6547 |
| mean | 0.880349989 | 0.79877 | 0.70018 | 0.58235 |
| SD | 0.096873864 | 0.01916 | 0.03046 | 0.04419 |
| SE | 0.039548589 | 0.00782 | 0.01244 | 0.01804 |

| CTRL | 0 | 24h | 48h | 72h |
|--------|--------|--------|--------|--------|
| CTRL | 0.9667 | 1.2284 | 1.3989 | 1.2126 |
| SIL | 0.9603 | 1.1299 | 1.0643 | 0.9932 |
| SIL+O3 | 0.9633 | 1.2158 | 1.1408 | 0.9836 |
| C+ | 0.8803 | 0.7988 | 0.7002 | 0.5823 |
| SE | 0.0394 | 0.0887 | 0.0977 | 0.0868 |
| SE | 0.0563 | 0.0113 | 0.0441 | 0.0347 |
| SE | 0.0394 | 0.0736 | 0.0623 | 0.0332 |
| SE | 0.0161 | 0.0300 | 0.0254 | 0.0136 |

NORMALIZED VALUE

| | 0 | 24h | 48h | 72h |
|--------|--------|----------|----------|----------|
| CTRL | 100 | 127.0789 | 144.7182 | 125.4390 |
| SIL | 100 | 117.6590 | 110.8282 | 103.4316 |
| SIL+O3 | 100 | 126.2102 | 118.4207 | 102.1060 |
| C+ | 100 | 90.7332 | 79.5347 | 66.1498 |
| SE | 4.0760 | 7.2219 | 6.9825 | 7.1565 |
| SE | 5.8677 | 0.9959 | 4.1425 | 3.4901 |
| SE | 4.0901 | 6.0528 | 5.4646 | 3.3776 |
| SE | 1.8271 | 3.7612 | 3.6347 | 2.3290 |

T-Test

| | |
|------------------|----------------|
| SIL 24 vsCtrl 24 | 0.17123048 ** |
| SIL 48 vsCtrl 24 | 0.0008545 ** |
| SIL 72 vsCtrl 24 | 0.00936275 |
| SIL+O3 24 vsCtrl | 0.87532283 * |
| SIL+O3 48 vsCtrl | 0.01017177 * |
| SIL+O3 72 vsCtrl | 0.01103546 |
| C+vs C 24h | 1.4043E-05 *** |
| C+vs C 48h | 3.4919E-06 *** |
| C+vs C 72h | 3.7565E-06 *** |