

**Supplementary Table 6.** Morphokinetic differences between embryos that developed to the blastocyst stage and those that arrested to develop before blastocyst stage of each group.

Parameter	Group							
	ICSI		SCNT-NT		SCNT-PsA		SCNT-VitC	
	Blastocyst	No Blastocyst	Blastocyst	No blastocyst	Blastocyst	No blastocyst	Blastocyst	No blastocyst
Time point	Median (Q1, Q3) in min							
PNd	935 (912, 975) <sup>a</sup>	973 (928, 1032) <sup>b</sup>	902 (882, 931)	910 (826, 961)	974 (923, 1020)	973 (912, 1020)	881 (841, 920) <sup>a</sup>	902 (862, 1030) <sup>b</sup>
div1-b	90 (83, 95)	90 (83, 95)	90 (80, 95)	95 (85, 105)	99 (84, 114)	98 (85, 110)	95 (78, 100)	90 (86, 100)
div1-e	95 (90, 105)	100 (90, 105)	98 (90, 105) <sup>a</sup>	105 (92.5, 125) <sup>b</sup>	110 (92, 125)	106 (94, 125)	100 (95, 115)	105 (95, 110)
Na	140 (120, 185)	135 (115, 162.5)	145 (130, 155)	140 (117.5, 195)	147 (124, 170)	142 (132, 154)	152 (128, 165)	142 (121, 168)
div2-b	1290 (1258, 1335) <sup>a</sup>	1350 (1265, 1495) <sup>b</sup>	1473 (1395, 1565) <sup>a</sup>	1580 (1485, 1730) <sup>b</sup>	1648 (1509, 1714)	1603 (1302, 2007)	1474 (1403, 1598)	1526 (1367, 1634)
div2-e	1295 (1263, 1340) <sup>a</sup>	1355 (1275, 1500) <sup>b</sup>	1483 (1405, 1570) <sup>a</sup>	1595 (1490, 1735) <sup>b</sup>	1655 (1514, 1719)	1628 (1312, 2020)	1481 (1411, 1607)	1536 (1372, 1644)
div3-b	1345 (1295, 1415) <sup>a</sup>	1530 (1340, 1685) <sup>b</sup>	1598 (1485, 1775) <sup>a</sup>	1720 (1640, 1975) <sup>b</sup>	1780 (1644, 1965)	2074 (1447, 2389)	1593 (1505, 1702)	1654 (1557, 1779)
div3-e	1355 (1300, 1420) <sup>a</sup>	1535 (1345, 1690) <sup>b</sup>	1605 (1495, 1785) <sup>a</sup>	1750 (1665, 1985) <sup>b</sup>	1787 (1649, 1970)	2079 (1467, 2394)	1598 (1517, 1707)	1659 (1567, 1792)
div4-b	2080 (2003, 2150) <sup>a</sup>	2198 (2100, 2447) <sup>b</sup>	2390 (2240, 2535)	2500 (2360, 2560)	2561 (2429, 2650) <sup>a</sup>	3252 (2712, 3515) <sup>b</sup>	2298 (2179, 2412)	2358 (2226, 2497)
div4-e	2088 (2008, 2155) <sup>a</sup>	2195 (2090, 2514) <sup>b</sup>	2405 (2245, 2540)	2510 (2365, 2565)	2569 (2434, 2659) <sup>a</sup>	3269 (2727, 3525) <sup>b</sup>	2306 (2184, 2427)	2362 (2236, 2527)
div5-b	2108 (2023, 2212) <sup>a</sup>	2275 (2155, 2470) <sup>b</sup>	2453 (2350, 2680)	2573 (2465, 2700)	2608 (2490, 2744) <sup>a</sup>	3517 (3139, 3894) <sup>b</sup>	2337 (2209, 2514)	2372 (2282, 2407)
div5-e	2118 (2028, 2217) <sup>a</sup>	2283 (2160, 2475) <sup>b</sup>	2463 (2355, 2685)	2583 (2475, 2705)	2613 (2497, 2754) <sup>a</sup>	3529 (3154, 3904) <sup>b</sup>	2342 (2217, 2524)	2382 (2292, 2422)
div6-b	2150 (2075, 2265) <sup>a</sup>	2270 (2215, 2720) <sup>b</sup>	2530 (2365, 2700) <sup>a</sup>	2708 (2555, 2755) <sup>b</sup>	2674 (2595, 2889)	3949 (3949, 3949)	2414 (2289, 2567)	2452 (2392, 2517)
div6-e	2155 (2080, 2270) <sup>a</sup>	2275 (2220, 2725) <sup>b</sup>	2535 (2370, 2705) <sup>a</sup>	2715 (2560, 2765) <sup>b</sup>	2679 (2605, 2894)	3964 (3964, 3964)	2419 (2299, 2572)	2457 (2402, 2527)
div7-b	2235 (2115, 2405) <sup>a</sup>	2605 (2350, 2805) <sup>b</sup>	2640 (2430, 2780)	2730 (2685, 2815)	2757 (2650, 2939)	-	2409 (2304, 2582)	2527 (2457, 2607)
div7-e	2240 (2120, 2410) <sup>a</sup>	2610 (2355, 2810) <sup>b</sup>	2645 (2435, 2785)	2735 (2690, 2820)	2762 (2655, 2944)	-	2419 (2309, 2587)	2542 (2462, 2617)
comp-b	2335 (2243, 2490) <sup>a</sup>	2665 (2445, 2814) <sup>b</sup>	2373 (2230, 2590)	2355 (2190, 2610)	2532 (2227, 2755)	2389 (2072, 3029)	2316 (2174, 2492)	2248 (2028, 2401)
comp<8C-b	2459 (2369, 2545)	2740	2348 (2128, 2480)	2340 (2190, 2585)	2484 (2215,	2389 (2072, 3029)	2217 (2112, 2332)	2175 (2016,

		(2430, 2814)			2674)			2380)	
comp8C-b	2314 (2220, 2490) <sup>a</sup>	2608 (2445, 2990) <sup>b</sup>	2638 (2530, 2770)	2750 (2750, 2750)	2795 (2735, 3022)	-	2448 (2382, 2542)	2560 (2440, 2697)	
comp-e	2595 (2470, 2745) <sup>a</sup>	2953 (2865, 3188) <sup>b</sup>	2820 (2700, 2915)	2780 (2600, 2955)	2960 (2760, 3114)	2944 (2584, 3369)	2696 (2554, 2792) <sup>a</sup>	2531 (2291, 2679) <sup>b</sup>	
cav-b	4125 (3963, 4488) <sup>a</sup>	4800 (4645, 4985) <sup>b</sup>	4205 (3905, 4300) <sup>a</sup>	4835 (4370, 5050) <sup>b</sup>	4400 (4200, 4644) <sup>a</sup>	5089 (4547, 6081) <sup>b</sup>	4187 (3919, 4574) <sup>a</sup>	4882 (4804, 5012) <sup>b</sup>	
cav-e	4443 (4223, 4985)	-	4965 (4550, 5370)	-	4789 (4544, 5240)	-	4905 (4456, 5563)	-	
<b>Duration</b>			<b>Median (Q1, Q3) in min</b>						
1-cell stage	90 (83, 95)	90 (83, 95)	90 (80, 95)	95 (85, 105)	99 (84, 114)	98 (85, 110)	95 (78, 100)	90 (86, 100)	
div1	10 (5, 10)	7.5 (5, 10)	10 (5, 10)	5 (5, 10)	10 (5, 10)	10 (5, 15)	7.5 (5, 15)	10 (5, 17.5)	
cycle1	95 (90, 105)	100 (90, 105)	98 (90, 105) <sup>a</sup>	105 (92.5, 125) <sup>b</sup>	110 (92, 125)	106 (94, 125)	100 (95, 115)	105 (95, 110)	
2-cell stage	1199 (1160, 1235) <sup>a</sup>	1240 (1220, 1335) <sup>b</sup>	1373 (1290, 1480) <sup>a</sup>	1460 (1355, 1625) <sup>b</sup>	1523 (1400, 1585)	1488 (1213, 1880)	1379 (1291, 1478)	1417 (1237, 1539)	
div2	5 (5, 10)	5 (5, 10)	10 (5, 10)	10 (5, 10)	10 (5, 10) <sup>a</sup>	10 (10, 15) <sup>b</sup>	5 (5, 10)	5 (5, 10)	
3-cell stage	40 (10, 70) <sup>a</sup>	100 (40, 240) <sup>b</sup>	95 (55, 150) <sup>a</sup>	150 (70, 250) <sup>b</sup>	85 (30, 200)	130 (95, 425)	60 (23, 125) <sup>a</sup>	115 (50, 183) <sup>b</sup>	
div3	5 (5, 10)	5 (5, 10)	5 (5, 10)	7.5 (5, 10)	5 (5, 10) <sup>a</sup>	5 (5, 20) <sup>b</sup>	5 (5, 10) <sup>a</sup>	10 (5, 15) <sup>b</sup>	
cycle2	1260 (1200, 1318) <sup>a</sup>	1325 (1250, 1590) <sup>b</sup>	1503 (1380, 1655) <sup>a</sup>	1620 (1540, 1880) <sup>b</sup>	1645 (1540, 1785)	1974 (1375, 2260)	1495 (1391, 1587)	1565 (1439, 1695)	
4-cell stage	710 (650, 770)	813 (655, 880)	795 (690, 875)	745 (605, 870)	740 (655, 860)	875 (290, 990)	703 (635, 795)	745 (645, 805)	
div4	5 (5, 7.5)	5 (5, 5)	5 (5, 10)	10 (5, 10)	5 (5, 10) <sup>a</sup>	15 (10, 25) <sup>b</sup>	5 (5, 10) <sup>a</sup>	10 (10, 10) <sup>b</sup>	
5-cell stage	23 (5, 68) <sup>a</sup>	73 (55, 115) <sup>b</sup>	50 (10, 215)	75 (35, 145)	45 (23, 108)	110 (100, 120)	35 (10, 100)	25 (10, 75)	
div5	5 (5, 5)	5 (5, 5)	5 (5, 10)	7.5 (5, 10)	5 (5, 10) <sup>a</sup>	12.5 (10, 15) <sup>b</sup>	5 (5, 10) <sup>a</sup>	10 (10, 10) <sup>b</sup>	
6-cell stage	20 (10, 65) <sup>a</sup>	105 (30, 150) <sup>b</sup>	60 (15, 90)	50 (25, 110)	80 (15, 155)	45 (45, 45)	45 (20, 80) <sup>a</sup>	95 (55, 130) <sup>b</sup>	
div6	5 (5, 5)	5 (5, 5)	5 (5, 10)	5 (5, 10)	5 (5, 10)	15 (15, 15)	5 (5, 10)	10 (10, 10)	
7-cell stage	45 (15, 105)	205 (33, 308)	90 (30, 145)	105 (50, 110)	105 (65, 120)	-	65 (25, 100)	55 (45, 80)	
div7	5 (5, 5)	5 (5, 5)	5 (5, 5)	5 (5, 10)	5 (5, 5)	-	5 (5, 10) <sup>a</sup>	10 (10, 10) <sup>b</sup>	
cycle3	890 (770, 975) <sup>a</sup>	1150 (953, 1285) <sup>b</sup>	1065 (920, 1160)	1070 (1070, 1095)	988 (910, 1160)	-	890 (835, 975)	930 (910, 975)	
8-cell stage	85 ( 50, 165) <sup>a</sup>	260 ( 175, 260) <sup>b</sup>	50 ( 10, 120)	15 ( 15, 15)	62.5 ( 20, 110)	-	55 ( 22.5, 95)	27.5 ( 20, 120)	
compaction	230 (185, 293)	350 (195, 417.5)	345 (265, 560)	308 (190, 555)	360 (205, 575)	335 (200, 535)	278 (188, 513)	275 (175, 480)	
morula stage	1543 (1363, 1860) <sup>a</sup>	1900 (1730, 2345) <sup>b</sup>	1378 (1180, 1610) <sup>a</sup>	1740 (1365, 2075) <sup>b</sup>	1455 (1195, 1650)	1718 (1055, 2712)	1470 (1230, 1815) <sup>a</sup>	2290 (1925, 2410) <sup>b</sup>	
cavitation	292 (198, 508)	-	660 (320, 1005)	-	420 (245, 535)	-	550 (365, 875)	-	
<b>Frequency</b>			<b>n (%)</b>						
directdiv	0 (0)	0 (0)	0 (0)	0 (0)	1 (2.4)	2 (6.1)	0 (0)	1 (2.7)	

comp2C	3 (6.2)	1 (5.0)	5 (13.2)	10 (22.2)	2 (4.8) <sup>a</sup>	10 (30.3) <sup>b</sup>	3 (5.4)	5 (13.5)
frag	8 (16.7) <sup>a</sup>	19 (95.0) <sup>b</sup>	16 (42.1) <sup>a</sup>	29 (64.4) <sup>b</sup>	11 (26.2) <sup>a</sup>	17 (51.5) <sup>b</sup>	28 (50.0) <sup>a</sup>	29 (78.4) <sup>b</sup>
uneven	0 (0) <sup>a</sup>	3 (15.0) <sup>b</sup>	3 (7.9)	5 (11.1)	10 (23.8)	5 (15.2)	5 (8.9)	4 (10.8)

<sup>a-b</sup> Values with different superscripts differ significantly within the same row in each group ( $p < 0.05$ ). NT: non-treated, PsA: psammaplin A, VitC: vitamin C