

Table S6. Traits for each cell type measured by CalMorph and used in this study.

| <b>Name</b> | <b>Cell Type</b> | <b>Biological Description</b>   |
|-------------|------------------|---|
| C11.1_A     | No Bud           | mother area   |
| C12.1_A     | No Bud           | mother circumference  |
| C13_A       | No Bud           | elliptical approximation  |
| C103_A      | No Bud           | long axis length  |
| C104_A      | No Bud           | short axis length   |
| C115_A      | No Bud           | axis ratio  |
| C126_A      | No Bud           | brightness difference of cell wall  |
| D14.1_A     | No Bud           | nucleus area  |
| D15.1_A     | No Bud           | nucleus brightness sum  |
| D16.1_A     | No Bud           | highest brightness nucleus  |
| D17.1_A     | No Bud           | elliptical approximation of nuclei  |
| D102_A      | No Bud           | distance between nuclear gravity center and mother tip                        |
| D117_A      | No Bud           | distance between nuclear gravity center and mother center                     |
| D127_A      | No Bud           | distance between nuclear brightest point and nearer cell tip                  |
| D135_A      | No Bud           | distance between nuclear brightest point and mother center                    |
| D147_A      | No Bud           | relative distance of nuclear gravity center in mother to mother center        |
| D148_A      | No Bud           | relative distance of nuclear brightest point in mother to mother center       |
| D173_A      | No Bud           | maximal distance between nuclear gravity center and nuclear outline in mother |
| D176_A      | No Bud           | nuclear long axis length in mother  |
| D179_A      | No Bud           | nuclear minimum radius in mother  |
| D182_A      | No Bud           | nuclear axis ratio in mother  |
| D191_A      | No Bud           | average nuclear brightness in mother  |
| D194_A      | No Bud           | maximal intensity of nuclear brightness divided by average in mother          |
| C11.1_A1B   | Small Bud        | mother area   |
| C11.2_A1B   | Small Bud        | bud area  |
| C12.1_A1B   | Small Bud        | mother circumference  |
| C13_A1B     | Small Bud        | elliptical approximation  |
| C101_A1B    | Small Bud        | whole cell size (mother and bud)  |
| C102_A1B    | Small Bud        | whole cell outline length   |
| C103_A1B    | Small Bud        | long axis length  |
| C104_A1B    | Small Bud        | short axis length   |
| C105_A1B    | Small Bud        | neck position   |
| C107_A1B    | Small Bud        | bud long axis length  |
| C108_A1B    | Small Bud        | bud short axis length   |
| C109_A1B    | Small Bud        | neck width  |
| C111_A1B    | Small Bud        | distance between bud tip and mother long axis extension                       |
| C112_A1B    | Small Bud        | distance between middle point of neck and mother center                       |
| C113_A1B    | Small Bud        | distance between bud tip and mother long axis through middle point of neck.   |
| C114_A1B    | Small Bud        | bud axis ratio  |
| C115_A1B    | Small Bud        | mother axis ratio   |
| C116_A1B    | Small Bud        | axis ratio ratio  |
| C126_A1B    | Small Bud        | brightness difference of cell wall  |
| C128_A1B    | Small Bud        | distance between middle point of neck and mother hip.                         |
| D14.3_A1B   | Small Bud        | nucleus area  |
| D15.3_A1B   | Small Bud        | nucleus brightness sum  |
| D16.3_A1B   | Small Bud        | highest brightness nucleus  |
| D17.3_A1B   | Small Bud        | elliptical approximation of nuclei  |
| D104_A1B    | Small Bud        | distance between nuclear gravity center and mother tip                        |
| D107_A1B    | Small Bud        | ratio of D104_A1B to long axis length   |
| D110_A1B    | Small Bud        | distance between nuclear gravity center and middle point of neck              |

|          |           |   |
|----------|-----------|---|
| D114_A1B | Small Bud | ratio of D110_A1B to C128_A1B   |
| D118_A1B | Small Bud | distance between nuclear gravity center and mother center   |
| D126_A1B | Small Bud | distance between nuclear gravity center and mother hip  |
| D121_C   | Large Bud | Distance between nuclear gravity center in bud and bud tip  |
| D123_C   | Large Bud | ratio of D121_C to C107_C   |
| D125_C   | Large Bud | distance between nuclear gravity center and in mother and mother tip  |
| D128_C   | Large Bud | distance between nuclear brightest point in mother and mother tip   |
| D130_C   | Large Bud | distance between nuclear brightest point in mother and middle point of neck   |
| D131_C   | Large Bud | distance between nuclear brightest point in bud and middle point of neck  |
| D134_C   | Large Bud | distance between two nuclear brightest points through middle point of neck  |
| D135_C   | Large Bud | distance between nuclear brightest point in mother and mother center  |
| D139_C   | Large Bud | distance between nuclear brightest point in bud and bud center  |
| D141_C   | Large Bud | distance between nuclear brightest point in mother and mother hip   |
| D143_C   | Large Bud | Distance between nuclear outline point and middle point of neck   |
| D144_C   | Large Bud | distance between nuclear outline point in bud and middle point of neck  |
| D145_C   | Large Bud | Distance between nuclear outline point in mother and mother hip   |
| D146_C   | Large Bud | distance between nuclear outline point in bud and bud tip   |
| D147_C   | Large Bud | relative distance of nuclear gravity center in mother to mother center  |
| D148_C   | Large Bud | relative distance of nuclear brightest point center in mother to mother center  |
| D149_C   | Large Bud | relative distance of nuclear gravity center in bud to bud center  |
| D150_C   | Large Bud | relative distance of nuclear brightest point in bud to bud center   |
| D151_C   | Large Bud | ratio of distance between each nucleus and middle point of neck   |
| D152_C   | Large Bud | mobility of nucleus in mother   |
| D153_C   | Large Bud | mobility of nucleus in bud  |
| D157_C   | Large Bud | angle between lines: short axis to bud nuclear bright point and short axis to bud tip   |
| D158_C   | Large Bud | angle between lines: long axis length and line between nuclear center of gravity and nuclear bright spot                          |
| D159_C   | Large Bud | angle between lines: long axis and line between bud nuclear bright point and bud nuclear center of gravity                        |
| D162_C   | Large Bud | angle between lines: line between nuclear bright point and nuclear center of gravity and line between neck and long axis.         |
| D163_C   | Large Bud | angle between lines: line between bud nuclear bright point and bud nuclear center of gravity and line between neck and long axis. |
| D166_C   | Large Bud | Angle between line: line between nuclear bright point and nuclear center of gravity and line between neck and bud tip             |
| D167_C   | Large Bud | angle between lines: line between bud nuclear bright point and bud nuclear center of gravity and line between neck and bud tip    |
| D169_C   | Large Bud | angle between lines: neck to nuclear gravity center   |
| D170_C   | Large Bud | angle between lines: neck to nuclear bright spot  |
| D173_C   | Large Bud | maximal distance between nuclear gravity center and nuclear outline   |
| D174_C   | Large Bud | maximal distance between nuclear gravity center and nuclear outline in bud  |
| D176_C   | Large Bud | nuclear long axis length in mother  |
| D177_C   | Large Bud | nuclear long axis length in bud   |
| D182_C   | Large Bud | nuclear axis ratio in mother  |
| D183_C   | Large Bud | nuclear axis ratio in bud   |
| D185_C   | Large Bud | length from nucleus to neck   |
| D186_C   | Large Bud | length from bud nucleus to neck   |
| D191_C   | Large Bud | average nuclear brightness in mother  |
| D192_C   | Large Bud | average nuclear brightness in bud   |
| D193_C   | Large Bud | average nuclear brightness in whole cell  |
| D194_C   | Large Bud | maximal intensity of nuclear brightness divided by average in mother  |
| D195_C   | Large Bud | maximal intensity of nuclear brightness divided by average in bud   |
| D196_C   | Large Bud | maximal intensity of nuclear brightness divided by average in whole cell  |
| D197_C   | Large Bud | ratio of nuclear size   |
| D198_C   | Large Bud | ratio of nuclear brightness   |