

Table 1 501 parameters

Nuclear_stage	No.	ID	Description	Definition
Stage_A	1	C11-1_A	Whole_cell_size	-
	2	C12-1_A	Whole_cell_outline_length	-
	3	C13_A	Whole_cell_fitness_for_ellipse	-
	4	C103_A	Long_axis_length_in_whole_cell	C1-1C1-2
	5	C104_A	Short_axis_length_in_whole_cell	C2-1C2-2
	6	C115_A	Whole_cell_axis_ratio	C1-1C1-2/C2-1C2-2
	7	C126_A	Brightness_difference_of_cell_wall	C6-C7
	8	C127_A	Thickness_difference_of_cell_wall	C8-C9
	9	A7-1_A	Size_of_actin_region	-
	10	A8-1_A	Actin_region_brightness	-
	11	A101_A	Actin_region_ratio_in_whole_cell	A7-1/C11-1
	12	A105_A	Actin_a_ratio	-
	13	A106_A	Actin_b_ratio	-
	14	A113_A	Actin_n_ratio	-
	15	A120_A	Total_length_of_actin_patch_link	-
	16	A121_A	Maximal_distance_between_patches	-
	17	A122_A	Number_of_bright_actin_patches	-
	18	A123_A	Ratio_of_actin_patches_to_actin_region	-
	19	D14-1_A	Nuclear_size	-
	20	D15-1_A	Nuclear_brightness	-
	21	D16-1_A	Maximal_intensity_of_nuclear_brightness	-
	22	D17-1_A	Nuclear_fitness_for_ellipse	-
	23	D102_A	Distance_between_nuclear_gravity_center_and_mother_tip	D1-1C1-1 or D1-1C1-2
	24	D105_A	Ratio_of_D102_to_C103	D1-1C1-1/C103 or D1-1C1-2/C103
	25	D117_A	Distance_between_nuclear_gravity_center_and_cell_center	D1-1C1
	26	D127_A	Distance_between_nuclear_brightest_point_and_cell_tip	D2-1C1-1 or D2-1C1-2
	27	D135_A	Distance_between_nuclear_brightest_point_and_cell_center	D2-1C1
	28	D147_A	Relative_distance_of_nuclear_gravity_center_to_cell_center	D1-1C1/C1D9-1
	29	D148_A	Relative_distance_of_nuclear_brightest_point_to_cell_center	D2-1C1/C1D10-1
	30	D154_A	Angle_between_C1D1-1_and_C1C1-2	∠D1-1C1C1-2
	31	D155_A	Angle_between_C1D2-1_and_C1C1-2	∠D2-1C1C1-2
	32	D173_A	Maximal_distance_between_nuclear_gravity_center_and_nuclear_outline	D1-1D3-1
	33	D176_A	Nuclear_long_axis_length	D3-1D4-1
	34	D179_A	Nuclear_minimum_radius	D1-1D5-1
	35	D182_A	Nuclear_axis_ratio	D3-1D4-1/D1-1D5-1
	36	D188_A	Distance_between_nuclear_gravity_center_and_brightest_point	D1-1D2-1
	37	D191_A	Average_of_nuclear_brightness	D15-1/D14-1
	38	D194_A	Maximal_intensity_of_nuclear_brightness_divided_by_average	D16-1/(D15-1/D14-1)
	39	CCV11-1_A	Coefficient_of_variation_of_C11-1_A	-
	40	CCV12-1_A	Coefficient_of_variation_of_C12-1_A	-
	41	CCV13_A	Coefficient_of_variation_of_C13_A	-
	42	CCV103_A	Coefficient_of_variation_of_C103_A	-
	43	CCV104_A	Coefficient_of_variation_of_C104_A	-
	44	CCV115_A	Coefficient_of_variation_of_C115_A	-
	45	CCV126_A	Coefficient_of_variation_of_C126_A	-
	46	CCV127_A	Coefficient_of_variation_of_C127_A	-
	47	ACV7-1_A	Coefficient_of_variation_of_A7-1_A	-
	48	ACV8-1_A	Coefficient_of_variation_of_A8-1_A	-
	49	ACV101_A	Coefficient_of_variation_of_A101_A	-
	50	ACV120_A	Coefficient_of_variation_of_A120_A	-
	51	ACV121_A	Coefficient_of_variation_of_A121_A	-
	52	ACV122_A	Coefficient_of_variation_of_A122_A	-
	53	ACV123_A	Coefficient_of_variation_of_A123_A	-
	54	DCV14-1_A	Coefficient_of_variation_of_D14-1_A	-
	55	DCV15-1_A	Coefficient_of_variation_of_D15-1_A	-
	56	DCV16-1_A	Coefficient_of_variation_of_D16-1_A	-
	57	DCV17-1_A	Coefficient_of_variation_of_D17-1_A	-
	58	DCV102_A	Coefficient_of_variation_of_D102_A	-
	59	DCV105_A	Coefficient_of_variation_of_D105_A	-
	60	DCV117_A	Coefficient_of_variation_of_D117_A	-
	61	DCV127_A	Coefficient_of_variation_of_D127_A	-
	62	DCV135_A	Coefficient_of_variation_of_D135_A	-
	63	DCV147_A	Coefficient_of_variation_of_D147_A	-
	64	DCV148_A	Coefficient_of_variation_of_D148_A	-
	65	DCV154_A	Coefficient_of_variation_of_D154_A	-
	66	DCV155_A	Coefficient_of_variation_of_D155_A	-
	67	DCV173_A	Coefficient_of_variation_of_D173_A	-
	68	DCV176_A	Coefficient_of_variation_of_D176_A	-
	69	DCV179_A	Coefficient_of_variation_of_D179_A	-
	70	DCV182_A	Coefficient_of_variation_of_D182_A	-
	71	DCV188_A	Coefficient_of_variation_of_D188_A	-
	72	DCV191_A	Coefficient_of_variation_of_D191_A	-
	73	DCV194_A	Coefficient_of_variation_of_D194_A	-
Stage_A1&B	74	C11-1_A1B	Mother_cell_size	-
	75	C11-2_A1B	Bud_cell_size	-
	76	C12-1_A1B	Mother_cell_outline_length	-
	77	C12-2_A1B	Bud_cell_outline_length	-
	78	C13_A1B	Mother_cell_fitness_for_ellipse	-
	79	C101_A1B	Whole_cell_size	C11-1+C11-2
	80	C102_A1B	Whole_cell_outline_length	C12-1+C12-2
	81	C103_A1B	Long_axis_length_in_mother	C1-1C1-2
	82	C104_A1B	Short_axis_length_in_mother	C2-1C2-2
	83	C105_A1B	Neck_position	∠C1-1C1C4-1
	84	C106_A1B	Bud_direction	-
	85	C107_A1B	Long_axis_length_in_bud	C4-1C4-2
	86	C108_A1B	Short_axis_length_in_bud	C5-1C5-2
	87	C109_A1B	Neck_width	C3-1C3-2
	88	C110_A1B	Distance_between_bud_tip_and_mother_long_axis_extension	-
	89	C111_A1B	Distance_between_bud_tip_and_mother_short_axis_extension	-
	90	C112_A1B	Distance_between_middle_point_of_neck_and_mother_center	C1C4-1
	91	C113_A1B	Distance_between_bud_tip_and_mother_long_axis_through_middle_point_of_neck	-
	92	C114_A1B	Bud_axis_ratio	C4-1C4-2/C5-1C5-2
	93	C115_A1B	Mother_axis_ratio	C1-1C1-2/C2-1C2-2
	94	C116_A1B	Axis_ratio_ratio	(C4-1C4-2/C5-1C5-2)/(C1-1C1-2/C2-1C2-2)
	95	C117_A1B	Cell_outline_ratio	C12-1/C12-2
	96	C118_A1B	Cell_size_ratio	C11-2/C11-1
	97	C123_A1B	Small_bud_ratio	-
	98	C124_A1B	Medium_bud_ratio	-
	99	C125_A1B	Large_bud_ratio	-
	100	C126_A1B	Brightness_difference_of_cell_wall	C6-C7
	101	C127_A1B	Thickness_difference_of_cell_wall	C8-C9
	102	C128_A1B	Distance_between_middle_point_of_neck_and_mother_hip	C10C4-1
	103	A7-1_A1B	Size_of_actin_region_in_mother	-
	104	A7-2_A1B	Size_of_actin_region_in_bud	-

105	A8-1_A1B	Total_brightness_of_actin_region_in_mother	-
106	A8-2_A1B	Total_brightness_of_actin_region_in_bud	-
107	A9_A1B	Proportion_of_actin_region_at_neck	-
108	A101_A1B	Actin_region_ratio_in_whole_cell	(A7-1+A7-2)/(C11-1+C11-2)
109	A102_A1B	Bud_actin_region_ratio_to_total_region	A7-2/(A7-1+A7-2)
110	A103_A1B	Relative_distance_of_actin_patch_center_from_neck_in_mother	-
111	A104_A1B	Relative_distance_of_actin_patch_center_from_neck_in_bud	-
112	A107_A1B	Actin_c_api_ratio	-
113	A108_A1B	Actin_d_iso_ratio	-
114	A109_A1B	Actin_e_ratio	-
115	A110_A1B	Actin_f_ratio	-
116	A112_A1B	Actin_cd_ratio	-
117	A113_A1B	Actin_n_ratio	-
118	A120_A1B	Total_length_of_actin_patch_link	-
119	A121_A1B	Maximal_distance_between_patches	-
120	A122_A1B	Number_of_bright_actin_patches	-
121	A123_A1B	Ratio_of_actin_patches_to_actin_region	-
122	D14-3_A1B	Nuclear_size	D14-1+D14-2
123	D15-3_A1B	Nuclear_brightness	D15-1+D15-2
124	D16-3_A1B	Maximal_intensity_of_nuclear_brightness	D16-1+D16-2
125	D17-3_A1B	Nuclear_fitness_for_ellipse	-
126	D104_A1B	Distance_between_nuclear_gravity_center_and_mother_tip	D1-3C1-2
127	D107_A1B	Ratio_of_D104_to_C103	D1-3C1-2/C103
128	D110_A1B	Distance_between_nuclear_gravity_center_and_middle_point_of_neck	D1-3C4-1
129	D114_A1B	Ratio_of_D110_to_C128	D1-3C4-1/C128
130	D118_A1B	Distance_between_nuclear_gravity_center_and_mother_center	D1-3C1
131	D126_A1B	Distance_between_nuclear_gravity_center_and_mother_hip	D1-3C10
132	D129_A1B	Distance_between_nuclear_brightest_point_and_mother_tip	D2-3C1-2
133	D132_A1B	Distance_between_nuclear_brightest_point_and_middle_point_of_neck	D2-3C4-1
134	D136_A1B	Distance_between_nuclear_brightest_point_and_mother_center	D2-3C1
135	D142_A1B	Distance_between_nuclear_brightest_point_and_mother_hip	D2-3C10
136	D143_A1B	Distance_between_nuclear_outline_point_D6-1_and_middle_point_of_neck	D6-1C4-1
137	D145_A1B	Distance_between_nuclear_outline_point_D7_and_mother_hip	D7C10
138	D147_A1B	Relative_distance_of_nuclear_gravity_center_to_mother_center	D1-1C1/C1D9-1
139	D148_A1B	Relative_distance_of_nuclear_brightest_point_to_mother_center	D2-1C1/C1D10-1
140	D152_A1B	Mobility_of_nucleus_in_mother	D6-1C4-1/D7C10
141	D154_A1B	Angle_between_C1D1-1_and_C1C1-2	D2D1-1C1C1-2
142	D155_A1B	Angle_between_C1D2-1_and_C1C1-2	D2D2-1C1C1-2
143	D161_A1B	Angle_between_D3-1D4-1_and_C1-1C1-2_or_between_D3-3D4-3_and_C1-1C1-2	Angle_between_D3-1D4-1_and_C1-1C1-2_or_between_D3-3D4-3_and_C1-1C1-2
144	D165_A1B	Angle_between_D3-1D4-1_and_C1C4-1_or_between_D3-3D4-3_and_C1C4-1	Angle_between_D3-1D4-1_and_C1C4-1_or_between_D3-3D4-3_and_C1C4-1
145	D169_A1B	Angle_between_C4-1D1-1_and_C4-1C1	D2D1-1C4-1C1
146	D170_A1B	Angle_between_C4-1D2-1_and_C4-1C1	D2D2-1C4-1C1
147	D172_A1B	Angle_between_C4-1D4-1_and_C4-1C1	D4-1C4-1C1 or D4-3C4-1C1
148	D175_A1B	Maximal_distance_between_nuclear_gravity_center_and_nuclear_outline	D1-3D3-3
149	D178_A1B	Nuclear_long_axis_length	D3-3D4-3
150	D181_A1B	Nuclear_minimum_radius	D1-3D5-3
151	D184_A1B	Nuclear_axis_ratio	D3-3D4-3/D1-3D5-3
152	D180_A1B	Distance_between_nuclear_gravity_center_and_brightest_point	D1-3D2-3
153	D193_A1B	Average_of_nuclear_brightness	D15-3/D14-3
154	D196_A1B	Maximal_intensity_of_nuclear_brightness_divided_by_average	D16-3/(D15-3/D14-3)
155	CCV11-1_A1B	Coefficient_of_variation_of_C11-1_A1B	-
156	CCV11-2_A1B	Coefficient_of_variation_of_C11-2_A1B	-
157	CCV12-1_A1B	Coefficient_of_variation_of_C12-1_A1B	-
158	CCV12-2_A1B	Coefficient_of_variation_of_C12-2_A1B	-
159	CCV13_A1B	Coefficient_of_variation_of_C13_A1B	-
160	CCV101_A1B	Coefficient_of_variation_of_C101_A1B	-
161	CCV102_A1B	Coefficient_of_variation_of_C102_A1B	-
162	CCV103_A1B	Coefficient_of_variation_of_C103_A1B	-
163	CCV104_A1B	Coefficient_of_variation_of_C104_A1B	-
164	CCV105_A1B	Coefficient_of_variation_of_C105_A1B	-
165	CCV106_A1B	Coefficient_of_variation_of_C106_A1B	-
166	CCV107_A1B	Coefficient_of_variation_of_C107_A1B	-
167	CCV108_A1B	Coefficient_of_variation_of_C108_A1B	-
168	CCV109_A1B	Coefficient_of_variation_of_C109_A1B	-
169	CCV110_A1B	Coefficient_of_variation_of_C110_A1B	-
170	CCV111_A1B	Coefficient_of_variation_of_C111_A1B	-
171	CCV112_A1B	Coefficient_of_variation_of_C112_A1B	-
172	CCV113_A1B	Coefficient_of_variation_of_C113_A1B	-
173	CCV114_A1B	Coefficient_of_variation_of_C114_A1B	-
174	CCV115_A1B	Coefficient_of_variation_of_C115_A1B	-
175	CCV116_A1B	Coefficient_of_variation_of_C116_A1B	-
176	CCV117_A1B	Coefficient_of_variation_of_C117_A1B	-
177	CCV118_A1B	Coefficient_of_variation_of_C118_A1B	-
178	CCV126_A1B	Coefficient_of_variation_of_C126_A1B	-
179	CCV127_A1B	Coefficient_of_variation_of_C127_A1B	-
180	CCV128_A1B	Coefficient_of_variation_of_C128_A1B	-
181	ACV7-1_A1B	Coefficient_of_variation_of_A7-1_A1B	-
182	ACV7-2_A1B	Coefficient_of_variation_of_A7-2_A1B	-
183	ACV8-1_A1B	Coefficient_of_variation_of_A8-1_A1B	-
184	ACV8-2_A1B	Coefficient_of_variation_of_A8-2_A1B	-
185	ACV9_A1B	Coefficient_of_variation_of_A9_A1B	-
186	ACV101_A1B	Coefficient_of_variation_of_A101_A1B	-
187	ACV102_A1B	Coefficient_of_variation_of_A102_A1B	-
188	ACV103_A1B	Coefficient_of_variation_of_A103_A1B	-
189	ACV104_A1B	Coefficient_of_variation_of_A104_A1B	-
190	ACV120_A1B	Coefficient_of_variation_of_A120_A1B	-
191	ACV121_A1B	Coefficient_of_variation_of_A121_A1B	-
192	ACV122_A1B	Coefficient_of_variation_of_A122_A1B	-
193	ACV123_A1B	Coefficient_of_variation_of_A123_A1B	-
194	DCV14-3_A1B	Coefficient_of_variation_of_D14-3_A1B	-
195	DCV15-3_A1B	Coefficient_of_variation_of_D15-3_A1B	-
196	DCV16-3_A1B	Coefficient_of_variation_of_D16-3_A1B	-
197	DCV17-3_A1B	Coefficient_of_variation_of_D17-3_A1B	-
198	DCV104_A1B	Coefficient_of_variation_of_D104_A1B	-
199	DCV107_A1B	Coefficient_of_variation_of_D107_A1B	-
200	DCV110_A1B	Coefficient_of_variation_of_D110_A1B	-
201	DCV114_A1B	Coefficient_of_variation_of_D114_A1B	-
202	DCV118_A1B	Coefficient_of_variation_of_D118_A1B	-
203	DCV126_A1B	Coefficient_of_variation_of_D126_A1B	-
204	DCV129_A1B	Coefficient_of_variation_of_D129_A1B	-
205	DCV132_A1B	Coefficient_of_variation_of_D132_A1B	-
206	DCV136_A1B	Coefficient_of_variation_of_D136_A1B	-
207	DCV142_A1B	Coefficient_of_variation_of_D142_A1B	-
208	DCV143_A1B	Coefficient_of_variation_of_D143_A1B	-
209	DCV145_A1B	Coefficient_of_variation_of_D145_A1B	-
210	DCV147_A1B	Coefficient_of_variation_of_D147_A1B	-
211	DCV148_A1B	Coefficient_of_variation_of_D148_A1B	-

	212	DCV152_A1B	Coefficient_of_variation_of_D152_A1B	-
	213	DCV154_A1B	Coefficient_of_variation_of_D154_A1B	-
	214	DCV155_A1B	Coefficient_of_variation_of_D155_A1B	-
	215	DCV161_A1B	Coefficient_of_variation_of_D161_A1B	-
	216	DCV165_A1B	Coefficient_of_variation_of_D165_A1B	-
	217	DCV169_A1B	Coefficient_of_variation_of_D169_A1B	-
	218	DCV170_A1B	Coefficient_of_variation_of_D170_A1B	-
	219	DCV172_A1B	Coefficient_of_variation_of_D172_A1B	-
	220	DCV175_A1B	Coefficient_of_variation_of_D175_A1B	-
	221	DCV178_A1B	Coefficient_of_variation_of_D178_A1B	-
	222	DCV181_A1B	Coefficient_of_variation_of_D181_A1B	-
	223	DCV184_A1B	Coefficient_of_variation_of_D184_A1B	-
	224	DCV190_A1B	Coefficient_of_variation_of_D190_A1B	-
	225	DCV193_A1B	Coefficient_of_variation_of_D193_A1B	-
	226	DCV196_A1B	Coefficient_of_variation_of_D196_A1B	-
Stage_C	227	C11-1_C	Mother_cell_size	-
	228	C11-2_C	Bud_cell_size	-
	229	C12-1_C	Mother_cell_outline_length	-
	230	C12-2_C	Bud_cell_outline_length	-
	231	C13_C	Mother_cell_fitness_for_ellipse	-
	232	C101_C	Whole_cell_size	C11-1+C11-2
	233	C102_C	Whole_cell_outline_length	C12-1+C12-2
	234	C103_C	Long_axis_length_in_mother	C1-1C1-2
	235	C104_C	Short_axis_length_in_mother	C2-1C2-2
	236	C105_C	Neck_position	$\angle C1-1C1C4-1$
	237	C106_C	Bud_direction	-
	238	C107_C	Long_axis_length_in_bud	C4-1C4-2
	239	C108_C	Short_axis_length_in_bud	C5-1C5-2
	240	C109_C	Neck_width	C3-1C3-2
	241	C110_C	Distance_between_bud_tip_and_mother_long_axis_extension	-
	242	C111_C	Distance_between_bud_tip_and_mother_short_axis_extension	-
	243	C112_C	Distance_between_middle_point_of_neck_and_mother_center	C1C4-1
	244	C113_C	Distance_between_bud_tip_and_mother_long_axis_through_middle_point_of_neck	-
	245	C114_C	Bud_axis_ratio	C4-1C4-2/C5-1C5-2
	246	C115_C	Mother_axis_ratio	C1-1C1-2/C2-1C2-2
	247	C116_C	Axis_ratio_ratio	$(C4-1C4-2/C5-1C5-2)/(C1-1C1-2/C2-1C2-2)$
	248	C117_C	Cell_outline_ratio	C12-1/C12-2
	249	C118_C	Cell_size_ratio	C11-2/C11-1
	250	C123_C	Small_bud_ratio	-
	251	C124_C	Medium_bud_ratio	-
	252	C125_C	Large_bud_ratio	-
	253	C126_C	Brightness_difference_of_cell_wall	C6-C7
	254	C127_C	Thickness_difference_of_cell_wall	C8-C9
	255	C128_C	Distance_between_middle_point_of_neck_and_mother_hip	C10C4-1
	256	A7-1_C	Size_of_actin_region_in_mother	-
	257	A7-2_C	Size_of_actin_region_in_bud	-
	258	A8-1_C	Total_brightness_of_actin_region_in_mother	-
	259	A8-2_C	Total_brightness_of_actin_region_in_bud	-
	260	A9_C	Proportion_of_actin_region_at_neck	-
	261	A101_C	Actin_region_ratio_in_whole_cell	$(A7-1+A7-2)/(C11-1+C11-2)$
	262	A102_C	Bud_actin_region_ratio_to_total_region	A7-2/(A7-1+A7-2)
	263	A103_C	Relative_distance_of_actin_patch_center_from_neck_in_mother	-
	264	A104_C	Relative_distance_of_actin_patch_center_from_neck_in_bud	-
	265	A107_C	Actin_c_api_ratio	-
	266	A108_C	Actin_d_iso_ratio	-
	267	A109_C	Actin_e_ratio	-
	268	A110_C	Actin_f_ratio	-
	269	A112_C	Actin_cd_ratio	-
	270	A113_C	Actin_n_ratio	-
	271	A120_C	Total_length_of_actin_patch_link	-
	272	A121_C	Maximal_distance_between_patches	-
	273	A122_C	Number_of_bright_actin_patches	-
	274	A123_C	Ratio_of_actin_patches_to_actin_region	-
	275	D14-1_C	Nuclear_size_in_mother	-
	276	D14-2_C	Nuclear_size_in_bud	-
	277	D14-3_C	Nuclear_size_in_whole_cell	D14-1+D14-2
	278	D15-1_C	Nuclear_brightness_in_mother	-
	279	D15-2_C	Nuclear_brightness_in_bud	-
	280	D15-3_C	Nuclear_brightness_in_whole_cell	D15-1+D15-2
	281	D16-1_C	Maximal_intensity_of_nuclear_brightness_in_mother	-
	282	D16-2_C	Maximal_intensity_of_nuclear_brightness_in_bud	-
	283	D16-3_C	Maximal_intensity_of_nuclear_brightness_in_whole_cell	-
	284	D17-1_C	Nuclear_fitness_for_ellipse_in_mother	-
	285	D17-2_C	Nuclear_fitness_for_ellipse_in_bud	-
	286	D103_C	Distance_between_nuclear_gravity_center_in_mother_and_mother_tip	D1-1C1-2
	287	D106_C	Ratio_of_D103_to_C103	D1-1C1-2/C103
	288	D108_C	Distance_between_nuclear_gravity_center_in_mother_and_middle_point_of_neck	D1-1C4-1
	289	D109_C	Distance_between_nuclear_gravity_center_in_bud_and_middle_point_of_neck	D1-2C4-1
	290	D112_C	Ratio_of_D108_to_C128	D1-1C4-1/C128
	291	D113_C	Ratio_of_D109_to_C107	D1-2C4-1/C107
	292	D116_C	Distance_between_two_nuclear_gravity_centers_through_middle_point_of_neck	D1-1C4-1+D1-2C4-1
	293	D117_C	Distance_between_nuclear_gravity_center_in_mother_and_mother_center	D1-1C1
	294	D119_C	Distance_between_nuclear_gravity_center_in_bud_and_bud_center	D1-2C2
	295	D121_C	Distance_between_nuclear_gravity_center_in_bud_and_bud_tip	D1-2C4-2
	296	D123_C	Ratio_of_D121_to_C107	D1-2C4-2/C107
	297	D125_C	Distance_between_nuclear_gravity_center_in_mother_and_mother_hip	D1-1C10
	298	D128_C	Distance_between_nuclear_brightest_point_in_mother_and_mother_tip	D2-1C1-2
	299	D130_C	Distance_between_nuclear_brightest_point_in_mother_and_middle_point_of_neck	D2-1C4-1
	300	D131_C	Distance_between_nuclear_brightest_point_in_bud_and_middle_point_of_neck	D2-2C4-1
	301	D134_C	Distance_between_two_nuclear_brightest_points_through_middle_point_of_neck	D2-1C4-1+D2-2C4-1
	302	D135_C	Distance_between_nuclear_brightest_point_in_mother_and_mother_center	D2-1C1
	303	D137_C	Distance_between_nuclear_brightest_point_in_bud_and_bud_center	D2-2C2
	304	D139_C	Distance_between_nuclear_brightest_point_in_bud_and_bud_tip	D2-2C4-2
	305	D141_C	Distance_between_nuclear_brightest_point_in_mother_and_mother_hip	D2-1C10
	306	D143_C	Distance_between_nuclear_outline_point_D6-1_in_mother_and_middle_point_of_neck	D6-1C4-1
	307	D144_C	Distance_between_nuclear_outline_point_D6-2_in_bud_and_middle_point_of_neck	D6-2C4-1
	308	D145_C	Distance_between_nuclear_outline_point_D7_in_mother_and_mother_hip	D7C10
	309	D146_C	Distance_between_nuclear_outline_point_D8_in_bud_and_bud_tip	D8C4-2
	310	D147_C	Relative_distance_of_nuclear_gravity_center_in_mother_to_mother_center	$D1-1C1/C1D9-1$
	311	D148_C	Relative_distance_of_nuclear_brightest_point_in_mother_to_mother_center	$D2-1C1/C1D10-1$
	312	D149_C	Relative_distance_of_nuclear_gravity_center_in_bud_to_bud_center	$D1-2C2/C2D9-2$
	313	D150_C	Relative_distance_of_nuclear_brightest_point_in_bud_to_bud_center	$D2-2C2/C2D10-2$
	314	D151_C	Ratio_of_distance_between_each_nucleus_and_middle_point_of_neck	$D6-2C4-1/D6-1C4-1$
	315	D152_C	Mobility_of_nucleus_in_mother	D6-1C4-1/D7C10
	316	D153_C	Mobility_of_nucleus_in_bud	D6-2C4-1/D8C4-2
	317	D154_C	Angle_between_C1D1-1_and_C1C1-2	$\angle D1-1C1C1-2$

318	D155_C	Angle_between_C1D2-1_and_C1C1-2	∠D2-1C1C1-2
319	D156_C	Angle_between_C2D1-2_and_C2C4-2	∠D1-2C2C4-2
320	D157_C	Angle_between_C2D2-2_and_C2C4-2	∠D2-2C2C4-2
321	D158_C	Angle_between_D1-1D1-2_and_C1-1C1-2	Angle_between_D1-1D1-2_and_C1-1C1-2
322	D159_C	Angle_between_D2-1D2-2_and_C1-1C1-2	Angle_between_D2-1D2-2_and_C1-1C1-2
323	D162_C	Angle_between_D1-1D1-2_and_C1C4-1	Angle_between_D1-1D1-2_and_C1C4-1
324	D163_C	Angle_between_D2-1D2-2_and_C1C4-1	Angle_between_D2-1D2-2_and_C1C4-1
325	D166_C	Angle_between_D1-1D1-2_and_C4-1C4-2	Angle_between_D1-1D1-2_and_C4-1C4-2
326	D167_C	Angle_between_D2-1D2-2_and_C4-1C4-2	Angle_between_D2-1D2-2_and_C4-1C4-2
327	D169_C	Angle_between_C4-1D1-1_and_C4-1C1	∠D1-1C4-1C1
328	D170_C	Angle_between_C4-1D2-1_and_C4-1C1	∠D2-1C4-1C1
329	D173_C	Maximal_distance_between_nuclear_gravity_center_and_nuclear_outline_in_mother	D1-1D3-1
330	D174_C	Maximal_distance_between_nuclear_gravity_center_and_nuclear_outline_in_bud	D1-2D3-2
331	D176_C	Nuclear_long_axis_length_in_mother	D3-1D4-1
332	D177_C	Nuclear_long_axis_length_in_bud	D3-2D4-2
333	D179_C	Nuclear_minimum_radius_in_mother	D1-1D5-1
334	D180_C	Nuclear_minimum_radius_in_bud	D1-2D5-2
335	D182_C	Nuclear_axis_ratio_in_mother	D3-1D4-1/D1-1D5-1
336	D183_C	Nuclear_axis_ratio_in_bud	D3-2D4-2/D1-2D5-2
337	D185_C	Total_length_of_two_straight_segments_D11-1C4-1_and_D11-2C4-1	D11-1C4-1+D11-2C4-1
338	D186_C	Total_length_of_two_straight_segments_D12-1C4-1_and_D12-2C4-1	D12-1C4-1+D12-2C4-1
339	D188_C	Distance_between_nuclear_gravity_center_and_brightest_point_in_mother	D1-1D2-1
340	D189_C	Distance_between_nuclear_gravity_center_and_brightest_point_in_bud	D1-2D2-2
341	D191_C	Average_of_nuclear_brightness_in_mother	D15-1/D14-1
342	D192_C	Average_of_nuclear_brightness_in_bud	D15-2/D14-2
343	D193_C	Average_of_nuclear_brightness_in_whole_cell	D15-3/D14-3
344	D194_C	Maximal_intensity_of_nuclear_brightness_divided_by_average_in_mother	D16-1/(D15-1/D14-1)
345	D195_C	Maximal_intensity_of_nuclear_brightness_divided_by_average_in_bud	D16-2/(D15-2/D14-2)
346	D196_C	Maximal_intensity_of_nuclear_brightness_divided_by_average_in_whole cell	D16-3/(D15-3/D14-3)
347	D197_C	Ratio_of_nuclear_size	D14-2/D14-1
348	D198_C	Ratio_of_nuclear_brightness	D15-2/D15-1
349	CCV11-1_C	Coefficient_of_variation_of_C11-1_C	-
350	CCV11-2_C	Coefficient_of_variation_of_C11-2_C	-
351	CCV12-1_C	Coefficient_of_variation_of_C12-1_C	-
352	CCV12-2_C	Coefficient_of_variation_of_C12-2_C	-
353	CCV13_C	Coefficient_of_variation_of_C13_C	-
354	CCV101_C	Coefficient_of_variation_of_C101_C	-
355	CCV102_C	Coefficient_of_variation_of_C102_C	-
356	CCV103_C	Coefficient_of_variation_of_C103_C	-
357	CCV104_C	Coefficient_of_variation_of_C104_C	-
358	CCV105_C	Coefficient_of_variation_of_C105_C	-
359	CCV106_C	Coefficient_of_variation_of_C106_C	-
360	CCV107_C	Coefficient_of_variation_of_C107_C	-
361	CCV108_C	Coefficient_of_variation_of_C108_C	-
362	CCV109_C	Coefficient_of_variation_of_C109_C	-
363	CCV110_C	Coefficient_of_variation_of_C110_C	-
364	CCV111_C	Coefficient_of_variation_of_C111_C	-
365	CCV112_C	Coefficient_of_variation_of_C112_C	-
366	CCV113_C	Coefficient_of_variation_of_C113_C	-
367	CCV114_C	Coefficient_of_variation_of_C114_C	-
368	CCV115_C	Coefficient_of_variation_of_C115_C	-
369	CCV116_C	Coefficient_of_variation_of_C116_C	-
370	CCV117_C	Coefficient_of_variation_of_C117_C	-
371	CCV118_C	Coefficient_of_variation_of_C118_C	-
372	CCV126_C	Coefficient_of_variation_of_C126_C	-
373	CCV127_C	Coefficient_of_variation_of_C127_C	-
374	CCV128_C	Coefficient_of_variation_of_C128_C	-
375	ACV7-1_C	Coefficient_of_variation_of_A7-1_C	-
376	ACV7-2_C	Coefficient_of_variation_of_A7-2_C	-
377	ACV8-1_C	Coefficient_of_variation_of_A8-1_C	-
378	ACV8-2_C	Coefficient_of_variation_of_A8-2_C	-
379	ACV9_C	Coefficient_of_variation_of_A9_C	-
380	ACV101_C	Coefficient_of_variation_of_A101_C	-
381	ACV102_C	Coefficient_of_variation_of_A102_C	-
382	ACV103_C	Coefficient_of_variation_of_A103_C	-
383	ACV104_C	Coefficient_of_variation_of_A104_C	-
384	ACV120_C	Coefficient_of_variation_of_A120_C	-
385	ACV121_C	Coefficient_of_variation_of_A121_C	-
386	ACV122_C	Coefficient_of_variation_of_A122_C	-
387	ACV123_C	Coefficient_of_variation_of_A123_C	-
388	DCV14-1_C	Coefficient_of_variation_of_D14-1_C	-
389	DCV14-2_C	Coefficient_of_variation_of_D14-2_C	-
390	DCV14-3_C	Coefficient_of_variation_of_D14-3_C	-
391	DCV15-1_C	Coefficient_of_variation_of_D15-1_C	-
392	DCV15-2_C	Coefficient_of_variation_of_D15-2_C	-
393	DCV15-3_C	Coefficient_of_variation_of_D15-3_C	-
394	DCV16-1_C	Coefficient_of_variation_of_D16-1_C	-
395	DCV16-2_C	Coefficient_of_variation_of_D16-2_C	-
396	DCV16-3_C	Coefficient_of_variation_of_D16-3_C	-
397	DCV17-1_C	Coefficient_of_variation_of_D17-1_C	-
398	DCV17-2_C	Coefficient_of_variation_of_D17-2_C	-
399	DCV103_C	Coefficient_of_variation_of_D103_C	-
400	DCV106_C	Coefficient_of_variation_of_D106_C	-
401	DCV108_C	Coefficient_of_variation_of_D108_C	-
402	DCV109_C	Coefficient_of_variation_of_D109_C	-
403	DCV112_C	Coefficient_of_variation_of_D112_C	-
404	DCV113_C	Coefficient_of_variation_of_D113_C	-
405	DCV116_C	Coefficient_of_variation_of_D116_C	-
406	DCV117_C	Coefficient_of_variation_of_D117_C	-
407	DCV119_C	Coefficient_of_variation_of_D119_C	-
408	DCV121_C	Coefficient_of_variation_of_D121_C	-
409	DCV123_C	Coefficient_of_variation_of_D123_C	-
410	DCV125_C	Coefficient_of_variation_of_D125_C	-
411	DCV128_C	Coefficient_of_variation_of_D128_C	-
412	DCV130_C	Coefficient_of_variation_of_D130_C	-
413	DCV131_C	Coefficient_of_variation_of_D131_C	-
414	DCV134_C	Coefficient_of_variation_of_D134_C	-
415	DCV135_C	Coefficient_of_variation_of_D135_C	-
416	DCV137_C	Coefficient_of_variation_of_D137_C	-
417	DCV139_C	Coefficient_of_variation_of_D139_C	-
418	DCV141_C	Coefficient_of_variation_of_D141_C	-
419	DCV143_C	Coefficient_of_variation_of_D143_C	-
420	DCV144_C	Coefficient_of_variation_of_D144_C	-
421	DCV145_C	Coefficient_of_variation_of_D145_C	-
422	DCV146_C	Coefficient_of_variation_of_D146_C	-
423	DCV147_C	Coefficient_of_variation_of_D147_C	-
424	DCV148_C	Coefficient_of_variation_of_D148_C	-

	425	DCV149_C	Coefficient_of_variation_of_D149_C	-
	426	DCV150_C	Coefficient_of_variation_of_D150_C	-
	427	DCV151_C	Coefficient_of_variation_of_D151_C	-
	428	DCV152_C	Coefficient_of_variation_of_D152_C	-
	429	DCV153_C	Coefficient_of_variation_of_D153_C	-
	430	DCV154_C	Coefficient_of_variation_of_D154_C	-
	431	DCV155_C	Coefficient_of_variation_of_D155_C	-
	432	DCV156_C	Coefficient_of_variation_of_D156_C	-
	433	DCV157_C	Coefficient_of_variation_of_D157_C	-
	434	DCV158_C	Coefficient_of_variation_of_D158_C	-
	435	DCV159_C	Coefficient_of_variation_of_D159_C	-
	436	DCV162_C	Coefficient_of_variation_of_D162_C	-
	437	DCV163_C	Coefficient_of_variation_of_D163_C	-
	438	DCV166_C	Coefficient_of_variation_of_D166_C	-
	439	DCV167_C	Coefficient_of_variation_of_D167_C	-
	440	DCV169_C	Coefficient_of_variation_of_D169_C	-
	441	DCV170_C	Coefficient_of_variation_of_D170_C	-
	442	DCV173_C	Coefficient_of_variation_of_D173_C	-
	443	DCV174_C	Coefficient_of_variation_of_D174_C	-
	444	DCV176_C	Coefficient_of_variation_of_D176_C	-
	445	DCV177_C	Coefficient_of_variation_of_D177_C	-
	446	DCV179_C	Coefficient_of_variation_of_D179_C	-
	447	DCV180_C	Coefficient_of_variation_of_D180_C	-
	448	DCV182_C	Coefficient_of_variation_of_D182_C	-
	449	DCV183_C	Coefficient_of_variation_of_D183_C	-
	450	DCV185_C	Coefficient_of_variation_of_D185_C	-
	451	DCV186_C	Coefficient_of_variation_of_D186_C	-
	452	DCV188_C	Coefficient_of_variation_of_D188_C	-
	453	DCV189_C	Coefficient_of_variation_of_D189_C	-
	454	DCV191_C	Coefficient_of_variation_of_D191_C	-
	455	DCV192_C	Coefficient_of_variation_of_D192_C	-
	456	DCV193_C	Coefficient_of_variation_of_D193_C	-
	457	DCV194_C	Coefficient_of_variation_of_D194_C	-
	458	DCV195_C	Coefficient_of_variation_of_D195_C	-
	459	DCV196_C	Coefficient_of_variation_of_D196_C	-
	460	DCV197_C	Coefficient_of_variation_of_D197_C	-
	461	DCV198_C	Coefficient_of_variation_of_D198_C	-
Total_stage	462	C119	no_bud_ratio	-
	463	C120	small_bud_ratio	-
	464	C121	medium_bud_ratio	-
	465	C122	large_bud_ratio	-
	466	C123	small_bud_ratio_to_budded_cells	-
	467	C124	medium_bud_ratio_to_budded_cells	-
	468	C125	large_bud_ratio_to_budded_cells	-
	469	A105	actin_a_ratio	-
	470	A106	actin_b_ratio	-
	471	A107	actin_c_api_ratio	-
	472	A108	actin_d_iso_ratio	-
	473	A109	actin_e_ratio	-
	474	A110	actin_f_ratio	-
	475	A111	actin_ae_ratio	-
	476	A112	actin_bcd_ratio	-
	477	A113	actin_n_ratio	-
	478	A114	actin_a_ratio_to_no_bud_cells	-
	479	A115	actin_b_ratio_to_no_bud_cells	-
	480	A116	actin_c_api_ratio_to_budded_cells	-
	481	A117	actin_d_iso_ratio_to_budded_cells	-
	482	A118	actin_e_ratio_to_budded_cells	-
	483	A119	actin_f_ratio_to_budded_cells	-
	484	D199	nuclear_A_ratio	-
	485	D200	nuclear_A1_ratio	-
	486	D201	nuclear_B_ratio	-
	487	D202	nuclear_C_ratio	-
	488	D203	nuclear_D_ratio	-
	489	D204	nuclear_E_ratio	-
	490	D205	nuclear_F_ratio	-
	491	D206	nuclear_A_ratio_to_no_bud_cells	-
	492	D207	nuclear_A1_ratio_to_budded_cells	-
	493	D208	nuclear_B_ratio_to_budded_cells	-
	494	D209	nuclear_C_ratio_to_budded_cells	-
	495	D210	nuclear_A_ratio_to_nuclear_AA1BC_cells	-
	496	D211	nuclear_A1_ratio_to_nuclear_AA1BC_cells	-
	497	D212	nuclear_B_ratio_to_nuclear_AA1BC_cells	-
	498	D213	nuclear_C_ratio_to_nuclear_AA1BC_cells	-
	499	D214	nuclear_A1_ratio_to_nuclear_A1BC_cells	-
	500	D215	nuclear_B_ratio_to_nuclear_A1BC_cells	-
	501	D216	nuclear_C_ratio_to_nuclear_A1BC_cells	-

Parameters obtained from staining with FITC-ConA, Rh-Ph, and DAPI are representing green, red, and blue, respectively. C1 and C2 (yellow letter) represents location of crossing point of long and short axis of mother cell (C1) and bud (C2). Basic parameters (primary parameters representing location of the position and morphological value) are depicted in Supplementary Figure 5A. Nuclear stage classification is according to D_group of Figure 5B.