Figure S1

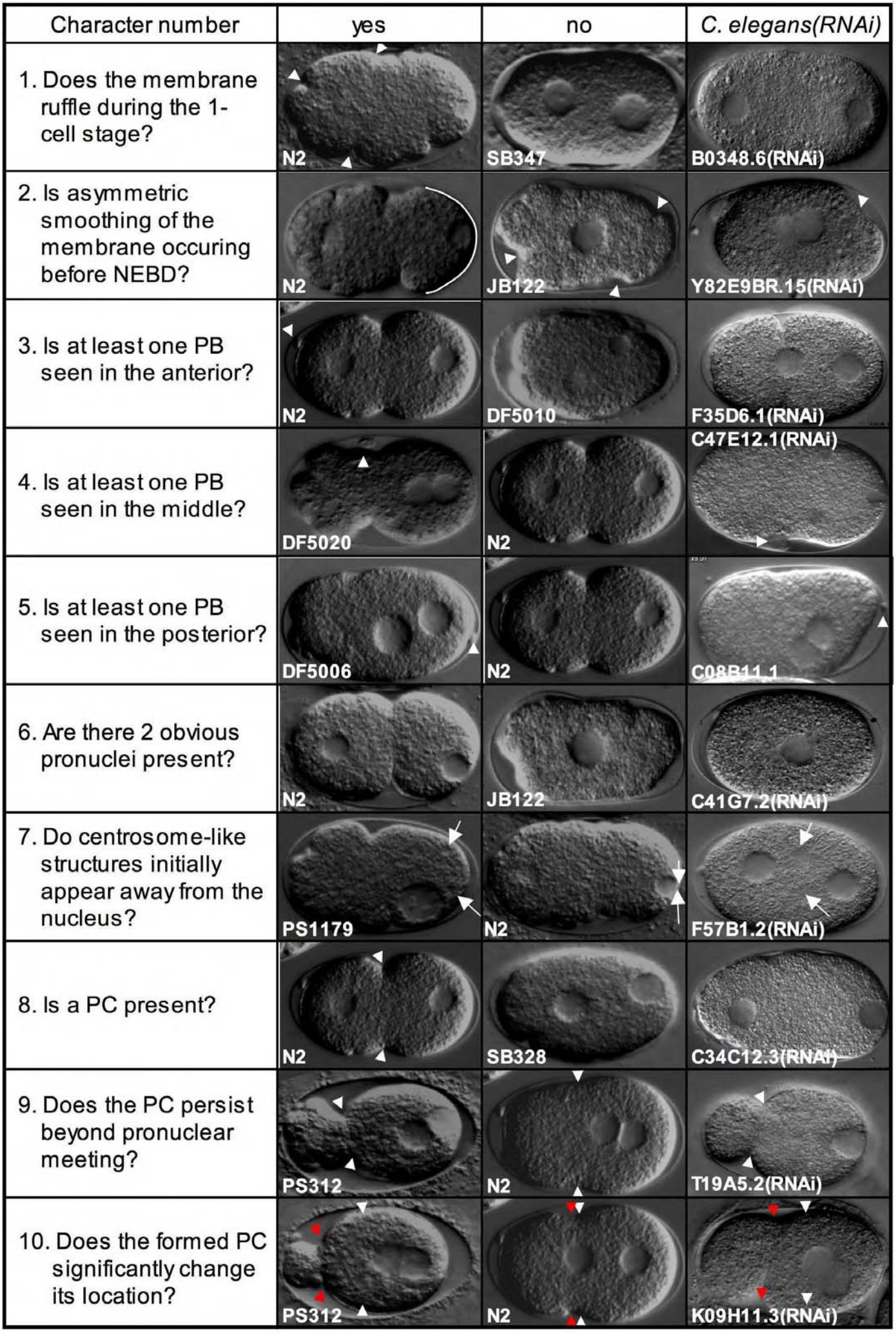

Character number
yes
no
C. elegans(RNAi)
1. Does the membrane ruffle during the 1-cell stage?
N2
SB347
B0348.6(RNAi)
2. Is asymmetric smoothing of the membrane occuring before NEBD?
N2
JB122
Y82E9BR.15(RNAi)
3. Is at least one PB seen in the anterior?
N2
DF5010
F35D6.1(RNAi)
4. Is at least one PB seen in the middle?
DF5020
N2
C47E12.1(RNAi)
5. Is at least one PB seen in the posterior?
DF5006
N2
C08B11.1
6. Are there 2 obvious pronuclei present?
N2
JB122
C41G7.2(RNAi)
7. Do centrosome-like structures initially appear away from the nucleus?
PS1179
N2
F57B1.2(RNAi)
8. Is a PC present?
N2
SB328
C34C12.3(RNAi)
9. Does the PC persist beyond pronuclear meeting?
PS312
N2
T19A5.2(RNAi)
10. Does the formed PC significantly change its location?
PS312
N2
K09H11.3(RNAi)

Figure S1, cont.

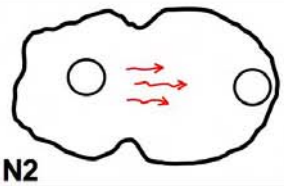
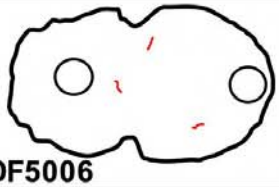
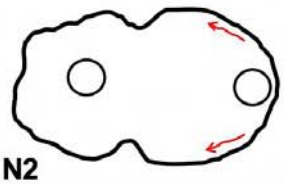
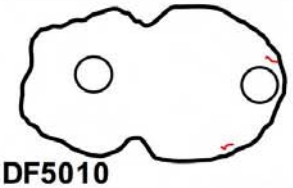
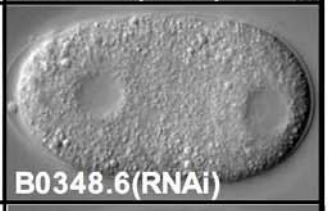
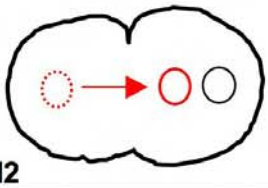
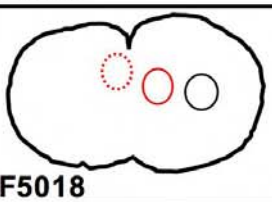
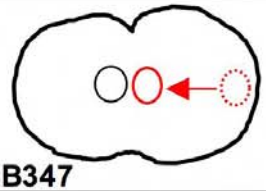
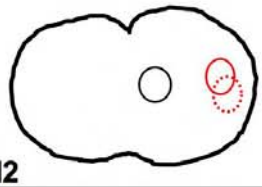
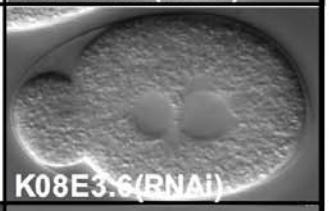
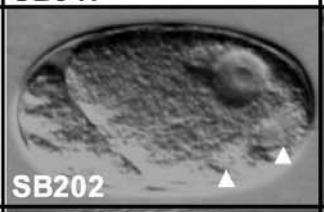
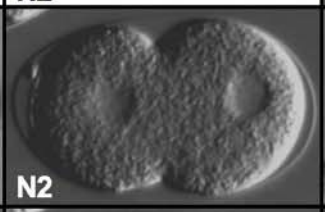
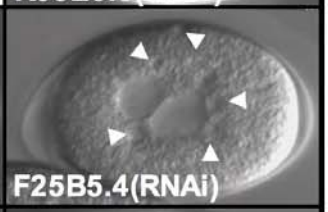
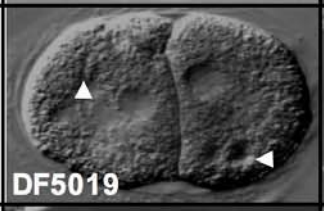
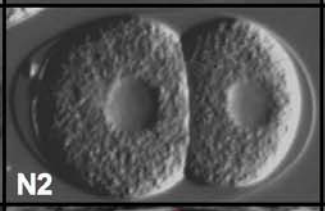
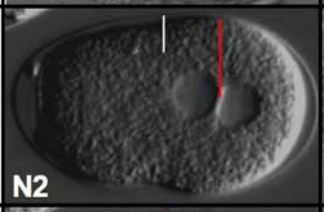
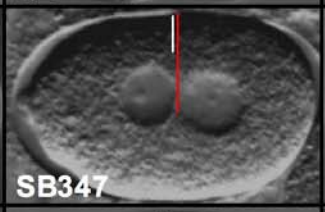
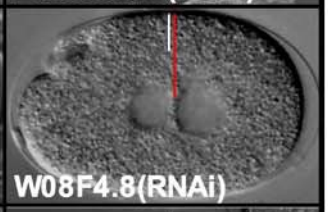
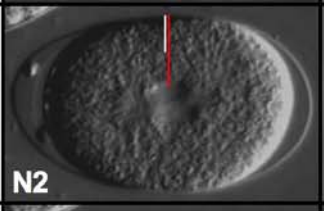
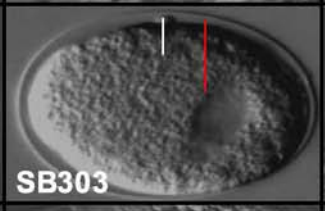
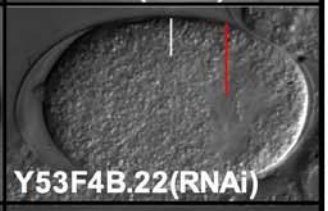
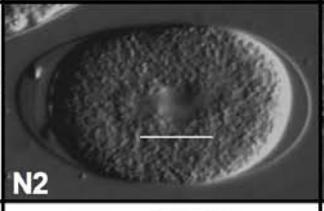
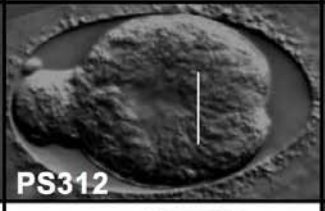
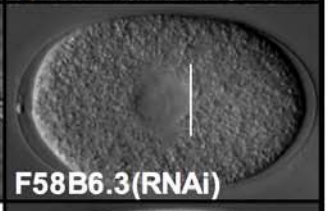
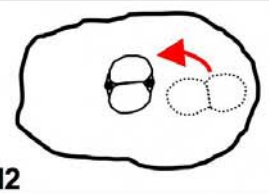
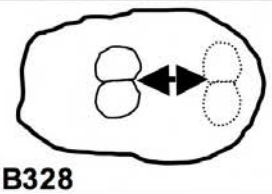
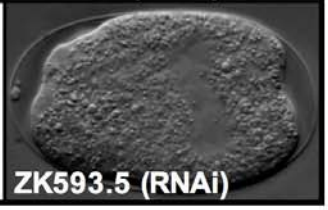
Character number	yes	no	*C. elegans*(RNAi)
11. Do cytoplasmic yolk granules stream to the posterior?	 N2	 DF5006	 C37A2.4(RNAi)
12. Do posterior cortical granules move anteriorly?	 N2	 DF5010	 B0348.6(RNAi)
13. Does the ant. pronucleus migrate across most of the cell to meet the post. one?	 N2	 DF5018	 Y54E2A.3(RNAi)
14. Does the posterior pronucleus migrate to meet the anterior one in the center?	 SB347	 N2	 K08E3.6(RNAi)
15. Are there cytopl. areas devoid of yolk granules at the 1-cell stage?	 SB202	 N2	 F25B5.4(RNAi)
16. Are there cytopl. areas devoid of yolk granules at the 2-cell stage?	 DF5019	 N2	 B03336.10(RNAi)
17. Do the pronuclei meet close to the posterior end?	 N2	 SB347	 W08F4.8(RNAi)
18. Is NEBD in the center of the 1-cell embryo?	 N2	 SB303	 Y53F4B.22(RNAi)
19. Does NEBD occur when the spindle reaches the final location and orientation for mitosis?	 N2	 PS312	 F58B6.3(RNAi)
20. Is there a nuclear rotation at the one-cell stage?	 N2	 SB328	 ZK593.5 (RNAi)

Figure S1, cont.

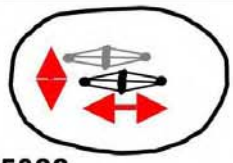
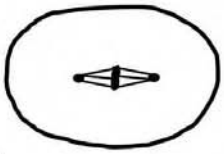
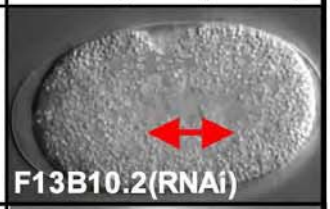
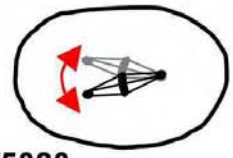
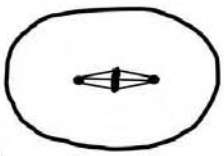
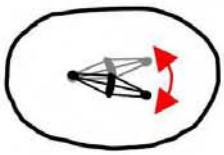
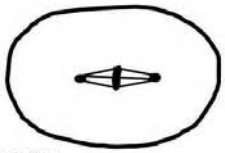
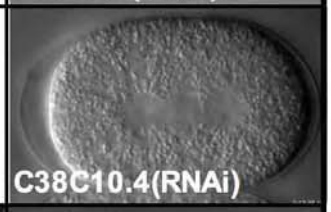
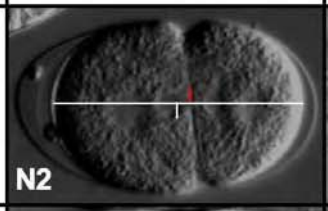
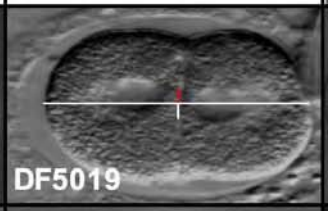
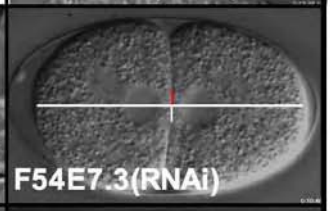
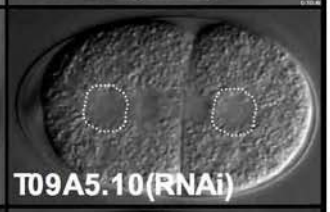
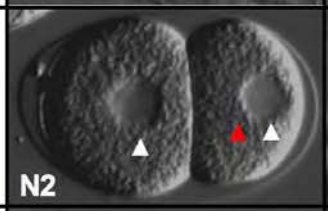
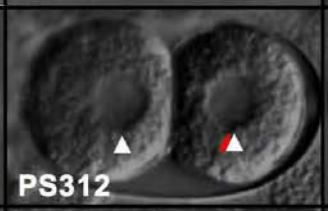
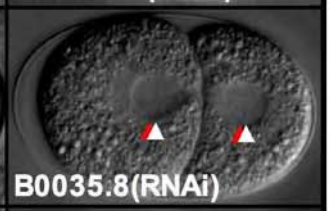
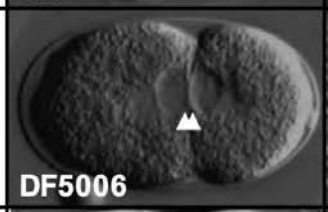
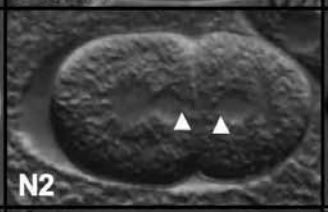
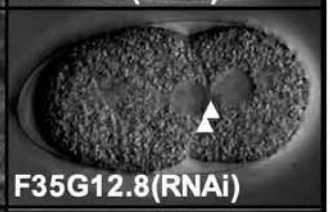
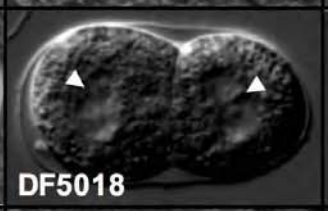
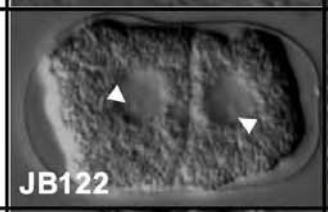
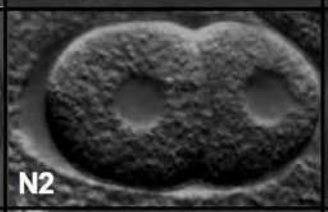
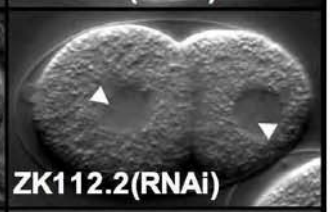
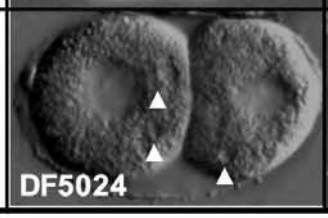
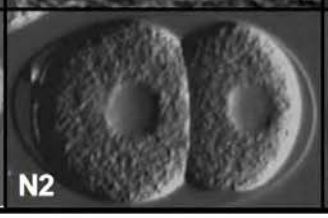
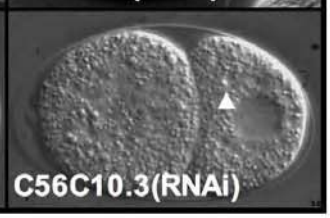
Character number	yes	no	*C. elegans*(RNAi)
21. Do displacements of the one-cell stage spindle occur (horizontally or vertically)?	 DF5022	 N2	 F13B10.2(RNAi)
22. Does the anterior pole of the spindle rock?	 DF5020	 N2	 F10C2.4(RNAi)
23. Does the posterior pole of the spindle rock?	 N2	 SB347	 C38C10.4(RNAi)
24. Is there an asymmetric first division?	 N2	 DF5019	 F54E7.3(RNAi)
25. Do the centrosomes have different shapes after cytokinesis?	 N2	 SB328	 T09A5.10(RNAi)
26. Do either nuclei of the AB or P_1 cell show obvious movements after mitosis?	 N2	 PS312	 B0035.8(RNAi)
27. Do the AB and P_1 nuclei touch the cytokinesis plane?	 DF5006	 N2	 F35G12.8(RNAi)
28. Is the AB and P_1 nucleus always of spherical shape and a single entity?	 N2	 DF5018	 T23H2.1(RNAi)
29. Are nucleoli visible at the 2-cell stage?	 JB122	 N2	 ZK112.2(RNAi)
30. Are there large vacuoles observable at the two-cell stage?	 DF5024	 N2	 C56C10.3(RNAi)

Figure S1, cont.

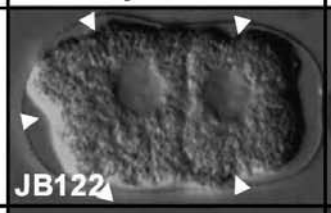
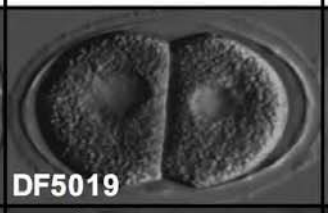
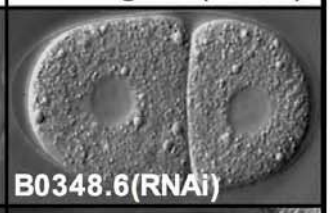
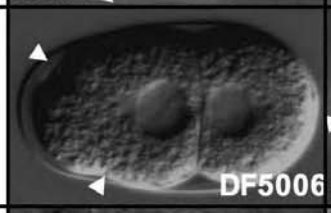
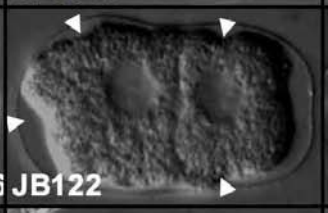
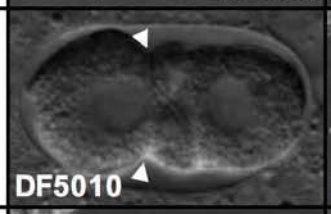
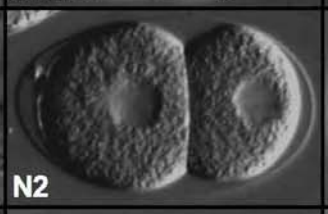
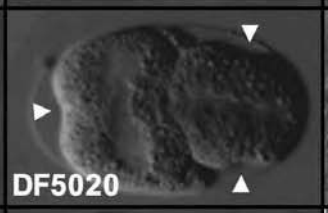
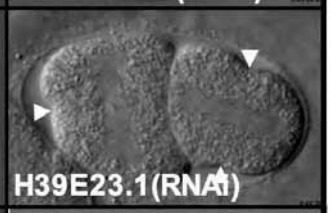
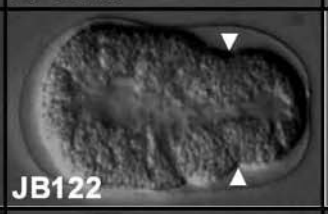
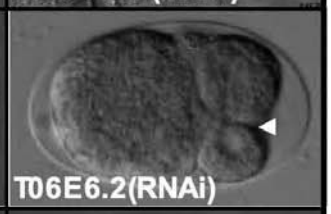
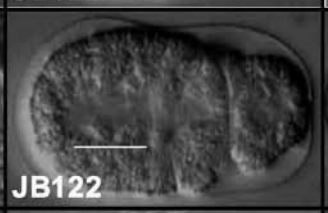
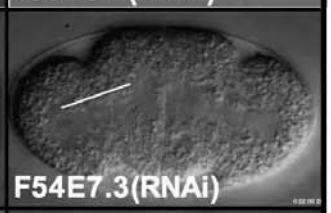
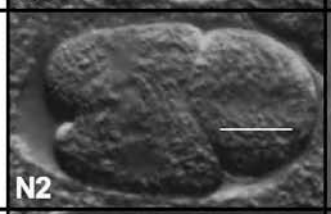
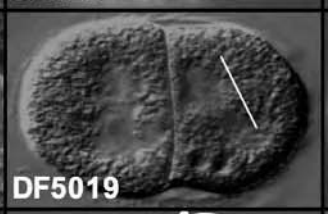
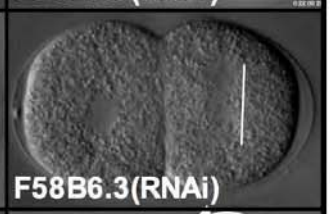
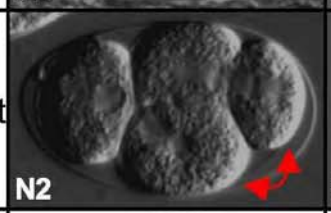
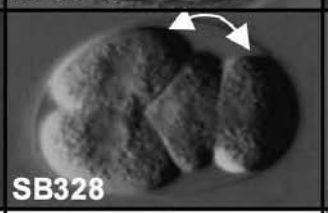
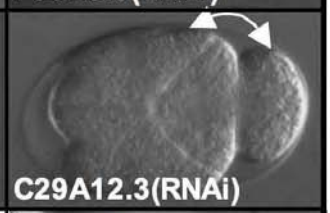
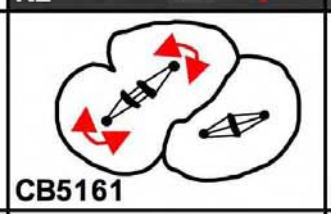
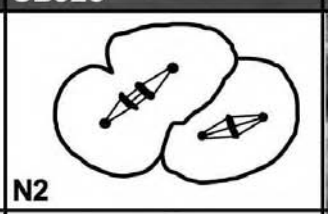
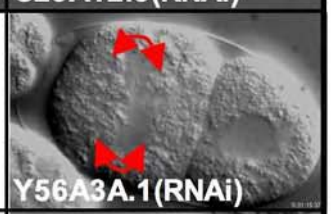
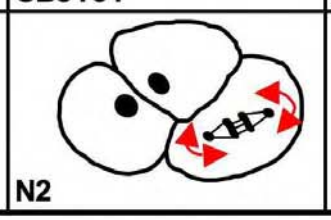
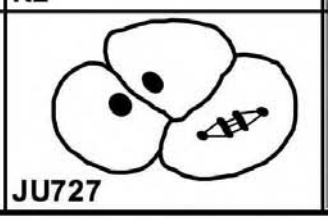
Character number	yes	no	*C. elegans*(RNAi)
31. Is there obvious ruffling at the 2-cell stage in either cell?	 JB122	 DF5019	 B0348.6(RNAi)
32. Does one cell ruffle more than the other at the 2-cell stage?	 DF5006	 JB122	 C26E6.8(RNAi)
33. Are there PC-like constrictions at the 2-cell stage?	 DF5010	 N2	 Y46G5A.31(RNAi)
34. Are the second divisions clearly asynchronous (> 30 seconds)?	 N2	 DF5020	 H39E23.1(RNAi)
35. Does the larger (anterior) cell divide first?	 N2	 JB122	 T06E6.2(RNAi)
36. Is the AB spindle oriented perpendicular to the long axis of the embryo?	 N2	 JB122	 F54E7.3(RNAi)
37. Is the P_1 spindle oriented along the long axis of the embryo?	 N2	 DF5019	 F58B6.3(RNAi)
38. Is the forming P_2 cell immediately in contact with the AB lineage?	 N2	 SB328	 C29A12.3(RNAi)
39. Does the AB spindle rock?	 CB5161	 N2	 Y56A3A.1(RNAi)
40. Does the P_1 spindle rock?	 N2	 JU727	 C26B2.1(RNAi)

Figure S1: Complete list of the 40 binary characters used for the phenotypic analysis of early embryogenesis and comparisons with RNAi experiments in C. elegans.

For every character, examples are given for both character states. All species that differ from *C. elegans* show the same phenotype. Cartoons illustrate the more dynamic characters that are difficult to represent in a single DIC image. (Movies representing all character states can be viewed on www.rhevolution.org.) The last column gives an example of an RNAi experiment in *C. elegans* that phenocopies the character state seen in the other species (pictures taken from phenobank.org or RNAi.org). Due to the inherent differences in RNAi penetrance, the RNAi phenotypes reported here are not necessarily seen in all published RNAi experiments and are seen in only a subset of the reported cases.

Symbols: Characters (1, 2, 31, 32) arrowheads: ruffling events; (2) white line: smooth part of the membrane; (3, 4, 5) arrowheads: polar bodies; (7) arrows: centrosome-like structures; (8, 9) arrowheads: PC; (10) white arrowheads: initial position of PC, red arrowheads: final position of PC; (11, 12) arrows: direction of yolk stream, small lines: undirected minor yolk movements; (13, 14) dotted red circle: location of the pronucleus before migration, solid red circle: position of the pronucleus after migration, red arrows: major movements; (15, 16) arrowheads: cytoplasmic areas devoid of yolk granules; (17) white line: middle of the embryo, red line: point where pronuclei meet; (18) white line: middle of the embryo, red line: position of NEBD; (19) white line: location and orientation of spindle at beginning of NEBD; (20) red arrow: rotation of nuclear complex

from position indicated with dotted outline to position shown in solid outline; black arrow: change in position of nuclear complex; (21) red arrows: movements of spindle, two different positions of the spindle are indicated in black and grey; (22, 23) red arrows: movements of spindle poles, two different positions of the spindle are indicated in black and grey; (24) white line: long axis of the embryo with middle marked by tick, red line: actual position of the division; (26) red arrowheads: position of the nuclei immediately after mitosis, white arrowheads: final position of the nuclei; (27) arrowheads: part of the nucleus closest to the cytokinesis plane; (28) arrowheads: areas where nuclei have non-spherical shape; (29) arrowheads: nucleoli; (30) arrowheads: vacuoles; (33) arrowheads: PC-like constrictions; (34) arrowheads: beginning of cytokinesis; (35) arrowheads: cell that divides first; (36, 37) white lines: spindle orientation (38) red arrow: contact between P2 and ABp, white arrows: lack of contact between these cells right after cell division; (39, 40) red arrows: spindle movements.