

## Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: Embryo 3247(iii) (Fig 1a) egg sharer embryo undergoing mitosis 1, chromosomes visualised using sirDNA, imaged using a widefield microscope.

File Name: Supplementary Movie 2

Description: Emryo 3371 (i) (Fig 1e) egg sharer embryo undergoing mitosis 1 with multipolar chromosome segregation, chromosomes visualised using sirDNA, imaged using a spinning disk confocal microscope.

File Name: Supplementary Movie 3

Description: Embryo 3272(i) (Fig 1e) egg sharer embryo undergoing mitosis 1 with lagging chromosome, chromosomes visualised using sirDNA, imaged using a widefield microscope.

File Name: Supplementary Movie 4

Description: Embryo 3215(v) (Fig 2d) deselected embryo undergoing mitosis 1 with micronuclei formation, chromosomes visualised using sirDNA, imaged using a widefield microscope.

File Name: Supplementary Movie 5

Description: Embryo 3172(ii) (Fig S2a), deselected embryo undergoing mitosis 1 with the appearance of two overlapping spindles, chromosomes visualised using sirDNA, imaged using a widefield microscope.

File Name: Supplementary Movie 6

Description: Embryo 3226(v) (Fig S2b), deselected embryo undergoing mitosis 1 with two separated spindles, chromosomes visualised using sirDNA, imaged using a widefield microscope.

File Name: Supplementary Movie 7

Description: Embryo 3471 (Fig 3b), deselected embryo undergoing mitosis 1 with a lagging chromosome, chromosomes visualised using H2B mCherry injection, imaged using a spinning disk confocal microscope.

File Name: Supplementary Movie 8

Description: Embryo 3457 (Fig 3c), deselected embryo undergoing mitosis 1 with a slow congressing single chromosome, plus multiple lagging chromosomes, chromosomes visualised using H2B mCherry injection, imaged using a spinning disk confocal microscope.

File Name: Supplementary Movie 9

Description: Embryo 3467\_2 Fig 3d, deselected embryo undergoing mitosis 1 with multipolar chromosome segregation, chromosomes visualised using H2B mCherry injection, imaged using a spinning disk confocal microscope.

File Name: Supplementary Movie 10

Description: Clinical treatment embryo 16, mononucleated at the 2-cell stage. Filmed in the IVF clinic using Embryoscope.

File Name: Supplementary Movie 11

Description: Clinical treatment embryo 46, micronuclei ( $>10\mu\text{m}$ ) formed at the 2-cell stage. Filmed in the IVF clinic using Embryoscope.

File Name: Supplementary Movie 12

Description: Clinical treatment embryo 53, a nuclear variant was formed at the 2-cell stage. Filmed in the IVF clinic using Embryoscope.