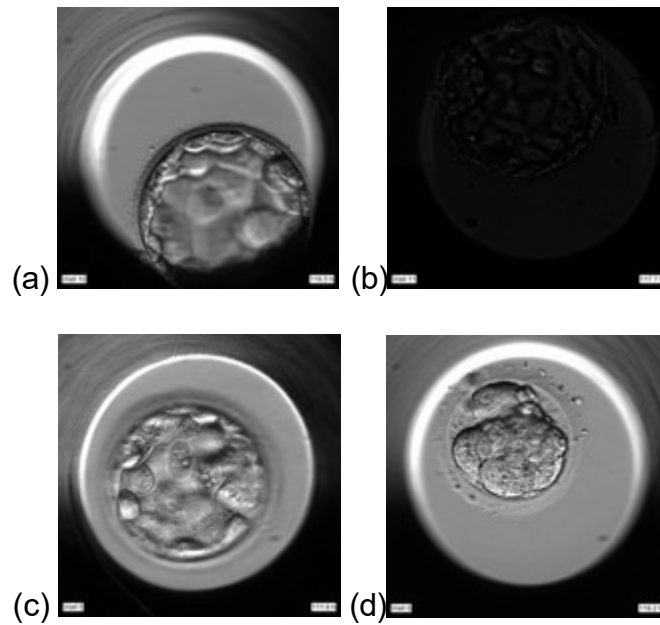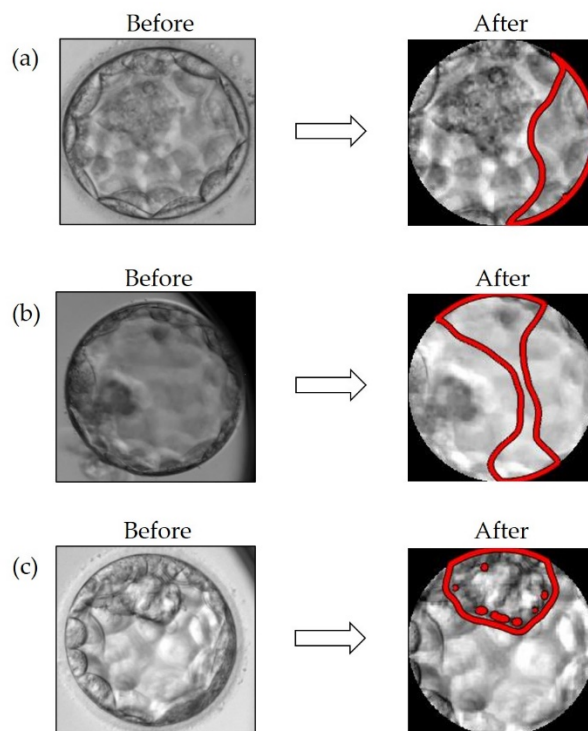Supplemental Figure S1 Excluded images due partly missed visual information (a), extremely darkened (b), out of focus (c) and embryo in stage of development that did not match with blastocyst (d).
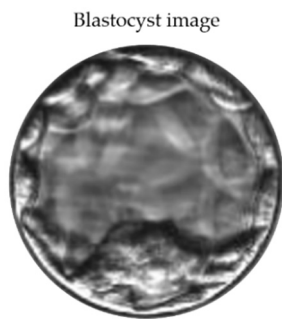

Supplemental Figure S2 Incorrect ICM segmentation due to the low quality of the raw image, such as blurred (a) or undetectable (b) ICM. Good quality images (c) display better segmentation results.
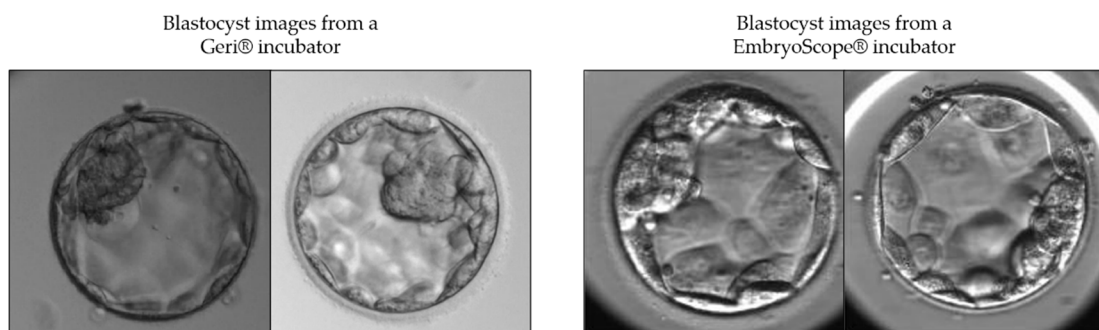
Feature variables

Texture variables denote repeating random regular patterns that provide measures of structural arrangements on surfaces. They represent the different interactions among pixels, from the differences in gray level from pixel to pixel in local regions of the image to the spatial arrangement of gray levels throughout the image. Gray level average, gray level standard deviation, and modal value represent the overall brightness/darkness and variation in brightness of the embryo. Relations refer to associations between otherwise distinct features, such as radius and area of the blastocyst. Finally, the light level variables represent the brightness variation in different regions of the embryo.

As cited in main text, variables from 1 to 15 are able to detect, in the embryo image, several differences in texture, such as, for example (Figure S3): a. if we observe in the upper half of the embryo image, its trophectoderm (TE) has several "valleys " and "slopes", b. in the lower half, we clearly observe a difference in texture between the blastocoel and the ICM, c. still looking at the lower half of the blastocyst, the texture of its TE is quite different from the rest of the embryo, which are detected by the techniques LBP and GLCM. However, each human blastocyst image shows different morphology of blastocoel, ICM and TE (Figure S4), making it difficult for the human eye to detail such nuances.
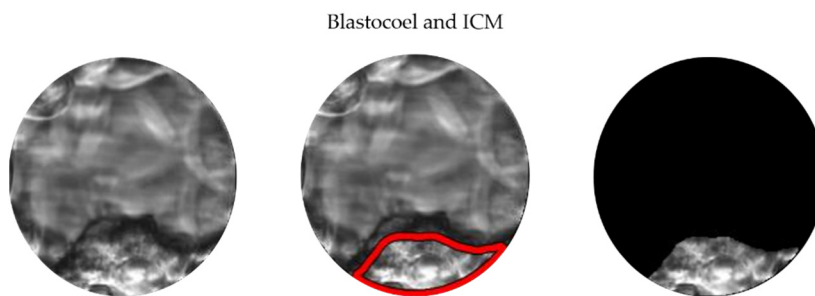

Supplemental Figure S3 Variations of morphological and textural features present in the same blastocyst.

Supplemental Figure S4 Morphological variations present in different human blastocysts.

Variables 16 to 18 analyze the pixel intensity of the various regions of the blastocyst image, showing us the level of sharpness of the regions. In Figure S5 we highlight the ICM, where

the pixel intensity is quite different in various parts of it and despite being visible to the human eye is difficult to objectively quantify them in terms of intensity.

Supplemental Figure S5 Different pixel intensities present in the ICM of the same blastocyst.

Variables 19 and 20 measure the dispersion of pixel intensity in the regions, quantifying this dispersion. In this way, the variables show us how expansive this intensity is in each region. Variables 21 and 22 provide us with the highest value obtained for the pixel intensity of each region analyzed.

The group of variables called "Relations", provide us with mathematical values of the regions, such as radius and areas, values that are difficult to obtain by the human eye, since in most embryo images, regions such as the ICM, have aspects very distinct (Figure S4).

The last group of variables ("Light level") determines the luminous intensity of the different regions, identifying brighter, darker areas and the average intensities, which help in determining the image quality of each region. The quantification of these variables would be unlikely to be determined by the human eye.