

CLAIMS

1. A system comprising:
 - a processor; and
 - a non-transitory computer readable medium storing machine executable instructions for assigning a value representing a location on a zona pellucida of an embryo that is furthest from a healthy blastomere, the machine executable instructions comprising:
 - an imager interface that receives an image of the embryo from an associated imager; and
 - a neural network that determines, from the image of the embryo, a clinical parameter representing the location on a zona pellucida of an embryo that is furthest from a healthy blastomere, the neural network being trained on a set of images, each labelled with a class of a set of classes, with each of the set of classes representing one section of a plurality of sections comprising the embryo, the clinical parameter representing a class of the set of classes representing a section of the plurality of sections containing the location on the zona pellucida of the embryo that is furthest from a healthy blastomere; and
 - wherein the clinical parameter is a categorical parameter representing one of the set of classes that is stored at the non-transitory computer readable medium.
2. The system of claim 1, further comprising an output device, the machine executable instructions comprising a user interface that displays the clinical parameter to a user at the output device.
3. The system of claim 1, wherein the neural network is a convolutional neural network.
4. The system of claim 1, further comprising the imager, the imager comprising:
 - a white light emitting diode;
 - a complementary metal-oxide-semiconductor (CMOS) image sensor; and
 - an objective lens connected to the CMOS image sensor.

5. The system of claim 4, further comprising the imager, the imager comprising a plastic housing containing an acrylic lens and configured to affix to a mobile device, such that the acrylic lens is aligned with a camera of the mobile device.
6. A method for determining a clinical parameter representing a location on a zona pellucida of an embryo that is furthest from a healthy blastomere, the method comprising:
- obtaining an image of the embryo; and
 - providing the image of the embryo to a neural network trained on a set of images, each labelled with a class of a set of classes, with each of the set of classes representing one section of a plurality of sections comprising the embryo, to generate the clinical parameter as a categorical parameter representing a class of the set of classes representing a section of the plurality of sections containing the location on the zona pellucida that is furthest from a healthy blastomere; and
 - storing the clinical parameter on a non-transitory computer readable medium.
7. The method of claim 6, further comprising performing a procedure on the embryo at a location determined according to the clinical parameter.
8. The method of claim 7, wherein the procedure on the embryo is laser assisted hatching.
9. The method of claim 6, wherein providing the image of the embryo to the neural network comprises providing the image of the embryo to a discriminative classifier trained as part of a generative adversarial network.
10. The method of claim 6, wherein providing the image of the embryo to the neural network comprises providing the image of the embryo to a recurrent neural network.
11. A method for planning an assisted fertility procedure, the method comprising:
- obtaining an image of an embryo; and
 - providing the image of the embryo to a neural network trained on a set of images, each labelled with a class of a set of classes, with each of the set of classes

representing one section of a plurality of sections comprising the embryo, to generate a clinical parameter representing a location on a zona pellucida of the embryo that is furthest from a healthy blastomere as a categorical parameter representing a class of the set of classes representing a section of the plurality of sections containing the location on the zona pellucida that is furthest from a healthy blastomere; and

performing a procedure on the embryo at a location determined according to the clinical parameter.

12. The method of claim 11, wherein performing a procedure on the embryo at the location determined according to the clinical parameter comprises performing laser assisted hatching at a location indicated by the clinical parameter.