What is claimed is:

1. A system for determining a probability of achieving a pregnancy at a selected point in time, the system comprising:

a central processing unit (CPU); and

storage coupled to said CPU for storing instructions that when executed by the CPU cause the CPU to:

accept as input, data representative of a plurality of fertility-associated phenotypic traits of a female subject; and

provide a probability of achieving a pregnancy at a selected point in time as a result of running an algorithm on said input data, the algorithm having been trained on a reference set of data from a plurality of women for whom at least one of fertility-associated phenotypic traits, fertility-associated medical interventions, or pregnancy outcomes are known, wherein the algorithm accounts for any woman who ceases pregnancy attempts prior to reaching a live birth outcome.

2. The system of claim 1, wherein the pregnancy results in a live birth.

3. The system of claim 1, wherein said fertility-associated phenotypic traits are adjusted per pre-specified time interval or fertility-associated medical intervention.

4. The system of claim 1, wherein said data are obtained from at least one selected from the group consisting of a questionnaire, a medical history of said subject, a family medical history of said subject, and a combination thereof.

5. The system of claim 1, wherein said data are obtained by analyzing a sample collected from a person selected from the group consisting of: said female subject, intimate partners of said subject, blood-related relatives of said subject, gamete donors, embryo donors, gestational carriers, and a combination thereof.

6. The system of claim 5, wherein said sample is a human tissue or bodily fluid.

7. The system of claim 1, wherein the data of the female subject further comprises fertility-associated genotypic traits of the female subject.

8. The system of claim 7, wherein the reference set of data from the plurality of women further comprises fertility-associated genotypic traits.

9. The system of claim 7, wherein the genotypic traits of the subject are obtained by conducting an assay on a sample from the subject to determine the presence or absence of a genetic variation that is associated with infertility.

10. The system according to claim 9, wherein the assay is selected from the group consisting of: sequencing, hybridization to an array, and an amplification reaction.

11. The system of claim 9, wherein the genetic variation is selected from the group consisting of: a single nucleotide polymorphism, a deletion, an insertion, a rearrangement, a copy number variation, and a combination thereof.

12. The system of claim 7, wherein the genotype traits are reflective of expression levels of one or more fertility-associated genes.

13. The system of claim 1, wherein the fertility-associated phenotypic trait is a trait selected from Table 1.

14. The system of claim 1, wherein the algorithm is stored at a remote location and the CPU communicates across a network to access said algorithm.

15. The system of claim 1, wherein the algorithm is stored locally within the CPU and the CPU accesses the algorithm within the CPU.

16. The system of claim 1, wherein the algorithm accounts for any woman who ceases pregnancy attempts without reaching a live birth outcome by weighting the remaining women in the reference set.

17. The system of claim 17, wherein the weighting is determined by modeling the likelihood of dropout.

18. The system of claim 1, wherein the data further comprises a plurality of fertility-associated phenotypic traits of a male subject.

19. A method for determining a probability of achieving a pregnancy at a selected point in time, the method comprising:

accepting as input, data representative of a plurality of fertility-associated phenotypic traits of a female subject; and

providing a probability of achieving a pregnancy at a selected point in time as a result of running an algorithm on said input data, the algorithm having been trained on a reference set of data from a plurality of women for whom at least one of fertility-associated phenotypic traits, fertility-associated medical interventions, or pregnancy outcomes are known, wherein the algorithm accounts for any woman who ceases pregnancy attempts prior to reaching a live birth outcome.

20. The method of claim 19, wherein the pregnancy results in a live birth.

21. The method of claim 19, wherein said fertility-associated traits are adjusted per pre-specified time interval or fertility-associated medical intervention.

22. The method of claim 19, wherein said data are obtained from at least one selected from the group consisting of a questionnaire, a medical history of said subject, a family medical history of said subject, and a combination thereof.

23. The method of claim 19, wherein said data are obtained by analyzing a sample collected from a person selected from the group consisting of: said female subject, intimate partners of said subject, blood-related relatives of said subject, gamete donors, embryo donors, gestational carriers, and a combination thereof.

24. The method of claim 23, wherein said sample is a human tissue or bodily fluid.

25. The method of claim 19, wherein the data of the female subject further comprises fertility-associated genotypic traits of the female subject.

26. The method of claim 25, wherein the reference set of data from the plurality of women further comprises fertility-associated genotypic traits.

27. The method of claim 25, wherein the genotypic traits of the subject are obtained by conducting an assay on a sample from the subject to determine the presence or absence of a genetic variation that is associated with infertility.

28. The method according to claim 27, wherein the assay is selected from the group consisting of: sequencing, hybridization to an array, and an amplification reaction.

29. The method of claim 28, wherein the genetic variation is selected from the group consisting of: a single nucleotide polymorphism, a deletion, an insertion, a rearrangement, a copy number variation, and a combination thereof.

30. The method of claim 25, wherein the genotype traits are reflective of expression levels of one or more fertility-associated genes.

31. The method of claim 19, wherein the fertility-associated phenotypic trait is a trait selected from Table 1.

32. The method of claim 19, wherein the data further comprises a plurality of fertility-associated phenotypic traits of a male subject.

33. A method for determining a probability of achieving a pregnancy at a selected point in time, the method comprising, the method comprising:

inputting data representative of a plurality of fertility-associated phenotypic traits of a female subject into a computer; and

causing the computer to provide a probability of achieving a pregnancy at a selected point in time as a result of running an algorithm on the inputted data, the algorithm having been trained on a reference set of data from a plurality of women for whom at least one of fertility-associated phenotypic traits, fertility-associated medical interventions, or pregnancy outcomes are known, wherein the algorithm accounts for any woman who ceases pregnancy attempts prior to reaching a live birth outcome.

34. The method of claim 33, wherein the pregnancy results in a live birth.

35. The method of claim 33, wherein the data of the female subject further comprises fertility-associated genotypic traits of the female subject.

36. The method of claim 35, wherein the reference set of data from the plurality of women further comprises fertility-associated genotypic traits.

37. The method of claim 35, wherein the genotypic traits of the subject are obtained by conducting an assay on a sample from the subject to determine the presence or absence of a genetic variation that is associated with infertility.

38. The method of claim 33, wherein the algorithm set is stored at a remote location and the computer communicates across a network to access said algorithm.

39. The method of claim 33, wherein the algorithm is stored locally within the computer and the computer accesses the algorithm within the computer.

40. The method of claim 33, wherein the data further comprises a plurality of fertility-associated phenotypic traits of a male subject.

Claims

1. A system for determining a probability of achieving a pregnancy at a selected point in time, the system comprising:

a central processing unit (CPU); and

storage coupled to said CPU for storing instructions that when executed by the CPU cause the CPU to:

accept as input, data representative of a plurality of fertility-associated phenotypic traits of a female subject;

analyze the input data using a prognosis predictor generated by:

obtaining training data from a plurality of women across a plurality of reproductive cycles, wherein the training data corresponds to fertility-associated characteristics selected from the group consisting of fertility-associated phenotypic traits, fertility-associated interventions, and pregnancy outcomes, and wherein the plurality of women includes a dropout population, who ceased pregnancy attempts after one or more reproductive cycles and prior to live birth, and a non-dropout population, who continued pregnancy attempts in one or more reproductive cycles until live birth,

determining one or more correlations between at least one of the characteristics and a known pregnancy outcome at a plurality of time points across the reproductive cycles;

weighting a correlation of the at least one characteristic associated with the non-dropout population based upon a value of that at least one characteristic within the dropout population; and

training the prognosis predictor with said training data to provide outputs indicative of a probability of achieving pregnancy at selected time points across the plurality of reproductive cycles; and

provide a probability of achieving a pregnancy at a selected point in time as a result of using the prognosis predictor on the input data.

2. The system of claim 1, wherein the probability is the probability of achieving pregnancy that results in a live birth.

3. The system of claim 1, wherein the correlations for said fertility-associated characteristics are adjusted at each time point across the reproductive cycles.

4. The system of claim 1, wherein said input data are obtained from at least one selected from the group consisting of a questionnaire, a medical history of said subject, a family medical history of said subject, and a combination thereof.

5. The system of claim 1, wherein said input data are obtained by analyzing a sample collected from a person selected from the group consisting of: said female subject, intimate partners of said subject, blood-related relatives of said subject, gamete donors, embryo donors, gestational carriers, and a combination thereof.

6. The system of claim 5, wherein said sample is a human tissue or bodily fluid.

7. The system of claim 1, wherein the input data of the female subject further comprises fertility-associated genotypic traits of the female subject.

8. The system of claim 7, wherein the training data from the plurality of women further corresponds to fertility-associated genotypic traits.

9. The system of claim 7, wherein the genotypic traits of the female subject are obtained by conducting an assay on a sample from the subject to determine the presence or absence of a genetic variation that is associated with infertility.

10. The system according to claim 9, wherein the assay is selected from the group consisting of: sequencing, hybridization to an array, and an amplification reaction.

11. The system of claim 9, wherein the genetic variation is selected from the group consisting of: a single nucleotide polymorphism, a deletion, an insertion, a rearrangement, a copy number variation, and a combination thereof.

12. The system of claim 7, wherein the genotype traits are reflective of expression levels of one or more fertility-associated genes.

13. The system of claim 1, wherein the fertility-associated phenotypic trait of the female subject or the plurality of women is a trait selected from Table 1.

14. The system of claim 1, wherein the prognosis predictor is stored at a remote location and the CPU communicates across a network to access the prognosis predictor.

15. The system of claim 1, wherein the prognosis predictor is stored locally within the CPU and the CPU accesses the prognosis predictor within the CPU.

16. The system of claim 1, wherein the weighting is determined by modeling the likelihood of dropout.

17. The system of claim 1, wherein the input data further comprises a plurality of fertility-associated phenotypic traits of a male subject.

18. A method for determining a probability of achieving a pregnancy at a selected point in time, the method comprising:

accepting as input, data representative of a plurality of fertility-associated phenotypic traits of a female subject;

analyzing the input data using a prognosis predictor correlated with infertility across a plurality of reproductive cycles, wherein the prognosis predictor was generated by:

obtaining training data from a plurality of women across a plurality of reproductive cycles, wherein the training data corresponds to fertility-associated characteristics selected from the group consisting of fertility-associated phenotypic traits, fertility-associated interventions, and pregnancy outcomes, and wherein the plurality of women includes a dropout population, who ceased pregnancy attempts after one or more reproductive cycles and prior to live birth, and a non-dropout population, who continued pregnancy attempts in one or more reproductive cycles until live birth,

determining one or more correlations between at least one of the characteristics and a known pregnancy outcome at a plurality of time points across the reproductive cycles;

weighting a correlation of the at least one characteristic associated with the non-dropout population based upon a value of that at least one characteristic within the dropout population; and

training the prognosis predictor with said training data to provide outputs indicative of a probability of achieving pregnancy at selected time points across the plurality of reproductive cycles; and

providing a probability of achieving a pregnancy at a selected point in time as a result of using the prognosis predictor on the input data.

19. The method of claim 18, wherein the pregnancy results in a live birth.

20. The method of claim 18, wherein the correlations for said fertility-associated characteristics are adjusted at each time point across the reproductive cycles.

21. The method of claim 18, wherein said input data are obtained from at least one selected from the group consisting of a questionnaire, a medical history of said subject, a family medical history of said subject, and a combination thereof.

22. The method of claim 18, wherein said input data are obtained by analyzing a sample collected from a person selected from the group consisting of: said female subject, intimate partners of said subject, blood-related relatives of said subject, gamete donors, embryo donors, gestational carriers, and a combination thereof.

23. The method of claim 22, wherein said sample is a human tissue or bodily fluid.

24. The method of claim 18, wherein the input data of the female subject further comprises fertility-associated genotypic traits of the female subject.

25. The method of claim 24, wherein the training data from the plurality of women further corresponds to fertility-associated genotypic traits.

26. The method of claim 24, wherein the genotypic traits of the female subject are obtained by conducting an assay on a sample from the subject to determine the presence or absence of a genetic variation that is associated with infertility.

27. The method according to claim 26, wherein the assay is selected from the group consisting of: sequencing, hybridization to an array, and an amplification reaction.

28. The method of claim 27, wherein the genetic variation is selected from the group consisting of: a single nucleotide polymorphism, a deletion, an insertion, a rearrangement, a copy number variation, and a combination thereof.

29. The method of claim 24, wherein the genotype traits are reflective of expression levels of one or more fertility-associated genes.

30. The method of claim 18, wherein the fertility-associated phenotypic trait of the female subject or the plurality of women is a trait selected from Table 1.

31. The method of claim 18, wherein the input data further comprises a plurality of fertility-associated phenotypic traits of a male subject.