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(71) Applicant: **IPHENOTYPE LLC** [US/US]; 11011 Torreyana Road, San Diego, California 92121 (US).

(72) Inventors: **SHORT, Jay**; 12985 Via Esperia, Del Mar, California 92014 (US). **BRIGGS, Steve**; 2454 Mango Way, Del Mar, California 92014 (US).

(74) Agent: **DUNLEAVY, Kevin J.**; Mendelsohn, Drucker, & Dunleavy, P.C., 1500 John F. Kennedy Blvd., Suite 312, Philadelphia, Pennsylvania 19102 (US).

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(54) **Title**: PHENOTYPIC INTEGRATED SOCIAL SEARCH DATABASE AND METHOD

(57) **Abstract**: A method for generating correlations between human biological phenotype and human behavioral and/or emotional phenotype, and optionally to temporal location, comprising the steps of correlating data on biological phenotype with survey-based data on behavioral and/or emotional phenotype. The data on biological phenotype is collected from a sample from an individual, and the survey-based data can be collected from answers to behavioral and emotional questions from the individual or from observations of the individual by a third party. Correlations can further be used to predict behavior, including preferences, wellness needs and desires, and/or emotions. Feedback, advice and guidance can be provided to individuals based on such correlations. Such correlations are further useful for product and service providers and industries for purposes of standardizing or rating product quality and efficacy, and/or for promotion and selling purposes. A database comprising the data on biological phenotype and survey-based data is also provided.

AMENDED CLAIMS
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WHAT IS CLAIMED IS:

1. A method for generating correlations between human biological phenotype and human behavioral and/or emotional phenotype, comprising the steps of:

correlating data on biological phenotype collected from an individual with survey-based data on behavioral and/or emotional phenotype.

2. The method of claim 1, wherein the survey-based data is collected from answers to behavioral and/or emotional questions from the individual or from observations of the individual by a third party.

3. The method of claim 2, wherein the survey-based data is collected through various online forums or media, such as Facebook or survey panels.

4. The method of claim 1, wherein the data on biological phenotype is selected from the group consisting of data on presence and/or concentration of one or more of polypeptides, polynucleotides, metabolites, microbes, inorganic compounds and ions in a sample from the individual.

5. The method of claim 4, wherein the sample is selected from the group consisting of saliva, sweat, blood, tears, mucus, urine, stool, mouth cell scrapings, stool, breath, fart gas, hair follicle, fingernails, and other bodily cells.

6. The method of claim 4, wherein the sample is a bodily fluid selected from the group consisting of blood, plasma, serum, bile, saliva, urine, tears, sweat, lacrimal fluid, mucus and nasal secretion, lymph, synovial fluid and cerebrospinal fluid.

7. The method of claim 4, wherein the presence and/or concentration of a polypeptide in the sample is determined by using an antibody that binds to the polypeptide.

8. The method of claim 4, wherein the presence or concentration of a polypeptide in the sample is determined by using an aptamer that specifically binds to the polypeptide.

9. The method of claim 4, wherein the presence or concentration of a polypeptide in the sample is determined by using an array comprising an immobilized molecule selected from antibodies and aptamers.

10. The method of claim 4, wherein the presence or concentration of a polynucleotide in the sample is determined by sequencing the polynucleotide.

11. The method of claim 4, wherein the presence or concentration of a polynucleotide in the sample is determined by using a probe that is complimentary to the polynucleotide.

12. The method of claim 4, wherein the presence or concentration of a polynucleotide in the sample is determined by using an aptamer that specifically binds to the polynucleotide.

13. The method of claim 4, wherein the presence or concentration of a polynucleotide in the sample is determined by using an array comprising an immobilized molecule selected from oligonucleotides and aptamers.

14. The method of claim 4, wherein the presence or concentration of a metabolite in the sample is determined by:

separating the metabolite in the sample; and

identifying the separated metabolites.

15. The method of claim 14, wherein the step of separating the metabolite comprising using a technology selected from the group consisting of chromatography, gel-electrophoresis, and exchange column.

16. The method of claim 14, wherein the step of identifying the separated metabolites comprising using a technology selected from the group consisting of mass spectrometry, and nuclear magnetic resonance spectroscopy.

17. The method of claim 4, wherein the presence or concentration of a metabolite in the sample is determined by using an array comprising an immobilized aptamers.

18. The method of claim 4, wherein the presence or concentration of a microbe in the sample is determined by detecting a feature that is specific to the microbe, wherein the feature is selected from the group consisting of microbial morphology, microbial genomic DNA, microbial RNA, microbial metabolites and microbial polypeptide.

19. The method of claim 1, wherein the step of correlating comprises an algorithm selected from the group consisting of classification algorithms, association rules algorithms, sequential pattern mining, clustering algorithms, principal component analysis, neural net or neural network, logistic regression algorithms, and support vector machine algorithms.

20. The method of claim 19, wherein the clustering algorithms comprise partitional clustering, hierarchical clustering, K-means and fuzzy clustering and Kohonen self organizing maps clustering.

21. The method of claim 1, wherein data on physiological phenotype of the individual is combined with the data on biological phenotype of the individual to generate correlations between human biological/physiological phenotype and human behavioral and/or emotional phenotype.

22. A database comprising a subject, data on biological phenotype of the subject, survey-based data on behavioral and/or emotional phenotype of the subject, and correlations between human biological phenotype and human behavioral and/or emotional phenotype,
wherein the data on biological phenotype is collected from a sample from the subject,
wherein the survey-based data is collected from answers to social behavioral and emotional questions from the subject or from observations of the subject by a third party.

23. The database of claim 22, wherein the data on biological phenotype include data on presence or concentration of polypeptides, polynucleotides, metabolites, microbes, inorganic compounds, and ions in the sample.

24. The database of claim 22, wherein the sample is a bodily fluid selected from the group consisting of blood, plasma, serum, bile, saliva, urine, tears, sweat, lacrimal fluid, mucus and nasal secretion, lymph, synovial fluid and cerebrospinal fluid.

25. The database of claim 22, wherein the sample is selected from the group consisting of saliva, sweat, blood, tears, mucus, urine, stool, mouth cell scrapings, stool, breath, fart gas, hair follicle, fingernails, and other bodily cells.

26. The database of claim 22, further comprising the identity of the sample.

27. The database of claim 22, further comprising the time that the sample is collected from the subject.

28. The method of claim 4, wherein the presence or concentration of a polypeptide in the sample is determined by using mass spectrometry.

29. The method of claim 1, further comprising a step of collecting and/or correlating a temporal location of the individual relative to a biological phenotype collected from the individual or survey-based data on behavioral and/or emotional phenotype, or both.

30. The database of claim 22, further comprising wherein the database further comprises temporal location information of the subject, and wherein the temporal location information is collected simultaneously with biological phenotype data or survey-based data.

31. The method of claim 1, wherein data is collected passively, longitudinally, in real-time, using an undirected method, or using non-invasive methods.

32. The database of claim 22, wherein the data has been collected passively, longitudinally, in real-time, using an undirected method, or using non-invasive methods.

33. The method of claim 1, wherein the behavior is lifestyle behavior, including one or more of preferences, wellness needs, deviations from wellness, personality traits and/or desires.

34. The database of claim 22, wherein the behavior is lifestyle behavior, including one or more of preferences, wellness needs, deviations from wellness, personality traits and/or desires.

35. The method of claim 1, wherein the correlations are used to provide feedback or guidance to the human, to provide information to a product provider or a service provider for use in marketing and/or selling of products and/or services, to provide a product provider or service provider with information useful in grading or rating products or services, or to provide a product provider or service provider with information useful to design new and/or better products or services.

36. The database of claim 22, wherein the correlations are used to provide feedback or guidance to the human, to provide information to a product provider or a service provider for use in marketing and/or selling of products and/or services, to provide a product provider or service provider with information useful in grading or rating products or services, or to provide a product provider or service provider with information useful to design new and/or better products or services.

37. The method of claim 1, wherein the human is a consumer.

38. The database of claim 22, wherein the human is a consumer.

39. The method of claim 4, wherein the presence or concentration of a polypeptide in the sample is determined by using a biosensor.

40. The method of claim 1, wherein the data on biological phenotype is selected from the group consisting of data on a presence and/or concentration of more than 10, more than 20, more than 100, more than 1000, or more than 10,000 polypeptides, polynucleotides, metabolites, microbes, inorganic compounds and/or ions in the sample.

41. The database of claim 22, wherein the database is configured to continue to accept new data selected from the group consisting of data on biological phenotype of the subject, survey-based data on behavioral and/or emotional phenotype, data on map locations, and data on environmental factors.

42. The database of claim 41, wherein the database is configured to evolve to include at least one new correlation based on the new data.

43. The method of claim 1, wherein the data on biological phenotype includes a ratio between concentrations of two biomarkers.

44. The method of claim 1, wherein the data on biological phenotype includes a ratio between a concentration of a biomarker and a concentration of a housekeeping gene product.