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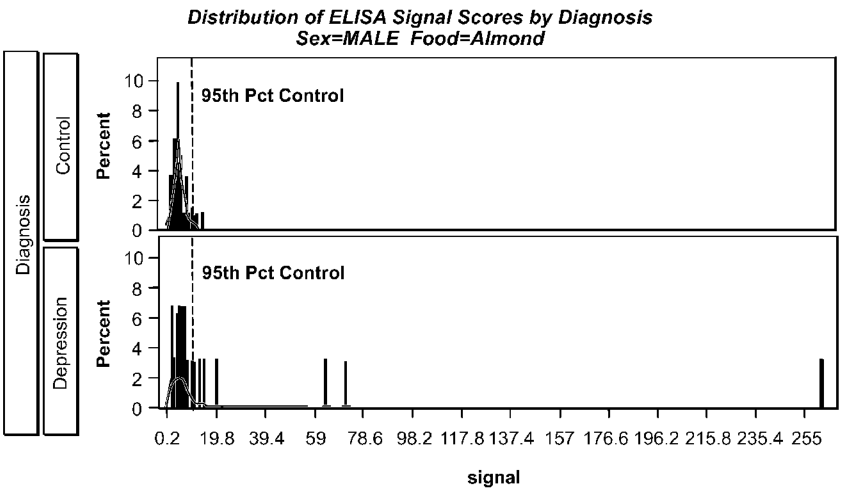

Figure 1A

(57) Abstract: Contemplated test kits and methods for food sensitivity are based on rational-based selection of food preparations with established discriminatory p-value. Particularly preferred kits include those with a minimum number of food preparations that have an average discriminatory p-value of ≤ 0.07 as determined by their raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value. In further contemplated aspects, compositions and methods for food sensitivity are also stratified by gender to further enhance predictive value

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[Continued on next page]

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COMPOSITIONS, DEVICES, AND METHODS OF DEPRESSION SENSITIVITY TESTING

Related Applications

[0001] This application claims priority to our U.S. provisional patent application with the serial number, 62/359909, filed July 8, 2016, which is incorporated by reference herein in its entirety.

Field of the Invention

[0002] The field of the invention is sensitivity testing for food intolerance, and especially as it relates to testing and possible elimination of selected food items as trigger foods for patients diagnosed with or suspected to have Depression.

Background

[0003] The background description includes information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[0004] Food sensitivity, especially as it relates to Depression (a type of mental disorder), often presents with a pervasive and persistent low mood that is accompanied by low self-esteem and by a loss of interest or pleasure in normally enjoyable activities, and underlying causes of Depression are not well understood in the medical community. Most typically, Depression is diagnosed by a mental state examination, which is an assessment of the person's current mood and thought content. Unfortunately, treatment of Depression is often less than effective and may present new difficulties due to neurochemical modulatory effects. Elimination of one or more food items has also shown promise in at least reducing incidence and/or severity of the symptoms. However, Depression is often quite diverse with respect to dietary items triggering symptoms, and no standardized test to help identify trigger food items with a reasonable degree of certainty is known, leaving such patients often to trial-and-error.

[0005] While there are some commercially available tests and labs to help identify trigger foods, the quality of the test results from these labs is generally poor as is reported by a consumer advocacy group (*e.g.*, http://www.which.co.uk/news/2008/08/food-allergy-tests-could-risk-your-health-154711/). Most notably, problems associated with these tests and labs were high false positive rates, high false negative rates, high intra-patient variability, and inter-laboratory variability, rendering such tests nearly useless. Similarly, further inconclusive and highly variable test results were also reported elsewhere (Alternative Medicine Review, Vol. 9, No. 2, 2004: pp 198-207), and the authors concluded that this may be due to food reactions and food sensitivities occurring via a number of different mechanisms. For example, not all Depression patients show positive response to food A, and not all Depression patients show negative response to food B. Thus, even if a Depression patient shows positive response to food A, removal of food A from the patient's diet may not relieve the patient's Depression symptoms. In other words, it is not well determined whether food samples used in the currently available tests are properly selected based on the high probabilities to correlate sensitivities to those food samples to Depression.

[0006] All publications identified herein are incorporated by reference to the same extent as if each individual publication or patent application were specifically and individually indicated to be incorporated by reference. Where a definition or use of a term in an incorporated reference is inconsistent or contrary to the definition of that term provided herein, the definition of that term provided herein applies and the definition of that term in the reference does not apply.

[0007] Thus, even though various tests for food sensitivities are known in the art, all or almost all of them suffer from one or more disadvantages. Therefore, there is still a need for improved compositions, devices, and methods of food sensitivity testing, especially for identification and possible elimination of trigger foods for patients identified with or suspected of having Depression.

Summary

[0008] The subject matter described herein provides systems and methods for testing food intolerance in patients diagnosed with or suspected to have Depression. One aspect of the disclosure is a test kit for testing food intolerance in patients diagnosed with or suspected to have Depression. The test kit includes a plurality of distinct food preparations coupled to individually addressable respective solid carriers. The plurality of distinct food preparations have an average

discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value. In some embodiments, the average discriminatory p-value is determined by a process, which includes comparing assay values of a first patient test cohort that is diagnosed with or suspected of having Depression with assay values of a second patient test cohort that is not diagnosed with or suspected of having Depression.

[0009] Another aspect of the embodiments described herein includes a method of testing food intolerance in patients diagnosed with or suspected to have Depression. The method includes a step of contacting a food preparation with a bodily fluid of a patient that is diagnosed with or suspected to have Depression. The bodily fluid is associated with gender identification. In certain embodiments, the step of contacting is performed under conditions that allow IgG from the bodily fluid to bind to at least one component of the food preparation. The method continues with a step of measuring IgG bound to the at least one component of the food preparation to obtain a signal, and then comparing the signal to a gender-stratified reference value for the food preparation using the gender identification to obtain a result. Then, the method also includes a step of updating or generating a report using the result.

[0010] Another aspect of the embodiments described herein includes a method of generating a test for food intolerance in patients diagnosed with or suspected to have Depression. The method includes a step of obtaining test results for a plurality of distinct food preparations. The test results are based on bodily fluids of patients diagnosed with or suspected to have Depression and bodily fluids of a control group not diagnosed with or not suspected to have Depression. The method also includes a step of stratifying the test results by gender for each of the distinct food preparations. Then the method continues with a step of assigning for a predetermined percentile rank a different cutoff value for male and female patients for each of the distinct food preparations.

[0011] Still another aspect of the embodiments described herein includes a use of a plurality of distinct food preparations coupled to individually addressable respective solid carriers in a diagnosis of Depression. The plurality of distinct food preparations are selected based on their average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

[0012] Various objects, features, aspects and advantages of the embodiments described herein will become more apparent from the following detailed description of preferred embodiments, along with the accompanying drawing figures in which like numerals represent like components.

Brief Description of The Drawings

[0013] **Table 1** shows a list of food items from which food preparations can be prepared.

[0014] **Table 2** shows statistical data of foods ranked according to 2-tailed FDR multiplicity-adjusted p-values.

[0015] **Table 3** shows statistical data of ELISA score by food and gender.

[0016] **Table 4** shows cutoff values of foods for a predetermined percentile rank.

[0017] **Figure 1A** illustrates ELISA signal score of male Depression patients and control tested with almond.

[0018] **Figure 1B** illustrates a distribution of percentage of male Depression subjects exceeding the 90^{th} and 95^{th} percentile tested with almond.

[0019] **Figure 1C** illustrates a signal distribution in women along with the 95^{th} percentile cutoff as determined from the female control population tested with almond.

[0020] **Figure 1D** illustrates a distribution of percentage of female Depression subjects exceeding the 90^{th} and 95^{th} percentile tested with almond.

[0021] **Figure 2A** illustrates ELISA signal score of male Depression patients and control tested with tomato.

[0022] **Figure 2B** illustrates a distribution of percentage of male Depression subjects exceeding the 90^{th} and 95^{th} percentile tested with tomato.

[0023] Figure 2C illustrates a signal distribution in women along with the 95th percentile cutoff as determined from the female control population tested with tomato.

[0024] Figure 2D illustrates a distribution of percentage of female Depression subjects exceeding the 90th and 95th percentile tested with tomato.

[0025] Figure 3A illustrates ELISA signal score of male Depression patients and control tested with tobacco.

[0026] Figure 3B illustrates a distribution of percentage of male Depression subjects exceeding the 90th and 95th percentile tested with tobacco.

[0027] Figure 3C illustrates a signal distribution in women along with the 95th percentile cutoff as determined from the female control population tested with tobacco.

[0028] Figure 3D illustrates a distribution of percentage of female Depression subjects exceeding the 90th and 95th percentile tested with tobacco.

[0029] Figure 4A illustrates ELISA signal score of male Depression patients and control tested with carrot.

[0030] Figure 4B illustrates a distribution of percentage of male Depression subjects exceeding the 90th and 95th percentile tested with carrot.

[0031] Figure 4C illustrates a signal distribution in women along with the 95th percentile cutoff as determined from the female control population tested with carrot.

[0032] Figure 4D illustrates a distribution of percentage of female Depression subjects exceeding the 90th and 95th percentile tested with carrot.

[0033] Figure 5A illustrates distributions of Depression subjects by number of foods that were identified as trigger foods at the 90th percentile.

[0034] Figure 5B illustrates distributions of Depression subjects by number of foods that were identified as trigger foods at the 95th percentile.

[0035] Table 5A shows raw data of Depression patients and control with number of positive results based on the 90th percentile.

[0036] Table 5B shows raw data of Depression patients and control with number of positive results based on the 95th percentile.

[0037] Table 6A shows statistical data summarizing the raw data of Depression patient populations shown in Table 5A.

[0038] Table 6B shows statistical data summarizing the raw data of Depression patient populations shown in Table 5B.

[0039] Table 7A shows statistical data summarizing the raw data of control populations shown in Table 5A.

[0040] Table 7B shows statistical data summarizing the raw data of control populations shown in Table 5B.

[0041] Table 8A shows statistical data summarizing the raw data of Depression patient populations shown in Table 5A transformed by logarithmic transformation.

[0042] Table 8B shows statistical data summarizing the raw data of Depression patient populations shown in Table 5B transformed by logarithmic transformation.

[0043] Table 9A shows statistical data summarizing the raw data of control populations shown in Table 5A transformed by logarithmic transformation.

[0044] Table 9B shows statistical data summarizing the raw data of control populations shown in Table 5B transformed by logarithmic transformation.

[0045] Table 10A shows statistical data of an independent T-test to compare the geometric mean number of positive foods between the Depression and non-Depression samples based on the 90th percentile.

[0046] Table 10B shows statistical data of an independent T-test to compare the geometric mean number of positive foods between the Depression and non-Depression samples based on the 95th percentile.

[0047] Table 11A shows statistical data of a Mann-Whitney test to compare the geometric mean number of positive foods between the Depression and non-Depression samples based on the 90th percentile.

[0048] Table 11B shows statistical data of a Mann-Whitney test to compare the geometric mean number of positive foods between the Depression and non-Depression samples based on the 95th percentile.

[0049] Figure 6A illustrates a box and whisker plot of data shown in Table 5A.

[0050] Figure 6B illustrates a notched box and whisker plot of data shown in Table 5A.

[0051] Figure 6C illustrates a box and whisker plot of data shown in Table 5B.

[0052] Figure 6D illustrates a notched box and whisker plot of data shown in Table 5B.

[0053] Table 12A shows statistical data of a Receiver Operating Characteristic (ROC) curve analysis of data shown in Tables 5A-11A.

[0054] Table 12B shows statistical data of a Receiver Operating Characteristic (ROC) curve analysis of data shown in Tables 5B-11B.

[0055] Figure 7A illustrates the ROC curve corresponding to the statistical data shown in Table 12A.

[0056] Figure 7B illustrates the ROC curve corresponding to the statistical data shown in Table 12B.

[0057] Table 13A shows a statistical data of performance metrics in predicting Depression status among female patients from number of positive foods based on the 90th percentile.

[0058] Table 13B shows a statistical data of performance metrics in predicting Depression status among male patients from number of positive foods based on the 90th percentile.

[0059] Table 14A shows a statistical data of performance metrics in predicting Depression status among female patients from number of positive foods based on the 95th percentile.

[0060] Table 14B shows a statistical data of performance metrics in predicting Depression status among male patients from number of positive foods based on the 95th percentile.

Detailed Description

[0061] The inventors have discovered that food preparations used in food tests to identify trigger foods in patients diagnosed with or suspected to have Depression are not equally well predictive and/or associated with Depression/Depression symptoms. Indeed, various experiments have revealed that among a wide variety of food items certain food items are highly predictive/associated with Depression whereas others have no statistically significant association with Depression.

[0062] Even more unexpectedly, the inventors discovered that in addition to the high variability of food items, gender variability with respect to response in a test plays a substantial role in the determination of association or a food item with Depression. Consequently, based on the inventors' findings and further contemplations, test kits and methods are now presented with substantially higher predictive power in the choice of food items that could be eliminated for reduction of Depression signs and symptoms.

[0063] The following discussion provides many example embodiments of the inventive subject matter. Although each embodiment represents a single combination of inventive elements, the inventive subject matter is considered to include all possible combinations of the disclosed elements. Thus if one embodiment comprises elements A, B, and C, and a second embodiment comprises elements B and D, then the inventive subject matter is also considered to include other remaining combinations of A, B, C, or D, even if not explicitly disclosed.

[0064] In some embodiments, the numbers expressing quantities or ranges, used to describe and claim certain embodiments of the invention are to be understood as being modified in some instances by the term "about." Accordingly, in some embodiments, the numerical parameters set forth in the written description and attached claims are approximations that can vary depending upon the desired properties sought to be obtained by a particular embodiment. In some embodiments, the numerical parameters should be construed in light of the number of reported significant digits and by applying ordinary rounding techniques. Notwithstanding that the numerical ranges and parameters setting forth the broad scope of some embodiments of the invention are approximations, the numerical values set forth in the specific examples are reported as precisely as practicable. The numerical values presented in some embodiments of the invention may contain certain errors necessarily resulting from the standard deviation found in their respective testing measurements. Unless the context dictates the contrary, all ranges set forth herein should be interpreted as being inclusive of their endpoints and open-ended ranges should be interpreted to include only commercially practical values. Similarly, all lists of values should be considered as inclusive of intermediate values unless the context indicates the contrary.

[0065] As used in the description herein and throughout the claims that follow, the meaning of "a," "an," and "the" includes plural reference unless the context clearly dictates otherwise. Also, as used in the description herein, the meaning of "in" includes "in" and "on" unless the context clearly dictates otherwise.

[0066] All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (*e.g.*, "such as") provided with respect to certain embodiments herein is intended merely to better illuminate the invention and does not pose a limitation on the scope of the invention otherwise claimed. No language in the specification should be construed as indicating any non-claimed element essential to the practice of the invention.

[0067] Groupings of alternative elements or embodiments of the invention disclosed herein are not to be construed as limitations. Each group member can be referred to and claimed individually or in any combination with other members of the group or other elements found herein. One or more members of a group can be included in, or deleted from, a group for reasons of convenience and/or patentability. When any such inclusion or deletion occurs, the specification is herein deemed to contain the group as modified thus fulfilling the written description of all Markush groups used in the appended claims.

[0068] In one aspect, the inventors therefore contemplate a test kit or test panel that is suitable for testing food intolerance in patients where the patient is diagnosed with or suspected to have Depression. Most preferably, such test kit or panel will include a plurality of distinct food preparations (*e.g.*, raw or processed extract, preferably aqueous extract with optional co-solvent, which may or may not be filtered) that are coupled to individually addressable respective solid carriers (*e.g.*, in a form of an array or a micro well plate), wherein the distinct food preparations have an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

[0069] In some embodiments, the numbers expressing quantities of ingredients, properties such as concentration, reaction conditions, and so forth, used to describe and claim certain embodiments of the invention are to be understood as being modified in some instances by the term “about.” Accordingly, in some embodiments, the numerical parameters set forth in the written description and attached claims are approximations that can vary depending upon the desired properties sought to be obtained by a particular embodiment. In some embodiments, the numerical parameters should be construed in light of the number of reported significant digits and by applying ordinary rounding techniques. Notwithstanding that the numerical ranges and parameters setting forth the broad scope of some embodiments of the invention are approximations, the numerical values set forth in the specific examples are reported as precisely as practicable. The numerical values presented in some embodiments of the invention may contain certain errors necessarily resulting from the standard deviation found in their respective testing measurements. Moreover, and unless the context dictates the contrary, all ranges set forth herein should be interpreted as being inclusive of their endpoints and open-ended ranges should be interpreted to include only commercially practical values. Similarly, all lists of values should be considered as inclusive of intermediate values unless the context indicates the contrary.

[0070] While not limiting to the inventive subject matter, food preparations will typically be drawn from foods generally known or suspected to trigger signs or symptoms of Depression. Particularly suitable food preparations may be identified by the experimental procedures outlined below. Thus, it should be appreciated that the food items need not be limited to the items described herein, but that all items are contemplated that can be identified by the methods presented herein. Therefore, exemplary food preparations include at least two, at least four, at least eight, or at least 12 food preparations prepared from foods 1-26 of **Table 2**. Still further especially contemplated food items and food additives from which food preparations can be prepared are listed in **Table 1**.

[0071] Using bodily fluids from patients diagnosed with or suspected to have Depression and healthy control group individuals (*i.e.*, those not diagnosed with or not suspected to have Depression), numerous additional food items may be identified. Preferably, such identified food items will have high discriminatory power and as such have a p-value of ≤ 0.15, more preferably ≤ 0.10, and most preferably ≤ 0.05 as determined by raw p-value, and/or a p-value of ≤ 0.10, more preferably ≤ 0.08, and most preferably ≤ 0.07 as determined by False Discovery Rate (FDR) multiplicity adjusted p-value.

[0072] In certain embodiments, such identified food preparations will have high discriminatory power and, as such, will have a p-value of ≤ 0.15, ≤ 0.10, or even ≤ 0.05 as determined by raw p-value, and/or a p-value of ≤ 0.10, ≤ 0.08, or even ≤ 0.07 as determined by False Discovery Rate (FDR) multiplicity adjusted p-value.

[0073] Therefore, where a panel has multiple food preparations, it is contemplated that the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.08 as determined by FDR multiplicity adjusted p-value, or even more preferably an average discriminatory p-value of ≤ 0.025 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value. In further preferred aspects, it should be appreciated that the FDR multiplicity adjusted p-value may be adjusted for at least one of age and gender, and most preferably adjusted for both age and gender. On the other hand, where a test kit or panel is stratified for use with a single gender, it is also contemplated that in a test kit or panel at least 50% (and more typically 70% or all) of the plurality of distinct food preparations, when adjusted for a single gender, have an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value. Furthermore, it should be appreciated that other stratifications (*e.g.*, dietary preference, ethnicity, place of residence, genetic predisposition or family history, etc.) are also contemplated, and the person of ordinary skill in the art (PHOSITA) will be readily appraised of the appropriate choice of stratification.

[0074] The recitation of ranges of values herein is merely intended to serve as a shorthand method of referring individually to each separate value falling within the range. Unless otherwise indicated herein, each individual value is incorporated into the specification as if it were individually recited herein. All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (*e.g.*, "such as") provided with respect to certain embodiments herein is intended merely to better illuminate the invention and does not pose a limitation on the scope of the invention otherwise claimed. No language in the specification should be construed as indicating any non-claimed element essential to the practice of the invention.

[0075] Of course, it should be noted that the particular format of the test kit or panel may vary considerably and contemplated formats include micro well plates, dip sticks, membrane-bound arrays, etc. Consequently, the solid carrier to which the food preparations are coupled may include wells of a multiwell plate, a (*e.g.*, color-coded or magnetic) bead, or an adsorptive film (*e.g.*, nitrocellulose or micro/nanoporous polymeric film), or an electrical sensor, (*e.g.*, a printed copper sensor or microchip).

[0076] Consequently, the inventors also contemplate a method of testing food intolerance in patients that are diagnosed with or suspected to have Depression. Most typically, such methods will include a step of contacting a food preparation with a bodily fluid (*e.g.*, whole blood, plasma, serum, saliva, or a fecal suspension) of a patient that is diagnosed with or suspected to have Depression, and wherein the bodily fluid is associated with a gender identification. As noted before, the step of contacting is preferably performed under conditions that allow IgG (or IgE or IgA or IgM) from the bodily fluid to bind to at least one component of the food preparation, and the IgG bound to the component(s) of the food preparation are then quantified/measured to obtain a signal. In some embodiments, the signal is then compared against a gender-stratified reference value (*e.g.*, at least a 90th percentile value) for the food preparation using the gender identification to obtain a result, which is then used to update or generate a report (*e.g.*, written medical report; oral report of results from doctor to patient; written or oral directive from physician based on results).

[0077] In certain embodiments, such methods will not be limited to a single food preparation, but will employ multiple different food preparations. As noted before, suitable food preparations can be identified using various methods as described below, however, especially preferred food preparations include foods 1-26, of Table 2, and/or items of **Table 1**. As also noted above, it is generally preferred that at least some, or all of the different food preparations have an average discriminatory p-value of ≤ 0.07 (or ≤ 0.05, or ≤ 0.025) as determined by raw p-value, and/or an average discriminatory p-value of ≤ 0.10 (or ≤ 0.08, or ≤ 0.07) as determined by FDR multiplicity adjusted p-value.

[0078] While in certain embodiments food preparations are prepared from single food items as crude extracts, or crude filtered extracts, it is contemplated that food preparations can be prepared from mixtures of a plurality of food items (*e.g.*, a mixture of citrus comprising lemon, orange, and a grapefruit, a mixture of yeast comprising baker's yeast and brewer's yeast, a mixture of rice comprising a brown rice and white rice, a mixture of sugars comprising honey, malt, and cane sugar). In some embodiments, it is also contemplated that food preparations can be prepared from purified food antigens or recombinant food antigens.

[0079] As it is generally preferred that the food preparation is immobilized on a solid surface (typically in an addressable manner), it is contemplated that the step of measuring the IgG or other type of antibody bound to the component of the food preparation is performed via an ELISA test. Exemplary solid surfaces include, but are not limited to, wells in a multiwell plate, such that each food preparation may be isolated to a separate microwell. In certain embodiments, the food preparation will be coupled to, or immobilized on, the solid surface. In other embodiments, the food preparation(s) will be coupled to a molecular tag that allows for binding to human immunoglobulins (*e.g.*, IgG) in solution.

[0080] Viewed from a different perspective, the inventors also contemplate a method of generating a test for food intolerance in patients diagnosed with or suspected to have Depression.

Because the test is applied to patients already diagnosed with or suspected to have Depression, the authors do not contemplate that the method has a diagnostic purpose. Instead, the method is for identifying triggering food items among already diagnosed or suspected Depression patients. Such test will typically include a step of obtaining one or more test results (*e.g.*, ELISA) for various distinct food preparations, wherein the test results are based on bodily fluids (*e.g.*, blood saliva, fecal suspension) of patients diagnosed with or suspected to have Depression and bodily fluids of a control group not diagnosed with or not suspected to have Depression. Most preferably, the test results are then stratified by gender for each of the distinct food preparations, a different cutoff value for male and female patients for each of the distinct food preparations (*e.g.*, cutoff value for male and female patients has a difference of at least 10% (abs)) is assigned for a predetermined percentile rank (*e.g.*, 90th or 95th percentile).

[0081] As noted earlier, and while not limiting to the inventive subject matter, it is contemplated that the distinct food preparations include at least two (or six, or ten, or 15) food preparations prepared from food items selected from the group consisting of foods 1-26 of **Table 2**, and/or items of **Table 1**. On the other hand, where new food items are tested, it should be appreciated that the distinct food preparations include a food preparation prepared from a food items other than foods 1-26 of **Table 2**. Regardless of the particular choice of food items, it is generally preferred however, that the distinct food preparations have an average discriminatory p-value of ≤ 0.07 (or ≤ 0.05, or ≤ 0.025) as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 (or ≤ 0.08, or ≤ 0.07) as determined by FDR multiplicity adjusted p-value. Exemplary aspects and protocols, and considerations are provided in the experimental description below.

[0082] Thus, it should be appreciated that by having a high-confidence test system as described herein, the rate of false-positive and false negatives can be significantly reduced, and especially where the test systems and methods are gender stratified or adjusted for gender differences as shown below. Such advantages have heretofore not been realized and it is expected that the systems and methods presented herein will substantially increase the predictive power of food sensitivity tests for patients diagnosed with or suspected to have Depression.

Experiments

[0083] General Protocol for food preparation generation: Commercially available food extracts (available from Biomerica Inc., 17571 Von Karman Ave, Irvine, CA 92614) prepared from the edible portion of the respective raw foods were used to prepare ELISA plates following the manufacturer's instructions.

[0084] For some food extracts, the inventors expect that food extracts prepared with specific procedures to generate food extracts provides more superior results in detecting elevated IgG reactivity in Depression patients compared to commercially available food extracts. For example, for grains and nuts, a three-step procedure of generating food extracts is preferred. The first step is a defatting step. In this step, lipids from grains and nuts are extracted by contacting the flour of grains and nuts with a non-polar solvent and collecting residue. Then, the defatted grain or nut flour are extracted by contacting the flour with elevated pH to obtain a mixture and removing the solid from the mixture to obtain the liquid extract. Once the liquid extract is generated, the liquid extract is stabilized by adding an aqueous formulation. In a preferred embodiment, the aqueous formulation includes a sugar alcohol, a metal chelating agent, protease inhibitor, mineral salt, and buffer component 20-50 mM of buffer from 4-9 pH. This formulation allowed for long term storage at -70 °C and multiple freeze-thaws without a loss of activity.

[0085] For another example, for meats and fish, a two step procedure of generating food extract is preferred. The first step is an extraction step. In this step, extracts from raw, uncooked meats or fish are generated by emulsifying the raw, uncooked meats or fish in an aqueous buffer formulation in a high impact pressure processor. Then, solid materials are removed to obtain liquid extract. Once the liquid extract is generated, the liquid extract is stabilized by adding an aqueous formulation. In a preferred embodiment, the aqueous formulation includes a sugar alcohol, a metal chelating agent, protease inhibitor, mineral salt, and buffer component 20-50 mM of buffer from 4-9 pH. This formulation allowed for long term storage at -70 °C and multiple freeze-thaws without a loss of activity.

[0086] For still another example, for fruits and vegetables, a two step procedure of generating food extract is preferred. The first step is an extraction step. In this step, liquid extracts from fruits or vegetables are generated using an extractor (*e.g.*, masticating juicer, etc) to pulverize foods and extract juice. Then, solid materials are removed to obtain liquid extract. Once the liquid extract is generated, the liquid extract is stabilized by adding an aqueous formulation. In a preferred embodiment, the aqueous formulation includes a sugar alcohol, a metal chelating agent, protease inhibitor, mineral salt, and buffer component 20-50 mM of buffer from 4-9 pH. This formulation allowed for long term storage at -70 °C and multiple freeze-thaws without a loss of activity.

[0087] Blocking of ELISA plates: To optimize signal to noise, plates will be blocked with a proprietary blocking buffer. In a preferred embodiment, the blocking buffer includes 20-50 mM of buffer from 4-9 pH, a protein of animal origin and a short chain alcohol. Other blocking buffers, including several commercial preparations, can be attempted but may not provide adequate signal to noise and low assay variability required.

[0088] ELISA preparation and sample testing: Food antigen preparations were immobilized onto respective microtiter wells following the manufacturer's instructions. For the assays, the food antigens were allowed to react with antibodies present in the patients' serum, and excess serum proteins were removed by a wash step. For detection of IgG antibody binding, enzyme labeled anti-IgG antibody conjugate was allowed to react with antigen-antibody complex. A color was developed by the addition of a substrate that reacts with the coupled enzyme. The color intensity was measured and is directly proportional to the concentration of IgG antibody specific to a particular food antigen.

[0089] Methodology to determine ranked food list in order of ability of ELISA signals to distinguish Depression from control subjects: Out of an initial selection (*e.g.*, 100 food items, or 150 food items, or even more), samples can be eliminated prior to analysis due to low consumption in an intended population. In addition, specific food items can be used as being representative of the a larger more generic food group, especially where prior testing has established a correlation among different species within a generic group (most preferably in both genders, but also suitable for correlation for a single gender). For example, green pepper could be dropped in favor of chili pepper as representative of the "pepper" food group, or sweet potato could be dropped in favor of potato as representative of the "potato" food group. In further preferred aspects, the final list foods will be shorter than 50 food items, and more preferably equal or less than of 40 food items.

[0090] Since the foods ultimately selected for the food intolerance panel will not be specific for a particular gender, a gender-neutral food list is necessary. Since the observed sample will be at least initially imbalanced by gender (*e.g.,* Controls: 38.6% female, Depression: 74.3% female), differences in ELISA signal magnitude strictly due to gender will be removed by modeling signal scores against gender using a two-sample t-test and storing the residuals for further analysis. For each of the tested foods, residual signal scores will be compared between Depression and controls using a permutation test on a two-sample t-test with a relative high number of resamplings (*e.g.,* >1,000, more preferably >10,000, even more preferably >50,000). The Satterthwaite approximation can then be used for the denominator degrees of freedom to account for lack of homogeneity of variances, and the 2-tailed permuted p-value will represent the raw p-value for each food. False Discovery Rates (FDR) among the comparisons, will be adjusted by any acceptable statistical procedures (*e.g.,* Benjamini-Hochberg, Family-wise Error Rate (FWER), Per Comparison Error Rate (PCER), etc.).

[0091] Foods were then ranked according to their 2-tailed FDR multiplicity-adjusted p-values. Foods with adjusted p-values equal to or lower than the desired FDR threshold are deemed to have significantly higher signal scores among Depression than control subjects and therefore deemed candidates for inclusion into a food intolerance panel. A typical result that is representative of the outcome of the statistical procedure is provided in **Table 2**. Here the ranking of foods is according to 2-tailed permutation T-test p-values with FDR adjustment.

[0092] Based on earlier experiments (data not shown here, see US 62/359909), the inventors contemplate that even for the same food preparation tested, the ELISA score for at least several food items will vary dramatically, and exemplary raw data are provided in **Table 3**. As should be readily appreciated, data unstratified by gender will therefore lose significant explanatory power where the same cutoff value is applied to raw data for male and female data. To overcome such disadvantage, the inventors therefore contemplate stratification of the data by gender as described below.

[0093] Statistical Method for Cutpoint Selection for each Food: The determination of what ELISA signal scores would constitute a "positive" response can be made by summarizing the distribution of signal scores among the Control subjects. For each food, Depression subjects who have observed scores greater than or equal to selected quantiles of the Control subject distribution will be deemed "positive". To attenuate the influence of any one subject on cutpoint determination, each food-specific and gender-specific dataset will be bootstrap resampled 1000 times. Within each bootstrap replicate, the 90th and 95th percentiles of the Control signal scores will be determined. Each Depression subject in the bootstrap sample will be compared to the 90th and 95% percentiles to determine whether he/she had a "positive" response. The final 90th and 95th percentile-based cutpoints for each food and gender will be computed as the average 90th and 95th percentiles across the 1000 samples. The number of foods for which each Depression subject will be rated as "positive" was computed by pooling data across foods. Using such method, the inventors will be now able to identify cutoff values for a predetermined percentile rank that in most cases was substantially different as can be taken from **Table 4**.

[0094] Typical examples for the gender difference in IgG response in blood with respect to almond is shown in **Figures 1A-1D,** where Figure 1A shows the signal distribution in men along with the 95th percentile cutoff as determined from the male control population. Figure 1B shows the distribution of percentage of male Depression subjects exceeding the 90th and 95th percentile, while Figure 1C shows the signal distribution in women along with the 95th percentile cutoff as determined from the female control population. Figure 1D shows the distribution of percentage of female Depression subjects exceeding the 90th and 95th percentile. In the same fashion, **Figures 2A-2D** exemplarily depict the differential response to tomato, **Figures 3A-3D** exemplarily depict the differential response to tobacco, and **Figures 4A-4D** exemplarily depict the differential response to carrot. **Figures 5A-5B** show the distribution of Depression subjects by number of foods that were identified as trigger foods at the 90th percentile (5A) and 95th percentile (5B). Inventors contemplate that regardless of the particular food items, male and female responses will be notably distinct.

[0095] It should be noted that nothing in the art have provided any predictable food groups related to Depression that is gender-stratified. Thus, a discovery of food items that show distinct responses by gender is a surprising result, which could not be obviously expected in view of all previously available arts. In other words, selection of food items based on gender stratification provides an unexpected technical effect such that statistical significances for particular food items as triggering food among male or female Depression patients have been significantly improved.

[0096] Normalization of IgG Response Data: While the raw data of the patient's IgG response results can be used to compare strength of response among given foods, it is also contemplated that the IgG response results of a patient are normalized and indexed to generate unit-less numbers for comparison of relative strength of response to a given food. For example, one or more of a patient's food specific IgG results (*e.g.*, IgG specific to orange and IgG specific to malt) can be normalized to the patient's total IgG. The normalized value of the patient's IgG specific to orange can be 0.1 and the normalized value of the patient's IgG specific to malt can be 0.3. In this scenario, the relative strength of the patient's response to malt is three times higher compared to orange. Then, the patient's sensitivity to malt and orange can be indexed as such.

[0097] In other examples, one or more of a patient's food specific IgG results (*e.g.*, IgG specific to shrimp and IgG specific to pork) can be normalized to the global mean of that patient's food specific IgG results. The global means of the patient's food specific IgG can be measured by total amount of the patient's food specific IgG. In this scenario, the patient's specific IgG to shrimp can be normalized to the mean of patient's total food specific IgG (*e.g.*, mean of IgG levels to shrimp, pork, Dungeness crab, chicken, peas, etc.) . However, it is also contemplated that the global means of the patient's food specific IgG can be measured by the patient's IgG levels to a specific type of food via multiple tests. If the patient has been tested for his sensitivity to shrimp five times and to pork seven times previously, the patient's new IgG values to shrimp or to pork are normalized to the mean of five-times test results to shrimp or the mean of seven-times test results to pork. The normalized value of the patient's IgG specific to shrimp can be 6.0 and the normalized value of the patient's IgG specific to pork can be 1.0. In this scenario, the patient has six times higher sensitivity to shrimp at this time compared to his average sensitivity to shrimp, but substantially similar sensitivity to pork. Then, the patient's sensitivity to shrimp and pork can be indexed based on such comparison.

[0098] Methodology to determine the subset of Depression patients with food sensitivities that underlie Depression: While it is suspected that food sensitivities plays a substantial role in signs and symptoms of Depression, some Depression patients may not have food sensitivities that underlie Depression. Those patients would not be benefit from dietary intervention to treat signs and symptoms of Depression. To determine the subset of such patients, body fluid samples of Depression patients and non- Depression patients can be tested with ELISA test using test devices with up to 26 food samples.

[0099] **Table 5A** and **Table 5B** provide exemplary raw data. As should be readily appreciated, the data indicate number of positive results out of 26 sample foods based on 90th percentile value (**Table 5A**) or 95th percentile value (**Table 5B**). The first column is Depression (n=114); second column is non-Depression (n=132) by ICD-10 code. Average and median number of positive foods was computed for Depression and non-Depression patients. From the raw data shown in **Table 5A** and **Table 5B**, average and standard deviation of the number of positive foods was computed for Depression and non-Depression patients. Additionally, the number and percentage of patients with zero positive foods was calculated for both Depression and non-Depression. The number and percentage of patients with zero positive foods in the Depression population is approximately 50% lower than the percentage of patients with zero positive foods in the non-Depression population (27.2% vs. 51.5%, respectively) based on 90th percentile value (**Table 5A**), and the percentage of patients in the Depression population with zero positive foods is also significantly lower (i.e. approximately 40% lower) than that seen in the non-Depression population (39.5 % vs. 66.7%, respectively) based on 95th percentile value (**Table 5B**). Thus, it can be easily appreciated that the Depression patient having sensitivity to zero positive foods is unlikely to have food sensitivities underlying their signs and symptoms of Depression.

[00100] **Table 6A** and **Table 7A** show exemplary statistical data summarizing the raw data of two patient populations shown in Table 5A. The statistical data includes normality, arithmetic mean, median, percentiles and 95% confidence interval (CI) for the mean and median representing number of positive foods in the Depression population and the non-Depression population. **Table 6B** and **Table 7B** show exemplary statistical data summarizing the raw data of two patient populations shown in Table 5B. The statistical data includes normality, arithmetic mean, median, percentiles and 95% confidence interval (CI) for the mean and median representing number of positive foods in the Depression population and the non-Depression population.

[00101] **Table 8A** and **Table 9A** show exemplary statistical data summarizing the raw data of two patient populations shown in Table 5A. In Tables 8A and 9A, the raw data was transformed by logarithmic transformation to improve the data interpretation. **Table 8B** and **Table 9B** show another exemplary statistical data summarizing the raw data of two patient populations shown in Table 5B. In Tables 8B and 9B, the raw data was transformed by logarithmic transformation to improve the data interpretation.

[00102] **Table 10A** and **Table 11A** show exemplary statistical data of an independent T-test (Table 10A, logarithmically transformed data) and a Mann-Whitney test (Table 11A) to compare the geometric mean number of positive foods between the Depression and non-Depression samples. The data shown in Table 10A and Table 11A indicate statistically significant differences in the geometric mean of positive number of foods between the Depression population and the non-Depression population. In both statistical tests, it is shown that the number of positive responses with 26 food samples is significantly higher in the Depression population than in the non-Depression population with an average discriminatory p-value of $\leq$ 0.0001. These statistical data is also illustrated as a box and whisker plot in **Figure 6A**, and a notched box and whisker plot in **Figure 6B**.

[00103] **Table 10B** and **Table 11B** show exemplary statistical data of an independent T-test (Table 10A, logarithmically transformed data) and a Mann-Whitney test (Table 11B) to compare the geometric mean number of positive foods between the Depression and non-Depression samples. The data shown in Table 10B and Table 11B indicate statistically significant differences in the geometric mean of positive number of foods between the Depression population and the non-Depression population. In both statistical tests, it is shown that the number of positive responses with 26 food samples is significantly higher in the Depression population than in the non-Depression population with an average discriminatory p-value of $\leq$ 0.0001. These statistical data is also illustrated as a box and whisker plot in **Figure 6C**, and a notched box and whisker plot in **Figure 6D**.

[00104] **Table 12A** shows exemplary statistical data of a Receiver Operating Characteristic (ROC) curve analysis of data shown in Tables 5A-11A to determine the diagnostic power of the test used in Table 5 at discriminating Depression from non- Depression subjects. When a cutoff criterion of more than 4 positive foods is used, the test yields a data with 36.8% sensitivity and 87.8% specificity, with an area under the curve (AUROC) of 0.665. The p-value for the ROC is significant at a p-value of <0.0001. **Figure 7A** illustrates the ROC curve corresponding to the statistical data shown in Table 12A. Because the statistical difference between the Depression population and the non-Depression population is significant when the test results are cut off to a positive number of 4, the number of foods for which a patient tests positive could be used as a confirmation of the primary clinical diagnosis of Depression, and whether it is likely that food sensitivities underlies on the patient's signs and symptoms of Depression. Therefore, the above test can be used as another 'rule in' test to add to currently available clinical criteria for diagnosis for Depression.

[00105] As shown in Tables 5A-12A, and Figure 7A, based on 90th percentile data, the number of positive foods seen in Depression vs. non-Depression subjects is significantly different whether the geometric mean or median of the data is compared. The number of positive foods that a person has is indicative of the presence of Depression in subjects. The test has discriminatory power to detect Depression with 36.8% sensitivity and 87.8% specificity. Additionally, the absolute number and percentage of subjects with 0 positive foods is also very different in Depression vs. non-Depression subjects, with a far lower percentage of Depression subjects (27.2%) having 0 positive foods than non-Depression subjects (51.5%). The data suggests a subset of Depression patients may have Depression due to other factors than diet, and may not benefit from dietary restriction.

[00106] **Table 12B** shows exemplary statistical data of a Receiver Operating Characteristic (ROC) curve analysis of data shown in Tables 5B-11B to determine the diagnostic power of the test used in Table 5 at discriminating Depression from non-Depression subjects. When a cutoff criterion of more than 0 positive foods is used, the test yields a data with 60.5% sensitivity and 66.7% specificity, with an area under the curve (AUROC) of 0.659. The p-value for the ROC is significant at a p-value of <0.0001. **Figure 7B** illustrates the ROC curve corresponding to the statistical data shown in Table 12B. Because the statistical difference between the Depression

population and the non-Depression population is significant when the test results are cut off to positive number of >0, the number of foods that a patient tests positive could be used as a confirmation of the primary clinical diagnosis of Depression, and whether it is likely that food sensitivities underlies on the patient's signs and symptoms of Depression. Therefore, the above test can be used as another 'rule in' test to add to currently available clinical criteria for diagnosis for Depression.

[00107] As shown in Tables 5B-12B, and Figure 7B, based on 95^{th} percentile data, the number of positive foods seen in Depression vs. non-Depression subjects is significantly different whether the geometric mean or median of the data is compared. The number of positive foods that a person has is indicative of the presence of Depression in subjects. The test has discriminatory power to detect Depression with 60.5% sensitivity and 66.7% specificity. Additionally, the absolute number and percentage of subjects with 0 positive foods is also very different in Depression vs. non-Depression subjects, with a far lower percentage of Depression subjects (39.5%) having 0 positive foods than non- Depression subjects (66.7%). The data suggests a subset of Depression patients may have Depression due to other factors than diet, and may not benefit from dietary restriction.

[00108] Method for determining distribution of per-person number of foods declared "positive": To determine the distribution of number of "positive" foods per person and measure the diagnostic performance, the analysis will be performed with 26 food items from Table 2, which shows most positive responses to Depression patients. To attenuate the influence of any one subject on this analysis, each food-specific and gender-specific dataset will be bootstrap resampled 1000 times. Then, for each food item in the bootstrap sample, sex-specific cutpoint will be determined using the 90th and 95th percentiles of the control population. Once the sex-specific cutpoints are determined, the sex-specific cutpoints will be compared with the observed ELISA signal scores for both control and Depression subjects. In this comparison, if the observed signal is equal or more than the cutpoint value, then it will be determined "positive" food, and if the observed signal is less than the cutpoint value, then it will be determined "negative" food.

[00109] Once all food items were determined either positive or negative, the results of the 52 (26 foods x 2 cutpoints) calls for each subject will be saved within each bootstrap replicate. Then, for each subject, 26 calls will be summed using 90^{th} percentile as cutpoint to get "Number of Positive Foods (90^{th})," and the rest of 26 calls will be summed using 95^{th} percentile to get "Number of Positive Foods (95^{th})." Then, within each replicate, "Number of Positive Foods (90^{th})" and "Number of Positive Foods (95^{th})" will be summarized across subjects to get descriptive statistics for each replicate as follows: 1) overall means equals to the mean of means, 2) overall standard deviation equals to the mean of standard deviations, 3) overall medial equals to the mean of medians, 4) overall minimum equals to the minimum of minimums, and 5) overall maximum equals to maximum of maximum. In this analysis, to avoid non-integer "Number of Positive Foods" when computing frequency distribution and histogram, the authors will pretend that the 1000 repetitions of the same original dataset were actually 999 sets of new subjects of the same size added to the original sample. Once the summarization of data is done, frequency distributions and histograms will be generated for both "Number of Positive Foods (90^{th})" and "Number of Positive Foods (95^{th})" for both genders and for both Depression subjects and control subjects using programs "a_pos_foods.sas, a_pos_foods_by_dx.sas".

[00110] Method for measuring diagnostic performance: To measure diagnostic performance for each food items for each subject, we will use data of "Number of Positive Foods (90^{th})" and "Number of Positive Foods (95^{th})" for each subject within each bootstrap replicate described above. In this analysis, the cutpoint was set to 1. Thus, if a subject has one or more "Number of Positive Foods (90^{th})", then the subject will be called "Has Depression." If a subject has less than one "Number of Positive Foods (90^{th})", then the subject will be called "Does Not Have Depression." When all calls were made, the calls were compared with actual diagnosis to determine whether a call was a True Positive (TP), True Negative (TN), False Positive (FP), or False Negative (FN). The comparisons will be summarized across subjects to get the performance metrics of sensitivity, specificity, positive predictive value, and negative predictive value for both "Number of Positive Foods (90^{th})" and "Number of Positive Foods(95^{th})" when the cutpoint is set to 1 for each method. Each (sensitivity, 1-specificity) pair becomes a point on the ROC curve for this replicate.

[00111] To increase the accuracy, the analysis above will be repeated by incrementing cutpoint from 2 up to 26, and repeated for each of the 1000 bootstrap replicates. Then the performance metrics across the 1000 bootstrap replicates will be summarized by calculating averages using a program "t_pos_foods_by_dx.sas". The results of diagnostic performance for female and male are shown in **Tables 13A and 13B** (90th percentile) and **Tables 14 A and 14B** (95th percentile).

[00112] Of course, it should be appreciated that certain variations in the food preparations may be made without altering the inventive subject matter presented herein. For example, where the food item was yellow onion, that item should be understood to also include other onion varieties that were demonstrated to have equivalent activity in the tests. Indeed, the inventors have noted that for each tested food preparation, certain other related food preparations also tested in the same or equivalent manner (data not shown). Thus, it should be appreciated that each tested and claimed food preparation will have equivalent related preparations with demonstrated equal or equivalent reactions in the test.

[00113] It should be apparent to those skilled in the art that many more modifications besides those already described are possible without departing from the inventive concepts herein. The inventive subject matter, therefore, is not to be restricted except in the spirit of the appended claims. Moreover, in interpreting both the specification and the claims, all terms should be interpreted in the broadest possible manner consistent with the context. In particular, the terms "comprises" and "comprising" should be interpreted as referring to elements, components, or steps in a non-exclusive manner, indicating that the referenced elements, components, or steps may be present, or utilized, or combined with other elements, components, or steps that are not expressly referenced. Where the specification claims refers to at least one of something selected from the group consisting of A, B, C .... and N, the text should be interpreted as requiring only one element from the group, not A plus N, or B plus N, etc.

Abalone	Cured Cheese	Onion	Walnut, black
Adlay	Cuttlefish	Orange	Watermelon
Almond	Duck	Oyster	Welch Onion
American Cheese	Durian	Papaya	Wheat
Apple	Eel	Paprika	Wheat bran
Artichoke	Egg White (separate)	Parsley	Yeast (S. cerevisiae)
Asparagus	Egg Yolk (separate)	Peach	Yogurt
Avocado	Egg, white/yolk (comb.)	Peanut	
Baby Bok Choy	Eggplant	Pear	**FOOD ADDITIVES**
Bamboo shoots	Garlic	Pepper, Black	Arabic Gum
Banana	Ginger	Pineapple	Carboxymethyl Cellulose
Barley, whole grain	Gluten - Gliadin	Pinto bean	Carrageneenan
Beef	Goat's milk	Plum	FD&C Blue #1
Beets	Grape, white/concord	Pork	FD&C Red #3
Beta-lactoglobulin	Grapefruit	Potato	FD&C Red #40
Blueberry	Grass Carp	Rabbit	FD&C Yellow #5
Broccoli	Green Onion	Rice	FD&C Yellow #6
Buckwheat	Green pea	Roquefort Cheese	Gelatin
Butter	Green pepper	Rye	Guar Gum
Cabbage	Guava	Saccharine	Maltodextrin
Cane sugar	Hair Tail	Safflower seed	Pectin
Cantaloupe	Hake	Salmon	Whey
Caraway	Halibut	Sardine	Xanthan Gum
Carrot	Hazelnut	Scallop	
Casein	Honey	Sesame	
Cashew	Kelp	Shark fin	
Cauliflower	Kidney bean	Sheep's milk	
Celery	Kiwi Fruit	Shrimp	
Chard	Lamb	Sole	
Cheddar Cheese	Leek	Soybean	
Chick Peas	Lemon	Spinach	
Chicken	Lentils	Squashes	
Chili pepper	Lettuce, Iceberg	Squid	
Chocolate	Lima bean	Strawberry	
Cinnamon	Lobster	String bean	
Clam	Longan	Sunflower seed	
Cocoa Bean	Mackerel	Sweet potato	
Coconut	Malt	Swiss cheese	
Codfish	Mango	Taro	
Coffee	Marjoram	Tea, black	
Cola nut	Millet	Tobacco	
Corn	Mung bean	Tomato	
Cottage cheese	Mushroom	Trout	
Cow's milk	Mustard seed	Tuna	
Crab	Oat	Turkey	
Cucumber	Olive	Vanilla	

Table 1

Ranking of Foods according to 2-tailed Permutation T-test p-values with FDR adjustment

Rank	*Food*	*Raw p-value*	*FDR Multiplicity-adj p-value*
1	Almond	0.0001	0.0080
2	Tomato	0.0002	0.0080
3	Tobacco	0.0006	0.0166
4	Carrot	0.0010	0.0185
5	Orange	0.0010	0.0185
6	Cucumber	0.0017	0.0252
7	Broccoli	0.0028	0.0323
8	Lettuce	0.0029	0.0323
9	Malt	0.0034	0.0340
10	Cantaloupe	0.0044	0.0390
11	Corn	0.0048	0.0390
12	Wheat	0.0066	0.0449
13	Honey	0.0069	0.0449
14	Chocolate	0.0071	0.0449
15	Oat	0.0101	0.0567
16	Avocado	0.0102	0.0567
17	Rye	0.0119	0.0602
18	Strawberry	0.0122	0.0602
19	Cauliflower	0.0130	0.0606
20	Safflower	0.0136	0.0606
21	Tea	0.0151	0.0630
22	Banana	0.0156	0.0630
23	Squashes	0.0184	0.0710
24	Green_Pepper	0.0213	0.0790
25	Butter	0.0237	0.0842
26	Buck_Wheat	0.0258	0.0885
27	Rice	0.0307	0.1013
28	Soybean	0.0363	0.1118
29	Grapefruit	0.0364	0.1118
30	Oyster	0.0427	0.1266

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Rank	*Food*	*Raw p-value*	*FDR Multiplicity-adj p-value*
31	Yeast_Brewer	0.0473	0.1359
32	Peach	0.0569	0.1584
33	Cane_Sugar	0.0594	0.1603
34	Cow_Milk	0.0616	0.1613
35	Spinach	0.0667	0.1697
36	Mustard	0.0719	0.1779
37	Cinnamon	0.0800	0.1923
38	Eggplant	0.0854	0.2001
39	Cabbage	0.1034	0.2303
40	Pinto_Bean	0.1053	0.2303
41	Onion	0.1061	0.2303
42	Sunflower_Sd	0.1204	0.2552
43	Walnut_Blk	0.1233	0.2552
44	Blueberry	0.1312	0.2655
45	Cottage_Ch_	0.1398	0.2714
46	Cheddar_Ch_	0.1403	0.2714
47	Goat_Milk	0.1438	0.2715
48	Lemon	0.1464	0.2715
49	Apple	0.1891	0.3435
50	Olive	0.1965	0.3498
51	Garlic	0.2065	0.3604
52	Yeast_Baker	0.2187	0.3742
53	Parsley	0.2262	0.3798
54	Sweet_Pot_	0.2585	0.4231
55	Yogurt	0.2615	0.4231
56	Swiss_Ch_	0.2712	0.4311
57	Amer__Cheese	0.2839	0.4394
58	Beef	0.2873	0.4394
59	Barley	0.2934	0.4394
60	Clam	0.2962	0.4394
61	Green_Pea	0.3118	0.4550
62	Salmon	0.3239	0.4649
63	Scallop	0.3518	0.4969
64	Celery	0.3573	0.4969

Rank	*Food*	*Raw p-value*	*FDR Multiplicity-adj p-value*
65	Chicken	0.4077	0.5582
66	Sardine	0.4479	0.5963
67	Lima_Bean	0.4489	0.5963
68	Codfish	0.4567	0.5977
69	Cashew	0.4784	0.6171
70	Peanut	0.5032	0.6384
71	Potato	0.5093	0.6384
72	Millet	0.5283	0.6530
73	Turkey	0.5557	0.6775
74	Pork	0.5674	0.6820
75	Mushroom	0.5748	0.6820
76	Coffee	0.6105	0.7150
77	Trout	0.6332	0.7319
78	Crab	0.6492	0.7407
79	Pineapple	0.6858	0.7726
80	Lobster	0.7421	0.8256
81	Egg	0.7893	0.8673
82	Sesame	0.8279	0.8886
83	Sole	0.8314	0.8886
84	Tuna	0.8387	0.8886
85	Halibut	0.8863	0.9280
86	String_Bean	0.9103	0.9421
87	Cola_Nut	0.9604	0.9739
88	Chili_Pepper	0.9629	0.9739
89	Grape	0.9849	0.9849

Table 2

Basic Descriptive Statistics of ELISA Score by Food and Gender Comparing Depression to Control

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
FEMALE	Almond	Control	51	4.057	1.630	1.275	8.090
		Depression	84	6.053	5.372	1.210	33.082
		Diff (1-2)	_	-1.996	4.360	_	_
	Amer__Cheese	Control	51	32.961	66.654	0.100	400.00
		Depression	84	31.594	42.040	1.002	244.77
		Diff (1-2)	_	1.367	52.660	_	_
	Apple	Control	51	4.793	6.600	0.100	44.163
		Depression	84	4.700	5.000	0.288	29.157
		Diff (1-2)	_	0.093	5.655	_	_
	Avocado	Control	51	2.144	1.129	0.100	5.561
		Depression	84	3.734	6.321	0.099	43.891
		Diff (1-2)	_	-1.589	5.041	_	_
	Banana	Control	51	3.042	2.909	0.100	17.212
		Depression	84	4.254	3.270	0.605	21.544
		Diff (1-2)	_	-1.212	3.139	_	_
	Barley	Control	51	3.867	3.919	0.100	25.110
		Depression	84	9.751	27.814	0.504	227.10
		Diff (1-2)	_	-5.883	22.103	_	_
	Beef	Control	51	9.007	12.047	1.029	81.664
		Depression	84	10.130	15.645	2.337	114.56
		Diff (1-2)	_	-1.124	14.398	_	_
	Blueberry	Control	51	3.533	4.712	0.100	26.459
		Depression	84	3.925	2.782	0.706	17.918
		Diff (1-2)	_	-0.392	3.630	_	_
	Broccoli	Control	51	5.211	4.424	0.107	29.602
		Depression	84	7.516	3.766	1.311	26.282
		Diff (1-2)	_	-2.305	4.026	_	_
	Buck_Wheat	Control	51	5.151	4.281	0.100	26.453
		Depression	84	6.040	6.662	1.543	51.255
		Diff (1-2)	_	-0.890	5.881	_	_
	Butter	Control	51	17.809	24.981	0.100	150.93
		Depression	84	19.850	26.939	1.776	169.07

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Diff (1-2)	_	-2.041	26.220	_	_
	Cabbage	Control	51	5.038	6.005	0.346	37.840
		Depression	84	5.930	5.330	0.706	28.026
		Diff (1-2)	_	-0.892	5.593	_	_
	Cane_Sugar	Control	51	15.189	10.152	3.462	50.454
		Depression	84	25.216	32.661	4.615	273.09
		Diff (1-2)	_	-10.027	26.542	_	_
	Cantaloupe	Control	51	4.707	2.368	1.153	12.761
		Depression	84	6.464	6.047	1.506	39.659
		Diff (1-2)	_	-1.757	4.993	_	_
	Carrot	Control	51	2.702	1.549	0.100	6.945
		Depression	84	4.670	4.958	0.706	33.323
		Diff (1-2)	_	-1.968	4.030	_	_
	Cashew	Control	51	8.621	13.756	0.100	81.886
		Depression	84	13.003	44.243	0.504	400.00
		Diff (1-2)	_	-4.382	35.954	_	_
	Cauliflower	Control	51	4.203	2.424	0.427	11.768
		Depression	84	5.122	4.128	1.109	31.116
		Diff (1-2)	_	-0.920	3.583	_	_
	Celery	Control	51	7.815	5.561	2.058	32.827
		Depression	84	7.848	6.159	1.923	37.247
		Diff (1-2)	_	-0.034	5.941	_	_
	Cheddar_Ch_	Control	51	25.261	59.385	1.533	400.00
		Depression	84	25.785	46.652	0.992	271.88
		Diff (1-2)	_	-0.524	51.807	_	_
	Chicken	Control	51	14.077	8.350	2.690	50.000
		Depression	84	16.733	25.109	2.054	164.81
		Diff (1-2)	_	-2.655	20.485	_	_
	Chili_Pepper	Control	51	7.281	6.348	0.571	32.357
		Depression	84	6.294	5.445	1.326	43.789
		Diff (1-2)	_	0.987	5.801	_	_
	Chocolate	Control	51	13.516	6.136	3.405	30.536
		Depression	84	17.719	9.932	4.135	47.953
		Diff (1-2)	_	-4.203	8.701	_	_

				ELISA Score			
Sex	Food	Diagnosis	N	Mean	SD	Min	Max
	Cinnamon	Control	51	8.317	6.347	1.490	38.804
		Depression	84	10.753	11.058	1.169	89.952
		Diff (1-2)	_	-2.436	9.563	_	_
	Clam	Control	51	36.890	57.603	7.452	400.00
		Depression	84	26.931	27.003	4.547	171.60
		Diff (1-2)	_	9.960	41.261	_	_
	Codfish	Control	51	27.484	34.270	6.174	203.91
		Depression	84	24.346	32.188	3.328	232.15
		Diff (1-2)	_	3.137	32.986	_	_
	Coffee	Control	51	34.003	55.076	6.732	400.00
		Depression	84	28.989	44.549	3.065	312.78
		Diff (1-2)	_	5.014	48.774	_	_
	Cola_Nut	Control	51	11.928	5.390	2.629	27.263
		Depression	84	12.964	6.626	2.521	37.735
		Diff (1-2)	_	-1.035	6.190	_	_
	Corn	Control	51	7.351	5.170	2.076	27.010
		Depression	84	10.825	11.201	1.614	71.435
		Diff (1-2)	_	-3.474	9.399	_	_
	Cottage_Ch_	Control	51	83.139	107.442	2.115	400.00
		Depression	84	87.213	117.081	3.341	400.00
		Diff (1-2)	_	-4.074	113.554	_	_
	Cow_Milk	Control	51	65.188	90.937	1.798	400.00
		Depression	84	69.385	88.404	2.220	400.00
		Diff (1-2)	_	-4.197	89.365	_	_
	Crab	Control	51	30.366	21.673	3.770	114.37
		Depression	84	27.416	27.641	3.955	183.02
		Diff (1-2)	_	2.951	25.562	_	_
	Cucumber	Control	51	6.559	5.110	1.269	26.496
		Depression	84	10.518	12.910	1.655	105.57
		Diff (1-2)	_	-3.959	10.669	_	_
	Egg	Control	51	70.569	97.119	5.109	400.00
		Depression	84	63.169	102.626	2.103	400.00
		Diff (1-2)	_	7.399	100.591	_	_
	Eggplant	Control	51	3.980	4.120	0.100	26.496

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Depression	84	4.808	4.545	0.769	31.159
		Diff (1-2)	_	-0.828	4.390	_	_
	Garlic	Control	51	8.615	4.650	0.100	23.410
		Depression	84	12.491	21.359	2.825	195.76
		Diff (1-2)	_	-3.876	17.112	_	_
	Goat_Milk	Control	51	12.631	28.034	0.100	149.14
		Depression	84	10.452	14.140	0.769	75.952
		Diff (1-2)	_	2.179	20.499	_	_
	Grape	Control	51	13.069	6.123	2.351	44.190
		Depression	84	11.984	6.244	5.166	48.166
		Diff (1-2)	_	1.085	6.199	_	_
	Grapefruit	Control	51	3.129	1.808	0.100	8.039
		Depression	84	4.425	4.535	0.473	27.688
		Diff (1-2)	_	-1.297	3.750	_	_
	Green_Pea	Control	51	5.735	5.596	0.100	27.006
		Depression	84	6.700	5.824	1.473	32.598
		Diff (1-2)	_	-0.966	5.739	_	_
	Green_Pepper	Control	51	4.001	2.220	1.153	11.464
		Depression	84	4.961	3.740	0.568	28.231
		Diff (1-2)	_	-0.960	3.253	_	_
	Halibut	Control	51	11.307	6.424	0.855	35.367
		Depression	84	10.593	9.057	3.026	77.575
		Diff (1-2)	_	0.713	8.167	_	_
	Honey	Control	51	8.234	3.765	0.534	22.795
		Depression	84	11.119	9.294	3.158	69.779
		Diff (1-2)	_	-2.885	7.697	_	_
	Lemon	Control	51	2.560	1.273	0.100	6.269
		Depression	84	2.960	1.809	0.100	10.352
		Diff (1-2)	_	-0.400	1.628	_	_
	Lettuce	Control	51	9.676	5.180	3.726	27.085
		Depression	84	13.809	13.075	2.919	68.119
		Diff (1-2)	_	-4.133	10.807	_	_
	Lima_Bean	Control	51	4.955	4.158	0.100	25.007
		Depression	84	5.594	3.681	0.100	22.803

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Diff (1-2)	_	-0.640	3.867	_	_
	Lobster	Control	51	7.008	4.348	1.175	23.980
		Depression	84	7.919	9.497	0.302	81.273
		Diff (1-2)	_	-0.910	7.962	_	_
	Malt	Control	51	13.807	7.087	1.923	31.196
		Depression	84	17.205	10.029	3.138	64.864
		Diff (1-2)	_	-3.399	9.036	_	_
	Millet	Control	51	3.883	6.158	0.100	45.888
		Depression	84	3.293	1.457	0.284	7.902
		Diff (1-2)	_	0.590	3.947	_	_
	Mushroom	Control	51	22.698	22.937	1.486	106.22
		Depression	84	26.098	35.501	2.596	269.25
		Diff (1-2)	_	-3.399	31.374	_	_
	Mustard	Control	51	5.398	2.689	0.914	11.657
		Depression	84	6.532	5.934	1.346	51.410
		Diff (1-2)	_	-1.133	4.969	_	_
	Oat	Control	51	11.120	9.563	0.100	49.538
		Depression	84	21.731	30.234	1.224	172.55
		Diff (1-2)	_	-10.611	24.593	_	_
	Olive	Control	51	15.480	19.299	3.048	111.23
		Depression	84	15.462	13.966	1.815	83.159
		Diff (1-2)	_	0.019	16.178	_	_
	Onion	Control	51	9.740	10.258	1.169	70.461
		Depression	84	11.730	10.513	2.045	57.666
		Diff (1-2)	_	-1.990	10.418	_	_
	Orange	Control	51	23.728	28.881	4.173	149.43
		Depression	84	40.043	61.930	3.273	400.00
		Diff (1-2)	_	-16.314	52.029	_	_
	Oyster	Control	51	44.125	34.722	9.622	168.93
		Depression	84	47.302	55.126	2.746	365.92
		Diff (1-2)	_	-3.177	48.473	_	_
	Parsley	Control	51	21.959	46.256	5.988	342.33
		Depression	84	23.172	46.201	4.615	395.02
		Diff (1-2)	_	-1.214	46.221	_	_

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
	Peach	Control	51	6.507	7.491	0.100	34.647
		Depression	84	10.153	13.064	0.501	86.767
		Diff (1-2)	_	-3.646	11.296	_	_
	Peanut	Control	51	5.445	4.273	0.100	24.233
		Depression	84	4.574	3.767	0.401	23.669
		Diff (1-2)	_	0.871	3.965	_	_
	Pineapple	Control	51	8.460	18.977	0.100	122.86
		Depression	84	9.496	10.815	0.301	68.963
		Diff (1-2)	_	-1.036	14.435	_	_
	Pinto_Bean	Control	51	9.830	9.653	0.214	47.923
		Depression	84	9.690	8.769	1.519	49.208
		Diff (1-2)	_	0.140	9.111	_	_
	Pork	Control	51	15.095	8.745	4.796	44.259
		Depression	84	14.848	16.951	2.105	136.08
		Diff (1-2)	_	0.247	14.424	_	_
	Potato	Control	51	8.664	2.240	4.899	14.014
		Depression	84	9.829	6.551	3.530	50.433
		Diff (1-2)	_	-1.165	5.354	_	_
	Rice	Control	51	18.985	14.969	4.896	73.099
		Depression	84	27.187	27.511	3.039	183.65
		Diff (1-2)	_	-8.203	23.591	_	_
	Rye	Control	51	4.185	2.647	0.229	17.994
		Depression	84	5.528	6.331	0.568	50.541
		Diff (1-2)	_	-1.343	5.258	_	_
	Safflower	Control	51	6.557	5.363	1.619	36.646
		Depression	84	10.104	18.078	1.513	158.79
		Diff (1-2)	_	-3.547	14.655	_	_
	Salmon	Control	51	13.155	11.632	3.483	68.368
		Depression	84	11.244	7.823	2.005	38.104
		Diff (1-2)	_	1.911	9.437	_	_
	Sardine	Control	51	29.733	14.098	12.950	76.726
		Depression	84	29.036	13.839	7.297	71.123
		Diff (1-2)	_	0.696	13.937	_	_
	Scallop	Control	51	53.504	22.302	15.624	107.71

Sex	Food	Diagnosis	N	ELISA Score Mean	SD	Min	Max
		Depression	84	48.185	31.160	12.400	183.38
		Diff (1-2)	_	5.320	28.159	_	_
	Sesame	Control	51	91.740	91.167	6.639	400.00
		Depression	84	74.492	86.939	3.652	400.00
		Diff (1-2)	_	17.248	88.552	_	_
	Shrimp	Control	51	31.906	31.340	5.364	151.14
		Depression	84	19.220	28.356	0.908	174.30
		Diff (1-2)	_	12.685	29.513	_	_
	Sole	Control	51	5.010	3.858	0.229	29.089
		Depression	84	5.160	3.607	0.568	32.149
		Diff (1-2)	_	-0.151	3.703	_	_
	Soybean	Control	51	14.277	10.254	4.153	51.573
		Depression	84	20.340	45.681	1.412	330.35
		Diff (1-2)	_	-6.063	36.631	_	_
	Spinach	Control	51	20.914	15.580	3.294	66.869
		Depression	84	19.305	19.975	3.530	112.21
		Diff (1-2)	_	1.609	18.446	_	_
	Squashes	Control	51	5.697	2.997	2.054	13.836
		Depression	84	7.591	7.642	1.461	61.130
		Diff (1-2)	_	-1.895	6.311	_	_
	Strawberry	Control	51	4.585	4.756	0.107	27.904
		Depression	84	5.668	8.119	0.288	71.144
		Diff (1-2)	_	-1.083	7.046	_	_
	String_Bean	Control	51	34.495	21.114	12.544	94.207
		Depression	84	33.201	17.652	6.617	91.525
		Diff (1-2)	_	1.294	19.028	_	_
	Sunflower_Sd	Control	51	7.402	4.308	1.487	21.171
		Depression	84	8.016	5.975	1.420	42.615
		Diff (1-2)	_	-0.614	5.409	_	_
	Sweet_Pot_	Control	51	13.319	8.694	4.463	53.650
		Depression	84	17.751	42.527	3.013	387.79
		Diff (1-2)	_	-4.432	34.016	_	_
	Swiss_Ch_	Control	51	37.893	78.801	1.486	400.00
		Depression	84	32.905	56.882	1.422	369.23

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Diff (1-2)	_	4.988	65.982	_	_
	Tea	Control	51	19.459	7.609	8.932	38.009
		Depression	84	23.868	11.404	7.392	60.568
		Diff (1-2)	_	-4.409	10.145	_	_
	Tobacco	Control	51	28.550	13.486	7.878	65.658
		Depression	84	40.993	33.443	6.961	266.42
		Diff (1-2)	_	-12.443	27.683	_	_
	Tomato	Control	51	7.412	5.926	1.915	30.764
		Depression	84	11.842	14.852	1.052	121.09
		Diff (1-2)	_	-4.430	12.283	_	_
	Trout	Control	51	15.254	16.016	3.000	93.127
		Depression	84	15.204	32.133	2.467	297.84
		Diff (1-2)	_	0.050	27.217	_	_
	Tuna	Control	51	8.129	6.362	3.048	33.878
		Depression	84	7.920	7.040	1.504	42.894
		Diff (1-2)	_	0.209	6.793	_	_
	Turkey	Control	51	11.859	5.301	4.489	28.920
		Depression	84	14.418	17.255	1.403	130.49
		Diff (1-2)	_	-2.559	14.013	_	_
	Walnut_Blk	Control	51	19.796	13.830	5.668	79.531
		Depression	84	22.704	21.647	4.188	147.49
		Diff (1-2)	_	-2.908	19.088	_	_
	Wheat	Control	51	14.031	16.566	3.201	116.33
		Depression	84	20.865	46.543	1.987	400.00
		Diff (1-2)	_	-6.834	38.145	_	_
	Yeast_Baker	Control	51	6.905	4.321	2.226	24.959
		Depression	84	11.196	14.140	1.002	90.740
		Diff (1-2)	_	-4.292	11.480	_	_
	Yeast_Brewer	Control	51	9.946	8.059	1.486	37.536
		Depression	84	16.898	21.682	2.220	133.32
		Diff (1-2)	_	-6.952	17.827	_	_
	Yogurt	Control	51	19.256	34.792	0.100	223.20
		Depression	84	14.529	14.602	1.285	58.971
		Diff (1-2)	_	4.727	24.252	_	_

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
MALE	Almond	Control	81	4.956	2.457	1.604	14.845
		Depression	30	19.240	48.521	2.209	261.78
		Diff (1-2)	_	-14.284	25.116	_	_
	Amer__Cheese	Control	81	33.623	47.729	1.711	234.20
		Depression	30	70.293	104.273	0.100	388.88
		Diff (1-2)	_	-36.670	67.563	_	_
	Apple	Control	81	4.768	4.226	0.994	30.113
		Depression	30	10.226	17.862	1.473	91.492
		Diff (1-2)	_	-5.457	9.899	_	_
	Avocado	Control	81	2.949	2.085	0.201	15.507
		Depression	30	4.977	6.902	0.670	29.430
		Diff (1-2)	_	-2.028	3.983	_	_
	Banana	Control	81	4.016	5.530	0.805	48.427
		Depression	30	7.836	9.483	1.531	40.890
		Diff (1-2)	_	-3.820	6.810	_	_
	Barley	Control	81	9.009	35.683	1.081	324.19
		Depression	30	15.659	45.746	1.435	254.23
		Diff (1-2)	_	-6.650	38.617	_	_
	Beef	Control	81	10.821	19.739	2.369	162.33
		Depression	30	19.620	24.830	3.199	123.25
		Diff (1-2)	_	-8.799	21.213	_	_
	Blueberry	Control	81	3.790	2.257	0.883	12.559
		Depression	30	5.614	5.070	1.031	26.070
		Diff (1-2)	_	-1.824	3.253	_	_
	Broccoli	Control	81	7.175	5.132	2.098	30.727
		Depression	30	18.338	44.970	2.251	250.15
		Diff (1-2)	_	-11.163	23.609	_	_
	Buck_Wheat	Control	81	5.548	3.014	1.667	23.702
		Depression	30	9.870	9.819	2.762	54.212
		Diff (1-2)	_	-4.323	5.685	_	_
	Butter	Control	81	16.652	19.179	1.546	93.145
		Depression	30	39.899	44.616	3.213	189.16
		Diff (1-2)	_	-23.246	28.277	_	_
	Cabbage	Control	81	5.952	10.811	0.985	94.740

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Depression	30	20.647	62.792	1.244	347.26
		Diff (1-2)	_	-14.695	33.687	_	_
	Cane_Sugar	Control	81	23.047	28.025	3.898	170.78
		Depression	30	30.241	26.558	5.441	131.80
		Diff (1-2)	_	-7.194	27.642	_	_
	Cantaloupe	Control	81	5.879	4.368	1.965	29.569
		Depression	30	19.244	52.306	2.967	288.31
		Diff (1-2)	_	-13.366	27.238	_	_
	Carrot	Control	81	4.016	3.787	1.177	27.684
		Depression	30	8.228	10.884	1.148	46.973
		Diff (1-2)	_	-4.212	6.484	_	_
	Cashew	Control	81	9.724	11.603	1.020	59.196
		Depression	30	11.345	20.757	1.148	114.69
		Diff (1-2)	_	-1.621	14.609	_	_
	Cauliflower	Control	81	4.865	3.698	1.514	24.163
		Depression	30	17.389	53.615	1.531	296.98
		Diff (1-2)	_	-12.524	27.836	_	_
	Celery	Control	81	8.967	5.476	2.947	34.787
		Depression	30	20.042	50.509	3.677	284.26
		Diff (1-2)	_	-11.075	26.472	_	_
	Cheddar_Ch_	Control	81	26.696	45.931	1.690	283.73
		Depression	30	73.052	117.039	3.478	400.00
		Diff (1-2)	_	-46.355	72.061	_	_
	Chicken	Control	81	16.054	12.550	2.942	76.881
		Depression	30	18.502	12.193	4.671	47.618
		Diff (1-2)	_	-2.449	12.456	_	_
	Chili_Pepper	Control	81	7.835	5.613	1.569	38.045
		Depression	30	11.129	16.881	1.856	96.246
		Diff (1-2)	_	-3.295	9.947	_	_
	Chocolate	Control	81	16.623	11.019	3.007	59.473
		Depression	30	22.913	15.578	4.307	70.958
		Diff (1-2)	_	-6.289	12.397	_	_
	Cinnamon	Control	81	9.850	7.037	1.640	40.477
		Depression	30	12.445	8.317	1.133	30.988

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Diff (1-2)	_	-2.595	7.399	_	_
	Clam	Control	81	33.566	20.277	3.189	98.482
		Depression	30	36.898	54.757	9.750	318.14
		Diff (1-2)	_	-3.332	33.159	_	_
	Codfish	Control	81	25.075	33.650	6.487	277.17
		Depression	30	45.890	73.290	7.959	400.00
		Diff (1-2)	_	-20.815	47.541	_	_
	Coffee	Control	81	30.318	43.408	4.323	356.95
		Depression	30	53.598	98.346	5.268	400.00
		Diff (1-2)	_	-23.280	62.898	_	_
	Cola_Nut	Control	81	15.243	8.049	4.084	38.816
		Depression	30	16.580	9.872	4.987	50.994
		Diff (1-2)	_	-1.337	8.572	_	_
	Corn	Control	81	9.923	12.544	2.358	95.512
		Depression	30	29.487	48.938	2.297	185.58
		Diff (1-2)	_	-19.564	27.435	_	_
	Cottage_Ch_	Control	81	76.631	102.973	1.207	400.00
		Depression	30	140.923	154.222	5.851	400.00
		Diff (1-2)	_	-64.292	118.787	_	_
	Cow_Milk	Control	81	60.822	83.166	1.767	400.00
		Depression	30	131.551	144.182	4.282	400.00
		Diff (1-2)	_	-70.728	102.991	_	_
	Crab	Control	81	32.448	37.288	4.765	299.11
		Depression	30	36.378	35.136	7.680	194.02
		Diff (1-2)	_	-3.930	36.728	_	_
	Cucumber	Control	81	8.752	8.584	1.877	61.859
		Depression	30	28.024	60.943	2.830	320.56
		Diff (1-2)	_	-19.272	32.284	_	_
	Egg	Control	81	62.505	92.408	3.785	400.00
		Depression	30	85.498	116.862	3.215	400.00
		Diff (1-2)	_	-22.994	99.503	_	_
	Eggplant	Control	81	5.045	5.910	1.367	48.789
		Depression	30	10.459	16.348	1.603	70.249
		Diff (1-2)	_	-5.414	9.836	_	_

				ELISA Score			
Sex	Food	Diagnosis	N	Mean	SD	Min	Max
	Garlic	Control	81	11.918	9.606	3.041	52.161
		Depression	30	14.955	16.035	2.834	88.234
		Diff (1-2)	_	-3.037	11.668	_	_
	Goat_Milk	Control	81	11.176	16.325	0.503	96.689
		Depression	30	35.670	59.210	1.879	210.41
		Diff (1-2)	_	-24.493	33.591	_	_
	Grape	Control	81	15.645	5.750	8.058	47.251
		Depression	30	21.674	38.577	4.906	221.13
		Diff (1-2)	_	-6.029	20.499	_	_
	Grapefruit	Control	81	4.255	3.962	0.807	32.913
		Depression	30	11.231	30.159	0.957	163.43
		Diff (1-2)	_	-6.976	15.922	_	_
	Green_Pea	Control	81	7.021	6.334	1.020	35.195
		Depression	30	9.031	6.837	1.818	30.562
		Diff (1-2)	_	-2.010	6.471	_	_
	Green_Pepper	Control	81	4.715	3.713	1.656	32.327
		Depression	30	14.672	46.012	0.957	256.35
		Diff (1-2)	_	-9.956	23.945	_	_
	Halibut	Control	81	14.289	15.877	4.414	135.74
		Depression	30	19.259	22.743	4.874	96.737
		Diff (1-2)	_	-4.970	17.962	_	_
	Honey	Control	81	10.351	5.111	2.733	29.823
		Depression	30	14.751	10.807	3.490	51.631
		Diff (1-2)	_	-4.400	7.089	_	_
	Lemon	Control	81	3.050	2.460	0.201	20.655
		Depression	30	4.648	6.262	0.377	26.648
		Diff (1-2)	_	-1.598	3.857	_	_
	Lettuce	Control	81	12.814	7.663	3.734	39.966
		Depression	30	27.973	42.368	4.151	211.92
		Diff (1-2)	_	-15.159	22.818	_	_
	Lima_Bean	Control	81	6.294	5.248	1.546	35.107
		Depression	30	8.145	7.785	0.928	36.538
		Diff (1-2)	_	-1.851	6.028	_	_
	Lobster	Control	81	9.455	6.640	1.311	41.983

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Depression	30	8.911	6.106	2.808	26.300
		Diff (1-2)	_	0.544	6.502	_	_
	Malt	Control	81	15.173	8.267	2.551	51.285
		Depression	30	20.386	11.297	6.461	53.111
		Diff (1-2)	_	-5.213	9.171	_	_
	Millet	Control	81	4.065	4.304	1.435	40.360
		Depression	30	4.712	2.347	1.340	9.527
		Diff (1-2)	_	-0.647	3.881	_	_
	Mushroom	Control	81	27.235	27.375	2.824	118.76
		Depression	30	32.179	33.673	4.434	131.33
		Diff (1-2)	_	-4.944	29.184	_	_
	Mustard	Control	81	6.992	4.301	1.947	30.771
		Depression	30	16.454	41.250	2.547	233.06
		Diff (1-2)	_	-9.462	21.593	_	_
	Oat	Control	81	18.201	20.144	1.176	88.428
		Depression	30	32.643	54.940	0.567	294.01
		Diff (1-2)	_	-14.442	33.180	_	_
	Olive	Control	81	17.589	31.696	3.554	281.30
		Depression	30	41.626	68.210	4.194	274.07
		Diff (1-2)	_	-24.037	44.443	_	_
	Onion	Control	81	13.450	23.822	2.271	210.93
		Depression	30	39.203	83.172	1.698	400.00
		Diff (1-2)	_	-25.753	47.508	_	_
	Orange	Control	81	26.423	37.325	2.824	314.77
		Depression	30	59.267	67.356	5.328	279.36
		Diff (1-2)	_	-32.843	47.218	_	_
	Oyster	Control	81	49.594	42.026	7.658	250.39
		Depression	30	101.583	81.794	9.637	278.65
		Diff (1-2)	_	-51.989	55.464	_	_
	Parsley	Control	81	17.745	7.652	5.298	59.623
		Depression	30	32.472	53.175	9.491	303.98
		Diff (1-2)	_	-14.727	28.201	_	_
	Peach	Control	81	10.414	10.155	1.913	53.125
		Depression	30	17.293	21.222	1.415	80.424

Sex	Food	Diagnosis	N	ELISA Score Mean	SD	Min	Max
		Diff (1-2)	_	-6.880	13.983	_	_
	Peanut	Control	81	5.730	9.913	1.223	89.273
		Depression	30	12.104	22.293	1.340	102.94
		Diff (1-2)	_	-6.374	14.295	_	_
	Pineapple	Control	81	12.433	44.326	1.660	400.00
		Depression	30	22.446	42.174	0.943	211.16
		Diff (1-2)	_	-10.013	43.764	_	_
	Pinto_Bean	Control	81	9.370	6.088	1.998	33.952
		Depression	30	26.024	65.400	3.067	359.76
		Diff (1-2)	_	-16.653	34.135	_	_
	Pork	Control	81	16.675	14.641	4.198	89.423
		Depression	30	15.489	8.675	4.774	38.269
		Diff (1-2)	_	1.186	13.317	_	_
	Potato	Control	81	12.243	8.339	4.922	75.768
		Depression	30	25.142	68.240	2.830	383.04
		Diff (1-2)	_	-12.899	35.916	_	_
	Rice	Control	81	24.230	16.518	4.815	79.625
		Depression	30	39.755	72.482	5.189	400.00
		Diff (1-2)	_	-15.525	39.975	_	_
	Rye	Control	81	5.122	3.376	1.569	23.489
		Depression	30	9.176	9.594	1.341	46.668
		Diff (1-2)	_	-4.055	5.732	_	_
	Safflower	Control	81	7.553	4.020	2.452	27.492
		Depression	30	10.295	8.332	2.169	35.466
		Diff (1-2)	_	-2.742	5.507	_	_
	Salmon	Control	81	16.307	15.972	0.100	136.52
		Depression	30	17.538	32.725	4.563	188.91
		Diff (1-2)	_	-1.231	21.730	_	_
	Sardine	Control	81	33.099	14.613	7.838	87.492
		Depression	30	34.114	16.377	10.600	91.647
		Diff (1-2)	_	-1.015	15.103	_	_
	Scallop	Control	81	50.308	23.097	11.061	116.33
		Depression	30	49.327	18.669	26.003	105.18
		Diff (1-2)	_	0.980	22.006	_	_

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
	Sesame	Control	81	73.449	87.622	3.433	400.00
		Depression	30	87.565	119.362	6.227	400.00
		Diff (1-2)	_	-14.116	97.085	_	_
	Shrimp	Control	81	34.185	40.052	2.925	272.28
		Depression	30	23.914	41.579	4.681	236.84
		Diff (1-2)	_	10.271	40.464	_	_
	Sole	Control	81	5.290	2.521	2.243	20.373
		Depression	30	5.586	2.457	2.166	10.613
		Diff (1-2)	_	-0.296	2.504	_	_
	Soybean	Control	81	16.814	12.312	3.479	81.383
		Depression	30	43.489	82.869	5.580	400.00
		Diff (1-2)	_	-26.676	44.026	_	_
	Spinach	Control	81	14.620	6.503	5.378	40.130
		Depression	30	33.807	70.886	6.133	400.00
		Diff (1-2)	_	-19.188	36.985	_	_
	Squashes	Control	81	7.200	4.790	2.259	24.675
		Depression	30	21.468	64.320	1.981	357.62
		Diff (1-2)	_	-14.268	33.430	_	_
	Strawberry	Control	81	5.073	4.417	1.002	29.163
		Depression	30	25.236	73.898	1.341	400.00
		Diff (1-2)	_	-20.163	38.305	_	_
	String_Bean	Control	81	37.257	22.322	7.894	146.17
		Depression	30	43.417	25.642	12.241	129.91
		Diff (1-2)	_	-6.160	23.252	_	_
	Sunflower_Sd	Control	81	8.566	5.303	2.451	31.256
		Depression	30	18.573	40.806	2.888	231.71
		Diff (1-2)	_	-10.007	21.533	_	_
	Sweet_Pot_	Control	81	17.536	13.698	4.101	74.660
		Depression	30	28.901	43.655	2.735	230.69
		Diff (1-2)	_	-11.365	25.392	_	_
	Swiss_Ch_	Control	81	35.608	58.963	2.010	299.50
		Depression	30	88.439	135.669	3.237	400.00
		Diff (1-2)	_	-52.831	86.306	_	_
	Tea	Control	81	23.966	9.868	7.617	46.395

Sex	Food	Diagnosis	N	ELISA Score Mean	SD	Min	Max
		Depression	30	31.665	19.407	8.589	101.02
		Diff (1-2)	_	-7.699	13.102	_	_
	Tobacco	Control	81	36.231	21.642	8.831	125.93
		Depression	30	61.161	58.497	11.649	312.01
		Diff (1-2)	_	-24.930	35.414	_	_
	Tomato	Control	81	9.199	6.995	2.319	40.933
		Depression	30	42.152	95.827	1.509	400.00
		Diff (1-2)	_	-32.953	49.790	_	_
	Trout	Control	81	14.686	9.992	3.220	83.963
		Depression	30	19.945	42.469	2.207	242.68
		Diff (1-2)	_	-5.259	23.519	_	_
	Tuna	Control	81	8.305	6.513	2.110	39.025
		Depression	30	8.443	7.910	1.428	36.792
		Diff (1-2)	_	-0.138	6.912	_	_
	Turkey	Control	81	14.012	11.116	4.079	65.177
		Depression	30	13.494	8.545	5.336	39.414
		Diff (1-2)	_	0.518	10.494	_	_
	Walnut_Blk	Control	81	20.821	10.402	5.682	58.466
		Depression	30	35.105	71.023	7.028	400.00
		Diff (1-2)	_	-14.284	37.702	_	_
	Wheat	Control	81	13.359	10.034	3.237	71.930
		Depression	30	38.088	73.346	4.815	352.91
		Diff (1-2)	_	-24.729	38.796	_	_
	Yeast_Baker	Control	81	12.471	20.370	2.073	123.35
		Depression	30	18.870	30.129	1.132	127.47
		Diff (1-2)	_	-6.399	23.368	_	_
	Yeast_Brewer	Control	81	15.903	21.143	2.642	130.89
		Depression	30	29.020	52.876	1.603	246.75
		Diff (1-2)	_	-13.117	32.741	_	_
	Yogurt	Control	81	15.651	16.295	3.004	73.200
		Depression	30	42.777	72.527	4.245	327.88
		Diff (1-2)	_	-27.126	39.930	_	_

Table 3

Upper Quantiles of ELISA Signal Scores among Control Subjects as Candidates for Test Cutpoints in Determining "Positive" or "Negative"

Top 26 Foods Ranked by Descending order of Discriminatory Ability using Permutation Test

Depression Subjects vs. Controls

			Cutpoint	
Food Ranking	*Food*	*Sex*	*90th percentile*	*95th percentile*
1	Almond	FEMALE	6.387	7.229
		MALE	8.201	10.364
2	Tomato	FEMALE	12.707	20.229
		MALE	16.458	23.901
3	Tobacco	FEMALE	46.676	52.120
		MALE	66.108	81.270
4	Carrot	FEMALE	5.028	6.030
		MALE	6.547	9.472
5	Orange	FEMALE	58.970	90.702
		MALE	47.782	67.581
6	Cucumber	FEMALE	12.530	18.094
		MALE	16.117	22.938
7	Broccoli	FEMALE	9.078	12.242
		MALE	13.227	17.923
8	Lettuce	FEMALE	17.214	21.301
		MALE	23.159	30.500
9	Malt	FEMALE	24.428	26.838
		MALE	26.135	30.793
10	Cantaloupe	FEMALE	7.816	9.816
		MALE	10.244	14.900
11	Corn	FEMALE	13.133	19.396
		MALE	16.893	27.942
12	Wheat	FEMALE	22.473	39.657
		MALE	23.851	30.952
13	Honey	FEMALE	12.418	14.289
		MALE	17.319	20.797
14	Chocolate	FEMALE	22.428	24.874
		MALE	31.758	37.652
15	Oat	FEMALE	22.737	27.403

			Cutpoint	
Food Ranking	*Food*	*Sex*	*90th percentile*	*95th percentile*
		MALE	52.310	63.866
16	Avocado	FEMALE	3.604	4.378
		MALE	4.620	6.230
17	Rye	FEMALE	6.138	8.899
		MALE	8.345	11.849
18	Strawberry	FEMALE	8.038	14.219
		MALE	9.266	13.944
19	Cauliflower	FEMALE	7.651	9.029
		MALE	7.718	12.080
20	Safflower	FEMALE	10.386	16.047
		MALE	11.748	14.739
21	Tea	FEMALE	29.842	33.214
		MALE	37.508	42.162
22	Banana	FEMALE	5.442	9.272
		MALE	6.610	10.019
23	Squashes	FEMALE	10.270	11.945
		MALE	13.571	18.431
24	Green_Pepper	FEMALE	6.908	8.215
		MALE	7.040	9.133
25	Butter	FEMALE	40.015	66.921
		MALE	44.018	61.716
26	Buck_Wheat	FEMALE	9.667	13.975
		MALE	8.502	10.282

Table 4

DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
171081AAB0001	0
171081AAB0002	0
171081AAB0003	4
171081AAB0004	0
171081AAB0005	5
171081AAB0006	1
171081AAB0008	3
171081AAB0009	5
171081AAB0010	0
171081AAB0011	3
171081AAB0012	5
171081AAB0014	18
171081AAB0015	1
171081AAB0016	5
171081AAB0017	11
171081AAB0018	7
171081AAB0019	1
171081AAB0020	1
171081AAB0022	7
171081AAB0023	1
171081AAB0025	0
171081AAB0027	18
171081AAB0028	8
171081AAB0029	11
171081AAB0030	2
171081AAB0032	7
171081AAB0033	19
171081AAB0037	4
171081AAB0039	1
171081AAB0040	8
171081AAB0043	0
171081AAB0044	13
171081AAB0045	0
171081AAB0046	0
171081AAB0047	7
171081AAB0049	18
171146AAB0002	0
171146AAB0003	4

NON-DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1244994	2
BRH1244995	0
BRH1244996	1
BRH1244997	0
BRH1244998	3
BRH1244999	0
BRH1245000	1
BRH1245001	0
BRH1245002	1
BRH1245004	0
BRH1245007	0
BRH1245008	0
BRH1245009	3
BRH1245010	4
BRH1245011	4
BRH1245014	0
BRH1245015	0
BRH1245018	1
BRH1245019	0
BRH1245022	11
BRH1245023	1
BRH1245024	2
BRH1245026	4
BRH1245029	0
BRH1245030	0
BRH1245031	3
BRH1245032	1
BRH1245033	0
BRH1245035	0
BRH1245037	0
BRH1245038	0
BRH1245039	11
BRH1245040	2
BRH1245041	2
BRH1267328	12
BRH1267329	1
BRH1267330	0
BRH1267332	0

DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
171146AAB0004	2
171146AAB0005	1
171146AAB0006	1
171146AAB0007	0
171146AAB0008	6
171146AAB0009	7
171146AAB0010	1
171146AAB0011	14
171146AAB0013	1
171146AAB0014	3
171146AAB0015	4
171146AAB0016	0
171146AAB0017	3
171146AAB0018	5
171146AAB0019	11
171146AAB0020	2
171146AAB0021	7
171146AAB0022	11
171146AAB0023	7
171146AAB0025	3
171146AAB0026	1
171146AAB0027	2
171146AAB0028	12
171146AAB0029	0
171146AAB0030	0
171146AAB0031	1
171146AAB0032	4
171146AAB0033	0
171146AAB0036	7
BRH1339646	0
BRH1339647	2
BRH1339648	1
BRH1339649	0
BRH1339650	0
BRH1339655	6
BRH1339657	1
BRH1339658	2
BRH1339659	0
BRH1339660	0

NON-DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1267333	0
BRH1267334	12
BRH1267335	3
BRH1267337	0
BRH1267338	0
BRH1267339	1
BRH1267340	6
BRH1267341	0
BRH1267343	3
BRH1267345	0
BRH1267346	0
BRH1267347	0
BRH1267349	0
BRH1244900	0
BRH1244901	6
BRH1244902	0
BRH1244903	0
BRH1244904	1
BRH1244905	0
BRH1244906	11
BRH1244907	0
BRH1244908	1
BRH1244909	0
BRH1244910	3
BRH1244911	2
BRH1244912	1
BRH1244913	0
BRH1244914	7
BRH1244915	1
BRH1244916	14
BRH1244917	11
BRH1244918	0
BRH1244920	2
BRH1244921	0
BRH1244922	14
BRH1244923	1
BRH1244924	0
BRH1244925	1
BRH1244926	10

DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1339662	0
BRH1339664	6
BRH1339666	0
BRH1339667	0
BRH1339668	4
BRH1339669	20
BRH1339670	1
171081AAB0007	17
171081AAB0013	2
171081AAB0021	9
171081AAB0024	7
171081AAB0026	11
171081AAB0031	18
171081AAB0034	14
171081AAB0035	2
171081AAB0036	0
171081AAB0038	7
171081AAB0041	0
171081AAB0042	2
171081AAB0048	0
171081AAB0050	1
171146AAB0012	0
171146AAB0024	0
171146AAB0034	16
171146AAB0035	7
171146AAB0037	6
171146AAB0038	1
171146AAB0039	0
171146AAB0040	2
BRH1339651	7
BRH1339652	0
BRH1339653	0
BRH1339654	14
BRH1339656	1
BRH1339661	2
BRH1339663	1
BRH1339665	0

No of	114

NON-DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1244928	1
BRH1244929	3
BRH1244931	0
BRH1244932	2
BRH1244933	4
BRH1244934	2
BRH1244938	4
BRH1244939	0
BRH1244940	0
BRH1244941	0
BRH1244942	4
BRH1244943	1
BRH1244944	10
BRH1244945	1
BRH1244946	5
BRH1244947	0
BRH1244948	0
BRH1244949	1
BRH1244950	0
BRH1244951	0
BRH1244952	0
BRH1244953	1
BRH1244954	0
BRH1244956	18
BRH1244959	1
BRH1244960	0
BRH1244961	0
BRH1244962	0
BRH1244963	0
BRH1244964	5
BRH1244965	0
BRH1244967	0
BRH1244969	0
BRH1244970	1
BRH1244971	1
BRH1244972	0
BRH1244973	2
BRH1244974	0
BRH1244975	0

DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
Observations	
Average Number	4.4
Median Number	2

# of Patients w/ 0 Pos Results	31
% Subjects w/ 0 pos results	27.2

NON-DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1244976	0
BRH1244977	0
BRH1244979	0
BRH1244980	0
BRH1244981	0
BRH1244982	0
BRH1244983	0
BRH1244985	0
BRH1244987	0
BRH1244988	2
BRH1244991	0
BRH1244992	2
BRH1267320	0
BRH1267322	4
BRH1267323	0
BRH1267325	3

No of Observations	132
Average Number	2.0
Median Number	0

# of Patients w/ 0 Pos Results	68
% Subjects w/ 0 pos results	51.5

Table 5A

DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
171081AAB0001	0
171081AAB0002	0
171081AAB0003	1
171081AAB0004	0
171081AAB0005	1
171081AAB0006	1
171081AAB0008	2
171081AAB0009	4
171081AAB0010	0
171081AAB0011	3
171081AAB0012	1
171081AAB0014	15
171081AAB0015	1
171081AAB0016	4
171081AAB0017	5
171081AAB0018	3
171081AAB0019	1
171081AAB0020	1
171081AAB0022	3
171081AAB0023	0
171081AAB0025	0
171081AAB0027	12
171081AAB0028	6
171081AAB0029	6
171081AAB0030	0
171081AAB0032	5
171081AAB0033	17
171081AAB0037	1
171081AAB0039	0
171081AAB0040	7
171081AAB0043	0
171081AAB0044	11
171081AAB0045	0
171081AAB0046	0
171081AAB0047	6
171081AAB0049	9
171146AAB0002	0
171146AAB0003	1

NON-DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1244994	0
BRH1244995	0
BRH1244996	0
BRH1244997	0
BRH1244998	2
BRH1244999	0
BRH1245000	1
BRH1245001	0
BRH1245002	0
BRH1245004	0
BRH1245007	0
BRH1245008	0
BRH1245009	1
BRH1245010	2
BRH1245011	2
BRH1245014	0
BRH1245015	0
BRH1245018	1
BRH1245019	0
BRH1245022	5
BRH1245023	1
BRH1245024	1
BRH1245026	3
BRH1245029	0
BRH1245030	0
BRH1245031	0
BRH1245032	0
BRH1245033	0
BRH1245035	0
BRH1245037	0
BRH1245038	0
BRH1245039	7
BRH1245040	1
BRH1245041	0
BRH1267328	8
BRH1267329	0
BRH1267330	0
BRH1267332	0

DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
171146AAB0004	2
171146AAB0005	0
171146AAB0006	0
171146AAB0007	0
171146AAB0008	3
171146AAB0009	5
171146AAB0010	0
171146AAB0011	9
171146AAB0013	0
171146AAB0014	1
171146AAB0015	0
171146AAB0016	0
171146AAB0017	1
171146AAB0018	2
171146AAB0019	8
171146AAB0020	1
171146AAB0021	4
171146AAB0022	8
171146AAB0023	6
171146AAB0025	2
171146AAB0026	1
171146AAB0027	1
171146AAB0028	9
171146AAB0029	0
171146AAB0030	0
171146AAB0031	0
171146AAB0032	4
171146AAB0033	0
171146AAB0036	2
BRH1339646	0
BRH1339647	1
BRH1339648	0
BRH1339649	0
BRH1339650	0
BRH1339655	4
BRH1339657	1
BRH1339658	1
BRH1339659	0
BRH1339660	0

NON-DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1267333	0
BRH1267334	8
BRH1267335	2
BRH1267337	0
BRH1267338	0
BRH1267339	0
BRH1267340	4
BRH1267341	0
BRH1267343	2
BRH1267345	0
BRH1267346	0
BRH1267347	0
BRH1267349	0
BRH1244900	0
BRH1244901	3
BRH1244902	0
BRH1244903	0
BRH1244904	0
BRH1244905	0
BRH1244906	7
BRH1244907	0
BRH1244908	1
BRH1244909	0
BRH1244910	1
BRH1244911	1
BRH1244912	0
BRH1244913	0
BRH1244914	3
BRH1244915	0
BRH1244916	9
BRH1244917	4
BRH1244918	0
BRH1244920	1
BRH1244921	0
BRH1244922	11
BRH1244923	0
BRH1244924	0
BRH1244925	1
BRH1244926	9

DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1339662	0
BRH1339664	6
BRH1339666	0
BRH1339667	0
BRH1339668	2
BRH1339669	20
BRH1339670	0
171081AAB0007	17
171081AAB0013	2
171081AAB0021	4
171081AAB0024	6
171081AAB0026	10
171081AAB0031	17
171081AAB0034	13
171081AAB0035	0
171081AAB0036	0
171081AAB0038	2
171081AAB0041	0
171081AAB0042	2
171081AAB0048	0
171081AAB0050	1
171146AAB0012	0
171146AAB0024	0
171146AAB0034	12
171146AAB0035	2
171146AAB0037	2
171146AAB0038	1
171146AAB0039	0
171146AAB0040	2
BRH1339651	5
BRH1339652	0
BRH1339653	0
BRH1339654	12
BRH1339656	0
BRH1339661	1
BRH1339663	0
BRH1339665	0

No of	114

NON-DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1244928	0
BRH1244929	1
BRH1244931	0
BRH1244932	0
BRH1244933	3
BRH1244934	1
BRH1244938	1
BRH1244939	0
BRH1244940	0
BRH1244941	0
BRH1244942	3
BRH1244943	1
BRH1244944	3
BRH1244945	1
BRH1244946	3
BRH1244947	0
BRH1244948	0
BRH1244949	0
BRH1244950	0
BRH1244951	0
BRH1244952	0
BRH1244953	1
BRH1244954	0
BRH1244956	13
BRH1244959	0
BRH1244960	0
BRH1244961	0
BRH1244962	0
BRH1244963	0
BRH1244964	3
BRH1244965	0
BRH1244967	0
BRH1244969	0
BRH1244970	0
BRH1244971	0
BRH1244972	0
BRH1244973	0
BRH1244974	0
BRH1244975	0

DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
Observations	
Average Number	3.0
Median Number	1

# of Patients w/ 0 Pos Results	45
% Subjects w/ 0 pos results	39.5

NON-DEPRESSION POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1244976	0
BRH1244977	0
BRH1244979	0
BRH1244980	0
BRH1244981	0
BRH1244982	0
BRH1244983	0
BRH1244985	0
BRH1244987	0
BRH1244988	1
BRH1244991	0
BRH1244992	1
BRH1267320	0
BRH1267322	1
BRH1267323	0
BRH1267325	0

No of Observations	132
Average Number	1.1
Median Number	0

# of Patients w/ 0 Pos Results	88
% Subjects w/ 0 pos results	66.7

Table 5B

Summary statistics

Variable	Depression_90th_percentile Depression 90th percentile
Sample size	114
Lowest value	0.0000
Highest value	20.0000
Arithmetic mean	4.4211
95% CI for the mean	3.4414 to 5.4007
Median	2.0000
95% CI for the median	1.0000 to 4.0000
Variance	27.8742
Standard deviation	5.2796
Relative standard deviation	1.1942 (119.42%)
Standard error of the mean	0.4945
Coefficient of Skewness	1.3689 (P<0.0001)
Coefficient of Kurtosis	1.0336 (P=0.0576)
D'Agostino-Pearson tes for Normal distibution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.0000	
5	0.0000	0.0000 to 0.0000
10	0.0000	0.0000 to 0.0000
25	0.0000	0.0000 to 1.0000
75	7.0000	5.0000 to 8.0000
90	13.1000	9.9660 to 17.9482
95	17.8000	13.8680 to 18.8568
97.5	18.0000	

Table 6A

Summary statistics

Variable	Depression_95th_percentile Depression 95th percentile
Sample size	114
Lowest value	0.0000
Highest value	20.0000
Arithmetic mean	3.0000
95% CI for the mean	2.1768 to 3.8232
Median	1.0000
95% CI for the median	1.0000 to 2.0000
Variance	19.6814
Standard deviation	4.4364
Relative standard deviation	1.4788 (147.88%)
Standard error of the mean	0.4155
Coefficient of Skewness	1.9281 (P<0.0001)
Coefficient of Kurtosis	3.3178 (P=0.0002)
D'Agostino-Pearson test for Normal distribution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.0000	
5	0.0000	0.0000 to 0.0000
10	0.0000	0.0000 to 0.0000
25	0.0000	0.0000 to 0.0000
75	4.0000	2.0000 to 6.0000
90	9.1000	6.0000 to 12.9482
95	12.8000	9.8680 to 17.0000
97.5	17.0000	

Table 6B

Summary statistics

Variable	Non_Depression_90th_percentile Non-Depression 90th percentile

Sample size	132
Lowest value	0.0000
Highest value	18.0000
Arithmetic mean	1.9621
95% CI for the mean	1.3602 to 2.5640
Median	0.0000
95% CI for the median	0.0000 to 1.0000
Variance	12.2199
Standard deviation	3.4957
Relative standard deviation	1.7816 (178.16%)
Standard error of the mean	0.3043
Coefficient of Skewness	2.4457 (P<0.0001)
Coefficient of Kurtosis	5.8138 (P<0.0001)
D'Agostino-Pearson test for Normal distribution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.0000	
5	0.0000	0.0000 to 0.0000
10	0.0000	0.0000 to 0.0000
25	0.0000	0.0000 to 0.0000
75	2.0000	1.0000 to 3.0000
90	6.0000	4.0000 to 11.0000
95	11.0000	6.6178 to 14.0000
97.5	12.4000	

Table 7A

Summary statistics

Variable	Non_Depression_95th_percentile Non-Depression 95th percentile

Sample size	132
Lowest value	0.0000
Highest value	13.0000
Arithmetic mean	1.0530
95% CI for the mean	0.6548 to 1.4512
Median	0.0000
95% CI for the median	0.0000 to 0.0000
Variance	5.3483
Standard deviation	2.3126
Relative standard deviation	2.1962 (219.62%)
Standard error of the mean	0.2013
Coefficient of Skewness	3.0440 (P<0.0001)
Coefficient of Kurtosis	9.7586 (P<0.0001)
D'Agostino-Pearson test for Normal distribution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.0000	
5	0.0000	0.0000 to 0.0000
10	0.0000	0.0000 to 0.0000
25	0.0000	0.0000 to 0.0000
75	1.0000	1.0000 to 1.9868
90	3.0000	2.0000 to 7.0000
95	7.0000	3.0000 to 9.6200
97.5	9.0000	

Table 7B

Summary statistics

Variable	Depression_90th_percentile_1 Depression 90th percentile_1

Back-transformed after logarithmic transformation.

Sample size	114
Lowest value	0.1000
Highest value	20.0000
Geometric mean	1.4587
95% CI for the mean	1.0357 to 2.0544
Median	2.0000
95% CI for the median	1.0000 to 4.0000
Coefficient of Skewness	-0.4070 (P=0.0728)
Coefficient of Kurtosis	-1.2637 (P<0.0001)
D'Agostino-Pearson test for Normal distribution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.10000	
5	0.10000	0.10000 to 0.10000
10	0.10000	0.10000 to 0.10000
25	0.10000	0.10000 to 1.0000
75	7.0000	5.0000 to 8.0000
90	13.0967	9.9160 to 17.9468
95	17.7954	13.8637 to 18.8535
97.5	18.0000	

Table 8A

Summary statistics

Variable	Depression_95th_percentile_1 Depression 95th percentile 1

Back-transformed after logarithmic transformation.

Sample size	114
Lowest value	0.1000
Highest value	20.0000
Geometric mean	0.8117
95% CI for the mean	0.5753 to 1.1453
Median	1.0000
95% CI for the median	1.0000 to 2.0000
Coefficient of Skewness	0.04587 (P=0.8348)
Coefficient of Kurtosis	-1.5224 (P<0.0001)
D'Agostino-Pearson test for Normal distribution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.10000	
5	0.10000	0.10000 to 0.10000
10	0.10000	0.10000 to 0.10000
25	0.10000	0.10000 to 0.10000
75	4.0000	2.0000 to 6.0000
90	9.0953	6.0000 to 12.9462
95	12.7936	9.8619 to 17.0000
97.5	17.0000	

Table 8B

Summary statistics

Variable	Non_Depression_90th_percentile_1 Non-Depression 90th percentile 1

Back-transformed after logarithmic transformation.

Sample size	132
Lowest value	0.1000
Highest value	18.0000
Geometric mean	0.4892
95% CI for the mean	0.3614 to 0.6622
Median	0.10000
95% CI for the median	0.10000 to 1.0000
Coefficient of Skewness	0.4536 (P=0.0336)
Coefficient of Kurtosis	-1.3443 (P<0.0001)
D'Agostino-Pearson test for Normal distribution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.10000	
5	0.10000	0.10000 to 0.10000
10	0.10000	0.10000 to 0.10000
25	0.10000	0.10000 to 0.10000
75	2.0000	1.0000 to 3.0000
90	6.0000	4.0000 to 11.0000
95	11.0000	6.5995 to 14.0000
97.5	12.3757	

Table 9A

Summary statistics

Variable	Non_Depression_95th_percentile_1 Non-Depression 95th percentile_1
Back-transformed after logarithmic transformation.	
Sample size	132
Lowest value	0.1000
Highest value	13.0000
Geometric mean	0.2788
95% CI for the mean	0.2141 to 0.3631
Median	0.10000
95% CI for the median	0.10000 to 0.10000
Coefficient of Skewness	1.0472 (P<0.0001)
Coefficient of Kurtosis	-0.4494 (P=0.2192)
D'Agostino-Pearson test for Normal distribution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.10000	
5	0.10000	0.10000 to 0.10000
10	0.10000	0.10000 to 0.10000
25	0.10000	0.10000 to 0.10000
75	1.0000	1.0000 to 1.9818
90	3.0000	2.0000 to 7.0000
95	7.0000	3.0000 to 9.5777
97.5	9.0000	

Table 9B

Independent samples t-test

Sample 1	
Variable	Depression_90th_percentile_1 Depression 90th percentile_1
Sample 2	
Variable	Non_Depression_90th_percentile_1 Non-Depression 90th percentile_1

Back-transformed after logarithmic transformation.

	Sample 1	Sample 2
Sample size	114	132
Geometric mean	1.4587	0.4892
95% CI for the mean	1.0357 to 2.0544	0.3614 to 0.6622
Variance of Logs	0.6423	0.5832
F-test for equal variances		P = 0.592

T-test (assuming equal variances)

Difference on Log-transformed scale	
Difference	-0.4745
Standard Error	0.09991
95% CI of difference	-0.6713 to -0.2777
Test statistic t	-4.749
Degrees of Freedom (DF)	244
Two-tailed probability	P < 0.0001
Back-transformed results	
Ratio of geometric means	0.3354
95% CI of ratio	0.2132 to 0.5276

Table 10A

Independent samples t-test

Sample 1	
Variable	Depression_95th_percentile_1 Depression 95th percentile_1
Sample 2	
Variable	Non_Depression_95th_percentile_1 Non-Depression 95th percentile_1

Back-transformed after logarithmic transformation.

	Sample 1	Sample 2
Sample size	114	132
Geometric mean	0.8117	0.2788
95% CI for the mean	0.5753 to 1.1453	0.2141 to 0.3631
Variance of Logs	0.6490	0.4434
F-test for equal variances		P = 0.036

T-test (assuming equal variances)

Difference on Log-transformed scale	
Difference	-0.4641
Standard Error	0.09384
95% CI of difference	-0.6489 to -0.2792
Test statistic t	-4.946
Degrees of Freedom (DF)	244
Two-tailed probability	P < 0.0001
Back-transformed results	
Ratio of geometric means	0.3436
95% CI of ratio	0.2244 to 0.5257

Table 10B

Mann-Whitney test (independent samples)

Sample 1	
Variable	Depression_90th_percentile Depression 90th percentile
Sample 2	
Variable	Non_Depression_90th_percentile Non-Depression 90th percentile

	Sample 1	Sample 2
Sample size	114	132
Lowest value	0.0000	0.0000
Highest value	20.0000	18.0000
Median	2.0000	0.0000
95% CI for the median	1.0000 to 4.0000	0.0000 to 1.0000
Interquartile range	0.0000 to 7.0000	0.0000 to 2.0000

Mann-Whitney test (independent samples)

Average rank of first group	145.2149
Average rank of second group	104.7462
Mann-Whitney U	5048.50
Test statistic Z (corrected for ties)	4.609
Two-tailed probability	P < 0.0001

Table 11A

Mann-Whitney test (independent samples)

Sample 1		
Variable	Depression_95th_percentile Depression 95th percentile	
Sample 2		
Variable	Non_Depression_95th_percentile Non-Depression 95th percentile	

	Sample 1	Sample 2
Sample size	114	132
Lowest value	0.0000	0.0000
Highest value	20.0000	13.0000
Median	1.0000	0.0000
95% CI for the median	1.0000 to 2.0000	0.0000 to 0.0000
Interquartile range	0.0000 to 4.0000	0.0000 to 1.0000

Mann-Whitney test (independent samples)

Average rank of first group	144.4737
Average rank of second group	105.3864
Mann-Whitney U	5133.00
Test statistic Z (corrected for ties)	4.684
Two-tailed probability	P < 0.0001

Table 11B

ROC curve

Variable	Depression_Test_90th Depression Test_90th
Classification variable	Diagnosis__1_Depression_0_Non_Depression_ Diagnosis(1_Depression 0_Non-Depression)

Sample size	246
Positive group [a]	114 (46.34%)
Negative group [b]	132 (53.66%)

[a] Diagnosis__1_Depression_0_Non_Depression_ = 1
[b] Diagnosis__1_Depression_0_Non_Depression_ = 0

Disease prevalence (%)	unknown

Area under the ROC curve (AUC)

Area under the ROC curve (AUC)	0.665
Standard Error [a]	0.0336
95% Confidence interval [b]	0.602 to 0.723
z statistic	4.893
Significance level P (Area=0.5)	<0.0001

[a] DeLong et al., 1988
[b] Binomial exact

Youden index

Youden index J	0.2472
95% Confidence interval [a]	0.09744 to 0.3186
Associated criterion	>4
95% Confidence interval [a]	>2.241316576 to >6
Sensitivity	36.84
Specificity	87.88

[a] BC_a bootstrap confidence interval (1000 iterations; random number seed: 978).

Table 12A

ROC curve

Variable	Depression_Test_95th Depression Test_95th
Classification variable	Diagnosis__1_Depression_0_Non_Depression_ Diagnosis(1_Depression 0_Non-Depression)

Sample size	246
Positive group [a]	114 (46.34%)
Negative group [b]	132 (53.66%)

[a] Diagnosis__1_Depression_0_Non_Depression_ = 1
[b] Diagnosis__1_Depression_0_Non_Depression_ = 0

Disease prevalence (%)	unknown

Area under the ROC curve (AUC)

Area under the ROC curve (AUC)	0.659
Standard Error [a]	0.0322
95% Confidence interval [b]	0.596 to 0.718
z statistic	4.934
Significance level P (Area=0.5)	<0.0001

[a] DeLong et al., 1988
[b] Binomial exact

Youden index

Youden index J	0.2719
95% Confidence interval [a]	0.1567 to 0.3743
Associated criterion	>0
95% Confidence interval [a]	>0 to >1
Sensitivity	60.53
Specificity	66.67

[a] BC_a bootstrap confidence interval (1000 iterations; random number seed: 978).

Table 12B

Performance Metrics in Predicting Depression Status from Number of Positive Foods

Using 90th Percentile of ELISA Signal to determine Positive

Sex	No. of Positive Foods as Cutoff	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Overall Percent Agreement
FEMALE	1	0.83	0.39	0.69	0.59	0.66
	2	0.70	0.56	0.72	0.53	0.65
	3	0.58	0.67	0.74	0.50	0.62
	4	0.51	0.72	0.75	0.47	0.59
	5	0.45	0.76	0.76	0.46	0.57
	6	0.41	0.81	0.78	0.45	0.56
	7	0.35	0.85	0.79	0.44	0.54
	8	0.30	0.87	0.79	0.43	0.52
	9	0.25	0.89	0.79	0.42	0.49
	10	0.22	0.90	0.79	0.42	0.48
	11	0.20	0.91	0.79	0.41	0.47
	12	0.18	0.91	0.78	0.41	0.46
	13	0.15	0.93	0.77	0.40	0.45
	14	0.12	0.94	0.77	0.40	0.43
	15	0.10	0.95	0.80	0.39	0.43
	16	0.09	0.97	0.80	0.39	0.42
	17	0.08	0.97	0.83	0.39	0.42
	18	0.07	0.97	0.88	0.39	0.42
	19	0.07	1.00	1.00	0.39	0.41
	20	0.06	1.00	1.00	0.39	0.41
	21	0.06	1.00	1.00	0.39	0.41
	22	0.05	1.00	1.00	0.39	0.41
	23	0.04	1.00	1.00	0.39	0.40
	24	0.02	1.00	1.00	0.39	0.40
	25	0.02	1.00	1.00	0.38	0.39
	26	0.00	1.00	1.00	0.38	0.38

Table 13A

Performance Metrics in Predicting Depression Status from Number of Positive Foods

Using 90th Percentile of ELISA Signal to determine Positive

Sex	*No. of Positive Foods as Cutoff*	*Sensitivity*	*Specificity*	*Positive Predictive Value*	*Negative Predictive Value*	*Overall Percent Agreement*
MALE	1	0.86	0.38	0.34	0.88	0.51
	2	0.74	0.57	0.39	0.86	0.62
	3	0.60	0.69	0.42	0.83	0.67
	4	0.48	0.76	0.42	0.80	0.68
	5	0.42	0.81	0.46	0.79	0.71
	6	0.40	0.86	0.50	0.79	0.73
	7	0.38	0.88	0.54	0.79	0.74
	8	0.35	0.89	0.55	0.79	0.75
	9	0.33	0.90	0.55	0.78	0.75
	10	0.30	0.91	0.56	0.78	0.75
	11	0.27	0.92	0.57	0.78	0.75
	12	0.25	0.93	0.57	0.77	0.75
	13	0.24	0.94	0.57	0.77	0.75
	14	0.21	0.94	0.57	0.76	0.74
	15	0.19	0.94	0.57	0.76	0.74
	16	0.17	0.95	0.57	0.76	0.74
	17	0.14	0.96	0.50	0.75	0.74
	18	0.13	0.96	0.50	0.75	0.74
	19	0.11	0.96	0.60	0.75	0.74
	20	0.11	0.98	0.67	0.75	0.74
	21	0.10	0.98	0.67	0.75	0.74
	22	0.10	0.98	0.75	0.75	0.75
	23	0.06	1.00	1.00	0.74	0.75
	24	0.05	1.00	1.00	0.74	0.74
	25	0.00	1.00	1.00	0.73	0.73
	26	0.00	1.00	1.00	0.73	0.73

Table 13B

Performance Metrics in Predicting Depression Status from Number of Positive Foods

Using 95th Percentile of ELISA Signal to determine Positive

Sex	*No. of Positive Foods as Cutoff*	*Sensitivity*	*Specificity*	*Positive Predictive Value*	*Negative Predictive Value*	*Overall Percent Agreement*
FEMALE	1	0.71	0.55	0.72	0.53	0.65
	2	0.54	0.70	0.74	0.48	0.60
	3	0.44	0.77	0.76	0.46	0.57
	4	0.36	0.82	0.77	0.44	0.54
	5	0.30	0.86	0.78	0.43	0.51
	6	0.25	0.90	0.81	0.43	0.50
	7	0.21	0.91	0.80	0.42	0.48
	8	0.18	0.93	0.80	0.41	0.47
	9	0.15	0.94	0.80	0.40	0.45
	10	0.12	0.95	0.80	0.40	0.44
	11	0.09	0.97	0.80	0.39	0.43
	12	0.08	0.97	0.83	0.39	0.42
	13	0.06	0.97	0.86	0.39	0.41
	14	0.06	1.00	1.00	0.39	0.41
	15	0.05	1.00	1.00	0.39	0.41
	16	0.05	1.00	1.00	0.39	0.41
	17	0.04	1.00	1.00	0.39	0.41
	18	0.04	1.00	1.00	0.39	0.40
	19	0.04	1.00	1.00	0.39	0.40
	20	0.02	1.00	1.00	0.39	0.40
	21	0.02	1.00	1.00	0.38	0.39
	22	0.02	1.00	1.00	0.38	0.39
	23	0.02	1.00	1.00	0.38	0.39
	24	0.00	1.00	1.00	0.38	0.38
	25	0.00	1.00	1.00	0.38	0.38
	26	0.00	1.00	.	0.38	0.38

Table 14A

Performance Metrics in Predicting Depression Status from Number of Positive Foods

Using 95th Percentile of ELISA Signal to determine Positive

Sex	*No. of Positive Foods as Cutoff*	*Sensitivity*	*Specificity*	*Positive Predictive Value*	*Negative Predictive Value*	*Overall Percent Agreement*
MALE	1	0.75	0.54	0.38	0.85	0.59
	2	0.59	0.75	0.46	0.83	0.70
	3	0.48	0.83	0.50	0.81	0.74
	4	0.36	0.88	0.53	0.79	0.74
	5	0.33	0.90	0.55	0.78	0.75
	6	0.30	0.92	0.56	0.78	0.75
	7	0.27	0.92	0.57	0.77	0.75
	8	0.24	0.94	0.57	0.77	0.75
	9	0.22	0.94	0.60	0.77	0.75
	10	0.20	0.96	0.60	0.76	0.75
	11	0.18	0.96	0.60	0.76	0.75
	12	0.17	0.96	0.67	0.76	0.75
	13	0.16	0.98	0.67	0.76	0.75
	14	0.14	0.98	0.67	0.75	0.75
	15	0.12	0.98	0.67	0.75	0.75
	16	0.10	0.98	0.75	0.75	0.75
	17	0.09	1.00	1.00	0.75	0.75
	18	0.09	1.00	1.00	0.75	0.75
	19	0.07	1.00	1.00	0.75	0.75
	20	0.06	1.00	1.00	0.74	0.75
	21	0.06	1.00	1.00	0.74	0.75
	22	0.06	1.00	1.00	0.74	0.75
	23	0.05	1.00	1.00	0.74	0.74
	24	0.00	1.00	1.00	0.73	0.73
	25	0.00	1.00	1.00	0.73	0.73
	26	0.00	1.00	.	0.73	0.73

Table 14B

CLAIMS

What is claimed is:

1. A test kit for testing food intolerance in patients diagnosed with or suspected to have Depression, comprising:
   one or more distinct food preparations, wherein each distinct food preparation of the one or more distinct food preparations is independently coupled to an individually addressable solid carrier;
   wherein each distinct food preparation of the one or more distinct food preparations has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value, or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value, wherein the average discriminatory p-value is determined by a process comprising comparing assay values of a first patient test cohort that is diagnosed with or suspected of having Depression with assay values of a second patient test cohort that is not diagnosed with or suspected of having Depression.

2. The test kit of claim 1 wherein the one or more distinct food preparations includes at least two food preparations prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

3. The test kit of claim 1 wherein the one or more distinct food preparations includes at least four food preparations prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

4. The test kit of claim 1 wherein the one or more distinct food preparations includes at least eight food preparations prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

5. The test kit of claim 1 wherein the one or more distinct food preparations includes at least 12 food preparations prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

6. The test kit of claim 1 wherein the one or more distinct food preparations has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.08 as determined by FDR multiplicity adjusted p-value.

7. The test kit of any one of claims 1-5 wherein the one or more distinct food preparations has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.08 as determined by FDR multiplicity adjusted p-value.

8. The test kit of claim 1 wherein the one or more distinct food preparations has an average discriminatory p-value of ≤ 0.025 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

9. The test kit of any one of claims 1-5 wherein the one or more distinct food preparations has an average discriminatory p-value of ≤ 0.025 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

10. The test kit of claim 1 wherein FDR multiplicity adjusted p-value is adjusted for at least one of age and gender.

11. The test kit of any one of claims 1-8 wherein FDR multiplicity adjusted p-value is adjusted for at least one of age and gender.

12. The test kit of claim 1 wherein FDR multiplicity adjusted p-value is adjusted for age and gender.

13. The test kit of any one of claims 1-8 wherein FDR multiplicity adjusted p-value is adjusted for age and gender.

14. The test kit of claim 1 wherein at least 50% of the one or more distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

15. The test kit of any one of claims 1-13 wherein at least 50% of the one or more distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤

0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

16. The test kit of claim 1 wherein at least 70% of the one or more distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

17. The test kit of any one of the claims 1-13 wherein at least 70% of the one or more distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

18. The test kit of claim 1 wherein all of the one or more distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

19. The test kit of any one of the claims 1-17 wherein all of the one or more distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

20. The test kit of claim 1 wherein the one or more distinct food preparations is crude filtered aqueous extracts.

21. The test kit of any one of the claims 1-19 wherein the one or more distinct food preparations is crude filtered aqueous extracts.

22. The test kit of claim 1 wherein the one or more distinct food preparations is processed aqueous extracts.

23. The test kit of any one of the claims 1-21 wherein the one or more distinct food preparations is processed aqueous extracts.

24. The test kit of claim 1 wherein the solid carrier is a well of a multiwall plate, a bead, an electrical, a chemical sensor, a microchip or an adsorptive film.

25. The test kit of any one of the claims 1-23 wherein the solid carrier is a well of a multiwall plate, a bead, an electrical, a chemical sensor, a microchip or an adsorptive film.

26. A method of testing food intolerance in patients diagnosed with or suspected to have Depression using a food preparation of a plurality of distinct food preparations, comprising:
    contacting the food preparation with a bodily fluid of a patient that is diagnosed with or suspected to have Depression, and wherein the bodily fluid is associated with a gender identification;
    wherein the step of contacting is performed under conditions that allow IgG from the bodily fluid to bind to at least one component of the food preparation;
    measuring IgG bound to the at least one component of the food preparation to obtain a signal;
    comparing the signal to a gender-stratified reference value for the food preparation using the gender identification to obtain a result; and
    updating or generating a report using the result.

27. The method of claim 26 wherein the bodily fluid of the patient is whole blood, plasma, serum, saliva, or a fecal suspension.

28. The method of claim 26 wherein the step of contacting a food preparation is performed with a plurality of distinct food preparations.

29. The method of claim 26 or claim 27 wherein the step of contacting a food preparation is performed with a plurality of distinct food preparations.

30. The method of claim 28 wherein the plurality of distinct food preparations is prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

31. The method of any of the claims 28-29, wherein the plurality of distinct food preparations is prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

32. The method of claim 28, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

33. The method of any of the claims 28-29, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

34. The method of claim 28, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.08 as determined by FDR multiplicity adjusted p-value.

35. The method of any of the claims 28-29, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.08 as determined by FDR multiplicity adjusted p-value.

36. The method of claim 28, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.025 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

37. The method of any of the claims 28-29, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.025 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

38. The method of claim 28, wherein all of the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

39. The method of any of the claims 28-29, wherein all of the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

40. The method of claim 26, wherein the food preparation is immobilized on a solid surface, optionally in an addressable manner.

41. The method of any of the claims 26-39, wherein the food preparation is immobilized on a solid surface, optionally in an addressable manner.

42. The method of claim 26, wherein the step of measuring IgG bound to the at least one component of the food preparation is performed via an immunoassay test.

43. The method of any of the claims 26-41, wherein the step of measuring IgG bound to the at least one component of the food preparation is performed via immunoassay test.

44. The method of claim 26, wherein the gender-stratified reference value for the food preparation is an at least a 90th percentile value.

45. The method of any of the claims 26-43, wherein the gender-stratified reference value for the food preparation is an at least a 90th percentile value.

46. A method of generating a test for food intolerance in patients diagnosed with or suspected to have Depression, comprising:

obtaining test results for a plurality of distinct food preparations, wherein the test results are based on bodily fluids of patients diagnosed with or suspected to have Depression and bodily fluids of a control group not diagnosed with or not suspected to have Depression;

stratifying the test results by gender for each of the distinct food preparations; and

assigning for a predetermined percentile rank a different cutoff value for male and female patients for each of the distinct food preparations.

47. The method of claim 46, wherein the test result is an ELISA result.

48. The method of claim 46, wherein the plurality of distinct food preparations includes at least two food preparations prepared from food items of Table 1 or selected foods 1-26 of Table 2.

49. The method of claim 46 or claim 47, wherein the plurality of distinct food preparations includes at least two food preparations prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

50. The method of claim 46, wherein the plurality of distinct food preparations includes at least six food preparations prepared from food items of Table 1 or selected from a group consisting of foods 1-26 of Table 2.

51. The method of any of claim 46 or claim 47, wherein the plurality of distinct food preparations includes at least six food preparations prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

52. The method of claim 46, wherein the plurality of distinct food preparations includes a food preparation prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

53. The method of any of claim 46 or 47, wherein the plurality of distinct food preparations includes a food preparation prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

54. The method of claim 46, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

55. The method of any of claims 46-53, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

56. The method of claim 46, wherein the plurality of different food preparations has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.08 as determined by FDR multiplicity adjusted p-value.

57. The method of any of claims 46-53, wherein the plurality of different food preparations has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.08 as determined by FDR multiplicity adjusted p-value.

58. The method of claim 46, wherein the plurality of different food preparations has an average discriminatory p-value of ≤ 0.025 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

59. The method of any of claims 46-53, wherein the plurality of different food preparations has an average discriminatory p-value of ≤ 0.025 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

60. The method of claim 46, wherein the bodily fluid of the patient is whole blood, plasma, serum, saliva, or a fecal suspension.

61. The method of any of claims 46-59, wherein the bodily fluid of the patient is whole blood, plasma, serum, saliva, or a fecal suspension.

62. The method of claim 46, wherein the predetermined percentile rank is an at least 90^{th} percentile rank.

63. The method of any of claims 46-61, wherein the predetermined percentile rank is an at least 90^{th} percentile rank.

64. The method of claim 46, wherein the cutoff value for male and female patients has a difference of at least 10% (abs).

65. The method of any of claims 46-63, wherein the cutoff value for male and female patients has a difference of at least 10% (abs).

66. The method of claim 26 or 46, further comprising a step of normalizing the result to the patient’s total IgG.

67. The method of any of claims 26-65, further comprising a step of normalizing the result to the patient’s total IgG.

68. The method of claim 26 or 46, further comprising a step of normalizing the result to the global mean of the patient’s food specific IgG results.

69. The method of any of claims 26-65, further comprising a step of normalizing the result to the global mean of the patient’s food specific IgG results.

70. The method of claim 26 or 46, further comprising a step of identifying a subset of patients, wherein the subset of patients' sensitivities to the distinct food preparations underlies Depression by raw p-value or an average discriminatory p-value of ≤ 0.01.

71. The method of any of claims 26-65, further comprising a step of identifying a subset of patients, wherein the subset of patients' sensitivities to the distinct food preparations underlies Depression by raw p-value or an average discriminatory p-value of ≤ 0.01.

72. The method of claim 26 or 46, further comprising a step of determining numbers of the distinct food preparations, wherein the numbers of the distinct food preparations can be used to confirm Depression by raw p-value or an average discriminatory p-value of ≤ 0.01.

73. The method of any of claims 26-65, further comprising a step of determining numbers of the distinct food preparations, wherein the numbers of the distinct food preparations can be used to confirm Depression by raw p-value or an average discriminatory p-value of ≤ 0.01.

74. Use of a plurality of distinct food preparations coupled to individually addressable respective solid carriers in a diagnosis of Depression, wherein the plurality of distinct food preparations have an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

75. Use of claim 74, wherein the plurality of food preparations includes at least two food preparations prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

76. Use of claim 74, wherein the plurality of food preparations includes at least four food preparations prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

77. Use of claim 74, wherein the plurality of food preparations includes at least eight food preparations prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

78. Use of claim 74, wherein the plurality of food preparations includes at least 12 food preparations prepared from food items of Table 1 or selected from foods 1-26 of Table 2.

79. Use of claim 74, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.08 as determined by FDR multiplicity adjusted p-value.

80. Use of any one of claims 74-78, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.08 as determined by FDR multiplicity adjusted p-value.

81. Use of claim of claim 74, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.025 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

82. Use of any one of claims 74-78, wherein the plurality of distinct food preparations has an average discriminatory p-value of ≤ 0.025 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

83. Use of claim 74, wherein FDR multiplicity adjusted p-value is adjusted for at least one of age and gender.

84. Use of any one of claims 74-82, wherein FDR multiplicity adjusted p-value is adjusted for at least one of age and gender.

85. Use of claim 74, wherein FDR multiplicity adjusted p-value is adjusted for age and gender.

86. Use of any one of claims 74-82, wherein FDR multiplicity adjusted p-value is adjusted for age and gender.

87. Use of claim 74, wherein at least 50% of the plurality of distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

88. Use of any one of claims 74-86, wherein at least 50% of the plurality of distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤

0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

89. Use of claim 74, wherein at least 70% of the plurality of distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

90. Use of any one of the claims 74-86, wherein at least 70% of the plurality of distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

91. Use of claim 74, wherein all of the plurality of distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

92. Use of any one of the claims 74-86, wherein all of the plurality of distinct food preparations, when adjusted for a single gender, has an average discriminatory p-value of ≤ 0.07 as determined by raw p-value or an average discriminatory p-value of ≤ 0.10 as determined by FDR multiplicity adjusted p-value.

93. Use of claim 74, wherein the plurality of distinct food preparations is crude filtered aqueous extracts.

94. Use of any one of the claims 74-92, wherein the plurality of distinct food preparations is crude filtered aqueous extracts.

95. Use of claim 74, wherein the plurality of distinct food preparations is processed aqueous extracts.

96. Use of any one of the claims 74-94, wherein the plurality of distinct food preparations is processed aqueous extracts.

97. Use of claim 74, wherein the solid carrier is a well of a multiwall plate, a bead, an electrical sensor, a chemical sensor, a microchip, or an adsorptive film.

98. Use of any one of the claims 74-96, wherein the solid carrier is a well of a multiwall plate, a bead, an electrical sensor, a chemical sensor, a microchip, or an adsorptive film.

99. Use of any one of claims 74-96, wherein the average discriminatory p-value is determined by a process comprising comparing assay values of a first patient test cohort that is diagnosed with or suspected of having Depression headaches with assay values of a second patient test cohort that is not diagnosed with or suspected of having Depression headaches.

100. The method of claim 46, wherein the test result is an ELISA result derived from a process that includes separately contacting each distinct food preparation with the bodily fluid of each patient.

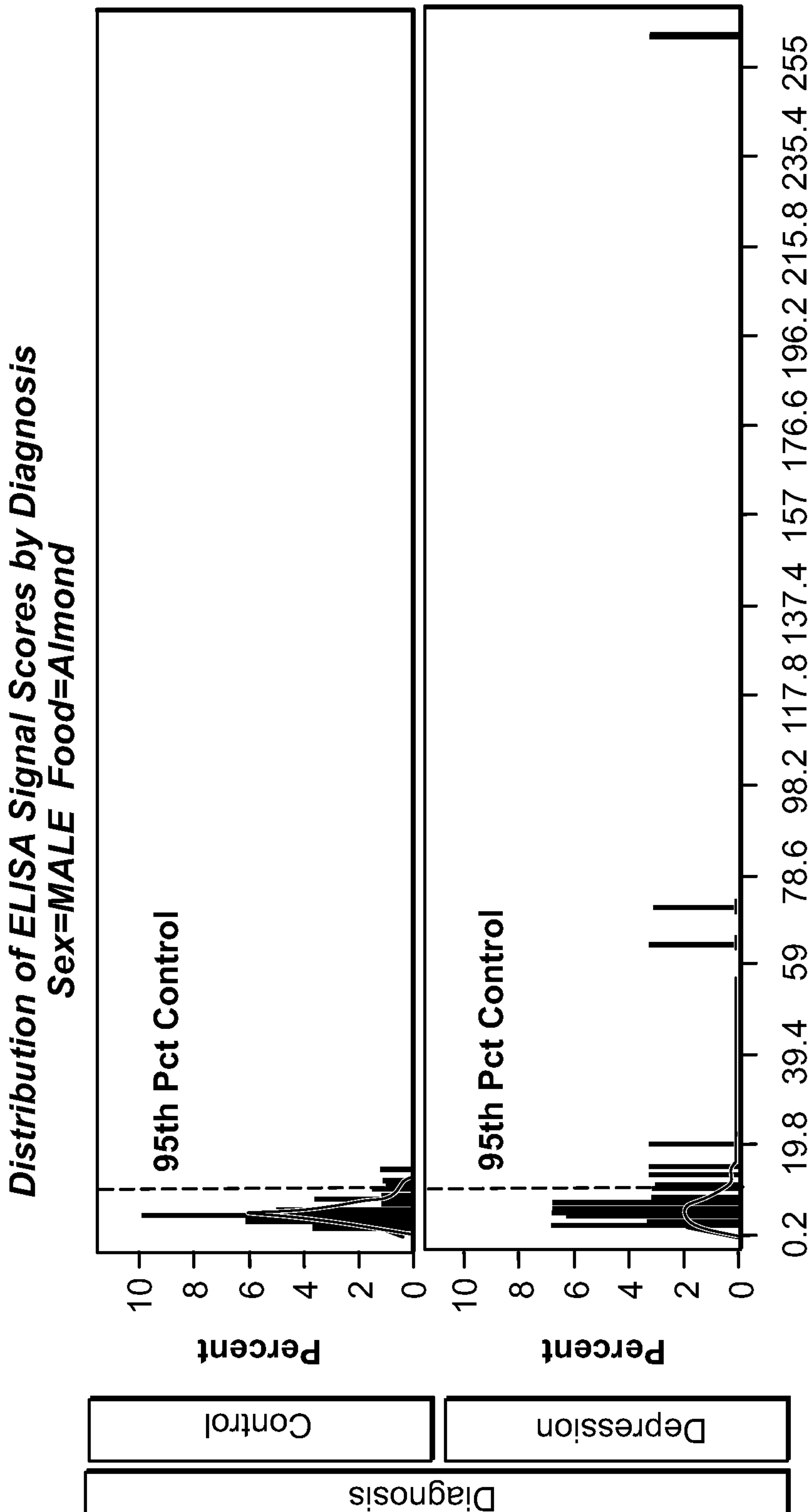
Distribution of ELISA Signal Scores by Diagnosis
Sex=MALE Food=Almond
95th Pct Control
95th Pct Control
Percent
Percent
10 8 6 4 2 0
10 8 6 4 2 0
0.2 19.8 39.4 59 78.6 98.2 117.8 137.4 157 176.6 196.2 215.8 235.4 255
signal
Control
Depression
Diagnosis

Figure 1A

Distribution of Percentage of Depression Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples

Sex=MALE Food=Almond

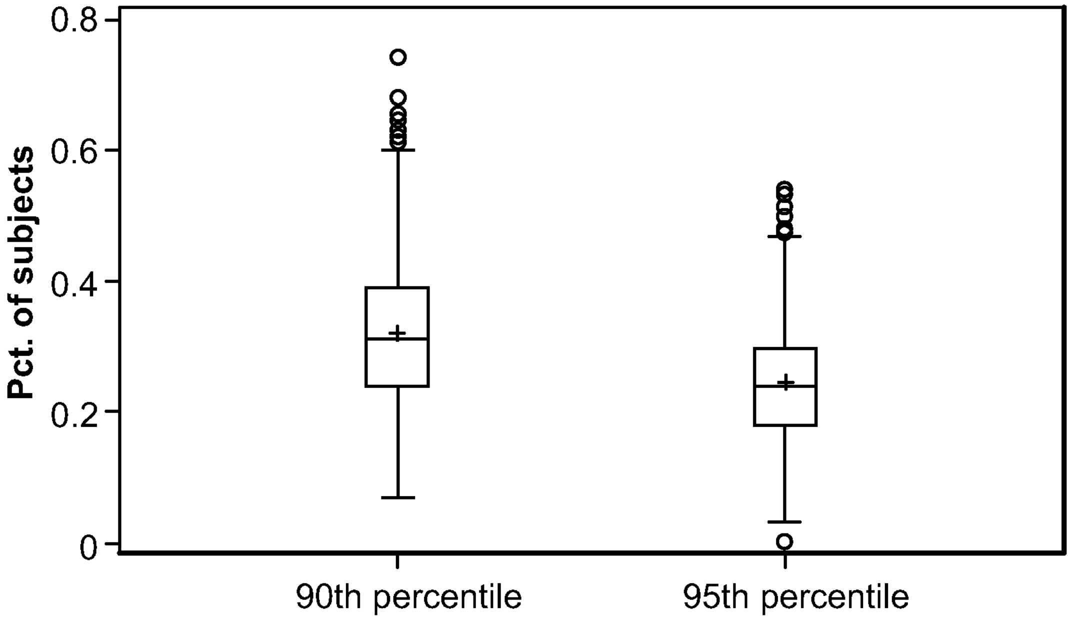

Figure 1B

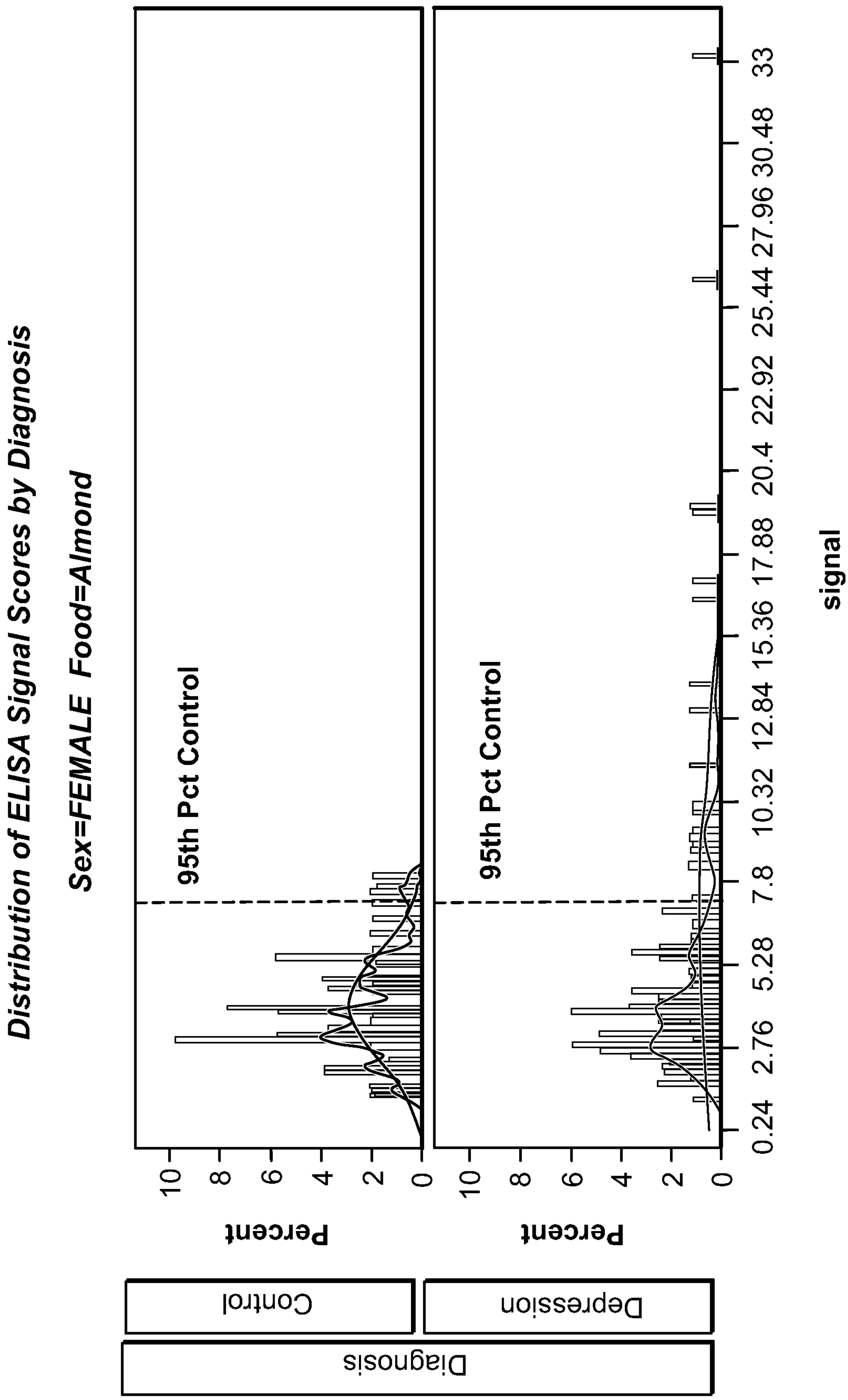
Distribution of ELISA Signal Scores by Diagnosis
Sex=FEMALE Food=Almond
95th Pct Control
95th Pct Control
Percent
Percent
10
8
6
4
2
0
0.24
2.76
5.28
7.8
10.32
12.84
15.36
17.88
20.4
22.92
25.44
27.96
30.48
33
signal
Control
Depression
Diagnosis

Figure 1C

Distribution of Percentage of Depression Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples

Sex=FEMALE Food=Almond

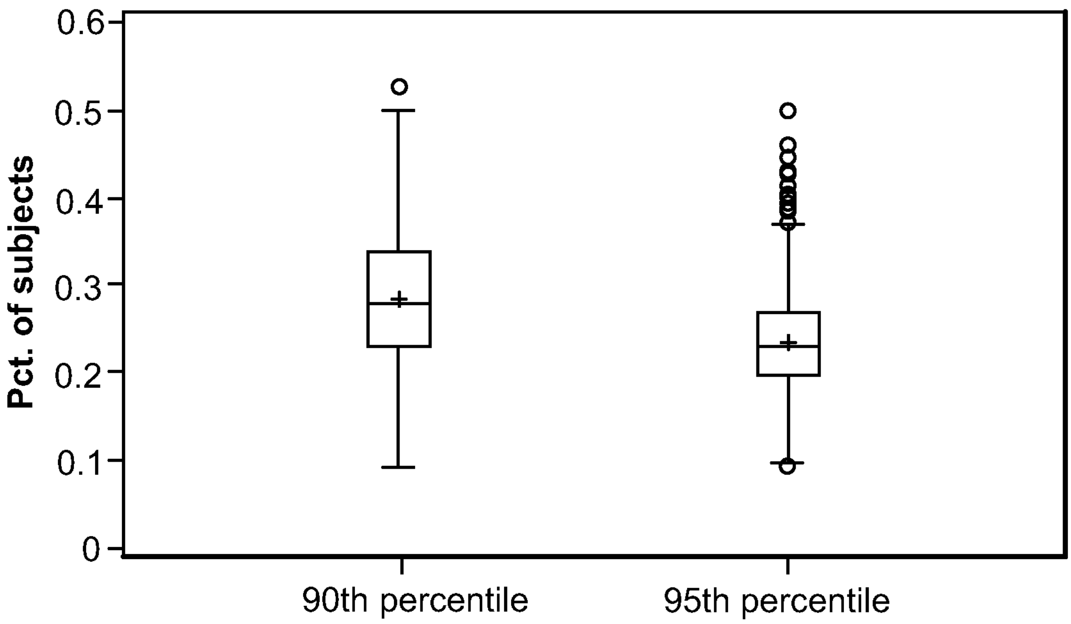

Figure 1D

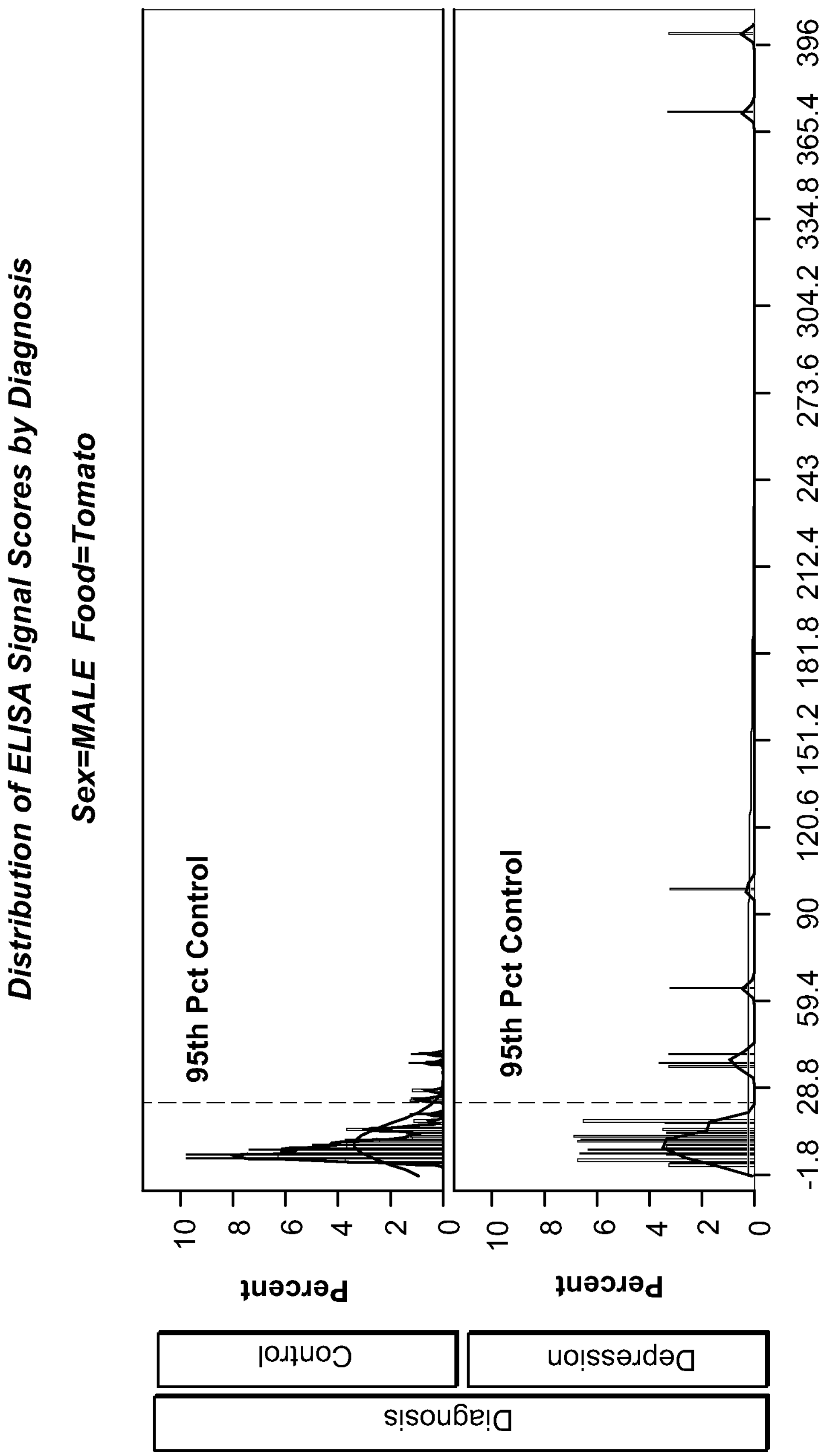
Distribution of ELISA Signal Scores by Diagnosis
Sex=MALE Food=Tomato
95th Pct Control
95th Pct Control
Percent
Percent
10
8
6
4
2
0
Control
Depression
Diagnosis
-1.8
28.8
59.4
90
120.6
151.2
181.8
212.4
243
273.6
304.2
334.8
365.4
396
signal

Figure 2A

Distribution of Percentage of Depression Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples

Sex=MALE Food= Tomato

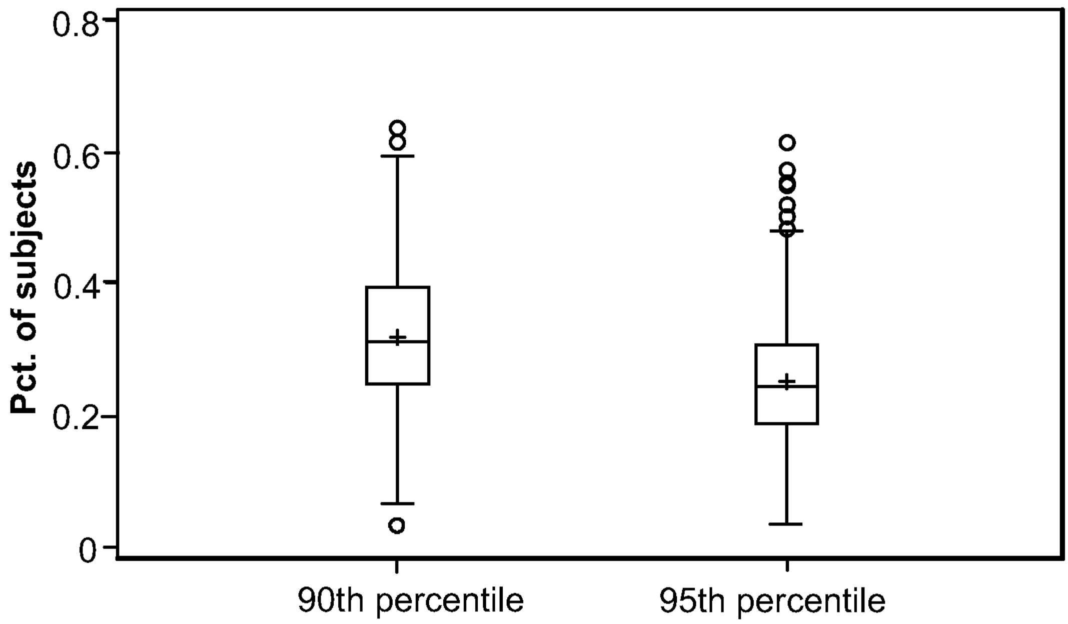

Figure 2B

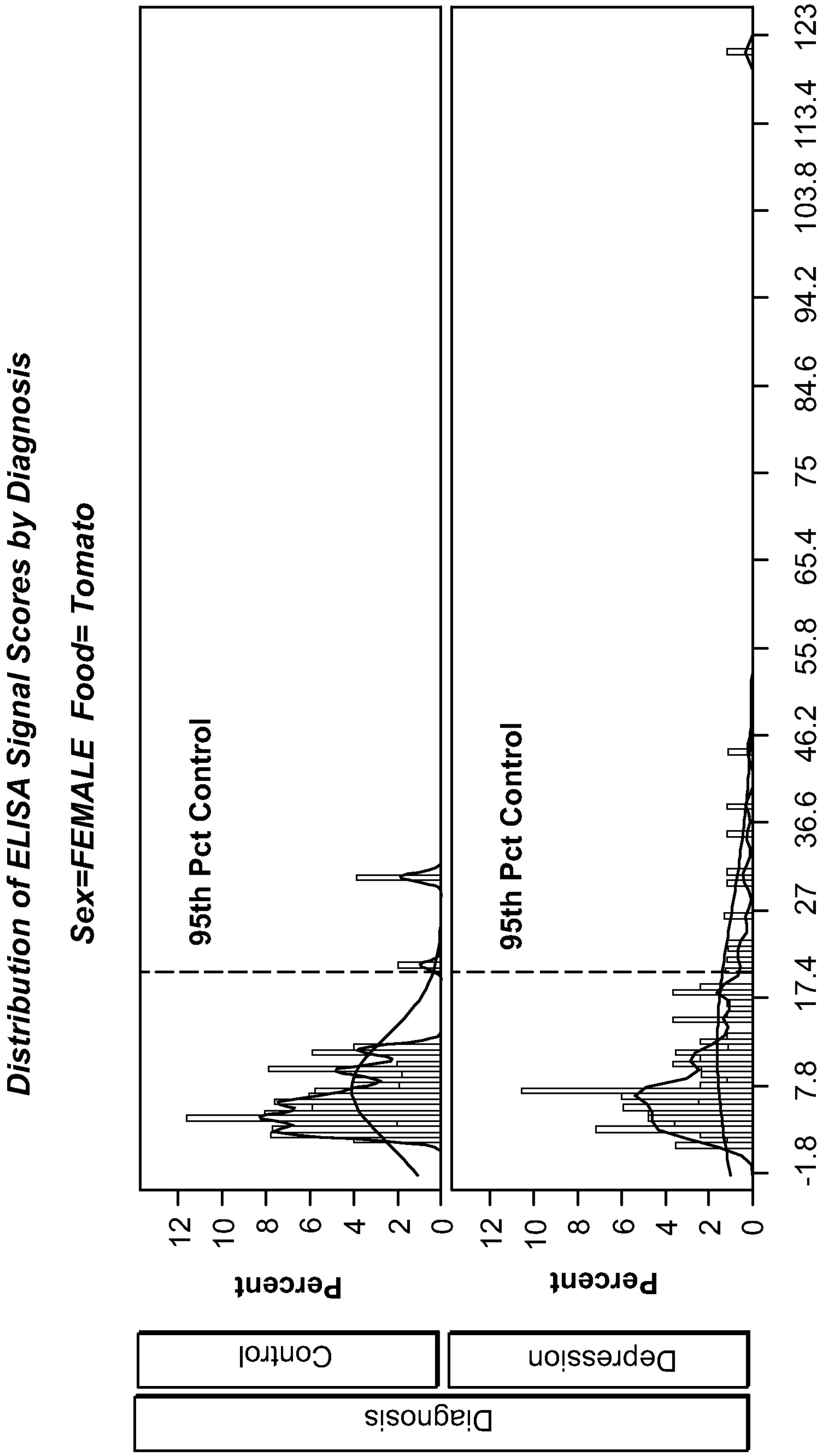
Distribution of ELISA Signal Scores by Diagnosis
Sex=FEMALE Food= Tomato
95th Pct Control
95th Pct Control
Percent
Percent
Control
Depression
Diagnosis
signal
-1.8
7.8
17.4
27
36.6
46.2
55.8
65.4
75
84.6
94.2
103.8
113.4
123
0
2
4
6
8
10
12

Figure 2C

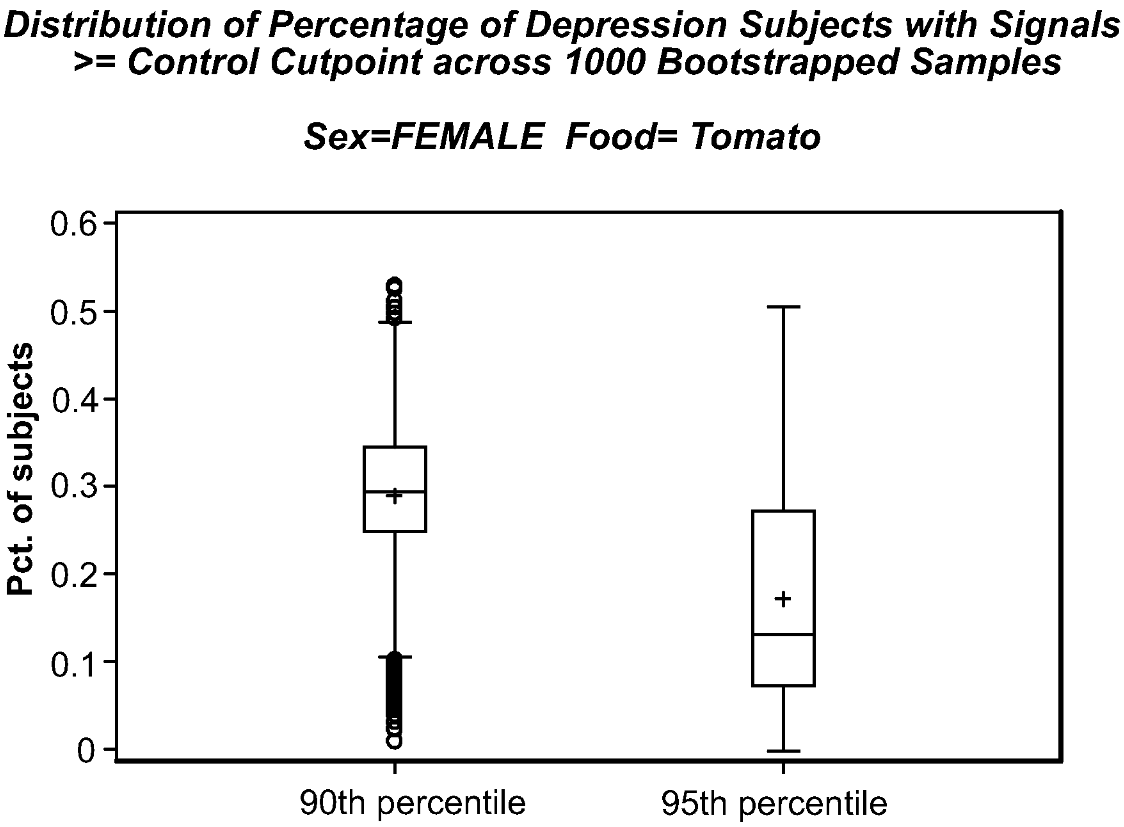
Distribution of Percentage of Depression Subjects with Signals
>= Control Cutpoint across 1000 Bootstrapped Samples
Sex=FEMALE Food= Tomato
Pct. of subjects
0.6
0.5
0.4
0.3
0.2
0.1
0
90th percentile
95th percentile

Figure 2D

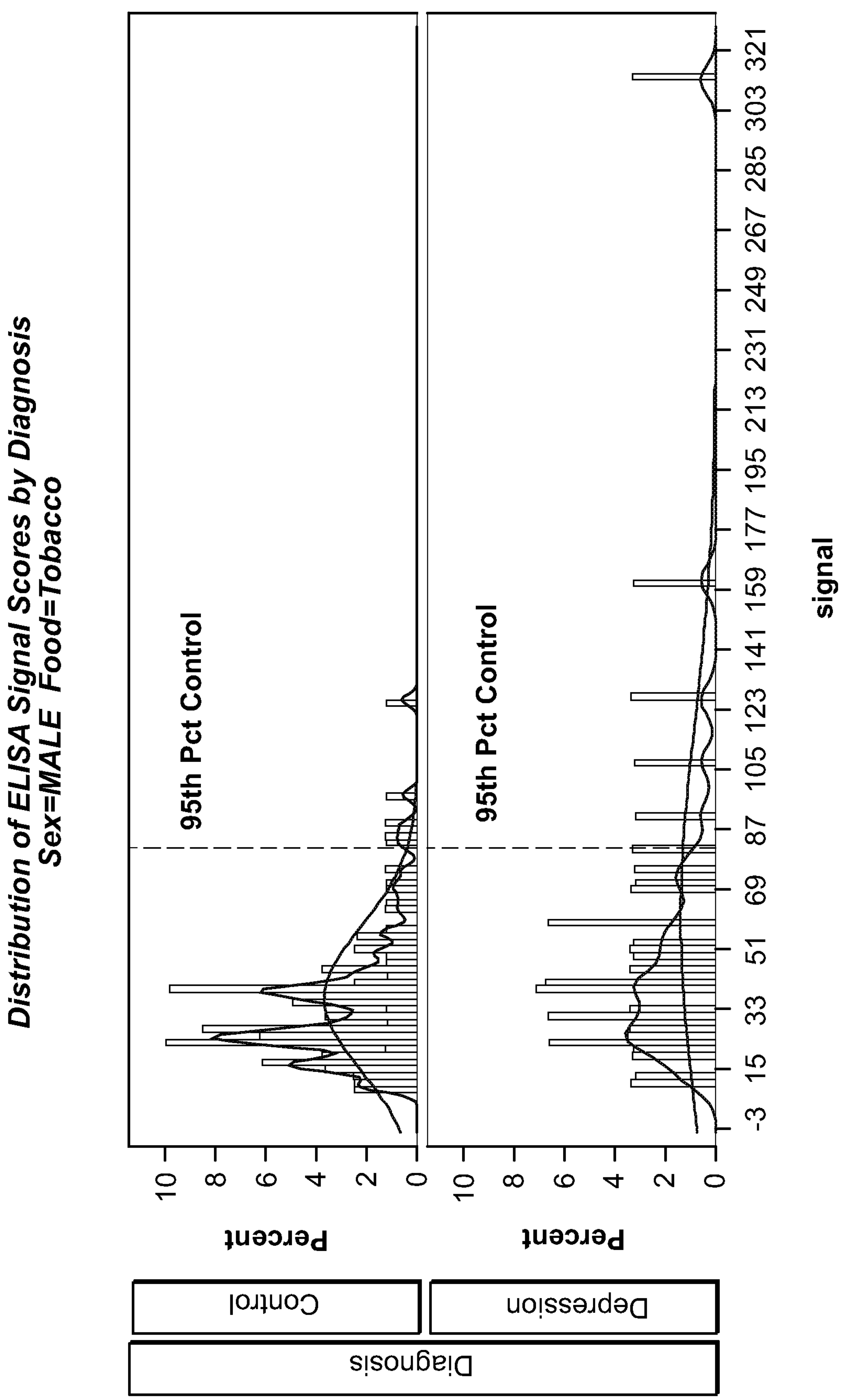
Distribution of ELISA Signal Scores by Diagnosis
Sex=MALE Food=Tobacco
95th Pct Control
95th Pct Control
Percent
Percent
Control
Depression
Diagnosis
signal
10
8
6
4
2
0
-3
15
33
51
69
87
105
123
141
159
177
195
213
231
249
267
285
303
321

Figure 3A

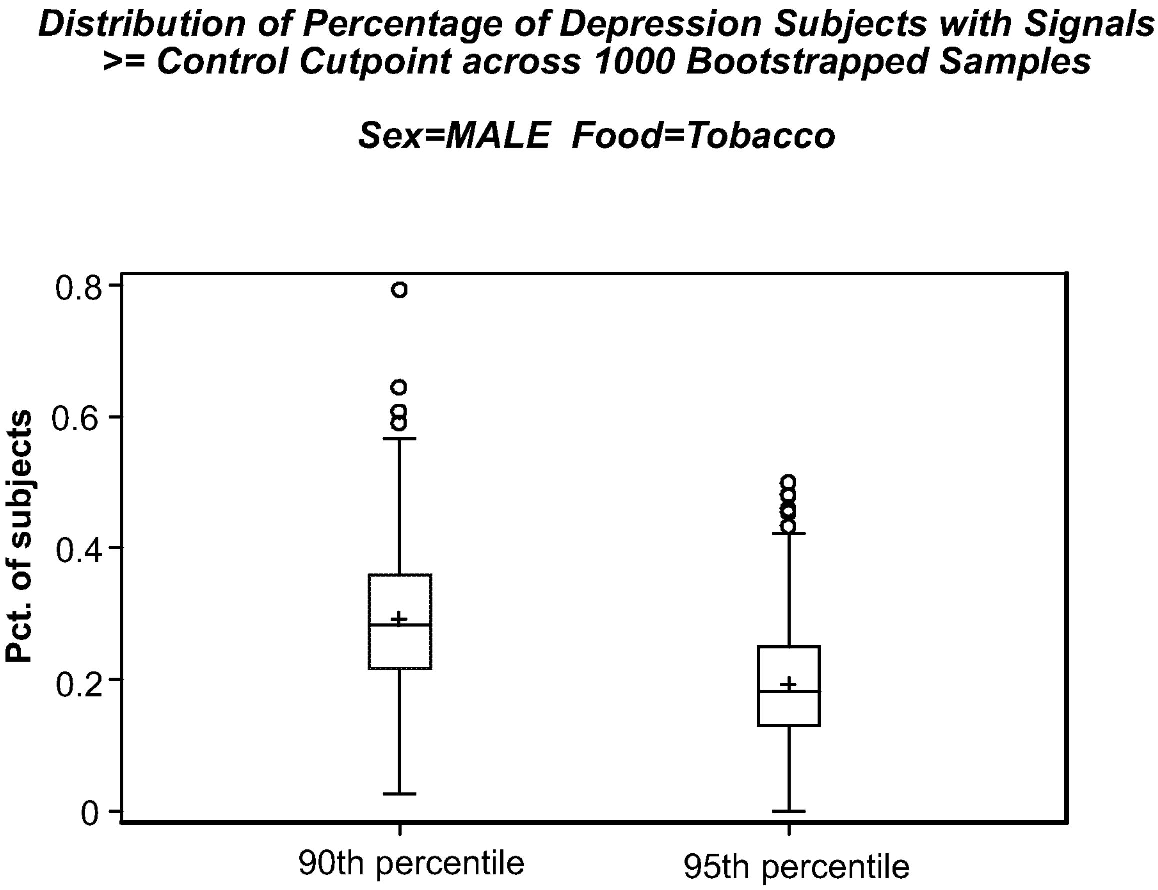
Distribution of Percentage of Depression Subjects with Signals
>= Control Cutpoint across 1000 Bootstrapped Samples
Sex=MALE Food=Tobacco
Pct. of subjects
0.8
0.6
0.4
0.2
0
90th percentile
95th percentile

Figure 3B

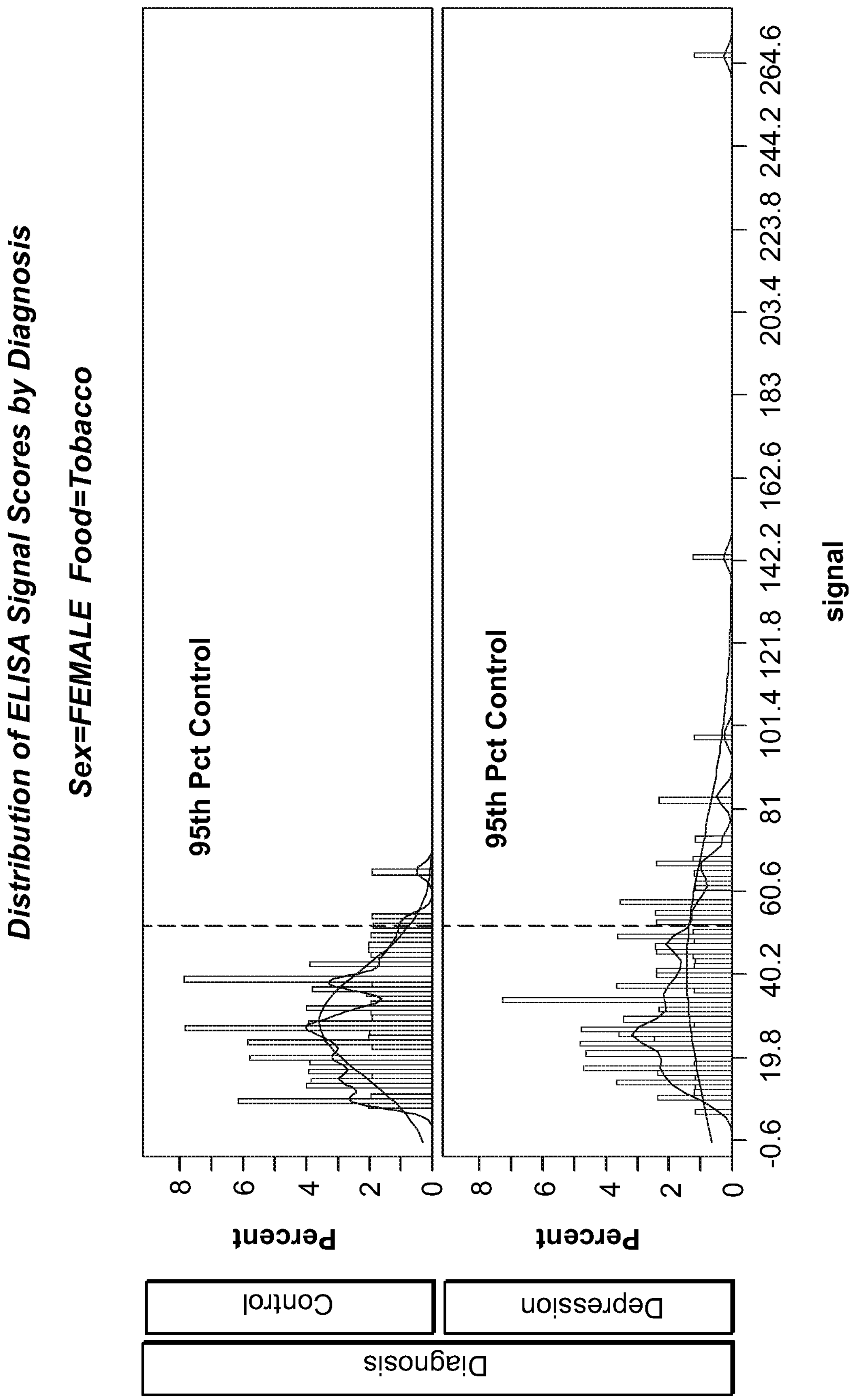
Distribution of ELISA Signal Scores by Diagnosis
Sex=FEMALE Food=Tobacco
95th Pct Control
95th Pct Control
Percent
Percent
0 2 4 6 8
0 2 4 6 8
-0.6 19.8 40.2 60.6 81 101.4 121.8 142.2 162.6 183 203.4 223.8 244.2 264.6
signal
Control
Depression
Diagnosis

Figure 3C

Distribution of Percentage of Depression Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples

Sex=FEMALE Food=Tobacco

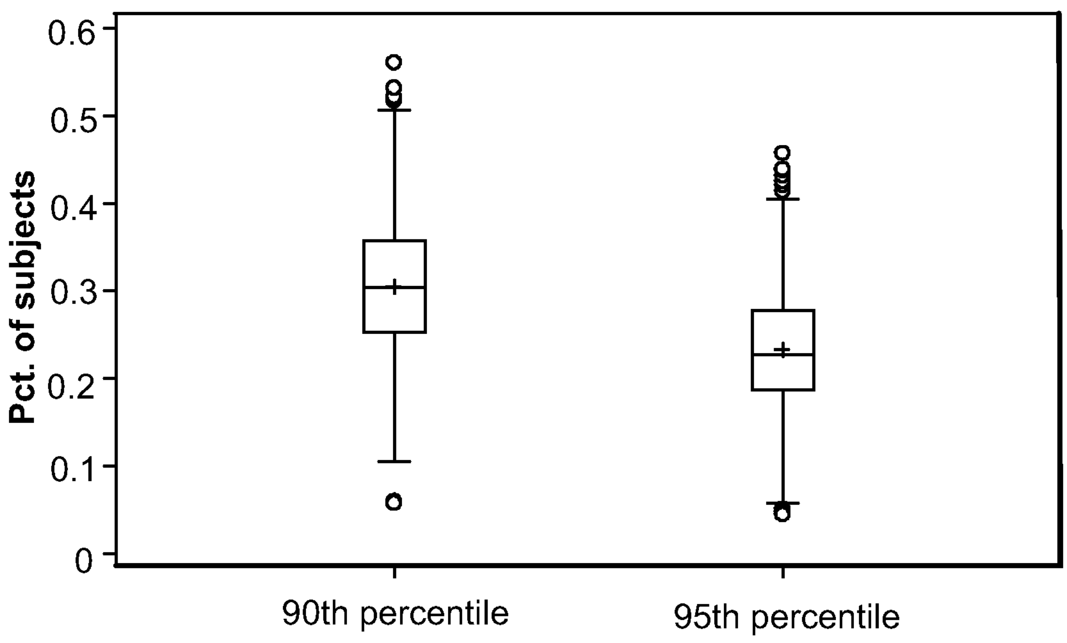

Figure 3D

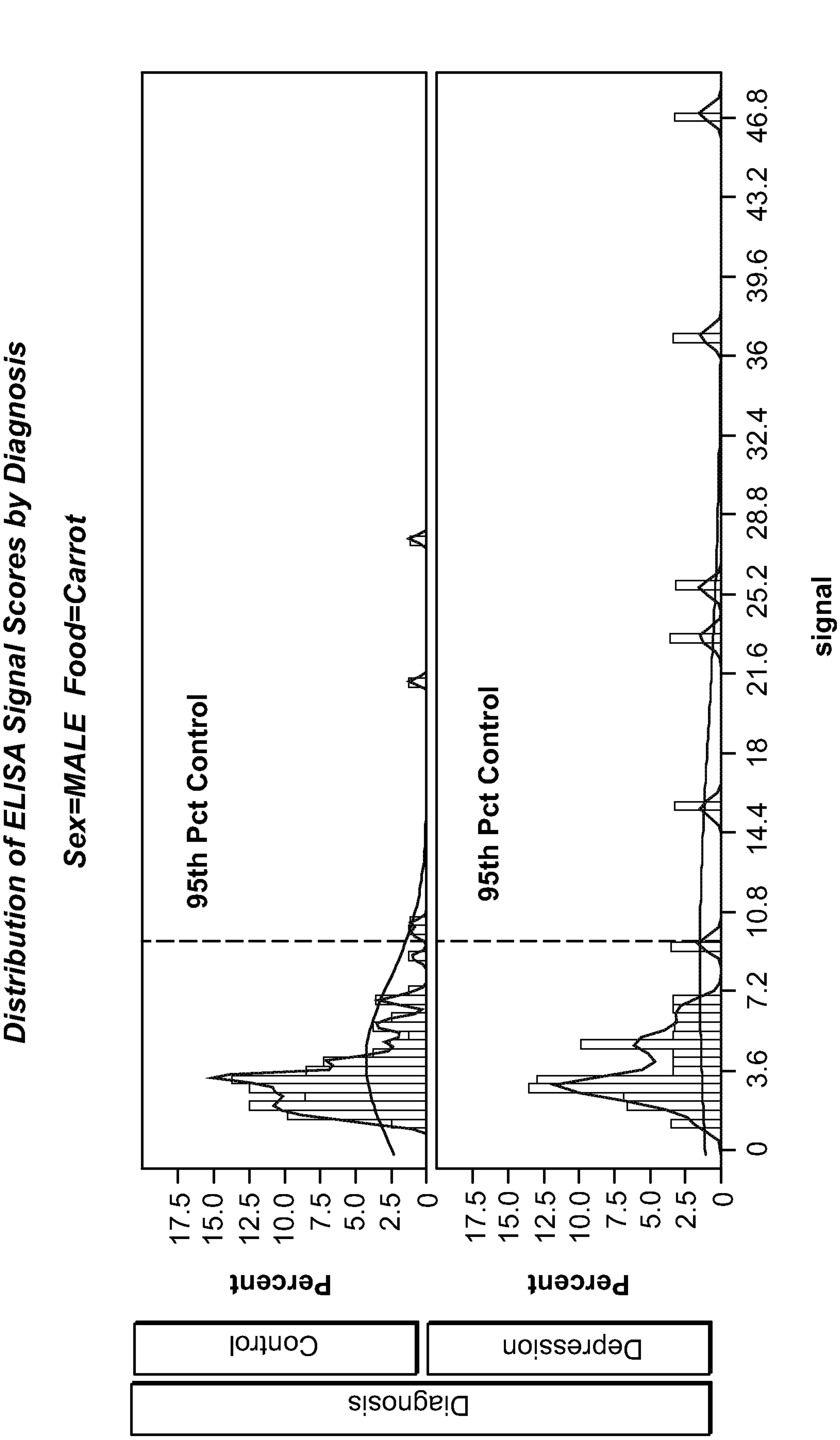
Distribution of ELISA Signal Scores by Diagnosis
Sex=MALE Food=Carrot
95th Pct Control
95th Pct Control
Percent
Percent
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0
Control
Depression
Diagnosis
0
3.6
7.2
10.8
14.4
18
21.6
25.2
28.8
32.4
36
39.6
43.2
46.8
signal

Figure 4A

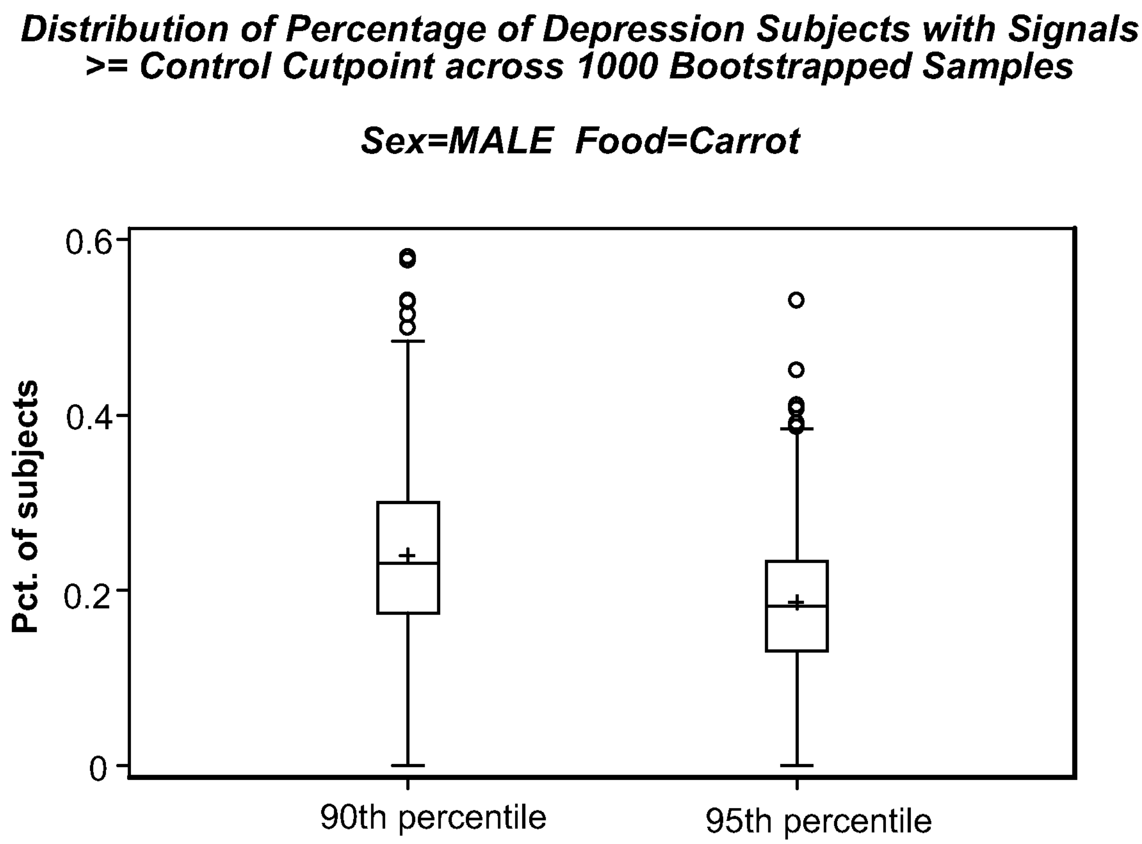
Distribution of Percentage of Depression Subjects with Signals
>= Control Cutpoint across 1000 Bootstrapped Samples
Sex=MALE Food=Carrot
Pct. of subjects
0.6
0.4
0.2
0
90th percentile
95th percentile

Figure 4B

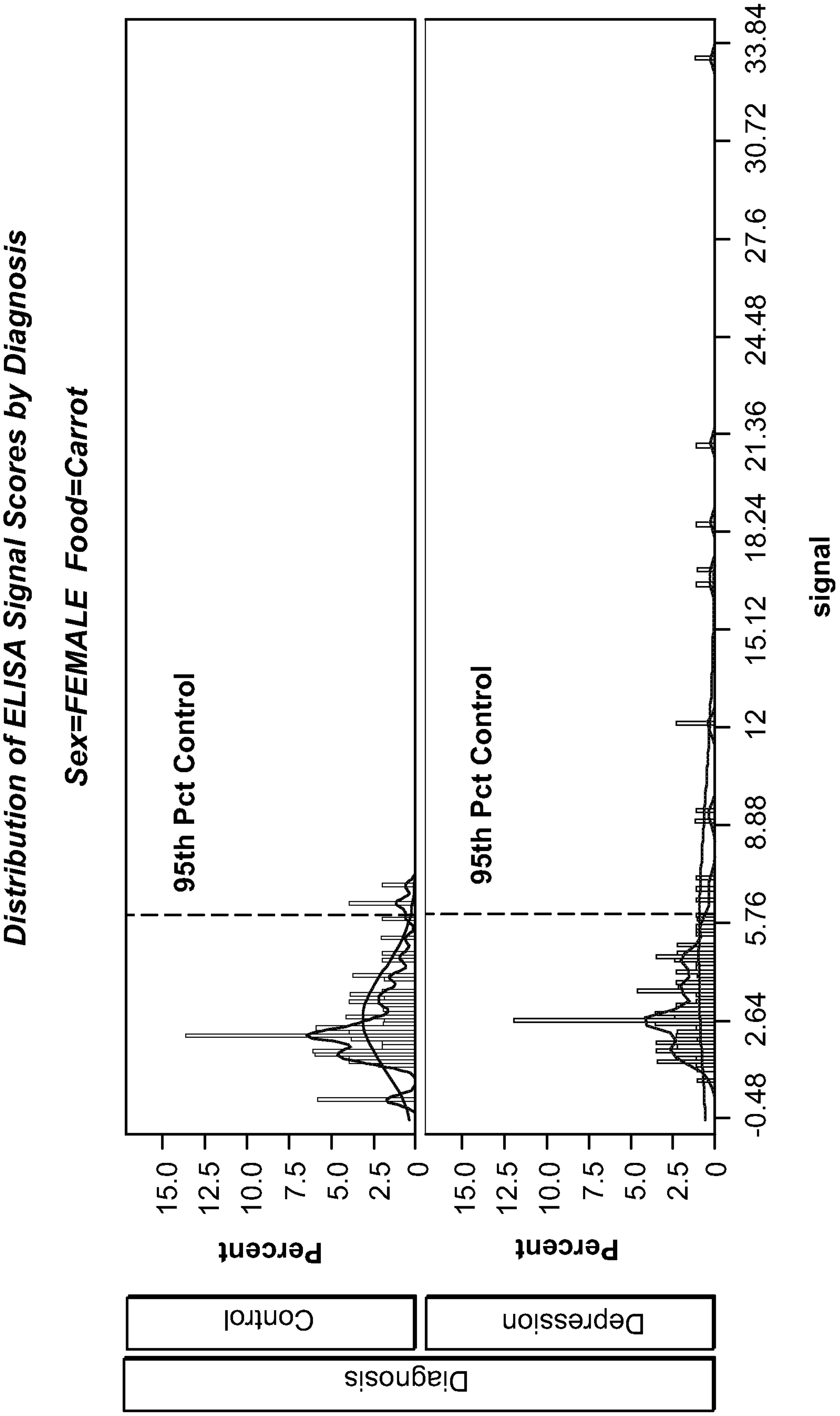
Distribution of ELISA Signal Scores by Diagnosis
Sex=FEMALE Food=Carrot
95th Pct Control
95th Pct Control
Percent
Percent
15.0
12.5
10.0
7.5
5.0
2.5
0
Control
Depression
Diagnosis
-0.48
2.64
5.76
8.88
12
15.12
18.24
21.36
24.48
27.6
30.72
33.84
signal

Figure 4C

Distribution of Percentage of Depression Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples

Sex=FEMALE Food=Carrot

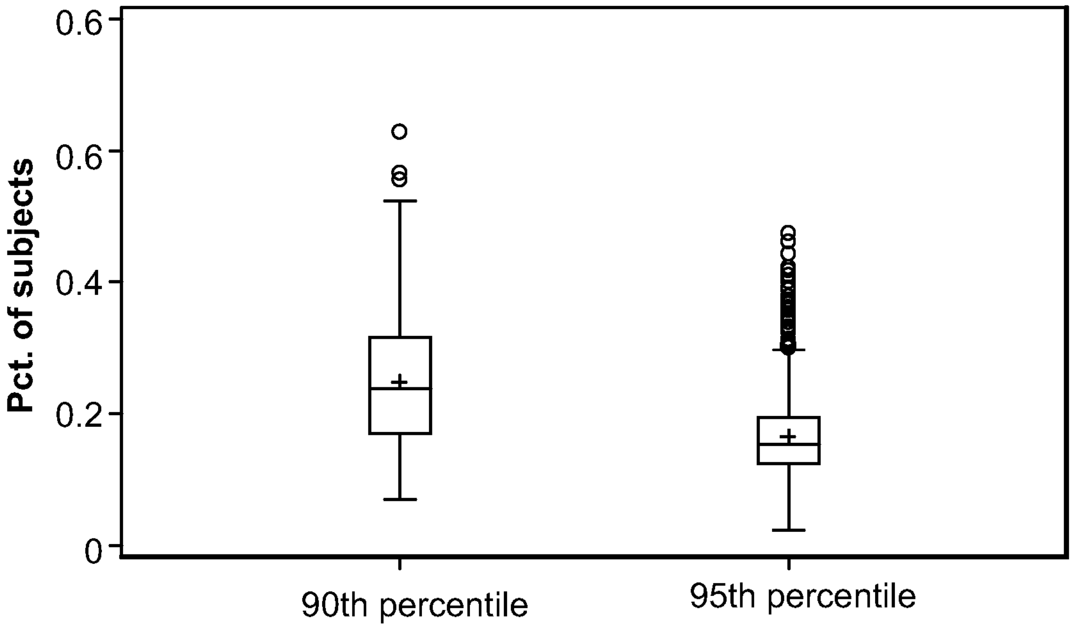

Figure 4D

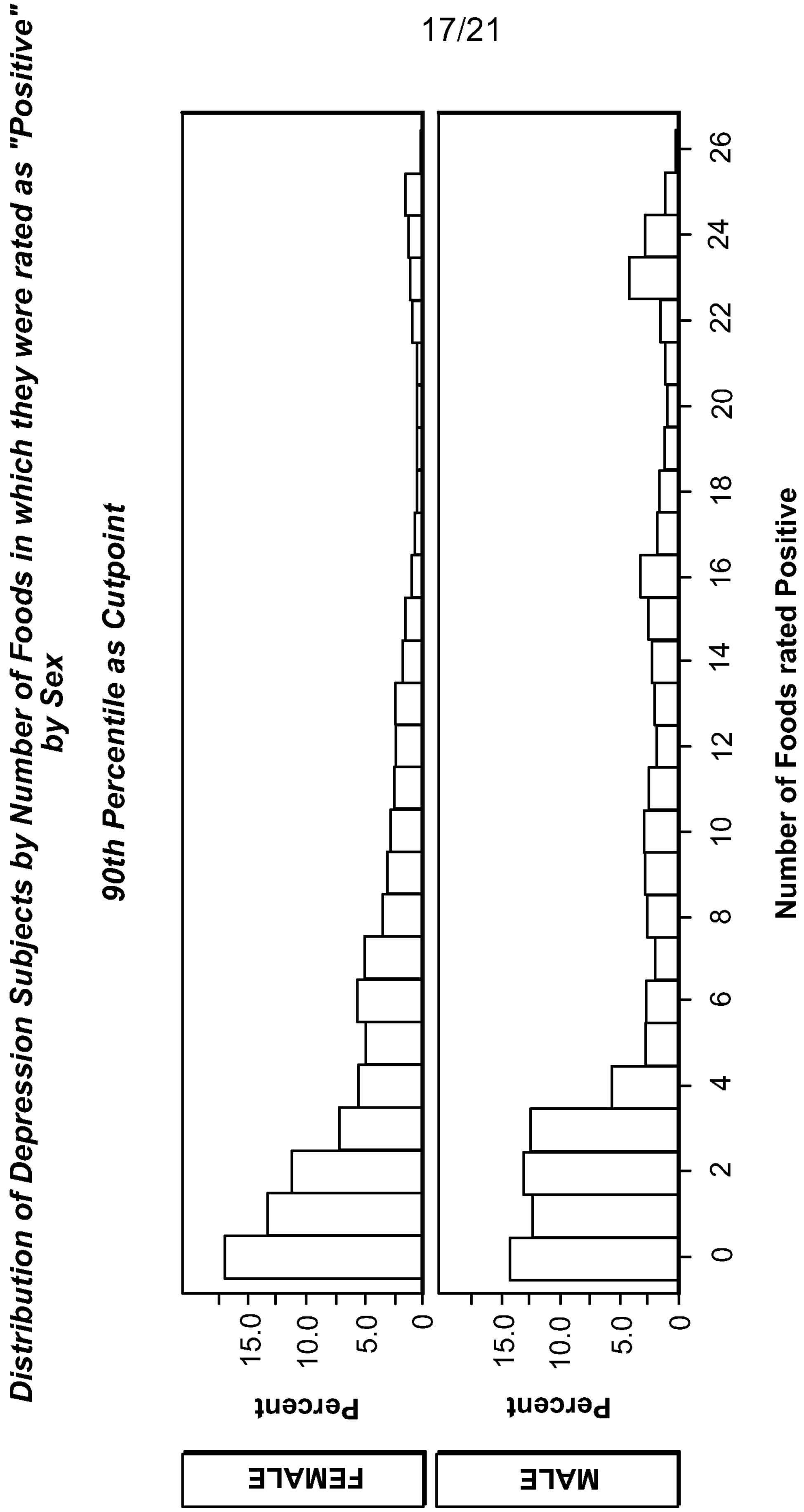
Distribution of Depression Subjects by Number of Foods in which they were rated as "Positive" by Sex
90th Percentile as Cutpoint
FEMALE
MALE
Percent
Percent
15.0
10.0
5.0
0
15.0
10.0
5.0
0
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Number of Foods rated Positive

Figure 5A

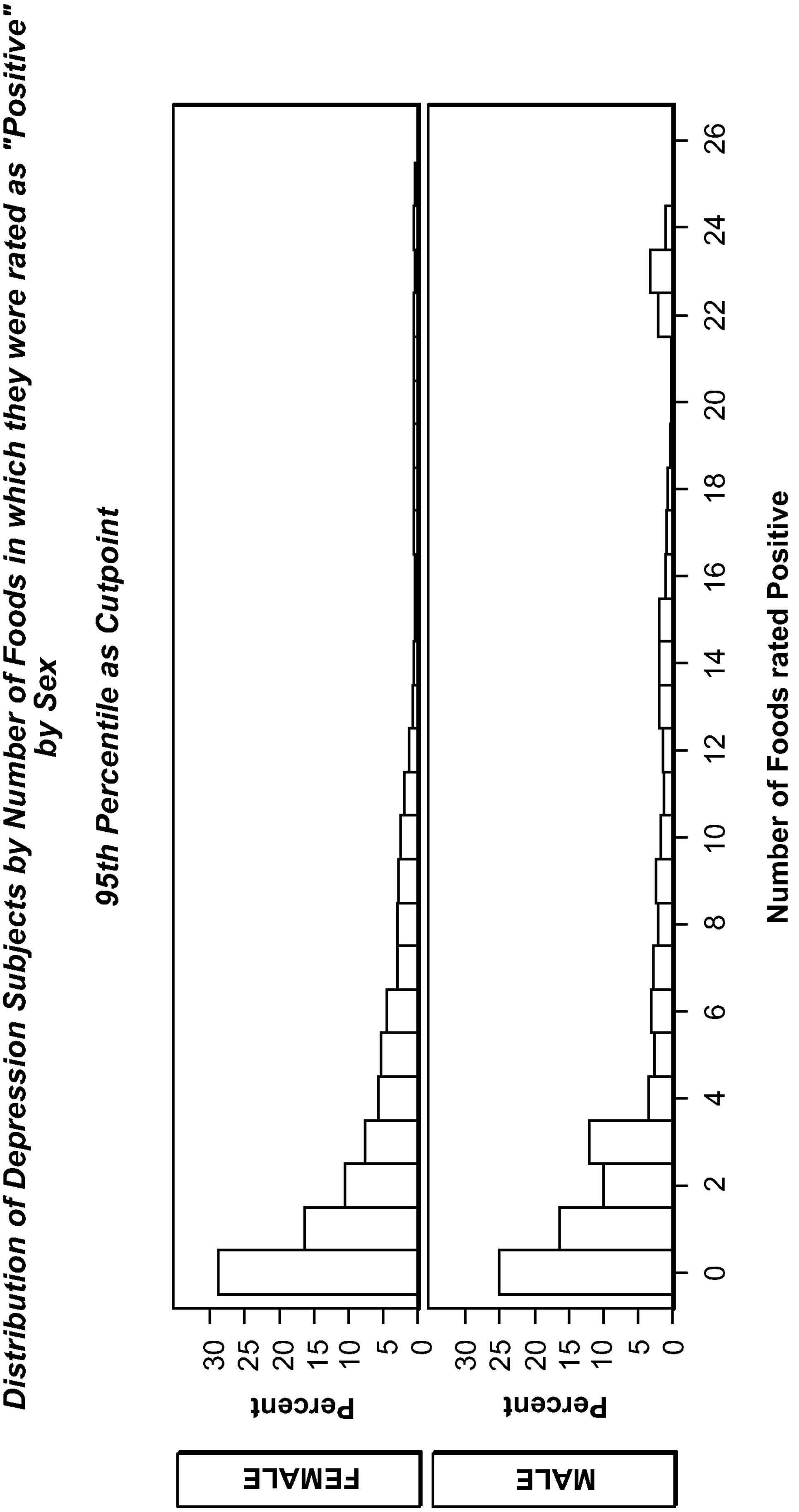
Distribution of Depression Subjects by Number of Foods in which they were rated as "Positive" by Sex
95th Percentile as Cutpoint
FEMALE
MALE
Percent
Percent
0
5
10
15
20
25
30
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Number of Foods rated Positive

Figure 5B

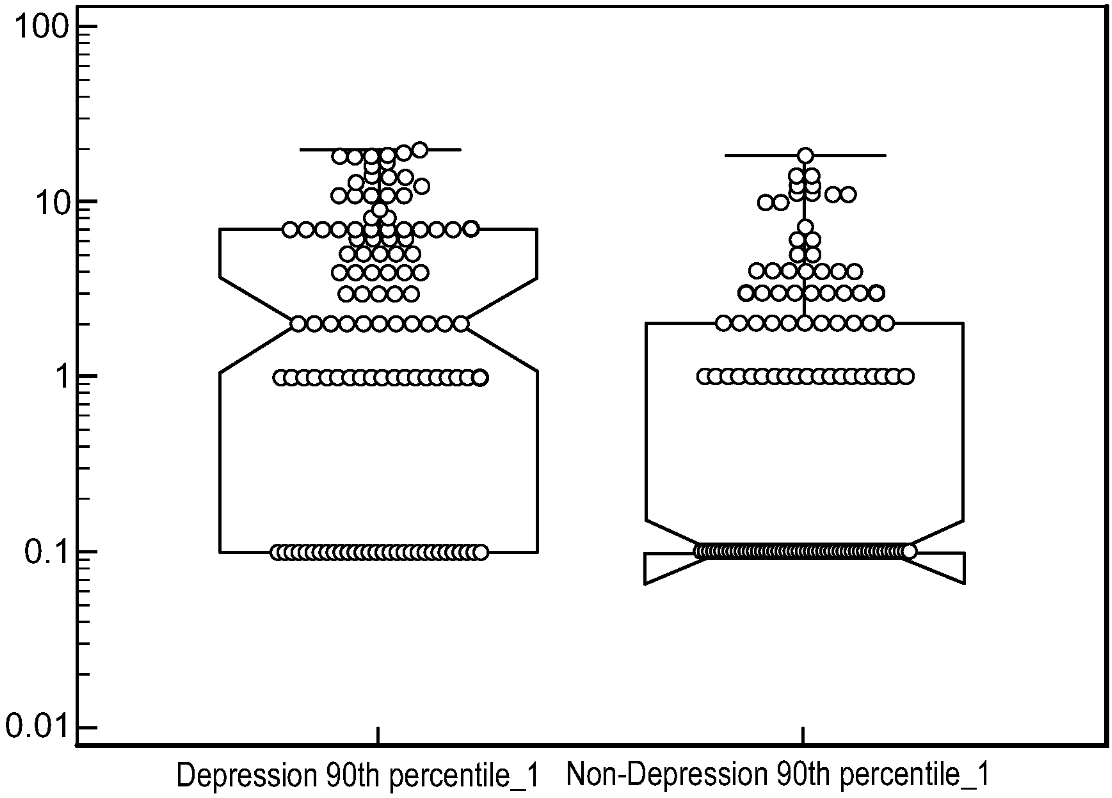

Figure 6A

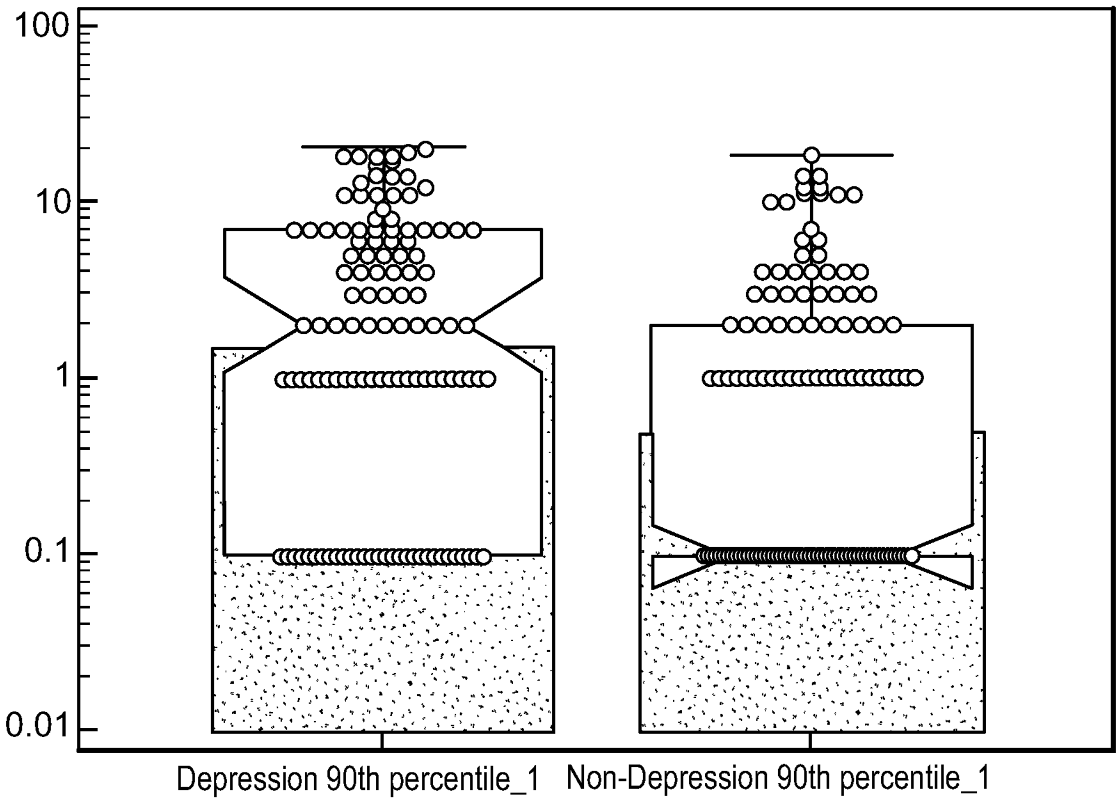

Figure 6B

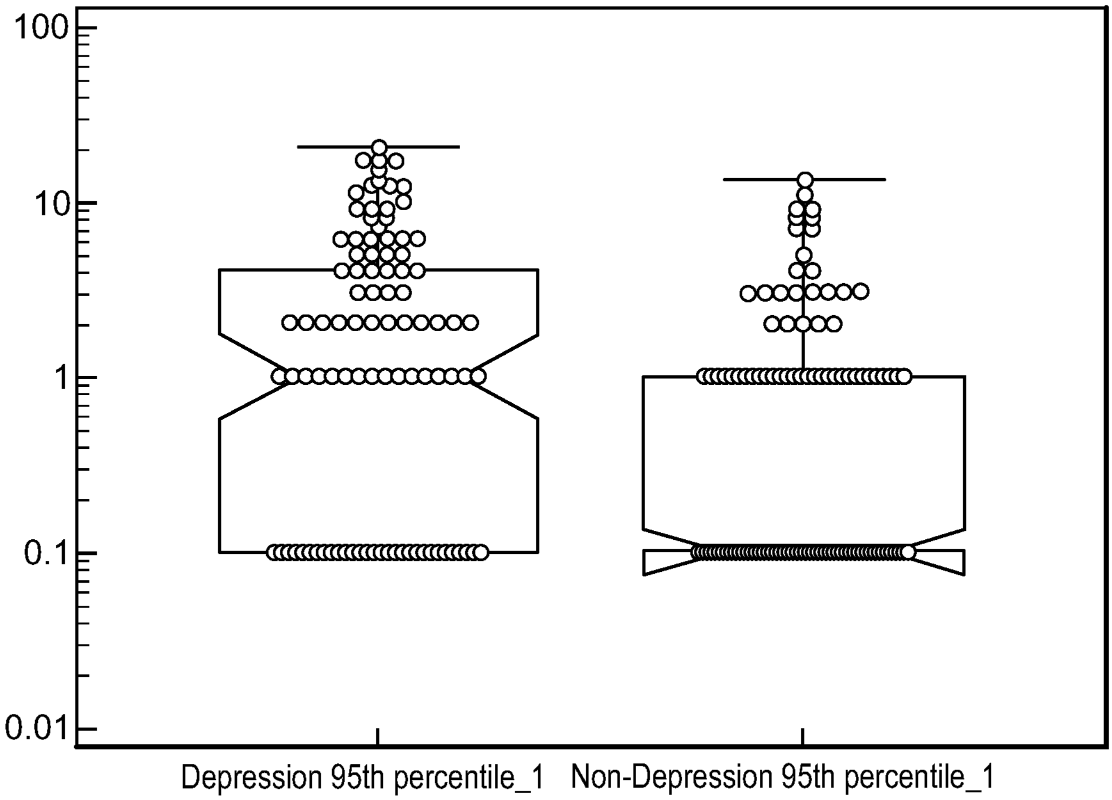

Figure 6C

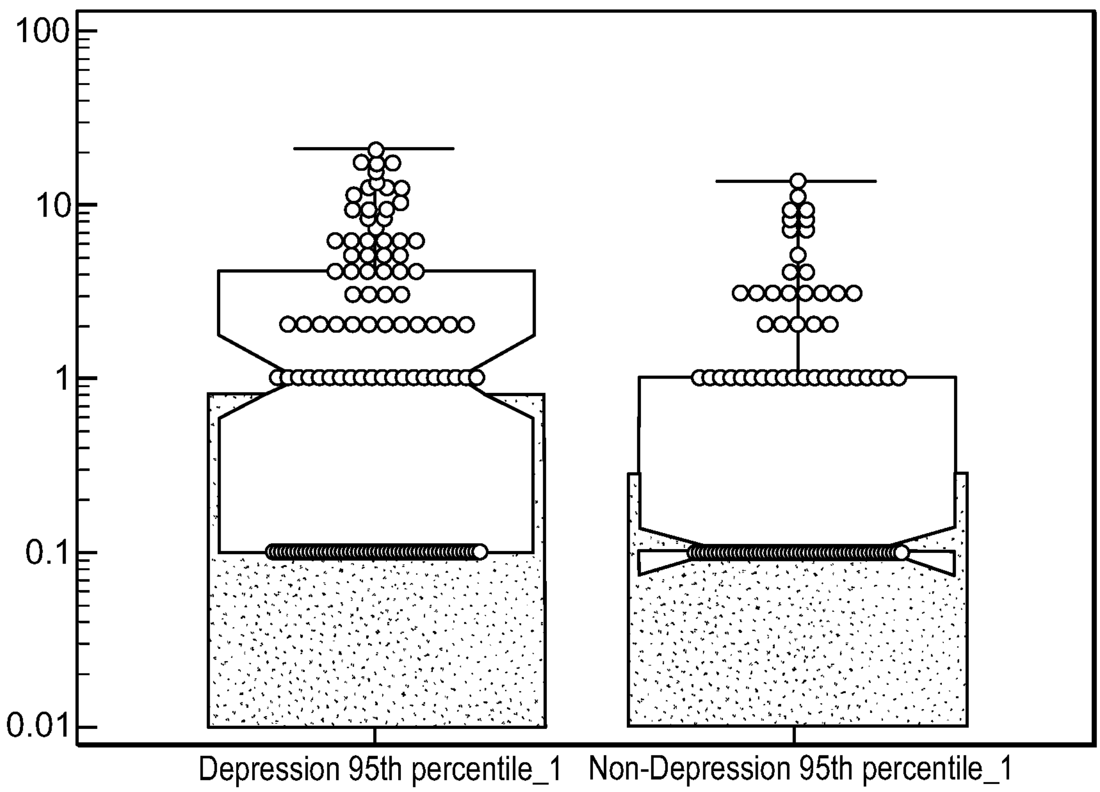

Figure 6D

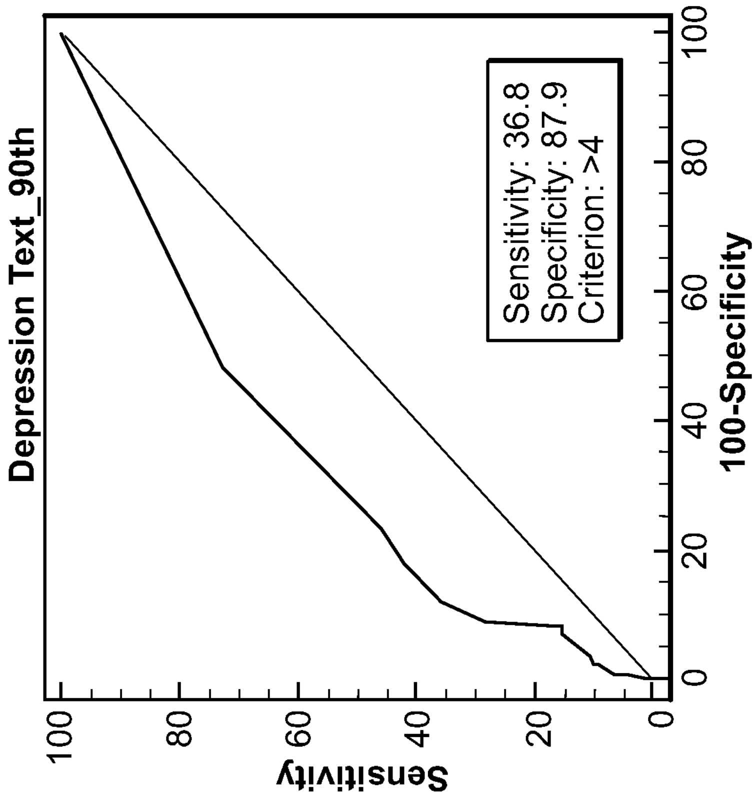

Figure 7A

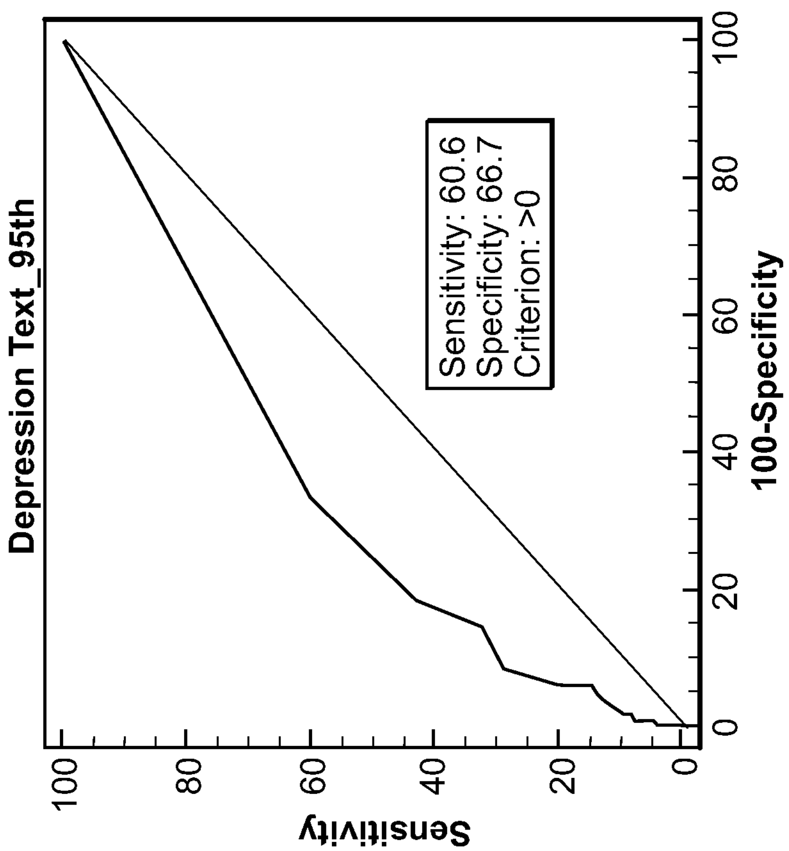

Figure 7B

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2017/041166

A. CLASSIFICATION OF SUBJECT MATTER

G01N 33/543(2006.01)i, G01N 33/564(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G01N 33/543; C12Q 1/02; G01N 33/563; G01N 33/566; G01N 33/53; G06Q 50/00; G06N 3/02; G01N 33/564

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: food intolerance, depression, p-value, FDR (false discovery rate), gender-stratified reference value

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2016-077808 A1 (BIOMERICA, INC.) 19 May 2016 See claims 1-98; and tables 1, 3.	1-10,12,14,16,18,20,22,24,26-30,32,34,36,38,40,42,44,46-54,56,58,60,62,64,66,68,70,72,74-83,85,87,89,91,93,95,97,100
A	US 2010-0227340 A1 (ROZENSHTEYN, A. et al.) 09 September 2010 See the whole document.	1-10,12,14,16,18,20,22,24,26-30,32,34,36,38,40,42,44,46-54,56,58,60,62,64,66,68,70,72,74-83,85,87,89,91,93,95,97,100

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 October 2017 (18.10.2017)	**18 October 2017 (18.10.2017)**

Name and mailing address of the ISA/KR	Authorized officer
International Application Division Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea	KIM, Sun Hee
Facsimile No. +82-42-481-8578	Telephone No. +82-42-481-5405

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2017/041166

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: See extra page.
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required addtional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of any additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
☐ No protest accompanied the payment of additional search fees.

Continuous of Box No. II.

3. Claims Nos.:
11,13,15,17,19,21,23,25,31,33,35,37,39,41,43,45,55,57,59,61,63,65,67,69,71,73,84,86,88,90,92,94,96,98,99

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2009-0253154 A1 (VOJDANI, A.) 08 October 2009 See the whole document.	1-10,12,14,16,18,20,22,24,26-30,32,34,36,38,40,42,44,46-54,56,58,60,62,64,66,68,70,72,74-83,85,87,89,91,93,95,97,100
A	US 6858398 B2 (VOJDANI, A.) 22 February 2005 See the whole document.	1-10,12,14,16,18,20,22,24,26-30,32,34,36,38,40,42,44,46-54,56,58,60,62,64,66,68,70,72,74-83,85,87,89,91,93,95,97,100
A	US 2011-0276344 A1 (WILLIAMS, P. E.) 10 November 2011 See the whole document.	1-10,12,14,16,18,20,22,24,26-30,32,34,36,38,40,42,44,46-54,56,58,60,62,64,66,68,70,72,74-83,85,87,89,91,93,95,97,100

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2017/041166

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2016-077808 A1	19/05/2016	AU 2015-346097 A1	27/04/2017
		KR 10-2017-0054522 A	17/05/2017
US 2010-0227340 A1	09/09/2010	WO 2009-035529 A1	19/03/2009
US 2009-0253154 A1	08/10/2009	None	
US 6858398 B2	22/02/2005	US 2003-0087320 A1	08/05/2003
		US 2003-0143627 A1	31/07/2003
		US 6689569 B2	10/02/2004
US 2011-0276344 A1	10/11/2011	AU 2010-205509 A1	18/08/2011
		EP 2387761 A1	23/11/2011
		WO 2010-082055 A1	22/07/2010