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(71) Applicant: **BIOMERICA, INC.** [US/US]; 17571 Von Karman Avenue, Irvine, California 92614 (US).

(72) Inventors: **IRANI-COHEN, Zackary**; 17571 Von Karman Avenue, Irvine, California 92614 (US). **LADERMAN, Elisabeth**; 17571 Von Karman Avenue, Irvine, California 92614 (US).

(74) Agents: **SHIN, Minyoung** et al.; Fish & Tsang LLP, 2603 Main Street, Suite 1000, Irvine, California 92614 (US).

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(54) Title: COMPOSITIONS, DEVICES, AND METHODS OF PSORIASIS FOOD SENSITIVITY TESTING

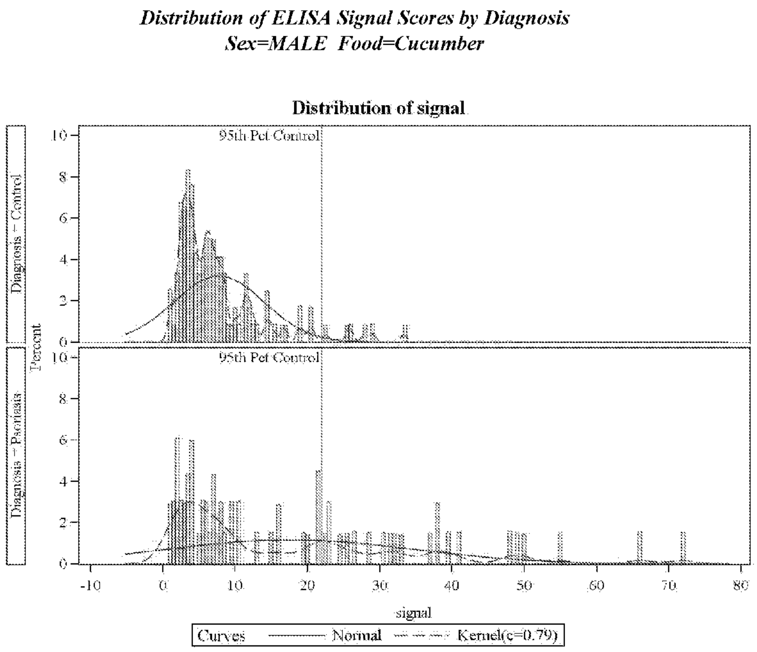

Figure 2A

(57) Abstract: Contemplated test kits and methods for food sensitivity are based on rational-based selection of food preparations with established discriminatory p-value. Exemplary 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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— *with amended claims (Art. 19(1))*

COMPOSITIONS, DEVICES, AND METHODS OF PSORIASIS FOOD SENSITIVITY TESTING

Related Applications

[0001] This application claims priority to our U.S. provisional patent application with the serial number 62/270,578, filed December 21, 2015, which is incorporated by reference herein in its entirety.

Field

[0002] The field of the subject matter disclosed herein is sensitivity testing for food intolerance, and especially as it relates to testing and possible elimination of selected food items as foods that exacerbate or worsen symptoms or foods that, when removed, alleviate symptoms in patients diagnosed with or suspected to have psoriasis.

Background

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

[0004] Food sensitivity (also known as food intolerance), especially as it relates to psoriasis (a type of autoimmune disease), often presents with skin lesions, scaly patches, papules, and plaques that usually itch. The underlying causes of psoriasis are not well understood in the medical community. Psoriasis may be visually diagnosed, along with various tests to exclude various other inflammatory or infectious conditions. Unfortunately, treatment of psoriasis may often be less than effective and may present new difficulties due to immune suppressive or modulatory effects. In certain instances, elimination of other one or more food items has also shown promise in at least reducing incidence and/or severity of the symptoms. However, psoriasis is often quite diverse with respect to dietary items triggering symptoms, whereby no standardized test to help identify trigger food items with a reasonable degree of certainty is known, thus 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 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 psoriasis patients show positive response to food A, and not all psoriasis patients show negative response to food B. Thus, even if a psoriasis patient shows positive response to food A, removal of food A from the patient's diet may not relieve the patient's psoriasis symptoms. In other words, it is not well determined whether food allergens used in the currently available tests are properly selected based on high probabilities of correlating sensitivities to those food allergens to psoriasis.

[0006] All publications identified herein are incorporated by reference to the same extent as if each individual publication or patent application was 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 psoriasis.

Summary

[0008] The subject matter described herein provides systems and methods for testing food intolerance in patients diagnosed with or suspected to have psoriasis. One aspect of the disclosure is a test kit with for testing food intolerance in patients diagnosed with or suspected to have psoriasis. 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.

[0009] Another aspect of the embodiments described herein includes a method of testing food intolerance in patients diagnosed with or suspected to have psoriasis. 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 psoriasis. 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 psoriasis. 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 psoriasis and bodily fluids of a control group not diagnosed with or not suspected to have psoriasis. 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 psoriasis. 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 and Tables

[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 cutpoint values of foods for a predetermined percentile rank.

[0017] Figure 1A illustrates ELISA signal score of male psoriasis patients and control tested with peach.

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

[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 peach.

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

[0021] Figure 2A illustrates ELISA signal score of male psoriasis patients and control tested with cucumber.

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

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

[0024] Figure 2D illustrates a distribution of percentage of female psoriasis subjects exceeding the 90^{th} and 95^{th} percentile tested with cucumber.

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

[0026] Figure 3B illustrates a distribution of percentage of male psoriasis subjects exceeding the 90^{th} and 95^{th} percentile tested with tea.

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

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

[0029] **Figure 4A** illustrates ELISA signal score of male psoriasis patients and control tested with tomato.

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

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

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

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

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

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

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

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

[0038] **Table 6B** shows statistical data summarizing the raw data of psoriasis 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 psoriasis patient populations shown in Table 5A transformed by logarithmic transformation.

[0042] Table 8B shows statistical data summarizing the raw data of psoriasis 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 psoriasis and non-psoriasis samples based on the 90^{th} percentile.

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

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

[0048] Table 11B shows statistical data of a Mann-Whitney test to compare the geometric mean number of positive foods between the psoriasis and non-psoriasis samples based on the 95^{th} 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 psoriasis 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 psoriasis 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 psoriasis 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 psoriasis 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 certain food tests to identify trigger foods in patients diagnosed with or suspected to have psoriasis are not necessarily predictive of, or otherwise associated with, psoriasis symptoms. Indeed, various experiments have revealed that among a wide variety of food items, certain food items are highly predictive/associated with psoriasis, whereas others may have no statistically significant association with psoriasis.

[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 may play a substantial role in the determination of association of a food item with psoriasis. 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 psoriasis signs and symptoms.

[0063] Food sensitivity (also known as food intolerance),especially as it relates to psoriasis (a type of autoimmune disease), often presents with skin lesions, scaly patches, papules, and plaques that usually itch. The underlying causes of psoriasis are not well understood in the medical community. Psoriasis may be visually diagnosed, along with various tests to exclude various other inflammatory or infectious conditions. Unfortunately, treatment of psoriasis may often be less than effective and may present new difficulties due to immune suppressive or modulatory effects. In certain instances, elimination of other one or more food items has also shown promise in at least reducing incidence and/or severity of the symptoms. However, psoriasis is often quite diverse with respect to dietary items triggering symptoms, whereby no standardized test to help identify trigger food items with a reasonable degree of certainty is known, thus leaving such patients often to trial-and-error.

[0064] 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.

[0065] In some embodiments, the numbers expressing quantities or ranges, used to describe and claim certain embodiments of the disclosure 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 disclosure 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 disclosure 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.

[0066] 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.

[0067] 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 disclosure and does not pose a limitation on the scope of the disclosure otherwise claimed. No language in the specification should be construed as indicating any non-claimed element essential to the practice of the disclosure.

[0068] Groupings of alternative elements or embodiments 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.

[0069] In one aspect, the inventors therefore contemplate a test kit or test panel that is suitable for testing food intolerance in a patient that is diagnosed with or suspected to have psoriasis. Such a test kit or panel will include one or more distinct food preparations (*e.g.*, raw or processed extract, which may include an aqueous extract with optional co-solvent, which may or may not be filtered) that are coupled to (e.g., immobilized on) individually addressable respective solid carriers (*e.g.*, in a form of an array or a micro well plate), wherein each distinct food preparation 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. In certain embodiments, the average discriminatory p-value is determined by comparing assay values of a first patient test cohort that is diagnosed with or suspected of having psoriasis, with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis. In such embodiments, the assay values can be determined by conducting assays for the first and second patient test cohorts with the distinct food preparation.

[0070] 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 disclosure 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 disclosure 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 disclosure 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.

[0071] 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 psoriasis. 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 1-59 of Table 2. Thus, for example, in some embodiments, the exemplary food preparations can include at least two of peach, cucumber, tea, tomato, broccoli, cauliflower, almond, green pepper, grapefruit, tobacco, eggplant, rye, oat, cantaloupe, cabbage, cane sugar, sweet pot, pineapple, avocado, orange, spinach, honey, swiss cheese, malt, mustard, wheat, apple, chocolate, yogurt, and goat milk. Still further especially contemplated food items and food additives from which food preparations can be prepared are listed in **Table 1**.

[0072] Using bodily fluids from patients diagnosed with or suspected of having psoriasis, and a healthy control group individuals (*i.e.*, those not diagnosed with or not suspected to have psoriasis), numerous additional food items may be identified. In certain embodiments, the methods described herein comprise the one of one or more distinct food preparations having an average discriminatory p-value, wherein the average discriminatory p-value for each distinct food preparation is determined by a process that includes comparing test results of a first patient test cohort that is diagnosed with or suspected of having psoriasis, with test results of a second patient test cohort that is not diagnosed with or suspected of having psoriasis. In such embodiments, test results (e.g., ELISA) for the first and second patient test cohorts are obtained for various distinct food preparations, wherein the test results are based on contacting bodily fluids (e.g., blood saliva, fecal suspension) of the first patient test cohort and the second patient test cohort with each food preparation.

[0073] 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.

[0074] Therefore, where a panel has multiple food preparations, it is contemplated that each distinct food preparations will have 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 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 certain aspects, it should be appreciated that the FDR multiplicity adjusted p-value may be adjusted for at least one of age or gender, and in certain embodiments 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% (or 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 a person of ordinary skill in the art will be readily apprised of the appropriate choice of stratification.

[0075] 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 disclosure and does not pose a limitation on the scope of the disclosure otherwise claimed. No language in the specification should be construed as indicating any non-claimed element essential to the practice of the disclosure.

[0076] 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 multiwall plate, a bead (*e.g.*, color-coded or magnetic), an adsorptive film (*e.g.*, nitrocellulose or micro/nanoporous polymeric film), or an electrical sensor (*e.g.* a printed copper sensor or microchip).

[0077] Consequently, the inventors also contemplate a method of testing food intolerance in patients that are diagnosed with or suspected to have psoriasis. 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 psoriasis, and wherein the bodily fluid is associated with a gender identification. As noted before, the step of contacting can be performed under conditions that allow an immunoglobulin such as 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).

[0078] 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, certain food preparations may include foods 1-59 of Table 2, and/or items of Table 1. As also noted above, in certain embodiments 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 or an average discriminatory p-value of ≤ 0.10 (or ≤ 0.08, or ≤ 0.07) as determined by FDR multiplicity adjusted p-value.

[0079] 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.

[0080] Each food preparation is immobilized on a solid surface (typically in an addressable manner, such that each food preparation is isolated), 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 (enzyme-linked immunosorbent assay) 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, etc.) in solution.

[0081] 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 psoriasis. Such a test is applied to patients already diagnosed with or suspected to have psoriasis, in certain embodiments, 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 psoriasis patients. As with the other methods described herein, test kits that can be used for this method may comprise one or more distinct food preparations having an average discriminatory p-value, wherein the average discriminatory p-value for each distinct food preparation is determined by a process that includes comparing test results of a first patient test cohort that is diagnosed with or suspected of having psoriasis, with test results of a second patient test cohort that is not diagnosed with or suspected of having psoriasis. In such embodiments, test results (e.g., ELISA, etc.) for the first and second patient test cohorts are obtained for various distinct food preparations, wherein the test results are based on contacting bodily fluids (e.g., blood saliva, fecal suspension, etc.) of the first patient test cohort and the second patient test cohort with each food preparation. In certain embodiments, 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), etc.) is assigned for a predetermined percentile rank (e.g., 90th or 95th percentile, etc.).

[0082] As noted earlier, in certain embodiments, it is contemplated that the distinct food preparations include at least two (or six, or ten, or fifteen) food preparations prepared from food items selected from the group consisting of foods 1-59 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 1-59 of Table 2. Regardless of the particular choice of food items, in certain embodiments each distinct food preparation will have an average discriminatory p-value of $\leq$ 0.07 (or $\leq$ 0.05, or $\leq$ 0.025) as determined by raw p-value or an average discriminatory p-value of $\leq$ 0.10 (or $\leq$ 0.08, or $\leq$ 0.07) as determined by FDR multiplicity adjusted p-value. Exemplary aspects and protocols, and considerations are provided in the experimental description below.

[0083] 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 psoriasis.

Experiments

[0084] 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.

[0085] For some food extracts, the inventors expect that food extracts prepared with specific procedures to generate food extracts may provides more superior results in detecting elevated IgG reactivity in psoriasis patients compared to commercially available food extracts. For example, for grains and nuts, a three-step procedure of generating food extracts may provide more accurate results. 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 one 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 another example, for meats and fish, a two-step procedure of generating food extract may provide more accurate results. 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 one 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] For still another example, for fruits and vegetables, a two-step procedure of generating food extract is may provide more accurate results. 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 one 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 ℃ and multiple freeze-thaws without a loss of activity.

[0088] Blocking of ELISA plates: To optimize signal to noise, plates will be blocked with a proprietary blocking buffer. In one embodiment, the blocking buffer includes 20-50 mM of buffer from 4-9 pH, a protein of animal origin (e.g., beef, chicken) and a short chain alcohol (e.g., glycerin, etc.). Other blocking buffers, including several commercial preparations, can be attempted but may not provide adequate signal to noise and low assay variability required.

[0089] ELISA preparation and sample testing: Food antigen preparations were immobilized onto respective microtiter wells following the manufacturer's instructions. For the assays (e.g., multiplexed assays, etc), 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.

[0090] Methodology to determine ranked food list in order of ability of ELISA signals to distinguish psoriasis 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 a larger more generic food group, especially where prior testing has established a correlation among different species within a generic group (with respect to both genders, or correlation with a single gender). For example, Thailand Shrimp could be dropped in favor of U.S. Gulf White Shrimp as representative of the "shrimp" food group, or King Crab could be dropped in favor of Dungeness Crab as representative of the "crab" food group. In further aspects, the final list foods will be shorter than 50 food items, or equal or less than of 40 food items.

[0091] For each of the tested foods, signal scores will be compared between psoriasis and controls using a permutation test on a two-sample t-test with a relative high number of resamplings (e.g., >1,000, or >10,000, or even >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.).

[0092] 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 psoriasis 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.

[0093] Based on earlier experiments (data not shown here; see US 62/079783, which is incorporated herein by reference in its entirety for all purposes), 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.

[0094] <u>Statistical Method for Cutpoint Selection for each Food:</u> 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, psoriasis 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 1,000 times. Within each bootstrap replicate, the 90th and 95th percentiles of the Control signal scores will be determined. Each psoriasis 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 psoriasis 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**.

[0095] Typical examples for the gender difference in IgG response in blood with respect to peach 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 psoriasis 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 psoriasis subjects exceeding the 90th and 95th percentile. In the same fashion, **Figures 2A-2D** exemplarily depict the differential response to cucumber, **Figures 3A-3D** exemplarily depict the differential response to tea, and **Figures 4A-4D** exemplarily depict the differential response to tomato. **Figures 5A-5B** show the distribution of psoriasis 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 were notably distinct.

[0096] It should be noted that nothing in the art has provided any predictable food groups related to psoriasis that are gender-stratified. Thus, a discovery of food items that show distinct responses by gender is a surprising result, which was not expected by the inventors. 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 foods among male or female psoriasis patients have been significantly improved.

[0097] <u>Normalization of IgG Response Data</u>: While the raw data of the patient's IgG response results can be use 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 tomato and IgG specific to cucumber) can be normalized to the patient's total IgG. The normalized value of the patient's IgG specific to tomato can be 0.1 and the normalized value of the patient's IgG specific to cucumber can be 0.3. In this scenario, the relative strength of the patient's response to cucumber is three times higher compared to tomato. Then, the patient's sensitivity to cucumber and tomato can be indexed as such.

[0098] 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.

[0099] Methodology to determine the subset of psoriasis patients with food sensitivities that underlie psoriasis: While it is suspected that food sensitivities may play a substantial role in signs and symptoms of psoriasis, some psoriasis patients may not have food sensitivities that underlie psoriasis. Those patients may not be benefit from dietary intervention to treat signs and symptoms of psoriasis. To determine the subset of such patients, body fluid samples of psoriasis patients and non- psoriasis patients can be tested with ELISA test using test devices with 24 food samples.

[00100] **Table 5A** and **Table 5B** provide exemplary raw data. As should be readily appreciated, the data indicate number of positive results out of 90 sample foods based on 90^{th} percentile value (Table 5A) or 95^{th} percentile value (Table 5B). The first column is psoriasis (n=133); second column is non-psoriasis (n=240) by ICD-10 code. Average and median number of positive foods was computed for psoriasis and non-psoriasis 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 psoriasis and non-psoriasis patients. Additionally, the number and percentage of patients with zero positive foods was calculated for both psoriasis and non-psoriasis. The number and percentage of patients with zero positive foods in the psoriasis population is almost half of the percentage of patients with zero positive foods in the non-psoriasis population (8.3% vs. 15.4%, respectively) based on 90th percentile value (Table 5A), and this percentage is also half in the psoriasis population of that seen in the non-psoriasis population (16.5% vs. 35.0%, respectively) based on 95th percentile value (Table 5B). Thus, it can be easily appreciated that the psoriasis patient having sensitivity to zero positive foods is unlikely to have food sensitivities underlying their signs and symptoms of psoriasis.

[00101] **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 psoriasis population and the non-psoriasis 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 psoriasis population and the non-psoriasis population.

[00102] **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.

[00103] **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 psoriasis and non-psoriasis 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 psoriasis population and the non-psoriasis population. In both statistical tests, it is shown that the number of positive responses with 90 food samples is significantly higher in the psoriasis population than in the non-psoriasis 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**.

[00104] **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 psoriasis and non-psoriasis 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 psoriasis population and the non-psoriasis population. In both statistical tests, it is shown that the number of positive responses with 90 food samples is significantly higher in the psoriasis population than in the non-psoriasis population with an average discriminatory p-value of ≤ 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**.

[00105] **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 psoriasis from non- psoriasis subjects. When a cutoff criterion of more than 5 positive foods is used, the test yields a data with 61.65% sensitivity and 64.17% specificity, with an area under the curve (AUROC) of 0.670. 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 psoriasis population and the non-psoriasis population is significant when the test results are cut off to a positive number of 5, the number of foods for which a patient tests positive could be used as a confirmation of the primary clinical diagnosis of psoriasis, and whether it is likely that food sensitivities underlies on the patient's signs and symptoms of psoriasis. Therefore, the above test can be used as another 'rule in' test to add to currently available clinical criteria for diagnosis for psoriasis.

[00106] As shown in Tables 5A-12A, and Figure 7A, based on 90^{th} percentile data, the number of positive foods seen in psoriasis vs. non-psoriasis 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 psoriasis in subjects. The test has discriminatory power to detect psoriasis with ~62% sensitivity and ~64% specificity. Additionally, the absolute number and percentage of subjects with 0 positive foods is also very different in psoriasis vs. non-psoriasis subjects, with a far lower percentage of psoriasis subjects (8.3%) having 0 positive foods than non-psoriasis subjects (15.4%). The data suggests a subset of psoriasis patients may have psoriasis due to other factors than diet, and may not benefit from dietary restriction.

[00107] **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 psoriasis from non-psoriasis subjects. When a cutoff criterion of more than 6 positive foods is used, the test yields a data with 39.9% sensitivity and 86.3% specificity, with an area under the curve (AUROC) of 0.676. 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 psoriasis population and the non-psoriasis population is significant when the test results are cut off to positive number of 6, the number of foods that a patient tests positive could be used as a confirmation of the primary clinical diagnosis of psoriasis, and whether it is likely that food sensitivities underlies on the patient's signs and symptoms of psoriasis. Therefore, the above test can be used as another 'rule in' test to add to currently available clinical criteria for diagnosis for psoriasis.

[00108] As shown in Tables 5B-12B, and Figure 7B, based on 95^{th} percentile data, the number of positive foods seen in psoriasis vs. non-psoriasis 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 psoriasis in subjects. The test has discriminatory power to detect psoriasis with ~40% sensitivity and ~86% specificity. Additionally, the absolute number and percentage of subjects with 0 positive foods is also very different in psoriasis vs. non-psoriasis subjects, with a far lower percentage of psoriasis subjects (16.5%) having 0 positive foods than non- psoriasis subjects (35%). The data suggests a subset of psoriasis patients may have psoriasis due to other factors than diet, and may not benefit from dietary restriction.

[00109] <u>Method for determining distribution of per-person number of foods declared "positive"</u>: To determine the distribution of number of "positive" foods per person and measure the diagnostic performance, the analysis was performed with 90 food items from the Table 1, which shows most positive responses to psoriasis patients. The 90 food items includes chocolate, grapefruit, honey, malt, rye, baker's yeast, brewer's yeast, broccoli, cola nut, tobacco, mustard, green pepper, buck wheat, avocado, cane sugar, cantaloupe, garlic, cucumber, cauliflower, sunflower seed, lemon, strawberry, eggplant, wheat, olive, halibut, cabbage, orange, rice, safflower, tomato, almond, oat, barley, peach, grape, potato, spinach, sole, and butter. To attenuate the influence of any one subject on this analysis, each food-specific and gender-specific dataset was bootstrap resampled 1000 times. Then, for each food item in the bootstrap sample, sex-specific cutpoint was determined using the 90th and 95th percentiles of the control population. Once the sex-specific cutpoints were determined, the sex-specific cutpoints was compared with the observed ELISA signal scores for both control and psoriasis subjects. In this comparison, if the observed signal is equal or more than the cutpoint value, then it is determined "positive" food, and if the observed signal is less than the cutpoint value, then it is determined "negative" food.

[00110] Once all food items were determined either positive or negative, the results of the 180 (90 foods x 2 cutpoints) calls for each subject were saved within each bootstrap replicate. Then, for each subject, 90 calls were summed using 90^{th} percentile as cutpoint to get "Number of Positive Foods (90^{th})," and the rest of 90 calls were 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})" were 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 pretended 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 were generated for both "Number of Positive Foods (90^{th})" and "Number of Positive Foods (95^{th})" for both genders and for both psoriasis subjects and control subjects using programs "a_pos_foods.sas, a_pos_foods_by_dx.sas".

[00111] <u>Method for measuring diagnostic performance</u>: To measure diagnostic performance for each food items for each subject, we used 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 is called "Has psoriasis." If a subject has less than one "Number of Positive Foods (90^{th})", then the subject is called "Does Not Have psoriasis.” 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 were 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.

[00112] To increase the accuracy, the analysis above was repeated by incrementing cutpoint from 2 up to 24, and repeated for each of the 1000 bootstrap replicates. Then the performance metrics across the 1000 bootstrap replicates were 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 Table 13 (90^{th} percentile) and Table 14 (95^{th} percentile).

[00113] Of course, it should be appreciated that certain variations in the food preparations may be made without altering the general scope of the 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.

[00114] It should be apparent to those skilled in the art that many more modifications besides those already described are possible without departing from the concepts herein. The 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.

CLAIMS

What is claimed is:

1. A test kit for testing for food intolerance in a patient diagnosed with, or suspected of having, psoriasis, the test kit comprising:
   one or more distinct food preparations, wherein each food preparation is independently coupled to an individually addressable solid carrier; and
   wherein each 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

2. The test kit of claim 1, wherein the one or more distinct food preparations are selected from preparations prepared from food items of Table 1, or are selected from foods 1-59 of Table 2.

3. The test kit of claim 1, comprising a plurality of at least two distinct food preparations, wherein the food preparations are prepared from food items of Table 1, or are selected from foods 1-59 of Table 2.

4. The test kit of claim 3, wherein the plurality comprises at least eight distinct food preparations.

5. The test kit of claim 3, wherein the plurality comprises at least twelve distinct food preparations.

6. The test kit of claim 1, wherein each of 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 ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

7. The test kit of any one of claims 1-5, wherein each of 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 ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

8. The test kit of claim 1, wherein each of 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 each of 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 the FDR multiplicity adjusted p-value is adjusted for at least one of age or gender.

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

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

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

14. The test kit of claim 1, comprising a plurality of at least two distinct food preparations, 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.

15. The test kit of any one of claims 1-13, comprising a plurality of at least two distinct food preparations, 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.

16. The test kit of claim 1, comprising a plurality of at least two distinct food preparations, 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.

17. The test kit of any one of the claims 1-13, comprising a plurality of at least two distinct food preparations, 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.

18. The test kit of claim 1, comprising a plurality of at least two distinct food preparations, 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.

19. The test kit of any one of the claims 1-17, comprising a plurality of at least two distinct food preparations, 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.

20. The test kit of claim 1, wherein each of the one or more distinct food preparations comprises a crude filtered aqueous extract.

21. The test kit of any one of the claims 1-19, wherein each of the one or more distinct food preparations comprises crude filtered aqueous extract.

22. The test kit of claim 1, wherein each of the one or more distinct food preparations comprises a processed aqueous extract.

23. The test kit of any one of the claims 1-21, wherein each of the one or more distinct food preparations comprises a processed aqueous extract.

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

26. A method comprising:

contacting a food preparation, said food preparation having at least one component, with a bodily fluid of a patient that is diagnosed with or suspected of having psoriasis, wherein the bodily fluid comprises at least one immunoglobulin, wherein the bodily fluid is associated with a gender identification, and wherein the contacting is performed under conditions that allow at least a portion of the immunoglobulin to bind to the at least one component;

measuring the portion of the immunoglobulin 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 comprises whole blood, plasma, serum, saliva, or a fecal suspension.

28. The method of claim 26, wherein the contacting a food preparation is performed with a multiplexed assay comprising a plurality of distinct food preparations.

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

30. The method of claim 28, wherein the plurality of distinct food preparations is prepared from food items selected from Table 1, or selected from foods 1-59 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 selected from Table 1, or selected from foods 1-59 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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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 ≤ 0.07 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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 ≤ 0.07 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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,

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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

38. The method of claim 28, wherein each of the 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 each of the 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.

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

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

43. The method of any of the claims 26-41, wherein the step of measuring the portion of the immunoglobulin bound to the at least one component of the food preparation is performed via an immunosorbent assay test.

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

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

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

obtaining test results for one or more distinct food preparations, wherein the test results are derived from a process comprising contacting each food preparation with bodily fluids of a first patient test cohort that is diagnosed with or suspected of having psoriasis, and contacting each food preparation with bodily fluids of a second patient test cohort that is not diagnosed with or suspected of having psoriasis; and

stratifying the test results by gender group for each of the distinct food preparations.

47. The method of claim 46, further comprising assigning for a predetermined percentile rank a different cutoff value for each gender group for each of the distinct food preparations.

48. The method of claim 46, wherein the one or more distinct food preparations are selected from food preparations prepared from food items of Table 1, or are selected from foods 1-59 of Table 2.

49. The method of claim 46 or claim 47, wherein the one or more distinct food preparations are selected from food preparations prepared from food items of Table 1, or are selected from foods 1-59 of Table 2.

50. The method of claim 46, comprising a plurality of distinct food preparations selected from food preparations prepared from food items of Table 1, or selected from a group consisting of foods 1-59 of Table 2.

51. The method of any of claim 46 or claim 47, comprising a plurality of distinct food preparations prepared from food items of Table 1, or selected from foods 1-59 of Table 2.

52. The method of claim 50 wherein the plurality comprises at least eight distinct food preparations.

53. The method of claim 51, wherein the plurality comprises at least eight distinct food preparations.

54. The method of claim 46, wherein each distinct food preparation 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

55. The method of any of claims 46-53, wherein each distinct food preparation 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

56. The method of claim 46, wherein each distinct food preparation 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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

57. The method of any of claims 46-53, wherein each distinct food preparation 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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

58. The method of claim 46, wherein each distinct food preparation 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,

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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

59. The method of any of claims 46-53, wherein each distinct food preparation 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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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

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

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

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

64. The method of claim 47, wherein the cutoff value for the gender groups has a difference of at least 10% (abs).

65. The method of any of claims 47-63, wherein the cutoff value for the gender groups has a difference of at least 10% (abs).

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

67. The method of any of claims 26-65, further comprising a step of normalizing each test result to each 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 food preparations underlies psoriasis 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 food preparations underlies psoriasis 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 food preparations, wherein the numbers of the food preparations can be used to confirm psoriasis 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 food preparations, wherein the numbers of the food preparations can be used to confirm psoriasis by raw p-value or an average discriminatory p-value of ≤ 0.01.

74. Use of a one or more distinct food preparations each independently coupled to separate, individually addressable solid carriers, wherein said use is implemented in a diagnosis of psoriasis, wherein each 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.

75. Use of claim 74, wherein the one or more food preparations are selected from food preparations prepared from food items of Table 1, or are selected from foods 1-59 of Table 2.

76. Use of claim 74, comprising a plurality of food preparations independently selected from food preparations prepared from food items of Table 1, or foods 1-59 of Table 2..

77. Use of claim 76, wherein the plurality comprises at least eight food preparations.

78. Use of claim 76, wherein the plurality comprises at least twelve food preparations.

79. Use of claim 74, wherein each distinct food preparation has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

80. Use of any one of claims 74-78, wherein each distinct food preparation has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

81. Use of claim of claim 74, wherein each food preparation 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 each food preparation 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 or gender.

84. Use of any one of claims 74-82, wherein FDR multiplicity adjusted p-value is adjusted for at least one of age or 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 76, 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 76-86, 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 76, 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 76-86, 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 76, 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 76-86, 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 each distinct food preparation is derived from a crude filtered aqueous extract.

94. Use of any one of the claims 74-92, wherein each distinct food preparation is derived from a crude filtered aqueous extract.

95. Use of claim 74, wherein each distinct food preparation is derived from a processed aqueous extract.

96. Use of any one of the claims 74-94, wherein each distinct food preparation is derived from a processed aqueous extract.

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

99. Use of claim 74, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

100. Use of any one of claims 74-98, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

101. The method of claim 46, wherein the test results comprises an ELISA result derived from a process that includes separately contacting each distinct food preparation with the bodily fluids of the first and second patients.

AMENDED CLAIMS
received by the International Bureau on 10 June 2017 (10.06.2017)

What is claimed is:

1. A test kit for testing for food intolerance in a patient diagnosed with, or suspected of having, psoriasis, the test kit comprising:
   one or more distinct food preparations, wherein each food preparation is independently coupled to an individually addressable solid carrier; and
   wherein each 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

2. The test kit of claim 1, wherein the one or more distinct food preparations are selected from preparations prepared from food items of Table 1, or are selected from foods 1-59 of Table 2.

3. The test kit of claim 1, comprising a plurality of at least two distinct food preparations, wherein the food preparations are prepared from food items of Table 1, or are selected from foods 1-59 of Table 2.

4. The test kit of claim 3, wherein the plurality comprises at least eight distinct food preparations.

5. The test kit of claim 3, wherein the plurality comprises at least twelve distinct food preparations.

6. The test kit of claim 1, wherein each of 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 ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

7. The test kit of any one of claims 1-5, wherein each of 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 ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

8. The test kit of claim 1, wherein each of 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 each of 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 the FDR multiplicity adjusted p-value is adjusted for at least one of age or gender.

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

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

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

14. The test kit of claim 1, comprising a plurality of at least two distinct food preparations, 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.

15. The test kit of any one of claims 1-13, comprising a plurality of at least two distinct food preparations, 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.

16. The test kit of claim 1, comprising a plurality of at least two distinct food preparations, 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.

17. The test kit of any one of the claims 1-13, comprising a plurality of at least two distinct food preparations, 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.

18. The test kit of claim 1, comprising a plurality of at least two distinct food preparations, 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.

19. The test kit of any one of the claims 1-17, comprising a plurality of at least two distinct food preparations, 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.

20. The test kit of claim 1, wherein each of the one or more distinct food preparations comprises a crude filtered aqueous extract.

21. The test kit of any one of the claims 1-19, wherein each of the one or more distinct food preparations comprises crude filtered aqueous extract.

22. The test kit of claim 1, wherein each of the one or more distinct food preparations comprises a processed aqueous extract.

23. The test kit of any one of the claims 1-21, wherein each of the one or more distinct food preparations comprises a processed aqueous extract.

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

26. A method comprising:

contacting a food preparation, said food preparation having at least one component, with a bodily fluid of a patient that is diagnosed with or suspected of having psoriasis, wherein the bodily fluid comprises at least one immunoglobulin, wherein the bodily fluid is associated with a gender identification, and wherein the contacting is performed under conditions that allow at least a portion of the immunoglobulin to bind to the at least one component;

measuring the portion of the immunoglobulin 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 comprises whole blood, plasma, serum, saliva, or a fecal suspension.

28. The method of claim 26, wherein the contacting a food preparation is performed with a multiplexed assay comprising a plurality of distinct food preparations.

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

30. The method of claim 28, wherein the plurality of distinct food preparations is prepared from food items selected from Table 1, or selected from foods 1-59 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 selected from Table 1, or selected from foods 1-59 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,

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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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 ≤ 0.07 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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 ≤ 0.07 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

38. The method of claim 28, wherein each of the 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 each of the 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.

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

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

43. The method of any of the claims 26-41, wherein the step of measuring the portion of the immunoglobulin bound to the at least one component of the food preparation is performed via an immunosorbent assay test.

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

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

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

    obtaining test results for one or more distinct food preparations, wherein the test results are derived from a process comprising contacting each food preparation with bodily fluids of a first patient test cohort that is diagnosed with or suspected of having psoriasis, and contacting each food preparation with bodily fluids of a second patient test cohort that is not diagnosed with or suspected of having psoriasis; and

    stratifying the test results by gender group for each of the distinct food preparations.

47. The method of claim 46, further comprising assigning for a predetermined percentile rank a different cutoff value for each gender group for each of the distinct food preparations.

48. The method of claim 46, wherein the one or more distinct food preparations are selected from food preparations prepared from food items of Table 1, or are selected from foods 1-59 of Table 2.

49. The method of claim 46 or claim 47, wherein the one or more distinct food preparations are selected from food preparations prepared from food items of Table 1, or are selected from foods 1-59 of Table 2.

50. The method of claim 46, comprising a plurality of distinct food preparations selected from food preparations prepared from food items of Table 1, or selected from a group consisting of foods 1-59 of Table 2.

51. The method of any of claim 46 or claim 47, comprising a plurality of distinct food preparations prepared from food items of Table 1, or selected from foods 1-59 of Table 2.

52. The method of claim 50 wherein the plurality comprises at least eight distinct food preparations.

53. The method of claim 51, wherein the plurality comprises at least eight distinct food preparations.

54. The method of claim 46, wherein each distinct food preparation 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

55. The method of any of claims 46-53, wherein each distinct food preparation 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

56. The method of claim 46, wherein each distinct food preparation 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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

57. The method of any of claims 46-53, wherein each distinct food preparation 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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

58. The method of claim 46, wherein each distinct food preparation 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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

59. The method of any of claims 46-53, wherein each distinct food preparation 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, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

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

61. The method of any of claims 47-59, wherein the bodily fluid of each patient is independently selected from whole blood, plasma, serum, saliva, or a fecal suspension.

62. The method of claim 47, wherein the predetermined percentile rank is at least a 90^{th} percentile rank.

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

64. The method of claim 47, wherein the cutoff value for the gender groups has a difference of at least 10% (abs).

65. The method of any of claims 47-63, wherein the cutoff value for the gender groups has a difference of at least 10% (abs).

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

67. The method of any of claims 26-65, further comprising a step of normalizing each test result to each 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 food preparations underlies psoriasis 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 food preparations underlies psoriasis 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 food preparations, wherein the numbers of the food preparations can be used to confirm psoriasis 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 food preparations, wherein the numbers of the food preparations can be used to confirm psoriasis by raw p-value or an average discriminatory p-value of ≤ 0.01.

74. Use of a one or more distinct food preparations each independently coupled to separate, individually addressable solid carriers, wherein said use is implemented in a diagnosis of psoriasis, wherein each 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.

75. Use of claim 74, wherein the one or more food preparations are selected from food preparations prepared from food items of Table 1, or are selected from foods 1-59 of Table 2.

76. Use of claim 74, comprising a plurality of food preparations independently selected from food preparations prepared from food items of Table 1, or foods 1-59 of Table 2..

77. Use of claim 76, wherein the plurality comprises at least eight food preparations.

78. Use of claim 76, wherein the plurality comprises at least twelve food preparations.

79. Use of claim 74, wherein each distinct food preparation has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

80. Use of any one of claims 74-78, wherein each distinct food preparation has an average discriminatory p-value of ≤ 0.05 as determined by raw p-value or an average discriminatory p-value of ≤ 0.07 as determined by FDR multiplicity adjusted p-value.

81. Use of claim of claim 74, wherein each food preparation 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 each food preparation 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 or gender.

84. Use of any one of claims 74-82, wherein FDR multiplicity adjusted p-value is adjusted for at least one of age or 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 76, 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 76-86, 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 76, 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 76-86, 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 76, 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 76-86, 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 each distinct food preparation is derived from a crude filtered aqueous extract.

94. Use of any one of the claims 74-92, wherein each distinct food preparation is derived from a crude filtered aqueous extract.

95. Use of claim 74, wherein each distinct food preparation is derived from a processed aqueous extract.

96. Use of any one of the claims 74-94, wherein each distinct food preparation is derived from a processed aqueous extract.

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

99. Use of claim 74, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

100. Use of any one of claims 74-98, 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 psoriasis with assay values of a second patient test cohort that is not diagnosed with or suspected of having psoriasis.

101. The method of claim 46, wherein the test results comprises an ELISA result derived from a process that includes separately contacting each distinct food preparation with the bodily fluids of the first and second patients.

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

FOOD ADDITIVES
Arabic Gum
Carboxymethyl Cellulose
Carrageneenan
FD&C Blue #1
FD&C Red #3
FD&C Red #40
FD&C Yellow #5
FD&C Yellow #6
Gelatin
Guar Gum
Maltodextrin
Pectin
Whey
Xanthan Gum

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	Peach	0.0000	0.0000
2	Cucumber	0.0000	0.0009
3	Tea	0.0000	0.0009
4	Tomato	0.0000	0.0009
5	Broccoli	0.0001	0.0009
6	Cauliflower	0.0001	0.0009
7	Almond	0.0001	0.0011
8	Green_Pepper	0.0001	0.0011
9	Grapefruit	0.0001	0.0013
10	Tobacco	0.0001	0.0013
11	Eggplant	0.0002	0.0013
12	Rye	0.0003	0.0023
13	Oat	0.0003	0.0024
14	Cantaloupe	0.0004	0.0024
15	Cabbage	0.0004	0.0024
16	Cane_Sugar	0.0005	0.0029
17	Sweet_Pot_	0.0005	0.0029
18	Pineapple	0.0006	0.0029
19	Avocado	0.0008	0.0035
20	Orange	0.0008	0.0035
21	Spinach	0.0008	0.0035
22	Honey	0.0009	0.0038
23	Swiss_Ch_	0.0012	0.0048
24	Malt	0.0013	0.0048
25	Mustard	0.0013	0.0048
26	Wheat	0.0017	0.0060
27	Apple	0.0020	0.0065
28	Chocolate	0.0020	0.0065
29	Yogurt	0.0021	0.0065
30	Goat_Milk	0.0022	0.0065
31	Cola_Nut	0.0023	0.0067
32	Clam	0.0024	0.0067
33	Cheddar_Ch_	0.0024	0.0067

Rank	*Food*	*Raw p-value*	*FDR Multiplicity-adj p-value*
34	Olive	0.0031	0.0083
35	Yeast_Brewer	0.0033	0.0084
36	Butter	0.0038	0.0095
37	Celery	0.0039	0.0095
38	Onion	0.0041	0.0097
39	Garlic	0.0048	0.0112
40	Walnut_Blk	0.0053	0.0118
41	Cottage_Ch_	0.0056	0.0121
42	Yeast_Baker	0.0057	0.0121
43	Cow_Milk	0.0059	0.0123
44	Corn	0.0066	0.0136
45	Amer__Cheese	0.0069	0.0137
46	Strawberry	0.0070	0.0137
47	Buck_Wheat	0.0071	0.0137
48	Lemon	0.0131	0.0245
49	Green_Pea	0.0190	0.0348
50	Trout	0.0200	0.0356
51	Barley	0.0202	0.0356
52	Potato	0.0206	0.0356
53	Beef	0.0223	0.0379
54	Rice	0.0227	0.0379
55	Sunflower_Sd	0.0248	0.0405
56	Chili_Pepper	0.0293	0.0472
57	Banana	0.0343	0.0542
58	String_Bean	0.0429	0.0655
59	Safflower	0.0429	0.0655
60	Pinto_Bean	0.0755	0.1133
61	Cinnamon	0.0962	0.1420
62	Lima_Bean	0.0987	0.1433
63	Parsley	0.1043	0.1490
64	Shrimp	0.1091	0.1534
65	Squashes	0.1350	0.1870
66	Blueberry	0.1543	0.2104
67	Coffee	0.1830	0.2458
68	Tuna	0.1920	0.2541
69	Carrot	0.2066	0.2695
70	Sardine	0.2145	0.2758

Rank	*Food*	*Raw p-value*	*FDR Multiplicity-adj p-value*
71	Mushroom	0.2268	0.2875
72	Peanut	0.3606	0.4477
73	Codfish	0.3631	0.4477
74	Lobster	0.3737	0.4545
75	Halibut	0.3928	0.4714
76	Millet	0.4224	0.5002
77	Pork	0.4461	0.5214
78	Oyster	0.4730	0.5457
79	Turkey	0.4958	0.5649
80	Grape	0.5046	0.5677
81	Scallop	0.6187	0.6808
82	Salmon	0.6203	0.6808
83	Lettuce	0.6583	0.7138
84	Chicken	0.7193	0.7707
85	Egg	0.7671	0.8122
86	Crab	0.7781	0.8143
87	Soybean	0.7932	0.8206
88	Sole	0.8287	0.8393
89	Sesame	0.8300	0.8393
90	Cashew	0.8677	0.8677

Table 2

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

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
FEMALE	Almond	Psoriasis	66	9.463	25.099	0.100	196.38
		Control	120	4.382	3.344	0.100	26.669
		Diff (1-2)	_	5.081	15.158	_	_
	Amer__Cheese	Psoriasis	66	38.439	76.854	0.100	400.00
		Control	120	27.290	48.298	1.113	229.42
		Diff (1-2)	_	11.149	59.960	_	_
	Apple	Psoriasis	66	10.134	22.758	0.100	164.02
		Control	120	4.925	5.686	0.100	47.698
		Diff (1-2)	_	5.209	14.279	_	_
	Avocado	Psoriasis	66	7.702	27.594	0.100	223.45
		Control	120	2.928	4.389	0.100	44.515
		Diff (1-2)	_	4.774	16.776	_	_
	Banana	Psoriasis	66	18.803	39.094	0.100	230.22
		Control	120	7.410	25.928	0.100	282.41
		Diff (1-2)	_	11.393	31.220	_	_
	Barley	Psoriasis	66	28.561	37.864	3.612	289.39
		Control	120	23.262	16.540	4.506	85.580
		Diff (1-2)	_	5.299	26.142	_	_
	Beef	Psoriasis	66	13.668	26.586	0.391	194.86
		Control	120	8.730	5.391	1.236	33.732
		Diff (1-2)	_	4.938	16.386	_	_
	Blueberry	Psoriasis	66	6.911	9.658	0.100	62.336
		Control	120	6.109	5.322	0.100	37.312
		Diff (1-2)	_	0.802	7.160	_	_
	Broccoli	Psoriasis	66	15.344	33.026	0.100	207.16
		Control	120	6.331	6.550	0.100	66.265
		Diff (1-2)	_	9.013	20.324	_	_
	Buck_Wheat	Psoriasis	66	15.287	26.424	2.125	170.89
		Control	120	8.413	5.866	0.247	48.998
		Diff (1-2)	_	6.873	16.398	_	_
	Butter	Psoriasis	66	35.022	56.419	1.593	357.31
		Control	120	21.399	23.407	1.686	120.98
		Diff (1-2)	_	13.623	38.455	_	_
	Cabbage	Psoriasis	66	15.924	35.280	0.100	236.14

Sex	Food	Diagnosis	N	ELISA Score Mean	SD	Min	Max
		Control	120	6.414	10.430	0.100	96.832
		Diff (1-2)	_	9.509	22.585	_	_
	Cane_Sugar	Psoriasis	66	31.243	35.380	6.143	275.59
		Control	120	25.083	30.963	5.114	246.06
		Diff (1-2)	_	6.159	32.592	_	_
	Cantaloupe	Psoriasis	66	16.024	41.224	0.100	298.22
		Control	120	6.106	4.312	1.253	35.519
		Diff (1-2)	_	9.917	24.746	_	_
	Carrot	Psoriasis	66	9.735	19.785	0.100	112.40
		Control	120	6.626	10.376	0.100	81.659
		Diff (1-2)	_	3.109	14.419	_	_
	Cashew	Psoriasis	66	15.343	31.364	0.100	238.59
		Control	120	15.596	24.671	0.100	115.05
		Diff (1-2)	_	-0.253	27.224	_	_
	Cauliflower	Psoriasis	66	13.156	29.717	0.100	192.10
		Control	120	4.439	4.040	0.100	34.046
		Diff (1-2)	_	8.717	17.959	_	_
	Celery	Psoriasis	66	17.121	35.082	2.443	273.52
		Control	120	11.433	9.083	2.967	63.628
		Diff (1-2)	_	5.688	22.094	_	_
	Cheddar_Ch_	Psoriasis	66	47.106	86.527	1.308	400.00
		Control	120	34.129	61.341	0.614	400.00
		Diff (1-2)	_	12.977	71.263	_	_
	Chicken	Psoriasis	66	25.858	49.683	3.260	367.76
		Control	120	22.187	18.930	5.601	128.81
		Diff (1-2)	_	3.671	33.223	_	_
	Chili_Pepper	Psoriasis	66	12.077	18.324	0.100	108.67
		Control	120	9.522	10.042	0.244	66.696
		Diff (1-2)	_	2.555	13.558	_	_
	Chocolate	Psoriasis	66	25.088	34.270	4.555	273.65
		Control	120	17.776	11.393	3.160	80.219
		Diff (1-2)	_	7.312	22.334	_	_
	Cinnamon	Psoriasis	66	46.046	36.230	8.411	229.67
		Control	120	41.665	27.573	3.555	141.66
		Diff (1-2)	_	4.380	30.909	_	_
	Clam	Psoriasis	66	56.705	58.927	7.862	370.14
		Control	120	43.165	25.445	8.396	162.89
		Diff (1-2)	_	13.540	40.563	_	_

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
	Codfish	Psoriasis	66	20.807	28.255	2.087	224.29
		Control	120	34.172	41.473	5.844	319.60
		Diff (1-2)	_	-13.365	37.342	_	_
	Coffee	Psoriasis	66	30.135	41.476	0.130	219.47
		Control	120	29.592	45.077	4.151	400.00
		Diff (1-2)	_	0.543	43.839	_	_
	Cola_Nut	Psoriasis	66	41.054	30.225	14.161	253.15
		Control	120	35.040	17.705	9.514	115.41
		Diff (1-2)	_	6.014	22.923	_	_
	Corn	Psoriasis	66	26.999	62.011	0.100	400.00
		Control	120	11.069	12.512	0.975	84.673
		Diff (1-2)	_	15.930	38.206	_	_
	Cottage_Ch_	Psoriasis	66	92.936	128.492	2.972	400.00
		Control	120	85.171	110.987	2.680	400.00
		Diff (1-2)	_	7.765	117.469	_	_
	Cow_Milk	Psoriasis	66	88.109	123.113	1.427	400.00
		Control	120	82.324	106.893	1.527	400.00
		Diff (1-2)	_	5.785	112.889	_	_
	Crab	Psoriasis	66	22.569	22.755	2.916	114.91
		Control	120	23.975	16.743	3.654	98.750
		Diff (1-2)	_	-1.405	19.084	_	_
	Cucumber	Psoriasis	66	21.399	46.134	1.806	238.43
		Control	120	8.249	7.926	0.382	54.906
		Diff (1-2)	_	13.150	28.151	_	_
	Egg	Psoriasis	66	50.720	63.917	0.125	312.95
		Control	120	43.188	72.783	0.100	400.00
		Diff (1-2)	_	7.532	69.780	_	_
	Eggplant	Psoriasis	66	13.670	29.480	0.100	215.30
		Control	120	5.983	7.662	0.731	69.612
		Diff (1-2)	_	7.687	18.573	_	_
	Garlic	Psoriasis	66	21.794	43.623	3.814	325.24
		Control	120	14.822	16.638	0.194	126.94
		Diff (1-2)	_	6.972	29.177	_	_
	Goat_Milk	Psoriasis	66	26.737	60.846	0.783	400.00
		Control	120	15.468	29.678	0.705	200.19
		Diff (1-2)	_	11.269	43.330	_	_
	Grape	Psoriasis	66	24.055	28.219	7.119	219.77
		Control	120	23.342	8.740	0.242	65.157

Sex	Food	Diagnosis	N	ELISA Score Mean	SD	Min	Max
		Diff (1-2)	_	0.713	18.185	_	_
	Grapefruit	Psoriasis	66	8.884	26.747	0.100	192.11
		Control	120	3.242	2.505	0.100	15.775
		Diff (1-2)	_	5.642	16.024	_	_
	Green_Pea	Psoriasis	66	17.339	19.594	0.561	91.663
		Control	120	12.270	16.744	0.100	103.64
		Diff (1-2)	_	5.069	17.803	_	_
	Green_Pepper	Psoriasis	66	11.397	28.112	0.100	179.23
		Control	120	4.146	3.731	0.087	30.934
		Diff (1-2)	_	7.251	16.976	_	_
	Halibut	Psoriasis	66	12.959	16.112	2.087	131.03
		Control	120	17.087	37.388	0.167	369.33
		Diff (1-2)	_	-4.128	31.556	_	_
	Honey	Psoriasis	66	18.555	34.347	4.241	273.98
		Control	120	11.291	6.987	0.112	50.000
		Diff (1-2)	_	7.264	21.174	_	_
	Lemon	Psoriasis	66	7.138	28.085	0.100	229.12
		Control	120	2.781	3.856	0.078	39.087
		Diff (1-2)	_	4.357	16.978	_	_
	Lettuce	Psoriasis	66	15.696	22.580	0.261	131.33
		Control	120	15.614	19.484	0.201	143.66
		Diff (1-2)	_	0.083	20.631	_	_
	Lima_Bean	Psoriasis	66	11.588	17.657	0.100	123.34
		Control	120	7.890	7.515	0.100	50.711
		Diff (1-2)	_	3.699	12.110	_	_
	Lobster	Psoriasis	66	15.344	13.116	1.984	87.594
		Control	120	16.677	12.421	0.289	68.024
		Diff (1-2)	_	-1.333	12.671	_	_
	Malt	Psoriasis	66	32.965	42.853	8.078	352.20
		Control	120	24.523	13.672	0.464	81.685
		Diff (1-2)	_	8.442	27.742	_	_
	Millet	Psoriasis	66	9.865	41.132	0.100	336.61
		Control	120	4.114	3.796	0.084	29.570
		Diff (1-2)	_	5.752	24.637	_	_
	Mushroom	Psoriasis	66	11.738	17.723	0.100	103.71
		Control	120	15.108	20.203	0.100	116.91
		Diff (1-2)	_	-3.369	19.363	_	_
	Mustard	Psoriasis	66	15.951	33.513	0.130	254.66

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Control	120	8.930	5.327	0.113	31.013
		Diff (1-2)	_	7.021	20.374	_	_
	Oat	Psoriasis	66	30.354	36.254	1.346	221.54
		Control	120	23.470	36.732	0.125	290.37
		Diff (1-2)	_	6.883	36.564	_	_
	Olive	Psoriasis	66	36.086	41.158	3.253	275.98
		Control	120	26.615	22.584	0.254	182.46
		Diff (1-2)	_	9.471	30.468	_	_
	Onion	Psoriasis	66	28.282	73.025	0.100	400.00
		Control	120	12.851	15.238	0.240	95.689
		Diff (1-2)	_	15.431	45.100	_	_
	Orange	Psoriasis	66	37.397	53.101	2.355	315.04
		Control	120	21.610	24.737	0.100	144.76
		Diff (1-2)	_	15.787	37.307	_	_
	Oyster	Psoriasis	66	59.961	61.669	7.438	400.00
		Control	120	69.943	81.247	0.524	400.00
		Diff (1-2)	_	-9.982	74.917	_	_
	Parsley	Psoriasis	66	7.608	15.306	0.100	96.051
		Control	120	8.922	18.491	0.100	115.44
		Diff (1-2)	_	-1.314	17.432	_	_
	Peach	Psoriasis	66	20.149	45.657	0.100	288.45
		Control	120	7.863	7.349	0.133	41.809
		Diff (1-2)	_	12.285	27.773	_	_
	Peanut	Psoriasis	66	9.591	28.734	0.100	232.15
		Control	120	4.997	5.150	0.071	30.134
		Diff (1-2)	_	4.594	17.573	_	_
	Pineapple	Psoriasis	66	40.071	61.790	0.100	364.63
		Control	120	22.992	46.848	0.191	400.00
		Diff (1-2)	_	17.078	52.613	_	_
	Pinto_Bean	Psoriasis	66	14.230	25.699	1.897	180.65
		Control	120	11.023	13.228	0.109	134.99
		Diff (1-2)	_	3.207	18.614	_	_
	Pork	Psoriasis	66	16.094	21.829	0.100	134.28
		Control	120	17.068	13.794	0.204	109.18
		Diff (1-2)	_	-0.974	17.070	_	_
	Potato	Psoriasis	66	23.808	51.516	3.926	376.25
		Control	120	13.913	5.970	0.205	45.985
		Diff (1-2)	_	9.894	30.993	_	_

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
	Rice	Psoriasis	66	29.880	42.091	4.972	279.93
		Control	120	23.480	19.047	0.153	114.70
		Diff (1-2)	_	6.400	29.334	_	_
	Rye	Psoriasis	66	10.086	24.836	0.100	205.41
		Control	120	5.638	4.657	0.100	40.915
		Diff (1-2)	_	4.448	15.229	_	_
	Safflower	Psoriasis	66	13.816	23.952	0.100	173.19
		Control	120	9.930	10.477	0.100	87.082
		Diff (1-2)	_	3.886	16.542	_	_
	Salmon	Psoriasis	66	11.326	14.055	0.100	98.129
		Control	120	13.367	19.859	0.206	175.07
		Diff (1-2)	_	-2.041	18.024	_	_
	Sardine	Psoriasis	66	42.916	20.268	14.274	106.56
		Control	120	41.394	23.930	0.531	179.66
		Diff (1-2)	_	1.522	22.704	_	_
	Scallop	Psoriasis	66	72.160	28.995	11.905	152.42
		Control	120	72.930	38.248	0.496	216.59
		Diff (1-2)	_	-0.770	35.258	_	_
	Sesame	Psoriasis	66	68.207	99.839	1.700	400.00
		Control	120	75.917	93.152	0.432	400.00
		Diff (1-2)	_	-7.710	95.568	_	_
	Shrimp	Psoriasis	66	24.896	23.489	2.891	108.11
		Control	120	40.662	33.157	0.173	145.07
		Diff (1-2)	_	-15.766	30.098	_	_
	Sole	Psoriasis	66	7.921	14.411	0.100	119.68
		Control	120	5.802	4.249	0.100	43.730
		Diff (1-2)	_	2.119	9.222	_	_
	Soybean	Psoriasis	66	22.020	26.692	1.304	191.68
		Control	120	22.789	32.894	0.239	328.71
		Diff (1-2)	_	-0.768	30.846	_	_
	Spinach	Psoriasis	66	28.675	54.265	4.599	400.00
		Control	120	18.031	11.903	0.349	81.566
		Diff (1-2)	_	10.644	33.644	_	_
	Squashes	Psoriasis	66	17.779	16.726	1.435	99.530
		Control	120	15.409	13.919	0.224	86.718
		Diff (1-2)	_	2.369	14.971	_	_
	Strawberry	Psoriasis	66	9.497	13.259	0.100	67.954
		Control	120	5.623	6.982	0.094	60.225

Sex	Food	Diagnosis	N	ELISA Score Mean	SD	Min	Max
		Diff (1-2)	_	3.874	9.676	_	_
	String_Bean	Psoriasis	66	54.297	36.746	13.372	206.67
		Control	120	45.877	28.346	0.655	197.63
		Diff (1-2)	_	8.420	31.570	_	_
	Sunflower_Sd	Psoriasis	66	16.896	26.382	2.916	171.20
		Control	120	11.856	9.297	0.237	61.393
		Diff (1-2)	_	5.040	17.372	_	_
	Sweet_Pot_	Psoriasis	66	16.568	34.990	0.100	268.63
		Control	120	8.661	6.190	0.126	53.190
		Diff (1-2)	_	7.907	21.384	_	_
	Swiss_Ch_	Psoriasis	66	61.885	107.888	0.874	400.00
		Control	120	45.126	83.628	1.123	400.00
		Diff (1-2)	_	16.759	92.925	_	_
	Tea	Psoriasis	66	38.989	21.305	11.118	123.92
		Control	120	32.549	14.001	0.416	69.233
		Diff (1-2)	_	6.440	16.944	_	_
	Tobacco	Psoriasis	66	55.956	51.658	7.519	271.30
		Control	120	37.198	21.613	0.941	103.98
		Diff (1-2)	_	18.758	35.282	_	_
	Tomato	Psoriasis	66	23.495	39.860	1.826	213.98
		Control	120	9.746	8.861	0.208	60.077
		Diff (1-2)	_	13.749	24.740	_	_
	Trout	Psoriasis	66	16.409	12.081	2.869	60.118
		Control	120	20.268	21.381	0.166	187.12
		Diff (1-2)	_	-3.859	18.634	_	_
	Tuna	Psoriasis	66	18.887	31.419	3.499	244.00
		Control	120	23.332	22.724	0.137	174.88
		Diff (1-2)	_	-4.445	26.128	_	_
	Turkey	Psoriasis	66	22.513	49.855	2.608	400.00
		Control	120	15.406	10.344	0.297	70.688
		Diff (1-2)	_	7.107	30.777	_	_
	Walnut_Blk	Psoriasis	66	37.778	48.751	6.591	385.96
		Control	120	27.327	17.653	0.743	95.666
		Diff (1-2)	_	10.451	32.266	_	_
	Wheat	Psoriasis	66	20.178	20.734	0.652	119.40
		Control	120	18.041	20.533	0.372	128.56
		Diff (1-2)	_	2.138	20.604	_	_
	Yeast_Baker	Psoriasis	66	13.228	24.840	1.814	185.88

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Control	120	6.411	6.010	0.071	48.346
		Diff (1-2)	_	6.818	15.535	_	_
	Yeast_Brewer	Psoriasis	66	23.808	31.963	2.996	149.52
		Control	120	12.828	11.230	0.076	70.528
		Diff (1-2)	_	10.980	21.035	_	_
	Yogurt	Psoriasis	66	31.284	58.867	2.775	400.00
		Control	120	22.138	24.995	0.294	145.59
		Diff (1-2)	_	9.146	40.351	_	_
MALE	Almond	Psoriasis	67	14.045	26.275	0.740	191.35
		Control	120	4.515	4.047	0.100	26.332
		Diff (1-2)	_	9.530	16.026	_	_
	Amer__Cheese	Psoriasis	67	49.902	77.319	0.740	400.00
		Control	120	21.244	26.891	0.100	182.23
		Diff (1-2)	_	28.658	50.970	_	_
	Apple	Psoriasis	67	11.904	16.364	0.529	74.230
		Control	120	5.841	9.488	0.539	94.469
		Diff (1-2)	_	6.063	12.387	_	_
	Avocado	Psoriasis	67	8.664	17.243	0.100	104.06
		Control	120	2.613	1.676	0.100	12.006
		Diff (1-2)	_	6.051	10.386	_	_
	Banana	Psoriasis	67	8.229	11.765	1.050	77.936
		Control	120	6.805	17.738	0.100	181.50
		Diff (1-2)	_	1.425	15.867	_	_
	Barley	Psoriasis	67	38.072	56.165	2.327	400.00
		Control	120	23.373	17.951	5.215	119.95
		Diff (1-2)	_	14.699	36.506	_	_
	Beef	Psoriasis	67	13.222	18.910	1.164	135.30
		Control	120	8.724	9.515	0.100	81.880
		Diff (1-2)	_	4.498	13.631	_	_
	Blueberry	Psoriasis	67	7.215	8.717	0.264	64.520
		Control	120	5.492	5.759	0.100	39.800
		Diff (1-2)	_	1.723	6.960	_	_
	Broccoli	Psoriasis	67	11.231	9.356	1.161	40.101
		Control	120	5.868	4.685	0.100	29.187
		Diff (1-2)	_	5.363	6.734	_	_
	Buck_Wheat	Psoriasis	67	11.351	8.711	1.164	41.385
		Control	120	8.628	9.970	0.100	102.45
		Diff (1-2)	_	2.724	9.540	_	_

				ELISA Score			
Sex	Food	Diagnosis	N	Mean	SD	Min	Max
	Butter	Psoriasis	67	37.269	41.773	1.375	167.04
		Control	120	24.158	23.089	2.552	168.48
		Diff (1-2)	_	13.110	31.072	_	_
	Cabbage	Psoriasis	67	13.084	17.139	0.846	82.785
		Control	120	5.873	6.959	0.100	43.990
		Diff (1-2)	_	7.211	11.660	_	_
	Cane_Sugar	Psoriasis	67	45.190	49.583	4.562	261.48
		Control	120	21.755	17.953	3.067	153.43
		Diff (1-2)	_	23.435	32.930	_	_
	Cantaloupe	Psoriasis	67	11.165	11.031	0.132	54.102
		Control	120	6.149	4.629	0.100	38.586
		Diff (1-2)	_	5.016	7.563	_	_
	Carrot	Psoriasis	67	7.089	6.305	0.132	32.623
		Control	120	6.514	8.763	0.100	54.468
		Diff (1-2)	_	0.575	7.974	_	_
	Cashew	Psoriasis	67	14.926	17.740	1.058	87.711
		Control	120	13.751	25.310	0.100	191.59
		Diff (1-2)	_	1.175	22.898	_	_
	Cauliflower	Psoriasis	67	9.482	9.827	0.846	40.723
		Control	120	4.800	4.866	0.100	37.593
		Diff (1-2)	_	4.682	7.049	_	_
	Celery	Psoriasis	67	19.699	23.303	1.481	138.45
		Control	120	10.547	9.546	1.381	62.991
		Diff (1-2)	_	9.152	15.886	_	_
	Cheddar_Ch_	Psoriasis	67	64.247	94.164	0.815	396.18
		Control	120	24.524	27.428	1.442	140.19
		Diff (1-2)	_	39.723	60.392	_	_
	Chicken	Psoriasis	67	20.655	15.804	3.251	98.710
		Control	120	21.525	14.252	4.785	72.374
		Diff (1-2)	_	-0.871	14.824	_	_
	Chili_Pepper	Psoriasis	67	15.269	19.184	0.925	113.06
		Control	120	10.014	10.722	0.972	66.659
		Diff (1-2)	_	5.255	14.326	_	_
	Chocolate	Psoriasis	67	21.566	11.727	3.148	63.694
		Control	120	15.666	9.099	0.686	49.767
		Diff (1-2)	_	5.900	10.115	_	_
	Cinnamon	Psoriasis	67	43.869	27.737	3.703	176.46
		Control	120	37.244	25.730	5.064	147.88

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Diff (1-2)	_	6.624	26.463	_	_
	Clam	Psoriasis	67	63.287	44.897	3.599	199.40
		Control	120	46.602	35.142	9.651	207.57
		Diff (1-2)	_	16.686	38.904	_	_
	Codfish	Psoriasis	67	23.816	47.824	1.763	400.00
		Control	120	30.941	42.235	3.190	385.08
		Diff (1-2)	_	-7.125	44.310	_	_
	Coffee	Psoriasis	67	35.066	69.440	1.164	400.00
		Control	120	20.736	20.293	2.522	111.30
		Diff (1-2)	_	14.331	44.555	_	_
	Cola_Nut	Psoriasis	67	43.487	21.300	8.679	113.02
		Control	120	34.448	16.528	9.778	93.693
		Diff (1-2)	_	9.040	18.373	_	_
	Corn	Psoriasis	67	22.141	39.316	1.587	296.82
		Control	120	12.279	23.585	1.151	222.95
		Diff (1-2)	_	9.862	30.154	_	_
	Cottage_Ch_	Psoriasis	67	148.673	153.331	1.719	400.00
		Control	120	78.084	88.553	2.230	400.00
		Diff (1-2)	_	70.589	115.894	_	_
	Cow_Milk	Psoriasis	67	143.436	146.344	1.058	400.00
		Control	120	75.003	84.042	1.465	400.00
		Diff (1-2)	_	68.434	110.380	_	_
	Crab	Psoriasis	67	37.438	41.118	1.161	195.05
		Control	120	34.136	38.768	4.906	264.34
		Diff (1-2)	_	3.302	39.623	_	_
	Cucumber	Psoriasis	67	17.544	17.069	0.952	71.952
		Control	120	7.744	6.270	0.920	33.408
		Diff (1-2)	_	9.800	11.368	_	_
	Egg	Psoriasis	67	38.702	57.835	1.164	294.76
		Control	120	50.344	75.665	0.925	400.00
		Diff (1-2)	_	-11.643	69.828	_	_
	Eggplant	Psoriasis	67	12.335	15.461	0.846	67.624
		Control	120	5.322	5.491	0.112	39.232
		Diff (1-2)	_	7.014	10.231	_	_
	Garlic	Psoriasis	67	27.412	28.856	4.096	137.10
		Control	120	15.507	14.140	3.034	88.882
		Diff (1-2)	_	11.905	20.632	_	_
	Goat_Milk	Psoriasis	67	37.833	55.624	0.752	248.63

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Control	120	15.413	17.918	0.553	101.25
		Diff (1-2)	_	22.420	36.198	_	_
	Grape	Psoriasis	67	22.838	14.081	5.237	66.666
		Control	120	20.624	7.921	6.592	57.274
		Diff (1-2)	_	2.214	10.540	_	_
	Grapefruit	Psoriasis	67	8.925	14.134	0.100	75.630
		Control	120	3.344	2.412	0.100	15.426
		Diff (1-2)	_	5.581	8.661	_	_
	Green_Pea	Psoriasis	67	16.145	15.519	1.393	59.863
		Control	120	12.264	16.995	0.100	106.01
		Diff (1-2)	_	3.881	16.484	_	_
	Green_Pepper	Psoriasis	67	10.681	13.167	0.397	54.044
		Control	120	4.275	3.376	0.100	19.874
		Diff (1-2)	_	6.406	8.318	_	_
	Halibut	Psoriasis	67	11.673	7.576	1.858	39.672
		Control	120	11.584	6.219	1.257	34.431
		Diff (1-2)	_	0.089	6.735	_	_
	Honey	Psoriasis	67	15.694	10.513	1.879	50.951
		Control	120	10.508	5.967	0.571	37.570
		Diff (1-2)	_	5.186	7.895	_	_
	Lemon	Psoriasis	67	4.721	7.888	0.100	48.492
		Control	120	2.433	1.778	0.100	11.844
		Diff (1-2)	_	2.288	4.923	_	_
	Lettuce	Psoriasis	67	12.890	9.459	1.858	47.917
		Control	120	14.631	14.739	3.452	96.804
		Diff (1-2)	_	-1.741	13.102	_	_
	Lima_Bean	Psoriasis	67	8.603	6.505	0.100	41.768
		Control	120	8.046	9.019	0.971	68.661
		Diff (1-2)	_	0.557	8.211	_	_
	Lobster	Psoriasis	67	17.441	14.390	1.164	79.720
		Control	120	18.803	15.191	3.224	101.76
		Diff (1-2)	_	-1.362	14.910	_	_
	Malt	Psoriasis	67	30.210	17.452	3.903	74.672
		Control	120	21.597	11.498	3.133	56.290
		Diff (1-2)	_	8.613	13.918	_	_
	Millet	Psoriasis	67	4.312	2.666	0.931	15.943
		Control	120	4.840	7.166	0.100	56.380
		Diff (1-2)	_	-0.529	5.964	_	_

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
	Mushroom	Psoriasis	67	13.841	13.351	0.661	64.842
		Control	120	15.151	21.062	0.756	150.46
		Diff (1-2)	_	-1.310	18.680	_	_
	Mustard	Psoriasis	67	18.451	20.701	1.269	89.895
		Control	120	10.473	7.851	1.004	48.101
		Diff (1-2)	_	7.978	13.876	_	_
	Oat	Psoriasis	67	44.494	52.195	2.542	290.07
		Control	120	18.633	21.889	2.160	143.48
		Diff (1-2)	_	25.861	35.779	_	_
	Olive	Psoriasis	67	31.962	26.949	3.148	107.32
		Control	120	22.137	15.571	5.503	100.38
		Diff (1-2)	_	9.825	20.373	_	_
	Onion	Psoriasis	67	24.735	30.803	1.481	167.19
		Control	120	12.459	14.850	2.072	94.943
		Diff (1-2)	_	12.275	21.917	_	_
	Orange	Psoriasis	67	31.057	24.919	2.321	122.07
		Control	120	19.878	20.985	2.158	137.98
		Diff (1-2)	_	11.179	22.468	_	_
	Oyster	Psoriasis	67	83.210	100.148	7.678	400.00
		Control	120	60.800	63.588	7.755	400.00
		Diff (1-2)	_	22.409	78.607	_	_
	Parsley	Psoriasis	67	4.843	8.179	0.100	61.337
		Control	120	8.940	20.778	0.100	143.39
		Diff (1-2)	_	-4.097	17.366	_	_
	Peach	Psoriasis	67	29.030	68.647	0.219	400.00
		Control	120	6.617	6.996	0.100	35.954
		Diff (1-2)	_	22.414	41.384	_	_
	Peanut	Psoriasis	67	6.394	5.648	0.698	32.385
		Control	120	7.099	11.916	0.100	72.177
		Diff (1-2)	_	-0.705	10.134	_	_
	Pineapple	Psoriasis	67	51.151	78.331	1.879	400.00
		Control	120	19.200	32.637	0.100	224.86
		Diff (1-2)	_	31.951	53.611	_	_
	Pinto_Bean	Psoriasis	67	13.990	14.660	1.509	63.774
		Control	120	10.179	8.220	3.076	78.334
		Diff (1-2)	_	3.811	10.961	_	_
	Pork	Psoriasis	67	25.403	67.110	1.904	400.00
		Control	120	16.887	32.923	2.848	352.54

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Diff (1-2)	_	8.515	48.000	_	_
	Potato	Psoriasis	67	17.425	14.056	3.597	66.390
		Control	120	13.287	4.968	4.321	30.493
		Diff (1-2)	_	4.138	9.293	_	_
	Rice	Psoriasis	67	34.151	33.596	3.492	155.91
		Control	120	24.295	18.422	2.701	119.70
		Diff (1-2)	_	9.856	24.919	_	_
	Rye	Psoriasis	67	11.542	14.157	0.656	66.368
		Control	120	5.514	3.891	0.100	30.398
		Diff (1-2)	_	6.028	9.014	_	_
	Safflower	Psoriasis	67	10.880	7.524	1.322	44.283
		Control	120	8.209	4.936	0.343	31.367
		Diff (1-2)	_	2.671	5.989	_	_
	Salmon	Psoriasis	67	10.786	11.056	1.269	63.548
		Control	120	10.261	8.222	1.573	55.715
		Diff (1-2)	_	0.525	9.332	_	_
	Sardine	Psoriasis	67	44.786	18.205	7.544	81.687
		Control	120	40.880	19.764	0.544	115.41
		Diff (1-2)	_	3.906	19.222	_	_
	Scallop	Psoriasis	67	80.760	56.137	4.876	265.50
		Control	120	75.524	36.235	1.284	182.33
		Diff (1-2)	_	5.236	44.371	_	_
	Sesame	Psoriasis	67	59.270	81.189	2.010	400.00
		Control	120	55.573	70.634	0.878	400.00
		Diff (1-2)	_	3.697	74.571	_	_
	Shrimp	Psoriasis	67	29.808	29.715	1.904	136.42
		Control	120	38.469	43.289	0.661	400.00
		Diff (1-2)	_	-8.661	38.992	_	_
	Sole	Psoriasis	67	5.644	3.051	0.529	18.266
		Control	120	7.084	16.070	0.097	176.86
		Diff (1-2)	_	-1.440	13.017	_	_
	Soybean	Psoriasis	67	18.957	14.730	1.862	91.453
		Control	120	19.618	20.367	0.206	150.95
		Diff (1-2)	_	-0.661	18.554	_	_
	Spinach	Psoriasis	67	30.882	30.214	3.715	113.82
		Control	120	17.084	11.299	0.190	78.744
		Diff (1-2)	_	13.798	20.194	_	_
	Squashes	Psoriasis	67	16.911	13.416	2.645	78.444

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
		Control	120	14.525	12.798	0.212	82.645
		Diff (1-2)	_	2.386	13.022	_	_
	Strawberry	Psoriasis	67	9.202	11.896	0.221	72.835
		Control	120	6.108	11.226	0.158	117.33
		Diff (1-2)	_	3.095	11.470	_	_
	String_Bean	Psoriasis	67	51.187	26.596	12.180	145.27
		Control	120	46.296	26.174	0.613	147.79
		Diff (1-2)	_	4.891	26.325	_	_
	Sunflower_Sd	Psoriasis	67	13.992	11.936	1.280	64.776
		Control	120	10.659	7.874	0.125	55.601
		Diff (1-2)	_	3.333	9.524	_	_
	Sweet_Pot_	Psoriasis	67	17.346	20.812	1.718	105.66
		Control	120	8.884	6.498	0.133	50.719
		Diff (1-2)	_	8.462	13.479	_	_
	Swiss_Ch_	Psoriasis	67	94.518	125.081	0.537	400.00
		Control	120	35.610	45.054	0.249	227.39
		Diff (1-2)	_	58.908	82.989	_	_
	Tea	Psoriasis	67	39.897	21.816	9.845	106.19
		Control	120	29.006	11.822	0.292	67.899
		Diff (1-2)	_	10.891	16.115	_	_
	Tobacco	Psoriasis	67	50.775	31.603	7.675	197.71
		Control	120	37.107	24.996	0.255	185.36
		Diff (1-2)	_	13.668	27.536	_	_
	Tomato	Psoriasis	67	25.375	47.435	1.658	266.03
		Control	120	8.734	9.383	0.121	80.067
		Diff (1-2)	_	16.641	29.315	_	_
	Trout	Psoriasis	67	14.406	12.290	2.561	70.436
		Control	120	17.960	14.790	0.169	109.24
		Diff (1-2)	_	-3.553	13.950	_	_
	Tuna	Psoriasis	67	15.597	13.183	0.793	78.014
		Control	120	17.583	13.172	0.189	93.539
		Diff (1-2)	_	-1.986	13.176	_	_
	Turkey	Psoriasis	67	14.921	14.977	2.539	121.32
		Control	120	16.465	10.055	0.228	49.751
		Diff (1-2)	_	-1.544	12.044	_	_
	Walnut_Blk	Psoriasis	67	37.689	32.233	4.232	153.60
		Control	120	27.829	17.399	0.157	112.07
		Diff (1-2)	_	9.860	23.778	_	_

				ELISA Score			
Sex	*Food*	*Diagnosis*	*N*	*Mean*	*SD*	*Min*	*Max*
	Wheat	Psoriasis	67	49.819	82.936	2.328	393.32
		Control	120	15.824	13.755	0.125	94.588
		Diff (1-2)	_	33.995	50.750	_	_
	Yeast_Baker	Psoriasis	67	9.296	11.376	0.582	72.057
		Control	120	6.922	7.362	0.074	47.574
		Diff (1-2)	_	2.374	9.002	_	_
	Yeast_Brewer	Psoriasis	67	19.343	23.727	0.931	135.85
		Control	120	14.452	17.389	0.101	100.26
		Diff (1-2)	_	4.891	19.883	_	_
	Yogurt	Psoriasis	67	50.145	66.551	0.931	280.93
		Control	120	22.386	23.180	0.321	136.19
		Diff (1-2)	_	27.760	43.883	_	_

Table 3

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

Top 59 Foods Ranked by Descending order of Discriminatory Ability using Permutation Test

			Cutpoint	
Food Ranking	*Food*	*Sex*	*90th percentile*	*95th percentile*
1	Peach	FEMALE	18.366	23.671
		MALE	15.233	23.190
2	Cucumber	FEMALE	16.978	23.451
		MALE	16.129	21.988
3	Tea	FEMALE	52.232	59.023
		MALE	44.521	49.474
4	Tomato	FEMALE	17.176	24.934
		MALE	17.889	23.383
5	Broccoli	FEMALE	11.120	13.707
		MALE	10.767	15.005
6	Cauliflower	FEMALE	8.101	10.487
		MALE	10.181	13.715
7	Almond	FEMALE	7.119	9.242
		MALE	9.912	12.749
8	Green_Pepper	FEMALE	8.310	9.809
		MALE	8.146	11.168
9	Grapefruit	FEMALE	6.395	7.795
		MALE	6.506	8.108
10	Tobacco	FEMALE	68.234	83.037
		MALE	67.010	79.772
11	Eggplant	FEMALE	9.830	16.881
		MALE	11.432	14.794
12	Rye	FEMALE	9.337	12.113
		MALE	9.269	12.298
13	Oat	FEMALE	46.854	68.118
		MALE	41.582	57.396
14	Cantaloupe	FEMALE	11.409	13.800
		MALE	11.573	13.558
15	Cabbage	FEMALE	12.730	17.087
		MALE	11.422	17.567
16	Cane_Sugar	FEMALE	40.065	53.675
		MALE	38.137	49.436

Food Ranking	Food	Sex	Cutpoint 90th percentile	95th percentile
17	Sweet_Pot_	FEMALE	14.044	17.261
		MALE	14.327	20.310
18	Pineapple	FEMALE	47.138	84.380
		MALE	50.766	87.306
19	Avocado	FEMALE	4.508	6.111
		MALE	4.376	5.474
20	Orange	FEMALE	47.023	72.520
		MALE	44.043	61.717
21	Spinach	FEMALE	30.407	39.841
		MALE	29.469	37.447
22	Honey	FEMALE	17.390	22.188
		MALE	17.629	22.161
23	Swiss_Ch_	FEMALE	125.53	246.90
		MALE	87.170	143.18
24	Malt	FEMALE	42.458	48.828
		MALE	37.608	43.367
25	Mustard	FEMALE	16.576	18.807
		MALE	19.286	26.442
26	Wheat	FEMALE	34.767	58.125
		MALE	30.214	40.845
27	Apple	FEMALE	8.916	11.286
		MALE	8.549	13.177
28	Chocolate	FEMALE	32.479	37.492
		MALE	27.159	33.055
29	Yogurt	FEMALE	52.355	69.899
		MALE	46.826	66.534
30	Goat_Milk	FEMALE	32.938	66.032
		MALE	38.223	53.932
31	Cola_Nut	FEMALE	60.409	64.983
		MALE	56.175	63.576
32	Clam	FEMALE	75.147	93.874
		MALE	88.303	112.57
33	Cheddar_Ch_	FEMALE	110.14	162.22
		MALE	56.509	80.656
34	Olive	FEMALE	46.417	60.040
		MALE	43.078	50.905

			Cutpoint	
Food Ranking	*Food*	*Sex*	*90th percentile*	*95th percentile*
35	Yeast_Brewer	FEMALE	25.085	32.400
		MALE	31.874	48.190
36	Butter	FEMALE	55.376	71.051
		MALE	53.978	66.916
37	Celery	FEMALE	22.392	29.399
		MALE	18.785	30.373
38	Onion	FEMALE	28.218	42.358
		MALE	26.807	42.455
39	Garlic	FEMALE	23.997	39.823
		MALE	27.773	43.316
40	Walnut_Blk	FEMALE	46.650	66.072
		MALE	46.713	60.996
41	Cottage_Ch_	FEMALE	252.56	376.95
		MALE	194.81	271.45
42	Yeast_Baker	FEMALE	10.825	15.561
		MALE	12.748	18.794
43	Cow_Milk	FEMALE	236.99	355.64
		MALE	192.77	255.70
44	Corn	FEMALE	18.329	33.786
		MALE	22.657	35.960
45	Amer__Cheese	FEMALE	86.030	146.07
		MALE	47.540	73.790
46	Strawberry	FEMALE	9.258	14.782
		MALE	10.629	15.268
47	Buck_Wheat	FEMALE	13.545	17.598
		MALE	14.037	17.446
48	Lemon	FEMALE	4.445	6.001
		MALE	4.209	5.714
49	Green_Pea	FEMALE	26.822	49.810
		MALE	24.182	51.333
50	Trout	FEMALE	35.184	49.914
		MALE	29.051	37.187
51	Barley	FEMALE	45.693	57.123
		MALE	39.460	55.067
52	Potato	FEMALE	19.569	25.620
		MALE	20.158	22.292

			Cutpoint	
Food Ranking	*Food*	*Sex*	*90th percentile*	*95th percentile*
53	Beef	FEMALE	14.699	20.083
		MALE	11.939	19.689
54	Rice	FEMALE	45.656	67.990
		MALE	46.617	62.770
55	Sunflower_Sd	FEMALE	20.574	30.655
		MALE	17.384	24.496
56	Chili_Pepper	FEMALE	18.264	29.015
		MALE	20.710	35.019
57	Banana	FEMALE	12.516	17.556
		MALE	13.351	24.350
58	String_Bean	FEMALE	75.632	100.65
		MALE	83.264	103.46
59	Safflower	FEMALE	16.360	23.394
		MALE	14.018	16.975

Table 4

Distribution of ELISA Signal Scores by Diagnosis
Sex=MALE Food=Peach

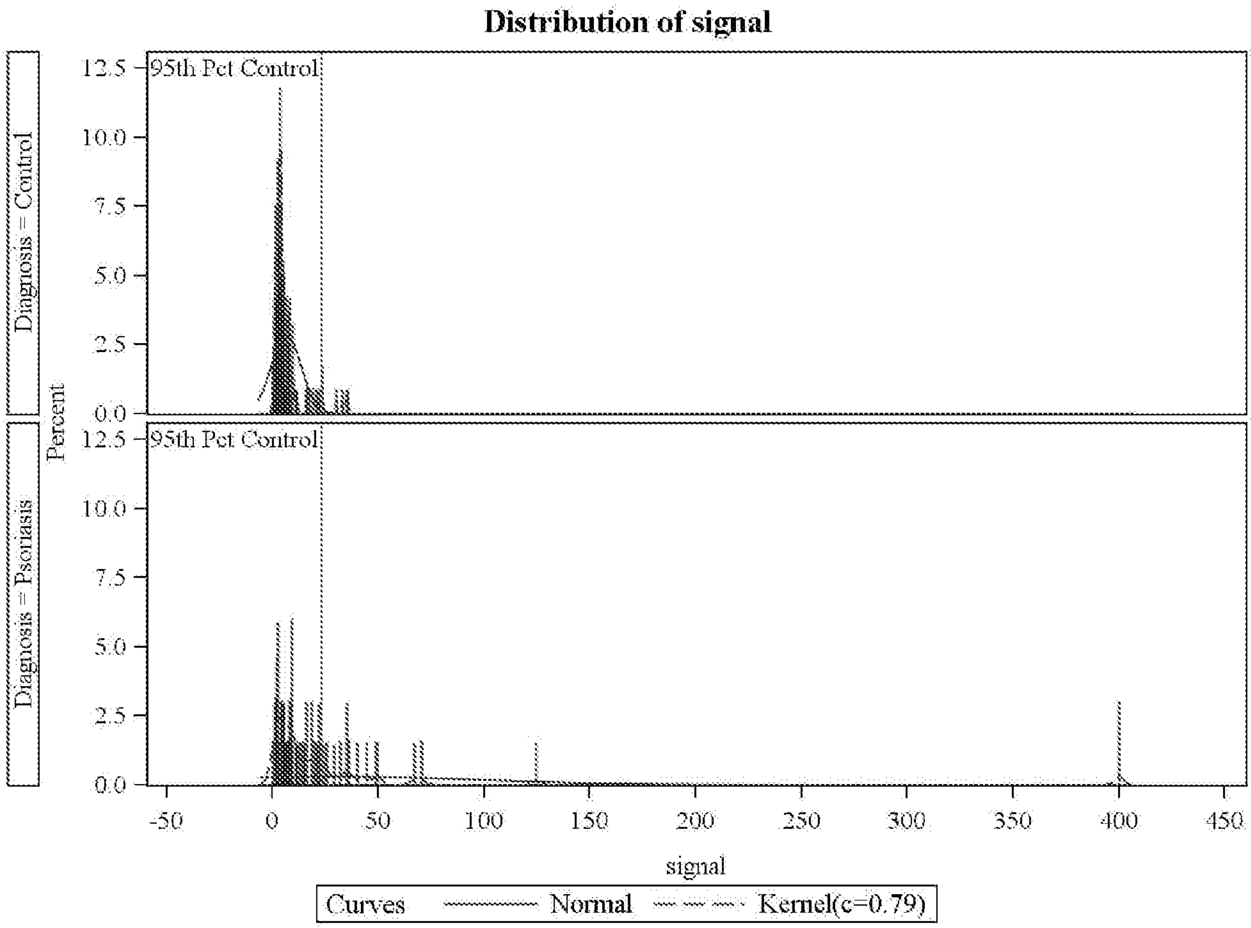

Figure 1A

Distribution of Percentage of Psoriasis Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples
Sex=MALE Food=Peach

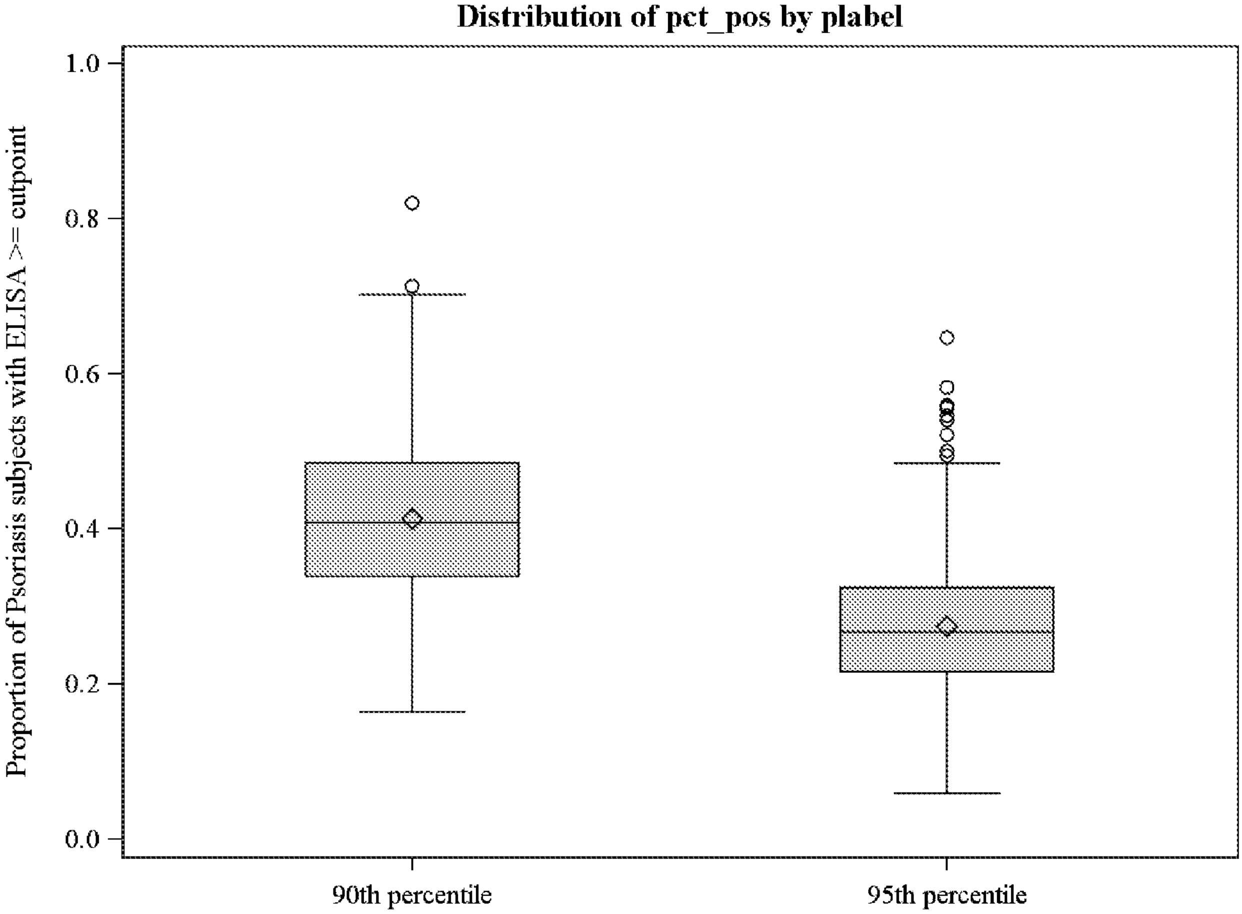

Figure 1B

Distribution of ELISA Signal Scores by Diagnosis
Sex=FEMALE Food=Peach

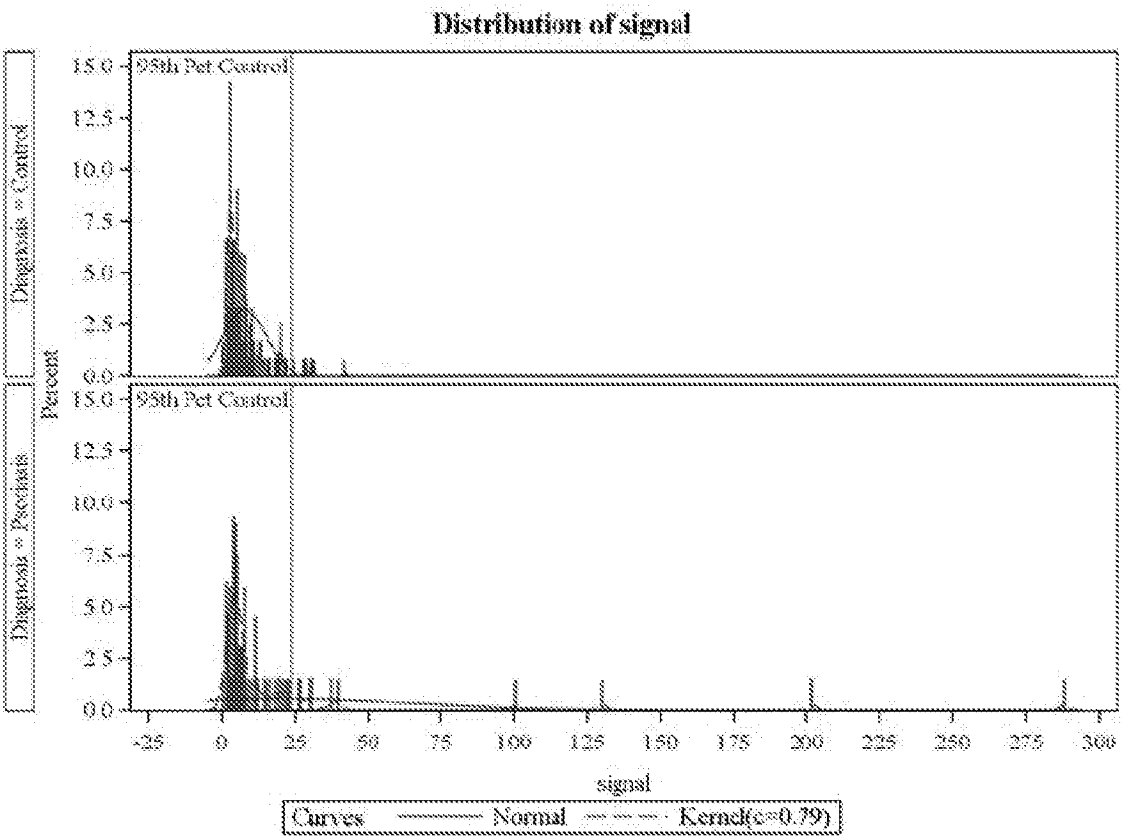

Figure 1C

Distribution of Percentage of Psoriasis Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples
Sex=FEMALE Food=Peach

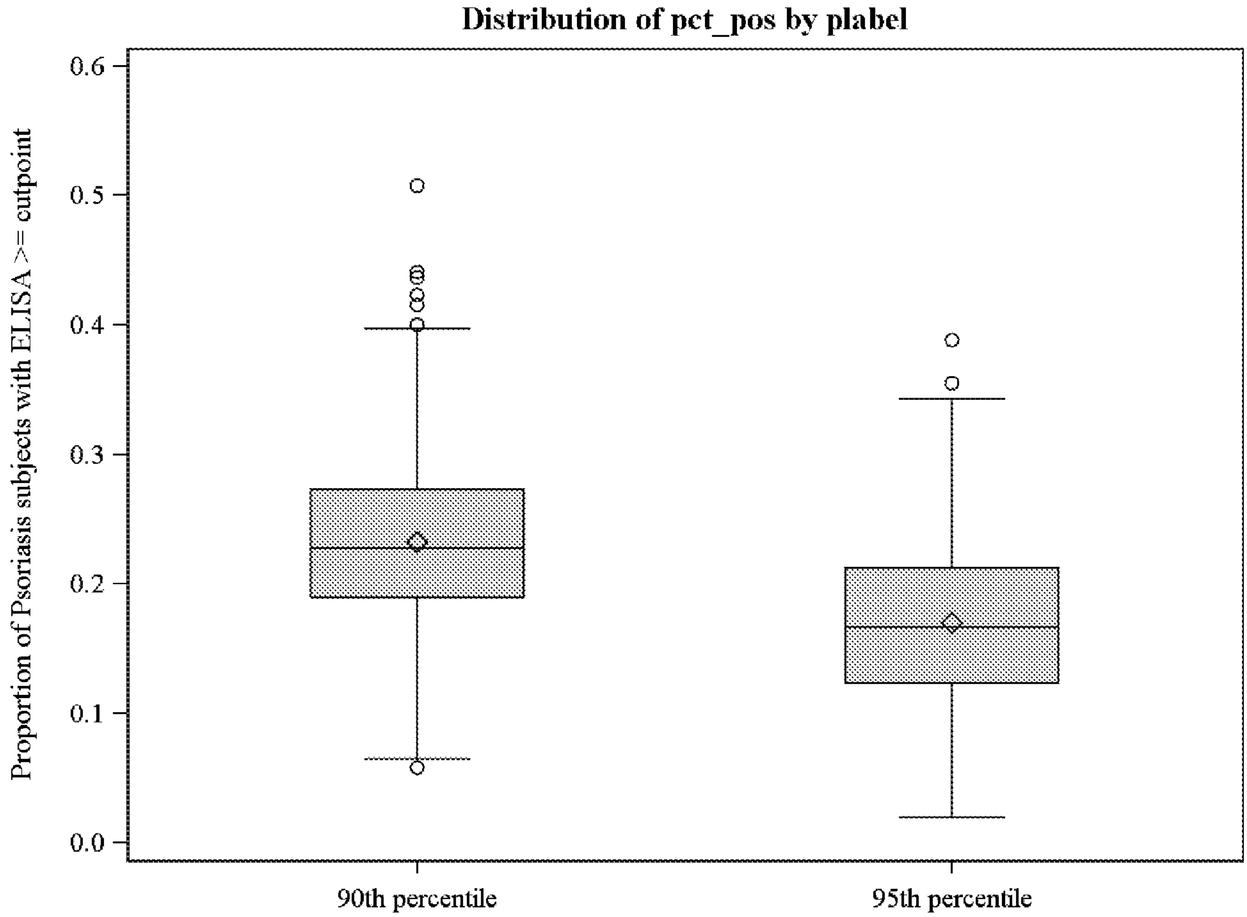

Figure 1D

Distribution of ELISA Signal Scores by Diagnosis
Sex=MALE Food=Cucumber

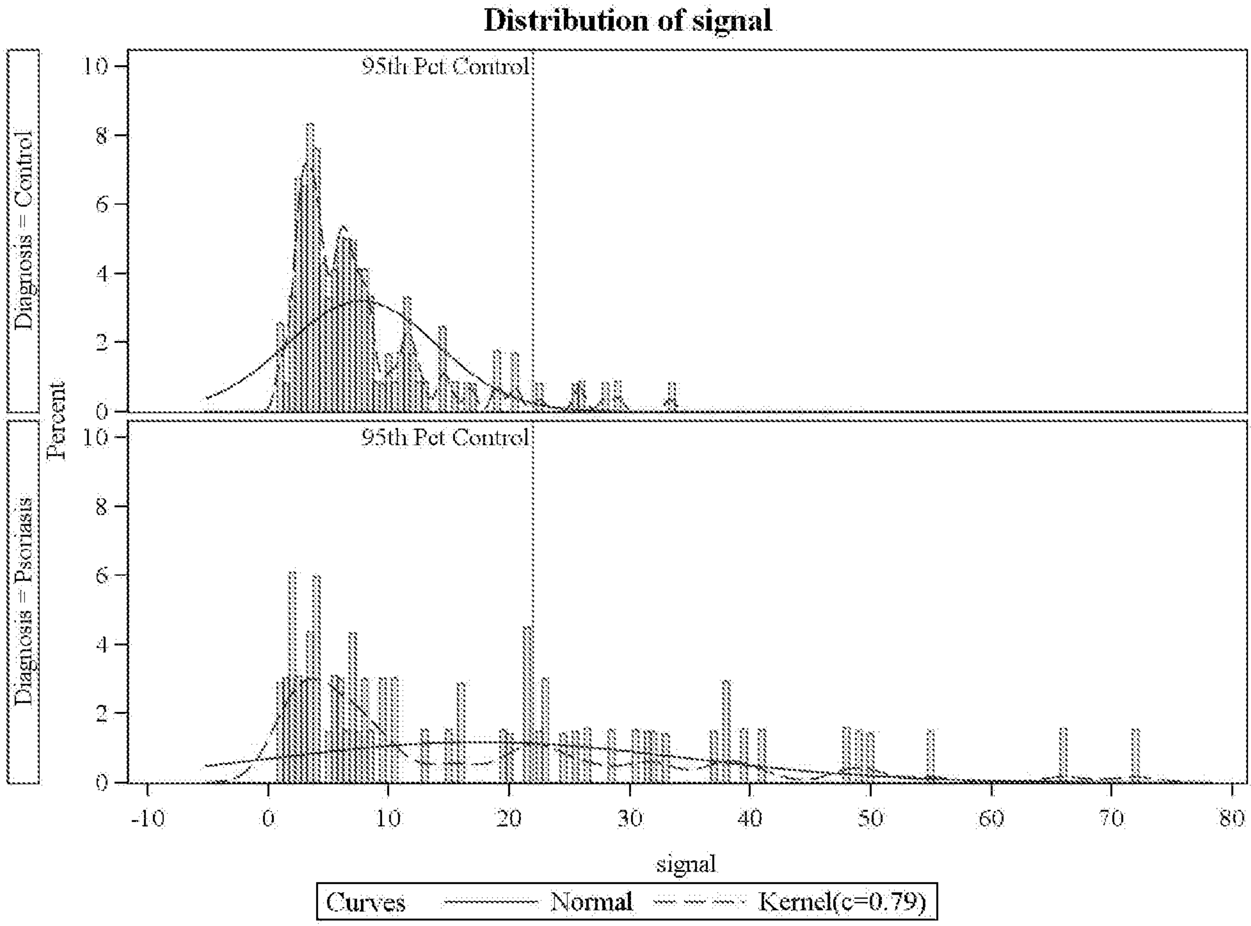

Figure 2A

Distribution of Percentage of Psoriasis Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples
Sex=MALE Food=Cucumber

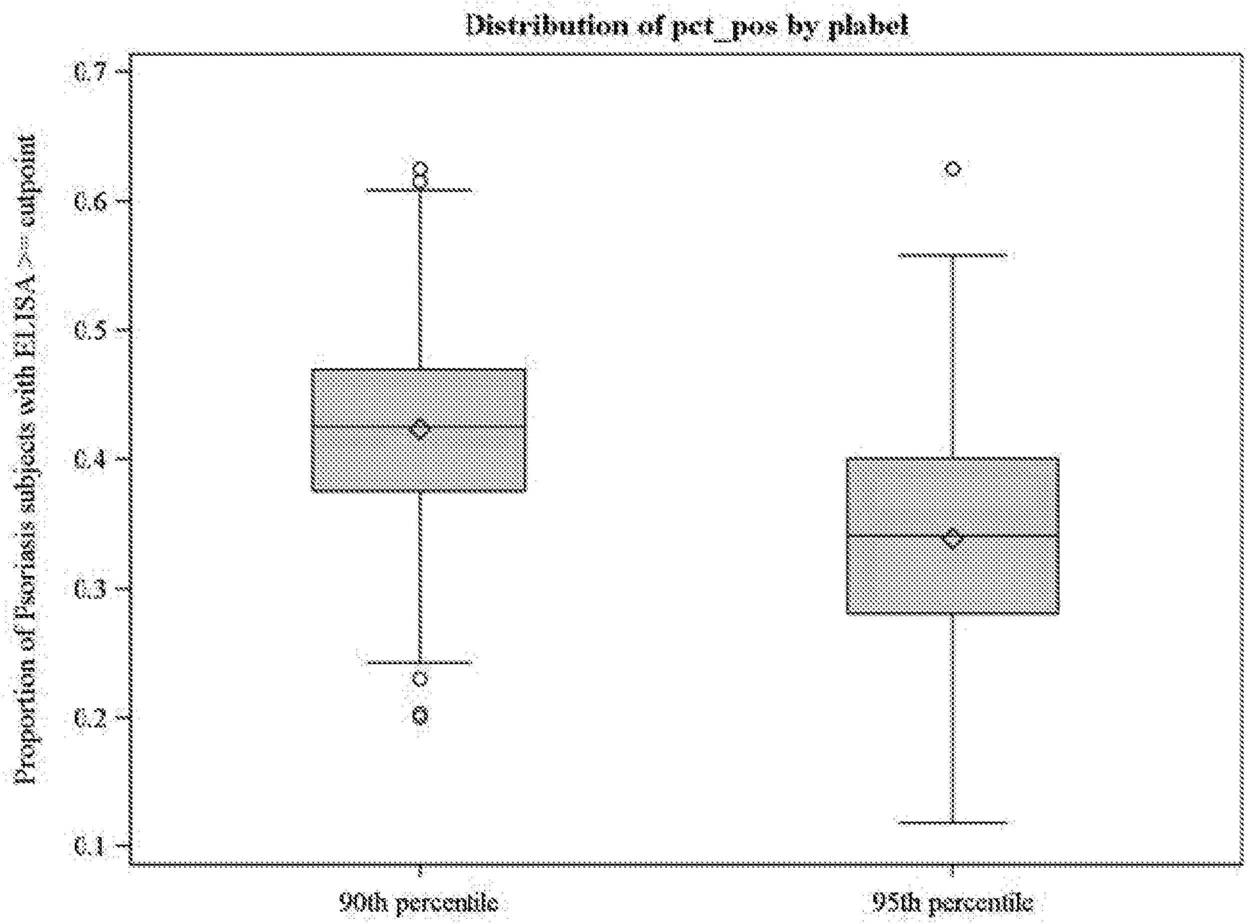

Figure 2B

Distribution of ELISA Signal Scores by Diagnosis
Sex=FEMALE Food=Cucumber

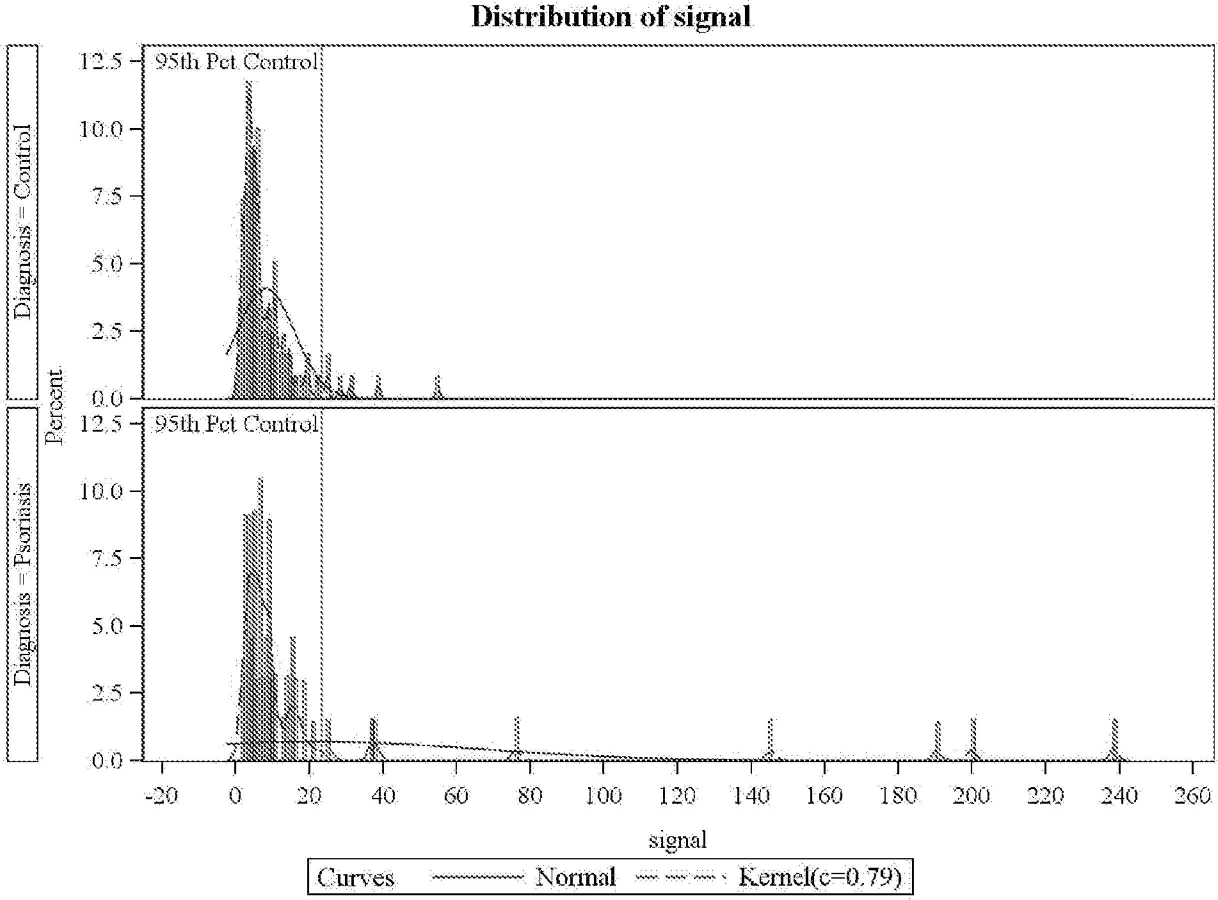

Figure 2C

Distribution of Percentage of Psoriasis Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples
Sex=FEMALE Food=Cucumber

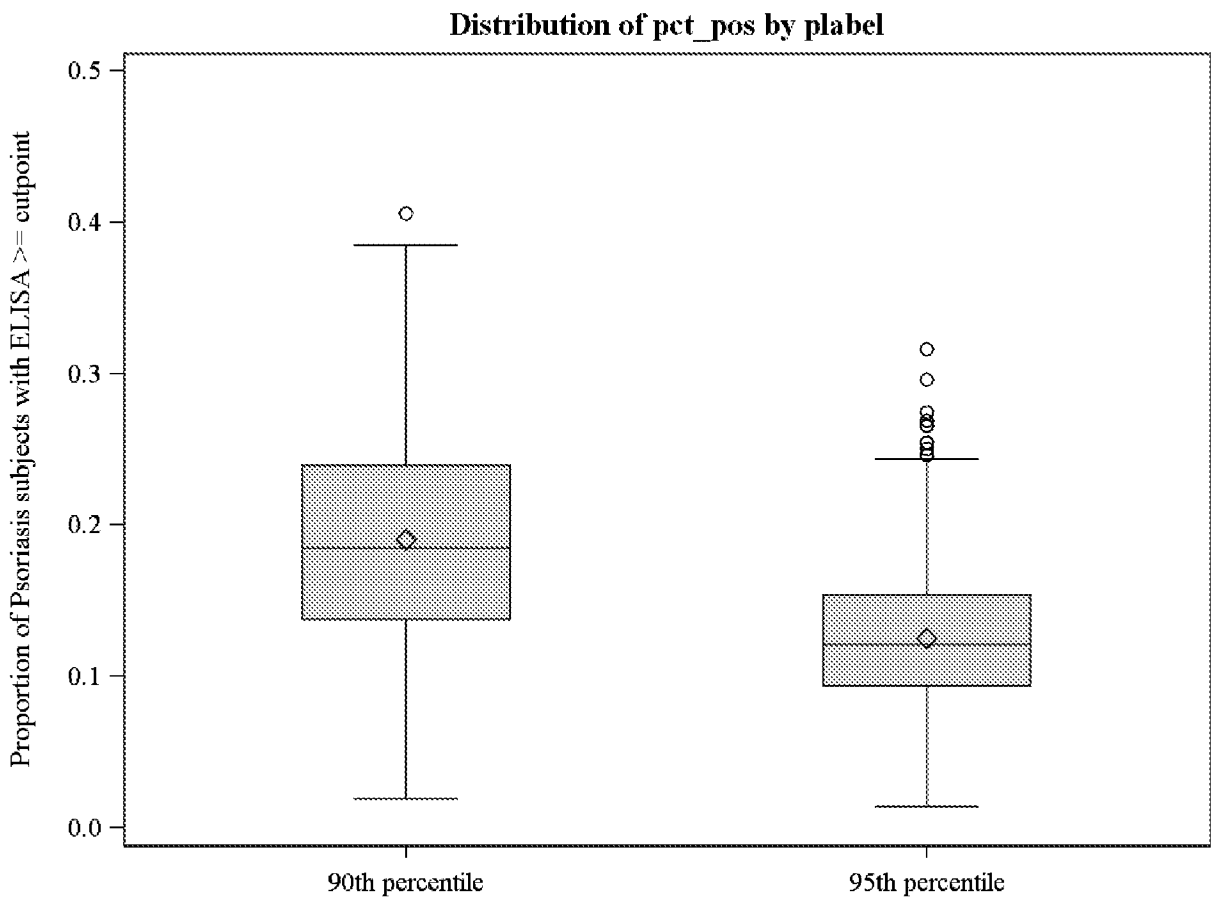

Figure 2D

Distribution of ELISA Signal Scores by Diagnosis
Sex=MALE Food=Tea

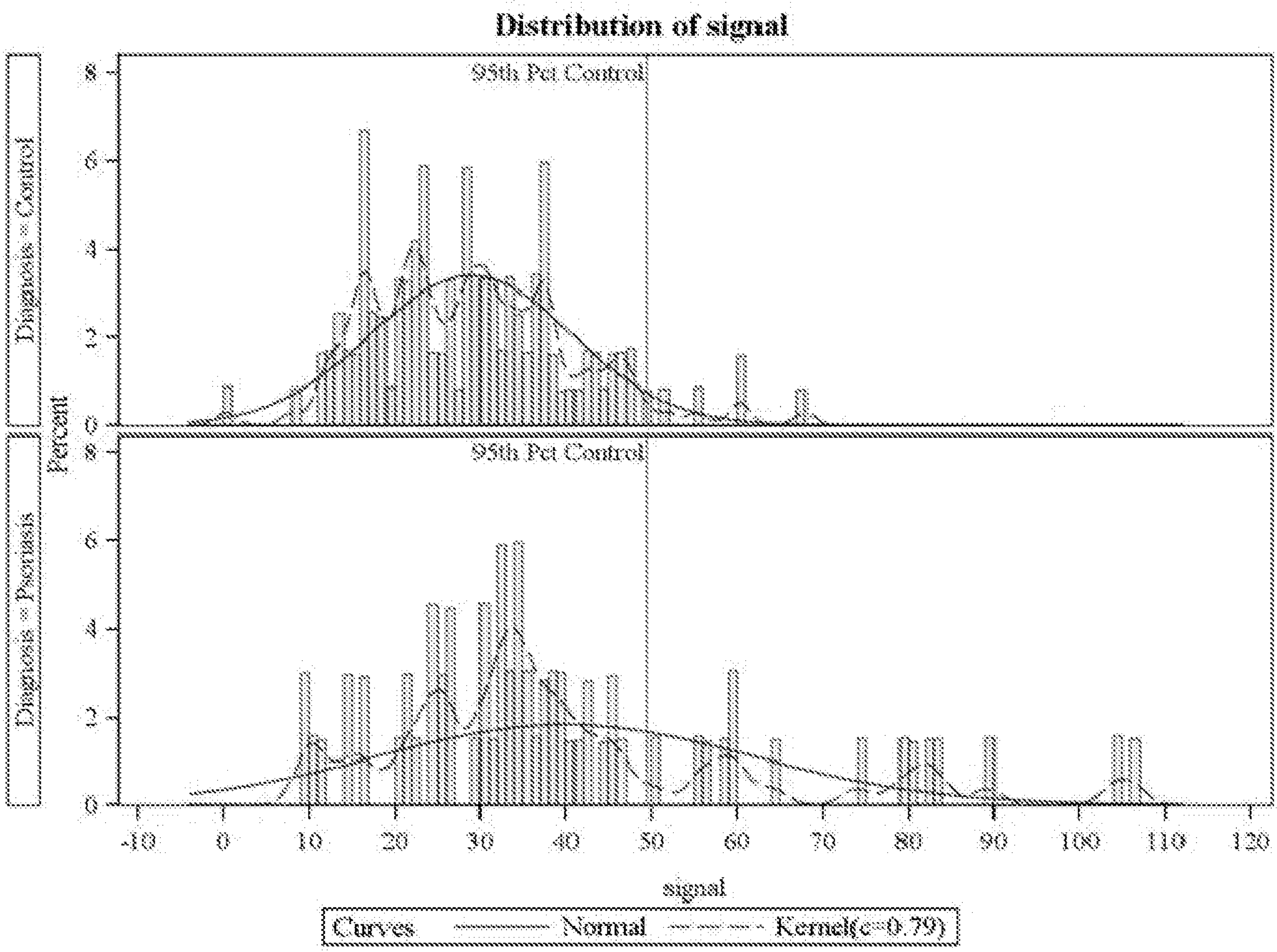

Figure 3A

Distribution of Percentage of Psoriasis Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples
Sex=MALE Food=Tea

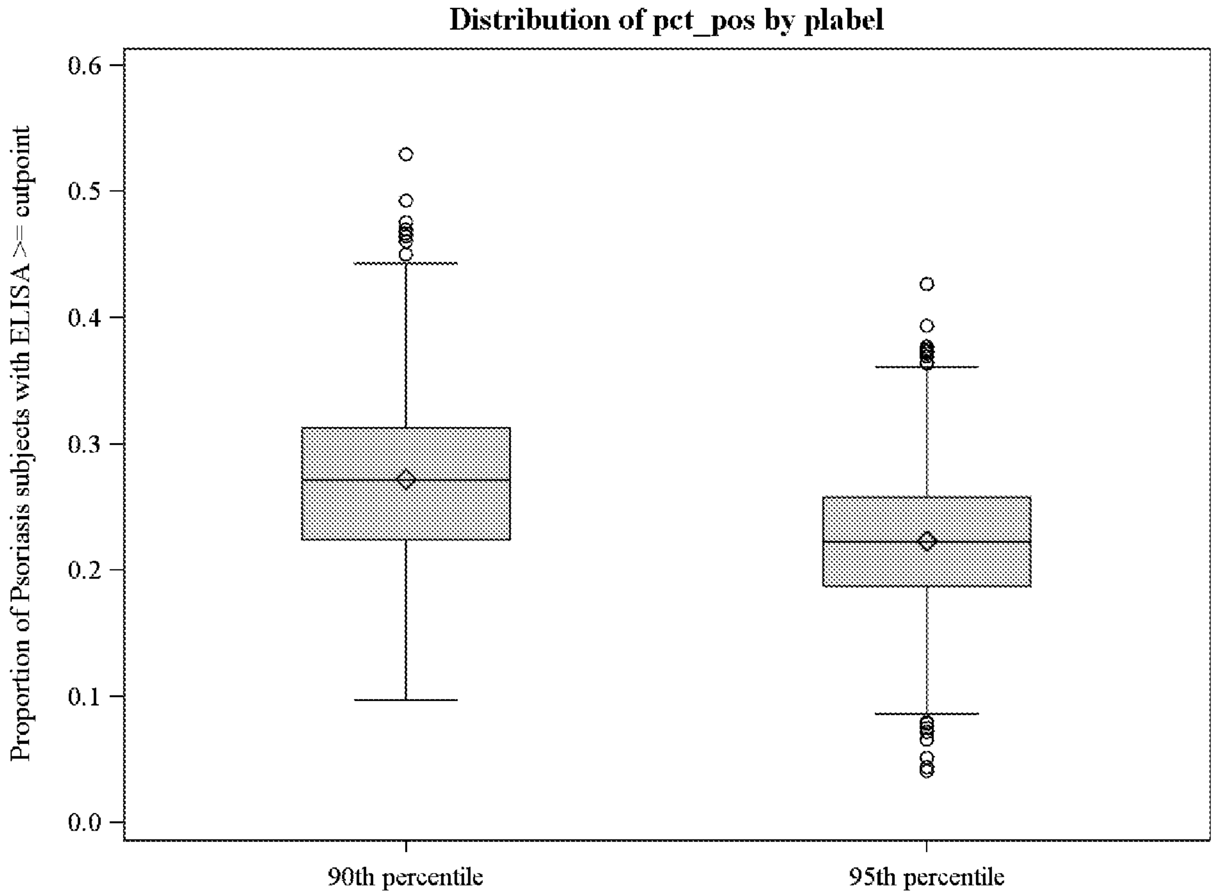

Figure 3B

Distribution of ELISA Signal Scores by Diagnosis
Sex=FEMALE Food=Tea

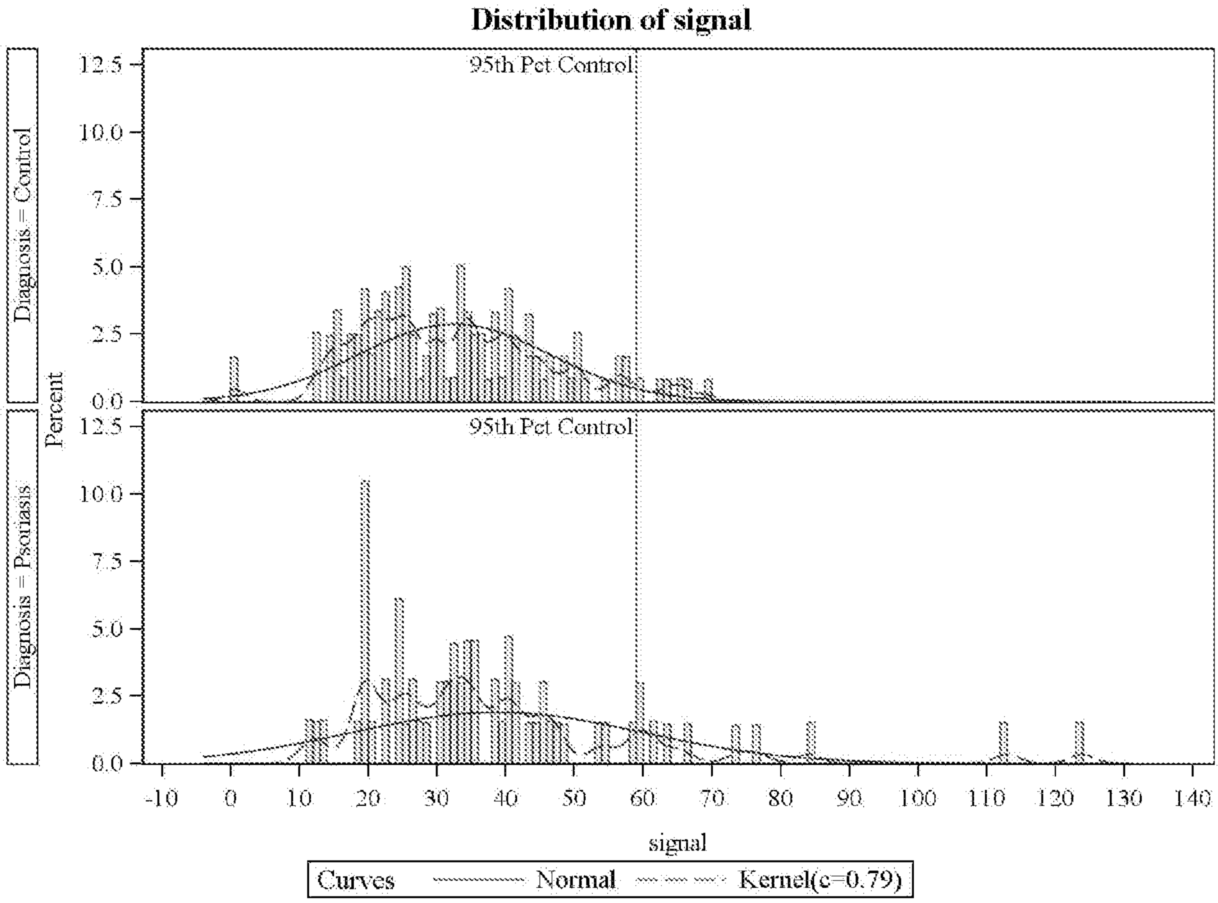

Figure 3C

Distribution of Percentage of Psoriasis Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples
Sex=FEMALE Food=Tea

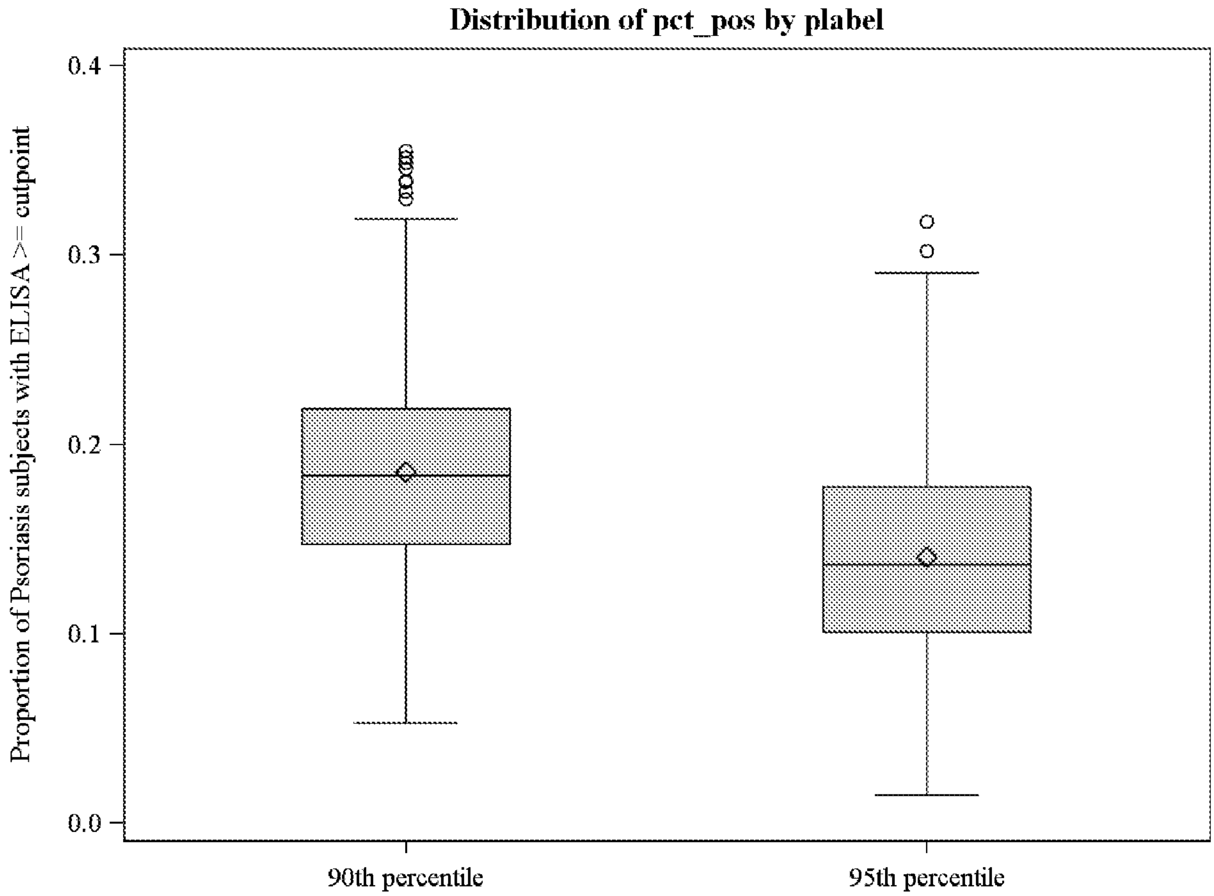

Figure 3D

Distribution of ELISA Signal Scores by Diagnosis
Sex=MALE Food=Tomato

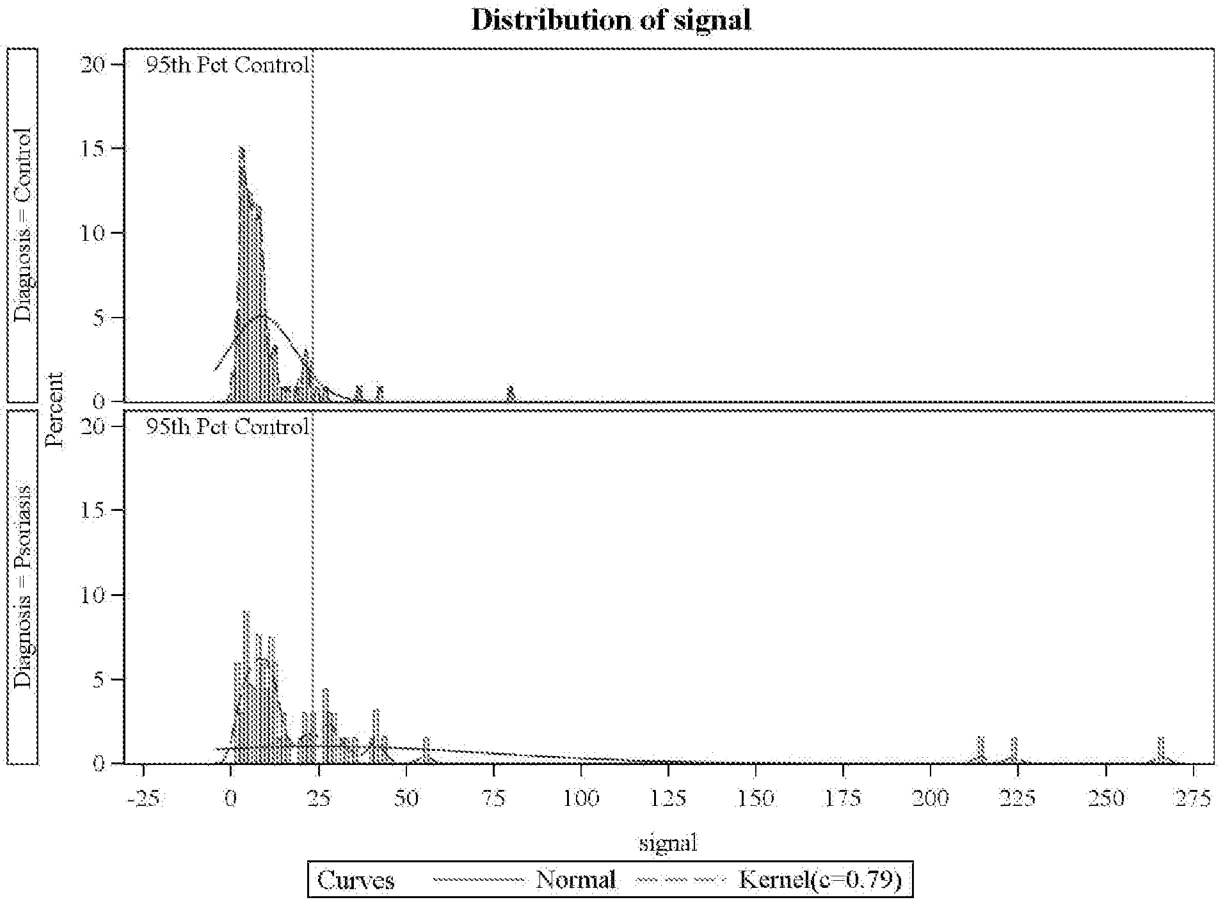

Figure 4A

Distribution of Percentage of Psoriasis Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples
Sex=MALE Food=Tomato

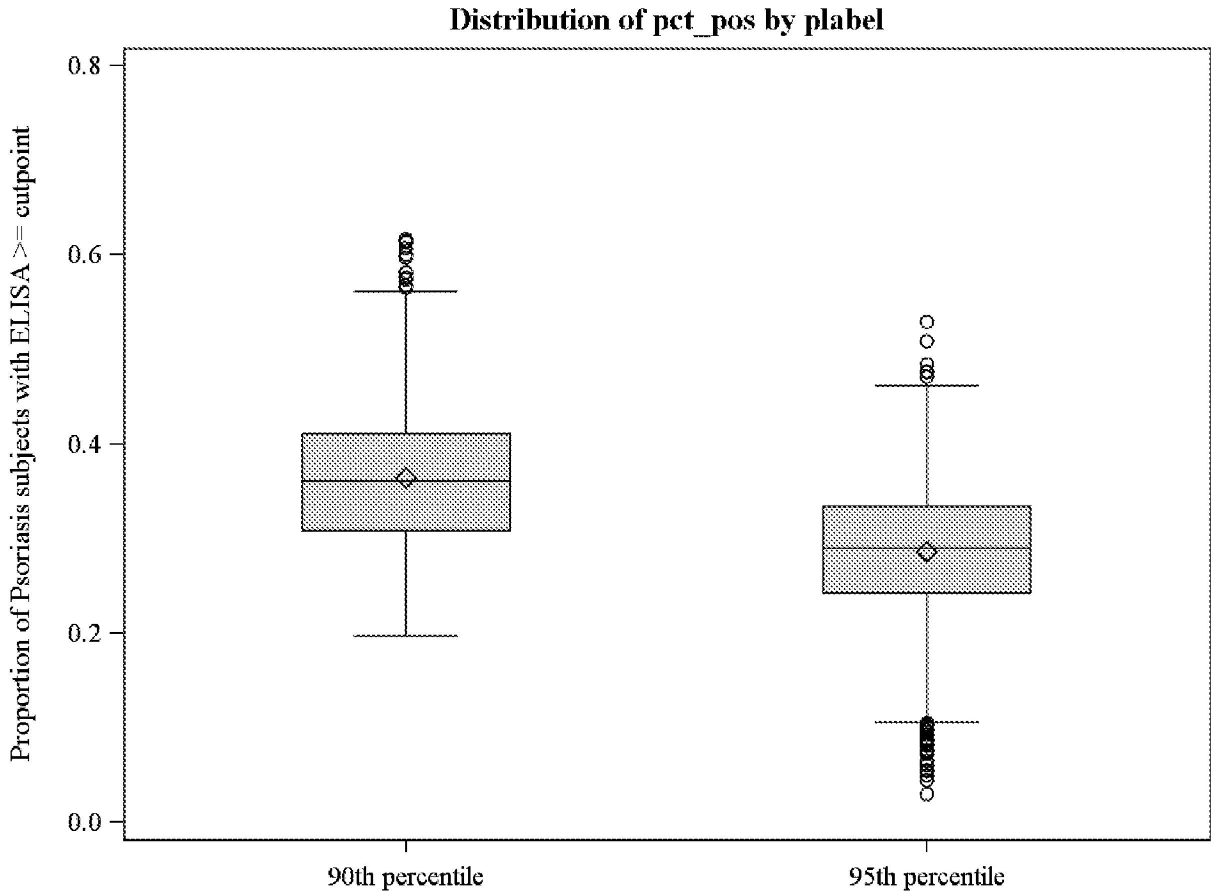

Figure 4B

Distribution of ELISA Signal Scores by Diagnosis
Sex=FEMALE Food=Tomato

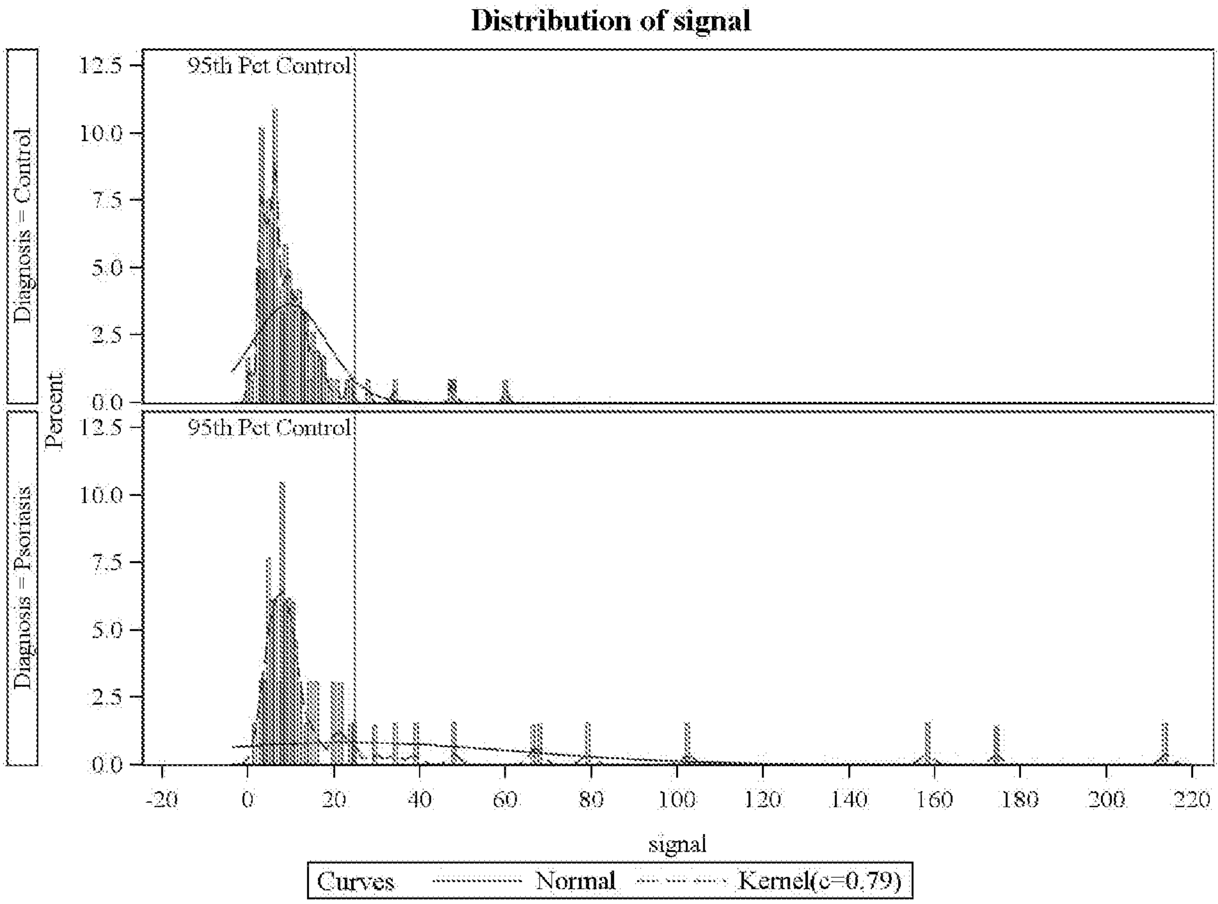

Figure 4C

Distribution of Percentage of Psoriasis Subjects with Signals >= Control Cutpoint across 1000 Bootstrapped Samples
Sex=FEMALE Food=Tomato

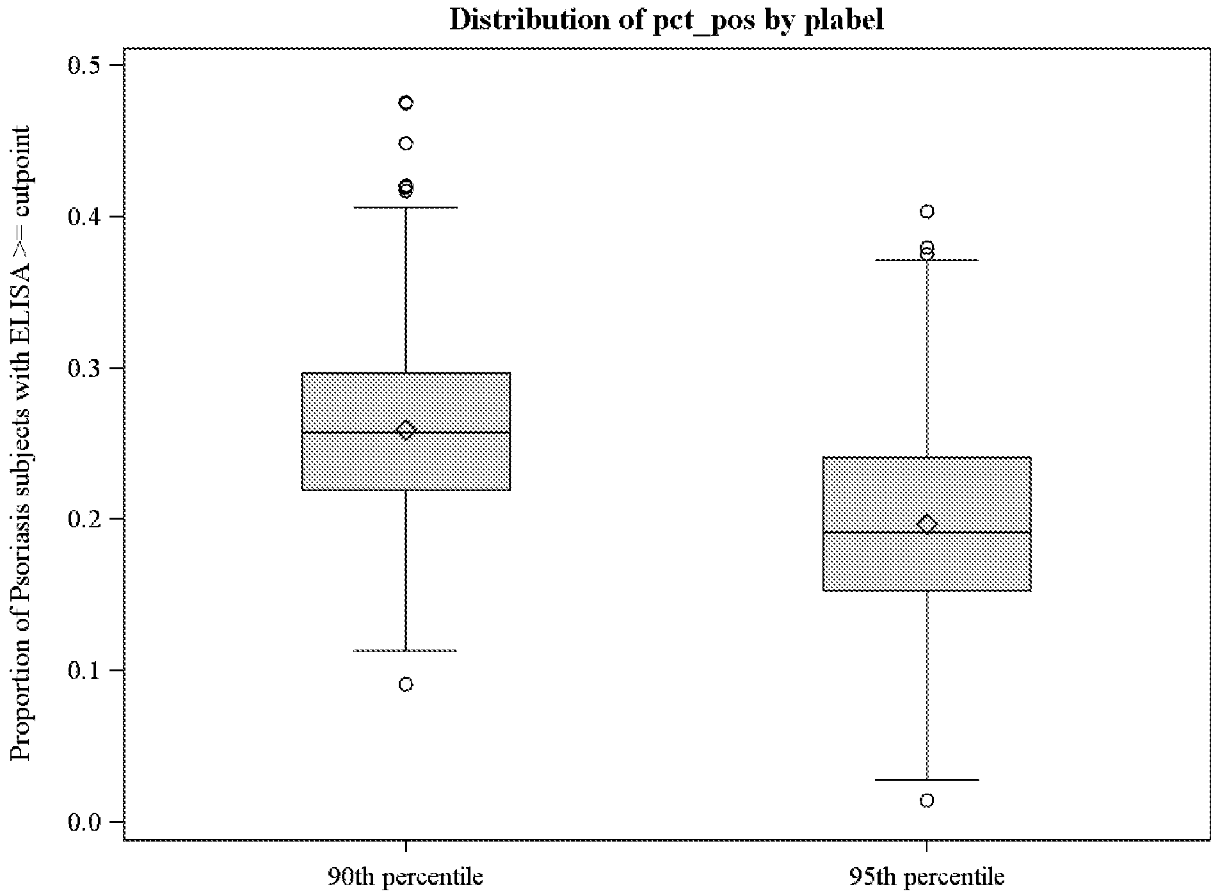

Figure 4D

Distribution of Psoriasis Subjects by Number of Foods in which they were rated as "Positive" by Sex

90th Percentile as Cutpoint

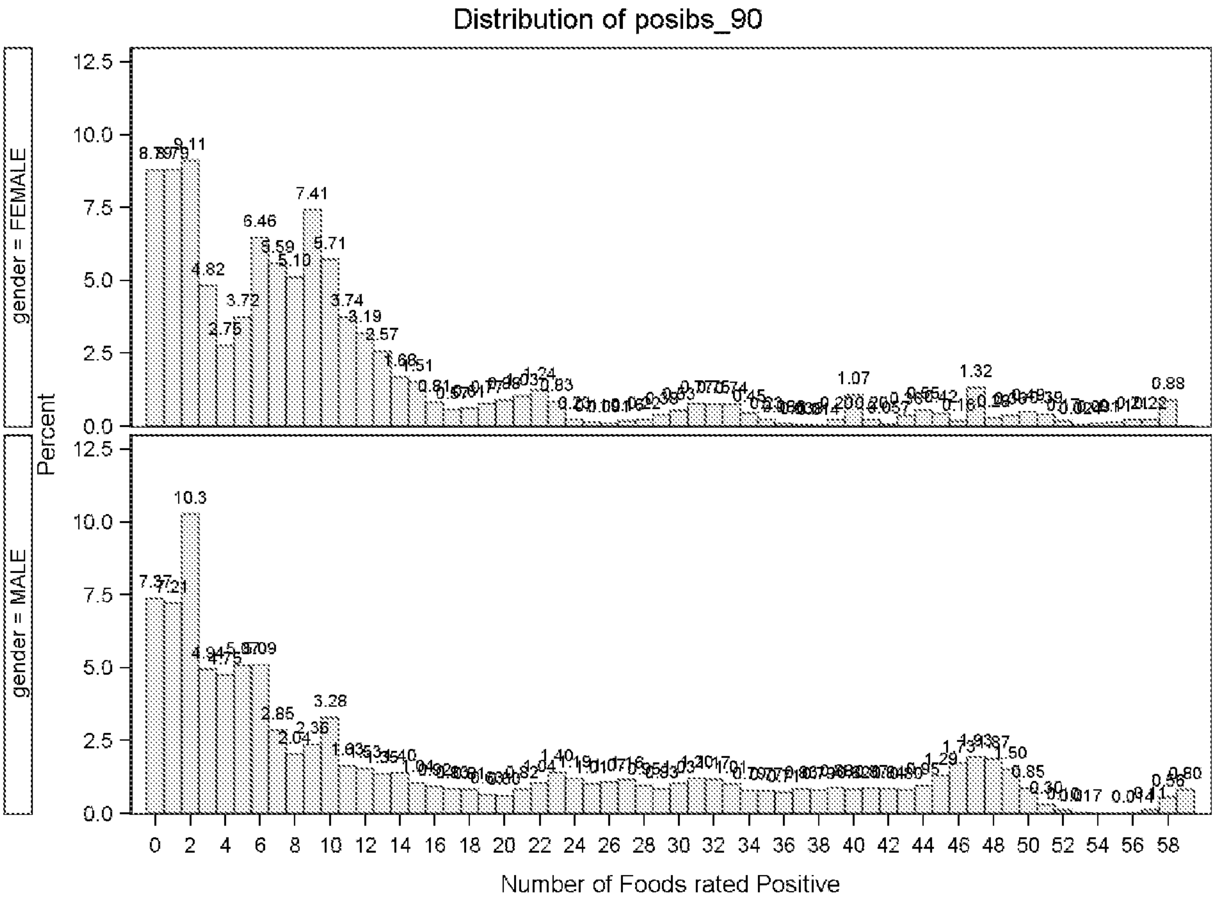

Figure 5A

Distribution of Psoriasis Subjects by Number of Foods in which they were rated as "Positive" by Sex

95th Percentile as Cutpoint

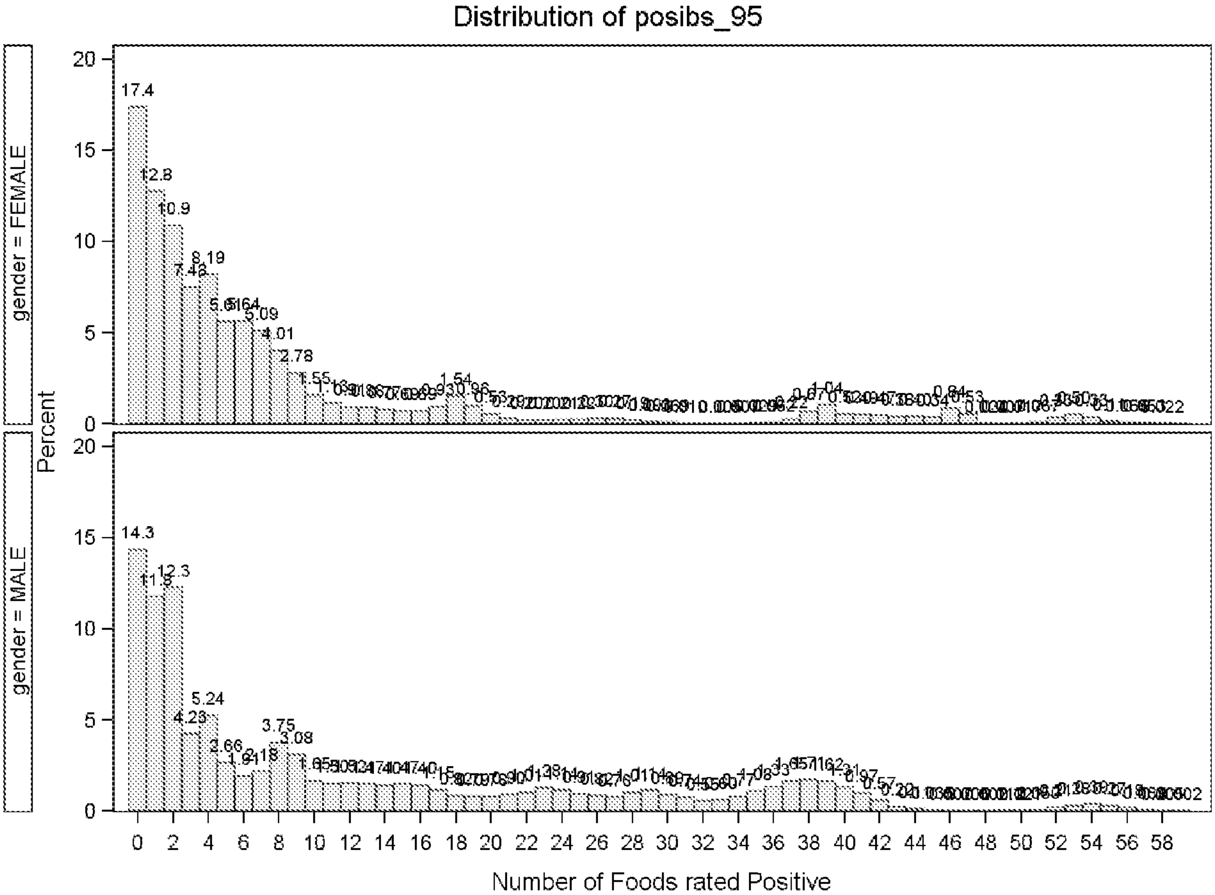

Figure 5B

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
KH16-12764	18
KH16-13276	14
KH16-13571	10
KH16-13573	46
KH16-13877	49
KH16-14181	2
KH16-14182	1
KH16-14184	25
KH16-14185	4
KH16-14186	50
KH16-14582	59
BRH1226007	37
BRH1226011	26
BRH1226013	29
BRH1226015	38
BRH1226016	30
BRH1226020	0
BRH1226021	2
BRH1226022	18
BRH1226024	8
BRH1217480	7
BRH1217481	11
BRH1217483	47
BRH1217485	1
BRH1217486	47
BRH1217489	5
BRH1217490	2
BRH1217491	46
BRH1217492	4
BRH1217494	4
BRH1217497	21
BRH1217498	39
BRH1217501	11
BRH1217502	2
BRH1217503	32
BRH1217504	0
BRH1217507	49
KH15-16815	0
KH15-17685	1
KH15-18901	6

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1165675	14
BRH1165676	8
BRH1165677	0
BRH1165678	2
BRH1165679	8
BRH1165680	4
BRH1165681	1
BRH1165682	22
BRH1165683	8
BRH1165684	6
BRH1165698	2
BRH1165700	0
BRH1165701	6
BRH1165703	9
BRH1165704	31
BRH1165705	2
BRH1165706	1
BRH1165707	1
BRH1165709	6
BRH1165710	12
BRH1165747	1
BRH1165748	10
BRH1165749	6
BRH1165750	1
BRH1165751	4
BRH1165752	1
BRH1165772	22
BRH1165773	6
BRH1165774	1
BRH1165775	2
BRH1165777	6
BRH1209177	0
BRH1209182	1
BRH1209183	1
BRH1209184	1
BRH1209187	7
BRH1209197	20
BRH1209198	0
BRH1209199	5
BRH1209200	10

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
KH16-01608	20
KH16-04038	10
KH16-04039	12
KH16-04313	6
KH16-04885	23
KH16-05027	1
KH16-05483	4
KH16-06929	8
KH16-06932	5
KH16-08306	10
KH16-08307	3
KH16-08560	2
BRH1214586	2
BRH1214587	0
BRH1214588	0
BRH1214590	2
BRH1214593	40
BRH1214594	37
BRH1214596	2
BRH1214597	4
BRH1214599	6
BRH1214600	12
BRH1214604	6
BRH1214606	24
BRH1214607	4
BRH1214608	34
BRH1214609	2
KH-1898	12
KH-1899	6
KH16-10295	1
KH16-12582	6
KH16-12584	19
KH16-12763	2
KH16-12765	10
KH16-13277	9
KH16-13570	33
KH16-13876	0
KH16-14183	8
KH16-15441	47
KH16-15641	22
KH16-16345	1
BRH1226008	9

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1209201	5
BRH1209212	3
BRH1209213	3
BRH1209214	0
BRH1209215	2
BRH1209216	9
BRH1209217	0
BRH1209218	0
BRH1209219	0
BRH1209220	8
BRH1209221	0
BRH1209238	1
BRH1209239	7
BRH1209240	0
BRH1209241	9
BRH1209243	1
BRH1209256	15
BRH1209257	0
BRH1209258	5
BRH1209259	10
BRH1165685	6
BRH1165688	0
BRH1165690	2
BRH1165691	2
BRH1165692	44
BRH1165694	2
BRH1165695	4
BRH1165711	6
BRH1165712	2
BRH1165713	9
BRH1165714	11
BRH1165715	11
BRH1165716	28
BRH1165717	4
BRH1165718	4
BRH1165719	2
BRH1165722	1
BRH1165723	1
BRH1165724	1
BRH1165725	5
BRH1165726	7
BRH1165727	2

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1226009	1
BRH1226010	32
BRH1226012	9
BRH1226014	1
BRH1226017	5
BRH1226018	10
BRH1226019	11
BRH1226023	18
BRH1217482	22
BRH1217484	10
BRH1217487	9
BRH1217488	7
BRH1217493	10
BRH1217495	7
BRH1217496	12
BRH1217499	3
BRH1217500	58
BRH1217505	13
BRH1217506	2
KH15-16733	44
KH15-16812	0
KH15-17088	6
KH15-17385	31
KH15-18902	50
KH16-00804	6
KH16-00805	2
KH16-01745	6
KH16-01748	9
KH16-02280	0
KH16-02752	13
KH16-02753	3
KH16-02872	2
KH16-02896	0
KH16-03138	6
KH16-03898	3
KH16-04886	2
KH16-05028	2
KH16-05627	40
KH16-07760	2
BRH1214589	5
BRH1214591	1
BRH1214592	0
BRH1214595	0

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1165729	2
BRH1165730	0
BRH1165731	2
BRH1165733	6
BRH1165734	12
BRH1165736	0
BRH1165739	6
BRH1165740	13
BRH1165742	1
BRH1165746	12
BRH1165753	6
BRH1165754	10
BRH1165755	8
BRH1165756	3
BRH1165758	0
BRH1165759	0
BRH1165761	1
BRH1165762	13
BRH1165767	2
BRH1165768	2
BRH1165770	1
BRH1165771	4
BRH1209188	1
BRH1209189	1
BRH1209190	24
BRH1209191	7
BRH1209193	10
BRH1209194	2
BRH1209195	5
BRH1209196	3
BRH1209202	1
BRH1209203	0
BRH1209205	6
BRH1209206	2
BRH1209207	4
BRH1209208	21
BRH1209209	26
BRH1209210	1
BRH1165779	23
BRH1165780	1
BRH1165781	1
BRH1165784	1
BRH1165785	30

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1214598	11
BRH1214601	15
BRH1214602	2
BRH1214603	8
BRH1214605	7
BRH1214610	11
BRH1214611	7
BRH1214612	9

No of Observations	133
Average Number	13.6
Median Number	8

# of Patients w/ 0 Pos Results	11
% Subjects w/ 0 pos results	8.3

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1165805	5
BRH1165806	11
BRH1165807	6
BRH1165811	3
BRH1165812	1
BRH1165821	1
BRH1165822	0
BRH1165823	4
BRH1165824	28
BRH1165825	5
BRH1165846	18
BRH1165847	26
BRH1165848	28
BRH1165850	2
BRH1165851	8
BRH1165852	8
BRH1165853	12
BRH1165856	2
BRH1165858	7
BRH1165859	1
BRH1165860	3
BRH1165861	3
BRH1165862	12
BRH1165864	0
BRH1165866	23
BRH1209262	9
BRH-1209348	6
BRH1209265	16
BRH1209266	12
BRH1209267	1
BRH1209272	8
BRH1209273	2
BRH1209275	3
BRH1209276	2
BRH1209278	2
BRH1209291	0
BRH1209293	3
BRH1209294	1
BRH1209295	16
BRH1209296	5
BRH1209297	2

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1209304	5
BRH1209305	1
BRH1209306	1
BRH1209307	0
BRH1209308	1
BRH1209318	9
BRH1209319	15
BRH1209321	0
BRH1209322	6
BRH1209323	5
BRH1209344	1
BRH1209345	20
BRH1209346	8
BRH1209347	0
BRH1165791	2
BRH1165794	0
BRH1165797	3
BRH1165798	2
BRH1165799	5
BRH1165801	26
BRH1165802	0
BRH1165803	0
BRH1165813	0
BRH1165814	2
BRH1165815	4
BRH1165817	5
BRH1165829	0
BRH1165832	18
BRH1165834	0
BRH1165837	3
BRH1165843	11
BRH1209269	1
BRH1209280	3
BRH1209283	1
BRH1209284	7
BRH1209287	4
BRH1209289	9
BRH1209298	0
BRH1209300	1
BRH1209302	33
BRH1209316	3
BRH1209325	3
BRH1209326	3

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 90th Percentile
BRH1209327	3
BRH1209330	2
BRH1209332	0
BRH1209337	1
BRH1209340	0
BRH1209341	1
BRH1244998	5
BRH1244999	3
BRH1245000	9
BRH1245001	1
BRH1245002	4
BRH1245004	1
BRH1245007	1
BRH1245008	4
BRH1245010	22
BRH1245011	8
BRH1245012	1
BRH1245013	6
BRH1245014	0
BRH1245015	0
BRH1245016	8
BRH1245018	0
BRH1245019	2
BRH1245022	13
BRH1245023	2
BRH1245024	2
BRH1244993	1
BRH1244994	0
BRH1244995	2
BRH1244996	6
BRH1244997	0

No of Observations	240
Average Number	5.8
Median Number	3

# of Patients w/ 0 Pos Results	37
% Subjects w/ 0 pos results	15.4

Table 5A

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
KH16-12764	12
KH16-13276	11
KH16-13571	9
KH16-13573	36
KH16-13877	38
KH16-14181	0
KH16-14182	1
KH16-14184	15
KH16-14185	1
KH16-14186	40
KH16-14582	54
BRH1226007	15
BRH1226011	24
BRH1226013	20
BRH1226015	30
BRH1226016	23
BRH1226020	0
BRH1226021	1
BRH1226022	10
BRH1226024	6
BRH1217480	3
BRH1217481	4
BRH1217483	40
BRH1217485	0
BRH1217486	36
BRH1217489	3
BRH1217490	2
BRH1217491	37
BRH1217492	2
BRH1217494	2
BRH1217497	13
BRH1217498	30
BRH1217501	9
BRH1217502	0
BRH1217503	27
BRH1217504	0
BRH1217507	38
KH15-16815	0
KH15-17685	0
KH15-18901	2

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1165675	7
BRH1165676	3
BRH1165677	0
BRH1165678	1
BRH1165679	3
BRH1165680	1
BRH1165681	0
BRH1165682	11
BRH1165683	4
BRH1165684	0
BRH1165698	0
BRH1165700	0
BRH1165701	3
BRH1165703	8
BRH1165704	17
BRH1165705	2
BRH1165706	1
BRH1165707	1
BRH1165709	4
BRH1165710	8
BRH1165747	0
BRH1165748	5
BRH1165749	6
BRH1165750	1
BRH1165751	2
BRH1165752	0
BRH1165772	11
BRH1165773	3
BRH1165774	0
BRH1165775	1
BRH1165777	6
BRH1209177	0
BRH1209182	1
BRH1209183	0
BRH1209184	0
BRH1209187	1
BRH1209197	6
BRH1209198	0
BRH1209199	2
BRH1209200	4

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
KH16-01608	16
KH16-04038	8
KH16-04039	8
KH16-04313	3
KH16-04885	18
KH16-05027	0
KH16-05483	1
KH16-06929	3
KH16-06932	2
KH16-08306	8
KH16-08307	2
KH16-08560	0
BRH1214586	1
BRH1214587	0
BRH1214588	0
BRH1214590	1
BRH1214593	36
BRH1214594	29
BRH1214596	2
BRH1214597	1
BRH1214599	4
BRH1214600	7
BRH1214604	4
BRH1214606	11
BRH1214607	4
BRH1214608	20
BRH1214609	1
KH-1898	4
KH-1899	4
KH16-10295	1
KH16-12582	3
KH16-12584	11
KH16-12763	1
KH16-12765	7
KH16-13277	4
KH16-13570	14
KH16-13876	0
KH16-14183	2
KH16-15441	46
KH16-15641	18
KH16-16345	1
BRH1226008	7

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1209201	4
BRH1209212	1
BRH1209213	3
BRH1209214	0
BRH1209215	0
BRH1209216	6
BRH1209217	0
BRH1209218	0
BRH1209219	0
BRH1209220	5
BRH1209221	0
BRH1209238	1
BRH1209239	2
BRH1209240	0
BRH1209241	4
BRH1209243	0
BRH1209256	5
BRH1209257	0
BRH1209258	1
BRH1209259	5
BRH1165685	4
BRH1165688	0
BRH1165690	1
BRH1165691	2
BRH1165692	23
BRH1165694	2
BRH1165695	1
BRH1165711	3
BRH1165712	1
BRH1165713	6
BRH1165714	4
BRH1165715	7
BRH1165716	12
BRH1165717	1
BRH1165718	2
BRH1165719	1
BRH1165722	1
BRH1165723	0
BRH1165724	0
BRH1165725	2
BRH1165726	2
BRH1165727	1

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1226009	0
BRH1226010	15
BRH1226012	1
BRH1226014	0
BRH1226017	2
BRH1226018	6
BRH1226019	7
BRH1226023	8
BRH1217482	18
BRH1217484	7
BRH1217487	8
BRH1217488	1
BRH1217493	7
BRH1217495	3
BRH1217496	3
BRH1217499	2
BRH1217500	53
BRH1217505	3
BRH1217506	1
KH15-16733	40
KH15-16812	0
KH15-17088	2
KH15-17385	26
KH15-18902	44
KH16-00804	6
KH16-00805	2
KH16-01745	4
KH16-01748	4
KH16-02280	0
KH16-02752	7
KH16-02753	1
KH16-02872	1
KH16-02896	0
KH16-03138	4
KH16-03898	1
KH16-04886	1
KH16-05028	0
KH16-05627	39
KH16-07760	2
BRH1214589	3
BRH1214591	0
BRH1214592	0
BRH1214595	0

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1165729	1
BRH1165730	0
BRH1165731	0
BRH1165733	1
BRH1165734	3
BRH1165736	0
BRH1165739	4
BRH1165740	6
BRH1165742	0
BRH1165746	8
BRH1165753	2
BRH1165754	1
BRH1165755	4
BRH1165756	2
BRH1165758	0
BRH1165759	0
BRH1165761	0
BRH1165762	5
BRH1165767	0
BRH1165768	0
BRH1165770	1
BRH1165771	2
BRH1209188	0
BRH1209189	1
BRH1209190	12
BRH1209191	5
BRH1209193	8
BRH1209194	2
BRH1209195	4
BRH1209196	0
BRH1209202	1
BRH1209203	0
BRH1209205	4
BRH1209206	2
BRH1209207	0
BRH1209208	11
BRH1209209	16
BRH1209210	0
BRH1165779	9
BRH1165780	0
BRH1165781	1
BRH1165784	0
BRH1165785	26

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1214598	8
BRH1214601	12
BRH1214602	0
BRH1214603	2
BRH1214605	5
BRH1214610	3
BRH1214611	3
BRH1214612	4

No of Observations	133
Average Number	9.6
Median Number	4

# of Patients w/ 0 Pos Results	22
% Subjects w/ 0 pos results	16.5

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1165805	4
BRH1165806	6
BRH1165807	5
BRH1165811	0
BRH1165812	0
BRH1165821	0
BRH1165822	0
BRH1165823	1
BRH1165824	16
BRH1165825	1
BRH1165846	9
BRH1165847	16
BRH1165848	17
BRH1165850	1
BRH1165851	0
BRH1165852	7
BRH1165853	9
BRH1165856	1
BRH1165858	2
BRH1165859	0
BRH1165860	2
BRH1165861	3
BRH1165862	6
BRH1165864	0
BRH1165866	13
BRH1209262	7
BRH-1209348	3
BRH1209265	14
BRH1209266	11
BRH1209267	0
BRH1209272	4
BRH1209273	2
BRH1209275	0
BRH1209276	0
BRH1209278	2
BRH1209291	0
BRH1209293	0
BRH1209294	0
BRH1209295	10
BRH1209296	3
BRH1209297	0

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1209304	1
BRH1209305	0
BRH1209306	1
BRH1209307	0
BRH1209308	0
BRH1209318	4
BRH1209319	3
BRH1209321	0
BRH1209322	2
BRH1209323	2
BRH1209344	1
BRH1209345	11
BRH1209346	2
BRH1209347	0
BRH1165791	0
BRH1165794	0
BRH1165797	2
BRH1165798	0
BRH1165799	2
BRH1165801	13
BRH1165802	0
BRH1165803	0
BRH1165813	0
BRH1165814	0
BRH1165815	2
BRH1165817	2
BRH1165829	0
BRH1165832	10
BRH1165834	0
BRH1165837	2
BRH1165843	9
BRH1209269	1
BRH1209280	2
BRH1209283	0
BRH1209284	2
BRH1209287	2
BRH1209289	5
BRH1209298	0
BRH1209300	1
BRH1209302	16
BRH1209316	3
BRH1209325	3
BRH1209326	1

PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile

NON-PSORIASIS POPULATION	
Sample ID	# of Positive Results Based on 95th Percentile
BRH1209327	1
BRH1209330	0
BRH1209332	0
BRH1209337	1
BRH1209340	0
BRH1209341	0
BRH1244998	2
BRH1244999	2
BRH1245000	5
BRH1245001	0
BRH1245002	0
BRH1245004	0
BRH1245007	1
BRH1245008	1
BRH1245010	10
BRH1245011	4
BRH1245012	1
BRH1245013	3
BRH1245014	0
BRH1245015	0
BRH1245016	5
BRH1245018	0
BRH1245019	1
BRH1245022	4
BRH1245023	1
BRH1245024	1
BRH1244993	0
BRH1244994	0
BRH1244995	0
BRH1244996	2
BRH1244997	0

No of Observations	240
Average Number	2.9
Median Number	1

# of Patients w/ 0 Pos Results	84
% Subjects w/ 0 pos results	35.0

Table 5B

Variable	Psoriasis_90th_precentile Psoriasis 90th precentile
Sample size	133
Lowest value	0.0000
Highest value	59.0000
Arithmetic mean	13.5940
95% CI for the mean	10.9822 to 16.2058
Median	8.0000
95% CI for the median	6.0000 to 10.0000
Variance	231.8642
Standard deviation	15.2271
Relative standard deviation	1.1201 (112.01%)
Standard error of the mean	1.3204
Coefficient of Skewness	1.3613 (P<0.0001)
Coefficient of Kurtosis	0.7443 (P=0.1088)
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 1.0000
10	1.0000	0.0000 to 1.9227
25	2.0000	2.0000 to 4.0000
75	19.2500	12.0000 to 29.7738
90	40.0000	32.0773 to 47.0000
95	47.0000	42.1962 to 52.2310
97.5	50.0000	

Table 6A

Variable	Psoriasis_95th_precentile Psoriasis 95th precentile
Sample size	133
Lowest value	0.0000
Highest value	54.0000
Arithmetic mean	9.5940
95% CI for the mean	7.3625 to 11.8255
Median	4.0000
95% CI for the median	3.0000 to 6.0000
Variance	169.2581
Standard deviation	13.0099
Relative standard deviation	1.3561 (135.61%)
Standard error of the mean	1.1281
Coefficient of Skewness	1.7172 (P<0.0001)
Coefficient of Kurtosis	2.0139 (P=0.0026)
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	1.0000	1.0000 to 2.0000
75	12.0000	8.0000 to 18.0000
90	36.0000	23.0773 to 39.5554
95	39.8500	36.0000 to 47.9521
97.5	44.3500	

Table 6B

Variable	Non__Psoriasis_90th_precentile Non- Psoriasis 90th precentile

Sample size	240
Lowest value	0.0000
Highest value	44.0000
Arithmetic mean	5.7833
95% CI for the mean	4.8519 to 6.7147
Median	3.0000
95% CI for the median	2.0000 to 4.0000
Variance	53.6516
Standard deviation	7.3247
Relative standard deviation	1.2665 (126.65%)
Standard error of the mean	0.4728
Coefficient of Skewness	2.1466 (P<0.0001)
Coefficient of Kurtosis	5.1163 (P<0.0001)
D'Agostino-Pearson test for Normal distribution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.0000	0.0000 to 0.0000
5	0.0000	0.0000 to 0.0000
10	0.0000	0.0000 to 0.0000
25	1.0000	1.0000 to 1.0000
75	8.0000	6.0000 to 9.0000
90	15.0000	12.0000 to 22.0000
95	23.0000	18.9920 to 28.0000
97.5	28.0000	23.3642 to 32.4280

Table 7A

Variable	Non__Psoriasis_95th_precentile Non- Psoriasis 95th precentile
Sample size	240
Lowest value	0.0000
Highest value	26.0000
Arithmetic mean	2.9292
95% CI for the mean	2.3872 to 3.4711
Median	1.0000
95% CI for the median	1.0000 to 2.0000
Variance	18.1665
Standard deviation	4.2622
Relative standard deviation	1.4551 (145.51%)
Standard error of the mean	0.2751
Coefficient of Skewness	2.3449 (P<0.0001)
Coefficient of Kurtosis	6.5236 (P<0.0001)
D'Agostino-Pearson test for Normal distribution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.0000	0.0000 to 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	3.0000 to 5.0000
90	9.0000	6.0405 to 11.0000
95	12.0000	10.0000 to 16.0000
97.5	16.0000	12.3642 to 21.2839

Table 7B

Variable	Psoriasis_90th_precentile_1 Psoriasis 90th precentile_1
Back-transformed after logarithmic transformation.	

Sample size	133
Lowest value	0.1000
Highest value	59.0000
Geometric mean	5.7525
95% CI for the mean	4.3355 to 7.6326
Median	8.0000
95% CI for the median	6.0000 to 10.0000
Coefficient of Skewness	-0.9815 (P<0.0001)
Coefficient of Kurtosis	0.6943 (P=0.1265)
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 1.0000
10	1.0000	0.10000 to 1.8956
25	2.0000	2.0000 to 4.0000
75	19.2452	12.0000 to 29.7708
90	40.0000	32.0763 to 47.0000
95	47.0000	42.1489 to 52.1130
97.5	50.0000	

Table 8A

Variable	Psoriasis_95th_precentile_1 Psoriasis 95th precentile _1

Back-transformed after logarithmic transformation.

Sample size	133
Lowest value	0.1000
Highest value	54.0000
Geometric mean	2.9541
95% CI for the mean	2.1402 to 4.0774
Median	4.0000
95% CI for the median	3.0000 to 6.0000
Coefficient of Skewness	-0.5344 (P=0.0132)
Coefficient of Kurtosis	-0.5936 (P=0.0635)
D'Agostino-Pearson test for Normal distribution	reject Normality (P=0.0083)

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	1.0000	1.0000 to 2.0000
75	12.0000	8.0000 to 18.0000
90	36.0000	23.0758 to 39.5523
95	39.8484	36.0000 to 47.8535
97.5	44.3436	

Table 8B

Variable	Non__Psoriasis_90th_precentile_1 Non-Psoriasis 90th precentile_1

Back-transformed after logarithmic transformation.

Sample size	240
Lowest value	0.1000
Highest value	44.0000
Geometric mean	2.2995
95% CI for the mean	1.8657 to 2.8342
Median	3.0000
95% CI for the median	2.0000 to 4.0000
Coefficient of Skewness	-0.6604 (P=0.0001)
Coefficient of Kurtosis	-0.3565 (P=0.2046)
D'Agostino-Pearson test for Normal distribution	reject Normality (P=0.0002)

Percentiles		95% Confidence interval
2.5	0.10000	0.10000 to 0.10000
5	0.10000	0.10000 to 0.10000
10	0.10000	0.10000 to 0.10000
25	1.0000	1.0000 to 1.0000
75	8.0000	6.0000 to 9.0000
90	15.0000	12.0000 to 22.0000
95	23.0000	18.9656 to 28.0000
97.5	28.0000	23.3593 to 32.4152

Table 9A

Variable	Non__Psoriasis_95th_precentile_1 Non- Psoriasis 95th precentile_1
Back-transformed after logarithmic transformation.	

Sample size	240
Lowest value	0.1000
Highest value	26.0000
Geometric mean	0.9065
95% CI for the mean	0.7232 to 1.1361
Median	1.0000
95% CI for the median	1.0000 to 2.0000
Coefficient of Skewness	-0.1139 (P=0.4626)
Coefficient of Kurtosis	-1.4181 (P<0.0001)
D'Agostino-Pearson test for Normal distribution	reject Normality (P<0.0001)

Percentiles		95% Confidence interval
2.5	0.10000	0.10000 to 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	3.0000 to 5.0000
90	9.0000	6.0376 to 11.0000
95	12.0000	10.0000 to 16.0000
97.5	16.0000	12.3550 to 21.0951

Table 9B

Sample 1	
Variable	Nor__Psoriasis_90th_precentile_1 Nor- Psoriasis 90th precentile_1
Sample 2	
Variable	Psoriasis_90th_precentile_1 Psoriasis 90th precentile_1

Back-transformed after logarithmic transformation		
	Sample 1	Sample 2
Sample size	240	133
Geometric mean	2.2995	5.7525
95% CI for the mean	1.8657 to 2.8342	4.3355 to 7.6326
Variance of Logs	0.5099	0.5127
F test for equal variances		P = 0.969

t-test (assuming equal variances)

Difference on Log-transformed scale	
Difference	0.3982
Standard Error	0.07727
95% CI of difference	0.2463 to 0.5502
Test statistic t	5.154
Degrees of Freedom (DF)	371
Two-tailed probability	P < 0.0001

Back-transformed results	
Ratio of geometric means	2.5016
95% CI of ratio	1.7631 to 3.5494

Table 10A

Sample 1	
Variable	Non__Psoriasis_95th_precentile_1 Non- Psoriasis 95th precentile_1
Sample 2	
Variable	Psoriasis_95th_precentile_1 Psoriasis 95th precentile_1

Back-transformed after logarithmic transformation.

	Sample 1	Sample 2
Sample size	240	133
Geometric mean	0.9065	2.9541
95% CI for the mean	0.7232 to 1.1361	2.1402 to 4.0774
Variance of Logs	0.5949	0.6659
F-test for equal variances		P = 0.451

T-test (assuming equal variances)

Difference on Log-transformed scale	
Difference	0.5131
Standard Error	0.08513
95% CI of difference	0.3457 to 0.6805
Test statistic t	6.027
Degrees of Freedom (DF)	371
Two-tailed probability	P < 0.0001
Back-transformed results	
Ratio of geometric means	3.2589
95% CI of ratio	2.2166 to 4.7914

Table 10B

Sample 1	
Variable	Non__Psoriasis_90th_precentile_1 Non-Psoriasis 90th precentile_1
Sample 2	
Variable	Psoriasis_90th_precentile_1 Psoriasis 90th precentile_1

	Sample 1	Sample 2
Sample size	240	133
Lowest value	0.1000	0.1000
Highest value	44.0000	59.0000
Median	3.0000	8.0000
95% CI for the median	2.0000 to 4.0000	6.0000 to 10.0000
Interquartile range	1.0000 to 8.0000	2.0000 to 19.2500

Mann-Whitney test (independent samples)

Average rank of first group	164.3354
Average rank of second group	227.8985
Mann-Whitney U	10520.50
Test statistic Z (corrected for ties)	5.474
Two-tailed probability	P < 0.0001

Table 11A

Sample 1	
Variable	Non__Psoriasis_95th_precentile_1 Non- Psoriasis 95th precentile_1
Sample 2	
Variable	Psoriasis_95th_precentile_1 Psoriasis 95th precentile_1

	Sample 1	Sample 2
Sample size	240	133
Lowest value	0.1000	0.1000
Highest value	26.0000	54.0000
Median	1.0000	4.0000
95% CI for the median	1.0000 to 2.0000	3.0000 to 6.0000
Interquartile range	0.1000 to 4.0000	1.0000 to 12.0000

Mann-Whitney test (independent samples)

Average rank of first group	163.5479
Average rank of second group	229.3195
Mann-Whitney U	10331.50
Test statistic Z (corrected for ties)	5.726
Two-tailed probability	P < 0.0001

Table 11B

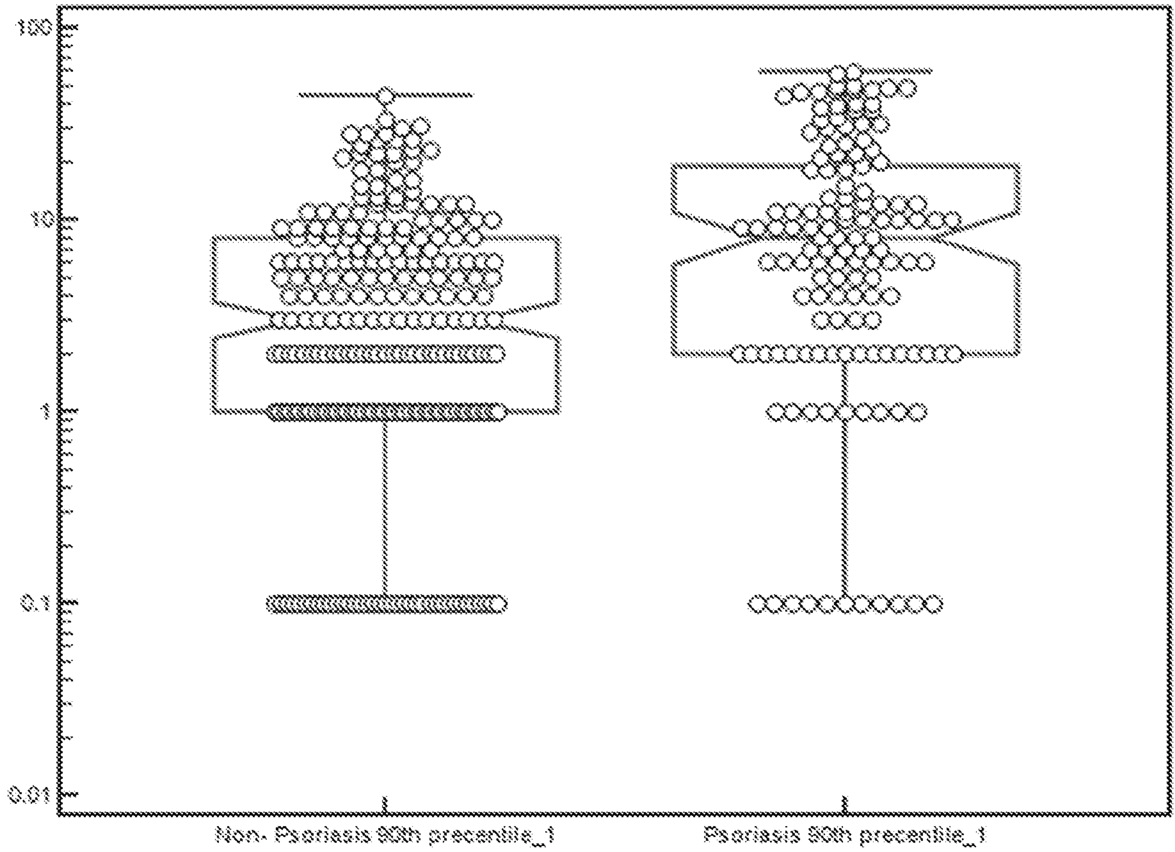
100
10
1
0.1
0.01
Non- Psoriasis 90th precentile_1
Psoriasis 90th precentile_1

Figure 6A

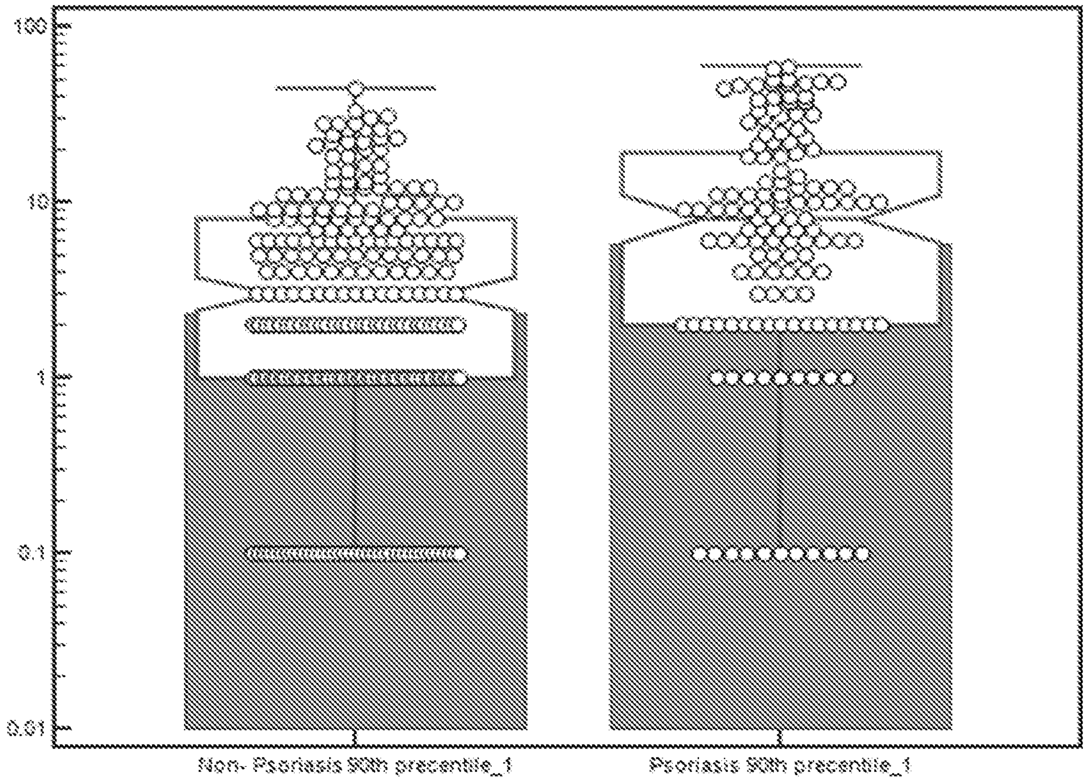
100
10
1
0.1
0.01
Non- Psoriasis 90th precentile_1
Psoriasis 90th precentile_1

Figure 6B

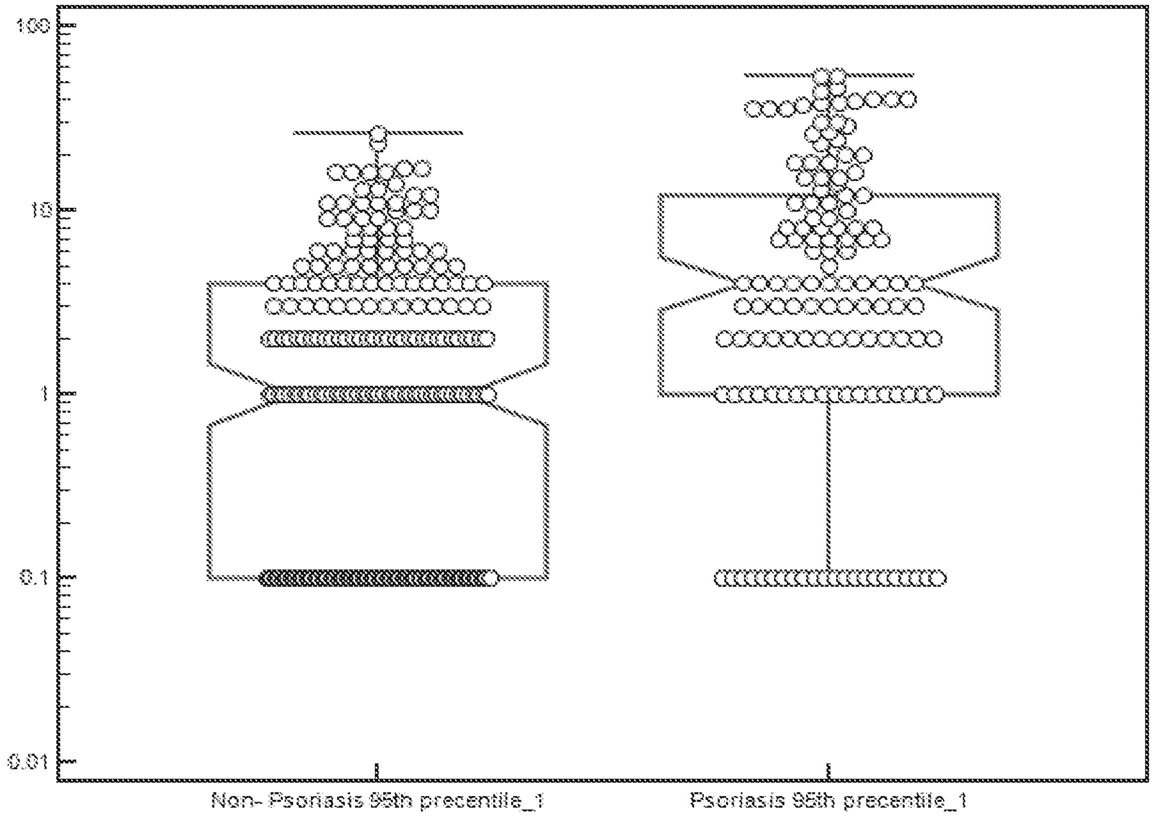
100
10
1
0.1
0.01
Non- Psoriasis 95th precentile_1
Psoriasis 95th precentile_1

Figure 6C

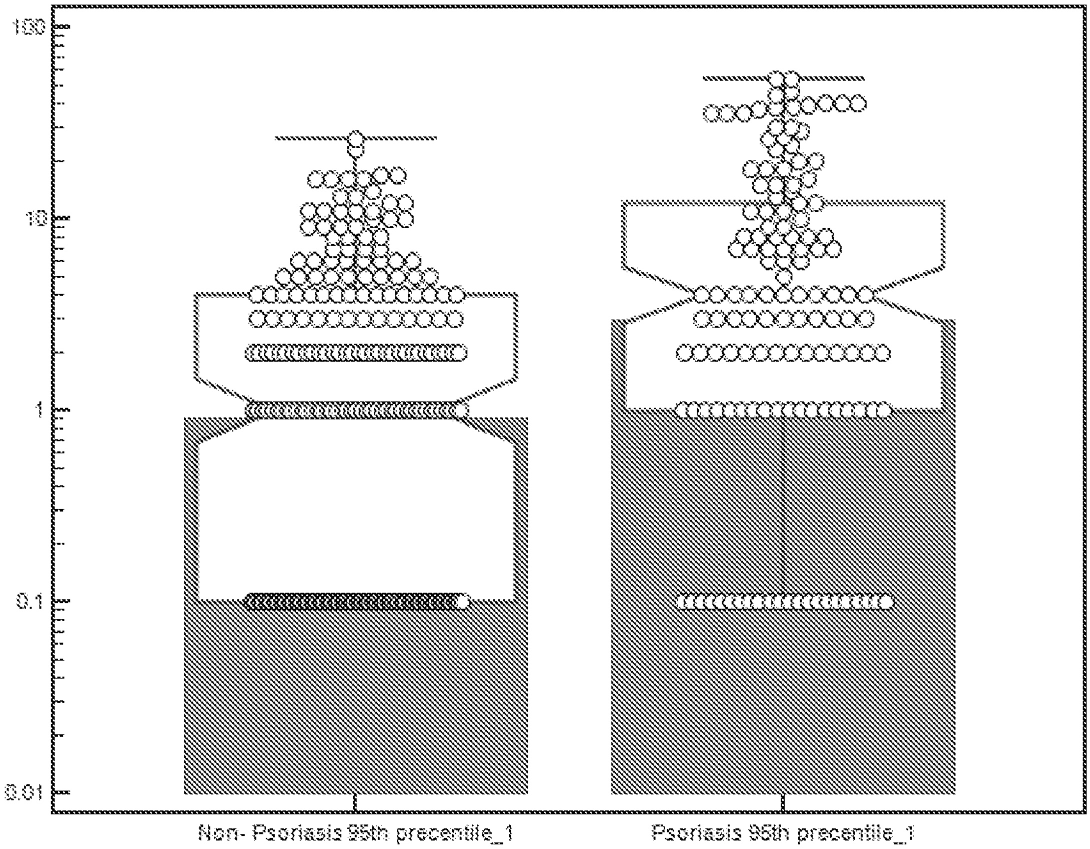
100
10
1
0.1
0.01
Non- Psoriasis 95th precentile_1
Psoriasis 95th precentile_1

Figure 6D

Variable	Psoriasis_Test
Classification variable	Diagnosis__1_Psoriasis_0_Non_Psoriasis_ Diagnosis(1_Psoriasis 0_Non-Psoriasis)

Sample size	373
Positive group [a]	133 (35.66%)
Negative group [b]	240 (64.34%)

[a] Diagnosis__1_Psoriasis_0_Non_Psoriasis_ = 1
[b] Diagnosis__1_Psoriasis_0_Non_Psoriasis_ = 0

Disease prevalence (%)	unknown

Area under the ROC curve (AUC)

Area under the ROC curve (AUC)	0.670
Standard Error [a]	0.0297
95% Confidence interval [b]	0.620 to 0.718
z statistic	5.742
Significance level P (Area=0.5)	<0.0001

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

Youden index

Youden index J	0.2582
95% Confidence interval [a]	0.1476 to 0.3283
Associated criterion	>5
95% Confidence interval [a]	>1 to >8
Sensitivity	61.65
Specificity	64.17

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

Table 12A

Variable	Psoriasis_Test
Classification variable	Diagnosis__1_Psoriasis_0_Non_Psoriasis_ Diagnosis(1_Psoriasis 0_Non-Psoriasis)

Sample size	373
Positive group [a]	133 (35.66%)
Negative group [b]	240 (64.34%)

[a] Diagnosis__1_Psoriasis_0_Non_Psoriasis_ = 1
[b] Diagnosis__1_Psoriasis_0_Non_Psoriasis_ = 0

Disease prevalence (%)	unknown

Area under the ROC curve (AUC)

Area under the ROC curve (AUC)	0.676
Standard Error [a]	0.0293
95% Confidence interval [b]	0.626 to 0.724
z statistic	6.028
Significance level P (Area=0.5)	<0.0001

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

Youden index

Youden index J	0.2610
95% Confidence interval [a]	0.1600 to 0.3315
Associated criterion	>6
95% Confidence interval [a]	>2 to >17
Sensitivity	39.85
Specificity	86.25

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

Table 12B

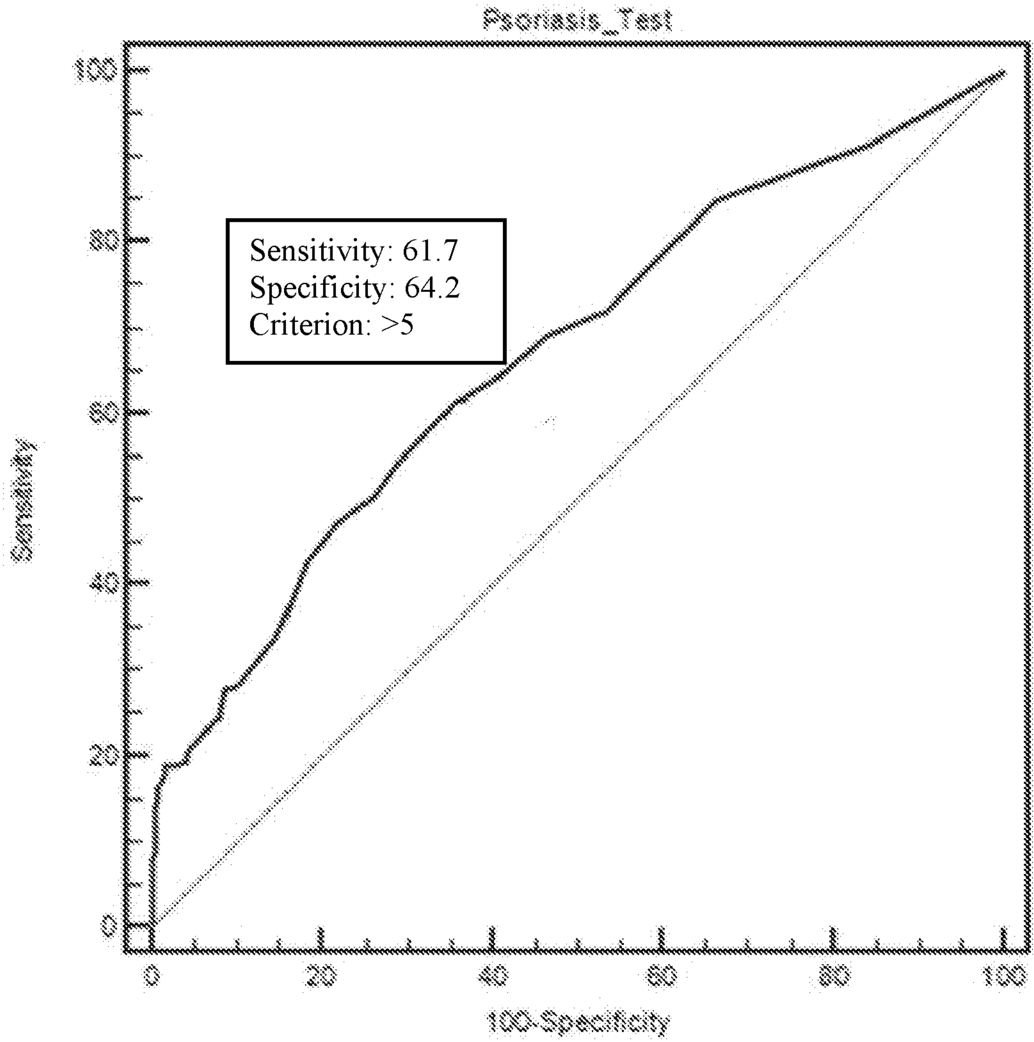
Psoriasis_Test
Sensitivity: 61.7
Specificity: 64.2
Criterion: >5
Sensitivity
100
80
60
40
20
0
0
20
40
60
80
100
100-Specificity

Figure 7A

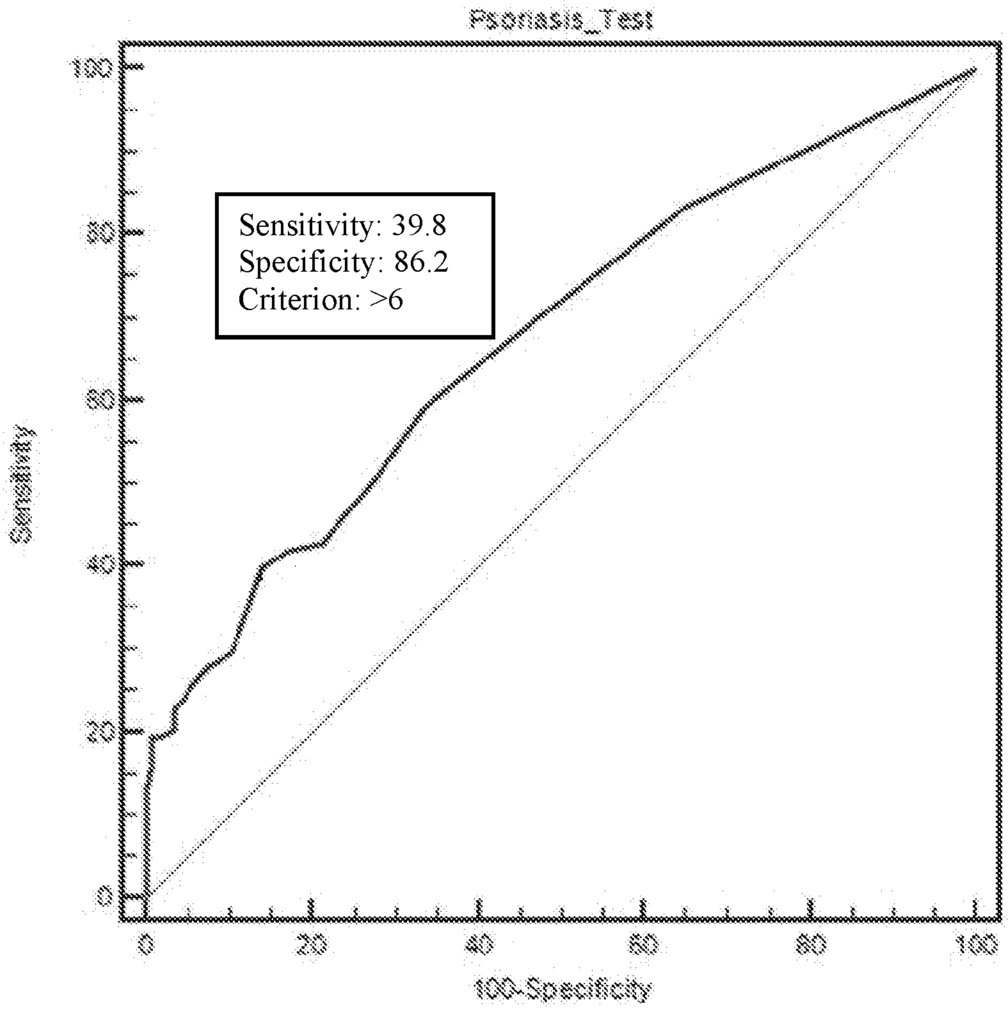
Psoriasis_Test
Sensitivity: 39.8
Specificity: 86.2
Criterion: >6
Sensitivity
100-Specificity
0
20
40
60
80
100

Figure 7B

Performance Metrics in Predicting Psoriasis 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	0.88	0.27	0.40	0.80	0.49
	2	0.74	0.45	0.42	0.76	0.55
	3	0.67	0.56	0.46	0.76	0.60
	4	0.59	0.64	0.47	0.74	0.62
	5	0.50	0.70	0.48	0.72	0.63
	6	0.40	0.76	0.48	0.70	0.64
	7	0.30	0.81	0.48	0.68	0.63
	8	0.26	0.84	0.46	0.67	0.63
	9	0.22	0.85	0.45	0.67	0.63
	10	0.20	0.87	0.47	0.66	0.63
	11	0.18	0.88	0.47	0.66	0.63
	12	0.16	0.89	0.46	0.66	0.63
	13	0.15	0.91	0.50	0.66	0.64
	14	0.15	0.92	0.53	0.66	0.65
	15	0.15	0.93	0.55	0.67	0.66
	16	0.14	0.95	0.60	0.67	0.66
	17	0.13	0.96	0.64	0.67	0.66
	18	0.10	0.97	0.67	0.66	0.66
	19	0.09	0.98	0.71	0.66	0.66
	20	0.08	0.99	0.80	0.66	0.67
	21	0.08	1.00	1.00	0.66	0.67
	22	0.07	1.00	1.00	0.66	0.67
	23	0.07	1.00	1.00	0.66	0.67
	24	0.06	1.00	1.00	0.66	0.67
	25	0.05	1.00	1.00	0.66	0.67
	26	0.05	1.00	1.00	0.66	0.66
	27	0.03	1.00	1.00	0.65	0.66
	28	0.03	1.00	1.00	0.65	0.66
	29	0.03	1.00	1.00	0.65	0.66
	30	0.02	1.00	1.00	0.65	0.65
	31	0.02	1.00	1.00	0.65	0.65
	32	0.02	1.00	1.00	0.65	0.65

Sex	*No. of Positive Foods as Cutoff*	*Sensitivity*	*Specificity*	*Positive Predictive Value*	*Negative Predictive Value*	*Overall Percent Agreement*
	33	0.02	1.00	1.00	0.65	0.65
	34	0.02	1.00	1.00	0.65	0.65
	35	0.00	1.00	1.00	0.65	0.65
	36	0.00	1.00	.	0.65	0.65
	37	0.00	1.00	.	0.65	0.65
	38	0.00	1.00	.	0.65	0.65
	39	0.00	1.00	.	0.65	0.65
	40	0.00	1.00	.	0.65	0.65
	41	0.00	1.00	.	0.65	0.65
	42	0.00	1.00	.	0.65	0.65
	43	0.00	1.00	.	0.65	0.65
	44	0.00	1.00	.	0.65	0.65
	45	0.00	1.00	.	0.65	0.65
	46	0.00	1.00	.	0.65	0.65
	47	0.00	1.00	.	0.65	0.65
	48	0.00	1.00	.	0.65	0.65
	49	0.00	1.00	.	0.65	0.65
	50	0.00	1.00	.	0.65	0.65
	51	0.00	1.00	.	0.65	0.65
	52	0.00	1.00	.	0.65	0.65
	53	0.00	1.00	.	0.65	0.65
	54	0.00	1.00	.	0.65	0.65
	55	0.00	1.00	.	0.65	0.65
	56	0.00	1.00	.	0.65	0.65
	57	0.00	1.00	.	0.65	0.65
	58	0.00	1.00	.	0.65	0.65
	59	0.00	1.00	.	0.65	0.65

Table 13A

Sex	*No. of Positive Foods as Cutoff*	*Sensitivity*	*Specificity*	*Positive Predictive Value*	*Negative Predictive Value*	*Overall Percent Agreement*
MALE	1	0.93	0.16	0.38	0.80	0.43
	2	0.81	0.32	0.40	0.75	0.49
	3	0.71	0.44	0.41	0.73	0.53
	4	0.64	0.52	0.43	0.73	0.56
	5	0.58	0.59	0.44	0.71	0.58
	6	0.54	0.65	0.47	0.72	0.62
	7	0.51	0.71	0.50	0.72	0.64
	8	0.49	0.77	0.54	0.73	0.67
	9	0.45	0.81	0.57	0.73	0.68
	10	0.43	0.85	0.61	0.73	0.70
	11	0.40	0.88	0.65	0.72	0.71
	12	0.39	0.90	0.68	0.72	0.71
	13	0.37	0.91	0.70	0.72	0.72
	14	0.36	0.92	0.71	0.72	0.72
	15	0.35	0.93	0.73	0.72	0.72
	16	0.34	0.93	0.74	0.72	0.72
	17	0.33	0.94	0.75	0.72	0.72
	18	0.33	0.95	0.76	0.71	0.72
	19	0.31	0.95	0.77	0.71	0.72
	20	0.28	0.96	0.79	0.71	0.72
	21	0.27	0.96	0.80	0.70	0.71
	22	0.26	0.96	0.81	0.70	0.71
	23	0.25	0.97	0.82	0.70	0.71
	24	0.24	0.97	0.85	0.70	0.71
	25	0.23	0.99	0.88	0.69	0.71
	26	0.21	0.99	0.89	0.69	0.71
	27	0.20	0.99	0.90	0.69	0.71
	28	0.20	0.99	0.90	0.69	0.70
	29	0.19	0.99	0.90	0.69	0.70
	30	0.18	0.99	0.90	0.69	0.70
	31	0.17	0.99	0.91	0.68	0.70
	32	0.16	0.99	0.92	0.68	0.69
	33	0.15	1.00	1.00	0.68	0.69
	34	0.14	1.00	1.00	0.68	0.69

Sex	*No. of Positive Foods as Cutoff*	*Sensitivity*	*Specificity*	*Positive Predictive Value*	*Negative Predictive Value*	*Overall Percent Agreement*
	35	0.13	1.00	1.00	0.67	0.68
	36	0.11	1.00	1.00	0.67	0.68
	37	0.10	1.00	1.00	0.66	0.68
	38	0.07	1.00	1.00	0.66	0.67
	39	0.05	1.00	1.00	0.65	0.66
	40	0.02	1.00	1.00	0.65	0.65
	41	0.02	1.00	1.00	0.65	0.65
	42	0.02	1.00	1.00	0.65	0.65
	43	0.02	1.00	1.00	0.65	0.65
	44	0.02	1.00	1.00	0.65	0.65
	45	0.02	1.00	1.00	0.65	0.65
	46	0.02	1.00	1.00	0.65	0.65
	47	0.02	1.00	1.00	0.65	0.65
	48	0.00	1.00	1.00	0.64	0.64
	49	0.00	1.00	.	0.64	0.64
	50	0.00	1.00	.	0.64	0.64
	51	0.00	1.00	.	0.64	0.64
	52	0.00	1.00	.	0.64	0.64
	53	0.00	1.00	.	0.64	0.64
	54	0.00	1.00	.	0.64	0.64
	55	0.00	1.00	.	0.64	0.64
	56	0.00	1.00	.	0.64	0.64
	57	0.00	1.00	.	0.64	0.64
	58	0.00	1.00	.	0.64	0.64
	59	0.00	1.00	.	0.64	0.64

Table 13B

Performance Metrics in Predicting Psoriasis 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	0.75	0.44	0.42	0.76	0.55
	2	0.61	0.62	0.47	0.74	0.62
	3	0.48	0.73	0.49	0.72	0.64
	4	0.36	0.81	0.50	0.70	0.65
	5	0.26	0.85	0.48	0.68	0.64
	6	0.22	0.87	0.47	0.67	0.64
	7	0.19	0.89	0.50	0.67	0.64
	8	0.17	0.91	0.50	0.67	0.65
	9	0.15	0.93	0.54	0.67	0.65
	10	0.14	0.95	0.57	0.67	0.66
	11	0.13	0.96	0.64	0.67	0.66
	12	0.12	0.97	0.75	0.67	0.67
	13	0.12	0.99	0.83	0.67	0.68
	14	0.11	1.00	1.00	0.67	0.68
	15	0.09	1.00	1.00	0.67	0.68
	16	0.08	1.00	1.00	0.66	0.67
	17	0.08	1.00	1.00	0.66	0.67
	18	0.08	1.00	1.00	0.66	0.67
	19	0.08	1.00	1.00	0.66	0.67
	20	0.08	1.00	1.00	0.66	0.67
	21	0.07	1.00	1.00	0.66	0.67
	22	0.05	1.00	1.00	0.66	0.66
	23	0.05	1.00	1.00	0.66	0.66
	24	0.04	1.00	1.00	0.66	0.66
	25	0.03	1.00	1.00	0.65	0.66
	26	0.03	1.00	1.00	0.65	0.66
	27	0.02	1.00	1.00	0.65	0.65
	28	0.02	1.00	1.00	0.65	0.65
	29	0.02	1.00	1.00	0.65	0.65
	30	0.02	1.00	1.00	0.65	0.65
	31	0.02	1.00	1.00	0.65	0.65
	32	0.00	1.00	1.00	0.65	0.65
	33	0.00	1.00	1.00	0.65	0.65

Sex	No. of Positive Foods as Cutoff	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Overall Percent Agreement
	34	0.00	1.00	1.00	0.65	0.65
	35	0.00	1.00	1.00	0.65	0.65
	36	0.00	1.00	.	0.65	0.65
	37	0.00	1.00	.	0.65	0.65
	38	0.00	1.00	.	0.65	0.65
	39	0.00	1.00	.	0.65	0.65
	40	0.00	1.00	.	0.65	0.65
	41	0.00	1.00	.	0.65	0.65
	42	0.00	1.00	.	0.65	0.65
	43	0.00	1.00	.	0.65	0.65
	44	0.00	1.00	.	0.65	0.65
	45	0.00	1.00	.	0.65	0.65
	46	0.00	1.00	.	0.65	0.65
	47	0.00	1.00	.	0.65	0.65
	48	0.00	1.00	.	0.65	0.65
	49	0.00	1.00	.	0.65	0.65
	50	0.00	1.00	.	0.65	0.65
	51	0.00	1.00	.	0.65	0.65
	52	0.00	1.00	.	0.65	0.65
	53	0.00	1.00	.	0.65	0.65
	54	0.00	1.00	.	0.65	0.65
	55	0.00	1.00	.	0.65	0.65
	56	0.00	1.00	.	0.65	0.65
	57	0.00	1.00	.	0.65	0.65
	58	0.00	1.00	.	0.65	0.65
	59	0.00	1.00	.	0.65	0.65

Table 14A

Sex	*No. of Positive Foods as Cutoff*	*Sensitivity*	*Specificity*	*Positive Predictive Value*	*Negative Predictive Value*	*Overall Percent Agreement*
MALE	1	0.86	0.29	0.40	0.78	0.49
	2	0.70	0.49	0.43	0.75	0.57
	3	0.57	0.61	0.45	0.72	0.60
	4	0.53	0.72	0.51	0.73	0.65
	5	0.50	0.80	0.58	0.74	0.69
	6	0.47	0.86	0.65	0.74	0.72
	7	0.44	0.89	0.69	0.74	0.73
	8	0.39	0.92	0.73	0.73	0.73
	9	0.36	0.93	0.75	0.72	0.73
	10	0.34	0.95	0.77	0.72	0.73
	11	0.32	0.95	0.79	0.72	0.73
	12	0.31	0.96	0.81	0.71	0.73
	13	0.30	0.97	0.85	0.71	0.73
	14	0.28	0.97	0.86	0.71	0.73
	15	0.27	0.98	0.88	0.70	0.72
	16	0.26	0.99	0.91	0.70	0.72
	17	0.24	0.99	0.91	0.70	0.72
	18	0.22	0.99	0.91	0.69	0.71
	19	0.21	0.99	0.91	0.69	0.71
	20	0.19	0.99	0.91	0.69	0.71
	21	0.18	0.99	0.92	0.69	0.70
	22	0.18	1.00	1.00	0.68	0.70
	23	0.17	1.00	1.00	0.68	0.70
	24	0.16	1.00	1.00	0.68	0.70
	25	0.15	1.00	1.00	0.68	0.69
	26	0.14	1.00	1.00	0.68	0.69
	27	0.13	1.00	1.00	0.67	0.69
	28	0.12	1.00	1.00	0.67	0.68
	29	0.11	1.00	1.00	0.67	0.68
	30	0.09	1.00	1.00	0.66	0.68
	31	0.07	1.00	1.00	0.66	0.67
	32	0.05	1.00	1.00	0.65	0.66
	33	0.03	1.00	1.00	0.65	0.66
	34	0.02	1.00	1.00	0.65	0.65
	35	0.02	1.00	1.00	0.65	0.65
	36	0.02	1.00	1.00	0.65	0.65

Sex	No. of Positive Foods as Cutoff	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Overall Percent Agreement
	37	0.02	1.00	1.00	0.65	0.65
	38	0.02	1.00	1.00	0.65	0.65
	39	0.02	1.00	1.00	0.65	0.65
	40	0.02	1.00	1.00	0.65	0.65
	41	0.02	1.00	1.00	0.65	0.65
	42	0.02	1.00	1.00	0.65	0.65
	43	0.00	1.00	1.00	0.64	0.65
	44	0.00	1.00	1.00	0.64	0.64
	45	0.00	1.00	1.00	0.64	0.64
	46	0.00	1.00	1.00	0.64	0.64
	47	0.00	1.00	1.00	0.64	0.64
	48	0.00	1.00	1.00	0.64	0.64
	49	0.00	1.00	.	0.64	0.64
	50	0.00	1.00	.	0.64	0.64
	51	0.00	1.00	.	0.64	0.64
	52	0.00	1.00	.	0.64	0.64
	53	0.00	1.00	.	0.64	0.64
	54	0.00	1.00	.	0.64	0.64
	55	0.00	1.00	.	0.64	0.64
	56	0.00	1.00	.	0.64	0.64
	57	0.00	1.00	.	0.64	0.64
	58	0.00	1.00	.	0.64	0.64
	59	0.00	1.00	.	0.64	0.64

Table 14B

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/068136

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 sheet.
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.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/068136

A. CLASSIFICATION OF SUBJECT MATTER

G01N 33/68(2006.01)i, G01N 33/543(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 33/68; G01N 33/53; C12M 3/00; G01N 33/543

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: psoriasis, food intolerance, ELISA, p-value, FDR (false discovery rate), gender, age

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	ZENG et al., 'Variable food-specific IgG antibody levels in healthy and symptomatic Chinese adults' PloS One, Vol.8, Issue No.1, e53612, internal pages 1-9 (2013) See abstract; pages 2, 5-7; and figures 1, 4.	1-10,12,14,16,18,20,22,24,26-30,32,34,36,38,40,42,44,46-54,56,58,60,62,64,66,68,70,72,74-83,85,87,89,91,93,95,97,99,101
Y	ZHAI et al., 'The detection of food-intolerance IgG antibodies in patient with psoriasis' The Chinese Journal of Dermatovenereology, Vol.11, internal pages 1-2 (2011) See internal page 1.	1-10,12,14,16,18,20,22,24,26-30,32,34,36,38,40,42,44,46-54,56,58,60,62,64,66,68,70,72,74-83,85,87,89,91,93,95,97,99,101

☒ 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
14 April 2017 (14.04.2017)	**17 April 2017 (17.04.2017)**

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

Authorized officer
KIM, Seung Beom
Telephone No. +82-42-481-3371

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 2007-0122840 A1 (COUSINS) 31 May 2007 See the whole document.	1-10,12,14,16,18,20,22,24,26-30,32,34,36,38,40,42,44,46-54,56,58,60,62,64,66,68,70,72,74-83,85,87,89,91,93,95,97,99,101
A	US 2004-0072272 A1 (FINE) 15 April 2004 See the whole document.	1-10,12,14,16,18,20,22,24,26-30,32,34,36,38,40,42,44,46-54,56,58,60,62,64,66,68,70,72,74-83,85,87,89,91,93,95,97,99,101
A	WO 2009-035529 A1 (IMMUNOHEALTH INTERNATIONAL, LLC et al.) 19 March 2009 See the whole document.	1-10,12,14,16,18,20,22,24,26-30,32,34,36,38,40,42,44,46-54,56,58,60,62,64,66,68,70,72,74-83,85,87,89,91,93,95,97,99,101

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2016/068136

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007-0122840 A1	31/05/2007	AU 2004-236863 A1	18/11/2004
		CA 2524579 A1	18/11/2004
		EP 1623233 A1	08/02/2006
		WO 2004-099785 A1	18/11/2004
US 2004-0072272 A1	15/04/2004	AU 2001-243593 B2	04/05/2006
		AU 4359301 A1	24/09/2001
		CA 2400968 A1	20/09/2001
		CA 2400968 C	30/06/2009
		EP 1322956 A2	02/07/2003
		EP 1322956 B1	02/05/2007
		IL 151570 A	31/05/2010
		US 2001-0036639 A1	01/11/2001
		US 2007-0298447 A1	27/12/2007
		US 6667160 B2	23/12/2003
		US 7604957 B2	20/10/2009
		WO 01-069251 A3	17/04/2003
		WO 01-69251 A2	20/09/2001
		WO 01-69251 A8	07/02/2002
WO 2009-035529 A1	19/03/2009	US 2010-0227340 A1	09/09/2010

Continuation of: Box No. II.

3. Claim 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, 100