CLAIMS:

1. A method for measuring cell-mediated immune response activity in a subject, said method comprising contacting a sample of whole blood containing the same lymphocytes ~~which comprises from 50% to 100% by volume of a sample to be assayed~~ from the subject with a first and second set of peptides wherein the lymphocytes comprise from 50% to 100% by volume of the sample to be assayed and wherein the first set comprises ~~at least one~~ peptides of from ~~about~~ 7 to 14 amino acid residues in length which are recognised by $CD8^+$ lymphocytes and the second set comprises ~~at least one~~ peptides of from 16 amino acid residues or greater which are recognised by $CD4^+$ lymphocytes which peptides encompass all or part of a protein antigen and measuring the presence or elevation in the level of an immune effector molecule from immune cells wherein the presence or level of the immune effector molecule is indicative of the level of cell-mediated responsiveness of the subject.

2. The method of Claim 1 wherein the subject is a human.

~~3. The method of Claim 1 wherein the 7 to 14 amino acid peptides are recognized by $CD8^+$ lymphocytes and the 16 amino acid or greater peptides are recognized by $CD4^+$ lymphocytes.~~

~~4~~3. The method of Claim 1 wherein the sample is undiluted whole blood.

~~5~~4. The method of Claim 1 or ~~4~~ 3 wherein the whole blood is collected in a tube comprising heparin.

~~6~~5. The method of Claim 1 wherein the immune effector molecule is a cytokine.

~~7~~6. The method of Claim ~~6~~ 5 wherein the cytokine is IFN-γ.

~~8~~7. The method of Claim 1 wherein the immune effector molecule is detected with antibodies specific for same.

~~9~~8. The method of Claim ~~8~~ 7 wherein the immune effector molecule is detected using ELISA.

~~10~~9. The method of Claim ~~9~~ 8 wherein the immune effector molecule is detected using ELISpot.

~~11~~10. The method of Claim 1 wherein the subject has an infection by a pathogenic agent selected from *Mycobacterium* species, *Staphylococcus* species, *Streptococcus* species, *Borrelia* species, *Escherichia coli*, *Salmonella* species, *Clostridium* species, *Shigella* species, *Proteus* species, *Bacillus* species, Herpes virus, Hepatitis B or C virus and Human immune deficiency virus (HIV) or a disease resulting therefrom.

~~12~~11. The method of Claim ~~11~~ 10 wherein the infection is by *Mycobacterium tuberculosis* or tuberculosis (TB).

~~13~~12. The method of Claim ~~12~~ 11 wherein the antigen is selected from CFP10, ESAT-6, TB7.7 and TB37.6.

~~14~~13. The method of Claim 1 wherein the subject has Celiac's disease.

~~15~~14. The method of Claim 1 wherein the subject has autoimmune diabetes.

~~16~~15. The method of Claim 1 wherein the subject has cancer.

~~17~~16. The method of Claim 1 wherein the subject was exposed to a proteinaceous toxicant.

~~18~~17. The method of any one of Claims 1 to ~~17~~ 16 wherein the magnitude of the cell-mediated immune response correlates with the state, progression and/or severity of a disease condition.

~~19~~18. Use of at least two sets of peptides, a first set comprising ~~at least one~~ peptides of from ~~about~~ 7 to 14 amino acid residues in length which are recognised by $CD8^+$ lymphocytes and a second set comprising ~~at least one~~ peptides of from 16 amino acid residues or greater which are recognised by $CD4^+$ lymphocytes which peptides encompass all or part of a protein antigen in the manufacture of a diagnostic assay of cell-mediated immune responsiveness by the method of incubating of the peptides with a sample of the same lymphocytes and detecting the presence or elevation in effector molecules.

~~20~~19. A method of allowing a user to determine the status of cell-mediated immunoresponsiveness of a subject, the method including:

(a) receiving data in the form of levels or concentrations of an immune effector molecule which relative to a control provide a correlation to the state of cell-mediated immunoresponsiveness from the user *via* a communications network, the immune effector molecule measured after exposure of whole blood containing the same lymphocytes ~~which comprises from 50% to 100% by volume of a sample to be assayed~~ from the subject with a first and second set of peptides wherein the lymphocytes comprise from 50% to 100% by volume of the sample to be assayed and wherein the first set comprises ~~at least one~~ peptides of from ~~about~~ 7 to 14 amino acid residues in length which are recognised by $CD8^+$ lymphocytes and the second set comprises ~~at least one~~ peptides of from 16 amino acid residues or greater which are recognised by $CD4^+$ lymphocytes which peptides encompass all or part of a protein antigen;

(b) processing the subject data *via* univariate or multivariate analysis to provide an immunoresponsiveness value;

(c) determining the status of the subject in accordance with the results of the immunoresponsiveness value in comparison with predetermined values; and

(d) transferring an indication of the status of the subject to the user *via* the communications network.