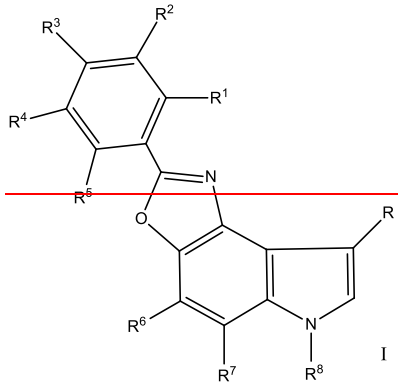
WHAT IS CLAIMED IS:

1. An immunogenic compound of Formula I for antibody production:



I

wherein: R is a member selected from the group consisting of alkyl, alkoxy, alkoxyalkyl, aminoalkyl, amidoalkyl, carboxyalkyl, substituted carboxyalkyl; and

R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 are each a member independently selected from the group consisting of hydrogen, alkyl, halo, hydroxyl, alkoxy, amino, aroyl, alkanoyl, amido, substituted amido, cyano, carboxyl, alkoxycarbonyl, sulfonato, alkoxyalkyl, carboxy, carboxyalkyl, alkoxycarbonylalkyl, sulfonatoalkyl, L and R^{11}B;

L is a linker;

R^{11} is the resultant attachment between the compound and a biomolecule; and

B is a biomolecule, which is a protein or an immunogenic peptide; wherein at least one member of the group of R^1, R^2, R^3, R^4, R^5, R^6, and R^7 is R^{11}B.

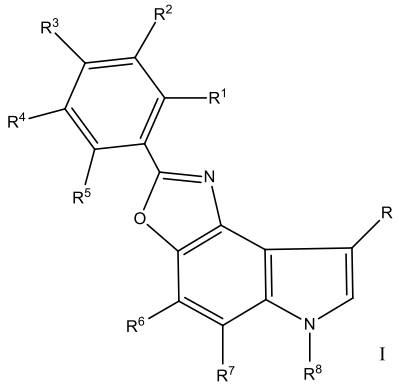
2. The compound of claim **1**, wherein R is a member selected from the group consisting of aminoalkyl, carboxyalkyl, and substituted carboxyalkyl.

3. The compound of claim **1**, wherein R is a member selected from the group consisting of $-CH_2CH_2NH_2$, $-CH_2CH_2CO_2H$ and $-CH_2CH(NH_2)CO_2H$.

4. The compound of claim **1**, wherein at least one member of the group of R^1, R^2, R^3, R^4, R^5, R^6, and R^7 is R^{11}B.

~~5~~1. A method for making antibodies, the method comprising:

(a) providing an immunogen comprising a derivative of 5-hydroxy tryptophan (5-HTP) according to ~~claims 1-4~~Formula I for antibody production;



I

wherein R is a member selected from the group consisting of alkyl, alkoxy, alkoxyalkyl, aminoalkyl, amidoalkyl, carboxyalkyl, substituted carboxyalkyl; and

R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 are each a member independently selected from the group consisting of hydrogen, C_1-C_6 alkyl, halo, hydroxyl, C_1-C_6 alkoxy, amino, aroyl, C_1-C_6 alkanoyl, amido, substituted amido, cyano, carboxyl, C_1-C_6 alkoxycarbonyl, sulfonato, C_1-C_6 alkoxy C_1-C_6 alkyl, carboxy, carboxy C_1-C_6 alkyl, C_1-C_6 alkoxycarbonyl C_1-C_6 alkyl, sulfonato C_1-C_6 alkyl, L and $R^{11}B$;

L is a linker, wherein L is a member selected from the group consisting of a direct link, or a covalent linkage, wherein the covalent linkage is linear or branched, cyclic or heterocyclic, saturated or unsaturated, having 1-60 atoms selected from the group consisting of C, N, P, O, and S, wherein L can have additional hydrogen atoms to fill valences, wherein the linkage contains any combination of ether, thioether, amine, ester, carbamate, urea, thiourea, oxy or amide bonds; or single, double, triple, or aromatic carbon-carbon bonds; or phosphorus-oxygen, phosphorus-sulfur, nitrogen-nitrogen, nitrogen-oxygen, or nitrogen-platinum bonds; or aromatic or heteroaromatic bonds;

R^{11} is the resultant attachment between the compound and a biomolecule; and

B is a biomolecule, which is a protein or an immunogenic peptide; wherein at least one member of the group of R^1, R^2, R^3, R^4, R^5, R^6, and R^7 is $R^{11}B$;

(b) immunizing an animal with the immunogen under conditions such that the immune system of the animal makes the antibodies; and

(c) removing the antibodies from the animal.

~~62~~. The method of claim ~~5~~1, wherein the animal is a member selected from the group consisting of a rabbit, a mouse, a sheep, chicken, and a goat.

~~73~~. An antibody made by the method of claim ~~5~~1.

~~84~~. The antibody or fragment thereof of claim ~~7~~3, wherein the antibody is a polyclonal or monoclonal antibody

~~95~~. The antibody or fragment thereof of claim ~~8~~4, wherein the polyclonal antibody is a rabbit antibody.

~~106~~. The antibody or fragment thereof of claim ~~8~~4, wherein the antibody is a Fab or Fab2 fragment.

~~117~~. The antibody or fragment thereof of claim ~~7~~3, wherein the antibody is a recombinant antibody.

~~128~~. The antibody or fragment thereof of any one of claims 3-7~~-11~~, which antibody or fragment thereof specifically binds to 5-hydroxytryptamine (5-HT), wherein said antibody has less than 1% cross-reactivity to a member selected from the group consisting of tryptophan, 5-hydroxytryptophan and 5-hydroxyindole acetic acid.

~~139~~. The antibody or fragment thereof of any one of claims 3-7~~-11~~, which antibody or fragment thereof specifically binds to 5-hydroxytryptophan (5-OH), wherein said antibody has less than 1% cross-reactivity to one or more members selected from the group consisting of tryptophan, 5-hydroxytryptamine and 5-hydroxyindole acetic acid.

~~1410~~. The antibody or fragment thereof of any one of claims 3-7~~-11~~, which antibody or fragment thereof specifically binds to 5-tryptophan, wherein said antibody has less than 1% cross-reactivity to one or more members selected from the group consisting of 5-hydroxytryptophan, 5-hydroxytryptamine and 5-hydroxyindole acetic acid.

~~1511~~. The antibody or fragment thereof of any one of claims 3-7~~-11~~, which antibody or fragment thereof specifically binds to 5-hydroxyindole acetic acid, wherein said antibody has less than 1% cross-reactivity to one or more members selected from the group consisting of tryptophan, 5-hydroxytryptophan, and 5-hydroxytryptamine.

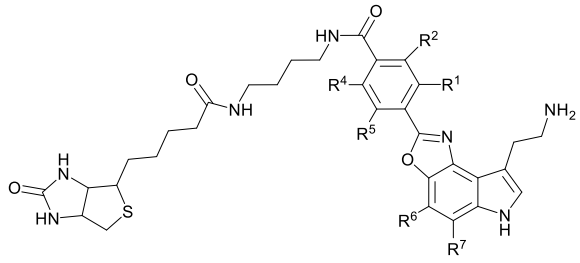
~~16~~12. A method for assaying a metabolite selected from the group consisting of serotonin (5-HT), 5-hydroxyindole acetic acid (5-HIAA), 5-hydroxy tryptophan (5-HTP), and a combination thereof in a fluid or tissue sample from a mammal, the method comprising:

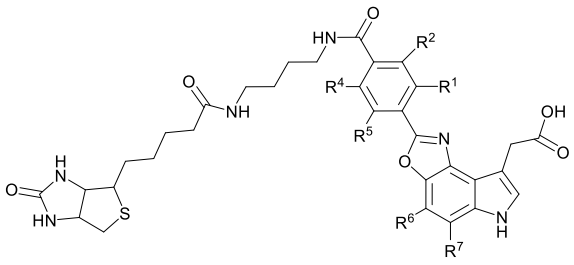
admixing the sample with antibodies of any one of claims ~~12-15~~8-11 that specifically bind to a metabolite selected from the group consisting of serotonin (5-HT), 5-hydroxyindole acetic acid (5-HIAA), 5-hydroxy tryptophan (5-HTP), and a combination thereof; and

determining whether the antibodies specifically bind to the metabolite, wherein specific antibody binding indicates that the metabolite is present in the sample.

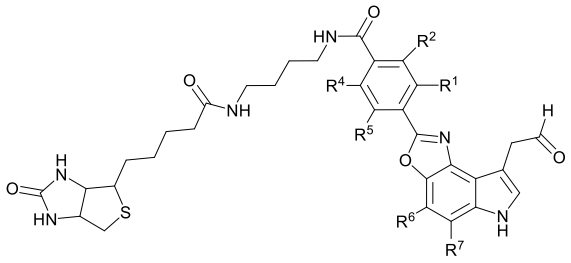
~~17~~13. The method of claim ~~16~~12, wherein the assay is a competitive ELISA wherein a metabolite in the sample competes with a labeled hapten.

~~18~~14. The method of claim ~~17~~13, wherein the labeled hapten is a member selected from the group consisting of





and



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15. The method of claim 1, wherein R is a member selected from the group consisting of amino C_1-C_6 alkyl, carboxy C_1-C_6 alkyl, and substituted carboxy C_1-C_6 alkyl.

16. The method of claim 1, wherein R is a member selected from the group consisting of $-CH_2CH_2NH_2$, $-CH_2CH_2CO_2H$ and $-CH_2CH(NH_2)CO_2H$.

17. The method of claim 1, wherein at least one member of the group of R^1, R^2. R^3, R^4, R^5, R^6, and R^7 is $R^{11}B$.