CLAIMS

~~1. A test kit for screening a test sample for the presence of a ligand, which ligand is capable of forming a complex with a steroid hormone receptor and eliciting a genomic response when in a cell, the test kit comprising:~~

~~(i) a hormone receptor that forms a receptor ligand complex with a ligand from the test sample; and~~

~~(ii) a nucleic acid response element that is bound by the receptor-ligand complex; and~~

~~(iii) a detection means for detecting binding between the receptor ligand complex and the nucleic acid response element; and optionally~~

~~wherein, the presence of a ligand in the test sample is determined when the sample is combined with the test kit and binding between the receptor-ligand complex and the nucleic acid response element is detected.~~

~~2. The test kit according to claim 1, wherein the relative amount of steroid hormone receptor to nucleic acid response element in the test kit is x:1, where x is the amount of steroid hormone receptor and is defined as [0.2 ≤ x ≤ 20].~~

~~3. The test kit according to claim 1 or claim 2, wherein the test kit further comprises a steroid hormone receptor cofactor that prevents the steroid hormone receptor from binding to the nucleic response element.~~

~~4. The test kit according to claim 3, wherein the steroid hormone receptor cofactor is selected from the group consisting of heat shock protein 70, heat shock protein 40, heat shock protein 90, p23, heat shock protein organizing protein (Hop), 48kD Hip protein, p60, and FKBP52.~~

~~5. The test kit according to any one of claims 1 to 4, wherein the nucleic acid response element is operably linked to a reporter element, and binding of the receptor ligand complex to the nucleic acid response element is determined by interrogating transcription or translation of the reporter element.~~

~~6. A test kit for screening a test sample for the presence of a ligand, which ligand is capable of forming a complex with a steroid hormone receptor and eliciting a genomic response when in a cell, the test kit comprising:~~

~~(i) a hormone receptor that forms a receptor ligand complex with a ligand from the test sample; and~~

~~(ii) a nucleic acid response element that is bound by the receptor ligand complex; and~~

(iii) a reporter construct operably linked to the nucleic acid response element; and optionally

(iv) a steroid hormone receptor cofactor, transcription machinery, steroid metabolism machinery and/or a cell-free extract

wherein, the reporter construct is activated when the receptor ligand complex binds to the nucleic acid response element, and

wherein, the presence of a ligand in the sample is determined when the sample is combined with the test kit and transcription of the reporter construct is detected.

7. The test kit according to claim 6, wherein the relative amount of steroid hormone receptor to nucleic acid response element in the test kit is x:1, where x is the amount of steroid hormone receptor and is defined as $[0.2 \leq x \leq 20]$.

8. The test kit according to claim 6 or claim 7, wherein the steroid hormone receptor cofactor is selected from the group consisting of heat shock protein 70, heat shock protein 40, heat shock protein 90, p23, heat shock protein organizing protein (Hop), 48kD Hip protein, p60, and FKBP52.

9. The test kit according to any one of claims 6 to 8, wherein the reporter construct is comprised of a promoter sequence and a reporter construct, and the promoter sequence is activated when the nucleic acid response element is bound by the receptor ligand complex.

10. The test kit according to any one of claims 6 to 9, wherein the reporter construct comprises a sequence encoding an RNA aptamer which is capable of binding to and enhancing fluorescence of a fluorophore.

11. The test kit according to claim 10, wherein the RNA aptamer is selected from Spinach, Spinach 2, iSpinach, Broccoli and Mango including Mango I-IV.

12. The test kit according to claim 10 or claim 11, wherein the fluorophore is selected from 3,5-difluoro-4-hydroxybenzylidene imidazolinone (DFHBI) and thiazole orange-1 (TO-1).

13. The test kit according to any one of claims 1 to 12, wherein the steroid hormone receptor is selected from the group consisting of an androgen receptor, estrogen receptor, progesterone receptor, mineralocorticoid receptor, and glucocorticoid receptor.

14. The test kit according to any one of claims 1 to 13, wherein the ligand is a performance enhancing drug and/or steroid, or wherein the ligand is of an unknown chemical structure.

~~15. The test kit according to any one of claims 1 to 14, wherein the sample is a biological sample derived from an animal selected from the group consisting of equine, canine, camelid, bovine, porcine, ovine, caprine, avian, simian, murine, leporine, cervine, piscine, salmonoid and human.~~

~~16. An assay method for detecting a ligand in a sample, which ligand is capable of forming a complex with a steroid hormone receptor and eliciting a genomic response when in a cell, the assay method comprising the steps of:~~

~~(i) providing assay reagents comprising:~~

~~a. a hormone receptor that forms a receptor-ligand complex with a ligand from the test sample; and~~

~~b. a nucleic acid response element that is bound by the receptor ligand complex; and~~

~~c. a detection means for detecting binding between the receptor-ligand complex and the nucleic acid sequence; and optionally~~

~~d. a steroid hormone receptor cofactor, transcription and/or translation machinery, steroid metabolism machinery and/or a cell-free extract~~

~~(ii) combining the test sample with the assay reagents~~

~~wherein, the presence of a ligand in the sample is determined when the sample is combined with the assay reagents and binding between receptor ligand complex and the nucleic acid response element is detected.~~

~~17. An assay method according to claim 16, wherein the sample is a biological sample derived from an animal and the presence of a ligand in the sample is indicative of doping in the animal.~~

~~18. An article of manufacture for determining sports doping in an animal, the article of manufacture comprising a test kit according to any one of claims 1 to 15 together with instructions for detecting the presence of ligand in a sample derived from the animal, wherein the presence of a ligand in the sample is indicative of doping in the animal.~~

1. A cell-free test kit for screening a test sample for presence of a ligand, which ligand is capable of forming a complex with a steroid hormone receptor and binding to a nucleic acid response element, the test kit comprising:

(i) a steroid hormone receptor that forms a receptor-ligand complex with a ligand from the test sample;

(ii) a nucleic acid response element that is bound by the receptor-ligand complex; and

(iii) a detection means for detecting binding between the receptor-ligand complex and the nucleic acid response element,

wherein a relative amount of the steroid hormone receptor to the nucleic acid response element in the test kit is x:1, where x is the amount of steroid hormone receptor and is defined as [0.2 ≤ x ≤ 20].

2. The test kit of claim 1, wherein the test kit further comprises a steroid hormone receptor cofactor that prevents the steroid hormone receptor from binding to the nucleic response element.

3. The test kit of claim 2, wherein the steroid hormone receptor cofactor is selected from the group consisting of heat shock protein 70, heat shock protein 40, heat shock protein 90, p23, heat shock protein organizing protein (Hop), 48kD Hip protein, p60, and FKBP52.

4. The test kit according to any one of claims 1 to 3, wherein the nucleic acid response element is operably linked to a reporter element, and binding of the receptor-ligand complex to the nucleic acid response element is determined by interrogating transcription or translation of the reporter element.

5. A cell-free the test kit for screening a test sample for presence of a ligand, which ligand is capable of forming a complex with a steroid hormone receptor and binding to a nucleic acid response element, the test kit comprising:

(i) a steroid hormone receptor that forms a receptor-ligand complex with a ligand from the test sample;

(ii) a nucleic acid response element that is bound by the receptor-ligand complex;

(iii) a reporter construct operably linked to the nucleic acid response element; and

(iv) zero, one, two, three or all four of a steroid hormone receptor cofactor, transcription machinery, steroid metabolism machinery and a cell-free extract,

wherein a relative amount of steroid hormone receptor to nucleic acid response element in the test kit is x:1, where x is the amount of steroid hormone receptor and is defined as [0.2 ≤ x ≤ 20],

wherein the reporter construct is activated when the receptor-ligand complex binds to the nucleic acid response element, and

wherein the presence of the ligand in the sample is determined when the sample is combined with the test kit and transcription of the reporter construct is detected.

6. The test kit of claim 5, wherein the steroid hormone receptor cofactor is selected from the group consisting of heat shock protein 70, heat shock protein 40, heat shock protein 90, p23, heat shock protein organizing protein (Hop), 48kD Hip protein, p60, and FKBP52.

7. The test kit of claim 5 or claim 6, wherein the reporter construct comprises a promoter sequence and a reporter construct, and the promoter sequence is activated when the nucleic acid response element is bound by the receptor-ligand complex.

8. The test kit of any one of claims 5 to 7, wherein the reporter construct comprises a nucleic acid sequence encoding an RNA aptamer which is capable of binding to and enhancing fluorescence of a fluorophore.

9. The test kit of claim 8, wherein the RNA aptamer is selected from Spinach, Spinach 2, iSpinach, Broccoli and Mango aptamer, or is one of Mango I, Mango II, Mango III and Mango IV.

10. The test kit of claim 8, wherein the fluorophore is selected from 3,5-difluoro-4-hydroxybenzylidene imidazolinone (DFHBI) and thiazole orange 1 (TO-1).

11. The test kit of any one of claims 1 to 10, wherein the steroid hormone receptor is selected from the group consisting of an androgen receptor, estrogen receptor, progesterone receptor, mineralocorticoid receptor, and glucocorticoid receptor.

12. The test kit of any one of claims 1 to 11, wherein the ligand is either one or both of a performance enhancing drug and steroid, or wherein the ligand is of an unknown chemical structure.

13. The test kit of any one of claims 1 to 12, wherein the test sample is a biological sample from an animal selected from the group consisting of equine, canine, camelid, bovine, porcine, ovine, caprine, avian, simian, murine, leporine, cervine, piscine, salmonoid and human.

14. An assay method for detecting a ligand in a test sample, which ligand is capable of forming a complex with a steroid hormone receptor and binding to a nucleic acid response element, the assay method comprising the steps of:

(i) providing assay reagents comprising:

a. a steroid hormone receptor that forms a receptor-ligand complex with a ligand from the test sample;

b. a nucleic acid response element that is bound by the receptor-ligand complex;

c. a detection means for detecting binding between the receptor-ligand complex and the nucleic acid sequence; and

d. zero, one, two, three, four or all five of a steroid hormone receptor cofactor, transcription machinery, translation machinery, steroid metabolism machinery and a cell-free extract; and

(ii) combining the test sample with the assay reagents

wherein a relative amount of steroid hormone receptor to nucleic acid response element in the test kit is x:1, where x is the amount of steroid hormone receptor and is defined as [$0.2 \leq x \leq 20$], and

wherein, the presence of the ligand in the sample is determined when the sample is combined with the assay reagents and binding between the receptor-ligand complex and the nucleic acid response element is detected.

15. The assay method of claim 14, wherein the test sample is a biological sample from an animal and the presence of the ligand in the sample is indicative of doping in the animal.

16. An article of manufacture for determining sports doping in an animal, the article of manufacture comprising the test kit of any one of claims 1 to 13 together with instructions for detecting presence of a ligand in a test sample from the animal, wherein the presence of the ligand in the sample is indicative of doping in the animal.