CLAIMS

1. A cell-free test kit for screening a sample for the presence of a ligand capable of eliciting a steroid hormone genomic response, the test kit comprising:
   (i) a steroid hormone receptor that is capable of forming a receptor-ligand complex with a ligand from the sample; and
   (ii) a nucleic acid reporter construct comprising:
      (a) a hormone response element that is capable of being bound by the receptor-ligand complex;
      (b) a fluorescence generating moiety; and
      (c) a fluorescence quenching moiety,
   wherein, the hormone response element (a) is located between the fluorescence generating moiety (b) and the fluorescence quenching moiety (c).

2. The test kit according to claim 1, wherein the fluorescence generating moiety comprises Cy3.

3. The test kit according to claim 1 or claim 2, wherein the flourescence quenching moiety comprises Cy5.

4. The test kit according to any one of claims 1 to 3, wherein the hormone response element is selected from any one of SEQ ID Nos: 1 to 10.

5. The test kit according to any one of claims 1 to 4, further comprising a steroid hormone receptor cofactor selected from heat shock protein 90 (HSP90), a complex of HSP90 and heat shock protein 70 (HSP70), a complex of HSP90, HSP70 and heat shock protein 40 (HSP40), a complex of HSP90, HSP70, HSP40 and p23, a complex of HSP90, HSP70, HSP40, p23 and heat shock protein organizing protein (Hop), a complex of HSP90, HSP70, HSP40, p23, Hop and 48kD Hip protein (Hip), a complex of HSP90, HSP70, HSP40, p23, Hop, Hip and p60, or a complex of HSP90, HSP70, HSP40, p23, Hop, Hip, p60 and FKBP52.

6. The test kit according to claim 5, wherein the relative amount of HSP90 to steroid hormone receptor is x:1, where x is the amount of HSP90 and is defined as [$1.0 \leq x \leq 5.0$].

7. The test kit according to any one of claims 1 to 6, wherein the relative amount of steroid hormone receptor to nucleic acid reporter construct is y:1, where y is the amount of steroid hormone receptor and is defined as [1.0 ≤ y ≤ 5.0].

8. The test kit according to any one of claims 1 to 7, wherein the steroid hormone receptor is selected from the group consisting of androgen receptor (AR), estrogen receptor alpha (ER-α), estrogen receptor beta (ER-β), progesterone receptor A (PRA), progesterone receptor A (PRB), mineralocorticoid receptor (MR); and glucocorticoid receptor (GR).

9. The test kit according to any one of claims 1 to 8, wherein the steroid hormone receptor is an endogenous steroid hormone receptor purified from a cell, a recombinant steroid hormone receptor or a synthetic steroid hormone receptor.

10. The test kit according to any one of claims 1 to 9, wherein:
    (i) the test kit is configured to detect a ligand that binds to an androgen receptor and the reporter construct is selected from any one of SEQ ID Nos: 11-70;
    (ii) the test kit is configured to detect a ligand that binds to an estrogen receptor and the reporter construct is selected from any one of SEQ ID Nos: 71-100;
    (iii) the test kit is configured to detect a ligand that binds to progesterone receptor and the reporter construct is selected from any one of SEQ ID Nos: 101-130;
    (iv) the test kit is configured to detect a ligand that binds to a mineralocorticoid receptor and the reporter construct is selected from any one of SEQ ID Nos: 131-160; or
    (v) the test kit is configured to detect a ligand that binds to a glucocorticoid receptor and the reporter construct is selected from any one of SEQ ID Nos: 131-160.

11. A cell-free assay method for detecting a ligand in a sample, which ligand is capable of eliciting a steroid hormone genomic response, the method comprising the steps of:
    (i) contacting a sample with:
        (a) a steroid hormone receptor that forms a receptor-ligand complex with a ligand from the test sample;
        (b) a nucleic acid reporter construct comprising:

1. a hormone response element that is bound by the receptor-ligand complex; and
2. a fluorescence generating moiety; and
3. a fluorescence quenching moeity; and

wherein the hormone response element (1) is located between the fluorescence generating moiety (2) and the fluorescence quenching moiety (3)

(ii) measuring a change in fluorescence of the reporter construct,

wherein, a measured change in the fluorescence of the reporter construct reflects that a ligand has been detected in the sample.

12. The assay method according to claim 11 which further comprises contacting the sample with a steroid hormone receptor cofactor selected from heat shock protein 90 (HSP90), a complex of HSP90 and heat shock protein 70 (HSP70), a complex of HSP90, HSP70 and heat shock protein 40 (HSP40), a complex of HSP90, HSP70, HSP40 and p23, a complex of HSP90, HSP70, HSP40, p23 and heat shock protein organizing protein (Hop), a complex of HSP90, HSP70, HSP40, p23, Hop and 48kD Hip protein (Hip), a complex of HSP90, HSP70, HSP40, p23, Hop, Hip and p60, or a complex of HSP90, HSP70, HSP40, p23, Hop, Hip, p60 and FKBP52.

13. The assay method according to claim 12, wherein the relative amount of HSP90 to steroid hormone receptor is x:1 when the sample is contacted with (a) and (b), where x is the amount of HSP90 and is defined as $[1.0 \leq x \leq 5.0]$.

14. The assay method according to any one of claims 11 to 13, wherein the relative amount of steroid hormone receptor to nucleic acid reporter construct is y:1 when the sample is contacted with (a) and (b), where y is the amount of steroid hormone receptor and is defined as $[1.0 \leq y \leq 5.0]$.

15. The assay method according to any one of claims 11 to 14, wherein the change in fluorescence of the reporter construct is measured using static quenching or dynamic quenching.

16. The assay method according to any one of claims 11 to 14, wherein the change in fluorescence of the reporter construct is measured using Forster Resonance Energy Transfer.

17. The assay method according to any one of claims 11 to 16 wherein the sample is a biological sample obtained from an athlete.

18. The method according to claim 17, wherein the biological sample is selected from blood, plasma, serum, saliva, urine, stool, hair, semen and muscle tissue.

19. The method according to claim 17 or claim 18, wherein the athlete is selected from a human athlete, an equine athlete, a canine athlete and a camelid athlete.

20. The method according to any one of claims 11 to 16 wherein the sample is a water sample.