1. Give a short description of the type of mechanism used by proteins to cause a response by a target cell __________________________________________________________

2. Give a short description of the type of mechanism used by steroids and thyroxine to cause a response by a target cell __________________________________________________________

3. Define up regulation _____________________________________________________

4. Define down regulation ___________________________________________________

5. What happens to the number of receptors if a person is addicted to a drug, and why? ______________________________________________________________________

6. What is the most addictive drug, and why? _____________________________________

7. ADH is produced by the ____________________ nuclei in the ____________________, and is stored in the _______________________.

8. ADH targets the _______________ and causes them to _______________________.

9. Oxytocin is produced by the ___________________ nuclei in the ___________________, and is stored in the __________________________.

10. In females, oxytocin targets smooth muscle in the ________________ and results in ____________________________________________.

11. In females, oxytocin also targets the _____________________________ and results in ____________________________________________.

12. In males, oxytocin targets smooth muscle in the ________________ and results in ____________________________________________.

13. _______________ and ________________ hormones from the __________________ control the production of hormones by the anterior pituitary.

14. Name the route of hormones from capillary beds in the hypothalamus to capillary beds in the anterior pituitary. ____________________________________________

15. TRH from ___________________ targets ___________________________ gland which releases _______ which targets the ____________ gland which releases ________________ .

16. _______ from the hypothalamus targets ___________________________ gland which releases ACTH which targets the ________________ which releases ____________________

17. GnRH from the hypothalamus targets anterior pituitary gland which releases _________ and _________ which target the ovaries which release ________________ and ________________.

18. _______ from the hypothalamus targets anterior pituitary gland which releases _________
And ___________ which target the testes which release ________________ and ________________.
19. FSH and LH control production of ____________________________ and __________ in males and females.

20. GHRH from the ___________________ targets the ____________________ gland which releases ___________________ which targets ____________________ and stimulates protein and lipid synthesis and growth.

21. PRH from the hypothalamus targets the anterior pituitary gland which releases __________ which targets the __________________ glands which produce __________.

22. ______ from the hypothalamus targets the anterior pituitary gland which releases __________________________ which targets melanocytes in the integument. What do the melanocytes produce, and what is the function of that chemical?

23. What hormones from the hypothalamus are released to stop the pathways in # 12-18?

24. Growth hormone and prolactin are regulated by ________________ feedback based on blood levels of those hormones.

25. Growth hormone has both direct and indirect effects. What cells are directly affected by GH?
   Explain the indirect effect of GH.

1. G protein and second messenger
2. direct gene activation
3. increase in number of receptors due to the body's current metabolic needs in order to maintain homeostasis
4. decrease number of receptors if there is too much chemical
5. number of receptors decreases after exposure to a very large amount of a chemical
6. nicotine; many cells have nicotinic receptors
7. supraoptic; hypothalamus; posterior pituitary
8. kidneys; retain water
9. paraventricular; hypothalamus; posterior pituitary
10. uterus; contractions during childbirth
11. mammary glands; release of milk
12. prostate gland; contractions
13. releasing; inhibiting; hypothalamus
14. hypophyseal portal system
15. hypothalamus; anterior pituitary; TSH; thyroid; thyroxine
16. CRH; anterior pituitary; adrenal cortex; glucocorticoids
17. FSH; LH; estrogen; inhibin
18. GnRH; FSH; LH; testosterone; inhibin
19. secondary sex characteristics; gametes
20. hypothalamus; anterior pituitary; growth hormone; almost all body cells
21. prolactin; mammary; milk
22. MRH; melanocyte stimulating hormone; melanin that protects the skin from UV rays
23. TIH; CIH; GnIH; GHIH; PIH; MIH
24. negative
25. direct - epithelial, bone, adipose and liver; indirect - targets liver to produce somatomedins which target skeletal muscles and cartilage
26. gigantism; acromegaly