

Name: _____ Date: _____

Neurobiology Honors Summer Reading: Phantoms in the Brain

- Get a copy of V.S. Ramachandran's *Phantoms in the Brain* from the library, Amazon/other source (used is cheaper), or a former student
- Preview the "Overall" questions on the last page
- Read Chapters 1-6 and 8 (you can skip chapter seven) and answer the questions in this packet as you go
- There will be a class discussion based on this reading in the first week of class, and an open note quiz to follow

I encourage you to read beyond these chapters, as they will compliment the class, but you are only required to read these. **PACE YOURSELF** – it's quite a bit of reading if you try to do it last minute.

Chapter 1:

1. Approximately how many neurons do we have?

2. How many connections can each neuron make with others?

3. What is a synapse?

4. Why might a stroke-damaged person be able to produce half a fake smile, but a whole real smile?

5. What's the function of the hippocampus?

6. "Exceptions help us learn the rules." - What do you think Ramachandran means by this?

Chapter 4:

17. What is the function of the “What” pathway?

18. What is the function of the “How” pathway?

19. Harry looks at a tiger, but his “what” pathway has been disrupted. What might happen?

20. What might happen if our “how” pathway is destroyed?

21. What does Ramachandran mean when he says there is a ‘zombie in all of us’?

22. What is motion blindness and how did it affect Ingrid’s life?

23. What does the superior colliculus do?

Chapter 5:

24. What is Charles Bonnet Syndrome?

25. When presented with textures or lines, what did Josh's brain do?

26. When presented with 1,2,3,____7,8,9, what did Josh's brain do?

27. When given twinkling dots on a black background, what happened?

28. What is one explanation for why people hallucinate in their blind spots?

Chapter 6:

29. What is hemi-neglect and why can it be a problem?

30. Why do we think it only happens with right side parietal damage?

31. What happened when a hemi-neglect patient was asked to draw a flower? A clock?

Chapter 8:

32. What is Capgras Syndrome?

33. What Freudian explanation do some psychologists propose?

34. What is the general function of the limbic system?

35. What more biological explanation does Ramachandran propose for Arthur's Capgras delusion?

36. What is GSR, and how was Arthur's different from what's normal?

Overall:

37. What do you think are some overarching themes of this book?

38. What was something you found interesting or shocking?

39. What does it mean to say that brains have 'plasticity'?

40. Compare/contrast the views of 'modularity' and 'holism' as models for how the brain works.

41. What do scientists mean when they talk about the 'nature vs. nurture' debate?