Plant Physiology – Biol327 name _____

# Cell Wall Quiz

**Wall Chemistry Matching**: *Match each of the following with the appropriate chemical (unless otherwise indicated, there is one response for each)*

a. cellulose c. hemicellulose e. pectic polysaccharides g. suberin
b. cutin d. lignin f. protein

1. _____ also called cross-linking glycans
2. _____ β 1,4-glucan
3. _____ calcium bridges link these
4. _____ carbohydrates *(3 responses)*
5. _____ common components in primary walls *(4 responses)*
6. _____ dissolved from the wall with strong alkali
7. _____ especially rich in wood
8. _____ expansin is an example
9. _____ extract from wall with dilute acid or hot water
10. _____ hydrophobic molecules *(2 responses)*
11. _____ made in the golgi apparatus *(2 responses)*
12. _____ made of phenylpropanoids
13. _____ main constituent of the middle lamella
14. _____ molecules form hydrogen bonds to make microfibrils
15. _____ orientation in the wall determined by microtubules
16. _____ polymer rich in galacturonic acid (homogalacturonic acid)
17. _____ polysaccharides that don't self aggregate *(2 responses)*
18. _____ primary strengthening agent in secondary wall
19. _____ proline, hydroxyproline and glycine are components
20. _____ rhamnogalacturonans
21. _____ rich in xyloglucans and glucoronarabinoxylans
22. _____ synthesized by rosettes in the membrane
23. _____ used in making gels
24. _____ waterproofing embedded in the wall
25. _____ waterproofing on the outside of the wall

26. Assume you are going to hammer a miniature nail through the cell wall. Which of the following would you hit as you move from outside (#1) to inside (5)?
    _____ secondary wall (S2) _____ secondary wall (S1) _____ secondary wall (S3)
    _____ middle lamella _____ primary wall

27. Assume the cell is making a protein to be inserted in the wall. Follow its progress through the endomembrane system by arranging the following in order from start (site of protein production to wall (#9).
    _____ cell membrane _____ golgi – cis _____ golgi – trans
    _____ RER _____ ribosome _____ SER
    _____ vesicle _____ vesicle _____ wall

28. What is the function of water in the wall?

29. Explain why every other glucose residue in a cellulose chain is upside-down.

30. Electron micrographs of the cell membrane show clusters of proteins that look like a flower (rosettes). What are these rosettes and what is their function?

31. Explain why secondary walls are not able to expand.

32. Explain why the walls of mature cells loose their ability to grow.

33. Compare and contrast plant and animal cells methods for controlling size and shape.

34. To expand, walls must be loosened (relaxed). What does this mean?

35. Explain why the terms "hydrogen ion" and "proton" are synonyms.

36. Describe two ways in which protons loosen walls.

37. What is the mechanism by which the wall becomes loosened?

38. Auxin, a plant hormone, has been shown to stimulate cell elongation. Describe two modes of action for auxin.

**Fill-in-the-Blanks:**

39. _____ Name the enzyme that makes cellulose
40. _____ Stage of cell cycle during which walls are synthesized
41. _____ Vesicles and spindle microtubules along the cell equator
42. _____ A drug that disrupts microtubule formation
43. _____ The driving force for cell expansion