

WHAT IS CLAIMED IS

1. A method for treating a tissue matrix, comprising:

selecting a tissue matrix; and

contacting the tissue matrix with alcalase and treating the tissue matrix with radiation under conditions including an incubation time in a solution having an alcalase activity selected to produce a desired increase in a pliability measured by a drape test of the tissue matrix without producing significant collagen degradation.
2. The method of claim 1, wherein the tissue matrix is contacted with alcalase under conditions that do not produce an undesirable change in at least one of tensile strength, tear strength, suture strength, creep resistance, burst strength, thermal transition temperature, collagenase susceptibility or combinations thereof.
3. The method of any of claims 1-2, wherein the conditions are selected to provide a substantially maximum increase in tissue pliability.
4. The method of any of claims 1-3, wherein the tissue matrix is a non-primate tissue matrix.
5. The method of any of claims 1-3, wherein the tissue matrix is a porcine tissue matrix.
6. The method of any of claims 1-5, wherein the tissue matrix is contacted with alcalase under conditions that do not produce an undesirable change in elasticity.
7. The method of any of claims 1-6, further including treating the tissue matrix to remove at least some of the cells and cellular components from the tissue matrix.

8. The method of claim 7, including removal of all the cells and cellular components from the tissue matrix.
9. The method of any of claims 1-7, wherein the tissue matrix is an acellular tissue matrix.
10. The method of any of claims 1-9, wherein the tissue matrix comprises a dermal tissue matrix.
11. The method of any of claims 1-10, wherein contacting the tissue matrix with alcalase includes contacting the tissue matrix with a solution having alcalase with an activity of 1×10^{-6} Anson units/mL to 0.015 Anson units/mL.
12. The method of any of claims 1-10, wherein contacting the tissue matrix with alcalase includes contacting the tissue matrix with a solution having alcalase with an activity of 1×10^{-6} Anson units/mL to 1.5×10^{-3} Anson units/mL..
13. The method of any of claims 1-10, wherein contacting the tissue matrix with alcalase includes contacting the tissue matrix with a solution having alcalase with an activity of about 2×10^{-5} Anson units/mL to about 4×10^{-5} Anson units/mL.
14. The method of any of claims 1-13, further comprising packaging the tissue matrix.
15. The method of any of claims 1-14, further comprising sterilizing the tissue matrix.
16. The method of any of claims 1-15, wherein the tissue matrix is contacted with alcalase under conditions to produce reductions in the drape value of or at least 30%.
17. The method of any of claims 1-15, wherein the tissue matrix is contacted with alcalase under conditions to produce reductions in the drape value of or at least 40%.

18. The method of any of claims 1-15, wherein the tissue matrix is contacted with alcalase under conditions to produce reductions in the drape value of or at least 50%.

19. The method of any of claims 1-15, wherein the tissue matrix is contacted with alcalase under conditions to produce reductions in the drape value of or at least 60%.

20. The method of any of claims 1-15, wherein the tissue matrix is contacted with alcalase under conditions to produce a drape value of 0.2-0.4.

21. The method of any of claims 1-20, wherein the drape test comprises placing a tissue matrix of a known circular area on top of a circular pedestal having a known diameter and dividing the projected area of the tissue matrix after it drapes over the pedestal by the original area of the tissue matrix circle to determine the drape value.