

- [54] **BIODEGRADABLE MATRIX AND METHODS FOR PRODUCING SAME**
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[57] **ABSTRACT**

There are disclosed processes for preparing biodegradable collagen-based matrices in sponge or sheet form wherein in one embodiment a collagen-based material including a collagen selected from the group consisting of types I, II and III collagens is freeze dried to form a collagen-based sponge which is contacted with a cross-linking agent selected from the group consisting of a carbodiimide or a succinimidyl active ester to form an intermediate collagen-based matrix which is subsequently subjected to conditions of severe dehydration to form the collagen-based matrix in sponge or sheet form. In another embodiment, a collagen-based sponge or sheet is first subjected to conditions of severe dehydration followed by contacting the thus formed intermediate collagen-based matrix with a carbodiimide crosslinking compound to form the collagen-based matrix in sponge or sheet form. In still another embodiment of the present invention the cross-linking agent is admixed with the collagen-based material prior to formation of the collagen-based sponge or sheet followed by processing steps of severe dehydration. In a particularly preferred form of the invention, a carrier compound is incorporated during processing to form a collagen-based matrix in sponge or sheet form impregnated with a carrier compound wherein the carrier compound is selected from the group consisting of types IV and V collagen, fibronectin, laminin, hyaluronate, proteoglycan, epidermal growth factor, platelet derived growth factor, angiogenesis factor, antibiotic, antifungal agent, spermicidal agent, enzyme and enzyme inhibitor.

38 Claims, No Drawings