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Woerly

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[54] **IMPLANTABLE POLYMER HYDROGEL FOR THERAPEUTIC USES**

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[58] **Field of Search** 424/78.08, 423; 526/199, 200

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,902,295 2/1990 Walthall et al. .

OTHER PUBLICATIONS

Xu et al. J. Comp. Neurol. 351, 145, 1995.
Woerly et al. Biomaterials, 11, 97, 1990.
Woerly et al. Biomaterials, 12, 197, 1991.
Woerly et al. J. Neural Transpl. Plast 3, 21, 1992.
Woerly et al. Cell Transpl., 2, 229, 1993.
Woerly et al. J. Neural Transpl. Plast., 5, 245, 1995.
Harvey et al. Brain Res., 671,119,1995.
Bellamkonda et al. *Hydrogel–based 3–dimensional matrix for neural cells*, J. Biomed Mat. Res. 29, 663–671, 1995.
Krewson et al. *Cell aggregatyion and neurite growth in gels of extracellular matrix molecules*, Biotechnol. Bioeng. 43, 555–562, 1994.
Wald et al. *Cell seeding in porous transplantation*, Biomat. 14, 270–278,1993.
Woerly et al. Neurosci. Lett. 205, 197–201, 1996.

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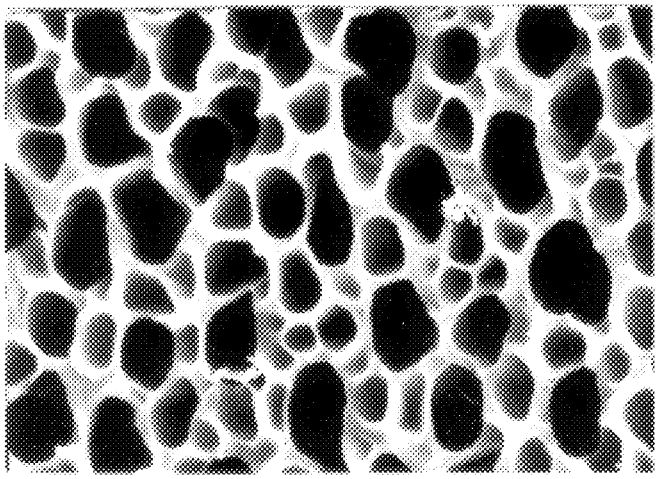
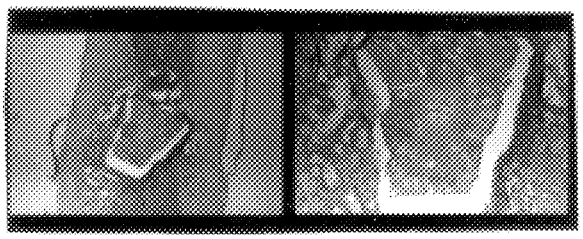
[57] **ABSTRACT**

The hydrogel is a copolymer of an N-substituted methacrylamide or acrylamide, a cross-linking agent and a complex sugar or derivative, a tissue adhesion peptide or a polymer conjugate with antibodies, the polymer being heterogeneous, elastically deformable and having an equilibrium water content of at least about 80%. It can be used for tissue regeneration and for organ repair, for example, in the developing and adult nervous system.

14 Claims, 1 Drawing Sheet