(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
23 February 2006 (23.02.2006)

PCT

(10) International Publication Number
WO 2006/020859 A3

(51) International Patent Classification:
A61F 2/16 (2006.01)

(21) International Application Number:
PCT/US2005/028723

(22) International Filing Date: 12 August 2005 (12.08.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/601,270 13 August 2004 (13.08.2004) US

(71) Applicants *(for all designated States except US)*: **OTTAWA HEALTH RESEARCH INSTITUTE** [CA/CA]; 725 Parkdale Avenue, Ottawa, Ontario K1Y 4E9 (CA). **NATIONAL RESEARCH COUNCIL OF CANADA** [CA/CA]; Intellectual Property Services Offices, 1200 Montreal Road, Ottawa, Ontario K1A 0R6 (CA). **COOPERVISION, INC.** [GB/US]; 370 Woodcliff Dr., Suite 200, Fairport, NY 14450 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **GRIFFITH, May** [CA/CA]; 1006 Spruce Ridge Road, RR#3, Carp, Ontario K0A 1L0 (CA). **CARLSSON, David, J.** [CA/CA]; 14 Delong Drive, Ottawa, Ontario K1J 7E6 (CA). **LI, Fengfu** [CA/CA]; 19 Maxton Private, Ottawa, Ontario K1J 1J1 (CA). **LIU, Yuwen** [CA/CA]; 514-790 Springland Drive, Ottawa, Ontario K1V 6L7 (CA). **MARMO, J. Christopher** [US/US]; 39 Green Gables Court, Danville, California 94506 (US). **ASMANRAFAT, Mehrdad** [CA/CA]; 112 Robert-Stewart Road, Gatineau, Quebec J9H 7K7 (CA).

(74) Agents: **UXA, Frank, J.** et al.; Stout, Uxa, Buyan & Mullins, LLP, 4 Venture, Suite 300, Irvine, CA 92618 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

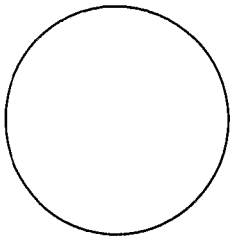
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
25 January 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: VISION ENHANCING OPHTHALMIC DEVICES AND RELATED METHODS AND COMPOSITIONS



(57) Abstract: Devices, methods, and compositions for improving vision or treating diseases, disorders or injury of the eye are described. Ophthalmic devices, such as corneal onlays, corneal inlays, and full-thickness corneal implants, are made of a material that is effective in facilitating nerve growth through or over the device. The material may include an amount of collagen greater than 1% (w/w), such as between about 10% (w/w) and about 30% (w/w). The material may include collagen polymers and/or a second biopolymer or water-soluble synthetic polymer cross-linked using EDC/NHS chemistry. The material may additionally comprise a synthetic polymer. The devices are placed into an eye to correct or improve the vision of an individual or to treat a disease, disorder or injury of an eye of an individual.

WO 2006/020859 A3