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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 October 2001 (25.10.2001)

PCT

(10) International Publication Number
WO 01/78805 A1

(51) International Patent Classification[7]: A61M 1/16, 1/34, B01D 69/02, 69/08, 61/14

(21) International Application Number: PCT/US01/40494

(22) International Filing Date: 11 April 2001 (11.04.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/549,131 13 April 2000 (13.04.2000) US

(71) Applicant: **TRANSVIVO, INC.** [US/US]; Suite 108, 1100 Lincoln Avenue, Napa, CA 94558 (US).

(72) Inventors: **GORSUCH, Reynolds**; 1119 State Lane, Yountville, CA 94599 (US). **GRAGE, Henry**; 175 Tenby Terrace, Danville, CA 94506 (US).

(74) Agent: **ARNO, Thomas, R.**; Knobbe, Martens, Olson & Bear, LLP, 16th Floor, 620 Newport Center Drive, Newport Beach, CA 92660 (US).

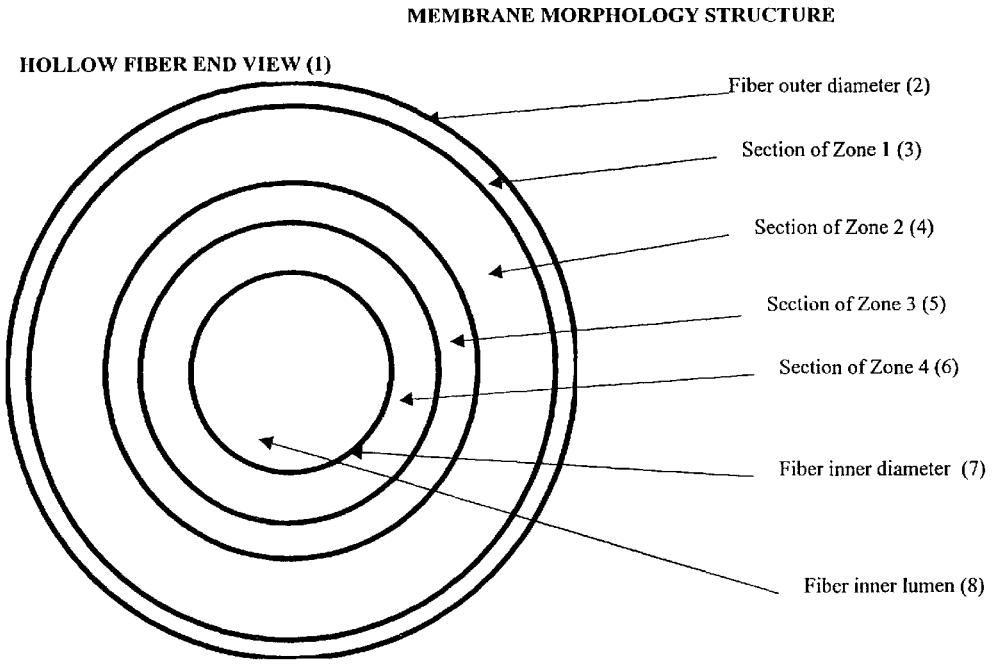
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, 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*

[Continued on next page]

(54) Title: SPECIALIZED HOLLOW FIBER MEMBRANES FOR IN-VIVO PLASMAPHERESIS AND ULTRAFILTRATION



(57) Abstract: An *in-vivo* plasmapheresis and/or *in-vivo* ultrafiltration membrane comprises a plurality of elongated hollow fibers each fiber having an interior lumen extending along the fiber length, the fiber wall having a plurality of zones between the inner and outer wall surfaces, each of the zones having a mass density different than the mass density of an adjacent zone. The fiber wall is characterized by having a lower mass density zone at the inner wall surface and a higher mass density zone at the outer wall surface.

WO 01/78805 A1

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.