



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61K 9/16, C12N 9/20, 9/04, 9/86	A1	(11) International Publication Number: WO 99/55310 (43) International Publication Date: 4 November 1999 (04.11.99)
(21) International Application Number: PCT/US99/09099 (22) International Filing Date: 27 April 1999 (27.04.99) (30) Priority Data: 60/083,148 27 April 1998 (27.04.98) US 09/224,475 31 December 1998 (31.12.98) US (63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 09/224,475 (CIP) Filed on 31 December 1998 (31.12.98) (71) Applicant (for all designated States except US): ALTUS BIO- LOGICS INC. [US/US]; 625 Putnam Avenue, Cambridge, MA 02139-4211 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): MARGOLIN, Alexey, L. [US/US]; 193 Upland Avenue, Newton, MA 02161 (US). KHALAF, Nazer, K. [US/US]; 14 Lauf Street, Worcester, MA 01602 (US). ST. CLAIR, Nancy, L. [US/US]; 806 East Forest Hill Boulevard, Durham, NC 27707 (US). RAKESTRAW, Scott, L. [US/US]; 8 Spring Hill Lane, Newark, DE 19711-2826 (US). SHENOY, Bharni, C.		[US/US]; 16 Westgate Drive, T-6, Woburn, MA 01801 (US). (74) Agents: HALEY, James, F., Jr. et al.; Fish & Neave, 1251 Avenue of the Americas, New York, NY 10020 (US). (81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, 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), 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 the receipt of amendments.
(54) Title: STABILIZED PROTEIN CRYSTALS, FORMULATIONS CONTAINING THEM AND METHODS OF MAKING THEM		
(57) Abstract This invention relates to methods for the stabilization, storage and delivery of biologically active macromolecules, such as proteins, peptides and nucleic acids. In particular, this invention relates to protein or nucleic acid crystals, formulations and compositions comprising them. Methods are provided for the crystallization of proteins and nucleic acids and for the preparation of stabilized protein or nucleic acid crystals for use in dry or slurry formulations. The present invention is further directed to encapsulating proteins, glycoproteins, enzymes, antibodies, hormones and peptide crystals or crystal formulations into compositions for biological delivery to humans and animals.		