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# United States Patent [19]

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Ranney

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[54] **ENDOTHELIAL ENVELOPMENT DRUG CARRIERS**

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[76] Inventor: **David F. Ranney**, 3539 Courtdale Dr., Dallas, Tex. 75234

[\*] Notice: The portion of the term of this patent subsequent to May 15, 2007 has been disclaimed.

[21] Appl. No.: **448,121**

[22] Filed: **Dec. 8, 1989**

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*Primary Examiner*—Thurman K. Page  
*Assistant Examiner*—Carlos Azpuru  
*Attorney, Agent, or Firm*—Arnold, White & Durkee

### Related U.S. Application Data

- [62] Division of Ser. No. 33,432, Apr. 1, 1987, Pat. No. 4,925,678.
- [51] Int. Cl.<sup>5</sup> ..... **A61K 9/16; A61K 45/05; A61K 9/50; A61K 37/22**
- [52] U.S. Cl. .... **424/493; 424/7.1; 424/9; 424/85.2; 424/450; 424/460; 424/461; 424/463; 424/469; 424/488; 424/499; 428/402.2; 428/402.24; 436/829; 514/963; 514/965**
- [58] Field of Search ..... **424/7.1, 9, 85.2, 450, 424/460, 461, 463, 469, 488, 499; 428/402.2, 402.24; 436/829; 514/963, 965**

### ABSTRACT

[57] This application describes the preparation and in vivo testing of surface coatings and matrix materials, which when applied to or caused to comprise the carriers for drugs and diagnostic agents, and administered in a fashion that allows efficient vascular access, causes the carriers to recognize determinants present or normal or focally diseased endothelium, and induces the following in vivo effects: 1) rapid, partial or total endothelial envelopment of the drug (diagnostic) carrier; 2) sequestration of the carrier and protecting entrapped agent from blood vascular clearance at an early time (2 minutes) when the endothelial pocket which envelops the carrier still invaginates into the vascular compartment; 3) acceleration of the carrier's transport across or through the vascular endothelium and/or subendothelial structures into the tissue compartment (interstitium); and 4) improvement of the efficiency with which the drug (or diagnostic) carrier migrates across the endothelium, or epi-endothelial or subendothelial barriers, such that a lower total drug dose is required to obtain the desired effect relative to that required for standard agents.

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**11 Claims, 6 Drawing Sheets**

