

***Representative Issued Patents Drafted and/or Prosecuted by Warren D. Woessner***

- Pharmaceuticals, Biologicals
- Genes and Gene Therapy
- Microorganisms/Cell Culture Technology/Stem Cells
- Monoclonal Antibodies and Diagnostic Methods
- Enzymology
- Polypeptides
- Agricultural Biotechnology
- Methods of Medical Treatment
- Drug Delivery Systems
- Medical Devices
- DNA Isolation and Synthesis
- Vaccines

**Pharmaceuticals, Biologicals**

- Poniard Pharmaceuticals, Inc. (U.S. Pat. No. 7,696,331): HIGH-DOSE RADIONUCLIDE COMPLEXES
- Genzyme Corp. (U.S. RE41,209E): PLATINUM COMPLEXES
- Orphan Medical, Inc. (U.S. Pat. No. 7,572,605): GAMMA-HYDROXYBUTYRATE COMPOSITIONS
- Orphan Medical, Inc. (U.S. Pat. No. 7,262,219): GAMMA-HYDROXY BUTYRATE FOR THE TREATMENT OF NARCOLEPSY
- University of California (U.S. Pat. No. 7,141,603): ANTITUMOR AGENTS
- Aesgen, Inc. (U.S. Pat. No. 6,211,169): STABLE CALCITRIOL SOLUTION FOR PACKAGING INTO VIALS
- University of Minnesota (U.S. Pat. No. 6,534,512): DIDEOXYCARBOCYCLIC NUCLEOSIDES
- University of Minnesota (U.S. Pat. No. 5,929,087): DECAHYDROQUINOLINE-BASED ANTI-CHOLINERGIC AGENTS
- Mayo Clinic (U.S. Patent No. 5,783,584): THA ANALOGS USEFUL AS CHOLINESTERASE INHIBITORS
- Research Corp. Technologies (U.S. Patent No. 5,840,859): (AMINOSTYRYL) PYRIDIDIUM COMPOUNDS FOR RADIOLABELLING CELL MEMBRANES

■ Research Corp. Technologies (U.S. Patent No. 5,648,378): 2-IMINOCHROMENE DERIVATIVES AS INHIBITORS OF PTK

## **Genes and Gene Therapy**

■ Mayo Clinic/Hybritech, Inc. (U.S. Pat. No. 6,013,471): DNA ENCODING VARIANT HK2 POLYPEPTIDES.

■ Mayo Clinic (U.S. Patent No. 5,470,737): STABLY-TRANSFORMED CELLS EXPRESSING HUMAN THIOPURINE METHYLTRANSFERASE

■ Mayo Clinic (U.S. Patent No. 5,744,355): CLONING AND EXPRESSION OF HUMAN LIVER ESTROGEN TRANSFERASE

■ Mayo Clinic (U.S. Patent 5,618,695): DNA ENCODING HEM-1

■ University of Minnesota (U.S. Pat. No. 6,238,916): DNA ENCODING TURKEY HYPOTHALMIC VASOACTIVE INTESTINAL PEPTIDE

■ University of Rochester (U.S. Patent 5,601,818): CANCER THERAPY UTILIXING MALIGNANT CELLS EXPRESSING HSV-TK

## **Microorganisms/Cell Culture Technology/Stem Cells**

■ University of Minnesota (U.S. Pat. No. 7,015,037): MULTIPOTENT STEM CELLS AND METHODS FOR ISOLATION

■ University of Minnesota (U.S. Pat. No. 6,277,557): INFUSIBLE GRADE SHORT-TERM CELL STORAGE MEDIUM

■ U of Minnesota (U.S. Patent No. 5,460,964): METHOD FOR CULTURING HEMATOPOIETIC CELLS

■ U of Minnesota (U.S. Patent No. 5,436,151): METHOD FOR CULTURING HUMAN HEMATOPOIETIC STEM CELLS IN VITRO

■ Mayo Clinic (U.S. Patent No. 5,693,511): IMMORTALIZED HUMAN FETAL OSTEOBLASTIC CELLS

## **Monoclonal Antibodies and Diagnostic Methods**

■ University of Arkansas (U.S. Pat. No. 7,601,800): COMPOSITIONS AND METHODS FOR MONITORING BREAST CANCER TREATMENT

■ Research Corporation Technologies, Inc.(U. S. Pat. No. 6,106,834): USE OF ANTI-CD45 LEUKOCYTE ANTIGEN ANTIBODIES FOR IMMUNOMODULATION.

- University of Minnesota (U.S. Pat. No. 5,919,457): TXU-5/B53-APA ANTIVIRAL THERAPEUTIC AGENT FOR THE TREATMENT OF AIDS.
- Mayo Clinic (U.S. Pat. No. 5,827,497): CHARCOAL - RADIONUCLIDE AGENTS FOR MEASUREMENT OF GASTROINTESTINAL TRANSIT.
- Mayo Clinic (U.S. Patent No. 5,529,902): DIRECT FLUORESCENCE-CONJUGATED IMMUNOASSAY FOR PLATELET ACTIVATION
- NeoRx (U.S. Patent No. 5,545,569): METHODS TO DETERMINE TGF-BETA
- U of Minnesota (U.S. Patent No. 5,316,907): ENZYMATIC FLUOROMETRIC ASSAY FOR ADENYLATE CYCLASE
- Mayo Clinic (U.S. Patent No. 5,516,639): ANTIBODIES SPECIFIC FOR HUMAN PROSTATE GLANDULAR KALLIKREIN
- Mayo Clinic (U.S. Pat. No. 6,087,097): PCR DETECTION OF BORRELIA BURGDORFERI

## **Enzymology**

- Iowa State University (U.S. Pat. No. 5,804,426): RECOMBINANT CYCLODEXTRAN GLUCANOTRANSFERASE MUTANTS
- Research Corporations Technologies (U.S. Patent No. 5,728,804): USE OF CYCLODEXTRINS FOR PROTEIN RENATURATION
- Iowa State (U.S. Patent No. 5,804,426): RECOMBINANT CYCLODEXTRAN GLUCANOTRANSFERASE MUTANTS

## **Polypeptides**

- University of Missouri (U.S. Pat. No. 7,214,664): PEPTIDE PRO-DRUGS THAT RESIST P-GLYCOPROTEIN MEDIATED DRUG EFFLUX
- University of Missouri (U.S. Pat. No. 7,553,812): ACYCLOVIR-PEPTIDE ANALOGS
- Hybritech Inc. (U.S. Pat. No. 6,103,237); STABLE VARIANT HK2 POLYPEPTIDE
- Mayo Clinic (U.S. Patent No. 5,583,108): VASONATRIN PEPTIDE
- Mayo Clinic/Hybritech, Inc. (U.S. Pat. No. 6,093,796): RECOMBINANT HK2 POLYPEPTIDE
- U of Minnesota (U.S. Patent No. 5,523,286): A STROMA-DERIVED PROTEOGLYCAN CONTAINING COMPOSITION WHICH PROMOTES DIFFERENTIATION AND MAINTAINS THE SELF-RENEWAL CAPACITY OF LONG-TERM BONE MARROW CULTURE-INITIATING CELLS

■ U of Minnesota (U.S. Pat. No. 5,424,221): KIT FOR DETECTION OF ISLET AMYLOID POLYPEPTIDE (IAPP)

■ U of Minnesota (U.S. Pat. No. 5,019,646): POLYPEPTIDES WITH FIBRONECTIN ACTIVITY

■ U of Minnesota (U.S. Pat. No. 5,158,884): IMMUNODOMINANT ACETYLCHOLINE RECEPTOR PEPTIDES

■ Mayo Clinic (U.S. Patent No. 5,260,308): METHOD TO INCREASE PERMEABILITY OF THE BLOOD-NERVE/BRAIN BARRIERS TO PROTEINS

### **Agricultural Biotechnology**

■ APC Company, Inc. (U.S. Pat. No. 7,182,962): IMMUNOSTIMULATOR FOR ANIMALS

■ The Lauridsen Group (U.S. Pat. No. 7,258,870): POULTRY FEED SUPPLEMENT

■ DEKALB Genetics Corp. (U.S. Pat. No. 6,025,545): METHODS AND COMPOSITIONS FOR THE PRODUCTION OF STABLY TRANSFORMED, FERTILE MONOCOT PLANTS

■ DEKALB Genetics Corp. (U.S. Pat. No. 6,013,863): FERTILE TRANSGENIC CORN PLANTS

■ DEKALB Genetics Corp. (U.S. Pat. No. 5,538,880): METHOD FOR PREPARING FERTILE TRANSGENIC CORN PLANTS

■ DEKALB Genetics Corp. (U.S. Pat. No. 5,538,877): METHOD FOR PREPARING FERTILE TRANSGENIC CORN PLANTS

■ DEKALB Genetics Corp. (U.S. Pat. No. 5,484,956): FERTILE TRANSGENIC ZEA MAYS PLANT COMPRISING HETEROLOGOUS DNA ENCODING BACILLUS THURINGIENSIS ENDOTOXIN

■ DEKALB Genetics Corp. (U.S. Pat. No. 5,554,798): FERTILE GLYPHOSATE-RESISTANT TRANSGENIC CORN PLANTS

■ University of Minnesota (U.S. Pat. Nos. 6,069,298; 6,146,861; 6,222,099): METHODS AND AN ACETYL COA CARBOXYLASE GENE

### **Methods of Medical Treatment**

■ University of Virginia (U.S. Pat. No. 7,442,681): METHOD OF INHIBITING VASCULAR PERMEABILITY

■ Eisai Inc. (U.S. Pat. No. 7,709,529): IMPROVED TREATMENT OF CANCER WITH GLUTAMINE

■ CUNY (U.S. Pat. No. 6,461,609): RECOMBINANT  $\alpha$ -GAL-A; A THERAPY FOR FABRY DISEASE

■ NeoRx (U.S. Pat. Nos. 5,770,609; 5,945,456; 6,197,789; 6,251,920; 6,262,079): PREVENTION AND TREATMENT OF PATHOLOGIES ASSOCIATED WITH ABNORMALLY PROLIFERATIVE SMOOTH MUSCLE CELLS

■ NeoRx (U.S. Pat. Nos. 5,811,447; 5,733,925; 6,074,659): THERAPEUTIC INHIBITOR OF VASCULAR SMOOTH MUSCLE CELLS

■ Mayo Clinic (U.S. Pat. No. 5,837,713): TREATMENT OF EOSINOPHIL-ASSOCIATED PATHOLOGIES

■ University of Minnesota (U.S. Pat. No. 5,780,479): USE OF OPIOID ANTAGONISTS TO TREAT IMPULSE CONTROL DISORDERS

■ Mayo Clinic (U.S. Pat. No. 5,691,343): USE OF TOPICAL AZATHIOPRENE TO TREAT INFLAMMATORY BOWEL DISORDERS

■ Mayo Clinic (U.S. Pat. No. 5,510,339): METHOD FOR TREATMENT OF BRONCHIAL ASTHMA BY ADMINISTRATION OF TOPICAL ANESTHETICS

■ Center for Innovative Technology (U.S. Pat. No. 5,541,226): TOPICAL COMPOSITIONS FOR RE-EPITHELIALIZATION OF PERSISTENT EPITHELIAL DEFECTS

■ Gleich (U.S. Pat. No. 5,498,410): METHOD FOR THE TREATMENT OF EOSINOPHIL-ASSOCIATED CONDITIONS WITH ANIONIC POLYMERS

■ NeoRx (U.S. Pat. No. 5,472,985): PREVENTION AND TREATMENT OF PATHOLOGIES ASSOCIATED WITH ABNORMALLY PROLIFERATIVE SMOOTH MUSCLE CELLS

■ U of Minnesota (U.S. Pat. No. 5,411,965): USE OF DELTA OPIOID RECEPTOR ANTAGONISTS TO TREAT COCAINE ABUSE

## **Drug Delivery Systems**

■ Iowa State University (U.S. Pat. No. 7563,451): CAPPED MESOPOROUS SILICATES

■ Rutgers (U.S. Pat. No. 5,560,922): TRANSDERMAL ABSORPTION DOSAGE UNIT USING A POLYACRYLATE ADHESIVE POLYMER AND PROCESS

■ U.S. Pat. No. 4,708,834: PREPARATION OF GELATIN-ENCAPSULATED CONTROLLED RELEASE COMPOSITION

■ U.S. Pat. No. 5,368,581: METHOD FOR USING A PACKAGING SYSTEM WITH FOLDED APPLICATOR PADS FOR DRUG DELIVERY

## **Medical Devices**

- U.S. Pat. No. 4,619,657: FLEXIBLE INTRAOCULAR LENS HOLDER
- U.S. Pat. No. 5,073,171: BIOCOMPATIBLE MATERIALS COMPRISING ALBUMIN-BINDING DYES
- U.S. Pat. No. 5,152,784: PROSTHETIC DEVICES COATED WITH A POLYPEPTIDE WITH TYPE IV COLLAGEN ACTIVITY

## **DNA Isolation and Synthesis**

- U.S. Pat. No. 5,023,171: METHOD FOR GENE SPLICING BY OVERLAP EXTENSION USING PCR
- U.S. Pat. No. 5,243,039: BACILLUS MGA3 ASPARTOKINASE II GENE

## **Vaccines**

- Endobiologics, Inc. (U.S. Pat. No. 7,014,857): ANTI-SEPSIS CONJUGATE VACCINE
- Mikrogen (U.S. Pat. No. 6,183,755): ACTIVE PROTEINS FROM B. BURGdorFERI
- Iowa State University (U.S. Pat. No. 5,419,907): PATHOGENIC PORCINE RESPIRATORY CORONAVIRUS
- University of Minnesota (U.S. Pat. No. 4,721,617): VACCINE AGAINST LYME DISEASE
- University of Minnesota (U.S. Pat. No. 5,843,462): DIPHTHERIA TOXIN EPITOPES