



US007531173B2

(12) **United States Patent**  
**Wiegand et al.**

(10) **Patent No.:** **US 7,531,173 B2**  
(45) **Date of Patent:** **\*May 12, 2009**

(54) **OPHTHALMIC COMPOSITION OF A VEGF ANTAGONIST**

6,270,993 B1 8/2001 Shibuya  
6,897,294 B2 5/2005 Davis-Smyth et al.

(75) Inventors: **Stanley J. Wiegand**, Croton-on-Hudson, NY (US); **Jingtai Cao**, Chappaqua, NY (US)

FOREIGN PATENT DOCUMENTS  
WO WO 97/44453 11/1997  
WO WO 98/13071 4/1998  
WO WO 99/13909 3/1999  
WO WO 00/75319 12/2000  
WO WO 03/072029 9/2003  
WO WO 2004/106378 12/2004

(73) Assignee: **Regeneron Pharmaceuticals, Inc.**, Tarrytown, NY (US)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

OTHER PUBLICATIONS

Phillips, A.J. (2001). The challenge of gene therapy and DNA delivery. *J. Pharm. Pharmacol.* 53:1169-1174.\*  
Palù et al. (1999). In pursuit of new developments for gene therapy. *J. Biotechnol.* 68:1-13.\*  
Holash, J., et al., (2002) *PNAS*, 99(17):11393-11398.  
Heidaran, M.A., et al., (1990) *J. Biol. Chem.* 265(31):18741-18744.  
Cunningham, S.A., et al., (1997) *Biochem. Biophys. Res. Comm.* 231:596-599.  
Fuh, G., et al., (1998) *J. Biol. Chem.* 273(18):11197-11204.  
Wiesmann, C., et al., (1997) *Cell*, 91:695-704.  
Barleon, B., et al., (1997) *J. Biol. Chem.* 272(16):10382-10388.  
Davis-Smyth, T., et al., (1998) *J. Biol. Chem.* 273(6):3216-3222.  
Wulff, C., et al., (2002) *Endocrinology* 143(7):2797-2807.  
Yatoh, S., et al., (1998) *Transplantation* 66(11):1519-1524.  
Cao, J., et al., (2004) *Investigative Ophthalmology and Visual Science*, 45(Suppl. 1):U922.

\* cited by examiner

*Primary Examiner*—Christine J Saoud  
*Assistant Examiner*—Jon M Lockard  
(74) *Attorney, Agent, or Firm*—Valeta Gregg

(21) Appl. No.: **11/998,746**

(22) Filed: **Nov. 30, 2007**

(65) **Prior Publication Data**  
US 2008/0085276 A1 Apr. 10, 2008

**Related U.S. Application Data**

(62) Division of application No. 11/346,009, filed on Feb. 2, 2006, now Pat. No. 7,303,748.

(60) Provisional application No. 60/649,232, filed on Feb. 2, 2005.

(51) **Int. Cl.**  
*A61K 38/18* (2006.01)  
*C07K 14/71* (2006.01)  
*C12N 15/62* (2006.01)

(52) **U.S. Cl.** ..... **424/134.1**; 424/192.1; 514/2; 514/12; 530/350; 536/23.4

(58) **Field of Classification Search** ..... None  
See application file for complete search history.

(56) **References Cited**  
U.S. PATENT DOCUMENTS

5,851,999 A 12/1998 Ullrich et al.  
6,011,003 A 1/2000 Charnock-Jones

(57) **ABSTRACT**

Methods of reducing or treating angiogenesis and/or inflammation associated with eye injury in a subject in need thereof, comprising administering an agent capable of blocking or inhibiting vascular endothelial growth factor (VEGF) are provided. The methods are useful for inhibiting or ameliorating eye injury, particularly acute or subacute corneal injury and feature local administration (for example, subconjunctival injection or eye drops).

**2 Claims, 7 Drawing Sheets**

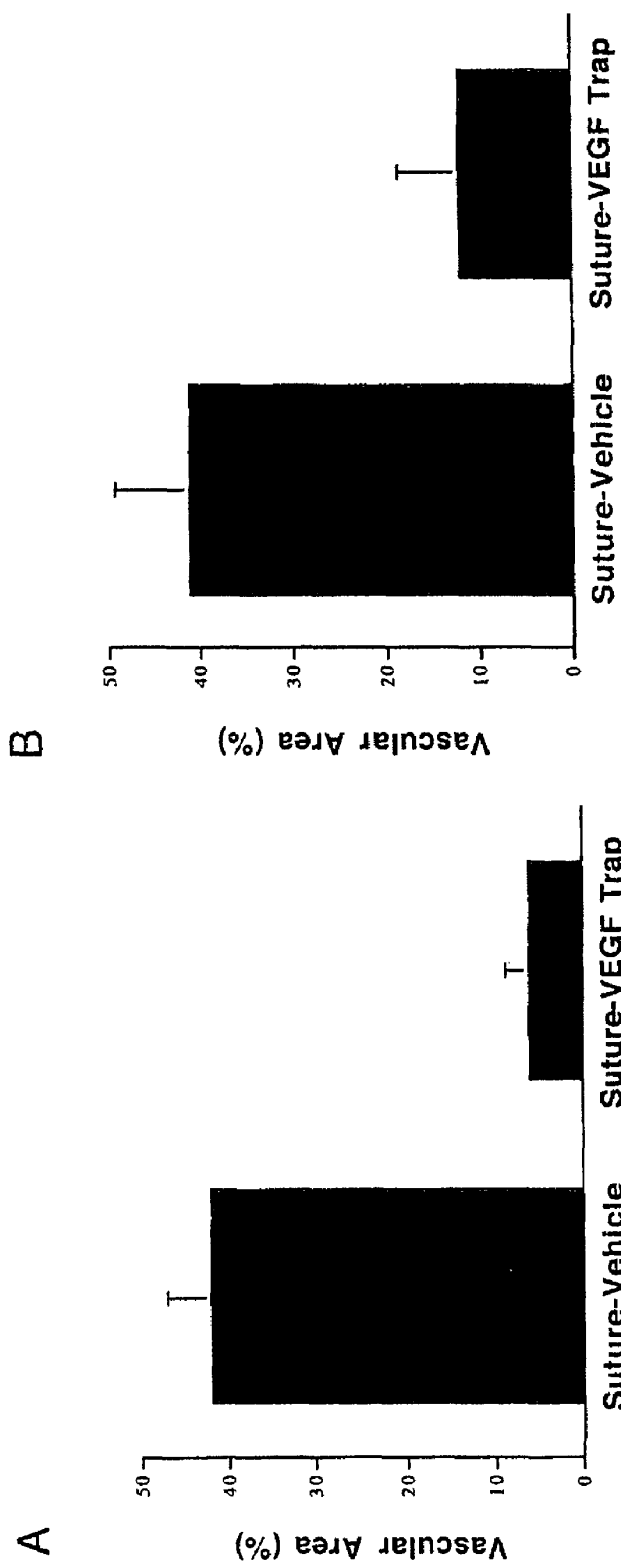


Fig. 1

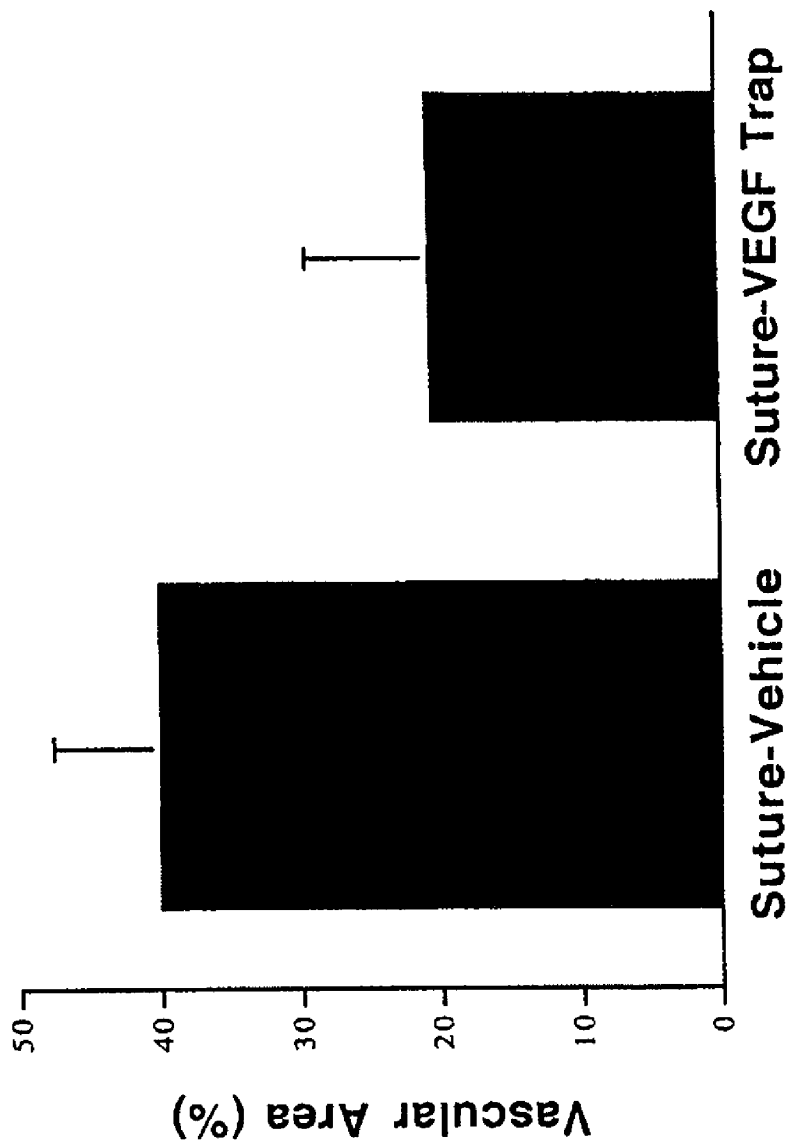


Fig. 2

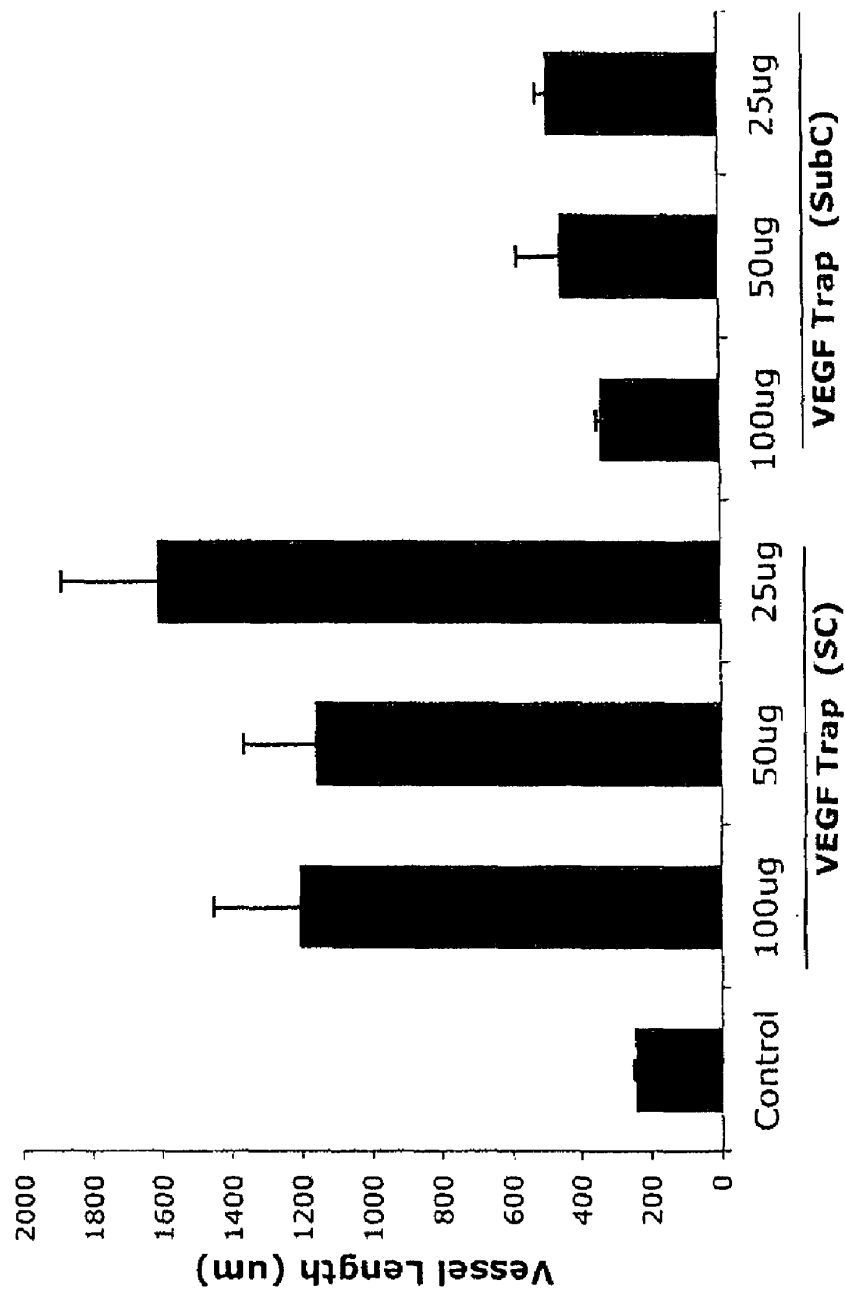


Fig. 3

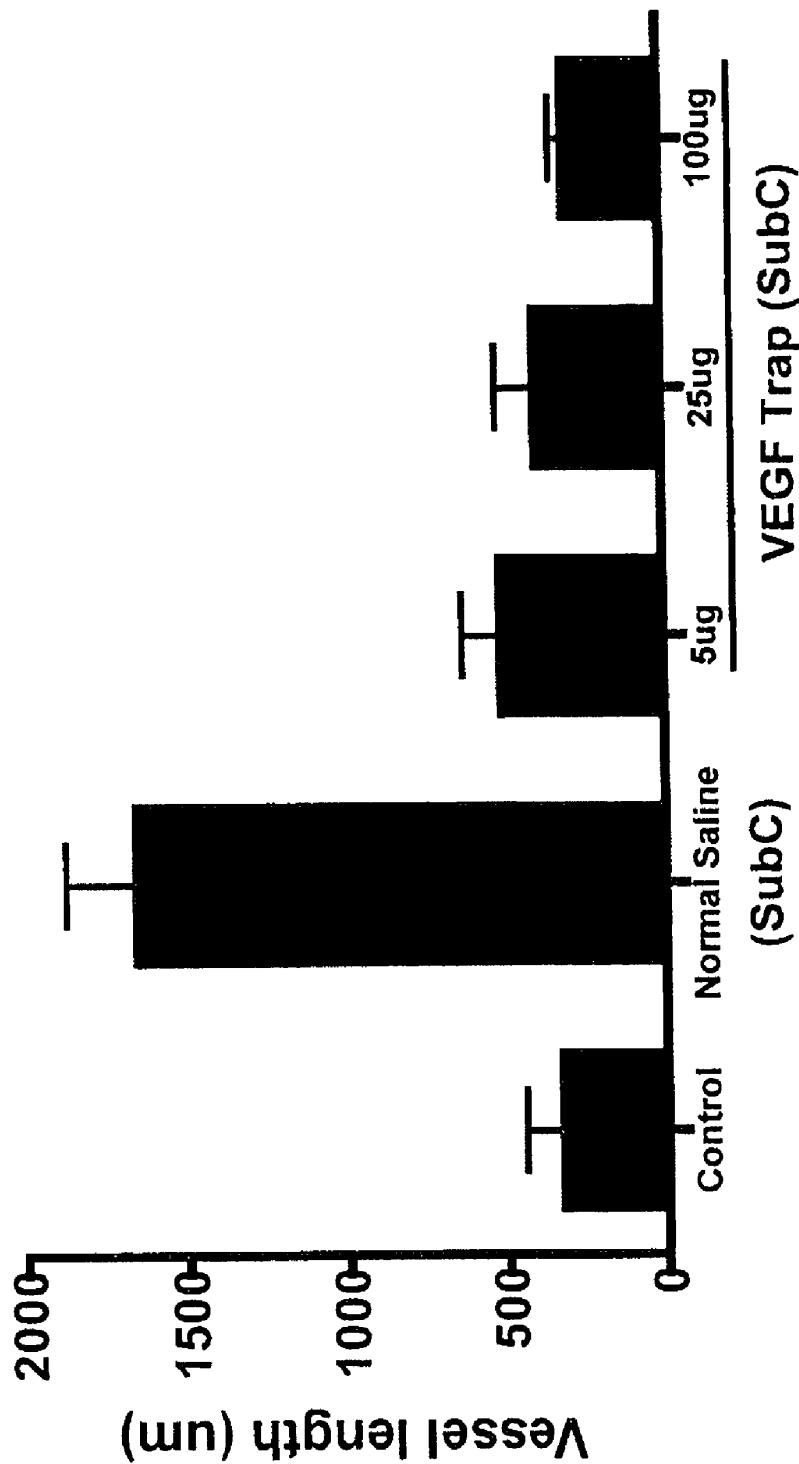


Fig. 4

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.