



- (51) **International Patent Classification:**
A61K 39/395 (2006.01) *C07K 16/00* (2006.01)
- (21) **International Application Number:**
PCT/US2015/019954
- (22) **International Filing Date:**
11 March 2015 (11.03.2015)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/951,226 11 March 2014 (11.03.2014) US
- (71) **Applicant: THE BOARD OF TRUSTEES OF THE LE-
LAND STANFORD JUNIOR UNIVERSITY [US/US];**
Office of the General Counsel, Building 170, 3rd Floor,
Main Quad, P.O. Box 20386, Stanford, California 94305-
2038 (US).
- (72) **Inventors: WEISKOPF, Kipp Andrew;** 745 Menlo Ave-
nue, Unit #10, Menlo Park, California 94025 (US). **RING, Aaron Michael;** 2253 Williams Street, Palo Alto,
California 94306 (US). **VOLKMER, Jens-Peter;** 12 Cole-
man Place, Apt 2, Menlo Park, California 94025 (US). **WEISSMAN, Irving L.;** 747 Santa Ynez Street, Stanford,
California 94305 (US). **RING, Nan Guo;** 2253 Williams
Street, Palo Alto, California 94306 (US).
- (74) **Agent: SHERWOOD, Pamela, J.;** Bozicevic, Field &
Francis LLP, 1900 University Avenue, Suite 200, East
Palo Alto, California 94303 (US).
- (81) **Designated States** (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG,
MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,
PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC,
SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ,
TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU,
TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE,
DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,
LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
— *before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))*
— *with sequence listing part of description (Rule 5.2(a))*

- (88) **Date of publication of the international search report:**
26 November 2015

(54) **Title:** ANTI SIRP-ALPHA ANTIBODIES AND BI-SPECIFIC MACROPHAGE ENHANCING ANTIBODIES

(57) **Abstract:** Anti-SIRP α antibodies, including multi-specific anti-SIRP α antibodies, are provided, as are related compositions and methods. The antibodies of the disclosure bind to SIRP α and can block the interaction of CD47 on one cell with SIRP α on a phago-
cytic cell. Antibodies that are bispecific for SIRP α and a second antigen are termed Bi-specific Macrophage Enhancing (BiME) anti-
bodies and have emergent properties. The subject anti SIRP α antibodies find use in various therapeutic methods. Embodiments of
the disclosure include isolated antibodies and derivatives and fragments thereof, pharmaceutical formulations comprising one or
more of the anti-SIRP α antibodies; and cell lines that produce the antibodies. Also provided are amino acid sequences of exemplary
anti-SIRP α antibodies.

