



(51) International Patent Classification:

G16H 10/20 (2018.01) G06N 20/00 (2019.01)
G16H 50/20 (2018.01) G16B 20/20 (2019.01)
G16H 50/50 (2018.01) A61K 49/00 (2006.01)
G16B 40/00 (2019.01) G16B 20/00 (2019.01)
G16B 35/00 (2019.01)

(21) International Application Number:

PCT/US2024/041461

(22) International Filing Date:

08 August 2024 (08.08.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/518,783 10 August 2023 (10.08.2023) US
63/639,488 26 April 2024 (26.04.2024) US

(71) Applicant: **SCIPHER MEDICINE CORPORATION**
[US/US]; 500 Totten Pond Road, 6th Floor, Waltham, Mass-
achusetts 02451 (US).

(72) Inventors: **GHIASSIAN, Susan**; 500 Totten Pond Road,
6th Floor, Waltham, Massachusetts 02451 (US). **SHAN-
THAMALLU, Uday Shankar**; 500 Totten Pond Road, 6th
Floor, Waltham, Massachusetts 02451 (US). **AKMAEV,**

Viatcheslav R.; 500 Totten Pond Road, 6th Floor, Waltham,
Massachusetts 02451 (US).

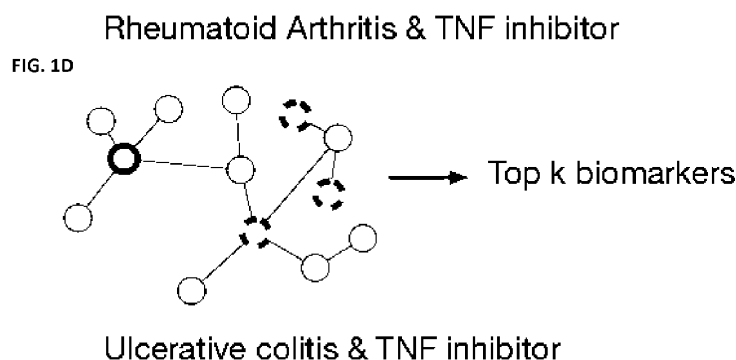
(74) Agent: **CRIPPEN, Shane** et al.; WILSON SONSINI
GOODRICH & ROSATI, 650 Page Mill Road, Palo Alto,
California 94304 (US).

(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, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG,
KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,
MA, MD, MG, MK, MN, MU, 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, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, CV,
GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE,

(54) Title: A NETWORK-BASED FRAMEWORK TO DISCOVER TREATMENT-RESPONSE-PREDICTING BIOMARKERS
FOR COMPLEX DISEASES

Implementation



(57) Abstract: Described are network-based frameworks to discover treatment-response-predicting biomarkers for complex diseases or disorders. In an aspect, described is a method of treating a subject suffering from an autoimmune disease or cancer. The method can include administering to the subject a therapy, in which the therapy has been predicted to generate a treatment response in the subject based at least in part on a trained machine learning (ML) classifier that classifies the subject as responsive or non-responsive to the therapy using treatment-response-predicting biomarkers.

[Continued on next page]

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:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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))*