



US011156542B2

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

(10) **Patent No.:** **US 11,156,542 B2**

(45) **Date of Patent:** **Oct. 26, 2021**

(54) **SURFACE ACOUSTIC WAVE BIOSENSOR EMPLOYING AN ANALOG FRONT END AND DNA ENCODED LIBRARIES TO IMPROVED LIMIT OF DETECTION (LOD) WITH EXEMPLARY APPARATUS OF THE SAME**

2291/0255 (2013.01); G01N 2291/0256 (2013.01); G01N 2291/0423 (2013.01)

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

(71) Applicant: **Sensor Kinesis Corporation**, Los Angeles, CA (US)
(72) Inventors: **Yehoshua Shachar**, Santa Monica, CA (US); **Roger Kornberg**, Atherton, CA (US)
(73) Assignee: **Autonomous Medical Devices Inc.**, Santa Monica, CA (US)
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 240 days.

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(21) Appl. No.: **16/325,291**
(22) PCT Filed: **Aug. 22, 2017**
(86) PCT No.: **PCT/US2017/048055**
§ 371 (c)(1),
(2) Date: **Feb. 13, 2019**
(87) PCT Pub. No.: **WO2018/057201**
PCT Pub. Date: **Mar. 29, 2018**

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(65) **Prior Publication Data**
US 2019/0170631 A1 Jun. 6, 2019

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Related U.S. Application Data
(60) Provisional application No. 62/397,233, filed on Sep. 20, 2016.

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Primary Examiner — Ann Y Lam
(74) *Attorney, Agent, or Firm* — Marcus C. Dawes; Daniel L. Dawes

(51) **Int. Cl.**
G01N 15/06 (2006.01)
G01N 29/22 (2006.01)
G01N 29/34 (2006.01)
B81C 1/00 (2006.01)
G01N 29/036 (2006.01)
G01N 29/02 (2006.01)
C12N 15/10 (2006.01)
G01N 33/53 (2006.01)
G01N 15/00 (2006.01)

(57) **ABSTRACT**
A surface acoustic wave (SAW) performs a rapid, label-free detection of biological species. Biosensing and detection of multiple analytes multiplexed by an array of sensing lanes is configured to enable bio-amplification using engineered DNA encoded libraries as the probe through a phage display procedure to enhance specificity, capture statistics for the detection, screening and analyzing of the analyte in vitro. A biochemical formulation minimizes the limit of detection (LOD) at a threshold magnitude on the order of a femtomolar concentration. Additional enhancement of the apparatus is achieved by use of an analog front end to amplify biochemical events.

(52) **U.S. Cl.**
CPC **G01N 15/0606** (2013.01); **B81C 1/00206** (2013.01); **C12N 15/1037** (2013.01); **G01N 29/022** (2013.01); **G01N 29/036** (2013.01); **G01N 29/222** (2013.01); **G01N 29/348** (2013.01); **G01N 33/5306** (2013.01); **B81B 2201/0214** (2013.01); **B81C 2201/0149** (2013.01); **G01N 2015/0065** (2013.01); **G01N**

17 Claims, 42 Drawing Sheets