November 29, 2021

Immunexpress, Inc
Lakesha Hunt-Dickens
Director, Quality and Regulatory Affairs
425 Pontius Avenue North, Suite 470
Seattle, Washington 98109

Re: K203748
Trade/Device Name: SeptiCyte RAPID
Regulation Number: 21 CFR 866.3215
Regulation Name: Rt-Qpcr Assay For Mrna Transcript Immune Biomarkers
Regulatory Class: Class II
Product Code: PRE
Dated: December 21, 2020
Received: December 23, 2020

Dear Lakesha Hunt-Dickens:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database located at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm identifies combination product submissions. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's

requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801 and Part 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance) and CDRH Learn (https://www.fda.gov/training-and-continuing-education/cdrh-learn). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Maria Ines Garcia, Ph.D.
Assistant Director
Division of Microbiology Devices
OHT7: Office of In Vitro Diagnostics
and Radiological Health
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

Enclosure

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: 06/30/2023
See PRA Statement below.

510(k) Number *(if known)*
K203748

Device Name
SeptiCyte® RAPID

Indications for Use *(Describe)*
The SeptiCyte ® RAPID test is a gene expression assay using reverse transcription polymerase chain reaction to quantify the relative expression levels of host response genes isolated from whole blood collected in the PAXgene ® Blood RNA Tube. The SeptiCyte ® RAPID test is used in conjunction with clinical assessments and other laboratory findings as an aid to differentiate infection-positive (sepsis) from infection-negative systemic inflammation in patients suspected of sepsis on their first day of ICU admission. The SeptiCyte ® RAPID test generates a score (SeptiScore®) that falls within one of four discrete Interpretation Bands based on the increasing likelihood of infection-positive systemic inflammation. SeptiCyte ® RAPID is intended for in-vitro diagnostic use on the Biocartis IdyllaTM System.

Type of Use *(Select one or both, as applicable)*

☒ Prescription Use (Part 21 CFR 801 Subpart D) ☐ Over-The-Counter Use (21 CFR 801 Subpart C)

CONTINUE ON A SEPARATE PAGE IF NEEDED.

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7. 510(k) Summary

A. 510(k) Number:

K203748

B. Purpose for Submission:

To obtain a substantial equivalence determination for SeptiCyte® RAPID

C. Measurand:

Two mRNA transcript immune biomarkers: PLA2G7, PLAC8

D. Type of Test:

Reverse transcription + quantitative PCR (RT-qPCR)

E. Applicant:

Immunexpress, Inc.

F. Proprietary and Established Names:

SeptiCyte® RAPID

G. Regulatory Information:

1. Regulation section:

   21 CFR 866.3215; Device to detect and measure non-microbial analyte(s) in human clinical specimens to aid in assessment of patients with suspected sepsis

2. Classification:

   Class II (Special Controls)

3. Product code:

   PRE

4. Panel:

   83: Microbiology

H. Intended Use:

1. Intended use(s):

   The SeptiCyte® RAPID test is a gene expression assay using reverse transcription polymerase chain reaction to quantify the relative expression levels of host response genes isolated from whole blood collected in the PAXgene® Blood RNA Tube. The SeptiCyte® RAPID test is used in conjunction with clinical assessments and other laboratory findings as an aid to differentiate infection-positive (sepsis) from infection-negative systemic inflammation in patients suspected of sepsis on their first day of ICU admission. The SeptiCyte® RAPID test generates a score (SeptiScore®) that falls within one of four discrete Interpretation Bands based on the increasing likelihood of infection-positive systemic inflammation. SeptiCyte® RAPID is intended for in-vitro diagnostic use on the Biocartis Idylla™ System.

2. Indication(s) for use:

   Same as Intended Use.

3. Special conditions for use statement(s):

   Whole blood is collected in a PAXgene® blood RNA tube (K042613)

4. Special instrument requirements:

   SeptiCyte RAPID is designed to run on the Biocartis Idylla system.

I. Device Description:

SeptiCyte RAPID is an in vitro diagnostic test for simultaneous amplification and detection of two RNA transcripts (PLA2G7 and PLAC8) using total RNA extracted from human blood. The test has been designed, manufactured, and validated for use on the Biocartis Idylla real-time PCR system. The SeptiCyte RAPID test is performed with an Idylla Cartridge, a single-use, disposable, multi-chambered fluidic cartridge that runs on the Biocartis Idylla System. In an automated fashion, all reaction steps take place within the cartridge, including sample extraction/purification, RT-qPCR for the detection and relative quantification of the two human mRNA targets PLAC8, PLA2G7. Test results (measured Cq values and calculated SeptiScore) are available in about 65 minutes.
The specimen used for the SeptiCyte RAPID is a sample of whole blood collected in a PAXgene blood RNA tube (FDA 510k number K042613). The cartridge contains all of the necessary reagents to perform RNA isolation from the sample.

SeptiCyte RAPID uses quantitative, real-time determination of the amount of each transcript in the sample based on the detection of fluorescence by the Biocartis Idylla qPCR instrument function. The cartridge includes the reagents for reverse transcription and PCR. Transcripts PLAC8 and PLA2G7 are amplified and quantified. These values are combined to produce the SeptiScore, which is interpreted and categorized into four discrete bands, which are associated with a sequentially higher likelihood of sepsis.

J. Substantial Equivalence Information:

1. Predicate device name(s):

   SeptiCyte LAB

2. Predicate 510(k) number(s):

   K163260

3. Comparison with predicate:

Similarities:

Item	Proposed Device: SeptiCyte RAPID	Predicate device: SeptiCyte LAB
Assay Method	Same	Reverse transcription + quantitative PCR (RT-qPCR)
Assay Principle	Same	Quantitative gene expression assay, based on real-time generation of fluorescence from hydrolysis of dye-quencher hydrolysis probes during cycles of PCR amplification of nucleic acid templates
Detection Method	Same	Multi-channel fluorescence detection
Intended Use Population	Same	Patients suspected of sepsis on their first day of Intensive Care Unit (ICU) admission
Specimen Type	Same	Whole blood collected in PAXgene Blood RNA tube
Analyte(s)	Two mRNA transcript immune biomarkers: PLA2G7 and PLAC8	Four mRNA transcript immune biomarkers: LAMP1, CEACAM4, PLA2G7, PLAC8

Differences:

Item	Proposed Device: SeptiCyte RAPID	Predicate device: SeptiCyte LAB
Specimen Processing	Automated extraction of material using the Idylla System	1. Manual extraction of material in PAXgene Blood RNA Tube, using the IVD version of the QIAGEN PAXgene Blood RNA Kit 2. Semi-automated extraction PAXgene Blood RNA Tube, using the QIAGEN QIAcube System
PCR Chemistry	One-step RT-qPCR; Three Singleplex reactions; Dried format	Two-Step RT-qPCR; one Singleplex, one Triplex reaction; Wet format
Fluorescent 5'-Probes and 3'-Quenchers	PLA2G7: 5'-FAM / 3'-BHQ1 PLAC8: 5'-ATTO532 / 3'-BHQ1 MS2: 5'-ATTO647N / 3'-BHQ2	PLA2G7: 5'-FAM / 3'-BHQ1 PLAC8: 5'-Q670 / 3'-BHQ3 CEACAM4: 5'-JOE / 3'-BHQ1 LAMP1: 5'-FAM / 3'-BHQ1
Controls	MS2 bacteriophage particles, serving as sample processing control (SPC), i.e., a within-cartridge positive control for both the sample extraction step and the coupled RT-qPCR step	High Positive Control, Low Positive Control and Negative Control for each in vitro transcript (LAMP1, CEACAM4, PLA2G7, PLAC8 (IVTs) formulated in neutral buffer, with IVT concentrations designed to produce high, medium or low SeptiScore values
Instrument Platform	Biocartis Idylla System	Applied Biosystems 7500 Fast Dx Real-Time PCR Instrument

K. Standard/Guidance Document Referenced (if applicable):

Standard Number	Standard Name
EP05-A3	Evaluation of Precision of Quantitative Measurement Procedures
EP07-A2	Interference Testing in Clinical Chemistry
EP17-A2	Evaluation of Detection Capability for Clinical Laboratory Measurement Procedures
EP25-A	Evaluation of Stability of In Vitro Diagnostic Reagents
Guidance	
FDA Guidance for the Content of Premarket Submissions for Software Contained in Medical Devices (issued 11 May 2005)	

L. Test Principle:

The SeptiCyte RAPID test employs a coupled reverse transcription - quantitative polymerase chain reaction (RT-qPCR) system to measure the expression levels (Cq values) of the host response genes PLA2G7 and PLAC8 isolated from whole blood. Amplicons generated by the RT-qPCR process are detected and quantitated by fluorescent dyes, upon exonucleolytic release of the dyes from oligonucleotide probes that specifically bind to the amplicons. The test is configured to run on the Biocartis Idylla System. The assay-specific software uses the measured PLA2G7 and PLAC8 Cq values to generate a SeptiScore, which falls into four discrete bands associated with a sequentially higher likelihood of sepsis.

M. Performance Characteristics:

1. Analytical Performance:

   a. Precision/Reproducibility

   Repeatability and intermediate precision were measured according to CLSI EP5-A3, using replicate PAXgene blood samples prepared from low, medium and high SeptiScore pools of PAXgene blood. Standard deviations were calculated for different subsets of data across operators, days, and instruments. Two sub-studies were performed:

   Sub-Study #1 - The primary purpose of this sub-study was to evaluate repeatability (within-run precision). The study was performed using the Low sample pool, and was performed over three days, by two operators running three replicates per day, with all runs on a single instrument. Sub-study #1 was performed with a single lot of cartridges.

Sub-Study #2 – The purpose of this sub-study was to evaluate intermediate precision. Sub-study #2 was performed with one cartridge lot, over a total span of 12 days, using three instruments and two operators. Each operator's runs were conducted over 4 non-sequential days within the 12-day study window. Each combination of day, operator and instrument was tested with two replicates. At each level of sub-study #2, aggregate means and standard deviations were calculated. These were then further summarized by taking the average of the aggregates as presented in the summary table.

Table 7-1 presents a summary of results for the repeatability and intermediate precision studies for SeptiScore. Low CVs were also observed for the individual PLA2G7 and PLAC8 Cq's.

Table 7-1: *Summary of Repeatability and Intermediate Precision Results*

	Sub-study-1		Sub-study-2							
	Repeatability		Across Days		Across Operators		Across Instruments		Total Variation	
Pool	MEAN	CV (%)	MEAN	CV (%)	MEAN	CV (%)	MEAN	CV (%)	MEAN	CV (%)
Low	4.56	4.0	4.48	4.5	4.48	4.8	4.48	4.9	4.48	5.0
Med	NA	NA	6.33	4.0	6.33	3.9	6.33	4.3	6.33	4.3
High	NA	NA	10.33	1.8	10.33	1.9	10.33	1.9	10.33	2.0

-NA's: Only the Low pool was used for Repeatability (Sub-study-1), Medium and High pools were not run for Repeatability

b. Lot-to-Lot reproducibility

Lot-to-lot reproducibility was performed with the three sample types (Low, Medium, and High pools, as described in the previous study) using three cartridge lots, over 3 non-consecutive days, using two instruments and one operator. Each combination of lot, day, and instrument was tested with two replicates.

The samples used in the study were prepared from banked samples in PAXgene Blood RNA Tubes. The banked samples were pooled to prepare a High Pool, Medium Pool, and Low Pool, with high, medium, and low SeptiScore results, respectively. Table **7-2** summarizes the results for the lot-to-lot reproducibility study for SeptiScore. Low CVs were also observed for the individual PLA2G7 and PLAC8 Cq's.

Table 7-2: *Lot-to-lot reproducibility of SeptiCyte RAPID*

	SeptiScore		
Pool	**Mean**	**SD**	**CV (%)**
Low	4.36	0.14	3.3
Medium	6.25	0.19	3.0
High	10.20	0.19	1.8

c. Linearity/assay reportable range

A specimen panel to test the linearity of quantitation of the two mRNA targets (PLA2G7, PLAC8) was constructed by spiking varying amounts of white blood cells (WBC) into a matrix consisting of platelet-reduced plasma. A broad range of WBC input amounts (25 cells/μL to 50,000 cells/μL) was tested. An inverse log-linear response (Pearson's r^2 > 0.99) was observed for the Cq of the individual SeptiCyte RAPID assay targets (PLA2G7 and PLAC8) when calculated across the entire input WBC concentration range. At the level of the individual analytes (PLA2G7, PLAC8), there appears to be a small Hook Effect (non-linearity) at the highest input concentrations (25,000 cells/μL and above). However, the SeptiScore, which is calculated based on relative expression of the individual analytes, compensates for the Hook Effect at the high input concentrations.

d. Traceability, Stability, Expected Values (controls, calibrators, or methods)

Controls:
A sample processing control is present in each cartridge. This consists of a predefined quantity of dried bacteriophage MS2 particles, which become mixed with the sample after sample addition but before further processing. The sample processing control is taken through the entire sample processing path, ultimately generating a PCR curve and Cq value, thereby serving as a positive control for both the extraction process and for the correct general functioning of the RT-qPCR enzymology.

Real-Time Stability:
Three manufactured lots of SeptiCyte RAPID cartridges were found to be stable for a minimum of 12 months when stored between 2°C and 30°C in their packaging as delivered (i.e., in their sealed pouches) .

In-Use Stability:
The results of the in-use stability study confirm that the SeptiCyte RAPID cartridge exhibits stability under two tested conditions:

- When unwrapped for up to 3 days before loading the sample and running on the Idylla instrument, and

- When held for up to 9 hours after receiving a sample, before running on the Idylla instrument.

These tests were conducted at the upper end of the range of expected laboratory conditions (30 ± 2 °C and 75 ± 5 % relative humidity).

Shipping Stability:

The SeptiCyte RAPID test is packaged in secondary packaging that is consistent with other tests manufactured for the Idylla platform. The shipping stability study consisted of thermal stress and shock/vibration components. Cartridges subjected to thermal stress or shock vibration had similar SeptiScore values when compared to their respective reference condition (cartridges tested during QC release). All Cq and SeptiScore values were valid and within ±10% of their respective reference values obtained at the time of QC release.

e. Detection limit

To determine the LoD and LoQ, platelet-reduced plasma was spiked with serial dilutions of white blood cells (WBCs) and 20 replicates of each level of WBC tested with the SeptiCyte RAPID Test. The lowest level at which 19/20 replicates generated a SeptiScore is reported as the LoD. The LoQ is the lowest level of WBC for which 19/20 replicates generate a SeptiScore with a standard deviation of 1.0 Score units or less. The LoD and LoQ were both determined to be 25 WBC/uL blood. Additionally, a platelet-reduced plasma sample with no spiked WBC (matrix only) was included and tested with 10 replicates to demonstrate that a SeptiScore would not be generated for any of the matrix replicates.

f. Analytical specificity

Interfering Substances

Based on the CLSI Guidance EP07-A2, “Interference Testing in Clinical Chemistry” SeptiCyte RAPID was evaluated in the presence of interfering substances. Each substance was added to a blood sample in a PAXgene Blood RNA tube. No interference was found for any of the substances in Table **7-3** at the concentration listed.

Table 7-3: *Interferents and Testing Levels*

Potential Interferent	Concentration
Rheumatoid Factor	45 IU/mL
Heparin	3000 U/L
Imipenem	1.2 mg/mL
Bilirubin	20 mg/dL
Triglycerides	500 mg/dL
Vancomycin	70 µmol/L
Cefotaxime	670 µmol/L
Dopamine	6.0 µmol/L
C-reactive protein (CRP)	4 mg/dL
Noradrenaline	700 pg/mL
Dobutamine	12 µg/mL
Hemoglobin	20 g/dL
Albumin	5 g/dL
Furosemide	180 µmol/L
soluble CD14 (sCD14)	5 µg/mL
Interleukin 6 (IL-6)	15 pg/mL
Lipopolysaccharide binding protein (LBP)	45 µg/mL

Lack of Reactivity Towards Blanks or Genomic DNA

This analytical specificity study was designed to confirm that the SeptiCyte RAPID test does not generate a valid signal against blank samples or in the presence of genomic DNA (gDNA).

Blank samples were prepared by adding a volume of nuclease-free phosphate buffered saline solution (PBS) to PAXgene stabilizer at the same volume ratio of specimen to RNA stabilizer expected during the standard sample collection process for PAXgene Blood RNA tubes. Twenty aliquots (0.9 mL) of this blank preparation were then tested with individual SeptiCyte RAPID cartridges. In addition to the blank samples, 10 cartridges were run empty, with no sample added to the lysis chamber

prior to running on the Biocartis Idylla system. For absence of reactivity towards gDNA, testing was conducted on 10 replicates of each of two commercially procured total human gDNA samples. Each lot was tested at 500 ng and 1000 ng gDNA input per reaction.

The results of the study conclude that (1) the SeptiCyte RAPID test does not exhibit reactivity toward blank samples and (2) the SeptiCyte RAPID test does not exhibit reactivity toward human genomic DNA, at input quantities of either 500 ng or 1000 ng per reaction.

g. Carryover

To evaluate the potential for carryover events, a series of 21 cartridges were tested with alternating blank samples, low SeptiScore positive samples, and high SeptiScore positive samples. The results of the study showed that all blank samples failed to generate a valid SeptiScore. All of the low SeptiScore samples generated a result in Band 1, and all of the high SeptiScore samples generated a result in Band 4. The results from the carryover study confirm that no carryover contamination events occur during the processing of individual SeptiCyte RAPID test cartridges.

h. PAXgene Blood RNA Tube Stability

Two matched PAXgene Blood RNA samples were collected from each of 15 healthy donors. The first sample was processed in real time, by removing two 0.9 mL aliquots for SeptiCyte RAPID analysis at the following times after phlebotomy: immediately (i.e., less than 5 min) and after 120 minutes. During this period of time, both tubes were held at room temperature (18 - 25°C) to approximate the sample handling conditions in a near-patient setting (e.g., STAT laboratory). The second PAXgene Blood RNA sample was frozen and stored at < -70°C for one month before being thawed, processed, and analyzed by SeptiCyte RAPID, to determine if storage at < -70°C, combined with one freeze/thaw cycle, has any effect on the resultant Cq and SeptiScore. The study demonstrated that matched healthy donor PAXgene blood samples did not differ significantly, when a 2-hour sample incubation step was either included or omitted. Additionally, SeptiScore values for matched healthy donor PAXgene blood samples were comparable, when samples were processed fresh (no incubation after blood draw), versus after being frozen and thawed once.

i. Assay cut-off: See clinical cutoff

2. Comparison studies:

a. Method comparison with predicate device:

Not applicable

b. Matrix comparison:

Not applicable

3. Clinical Studies:

a. Prospective and Retrospective Studies

The validation and 510(k) clearance of SeptiCyte RAPID was based on samples and clinical data collected from the following observational trials, which recruited critically ill subjects suspected of sepsis:

- Netherlands-based Molecular diagnosis And Risk Stratification of sepsis (MARS) clinical trial (NCT01905033) – retrospective study
- USA-based Validation of septic gene Expression Using SeptiCyte (VENUS) clinical trial (NCT02127502) – retrospective study
- USA-based NEar PatienT MolecUlar TestiNg in Sepsis (NEPTUNE) clinical trial– prospective study

The overall clinical accuracy of the SeptiCyte RAPID test was established by combining data from the retrospective (N= 356, frozen specimens) and prospective (N = 30, fresh specimens) clinical studies for a combined dataset of size N = 386.The prospective study was terminated early due to enrollment restrictions during the COVID-19 pandemic.

In both retrospective and prospective studies, the clinical status of each subject (SIRS, sepsis or indeterminate) was determined by clinical case review or retrospective physician diagnosis (RPD) conducted by an external three-member expert panel not involved in the care of the patients. Three different methods of RPD were used in analysis, as briefly described below:

Consensus: Two or three RPD panelists agree that patient is either sepsis or SIRS. Indeterminates are excluded.

Unanimous: All three RPD panelists, as well as the consensus discharge evaluation of the site investigators, agree that patient is either sepsis or SIRS. (A unanimous call of indeterminate is also theoretically possible).

Forced: Applies to patients that are initially called “indeterminate” by the RPD panelists. The RPD panelists are then forced to make a consensus or unanimous call of sepsis or SIRS.

The combined retrospective and prospective studies had the following acceptance criteria for the primary endpoint:

1) A monotonic increase in probability of sepsis across the four SeptiScore interpretation bands;

2) Non-overlapping 80% confidence intervals for the probability of sepsis between non-adjacent SeptiScore interpretation bands (i.e., between bands 1 and 3; and between bands 2 and 4).

The clinical data and primary endpoint analysis are summarized in Figure **7-1** and Table **7-4**:

Figure 7-1: *Analysis of clinical performance data. Results are presented for (A) Forced, (B) Consensus, and (C) Unanimous RPD methods. The percentage (prevalence) of sepsis is indicated for each Band with error bars representing 80% confidence intervals. The number (N) of sepsis and SIRS in each Band is indicated to the right of the point estimate (N_{Sepsis}:N_{SIRS}) as determined by each RPD method.*

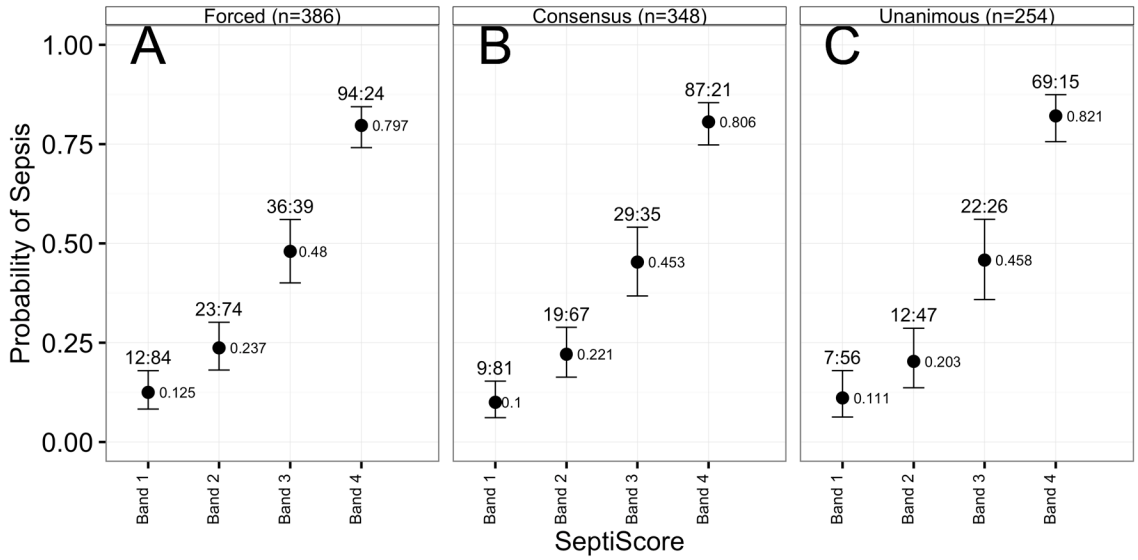

Table 7-4: *Analysis of clinical performance data by interpretation band for each RPD Method.*

RPD Method	N	Prevalence of Sepsis (80% Confidence Interval)			
		Band 1 (0-4.9)	**Band 2 (5.0-6.1)**	**Band 3 (6.2-7.3)**	**Band 4 (7.4-15)**
Forced	386	0.12 (0.08 - 0.18)	0.24 (0.18 - 0.3)	0.48 (0.4 - 0.56)	0.80 (0.74 - 0.84)
Consensus	348	0.1 (0.06 - 0.15)	0.22 (0.16 - 0.29)	0.45 (0.37 - 0.54)	0.81 (0.75 - 0.85)
Unanimous	254	0.11 (0.06 - 0.18)	0.20 (0.14 - 0.29)	0.46 (0.36 - 0.56)	0.82 (0.76 - 0.87)

4. Clinical interpretation

SeptiCyte RAPID generates a score (SeptiScore) that falls within one of four discrete Interpretation Bands based on the increasing likelihood of infection-positive systemic inflammation.

SeptiScore cut-off values (i.e., the interpretation band thresholds) were established prior to the clinical trial. The following SeptiScore Interpretation tables are the results from validation clinical trials using the Forced Diagnosis (Table 7-5), Consensus Diagnosis (Table 7-6), or Unanimous RPD Diagnosis (Table 7-7).

Table 7-5: *Results observed using the Forced Diagnosis*

SeptiScore Interpretation Band	Prevalence*		Sepsis Likelihood Ratio
	SIRS	Sepsis	
Band 4 (7.4 - 15.0) High risk of sepsis	20.3	79.7	5.23
Band 3 (6.2 – 7.3)	52.0	48.0	1.24
Band 2 (5.0 – 6.1)	76.3	23.7	0.41
Band 1 (0 – 4.9) Low risk of sepsis	87.5	12.5	0.19

Table 7-6: *Results observed using the Consensus Diagnosis*

SeptiScore Interpretation Band	Prevalence*		Sepsis Likelihood Ratio
	SIRS	Sepsis	
Band 4 (7.4 - 15.0) High risk of sepsis	19.4	80.6	5.86
Band 3 (6.2 – 7.3)	54.7	45.3	1.17
Band 2 (5.0 – 6.1)	77.9	22.1	0.40
Band 1 (0 – 4.9) Low risk of sepsis	90.0	10.0	0.16

Table 7-7: *Results observed using the Unanimous Diagnosis*

SeptiScore Interpretation Band	Prevalence*		Sepsis Likelihood Ratio
	SIRS	Sepsis	
Band 4 (7.4 - 15.0) High risk of sepsis	17.9	82.1	6.03
Band 3 (6.2 – 7.3)	54.2	45.8	1.10
Band 2 (5.0 – 6.1)	79.7	20.3	0.33
Band 1 (0 – 4.9) Low risk of sepsis	88.9	11.1	0.16

**Distribution observed from clinical trial*

5. Expected values/Reference range:

Test samples were collected from a total of 30 (29 for Hispanic donors) individual adult donors (≥20 years of age) for each race/ethnicity (White, African American, Asian, Hispanic). The donor cohort consisted of an equal number of males (15) and females (15). SeptiCyte RAPID is not intended for use in patients not suspected of sepsis. Healthy individuals may generate scores above Band 1.

Table 7-8: Healthy Reference Range Band Values by Ethnic Subgroup

Race / Ethnicity		SeptiScore Interpretation Band (SeptiScore Range)			
		1 (0-4.9)	2 (5.0-6.1)	3 (6.2-7.3)	4 (7.4-15)
Asian-American	N	4	21	5	0
	%	13.3	70.0	16.7	0
African-American	N	3	16	8	3
	%	10.0	53.3	26.7	10.0
Hispanic	N	13	14	2	0
	%	44.8	48.3	6.9	0
White	N	18	11	1	0
	%	60.0	36.7	3.3	0
Total	N	38	62	16	3

	%	31.9	52.1	13.4	2.5

N. Instrument Name:

Biocartis Idylla™ System

O. System Descriptions:

1. Modes of Operation: See Device Description (Section I) above

   Does the applicant's device contain the ability to transmit data to a computer, webserver, or mobile device?

   Yes_____X____or No _____

2. Software: FDA has reviewed applicant's Hazard Analysis and software development processes for this line of product types:

   Yes_____X____or No _____

3. Specimen Identification:

   The Idylla Console and its software provide users with a Graphical User Interface for workflow management and barcode scanner to scan Sample and Cartridge barcodes. Refer to K163628 for more information.

4. Specimen Sampling and Handling: See Section I- Device description

5. Calibration: No calibrators are run as part of the SeptiCyte RAPID protocol.

6. Quality Control: See Section M.1.d. - *Traceability, Stability, Expected values (controls, calibrators, or methods):*

P. Proposed Labeling:

The proposed labeling can be found in Section 14 and satisfies the requirements of 21 CFR Part 809.10.

Q. Conclusion:

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.