# *Simplexa* Group A Strep New Lot and/or New Shipment Quality Control

PURPOSE

* This procedure provides instructions for verifying reagent performance

## SAFETY CONSIDERATIONS

* Standard precautions. Refer to [MB 2.02](http://khan.childrensmn.org/Manuals/Lab/SOP/MolBio/Safety/212201.pdf)Biohazard Containment
* Use of engineering controls: Refer to [MB 3.01](http://khan.childrensmn.org/Manuals/Lab/SOP/MolBio/EngCtl/212209.pdf) Engineering Controls to Prevent Nucleic Acid Contamination

**ABBREVIATIONS**

|  |  |
| --- | --- |
| * BSC: biosafety cabinet * Ct: crossing threshold * F/T: freeze/thaw * GAS: group A strep * GASDN: Group A strep Detection by PCR * IC: internal control * LOD: level of detection * MM: master mix * NEGC: negative control * NFW: nuclease free water | * PCR: polymerase chain reaction * PCTL: process control * PP: primer – pair * PPE: personal protective equipment * SEAC: Simplexa extraction and amplification control * TE buffer: Tris – EDTA buffer   Area/Room 1: Clean room  Area/Room 2: Processing room  Area/Room 3: Amplification room |

#### MATERIALS

| **Equipment** | **Reagents** | **Supplies** |
| --- | --- | --- |
| Room 1: Clean room   * Laminar-flow hood, Clean rm 1 * Freezer, -10 to -30⁰ C * Refrigerator, 2 to 8⁰ C * Micro-centrifuge * Nalgene cooling block * Vortex * Eppendorf Repeater pipette * Dedicated set of pipettes: 2 µl, 10 µl, 20 μl, 100 μl, 200 μl, and 1000 μl pipettes   Room 2: Processing   * BSC, Process rm 2 * Refrigerator, 2 to 8⁰ C * Freezer, ≥ - 70⁰C * Nalgene cooling block * Vortex * Micro-centrifuge * Dedicated set of pipettes: 2 µl, 10 µl, 20 μl, 100 μl, 200 μl, and 1000 μl pipettes * Gilson Concept pipette, 100 µl   Room 3: Amplification and detection   * Liaison MDX | TE buffer | Micro tube racks |
| Nuclease Free Water (NFW) | 2 ml cryovials |
| SEAC (*Simplexa* extraction and amplification control)   * Internal control primer (IC pp) * Internal control DNA | Sterile filtered pipette tips for 10 µl, 20 µl, 100 μl, 200 µl, 1000 µl pipettes |
| GAS Primer (GAS pp) | Micro tubes 1.5 ml, RNase/DNase free |
| GAS process control (PCTL) | Universal disc |
| TA MasterMix (TA MM) | Universal disc sealer |
| Sani-Cloth Bleach wipes | Nitrile gloves (powder-free) |
| 70% alcohol | Sharps disposal container |
| 5% Extran | Gripper rack, rm 2 |
|  | Orange barrier wipes |
|  | Culturette swabs |

**PROCEDURE A:** Follow the activities for testing reagent reactivity in the table below

New reagent lot and/or new shipment verification

| **Activity** | **Step** | **Action** | **Related Doc** |
| --- | --- | --- | --- |
| **Testing requirements** | 1 | Reagent components from each new lot/shipment of the GASD assay must be tested before placing them into service for equivalent performance with the reagents currently in use.   * GAS Primer-Probe * GAS PCTL * GAS NEGC * TA MM * SEAC * TE buffer | [MB 5.02](http://khan.childrensmn.org/Manuals/Lab/SOP/MolBio/Qual/212231.pdf)  MOLB Standards of Practice |
| **PP, SEAC, TA MM, TE buffer**  **verification** | 2 | Retest one known group A strep positive and one known negative patient sample buffer from previous lot against the new reagent lot   * + ***Note:*** *Select a positive sample with a Ct value between* ***30 – 33*** *to challenge the LOD and verify the sensitivity of the assay* | MB 8.09.F1  GAS QC worksheet |
|  | 3 | Test a PCTL and NEGC using the new lot/shipment reagents |  |
| **PCTL and NEGC**  **verification** | 4 | Test the new lot (prep date) in parallel with the old lot before placing into service | MB 8.09.F8  GAS PCTL QC Worksheet  MB 8.09.F10  GAS NEGC QC Worksheet |
| **Results** | 5 | Equivalent results must be obtained   |  |  |  | | --- | --- | --- | |  | Test Materials | Expected Results | | a | Known positive sample/pt | positive | | b | Known negative sample/pt | negative | | c | Process Control | Positive: Ct = 26 – 33 | | d | Negative Reagent Control | Negative: IC Ct = 26 – 35 | | New Lot/Shipment Inventory Forms   * + MB 8.09.F3 GAS pp   + MB 8.09.F4 SEAC   + MB 8.09.F5 TA MM   + MB 8.09.F7 TE buffer |
|  | 6 | Record results on QC worksheet; staple QC worksheet to GAS segment report |
| **Record** | 7 | Verify that all reagents and materials meet expiration date and QC parameters as per CLSI document MM3-A2. |
|  | 8 | Check off inventory form |
|  | 9 | Archive result forms in *New Lot Inventory and QC* manual. |

**PROCEDURE B:** Follow the activities for troubleshooting verification failures in the table below

Performance Failures

| **Activity** | **Step** | **Action** | | **Related doc** |
| --- | --- | --- | --- | --- |
|  | 1 | Verify that the reagent performance is acceptable before implementation of a new lot and/or shipment | |  |
|  |  | If | Then |  |
| **Troubleshooting Failures** | Any Control fails | * Document observation/corrective action on QC log * Do not implement new lot/shipment * Repeat all testing; if repeat testing fails, contact DiaSorin technical service | [MB 8.05](http://khan.childrensmn.org/Manuals/Lab/SOP/MolBio/GAS/212288.pdf) Procedure H: *Repeat Testing* |
|  | PCTL fails | * Preparation error * Amplification failure: Review amplification curve for amplification of target * Possible reagent or system failure: Review MM preparation and assay set-up * Repeat testing; if repeat testing fails, contact DiaSorin technical service | [MB 8.06](http://khan.childrensmn.org/Manuals/Lab/SOP/MolBio/GAS/212289.pdf)  Simplexa Troubleshooting guide |
|  | NEGC fails | * Possible carryover or reagent contamination: Review pipetting technique, glove contamination, possible aerosol creation, and MM preparation * Repeat testing; if repeat testing fails, contact DiaSorin technical service |  |
|  | Known pos/neg sample fails | * Review amplification curve for inhibition, lost target or carryover contamination * Select new positive sample if target appears to be lost * Repeat testing |  |
|  | Problem unresolved | * Call DiaSorin technical service at **1-800-838-4548**, Option #3 * Notify technical specialist/designee or technical director |  |

**REFERENCES**

1. Simplexa™ 3M™ Integrated Cycler Studio 5.0 , 3M™ Integrated Cycler Operator Manual Reference 34-8710-8382-9, PI.MOL1101.UD\_REV. F for use with user defined assays, Focus Diagnostics 2009-2012, Focus Diagnostics, Inc. Cypress, CA
2. Clinical Verification and Validation Study performed at Children’s Hospitals and Clinics of MN August 2014
3. CLSI *Molecular Diagnostic Methods for Infectious Diseases;* Approved Guideline – Second Edition, CLSI document MM3-A2, Wayne, PA, Clinical and Laboratory Standards Institute; 2006
4. CLSI *Establishing Molecular Testing in Clinical Laboratory Environments; Approved Guideline*, MM19-A, Vol. 31. No. 21, Wayne, PA, Clinical and Laboratory Standards Institute; 2011

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| Historical Record | | | |  |
|  | **Version** | **Written/Revised by:** | **Effective Date:** | **Summary of Revisions** |
| 1 | P. Ackerman | 9.20.2014 | Initial Version |
| 2 | P. Ackerman | 08.16.2016 | Reformatted for CMS; prev GAS 009 v1 |
|  | 3 | P. Ackerman | 03.29.17 | Instrument name change from Focus Integrated Cycler to DiaSorin Liaison MDX; fixed hyperlinks |
|  | 4 | J. Laramie | 02.12.18 | Eliminated steps and notes regarding Positive Control (manufactured) |
|  | 5 | J. Laramie | 02.12.18 | Edited notes to reflect swab use for negative control |