

Document type: procedure	USE AND MAINTENANCE OF THERMAL CYCLER
Document code: Uganda QP 07-06-11	
Confidentiality: confidential	

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Issued by: Head of Laboratory Research	Date of issue: 30NOV08
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1. PURPOSE

This operating procedure describes the use and maintenance of the Thermocycler in the FIND Research Laboratory, Kampala, Uganda.

The Thermal Cycler has a number of molecular biology applications, including in Polymerase Chain Reactions (PCR).

2. SCOPE

This SOP covers all procedures involving Polymerase Chain Reaction (PCR) and other molecular biology procedures. All procedures will be performed in the Post-Amplification Room in the FIND Research Laboratory, Kampala, Uganda.

3. RESPONSIBILITIES

All staff members working in the FIND Uganda Research Laboratory are responsible for the implementation of this operating procedure.

All users of this procedure who do not understand it or are unable to carry it out as described are responsible for seeking advice from their supervisor.

4. CROSS-REFERENCES

SOP UG-P-003. Cleaning and maintenance of laboratory

SOP UG-E-010. USE AND MAINTENANCE OF THE PCR HOOD

5. PROCEDURES

5.1. Equipment

- Thermal Cycles is installed in the Post Amplification room and must not be operated in other rooms at the FIND Research Laboratory.
- Thermal Cycler, installed after checking compatibility of voltage supply
- Ensure adequate ventilation by placing Thermal Cycler at least 30 cm away from adjacent instruments or walls

- Place Thermal Cycler on a firm and flat surface
- Machine should be installed in room with ambient temperature 15-30°C and relative humidity 20-80%

5.2. Operation

5.2.1 Running an existing program

- Press Power On/Off button to turn machine on
- Open lid in one of 2 ways: 1) Slide lid to rear 2) Lift up lid
- Rotate lid knob in counter-clockwise direction until lid pops out, at which point one can slide the lid to rear
- Within the User folder screen, use F1-F4 for view, create, edit, and delete User folders.
- Pressing F1: OPEN allows one to view all protocols in a selected folder.
- If not using [Preset] or [Public] Folders, must enter 4 digit PIN, followed by F1:ACCEPT or ENTER to confirm PIN
- Press F1-F4 to Run, New(Create), Edit(View), and Delete Selected Protocol
- Select temperature control mode. 1 is tube control mode, which utilizes an algorithm to estimate sample temperature based on block temperature and sample volume. 2 is block control mode, based directly on block temperature
- Press F1:START to run Protocol
- Lid temperature flashes on the status bar when protocol starts, and remains on until lid temperature=50°C. At this point "HOT!" will appear in right hand corner and remain until temperature falls below 40°C. When lid reaches set temperature, block will begin to heat
- To pause protocol for 10 min, press F1: PAUSE. To resume, press F1: RESUME
- To terminate a protocol, press F5: EXIT or the STOP key to bottom-left of keypad

5.2.2 Creating programs

- From User Folder screen, select User name. Press F1:OPEN or ENTER, followed by PIN.
- Press F2: NEW to create new Protocol.
- Use arrow keys to select temperature or time settings to be changed.

- Enter desired values and press ENTER or move cursor to other values to save settings.
- For details, see reference manual for MultiGene Thermal Cycler.
- Temperature limits are 4-99.0°C.

5.2.3 Maintenance

5.2.3.1 Cleaning

- Periodically use soft lint-free cloth and distilled water to wipe unit clean of dust.
- Heated lid may be cleaned by sliding the lid back on the tracks until the front pins align with slots, holding the rolleiflex cable clear. Lift lid from the front and flip it up. Use mild detergents to clean lid. A kimwipe dipped in 70% ethanol can be used to remove residue from sealing tape.
- Frame of unit may be cleaned with slightly moist cloth or ethanol. Avoid aggressive cleaning agents.

5.2.3.2. Servicing

- The thermal cycler must only be opened by approved expert.
- In case of damage or failure to work, an *Equipment Failure Report* must be completed and the authorized service representatives must be called out.
- An *Equipment Failure Notice* must be placed on the thermal cycler indicating that work is prohibited.

Use: *Equipment Failure Notice _sign.doc*

Location: *Hard copy: FIND Uganda SOPs*

Use: *Equipment Failure Report _form.doc*

Location: *Hard copy: FIND Uganda SOPs*

6. REFERENCES

7. CHANGE HISTORY

New version # / date	Old version # / date	No. of changes	Description of changes	Source of change request