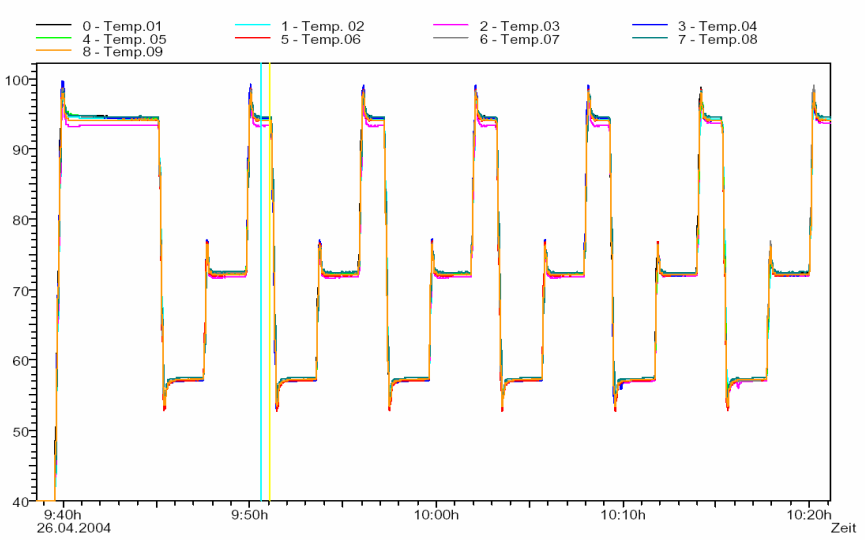
# To safeguard your PCR results

- Calibration of Thermal Cyclers with blocks up to 12x8 wells
- Vendor independent
- Calibration can be performed on site or in our accredited laboratoy in Gießen
- Documentation of a typical PCR protocol




| Messstelle | Linker Cursor | Rechter Cursor | Differenz | Minimum | Maximum | Max - Min | Mittelwert | Standardabw. |
|---|---|---|---|---|---|---|---|---|
| 0 - Temp.01 | 94,57 °C | 94,54 °C | -0,03 °C | 94,55 °C | 94,59 °C | 0,04 °C | 94,562 °C | 0,0136 °C |
| 1 - Temp. 02 | 94,28 °C | 94,26 °C | -0,02 °C | 94,27 °C | 94,29 °C | 0,02 °C | 94,277 °C | 0,0088 °C |
| 2 - Temp.03 | 93,21 °C | 93,25 °C | 0,04 °C | 93,21 °C | 93,25 °C | 0,04 °C | 93,239 °C | 0,0075 °C |
| 3 - Temp.04 | 94,43 °C | 94,4 °C | -0,03 °C | 94,41 °C | 94,45 °C | 0,04 °C | 94,424 °C | 0,015 °C |
| 4 - Temp. 05 | 94,51 °C | 94,48 °C | -0,03 °C | 94,48 °C | 94,53 °C | 0,05 °C | 94,499 °C | 0,0172 °C |
| 5 - Temp.06 | 94,01 °C | 94,03 °C | 0,02 °C | 94,01 °C | 94,04 °C | 0,03 °C | 94,033 °C | 0,0056 °C |
| 6 - Temp.07 | 94,5 °C | 94,49 °C | -0,01 °C | 94,49 °C | 94,53 °C | 0,04 °C | 94,507 °C | 0,0118 °C |
| 7 - Temp.08 | 94,55 °C | 94,54 °C | -0,01 °C | 94,54 °C | 94,57 °C | 0,03 °C | 94,551 °C | 0,0115 °C |
| 8 - Temp.09 | 94,1 °C | 94,13 °C | 0,03 °C | 94,1 °C | 94,13 °C | 0,03 °C | 94,127 °C | 0,0044 °C |

# Calibration of your THERMAL CYCLER

- Calibration on generic measuring points under real conditions
- Determination and documentation of all parameters, which are relevant for the process
- Your special needs can be considered

Thermal cyclers which are in use as a testing equipment in accredited laboratories, have to be calibrated regularly. If a validation of the complete process is required (e.g. following ISO, GLP or GMP guidelines) the calibration of the thermal cycler is part of the validation to get an information about its performance.

Even if your thermal cycler is not subject to any quality assurance procedures, it should be calibrated periodically. Especially if PCR results don´t meet your expectations or if you need a verification of the temperature distribution within the block, a calibration gives you a reliable information about the state of the thermal cycler.

## Benefits :

A Polymerase Chain Reaction (PCR) is a temperature-sensitive process. Therefore the result may not just be influenced by the temperature accuracy and stability. Even factors, as over shoots and under shoots during heating and cooling phases, times to come of set temperature and not at least the length of time during steady phases, have a bearing on the amplification result.
Deviating parameters may easily lead to a mistake.
Becomes a result rated wrong due to the malfunction of a thermal cycler, may this lead to serious consequences.

Different results produced by the same block within the thermal cycler are often attributed to temperature non-uniformities. Most of the thermal cylcers are equipped with different heating and cooling elements within the block. Thereby local defects or malfunctions may appear and may not recognized early enough.

The calibration offered by biomedis is a documented verification that gives you all necessary information about the function and reliability of your thermal cycler. All measurements will be performed under real conditions, that means by using original collection tubes. During the calibration the heated lid –if available– gets closed. Thereby the heat transfer is considered and the real temperature profile within the tubes can be registered.

If you are in doubt about your amplification result (e.g. just concerning single wells), we would be pleased to define with you an individual testing method. If you have any application-oriented questions, please don´t hesitate to contact us.

## Range of services:

- Calibration of almost all types of thermal cyclers
- Temperature recording using 9 temperature sensors (accuracy <0,1°C) which are evenly located inside the wells of the block to define the useful area. One of the sensors is located at the reference point of the block.
- Protocol: 5 cycles at 55°C/72°C/93°C and a hold time of about 120sec. per phase or using a protocol given by the user.
- Test report, containing:
  - — Minimum and maximum temperature on each measuring point
  - — Temperature inaccuracy on each measuring point
  - — Temperature instability on each measuring point
  - — Temperature non-uniformity within the block
  - — Heating and cooling ramp rates
  - — Over shoots and under shoots
  - — Measurement uncertainty of the calibration method
  - — Graphics
- Labeling of the thermal cycler with a calibration sticker

If you have any questions or if you would like to get an offer without engagement, please feel free to contact us.

## In cooperation with:


biomedis® Kalibrierservice GmbH & Co.KG
Kerkrader Straße 2
35394 Gießen
**www.biomedis.de**
Tel.: 0641-94 60 01-0
Fax: 0641-94 60 01-50
**e-mail: info@biomedis.de**

BIOProjects
Dieulefiter Straße 24
35423 Lich
**www.bioprojects.de**
Tel.: 06404-66804-80
Fax: 06404-66804-85
**e-mail: info@bioprojects.de**