

Thermal Cycler (PCR Machine)

The **Thermal Cycler** (also known as a **Thermocycler**, **PCR Machine** or **DNA Amplifier**) is a laboratory apparatus used to amplify segments of DNA via the Polymerase Chain Reaction (PCR). The device has a *thermal block* with holes where tubes holding the PCR reaction mixtures can be inserted. The cycler then raises and lowers the temperature of the block in discrete, pre-programmed steps.

It is an important instrument which is needed in all the labs working in the field of gene cloning.

A basic PCR set up requires several components and reagents. These components include:

- *DNA template* that contains the DNA region (target) to be amplified.
- Two *primers*, which are complementary to the DNA regions at the 5' (five prime) or 3' (three prime) ends of the DNA region.
- A thermostable DNA polymerase such as *Taq polymerase* .
- Deoxynucleoside triphosphates (dNTPs), the building blocks from which the DNA polymerases synthesizes a new DNA strand.
- Buffer solution, providing a suitable chemical environment for optimum activity and stability of the DNA polymerase.
- Divalent cations, magnesium or manganese ions; generally Mg^{2+} is used Monovalent cation potassium ions.

Eppendorf Mastercycler® personal

There are many companies making Thermocyclers such as BioRad, Thermo, Eppendorf, having the basic set-up with some specific features

The Eppendorf Mastercycler personal is a high quality, compact thermal cycler. In addition to its speed and precise block homogeneity, it offers first-rate operational flexibility. Its universal block with a 25-well format can accommodate 25 x 0.2 ml tubes, 16 x 0.5 ml tubes or microtiter plates in a 5 x 5 grid format.



The Eppendorf Mastercycler® Personal is an essential instrument of our lab. For the last six years, it is being used for regular PCR of the DNA for cloning purpose. Apart from our lab, it is available to everyone in the institute for the use. The various reagents and buffers required for the PCR reactions have to be brought by the person using it.

For further information and use of the instrument, contact can be made at

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