

Moreover, RNA testing establishes the absence or presence of the Hepatitis C virus in antibody positive patients and has been proven useful in establishing perinatal transmission of HCV from infected mothers to their newborns.

HCV virus is present in the serum at extremely low concentration that is why direct detection in the serum is not possible. Viral RNA copies must be amplified first by PCR.

Hepatitis B and C Viral load assay is most accurately done by PCR. Viral load monitoring in Hepatitis C and B virus infected patients is useful in assessing response to anti-viral treatment protocols, allowing dose and treatment duration adjustments. Monitoring viral loads has become a necessity with the advent of commercially available anti-viral drugs.

DNA services are performed by fully-licensed and highly-skilled technologists. All results are double-checked for accuracy, first by a knowledgeable DNA supervisor and then by a qualified laboratory Immunologist.



For more information  
Please call the DNA Typing Section  
924-3601 loc. 1057



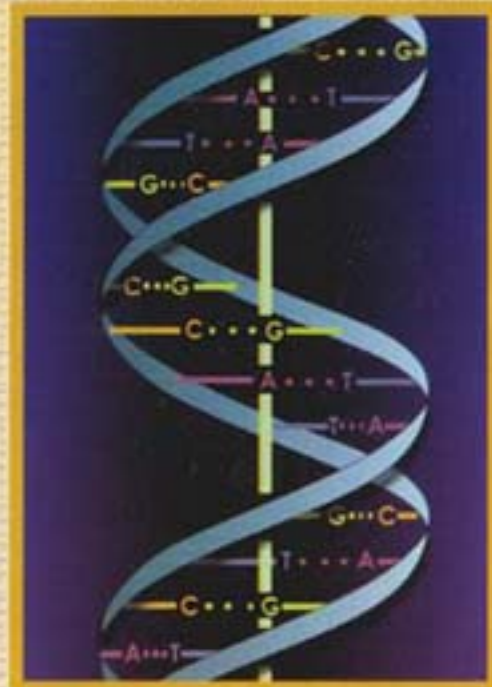
**NATIONAL KIDNEY AND TRANSPLANT INSTITUTE**

East Avenue, Quezon City  
Tel.: 9243601 to 19 • Fax: 922-5608  
Internet: <http://www.kidney.gov.ph>  
E-Mail: [info@kidney.gov.ph](mailto:info@kidney.gov.ph)



**NATIONAL  
KIDNEY AND  
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INSTITUTE**

**DEPARTMENT OF LABORATORY MEDICINE**



**DNA TYPING**

**EXCITING NEW TECHNOLOGY  
FOR TODAY'S MODERN  
LABORATORY**



**DNA helicase from  
Hepatitis C Virus**

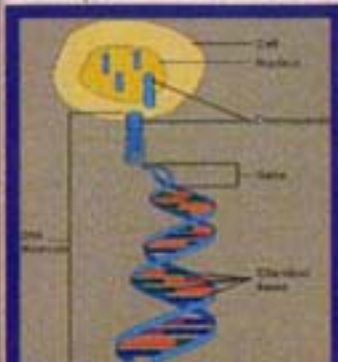
# DNA TYPING

Nucleic acid (DNA/RNA) detection is a revolutionary technique in laboratory diagnostics because of its versatility. It is now applied in almost every field in medicine particularly in genetic and infectious diseases, in oncology, hematology and organ transplantation. Nucleic Acids are gene

materials found in cells of human and other living organisms. DNA / RNA are now utilized for disease detection at a molecular level making easier and earlier detection of infectious

agents, abnormal cells (cancer) and proteins associated with various illnesses, that are difficult to detect by conventional serology tests.

The NKTI DNA Typing Laboratory pioneered the use of molecular techniques for routine clinical use in the country. The laboratory was established in 1994 primarily to support the institute's organ transplant program. The laboratory has expanded since to serve other medical areas as well and is now routinely performing a variety of Polymerase Chain Reaction (PCR) based assays.



Cell-DNA



PCR Thermal Cycler

The PCR assay, a simplified format of DNA typing is an exquisitely sensitive and specific test

The test that can detect a single copy of a target nucleic acid (DNA/RNA) in biological fluids, by amplifying it into a quantity that is readily detectable by simple laboratory techniques such as gel electrophoresis, ELISA and southern blots.

PCR is currently performed at the NKTI DNA typing laboratory for Tissue typing and Hepatitis B and C detection assays.



A DNA/RNA copy is amplified into as many as a billion copies by PCR

## HLA-DNA Typing (Tissue Typing)

Tissue (HLA) Typing is routinely done to test for histocompatibility between transplant donor and recipients. DNA typing is now the recommended standard procedure for HLA class I and II typing for bone marrow transplantation, and for HLA class II typing for solid organ transplantation.

The NKTI HLA typing laboratory is the largest in the country with the broadest experience in this area. It performs an average of 800 tests annually on clinical samples from all over the country.

## Hepatitis Virus Detection And Viral Load Monitoring

Hepatitis C viral RNA detection in serum is the gold standard for detection of hepatitis C viremia. HCV RNA detection allows HCV infection to be diagnosed in early acute disease prior to detection of liver enzyme elevation, or in immunocompromised individuals who fail to develop specific antibodies in the face of chronic infection and therefore cannot be diagnosed by conventional serology.



PCR amplified DNA detected on agarose gel