HLA TYPING ON SINGLE HUMAN HAIRS: DNA PROBES TO ENZYMATICALLY AMPLIFIED GENES.

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A single human hair does not contain enough DNA to allow detection of DNA polymorphisms routinely (1). However, a new technique (2) is available that can greatly amplify, in-vitro, short regions of DNA and can detect as little as a few copies of a gene. By using this technique, called the Polymerase Chain Reaction (PCR), to first amplify DNA sequences present in hair, DNA polymorphisms can be easily detected both in single hairs that have been plucked and in single hairs that have fallen out.

In particular, a region of the class II HLA gene, DQ alpha, has been amplified by PCR from single hairs and the particular alleles of that gene present have been detected by hybridization to allele-specific, oligonucleotide probes (3). This has been done in a "dot-blot" format using either radioactive or non-radioactive probes. The "HLA typings" obtained have been verified by independent typing of the same individual's blood. PCR amplification can even be carried out on crude hair preparations without purifying DNA. These techniques promise simple, sensitive and rapid means of determining genetic variation between individuals.

1. Gill, P., et al., Nature 318: 577-579 (1985)
2. Saiki, R.K., et al., Science 230: 1350-1354 (1985)
3. Saiki, R.K., et al., Nature 324: 163-166 (1986)

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