

Pulsed-Field Gel Electrophoresis: A New Technique For Fractionating Large DNA Molecules

Pulsed-field gel electrophoresis for fractionating large DNA molecules is a technique that has increased the size of DNA molecules that can be separated by almost 100-fold. The development of this technique opens up the possibility of separating and analyzing pieces of DNA from 10,000 to 1,000,000 base pairs in size. The technique involves the

use of restriction endonucleases that cut the DNA infrequently within the human genome. The electrophoresis is based on the rate at which these large molecules alter their shape to migrate inside the gel matrix. The technique depends on the stiff DNA molecules undergoing distortion or relaxation under the influence of the electrical field. Because there is an alternating electrical impulse, which lasts from one second to five minutes, the DNA molecules migrate in alternating fields and zig-zag their way across the gel. The technique holds promise, both for isolating specific genes and for

mapping the genome of various organisms.

1. Anand R. *TIG* 1986;Nov: 278-283.
2. Chu G, Vollrath D, David RW. *Science* 1986;234:1582-1585.
3. Smith CL, Cantor CR. *Nature* 1986;319:701.

Editor's comment—Just as the Southern blot technique revolutionized DNA research 12 years ago, it would appear that this new technique represents a giant step in allowing the separation of large unique sequence pieces of DNA, both from the human genome and from other organisms.

Transient Increases in Progesterone in Daily and 2-Hourly Saliva Specimens From Adolescent Girls

Detailed information on short-term changes in progesterone concentrations during the peri- and postmenarcheal period has been sparse because of difficulties associated with frequent collection of samples of plasma or urine. With the advent of reliable assays for progesterone concentration in saliva, Truran et al determined progesterone levels in perimenarcheal girls.

Saliva specimens were collected from clinically healthy premenarcheal and adolescent girls either daily throughout the menstrual cycle or at 2-hour intervals throughout a 24-hour period.

The mean age of the adolescents at menarche was 12 ± 1.3 (SD) years. A minority of these cycles were consistent with luteal phase (ovulatory) progesterone increases, especially within the first two years following menarche. The frequency of transient increases of salivary progesterone declined after the menarche and was negatively correlated with the first postmenarcheal year.

A large number of isolated in-

creases (levels exceeding 150 pmol/l and preceded and succeeded by at least one sample in which levels are less than one-third those in the increased sample) were noted in the samples drawn every 2 hours from premenarcheal adolescents.

Truran PL, Leith HM, Read GH. *J Endocrinol* 1986;111:513-518.

Editor's comment—Transient increases of salivary progesterone seem to be largely confined to the period of adolescence, with a steady decline in the rate of "spiking" in the years after the menarche. However, detailed studies in adult women (in which plasma samples were withdrawn every 10 to 20 minutes) show a pulsatile pattern of progesterone secretion in the luteal phase of the menstrual cycle. Thus, the ovary (follicle and corpus luteum) can translate the pulsatile pattern of luteinizing hormone secretion to intermittent progesterone (and estrogen) secretion.

Salivary progesterone concentration determination represents a new noninvasive method for determining alterations in ovarian physiology. Most other steroid hormones can be determined in this fluid, and assays have been validated for cortisol, estrogens, and androgens.

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