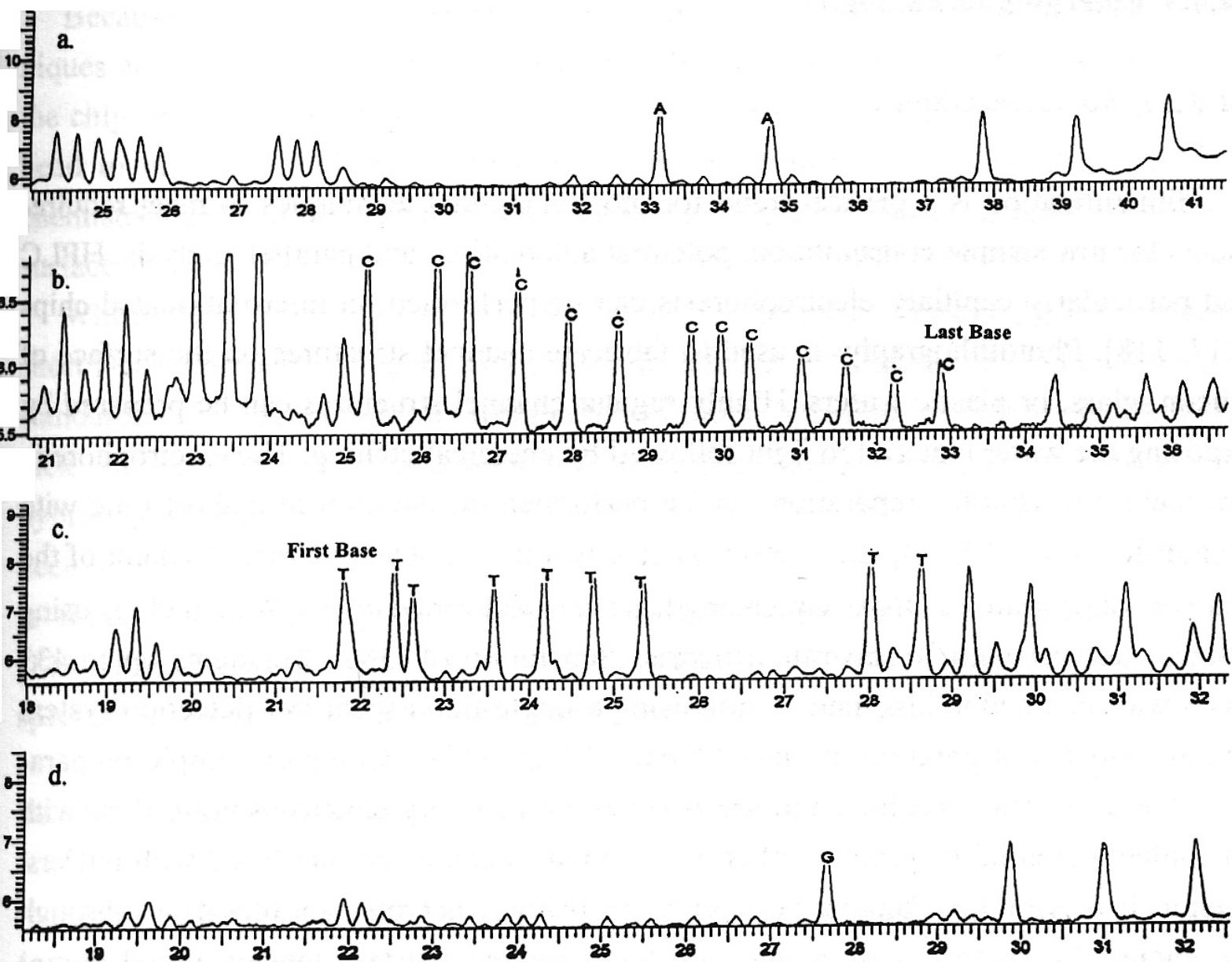


Separation of poly(deoxythymidylic acid[s]) using CGE.



CE UV sequencing. Four separate electropherograms show the products of four individual sequencing reactions with dideoxy terminators. The first base of antisense DNA (electropherogram c) is located immediately after the last base of the 3'-auxiliary DNA signal sequence (AAA AAA CCC AAA). The last base of antisense DNA (electropherogram b) is located just before the first base of the 5'-auxiliary DNA signal sequence (TAG TCA GTC AGT). The correct sequence is obtained by aligning the four individual chromatograms: 3' TCT TCC TCT CTC TAC CCA CGC TCT C 5'. Baseline separation of ssDNA fragments up to 100-mer was obtained using linear polyacrylamide.

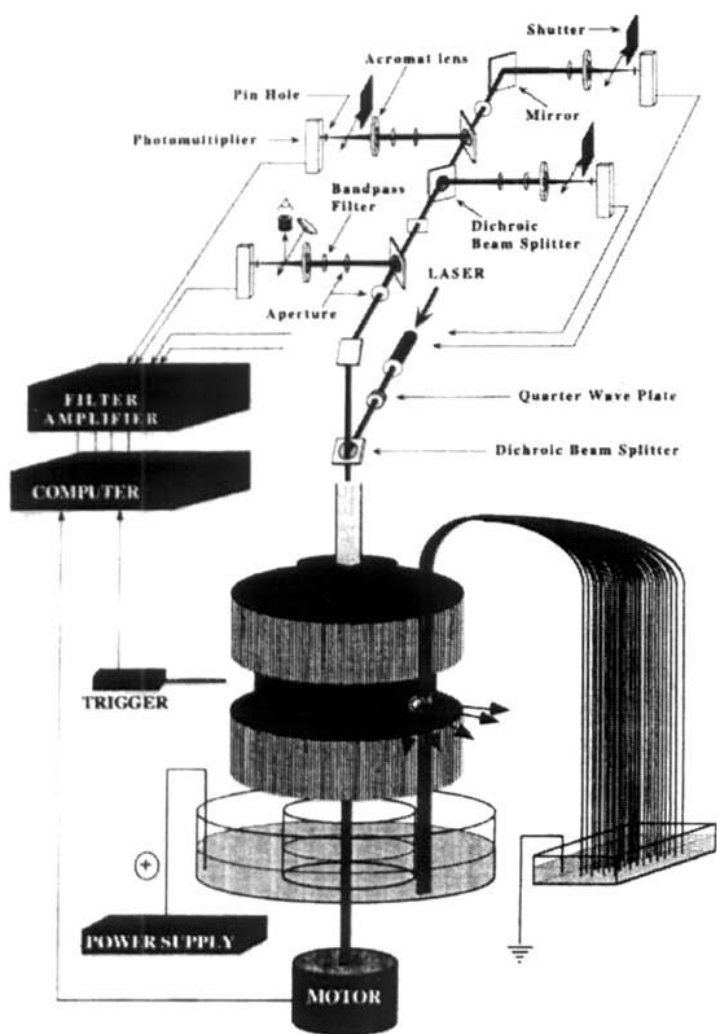


Figure 1. Schematic representation of the 1000 capillary rotary scanner and the four-color confocal fluorescence detection system.

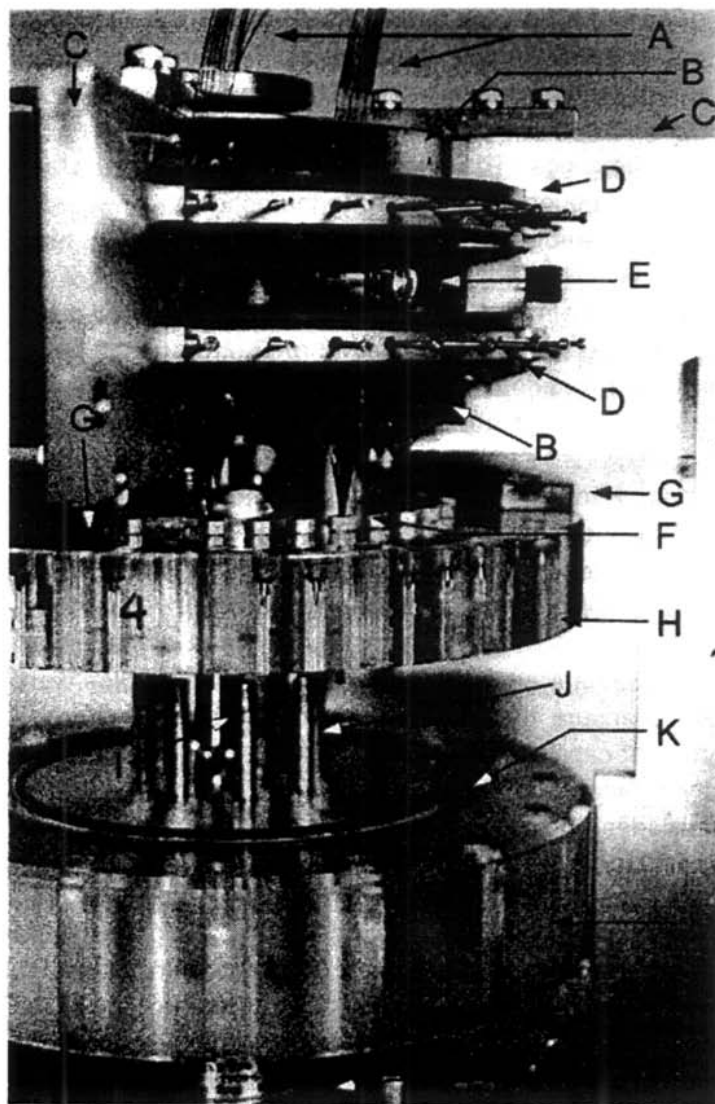
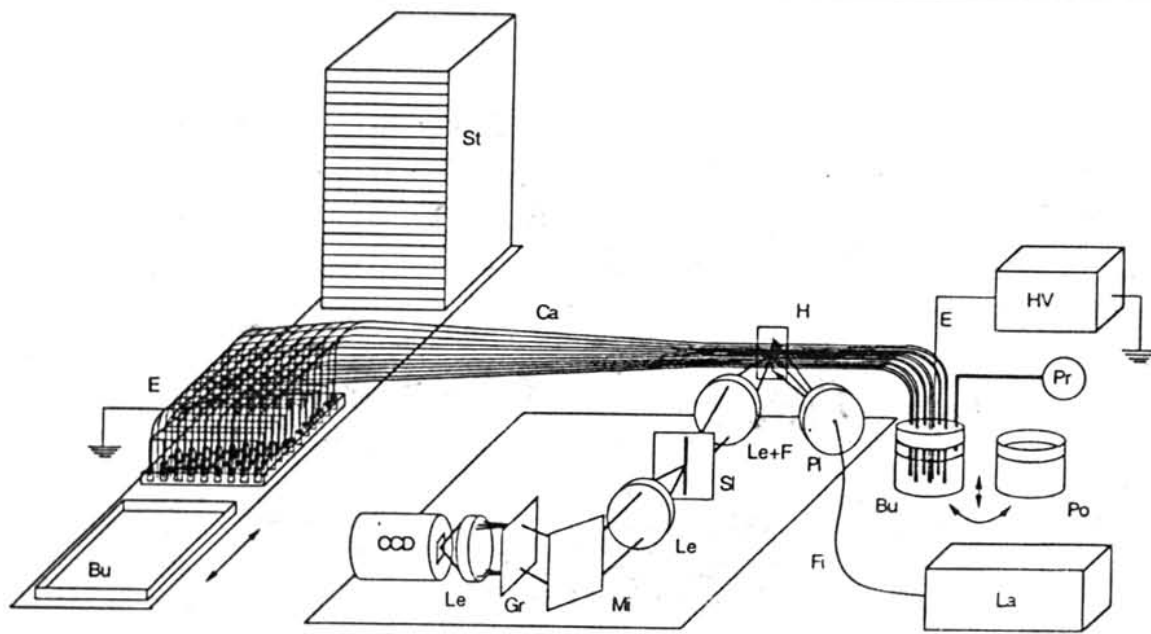
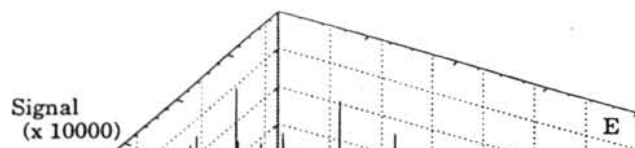
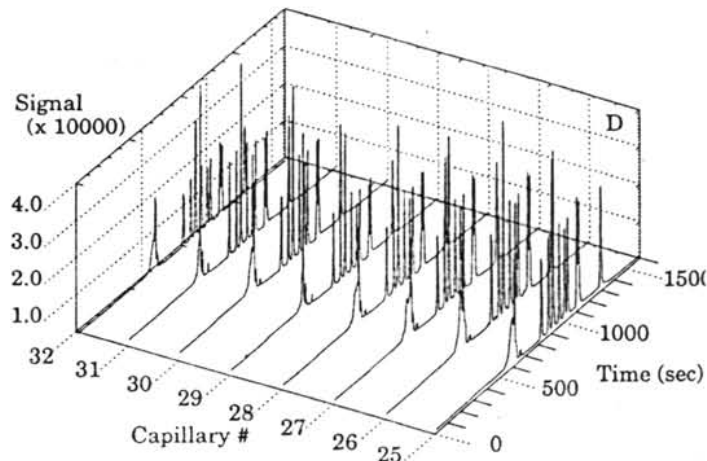
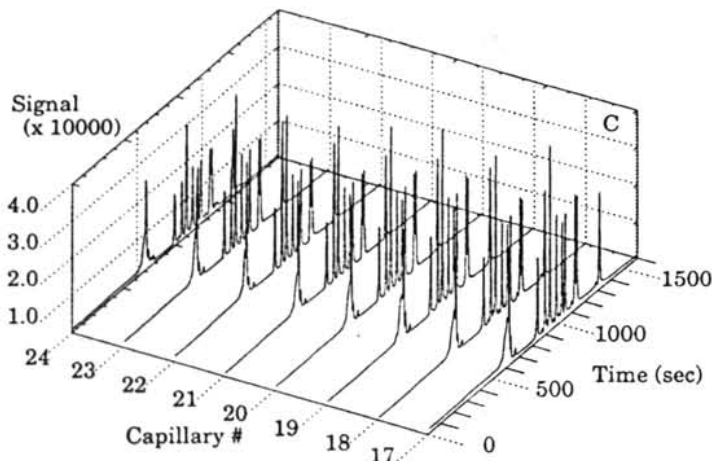
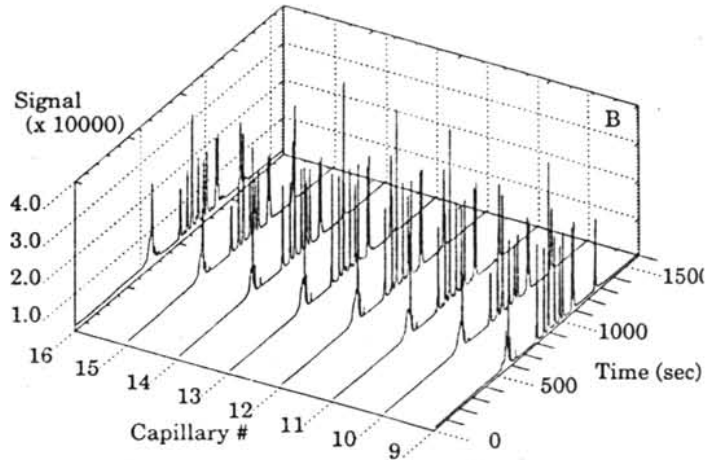
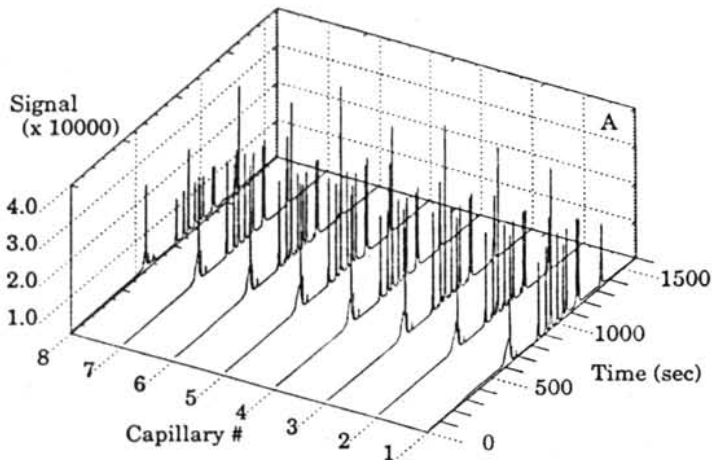


Figure 2. Photograph of one quadrant of the rotary scanner with the high-pressure reservoir detached. (A) Capillary bundles in the first and fourth group positions of the quadrant; (B) upper and lower grooved cylinders; (C) supports that connect the two cylinders; (D) U-shaped delrin blocks that retain the capillaries; (E) objective attached to the central rotor; (F) PEEK fitting screwed into the high-pressure adaptor plate (H); (G) bolting plates for the 2nd and 4th quadrants; (I) central shaft attaching the motor (M) to the central rotor; (J) bolts that secure the inner part of the high pressure reservoir to the adaptor plate (H); (K) the inner well for loading the matrix and the O-rings that seal the adaptor plate; (L) high pressure Lucite block.



Scheme of the automated multi-capillary electrophoresis device. The capillary array (Ca) consists of 96 capillaries, subdivided into six arrays of 16. In the window area, they are fixed in the capillary holder (H) in individual U-shaped grooves. The light from an argon-ion laser (La) is guided through an optical fiber (Fi) to the line generator (PI), which spreads out the collimated light in one dimension and shines a

thin line with a uniform intensity profile across the whole array of capillary windows in an angle of about 30° . The emitted light from the capillaries is collected through a filter with a 50 mm $f = 1/1.2$ lens (Le+F) and focused onto the slit (SI). A second lens (Le) collects and collimates the emitted fluorescence. The light is reflected by a mirror (Mi) and passed onto the holographic transmission grating (Gr). A third lens collects this light and produces the final image on the CCD camera (CCD). The microtiter plates containing the samples are stored in a stacker (St) and brought to the injection area by a transport unit. After injection, the sample plate is replaced by a second plate filled with electrophoresis buffer (Bu) and the high voltage (HV) is applied to the electrodes (E). After the run, the outlet vessel with buffer is replaced by the polymer reservoir (Po), and the chamber is pressurized with air (Pr: pressurized air supply).



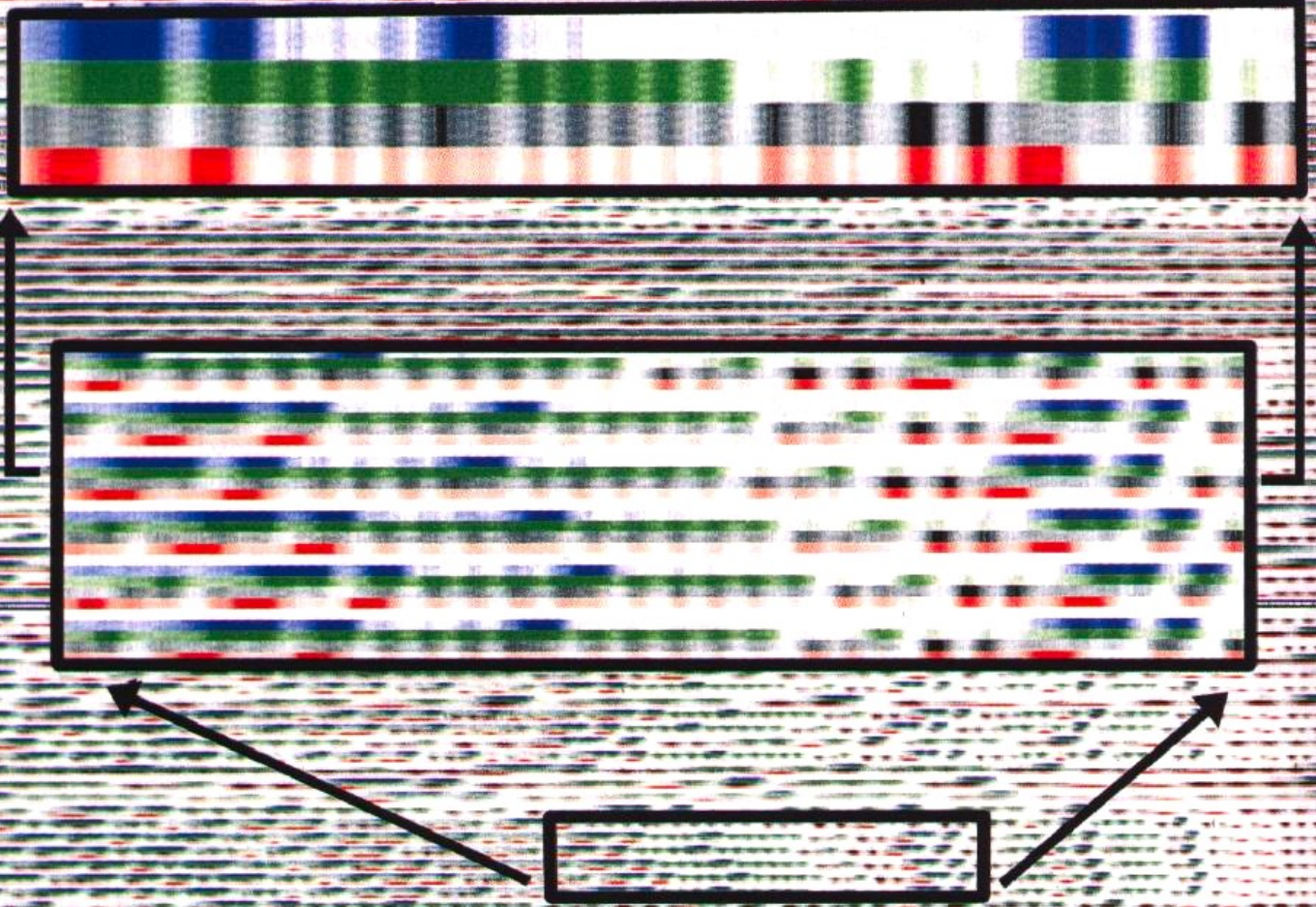
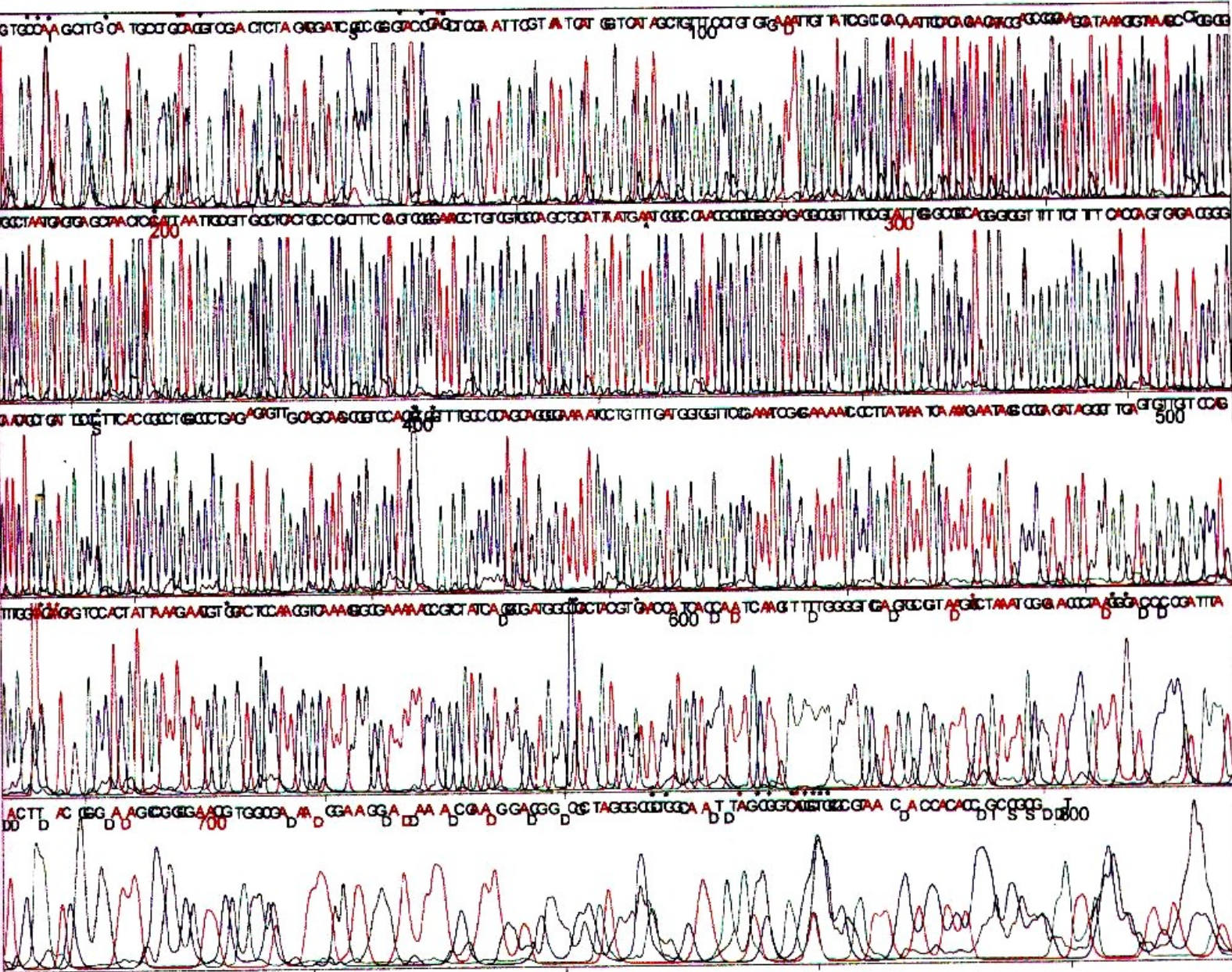


Image of sequencing data obtained from 128 capillaries using the rotary scanner. Each capillary is represented using four lanes, one for each base (blue: C, green: T, black: G, and red: A). The total electrophoresis time is 130 min. To prepare this image from the text data files, the four-column 12-bit electrophoresis data were opened in NIH Image as 8-bit text files and saved as 4-pixel-wide 8-bit TIFF files. These files were enlarged to 16 pixels for ease of visualization and then color-contrasted in Photoshop.



Complete DNA sequence data from capillary 64 in Fig. 6. The primers used for each base were: C, blue (C10R110); T, green (C10G); G, black (C10T); A, red (C10R). Compressions are marked with an *, substitution errors by S, insertion errors by I and deletion errors as D in the color corresponding to that base. The data shown here were base-called to 750 bases with 90% accuracy.