The objective of this section is to keep readers aware of significant inventions and trends in industrial research as well as to highlight those areas of research that may lead to new biotechnological opportunities. In addition to DNA probes for clinical applications covered in the last issue, three other subject areas are being surveyed in 1986: protein engineering, mammalian cell culture, and microbial transformations. The subject of this, the fourth Patents and Literature Section of 1986 is protein engineering and site-directed mutagenesis.

Protein Engineering and Site-Directed Mutagenesis

Patents

This section identifies and gives a brief description of patents from the US patent literature from January 1975 through February 1986. The search headings were protein engineering, site-directed mutagenesis, and nucleotide modification or alteration. Both patent titles and abstracts were searched. Patent assignees were also searched for several of the major biotechnology companies. Copies of the US patents can be obtained for $1.50 each from the Commissioner of Patents and Trademarks, Washington, DC 20231.
Bahl, C. P.
METHOD FOR SINGLE NUCLEOTIDE ALTERATION
US 4,351,901, Sep. 28, 1982
Assignee: Cetus Corp.

A method is described for altering a single nucleotide at a predetermined position in a gene involving the isolation of a single strand gene fragment extending up to the position before the nucleotide to be altered. A ribonucleotide or a protected deoxyribonucleotide corresponding to the desired altered nucleotide is attached at the end of this fragment. The fragment is then annealed to a complementary template that extends beyond the end of the fragment. The fragment is then extended complementary to the remainder of the template. The resulting partially mismatched double-stranded DNA is used to produce a pure DNA gene containing an altered deoxyribonucleotide at the single desired position.

Bender, R. and Duck, P. D.
CHEMICAL SYNTHESIS APPARATUS FOR PREPARATION OF POLYNUCLEOTIDES
US 4,353,989, Oct. 12, 1982
Assignee: ens Bio Logicals Inc.

An apparatus is described for the stepwise synthesis of polynucleotides in which the polynucleotide chains are extended in stepwise fashion from a modified form of polymer support to which the first unit is linked. This apparatus includes a reaction column containing the polymer supported product, which acts as the reaction vessel, and a series of reaction bottles all connected by two-way valves arranged in series to the column by means of a fluid-flow conduit. The farthest upstream vessel of the series contains reaction solvent, used for washing purposes. The most downstream of the reaction vessels contain nucleotide reagents. Each of the values has two separate and discreet fluid-flow passageways, the first used exclusively for flow of reagent from the vessel and the second for flow of solvent or reagents from an upstream vessel. This eliminates the possibility of cross-contamination as a result of residual reagent left in the dead space of the valve. The valves are biased toward their solvent flow condition. Materials are drawn through the fluid flow conduit and values by suction.

Itakura, K.
RECOMBINANT DNA CLONING VEHICLE

and

MAMMALIAN GENE FOR MICROBIAL EXPRESSION
US 4,571,421, Feb. 18, 1986
Assignee: Genetech, Inc.