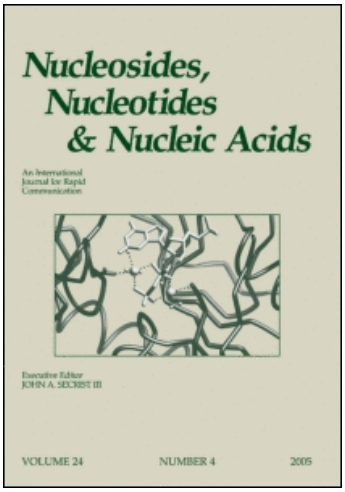

Nucleosides, Nucleotides and Nucleic Acids
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713597286

A Rapid Method for Simultaneous Chemical Synthesis of Oligonucleotides in Large Nufiber

H. Ilatthes[a]; T. Grundstrom[a]; M. Zenke[a]; M. Wintzerith[a]; A. Staub[a]; P. Chambon[a]
[a] Facult6 de MGdecine, LGME du C.N.R.S., 11184 de l'INSERM, STRASBOURG Cédex, FRANCE

To cite this Article Ilatthes, H. , Grundstrom, T. , Zenke, M. , Wintzerith, M. , Staub, A. and Chambon, P.(1985) 'A Rapid Method for Simultaneous Chemical Synthesis of Oligonucleotides in Large Nufiber', Nucleosides, Nucleotides and Nucleic Acids, 4: 1, 297
To link to this Article: DOI: 10.1080/07328318508077897
URL: http://dx.doi.org/10.1080/07328318508077897

NUCLEOSIDES & NUCLEOTIDES, 4(1&2), 297 (1985)

A RAPID METHOD FOR SIMULTANEOUS CHEMICAL SYNTHESIS OF OLIGONUCLEOTIDES IN LARGE NUMBER

H. Matthes, T. Grundström, M. Zenke, M. Wintzerith, A. Staub and P. Chambon*.
LGME du C.N.R.S., U184 de l'INSERM, Faculté de Médecine, 11, rue Humann, 67085 STRASBOURG Cédex - FRANCE

Summary : A rapid manual method is described for simultaneous synthesis of over one hundred oligonucleotides on a microscale by the phosphotriester approach on cellulose paper.

With the increasing need for synthetic oligonucleotides in molecular biology it became necessary to develop a simple, rapid, inexpensive technique for synthesis and purification of a large number of unique oligonucleotides. The phosphotriester approach was used : The solid support was paper disks stacked into 4 glass columns (one for each monomer to be added) placed in parallel in a continuous-flow system controlled by gas pressure. Anhydrous solvents, protected mononucleotides as triethylammonium salts and 5-O-DMT-2'déoxynucleoside 3'-O-succinates were obtained commercially and used without additional purification. By use of the catalyst 1-methylimidazole, with MSNT as condensing agent the coupling reaction was 15 min with an average efficiency of 90 % per step. The same catalyst was used to couple deoxyribonucleoside succinates to the cellulose support and lead to a loading of 80 μmol/g paper. Based on 50 nmol scale the yields for 17-20 mers were on average 10 %, an amount sufficient for most purposes. In the synthesis of 125 oligomers, the assemblies were carried out in 3 days. The majority of this time was spent on sorting the disks. Purification was performed by HPLC and polyacrylamide gel electrophoresis. The latter procedure offers the advantage that many oligomers can be purified simultaneously. The numerous oligonucleotides synthesized and purified by the described method were biologically active in different experiments.

0732-8311/85/0401-0297$3.50/0