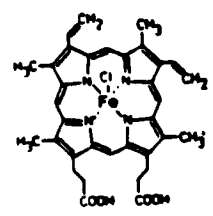
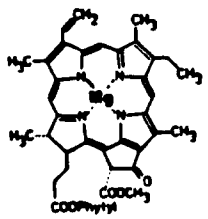
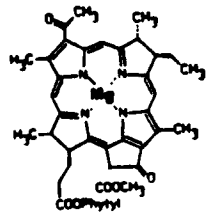


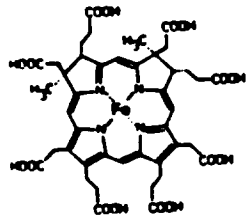
Hämin



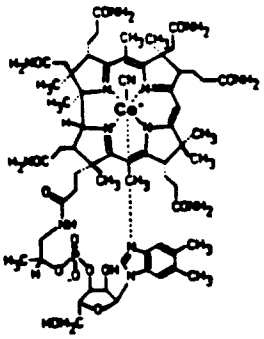
Chlorophyll a



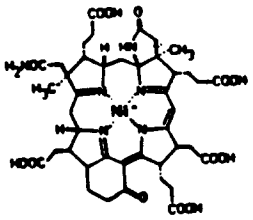
Bakteriochlorophyll a



Sirohäm

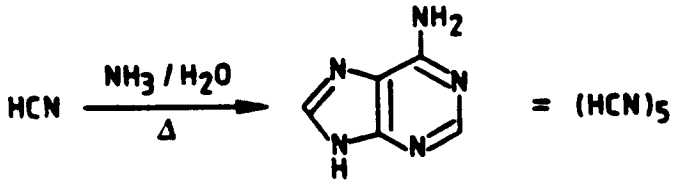


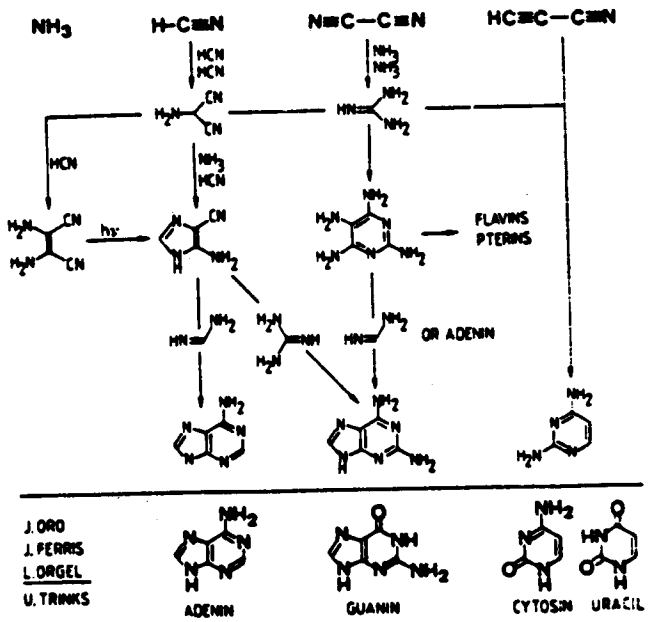
Vitamin B12



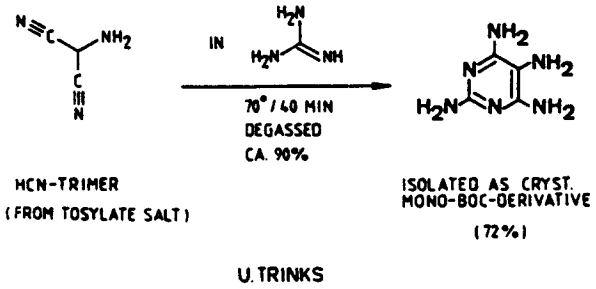
Faktor F 430

J.ORO (1961): **ADENINE**, A PENTAMER OF HCN





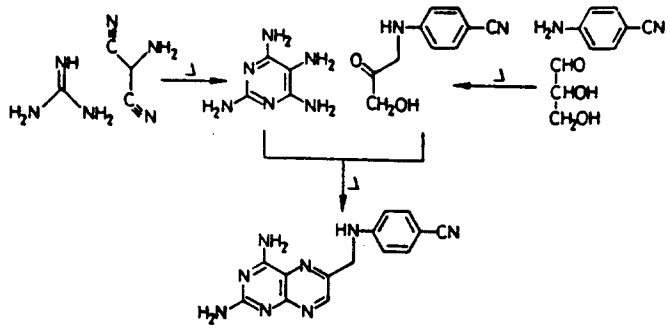
CHEMISTRY OF HCN: TETRA-AMINO-PYRIMIDINE



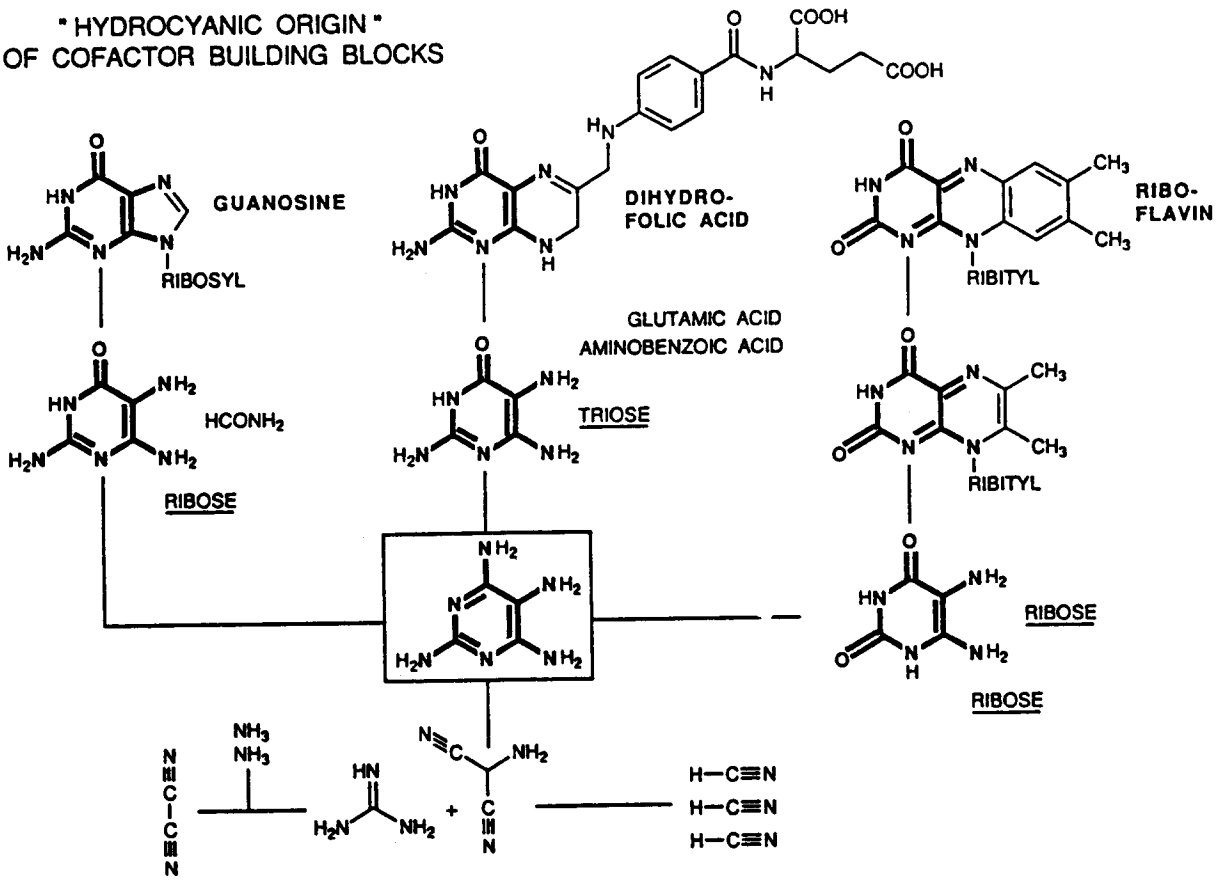
HCN-TRIMER
(FROM TOSYLATE SALT)

ISOLATED AS CRYST.
MONO-BOC-DERIVATIVE
(72%)

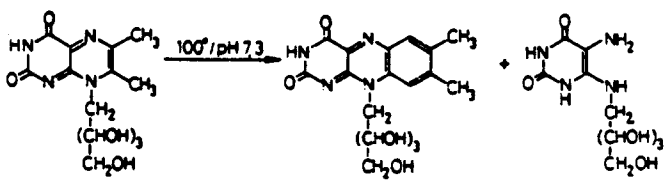
U. TRINKS

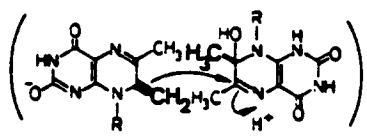


"HYDROCYANIC ORIGIN" OF COFACTOR BUILDING BLOCKS



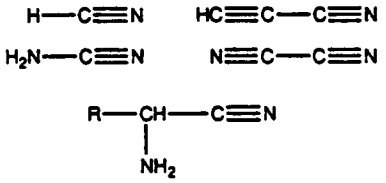
BIOMIMETIC CHEMOSYNTHESIS
CHEMOMIMETIC BIOSYNTHESIS OF RIBOFLAVIN

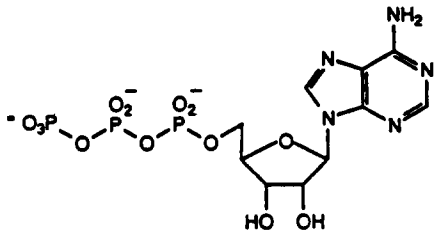




T. ROWAN, H.C.S. WOOD J.C.S. (C) 1968, 452
J.C.S. (PERKIN I) 1972, 1051

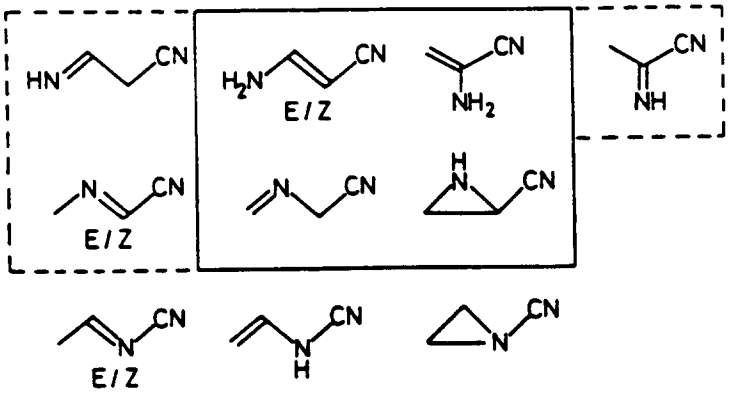
"ANHYDRIDES" :



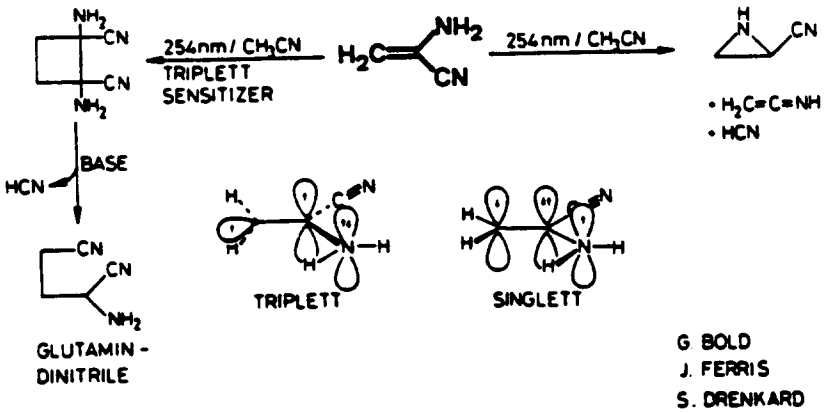


ENSEMBLE OF
$C_3N_2H_4$-NITRILES

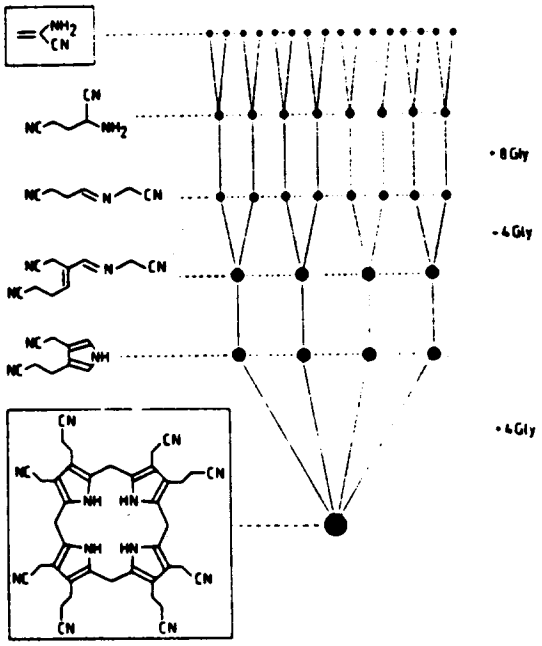
$H_3C-C\equiv N \cdot H-C\equiv N$
$HC\equiv C-C\equiv N \cdot NH_3$



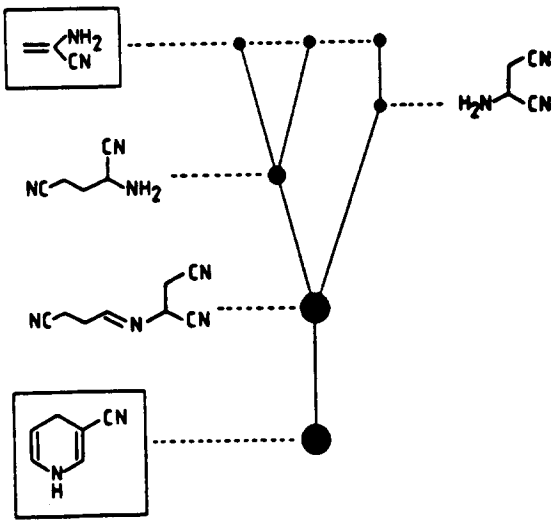
PHOTOCHEMISTRY OF 2-AMINO-PROPENE-NITRILE



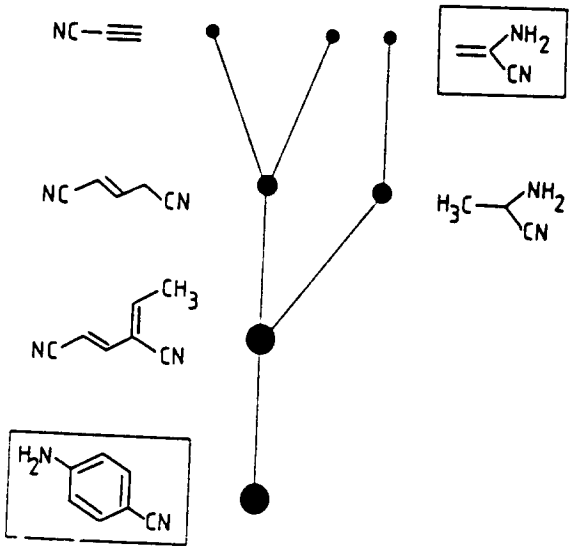
G. BOLD
J. FERRIS
S. ORENKARD

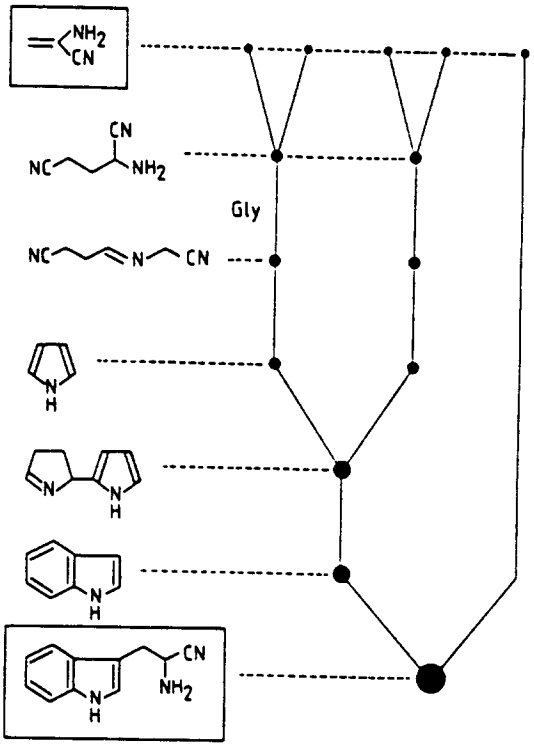


UROGEN OCTANITRILE, A HEXADECAMEROID OF APN
(A 40-MEROID OF GLYCINE NITRILE)

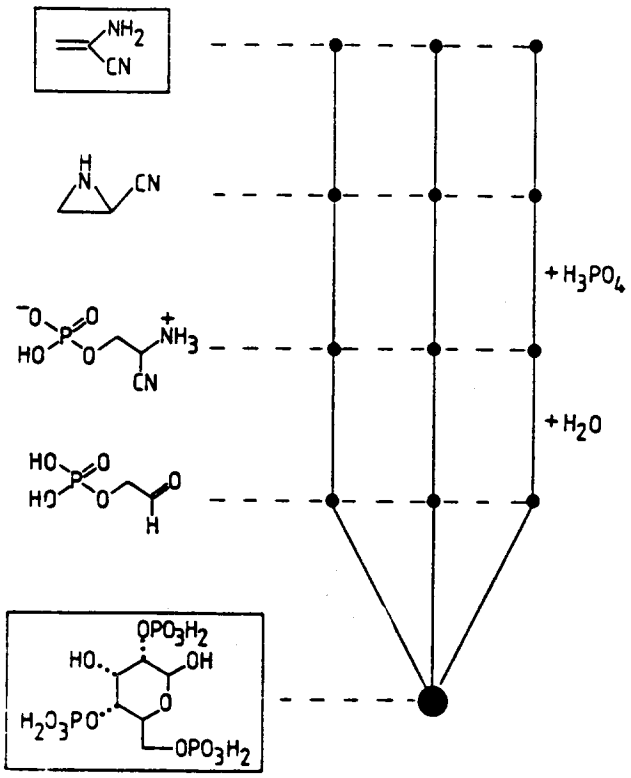


1,4-DIHYDRO NICOTINE NITRILE, A TRIMEROID
OF APN (A HEXAMEROID OF GLYCINE NITRILE).

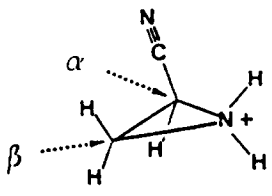


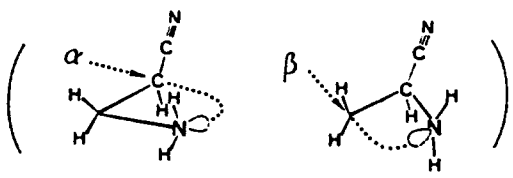


TRYPTOPHANE NITRILE, A PENTAMEROID OF APN
(A DODECAMEROID OF GLYCINE NITRILE)

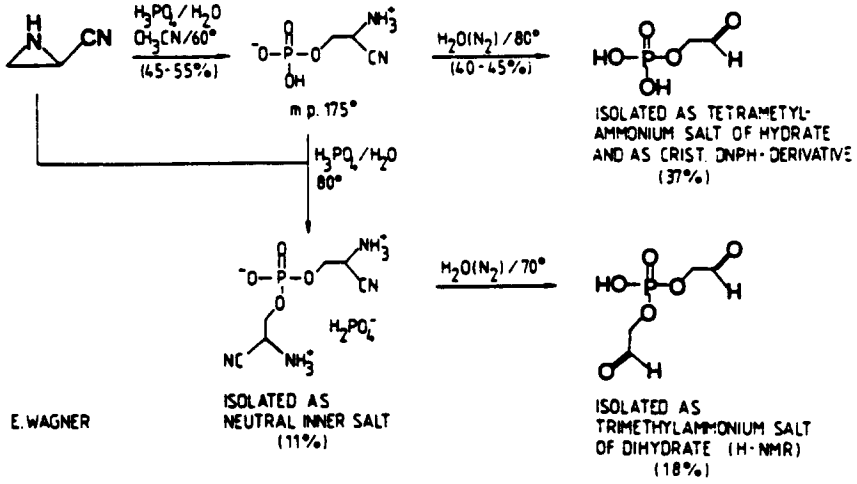


CHEMISTRY OF 2-AZIRIDINE CARBONITRILE:
REGIOSELECTIVITY IN RINGOPENING WITH NUCLEOPHILES



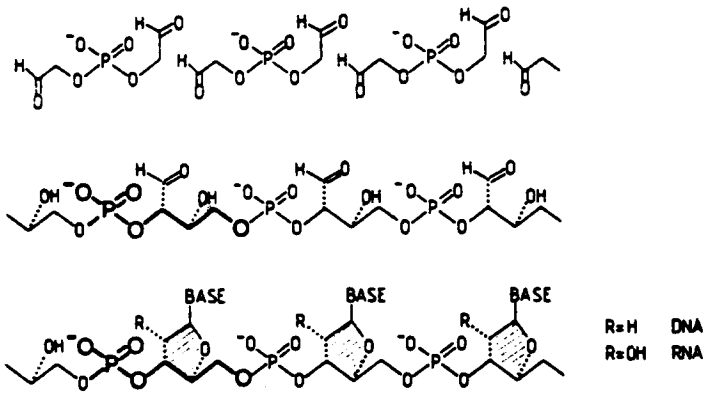


CHEMISTRY OF 2-AZIRIDINE CARBONITRILE : GLYCOLALDEHYDE PHOSPHATES

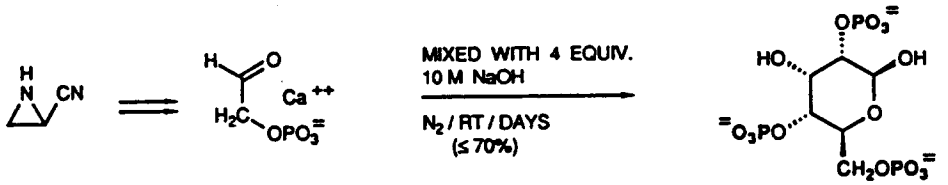


E. WAGNER

STRUCTURAL RELATIONSHIP BETWEEN
DI(2-OXO-ETHYL)-PHOSPHATE AND POLYNUCLEOTIDES

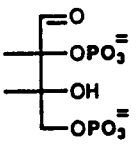


CHEMISTRY OF AZIRIDINE-2-CARBONITRILE : HEXOSE-2,4,6-TRIPHOSPHATES



NaOH IN DILUTE SOLUTION

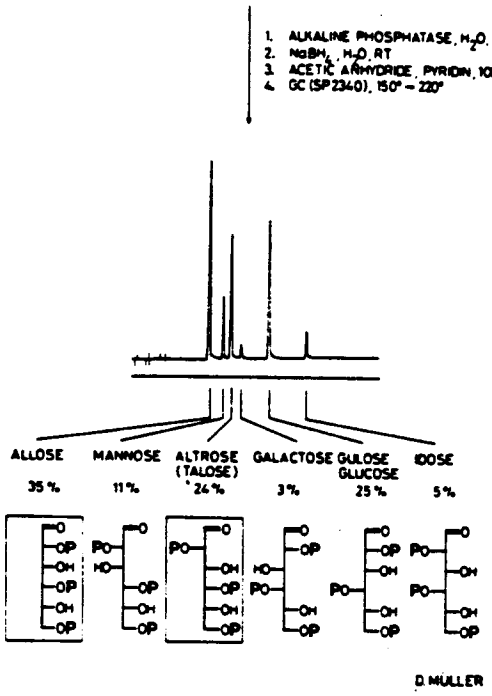
HEXOSE - TRIPHOSPHATE FRACTION
ISOLATED AS CALCIUM SALTS
(TLC, ^{1}H-, ^{13}C-, ^{31}P-NMR, FAB-MS)
6 DIASTEREOMERS



TETROSE - DIPHOSPHATE FRACTION
(TLC, ^{1}H-, ^{13}C-, FAB-MS)
2 DIASTEREOMERS

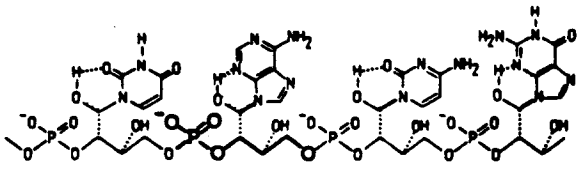
D. MÜLLER
Dr. E. WAGNER

HEXOSE - TRIPHOSPHATE - FRACTION

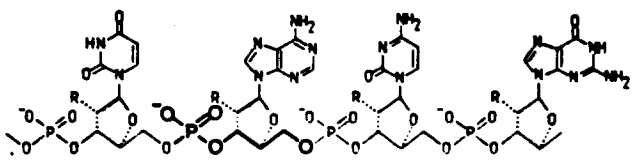


D. MÜLLER

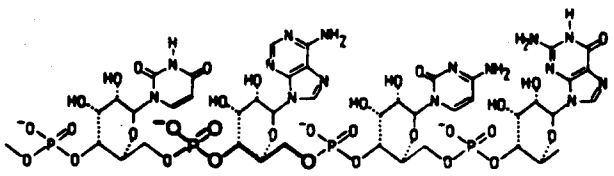
WHY
PENTOSE -
AND NOT
HEXOSE -
NUCLEIC ACIDS ?



(a "TNA")

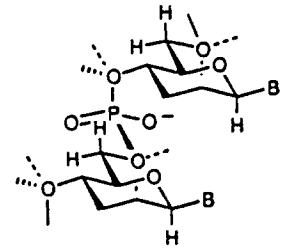


R=H : DNA
R=OH : RNA

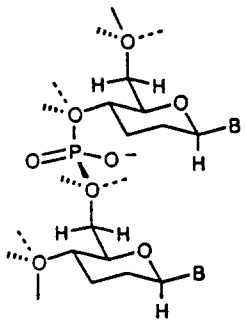


(an "HNA")

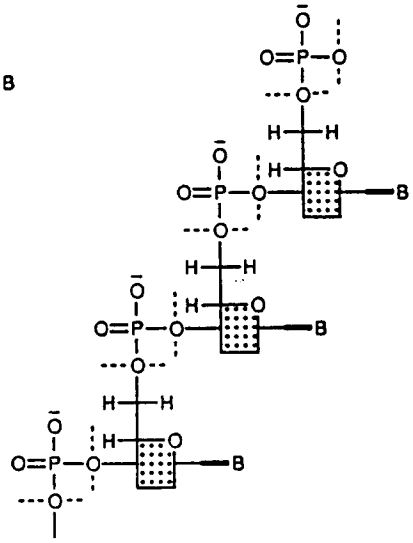
HEXOSE NA's



gg



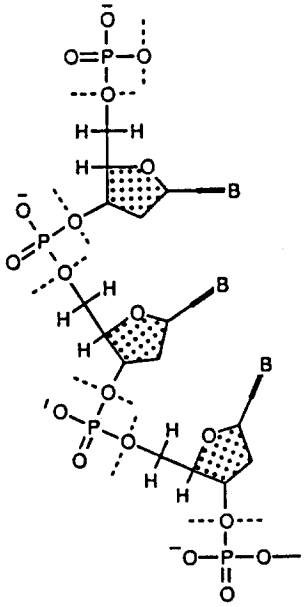
tg



BACKBONE
INTRINSICALLY LINEAR

(ALL SUBSTITUENTS AT SIGMA BONDS OF BACKBONE IDEALLY STAGGERED)

PENTOSE NA's

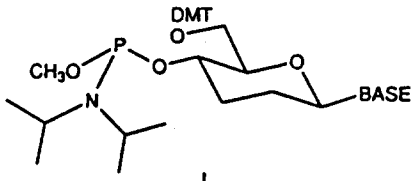


BACKBONE
INTRINSICALLY HELICAL

(NON-IDEAL STAGGERING AT 5-MEMBERED RINGS)

CHEMICAL SYNTHESIS OF OLIGO-2',3'-DIDEOXY-GLUCO-NUCLEOTIDES

(" HOMO-DNA'S ")



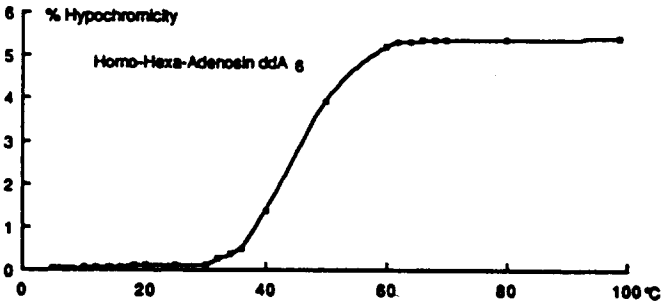
BASE = U, A^{NHBz}, C^{NHBz}, $G^{NH\,i\,Bu}$

YIELDS :
U : > 97%
A : > 97%
C : 88-96%

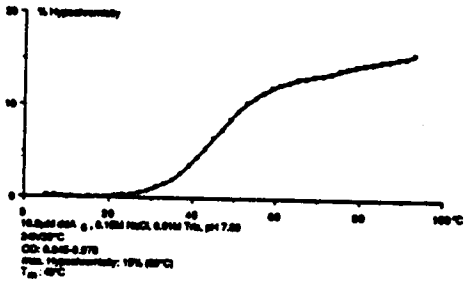
SOLID SUPPORT :	FRACTOSIL 500, 3 (SUCCINOYL-AMINO) PROPYL-DIETHOXY-SILYL
COUPLING :	6 MOL EQUIV. MONOMER, 24 TETRAZOL / CH_3CN RT / 30 MIN.
OXIDATION :	0.1 M I_2, THF-H_2O-LUTIDINE / RT / 1 MIN.
DETRITYLATION :	2% $CHCl_2COOH$, CH_2Cl_2 / RT / 2 MIN.

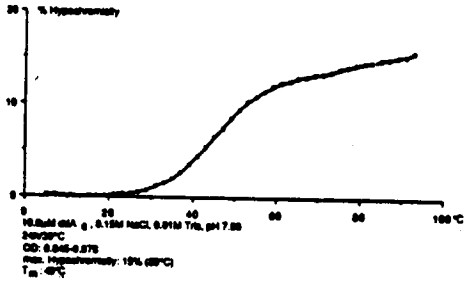
U	U	U	U	U	U	D - SERIES
U	U	U	U	U	U	L -
A	A	A	A	A	A	D -
A	U	A	U	A	U	D -
C	C	C	C	C	C	D -

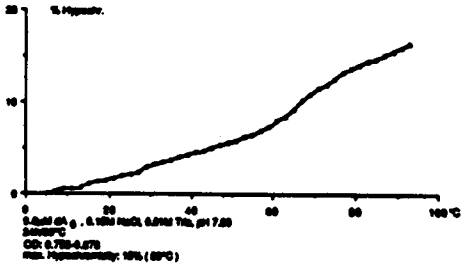
H.J. ROTH
M. BÖHRINGER
J. HUNZIKER
DR. R. KRISHNAN
DR. M. GOEBEL
DR. C. LEUMANN

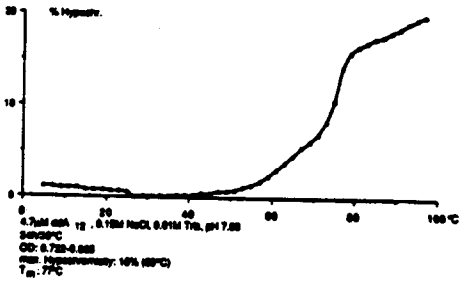


9.0µM ddA $_6$, 0.15M NaCl, 0.01M Tris, pH 7.0
24h/RT
OD: 0.784-0.815
max. Hypochromicity: 5% (89°C)
T_m = 46°C

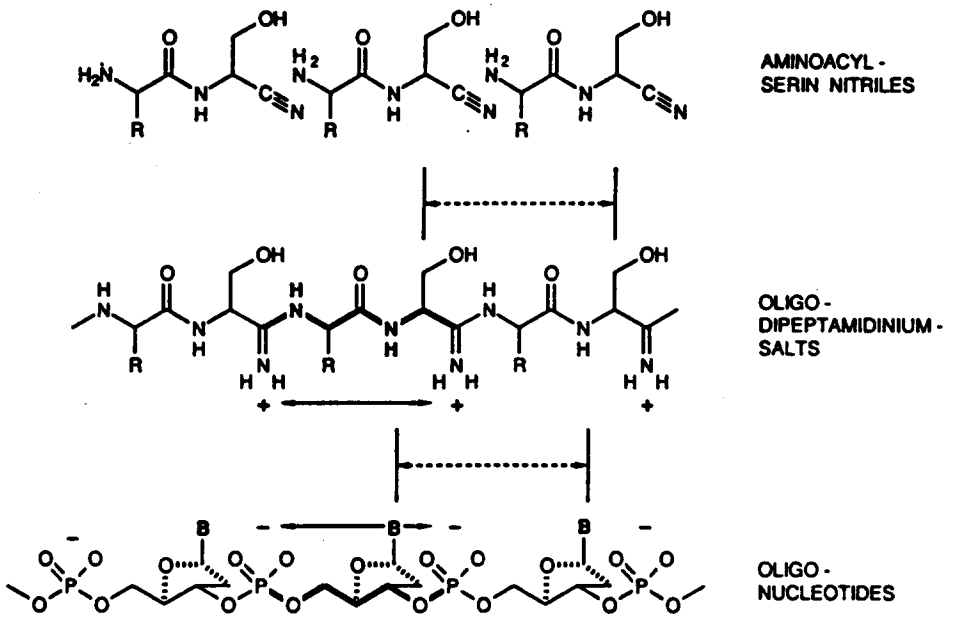








CONSTITUTIONAL RELATIONSHIP BETWEEN DIPEPTIDE NITRILES, OLIGODIPEPTAMIDINIUM SALTS AND OLIGONUCLEOTIDES

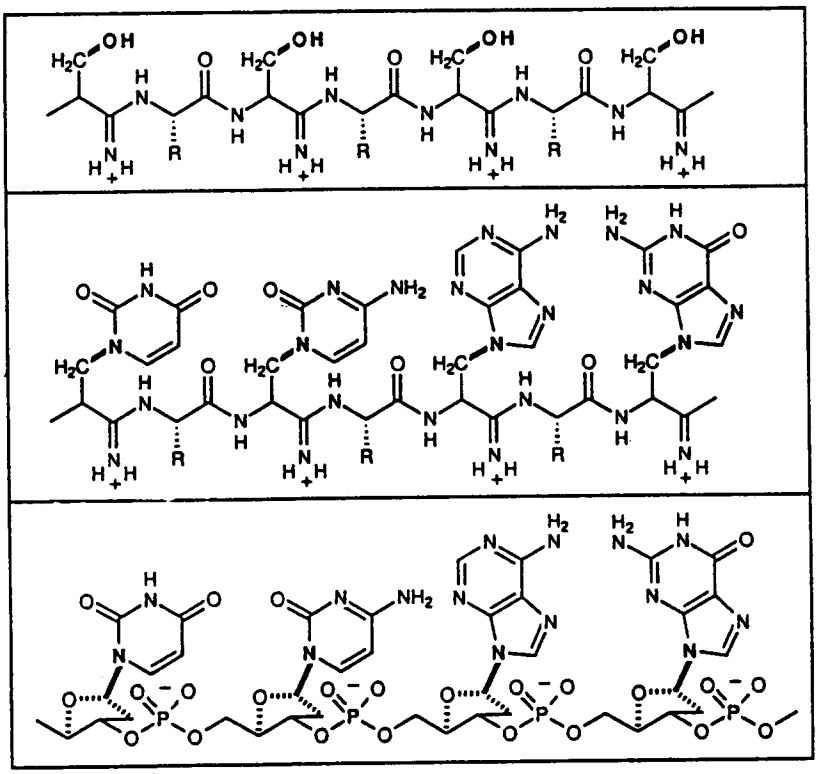


AMINOACYL - SERIN NITRILES

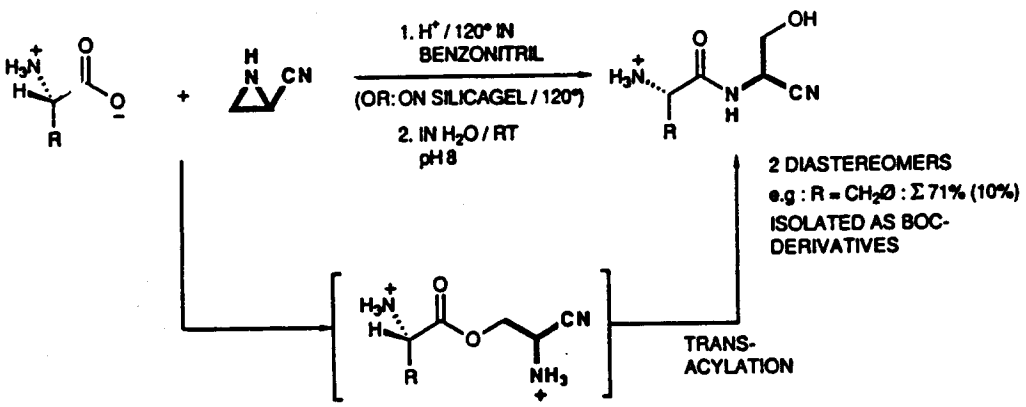
OLIGO - DIPEPTAMIDINIUM - SALTS

OLIGO - NUCLEOTIDES

OLIGO - NUCLEO-
DIPEPTAMIDINIUM
SALTS :
CONSTITUTIONAL
COMPLEMENTARITY TO
OLIGONUCLEOTIDES

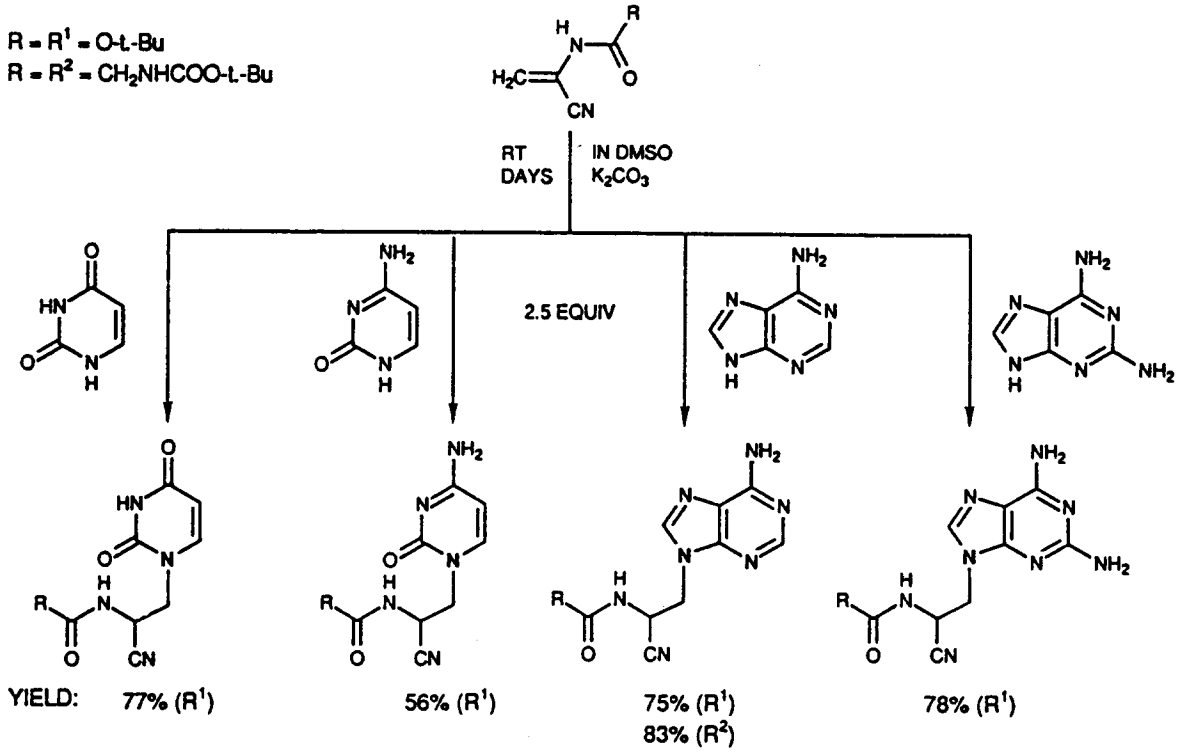


CHEMISTRY OF AZIRIDINE-2-CARBONITRILE : <u>DIPEPTIDE-NITRILES</u>

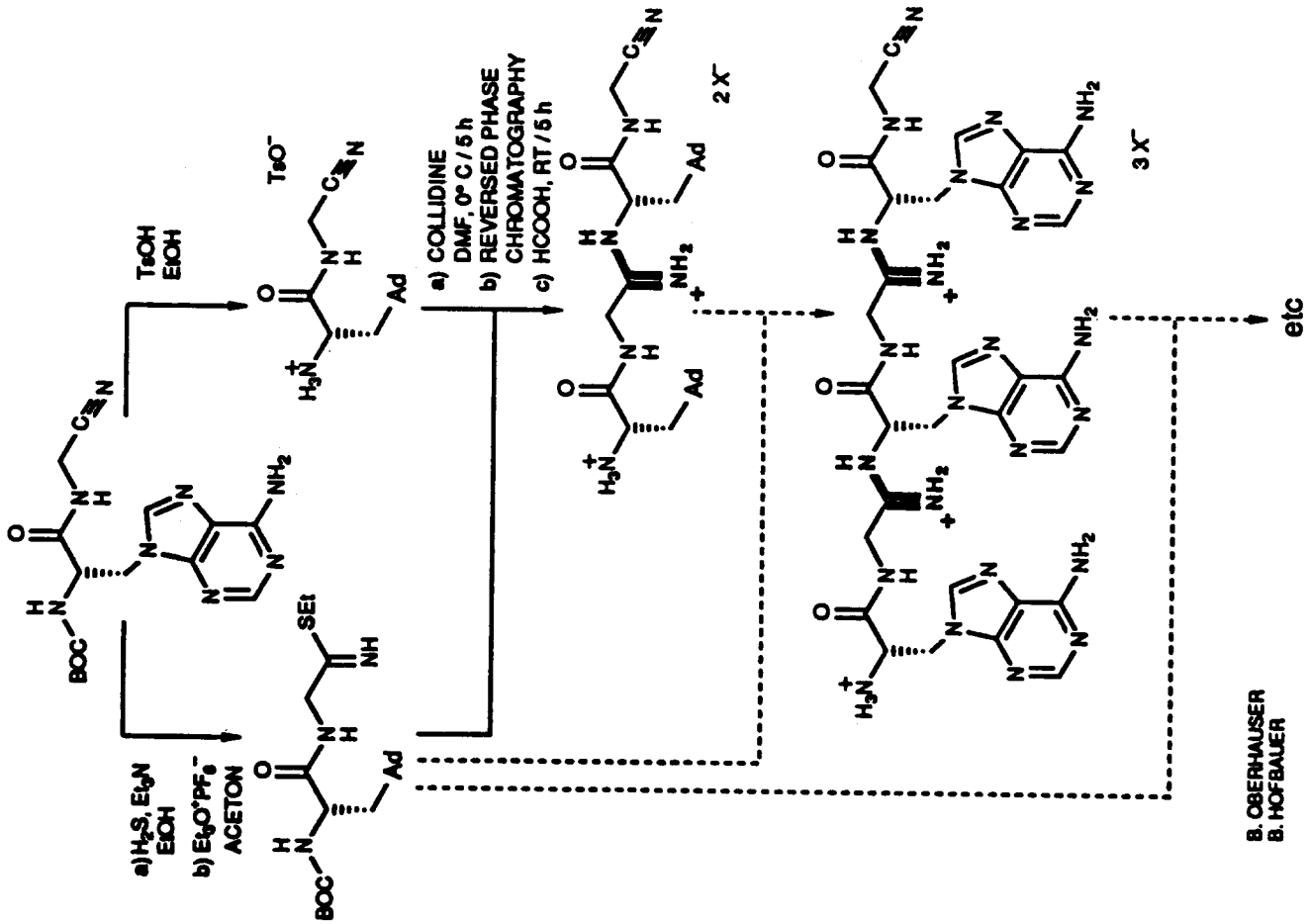


Dr. K. BAUMANN
J. GÜCK

REGIOSELECTION IN MICHAEL ADDITIONS OF PYRIMIDINE AND PURINE BASES



B. OBERHAUSER / B. HOFBAUER



THIOL-CATALIZED OLIGOMERIZATION OF DIPEPTIDE NITRILES