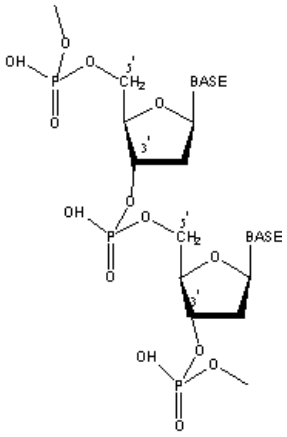
Catalog Number: 101500, 101501, 101502, 101503, 101504, 102907, 105282, 152274, 152275, 160098, 195130, 195129

Deoxyribonucleic acid

Structure:



CAS # 9007-49-2

Synonyms: DNA; Desoxiribon; Eucytol

Polymerization: "Highly Polymerized" DNA is DNA which has not undergone any additional processing after isolation. "Not Highly Polymerized" DNA is DNA which may have gone through some denaturization after isolation.

Description: DNA is a polynucleotide. It is an essential component of chromosomes in cell nuclei. It is the carrier of genetic material. It contains information in chemical code to direct the development of the cell according to its inheritance.[1]

The purine and pyrimidine bases of the nucleosides are primarily adenine, guanine, cytosine and thymine. The sugar is D-2-deoxyribose. The nucleosides are linked together by phosphates in diester linkage from the 3'-hydroxyl of one sugar to the 5'-hydroxyl of the next. The repeating sugar-phosphate linkage forms the backbone of the single polynucleotide strand which is the primary structure of DNA. Chemical analysis of DNA from different species show that the purine content is equal to the pyrimidine content; adenine content equal to thymine; guanine equal to cytosine.[1]

In the Watson-Crick model of its secondary structure (based on chemical analysis and x-ray studies), DNA consists of two polynucleotide chains forming right-handed helices coiled around the same axis with the sequence of atoms in the two sugar-phosphate backbones running in opposite direction. Two major families of right-handed helix were proposed. A-DNA and B-DNA, each having its own intrinsic restrictions on chain-folding and structure. B-DNA is believed to be the predominant form in biological systems. The purine and pyrimidine bases are inside the helical structure formed by the sugar phosphate backbones; those on one chain form hydrogen bonds to those on the other. Adenine in one chain is always bonded to thymine in the complementary chain by hydrogen bonds; similarly guanine is bonded to cytosine. The linear sequence of bases in one strand completely determines the sequence in the complementary strand. Thus each strand can serve as a template for the replication of the original DNA molecule. DNA also acts as a template in the formation of ribonucleic acids, q.v., which play a fundamental role in the synthesis of proteins in the cell.[1]

Another form of DNA, termed Z-DNA, is also known. Its structure is an antiparallel double helix with Watson-Crick base pairing, but it is a left-handed helix with the ribose-phosphate backbone following a zig-zag course.[1]

Solubility: Most DNA is soluble in water or aqueous buffers. Slight heating may help. The addition of SDS or similar detergent may help solubilize DNA; however, detergents tend to denature the DNA into shorter strands.

Availability:

Catalog Number	Description	Size
101500	DNA free acid, from salmon sperm, not highly polymerized	25 g 100 g 250 g 1 kg
152274	DNA free acid, from herring sperm, not highly polymerized	25 g 100 g 250 g 1 kg
101501	DNA sodium salt, from salmon sperm, highly polymerized	250 mg 1 g 5 g

		10 g
152275	DNA sodium salt, from fish sperm (salmon or herring as available), not highly polymerized	25 g 100 g 250 g 1 kg
160098	DNA sodium salt, from fish sperm (salmon or herring as available), highly polymerized	250 mg 1 g 5 g 10 g
195130	DNA, sodium salt, from herring testes	250 mg 1 g 10 g
102907	DNA sodium salt, from calf thymus, not highly polymerized. Large fragments	25 g 100 g 250 g 1 kg
195129	DNA sodium salt, from calf thymus, highly polymerized	50 mg 100 mg 500 mg 1 g
105282	DNA, potassium salt	1 g 5 g
101502	DNA, free acid, from *Cl. perfingens*, Isolated by procedure of Marmur, *J. Mol. Biol*., **v. 3**, 208 (1961).	5 mg 10 mg 50 mg
101503	DNA, free acid, from *E. coli*, Isolated by procedure of Marmur, *J. Mol. Biol*., **v. 3**, 208 (1961).	1 mg 5 mg 10 mg 50 mg
101504	DNA free acid, Isolated by procedure of Mirsky, Pollister, *J. Gen. Physiology*, **v. 130**, 117 (1946). Typical Composition: Adenine: 10.8; Guanine: 12.9; Thymine: 10.0; Cytosine: 8.8	100 mg 1 g 5 g

References:

1. *Merck Index*, **12 th Ed.**, No. 2954.
2. Watson, Crick, *Nature*, **v. 171**, 737, 964 (1953).
3. Wilkins, et. al., *Nature*, **v. 171**, 738 (1953).
4. Marvin, et. al., *J. Mol. Biol*., **v. 3**, 547 (1961)
5. Fuller, et. al., *J. Mol. Biol*., **v. 12**, 60 (1965).