significant. This result has been supported by observation of considerable interspecies cross reaction among denatured DNA fragments and DNA-agar of several mammalian species. In addition, DNA-DNA and also RNA-DNA interactions have been used to evaluate quantitatively, genetic relatedness among the Enterobacteriaceae (*11*).

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References and Notes

1. The abbreviations are: RNA, ribonucleic acid; DNA, deoxyribonucleic acid; SSC, standard saline citrate (0.15*M* NaCl and 0.015*M* sodium citrate); A, C, G, and U, are adenylic, cytidylic, guanylic, and uridylic acids, respectively.
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Zeolite ZK-5: A New Molecular Sieve

Abstract. *An aluminosilicate of novel crystal structure has been synthesized. It has molecular-sieve properties that permit separation of straight-chain from branched-chain and cyclic hydrocarbons. This zeolite is unusually stable in solutions of low* pH.

A crystalline aluminosilicate with a novel crystal structure has been synthesized. Table 1 contains pertinent data derived from x-ray diffraction measurements of this new substance. These data indicate that the crystal structure of the new zeolite, given the name zeolite ZK-5, is body-centered cubic with a lattice parameter $a = 18.72$ Å. A pseudo cell was also observed which is primitive cubic with $a' = a/(2)^{\frac{1}{2}}$. Meier and Kokotailo have elucidated the main features of the crystal structure (*1*).

Table 1. X-ray diffraction data—zeolite ZK-5.

(*h*, *k*, *l*)	*d*(Å)	I/I_{max}*
110	13.3	0.18
200	9.41	1.00
220	6.62	0.06
310	5.93	.41
222	5.41	.48
321	5.03	.02
400	4.69	.06
330	4.41	.50
420	4.19	.34
332	3.98	.22
422	3.81	.18
510	3.66	.06
521	3.41	.13
530,433	3.21	.35
611	3.02	.28
620	2.94	.21
541	2.88	.02
622	2.81	.26
631	2.75	.09
543,710,550	2.64	.11
640	2.59	.02
721,633,552	2.54	.09
730	2.45	.03
732,651	2.37	.01
811,741,554	2.30	.02
822,660	2.20	.03
831,750,743	2.17	.02
662	2.14	.01
910,833	2.06	.03
842	2.04	.02
921,761,655	2.02	.03
830,851,754	1.97	.005
932,763	1.93	.02
941,853,770	1.89	.02
10,2,0,862	1.83	.05
10,3,1,952,765	1.79	.05

*I/I_{max} is the intensity of each reflection relative to the reflection of maximum intensity.

The mole ratio of SiO_2 to Al_2O_3 in zeolite ZK-5 varies from 4.0 to 5.1. The more silica-rich samples can undergo cation exchange with dilute hydrochloric acid solution (about 0.1*N*) with no significant loss in crystallinity. Stability of this type is not frequently observed in either naturally occurring or synthetic zeolites. Various cation forms of this zeolite, prepared by standard ion-exchange techniques, are capable of adsorbing about 13 percent by weight of straight-chain hydrocarbons while excluding branched-chain or cyclic hydrocarbons. In this respect, zeolite ZK-5 has molecular sieve properties similar to those of zeolite A (*2*) and zeolite ZK-4 (*3*).

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20 May 1963

Blood Group Studies with Turtles

Abstract. *Groups and individuals of diverse species of turtles have been distinguished by selective agglutinations of their washed red blood cells when undiluted normal serums or plant extracts are used as agglutinins. During these studies, production of hemagglutinins and precipitins has been induced in turtles and certain other poikilotherms.*

Very little immunogenetic research has involved reptiles and amphibians, literature in this field having been reviewed by Hildemann (*1*). Sixty years ago Noguchi (*2*) reported hemagglutination and antibody production in turtles. Later, antibodies to mammalian serum were induced in one species of turtle (*3*); normal isohemagglutinins were demonstrated in two species, and irregular heterospecific agglutinins were found (*4*). The present report deals with blood group differences in turtles and shows that a variety of blood grouping reagents may be used for characterizing individuals and populations.

Most of the blood samples were taken without serious trauma by cardiac puncture. So far I have had some limited success in obtaining microliter samples from retro-orbital sinuses of some turtles (*5*) by using techniques recently used with other organisms (*6*). Blood cells were washed three times with 0.9-percent sodium chloride or Alsever's solution, and small drops of approximately 2-percent cell suspensions were mixed in wells of test plates with equal volumes of individual undiluted serum or lectin-containing plant extract. For certain of the reactions, titers were obtained by using serial dilutions of agglutinins in test tubes. Most serums tested were from unimmunized reptiles, but a few amphibian (toad), mammalian (human and rabbit), fish (chondrichthyes and osteichthyes) and arthropod (crab) serums also caused selective agglutinations. Lectins were extracted in 0.85-percent sodium chloride (weight of plant tissue to solvent being about 1:5), and