CODONS

(A computer program to generate mRNA for manual "translation.")

This program first asks the user how wide the printer carriage is. Next it asks for the number of "strands" of mRNA desired and goes ahead and prints them. It simply prints a line of the letters "A," "C," "G," and "U" representing the bases on an mRNA molecule. There is always an "AUG" codon near the beginning of the strand, but there is no guarantee of a "STOP," although they do appear often enough. The strands are of slightly different lengths, depending on where the "START" codon happened to fall. Other than the one, guaranteed "AUG," the sequence of letters is determined randomly by the computer.

The strands are printed far enough apart so that the paper can be cut into individual "molecules." A suggested use for them is in a discussion or lab setting to give the students some practice at reading a table of codons and a feel for the translation process. The students are instructed to pretend that they are ribosomes and then each is given his or her own mRNA molecule to translate. From there, the students look for the start codon and translate the message, simply writing down the names (or abbreviations) of the amino acids below each of the codons. If time or inclination permits, the instructor may use the blackboard to note the length of all of the "polypeptides" formed and calculate the average. This is a good starting point for a discussion of the value of the redundancy of the genetic code, in that it is unlikely that one of the "STOP" codons will be produced as a result of a random substitution mutation.

Every attempt was made to make the program "crash-proof" so that it responds appropriately, no matter what strange and off the wall answers you give to its questions. It was written and compiled from Turbo Pascal (Version 2.0). The profusely commented source code is included on the disk for those interested in such things.

(A much earlier and more primitive version is also available for the Apple II series of computers. The Apple version is written in Applesoft BASIC and should work on the Apple II, II+, IIC, Ile and IIgs computer. It requires a wide carriage (132 column) printer and was designed with an Epson in mind. However, it would be a simple matter to change the length of the lines printed and printer codes sent.)

This program is in the public domain. To obtain a copy, please send a blank 5.25" diskette to the author:

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(Please specify Apple or MS-DOS (IBM) format.)