

## BIOCHEMISTRY

## An Error in Model Building

ABOUT a year ago Dr. S. R. Pelc and Miss M. G. E. Welton claimed<sup>1,2</sup> that "it is possible to fit amino-acids stereochemically to their codons". They described how they built models using Courtauld space-filling components, but it was not possible to tell from their very brief descriptions whether their models were stereochemically acceptable. I therefore corresponded with Dr. Pelc and he was kind enough to show me some of their models.

Dr. Pelc produced several examples for me to examine, but I will comment here only on their model of lysine fitted to AAG, as illustrated in the photograph of Fig. 2 of the first of their two papers<sup>1</sup>.

This model is stereochemically unacceptable for the following reasons. (1) The terminal  $-\text{NH}_2^+$  group of the lysine was built as  $-\text{NH}_2$ . (2) In two places (one in the amino-acid, one in the triplet) adjacent methyl groups were in the eclipsed rather than the staggered configuration. (3) In two cases an  $\text{>NH}$ , which should either make a satisfactory hydrogen bond, or at least be free to make one to a water molecule, was pointing directly at a hydrophobic group.

Further inspection revealed that Dr. Pelc and Miss Welton had built all their polynucleotide sequences backwards\*. Their AAG was in fact GAA (which codes glutamic acid). This mistake can be detected by a very careful study of Fig. 2 of ref. 1.

I conclude that the models of Pelc and Welton do not support their hypothesis.

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\* For the standard convention see, for example, ref. 3. The triplet AAG can also be written as ApApG, the convention being that pG signifies a phosphate attached to the 5'-hydroxyl of the guanosine.

<sup>1</sup> Pelc, S. R., and Welton, M. G. E., *Nature*, **209**, 868 (1966).

<sup>2</sup> Welton, M. G. E., and Pelc, S. R., *Nature*, **209**, 870 (1966).

<sup>3</sup> "Abbreviated Instructions to Authors", *J. Biol. Chem.*, **241**, No. 23, 111 (1966).

Sir John Randall, Director of the Medical Research Council Biophysics Research Unit at King's College, London, wishes to state that he has read Dr. Crick's letter in manuscript, that he agrees with its conclusion, and that he had so informed Dr. Pelc and Miss Welton at the time of their original publication.—EDITOR, *Nature*.