aequorin luminescence as a fast, sensitive test for presence of Ca²⁺ in biological systems¹²⁻¹⁹. Inclusion of coelenterazine in the test system should prolong considerably the luminescence life of aequorin.

A recent paper²⁰ contains statements which amount to the suggestion that YC of the present paper is in effect Renilla luciferin. We have shown, however, that Renilla luciferin is actually identical to coelenterazine9. It should be emphasised that the absorption spectrum of YC (ref. 5) is significantly different from that of coelenterazine except for the one peak in the visible region. Moreover, recent mass spectrometric data (O.S. and F.H.J., unpublished) have demonstrated that YC and coelenterazine are in fact different compounds.

We thank Drs T. Goto and S. Inoue for a sample of synthetic coelenterazine, and the US National Science Foundation and Office of Naval Research for financial support.

> **OSAMU SHIMOMURA** FRANK H. JOHNSON

Biology Department, Princeton University, Princeton, New Jersey 08540

Received February 3: accepted June 5, 1975.

- Shimomura, O., Johnson, F. H., and Saiga, Y., J. cell. comp. Physiol., 59, 223-240 (1962).
 Shimomura, O., and Johnson, F. H., Biochemistry, 8, 3991-3997 (1969).
 Kohama, Y., Shimomura, O., and Johnson, F. H., Biochemistry, 10, 4149-4152 (1971).
- (1971).
 Shimomura, O., and Johnson, F. H., Nature, 227, 1356-1357 (1970).
 Shimomura, O., Johnson, F. H., and Morise, H., Biochemistry, 13, 3278-3286 (1974).
 Cormier, M. J., Hori, K., and Anderson, J. M., Biochem. biophys. Acta, 346, 137-164 (1974).
 Morise, H., Shimomura, O., and Johnson, F. H., Biochemistry, 13, 2656-2662 (1974).
- 137-164 (1974).
 7 Morise, H., Shimomura, O., and Johnson, F. H., Diocnamics, M., Shimomura, O., and Johnson, F. H., Tetrahedron Lett., 2963-2966 (1973).
 8 Shimomura, O., and Johnson, F. H., Proc. natn. Acad. Sci. U.S.A., 72, 1546-1549 (1975).
 9 Shimomura, O., and Johnson, F. H., Proc. natn. Acad. Sci. U.S.A., 72, 1546-1549 (1975).

- ¹⁹ Similorinte, C., and Jointson, T. H., *Proc. nam. Acad. Sci. C. S.A.*, *12*, 1340–1349 (1975).
 ¹⁰ Cormier, M. J., et al., J. cell. Physiol., 81, 291–298 (1973).
 ¹¹ Inoue, S., et al., *Chem. Lett.*, 141–144 (1975).
 ¹² Ashley, C. C., and Ridgway, E. B., *Nature*, 219, 1168–1169 (1968).
 ¹³ Azzi, A., and Chance, B., Biochim. biophys. Acta, 189, 141–151 (1969).
 ¹⁴ Baker, P. F., Hodgkin, A. L., Ridgway, E. B., J. Physiol., Lond., 218, 709–755 (1971).
 ¹⁵ Johnson, F. H., and Shimomura, O., *Nature new Biol.* 237, 287–288 (1972).
 ¹⁶ Llinas, R., Blinks, J. R., and Nicholson, C., *Science*, 176, 1127–1129 (1972).
 ¹⁷ Kaminer, B., and Kimura, J., *Science*, 176, 406–407 (1972).
 ¹⁸ Stinnakre, J., and Tauc, L., *Nature new Biol.*, 242, 113–115 (1973).
 ¹⁹ Chang, J. J., Gelperin, A., and Johnson, F. H., *Brain Res.*, 77, 431–442 (1974).
 ²⁰ Hori, K., Anderson, J. M., Ward, W. W., and Cormier, M. J., *Biochemistry*, 14, 2371–2376 (1975).

Erratum

In the article "Computer simulation of protein folding" by M. Levitt and A. Warshel (Nature, 253, 694; 1975) the wrong version of Fig. 4 was printed. The correct version is reprinted below.



Fig. 4 Simulation of PTI folding from an extended starting conformation with the terminal helix ($\alpha = 180^{\circ}$ for all except 48 to 58 where $\alpha = 45^{\circ}$). No knowledge whatsoever about native PTI is used during this simulation (apart from setting the terminal helix). The conformation was thermalised at the end of each minimisation except near cycles 490 and 730 when the energy rises slightly because the minimisation was restarted after rounding the torsion angles to one degree. In the first two thermalisations, each normal mode was perturbed in the plus direction to raise the associated energy to R(n)kT/2 with T = 1,000 K. In the other three thermalisations, the perturbations were randomly in the plus and minus directions but always such as to raise the energy by kT/2 with T = 300 K. (Because the random numbers are distributed uniformly rather than exponentially, these temperatures do not correspond to the macroscopic temperature.) The 8 ribbon diagrams, which show the C to have no for from left to right to the 2 conformations of the airside points on the random corresponding the area of the airside points on the random corresponding the area of the airside points on the random corresponding the area of the airside points on the random corresponding the area of the airside points on the random corresponding the area of the airside points on the random corresponding the area of the airside points on the random corresponding the area of the airside points on the random corresponding to the random corresponding the area of the airside points on the random corresponding to the random corresponding the area of the airside points on the random corresponding the area of the airside points on the random corresponding to the random corresponding the area of the airside points on the random corresponding to the random c buted uniformity rather than exponentially, these temperatures do not correspond to the matroscopic temperature.) The shoot magnatis, which show the C^e chain path, refer from left to right to the 8 conformations at the circled points on the r.m.s. deviation curve, respectively. The last five conformations have progressively lower energies and are each a little closer to the native structure (E = -43.3, -45.7, -46.9, -46.9 and -48.9 kcalorie mol⁻¹, respectively; r.m.s. deviation = 6.08, 5.7, 5.6, 5.4 and 5.3 Å, respectively). The solid dots at the end of a minimisation indicate that a perfect minimum was reached (r.m.s. gradient less than 10^{-6} kcalorie mol⁻¹-rad⁻¹). One cycle takes about 0.6 s on an IBM 370/165 computer.