Cenozoic motion of China with respect to stable Eurasia is unlikely to exceed 500 km.

Actually, the rotation around the North Pole proposed by Lin *et al.* is only one of an infinity of rotations that can bring the China and northern Eurasia Middle Jurassic/Lower Cretaceous poles in coincidence: indeed, all Euler poles falling along the great circle that bisects the two mean poles are acceptable (Fig. 2). Another solution, implying the smallest possible rotation (13 ± 5°), has a pole lying at 16° N, 7° E (rotation pole 2 in Fig. 2). For the Chinese sites located near 40° N, 120° E, this pole implies 'only' 1,300 km of displacement with respect to northern Eurasia, with an azimuth of ~30° E (Fig. 2, double arrow labelled 2). Of course, any pole falling between the Lin *et al.*[5] Euler pole 1 and the pole that leads to the minimum displacement (pole 2) is acceptable from a palaeomagnetic (if not geological) point of view.

If one accepts a Euler pole close to pole 2 as a reasonable solution, where can the 1,300-km displacement occur? Lee *et al.*[7] point out that all available palaeomagnetic sites from the China blocks come from close to or east of the Tancheng-Lujiang (Tanlu) fault zone, which is known to have undergone major sinistral slip during the Mesozoic[11]. All the Upper Jurassic to Lower Cretaceous sites given by Lin[6] fall within two very small (100–150 km wide) areas, respectively near Hangzhou in Zhejiang province and Jinan in Shandong province (points S and N in Fig. 2). Thus, it is not obvious that available Jurassic and Cretaceous Chinese data pertain to the bulk of the NCB, west of the Tanlu fault; this part of the block (Ordos and Tarim, that is, the largest part of it) is still devoid of palaeomagnetic sites and thus is a primary goal for future sampling.

In a more detailed discussion of Cretaceous data from China and Korea, Lee *et al.*[7] point out that the remaining latitudinal discrepancy between China and Eurasia could be accounted for in at least three ways: (1) The post-Lower Cretaceous motion could have occurred between the SCB and NCB in the Qinling mountains and along the Tanlu fault. However, motions documented by geology[11,12] and a palaeomagnetism[5,6,13] would seem to have taken place earlier. (2) The motion could have occurred between the NCB and Siberia in the Central Asian fold belt. But we have already pointed out that such major belated motion was most unlikely[10]. (3) The palaeomagnetic data for Siberia (Cretaceous Eurasia) are not reliable and should be revised[7]. It is actually our feeling that extensive work on the Cretaceous APW path of Eurasia, and particularly Siberia, is urgently needed.

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LIN AND FULLER REPLY—Courtillot and Besse raise two major questions about our paper[1]: the uniqueness of our Euler pole and the offset along the Tanlu fault in eastern China.

In answer to their first question, we emphasize that our Euler pole is unique. Although a unique Euler pole cannot be obtained if it is based on only one pair of palaeopoles, it certainly can be achieved if one has several pairs of palaeopoles, or better still, two pieces of curves. Our Euler pole (86.5° N, 31.5° E) was obtained by matching two pieces of curves, the late Palaeozoic-Mesozoic apparent polar wander (APW) paths for the South China block (SCB) and for northern Eurasia, each of which consists of at least nine palaeopoles. It is on the basis of this unique Euler pole that we suggest the SCB moved 4,300 ± 1,200 km eastwards with respect to northern Eurasia.

As to the Tanlu fault in eastern China, most Chinese geologists agree that it underwent an early Cretaceous sinistral offset, but no consensus has been reached over the amount of the offset; most people suggest that it was about 200–300 km. The largest offset ever suggested[2], based on an analysis of the regional geology, is about 600 km. The 1,300-km displacement suggested by Courtillot and Besse is more than double this. A palinspastic reconstruction would place the Shandong and Liaodong peninsulas of North China in the present location of Fujian and Guangdong provinces of South China, or even in the South China Sea if we accept Courtillot and Besse's suggestion. Most Chinese geologists would find it difficult to accept such a palaeogeographic configuration.

Recent new Triassic and Jurassic palaeomagnetic results, despite the fact that they come from Guizhou and Sichuan provinces of southwestern China, several thousand kilometres away from the Tanlu fault[3,4], are consistent with our SCB APW path. This indicates that our sampling area in Zhejiang has been a coherent part of the SCB since the early Mesozoic, maybe even since the early Palaeozoic, as we argued earlier by comparing the Cambrian palaeomagnetic results from Zhejiang, Hubei and Yunnan provinces[1,5].

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Liposomal subunit vaccine against Epstein–Barr virus-induced malignant lymphoma

THE recent success of Epstein *et al.*[1] in protecting cottontop tamarins against Epstein–Barr virus-induced malignant lymphoma by using the purified virus-determined membrane antigen gp340 incorporated in liposomes, has once more highlighted the need for an effective immunological adjuvant. The antigen gp340 is poorly immunogenic but in its liposomal form elicited specific high titres of virus-neutralizing antibodies in mice[2,3]. However, in tamarins the production of titres sufficiently high to confer protection[1] was slow and required multiple (intraperitoneal) injections. Epstein *et al.*[1] refer to more recent work[4] with tamarins in which larger doses of liposomal gp340 produced rapid induction of high-titre antibodies. As discussed previously[1,5], the vaccine could be improved upon by presenting it in such a manner that a protective immune response is achieved with lesser amounts and fewer doses of gp340 and by altering the schedule of immunization. In this respect, a role for liposomes in immunopotentiation appears in the paper[1] to be somewhat less promising than it actually is.

Liposomes[6] are uniquely versatile in size, surface characteristics, lipid composition and in the ways in which they can accommodate antigens, preparations now