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Letter to the Editor

Rice kinesin O12 is identical to kinesin OsKCH1

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Since 2004, we have been conducting molecularlevel *in vitro* studies for the biochemical characterization of kinesins encoded on the rice genome. Some kinesins have previously been characterized, and their biochemical and crystallographic studies have been published (*1*–*4*). The kinesin we named as 'O12' is one of the several rice kinesins. To express kinesin O12 using an *Escherichia coli* expression system, we used a plasmid (accession number: AK065586; clone name: J013034O12) that was supplied by the National Institute of Agrobiological Science. We determined the unique enzymatic properties of kinesin O12 in 2005 and reported its biochemical characterization at meetings in 2006 (*5*, *6*) and 2007 (*7*). At that stage, O12 was recognized as a novel kinesin. We believe that we characterized the biochemical properties of the rice kinesin O12 before any other research groups. Subsequently, we published an article detailing additional biochemical studies of kinesin O12 in *The Journal of Biochemistry* in 2011 (*8*). The aim of this study was to apply the unique characteristics of rice plant kinesins to the field of bionanotechnology. For instance, we observed an interesting property that the ATPase activity of the motor domain of kinesin O12, which does not contain a calponin homology domain, is regulated by actin and may be applicable in the regulation of a molecular shuttle based on the kinesin motor protein. As mentioned so far, our series of studies on the rice kinesins have been performed independently, on the basis of our original ideas since 2004.

Moreover, some other research groups have also reported studies on rice plant kinesins. In particular, Nick and coworkers (*9*–*12*) have studied the biological functions of the rice kinesins and related plant kinesins in detail. They focused on the rice kinesin OsKCH1, which contains a calponin homology domain. They have shown the *in vivo* association of OsKCH1 with microtubules and actin microfilaments in both cycling and non-cycling cell systems. Furthermore, they have shown that OsKCH1 binds to microtubules and actin microfilaments *in vitro* and that this is a domain-dependent association. Additionally, this unique type of kinesin has been shown to oligomerize both *in vivo* and *in vitro* (*10*). The rice kinesin OsKCH1 was derived from complementary DNA (accession number: AK065586) that was the same source for the kinesin O12 prepared by us. Therefore, we surmise that kinesin O12 is identical to OsKCH1.

Finally, we mention that the sequences of the two kinesins, O12 and OsKCH1, originate from the same gene; kinesin O12 is thus identical to OsKCH1. Accordingly, the readers should now be able to link the two series of studies that have been carried out on the same rice kinesin: one being our series of biochemical studies and the other, the physiological studies conducted by Nick and coworkers.

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