Ablation of the scaffold protein JLP causes reduced fertility in male mice

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The specific and efficient activation of mitogen-activated protein kinase (MAPK) signaling modules is mediated, at least in part, by scaffold proteins. c-Jun NH_2-terminal kinase (JNK)-associated leucine zipper protein (JLP) was identified as a scaffold protein for JNK and p38 MAPK signaling modules. JLP is expressed nearly ubiquitously and is involved in intracellular signaling pathways, such as the $G_{\alpha 13}$ and Cdo-mediated pathway, in vitro. To date, however, JLP expression has not been analyzed in detail, nor are its physiological functions well understood. Here we investigated the expression of JLP in the mouse testis during development. Of the tissues examined, JLP was strongest in the testis, with the most intense staining in the elongated spermatids. Since the anti-JLP antibody used in this study can recognize both JLP and sperm-associated antigen 9 (SPAG9), a splice variant of JLP that has been studied extensively in primates, we also examined its expression in macaque testis samples. Our results indicated that in mouse and primate testis, the isoform expressed at the highest level was JLP, not SPAG9. We also investigated the function of JLP by disrupting the *Jlp* gene in mice, and found that the male homozygotes were subfertile. Taken together, these observations may suggest that JLP plays an important role in testis during development, especially in the production of functionally normal spermatozoa.

Table Fertility of *Jlp*-deficient mice

Jlp genotype		No.	No.	Mean litter
Male	Female	crossings	pregnancies (%)	sizes (±SD)
+/-	+/+, +/-	26	25 (96.2)	8.5 (±2.1)
-/-	+/+, +/-	41	10 (24.4)*	6.4 (±1.6)
+/+, +/-	-/-	12	10 (83.3)	6.9 (±1.4)

Mean litter size was calculated as the number of live pups born per number of litters. *$p < 0.01$, chi-square test.

Reference: A. Iwanaga et al. Transgenic Res. (2008) 17:1045-1058.