



# Expression patterns of the STAG gene in intact and regenerating planarians (*Dugesia japonica*)

Z.Q. Yuan, B.S. Zhao and J.Y. Zhang

Laboratory of Developmental and Evolutionary Biology,  
School of Life Sciences, Shandong University of Technology,  
Zibo, P.R. China

Corresponding author: B.S. Zhao  
E-mail: zhaobosheng@sdut.edu.cn

Genet. Mol. Res. 10 (1): 410-418 (2011)  
Received August 30, 2010  
Accepted January 8, 2011  
Published March 9, 2011  
DOI 10.4238/vol10-1gmr1042

**ABSTRACT.** We examined the spatial and temporal expression of the planarian *Dugesia japonica* STAG-related gene (DjStag), in both intact and regenerating planarians, by whole-mount *in situ* hybridization and relative quantitative real-time PCR. The first localized transcripts of DjStag were detected in the blastemas three days after amputation, in all regenerates including those from head, tail and trunk pieces. The maximum level of expression of DjStag transcripts occurred at five days after cutting. After regeneration for seven days, DjStag was weakly expressed. A similar decrease occurs regardless of the orientation of the cut. The expression pattern did not differ significantly in the different types of regeneration. Relative quantitative real-time PCR analysis of DjStag mRNA indicated that the expression of DjStag mRNA was increased after amputation compared to that in normal intact planarians, and the maximum level of expression of DjStag transcripts occurred at five days after amputation. All results suggest that DjStag, implicated in planarian

regeneration, plays a role in maintaining the ability of pluripotent stem cells to regenerate lost tissue in planarians.

**Key words:** Planarian; Regeneration; STAG; Gene expression; *In situ* hybridization