

Forkhead Genes are Key Regulators of Developmental Processes in *Aspergillus nidulans*

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In a homothallic filamentous fungus *Aspergillus nidulans*, sexual and asexual developments are largely affected by the genetic and environmental factors. To regulate the complex subsets of genes involved in the developmental processes accurately, tight regulations of transcription factors are required. The forkhead type transcription factors are the class of regulators that function in a broad spectrum of cellular and developmental processes in many species from yeast to human. Here, we identified the *fkhA* and *fkhB* genes that encode a conserved forkhead transcription factors. The *fkhA* deletion resulted in the complete loss of fruiting body formation under all conditions favoring sexual development, suggesting that the *fkhA* gene is required for sexual development in *A. nidulans*. Overexpression of *fkhA* resulted in enhanced formation of fruiting bodies under induction condition not only in the normal condition but also in the condition of presence of 0.6 M KCl, which strongly inhibits sexual development. To know the function of the *fkhB* gene, we also generated *fkhB* knock-out strain in *A. nidulans*. Deletion of *fkhB* resulted in abnormal conidiophore formation under standard conditions and delayed sexual development process, suggesting that the *fkhB* gene plays an important role in conidiophore morphogenesis. Taken together, these results suggest that the *fkhA* gene is necessary and sufficient for regulating sexual development and the *fkhB* gene is a transcription factor related in asexual developmental process in *A. nidulans*.