

ACTIVATION OF *ECL1* PROMOTES FLOWERING BY UPREGULATING *FT* IN ARABIDOPSISSeung Kwan Yoo¹, Jong Seob Lee², and Ji Hoon Ahn¹

¹ Plant Signaling Network Research Center, School of Life Sciences and Biotechnology, Korea University, Seoul, 136-701, South Korea;

² School of Biological Sciences, Seoul National University, Seoul, 151-742, South Korea

ec11-1D (*Early flowering and Curly Leaves1-1D*) was isolated from an activation tagging screen (Weigel et al., *Plant Physiology* 122: 1003 [2000]) that showed early flowering phenotype and additional curled leaf morphology. *ec11-1D* was not responsive to vernalization and GA treatment. Furthermore, expression levels of the genes within the autonomous and GA pathways are not altered in *ec11-1D*, suggesting that *ECL1* acts in the photoperiod pathway. Expression studies in *ec11-1D* showed that activation of *ECL1* caused upregulation of *FLOWERING LOCUS T* (*FT*). However, loss of *FT* function partially suppressed the early flowering of *ec11-1D*, suggesting, at least in part, a redundant pathway downstream of *ECL1*. Furthermore, *ec11-1D* shows altered leaf movement, possibly due to arrhythmic expression of *TIMING OF CAB EXPRESSION1* (*TOC1*). RT-PCR analysis showed that the curly leaf phenotype was resulted from ectopic expression of *AGAMOUS* (*AG*) in leaves, as shown in *clf* mutant (Uchimiya et al., *Planta* 206:2 [1998]). A microarray using the Affymetrix GeneChip showed the genomic response by activation of *ECL1*, including upregulation of floral promoters and downregulation of floral repressors, such as *SHORT VEGETATIVE PHASE PROTEIN* (*SVP*) and *MADS AFFECTING FLOWER1* (*MAF1*). Taken together, our data suggest that *ECL1* is a floral promoter that exerts its effect on *FT* in determining flowering time.