

P027 The *FANCD2* homologue of *Arabidopsis* is essential for meiosis and DNA repair

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Fanconi anemia (FA) is an autosomal recessive syndrome characterised by cellular sensitivity to DNA cross-linking agents such as Mitomycin C (MMC). Several FA proteins have been implicated to function in a network together with BRCA1 and BRCA2. Upon DNA damage, a nuclear complex consisting of at least 6 FA related proteins is activated and mono-ubiquitinates the FA related protein D2 (*FANCD2*), which is thereby targeted to chromatin-associated foci where it co-localizes with BRCA1, BRCA2, RAD51 and the MRE11/RAD50/NBS1 complex. Moreover *FANCD2* is phosphorylated by ATM and ATR. Here we present the first characterisation of a *FANCD2* homologue in plants. A putative *FANCD2* homologue has been identified in the genome of *Arabidopsis* and named *AtFANCD2*. Expression analysis by RT-PCR revealed its ubiquitous expression. *Atfancd2/ku80* double mutants exhibit severe sensitivity against MMC, whereas the single mutants are only slightly affected. This indicates that *AtFANCD2* acts parallel to *KU80* in repairing DNA, but is not involved in the non-homologous-end-joining repair pathway. Furthermore, *AtFANCD2*'s role in meiotic progression is elucidated by the fact that the partial sterility of *atm* mutants is aggravated in *Atfancd2/atm* double mutants.