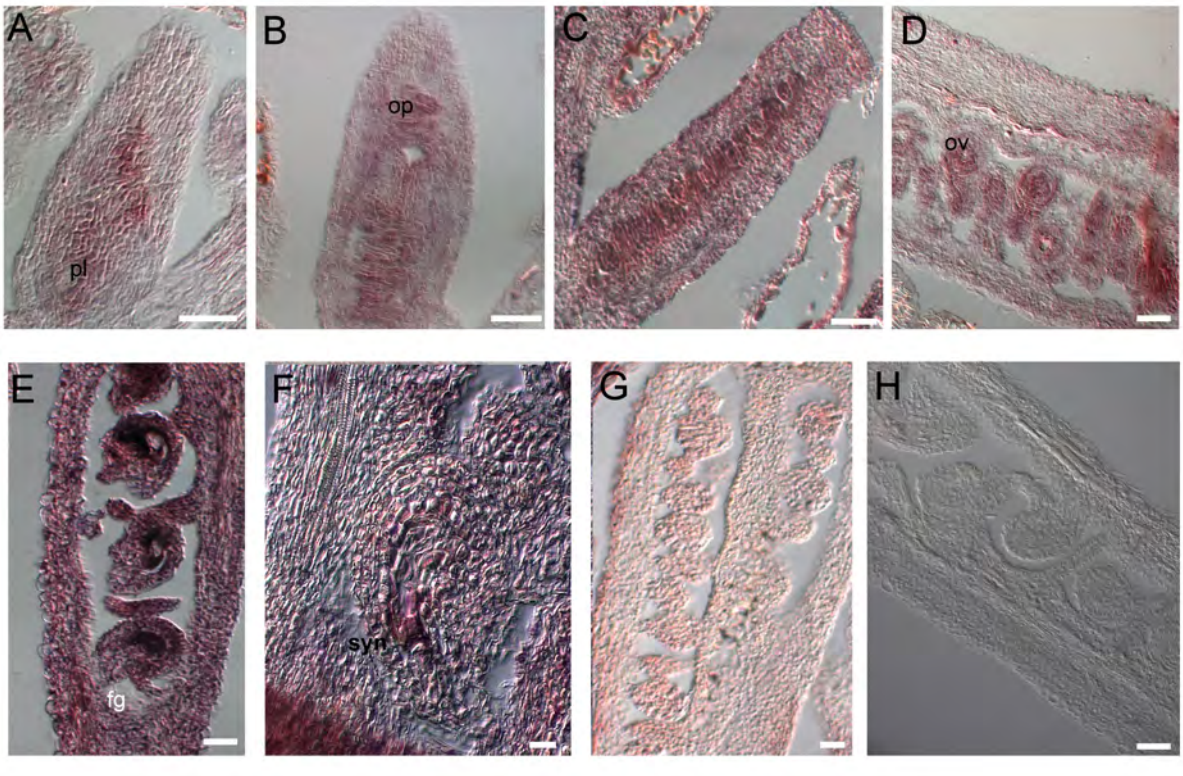
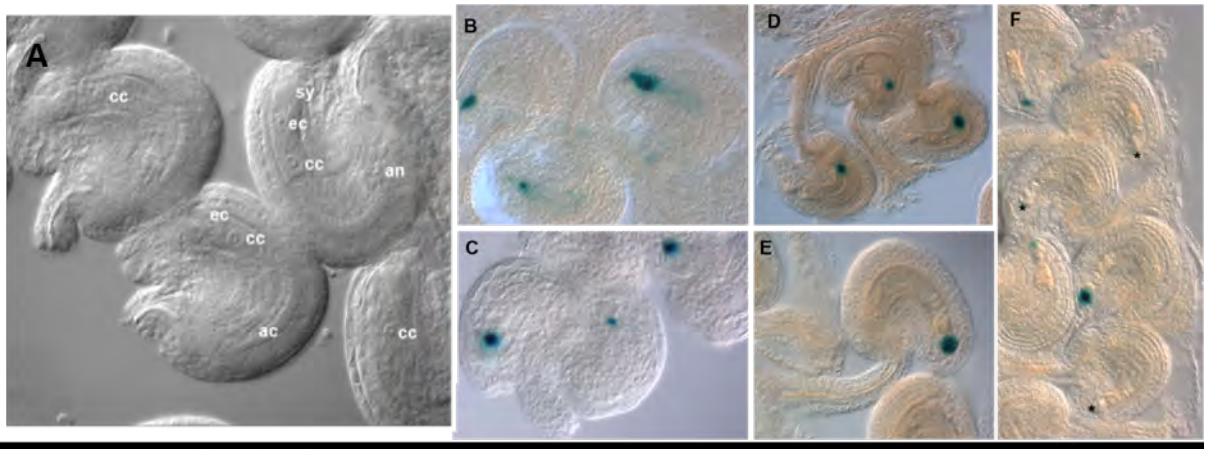
Table S1. Correlation analysis of STK vs all genome, p(LIN) and p(LOG). Pearson coef. > 0.6 . Different colours were used to identify the best correlators - genes that present a high coefficient Lin or Log- with STK (table S1) and VDD (table S2). Interestingly 10 out of the best 15 correlators of STK (67%) are among the best 20 correlators of VDD. Table can be accessed on Figshare at https://dx.doi.org/10.6084/m9.figshare.3464054.v2.

Table S2. Correlation analysis of VDD vs all genome, p(LIN) and p(LOG). Pearson coef. > 0.6. Table can be accessed on Figshare at https://dx.doi.org/10.6084/m9.figshare.3464057.v2.



Supplemental Figure 1- *VAL* in situ hybridization

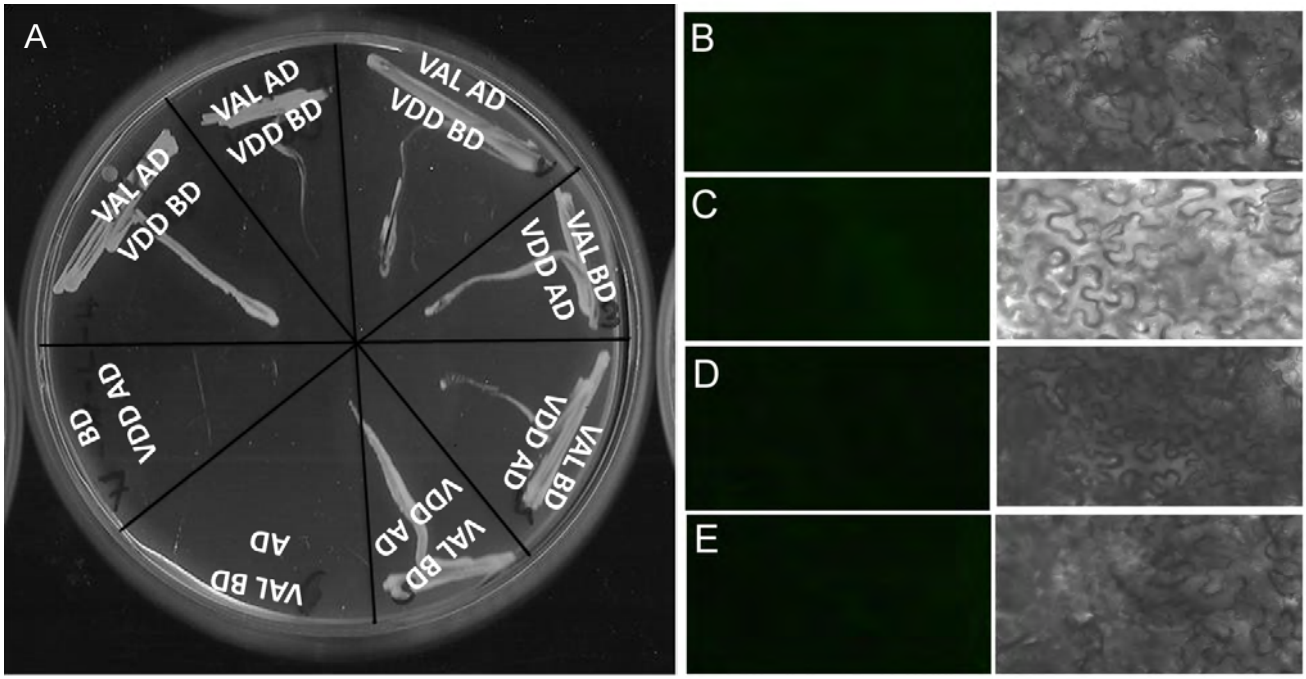
(A-F) *In situ* hybridization experiments performed using wild-type plants: (A-C) *VAL* gene is expressed in the early stages of ovule development; (D) *VAL* mRNA is detectable as a strong signal during later stages of ovule formation; (E) In the mature ovule *VAL* expression is highly detectable inside the embryo sac; (F) mature ovule detail, strong VAL expression inside the embryo sac more precisely in the synergid cells zone (syn). (G) *In situ* hybridization experiment performed in *stk* single mutant, the *VAL* signal is reduced. (H) Experiment performed in *stkshp1shp2* triple mutant background, almost any signal was detected. pl-placenta; op-ovule primordia; ov-ovule; fg-female gametophyte. Scale bars: 50µm.



	Genotype	Ovules with signal (%)	Ovules without signal (%)	Unfertilized ovules (%)
Antipodal cells (F2)	wild-type	97%	3%	3%
	VAL_RNAi	92%	8%	30%
Egg cell (F2)	wild-type	95%	5%	4%
	VAL_RNAi	95%	5%	27%
Central cell (F2)	wild-type	98%	2%	2%
	VAL_RNAi	95%	5%	37%
Synergid cells (F2)	wild-type	95% (n=267)	5% (n=16)	2%
	VAL_RNAi	62,5%(n=500)	37,5% (n=300)	37%

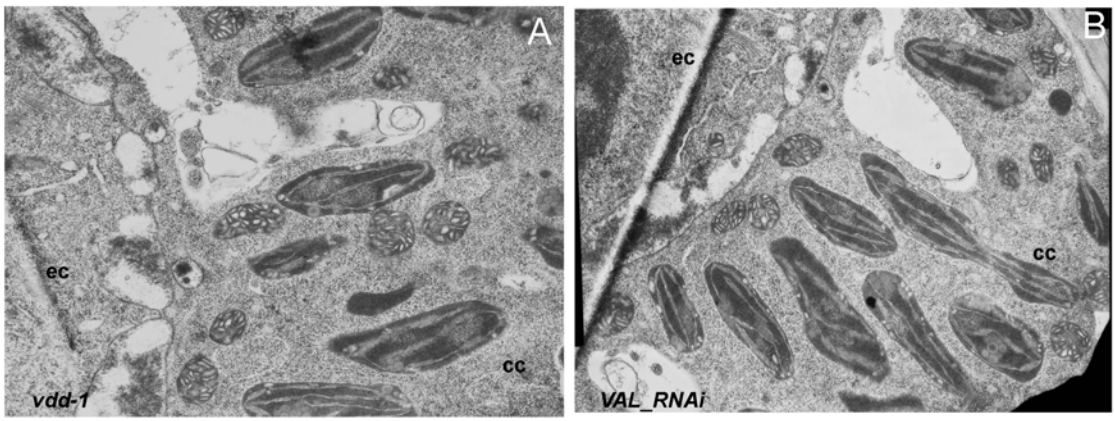
Supplemental Figure 2- Embryo sac cells markers in *VAL_RNAi*

(A) Differential interference contrast microscopy (DIC) analysis of *VAL_RNAi* ovules. The ovules are morphologically indistinguishable from the wild type ones, the embryo sac is composed by seven cells. (B-E) Embryo sac cell markers expression in *VAL_RNAi:* (B) egg cell; (C) central central; (D) antypodals and (E-F) synergid cells. The bottom table presents all the percentages and number of ovules analysed. sy- synergids; ec-egg cell; cc- central cell; an- antipodal cells.



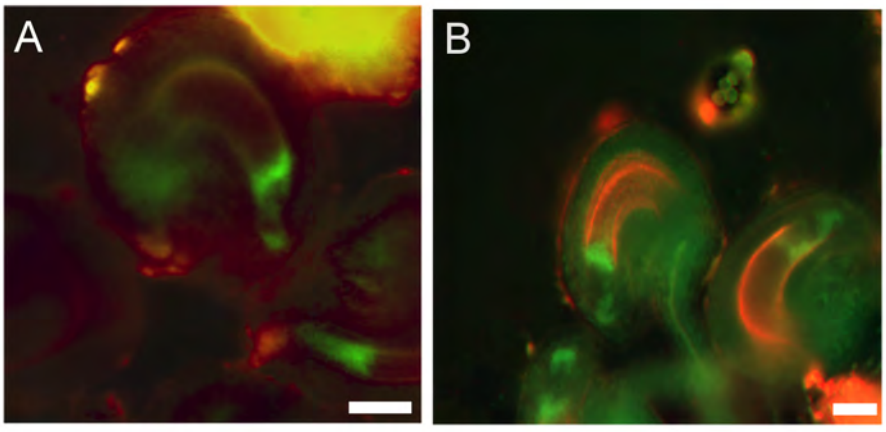
Supplemental Figure 3- Yeast 2 Hybrid (Y2H) experiment and negative BiFC controls

(A) Y2H assay, positive interactions were found for VDD AD versus VAL BD, and vice versa, the colonies growth in -W-L-H + 5mM 3AT selective medium. As negative controls we tested VAL BD vector for empty AD and VDD AD for empty BD vector. (B-E) BIFC negative controls: (B) VDD_YFN plus empty YFC vector; (C) VDD_YFC plus empty YFN vector; (D) VAL_YFN plus empty YFC vector; (E) VAL_YFC plus empty YFN vector.



Supplemental Figure 4- TEM imaging of intact egg and central cells in *vdd-1* and *VAL_RNAi*

Those ovules in which the female gametophyte remained unfertilized, regularly featured intact egg and central cells: (A) *vdd-1*; (B) *VAL_RNAi* lines. ec-egg cell, cc- central cell.



Supplemental Figure 5- *FER_GFP* in *vdd_1* and *VAL_RNAi*

(A) *FER_GFP* in *vdd-1*, *FER* protein localization in the synergids region (n=50 ovules); (B) *FER_GFP* in *VAL_RNAi* background (n=50 ovules). scale bars: 50 µm