Supplementary materials

Table S1. Analysis of deviance table of maturation efficiency by cell lines of sugi (Japanese cedar, *C. japonica*). Residual deviance was estimated by generalized linear models using the cell line as the explanatory variable.

Model	D.f.	Deviance	Residual d.f.	Residual deviance	AIC	Deviance explained
Null			94	16925.9	17579.6	
+ Cell line	18	10702	76	6224.1	6913.8	63.2%

Table S2. Analysis of deviance table of germination rate by cell lines of sugi (Japanese cedar, *C. japonica*). The number of germinants per number of installed cotyledonary embryos was applied to the GLMs with a binomial distribution.

Model	D.f.	Deviance	Residual d.f.	Residual deviance	AIC	Deviance explained
Null			132	822.6	1150.0	
+ Cell line	18	385.0	114	437.6	801.0	46.8%

Table S3. Analysis of deviance table of efficiency from germination to plantlet conversion of sugi (Japanese cedar, *C. japonica*). The number of converted plantlets per number of germinants was applied to the GLMs with a binomial distribution.

Model.	D.f.	Deviance	Residual d.f.	Residual deviance	AIC	Deviance explained
Null			132	198.1	361.6	
+ Cell line	18	37.0	114	161.2	360.7	18.7%

Table S4. Analysis of deviance table for somatic plantlet growth of sugi (Japanese cedar, *C. japonica*) in height (HG), diameter (DG), developed number of first-order branches (DNB), developed number of roots (DNR), maximum length of first-order branches (MLB), and maximum length of roots (MLR).

Trait	Model	D.f.	Deviance	Residual d.f.	Residual deviance	AIC	Deviance explained
HG	Null			170	400.0	634.6	
	+ Cell line	18	133.0	152	267.0	601.5	33.2%
DG	Null			170	7.2	-53.4	
	+ Cell line	18	2.4	152	4.8	-87.2	33.5%
DNB	Null			170	175.1	660.4	
	+ Cell line	18	33.6	152	141.5	662.8	19.2%
DNR	Null			170	81.4	662.6	
	+ Cell line	18	20.7	152	60.8	677.9	25.4%
MLB	Null			164	420.8	626.7	
	+ Cell line	18	105.1	146	315.8	615.3	25.0%
MLR	Null			170	7116.3	1126.8	
	+ Cell line	18	2826	152	4290.3	1076.3	39.7%
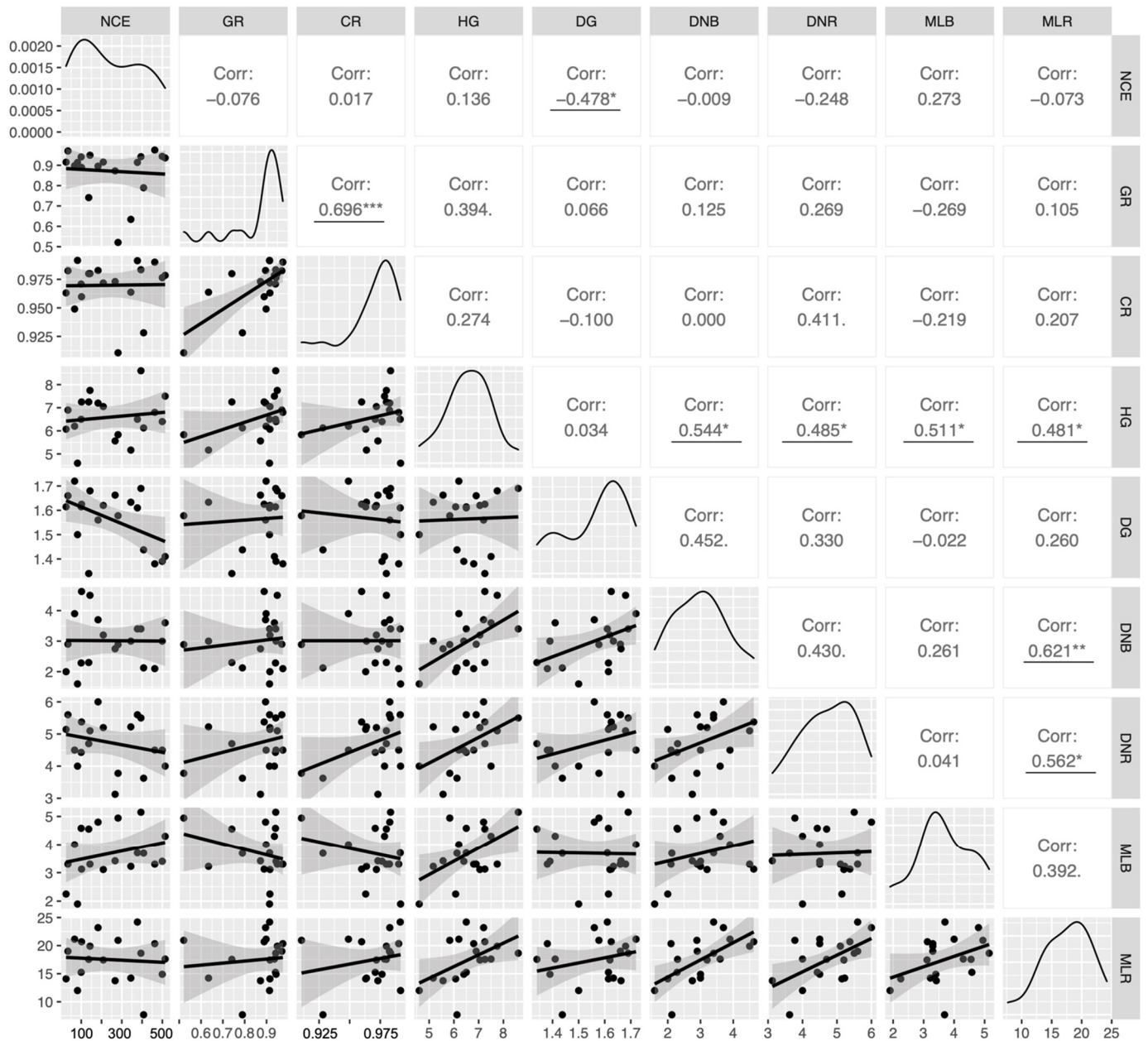
Figure S1. Pairwise correlations among mean value of the number of matured cotyledonary embryos, average rates of germination and plantlet conversion, and growth traits of 19 somatic sugi lines. NCE: number of matured cotyledonary embryos, GR: germination rate, CR: plantlet conversion rate, HG: height growth, DG: diameter growth, DNB: developed number of first-order branches, DNR: developed number of roots, MLB: maximum length of first-order branches, and MLR: maximum length of roots. Spearman's coefficient values and their significances are presented in the upper right.