Two new pea mutations simultaneously affecting tendril and leaflet shape and plant internode length.

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During the screening of the EMS-treated pea line SGE, M_2 progeny, the two new mutants SGE–0284 and SGE–1003 were isolated, characterized with the effect on tendrils and leaflet shape and also the internode length. These mutants are shown at Fig. 1.

Fig. 1. SGE-0284 and SGE-1003 plants: A – normal SGE plant; B – SGE-0284 mutant; C – SGE-1003 mutant. Note: the internode length of the mutants is slightly (SGE-0284) and strictly (SGE-1003) diminished compared to the parental normal line, SGE.

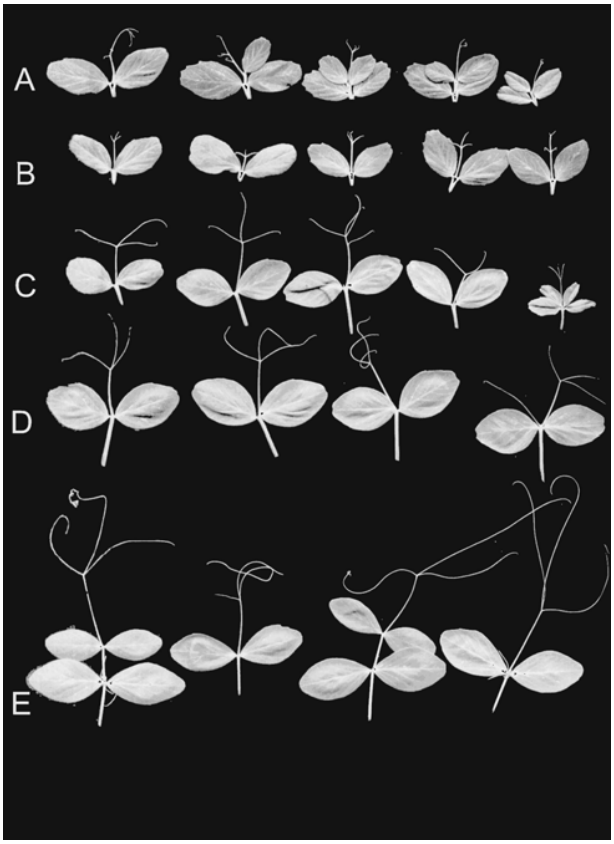

*Fig 2. Leaves of the SGE-1003 mutant (*brtl*) —A, B; leaves of the 0284 mutant (*htl*) —C, D; and the leaves of the normal SGE parental plant — E.*

The leaflets of the SGE–0284 and SGE–1003 mutants are also altered in shape: both of them have blunt tips, sometimes with a slight notch at the edge of a tip. Moreover, the SGE–1003 mutant has slightly raised veins on the leaflets, and the leaflets are somewhat *insecatus*. Fig. 2 presents the view of the mutants leaves.

However, the most striking changes in phenotype of the mutants plants concerned the shape of the tendrils. SGE–0284 possesses the deformed tendril tip—it looks like a hook or a chrochet needle (Fig. 3C), so I propose the symbol *htl* (hooked tendril) for this mutation. SGE–1003 mutant has an incrassate tendril base with the tendrils being strongly reduced in length. Lateral tendrils are incrassate, strongly hooked, and

declinated (Fig.3A). To the naked eye the tendrils look singed, suggesting analogy with the *Bristle* gene in Drosophila. Thus, I propose *Bristle* as the name for this pea mutation with the gene symbol *brtl* — *Bristle tendrils.*

In F_2 progeny derived from crosses between the mutant line and line SGE, a segegation ratio not signifantly different from 3:1 was observed for both mutations, indicating a recessive monogenic basis for each mutation (Table 1).

Only a few genes affecting tendril shape have been described in *Pisum sativum* (1,2). None of these has the same phenotype as SGE–0284 or SGE–1003 mutant. The mutation *bulf* (3), is similar in that it affects only leaflets and tendrils. However, *bulf* produces necrotic areas on leaflet and tendril tips, while the described SGE mutants do not cause necrosis at all.

The allelic test between lines SGE–0284 and SGE–1003 has shown that the mutations affect different loci – all five of the F_1 hybrid plants examined were of the wild (normal) phenotype, as the parental pea line SGE.

Hence I must conclude that all phenotypic effects visible in the mutants SGE-0284 and SGE-1003 are produced by the action of one gene—*htl* in the case of SGE–0284 and *brtl* in the case of SGE–1003.

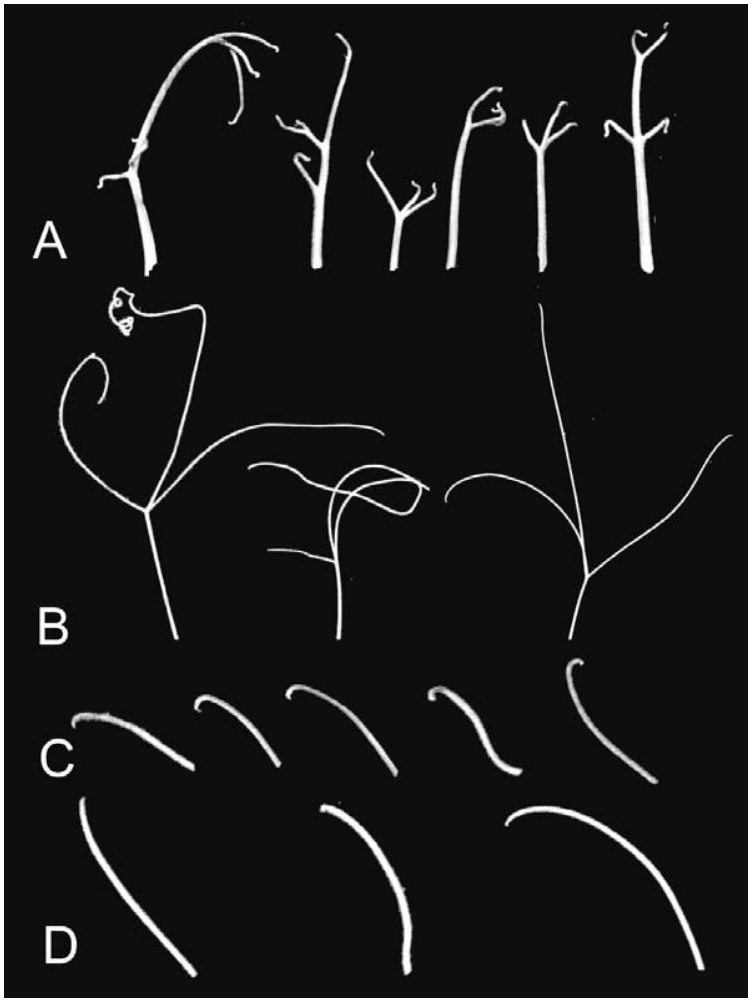

Fig. 3. Tendrils of the SGE-1003 mutant — A; Tendrils of the normal parental line SGE — B; Tendril tips of the SGE-0284 mutant —C; tendril tips of the normal parental line SGE.

Table 1. Segregation in F_2 progenies after the crosses between mutant lines SGE-0284 (*htl*) and SGE-1003 (*brtl*) with the parental line SGE.

Cross	Parental line phenotype(normal)	Mutant phenotype	$\chi^2_{3:1}$	probability
SGE-0284 X SGE	86	22 (*htl*)	1.2346	$0.2 < p < 0.3^*$
SGE-1003 X SGE	103	28 (*brtl*)	0.9186	$0.3 < p < 0.4^*$

1. Blixt S. 1972. Agri Hort. Genetica 30: 1–293.
2. Pisum Genetics Association Gene List. Pgene. http://www.jic.ac.uk/GERMPLAS/pisum/Zgc4g.htm
3. Sharma B. 1973. PNL 5: 46.