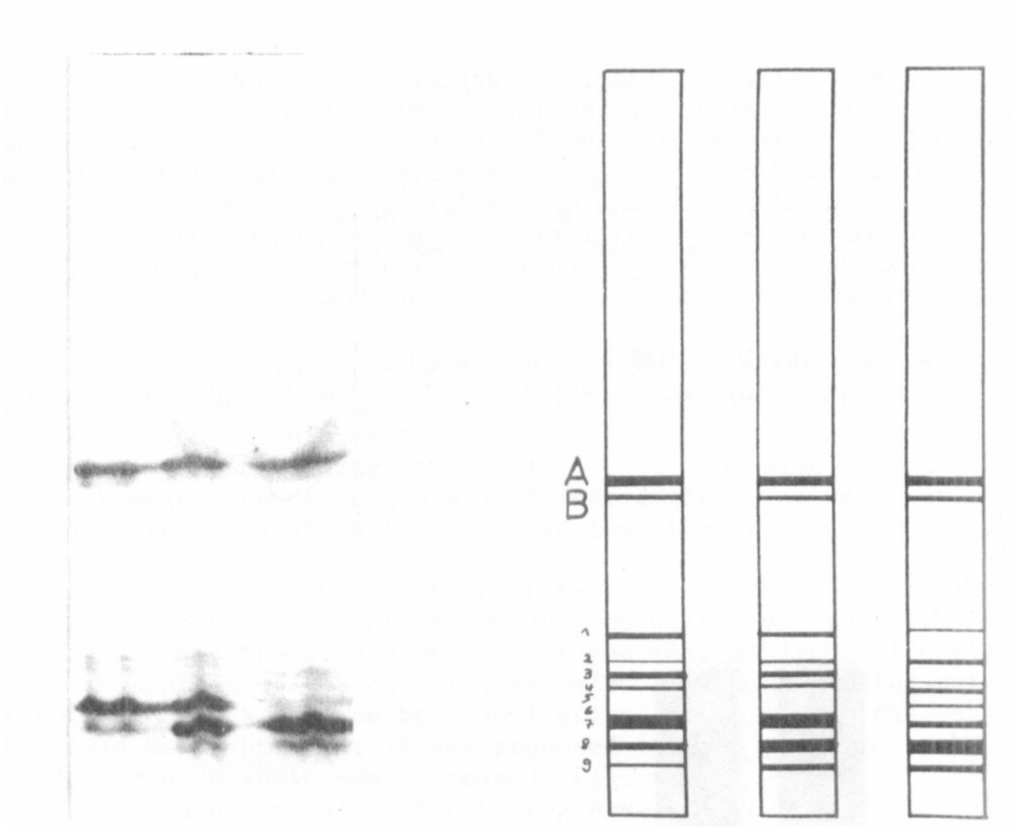


a b

**Fig. 3a. Electrophoretic banding pattern of leucine-amino-peptidase.**
**Left: DGV Right: Mutant 157 Middle: DGV x 157**

**3b. Schematical drawing of the electrophoretic banding pattern of leucine-amino-peptidase.**

## LEUCINE AMINOPEPTIDASE (LAP-2) VARIABILITY IN THE GENUS PISUM

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Two major aminopeptidase (LAP) activity zones detectable after electrophoresis can be observed in many tissues and developmental stages of Pisum sativum. The two forms were described for the firs) time by Scandalios and Espiritu (6) as AmP-1 and AmP-2. Later investigations I, Scandalios and Campeau (7) showed that the faster migrating polymorphic locus LAP-1 is composed of two alleles AmP-lF and AmP-lS. Appropriate crosses made between LAP-1 pea lines differing with respect to the mobility of the two LAP-1 forms demonstrated that the LAP-1 locus in Pisum is controlled by two alleles exhibiting codominant expression.

Other investigators (1) confirmed these results and Przybylska appears to have detected a third allele at this locus in P. humile from Jerusalem, described by her as a phenotype "c". A tight linkage between the locus LAP-1 and the gene B on chromosome 3 was described for the first time by Almgard and Ohland (1). Only two alleles at LAP-1 locus have been detected in our investigations. We called them alleles A1 and A2 (Fig. I) but they are not the subject of our interest in this paper.

The LAP-2 locus was mentioned by Scandalios and Espiritu (6) as monomorphic. Polymorphism at this locus was described by Przybylska et al. (3, 4) as well as by Gottschalk and Muller (2), who dealt with seed protein analysis, and recently by Weeden and Marx (10).

Ninety-five pea lines of the Wiatrowo Pea Gene Bank (8) belonging to different Pisum taxa (P. sativum s.l. - 34 lines; P. abyssinicum - 8 lines; P. e1atius - 8 lines; P. fulvum - 3 lines; P. syriacum - 8 lines; and 34 lines of the mutation group) were analyzed in this study. All plants were cultivated in uniform greenhouse conditions for four weeks. Crude extract from one leaf (usually the third) was absorbed onto paper wicks (Beckman No. 319329) and electrophoresis was conducted in 9% starch gel (SERVA, W. Germany) in the continuous lithium-boric buffer system (5). Afterwards, nine lines representing different phenotypes were selected for further studies (Table 1).

So tar our investigations have revealed four LAP-2 variants, designated a1 to a4 in decreasing order of their electrophoretic mobility. A large number of individuals examined within particular lines has demonstrated that each line is monomorphic. As can be seen from Fig. 1, one banded homozygous genotypes as well as two banded "heterozygous" ones are easily recognized. Moreover, some lines retain their "heterozygosity" for a tew progenies. The interesting nature of this variability encouraged us to carry out more extensive investigations, the results of which will be published soon.

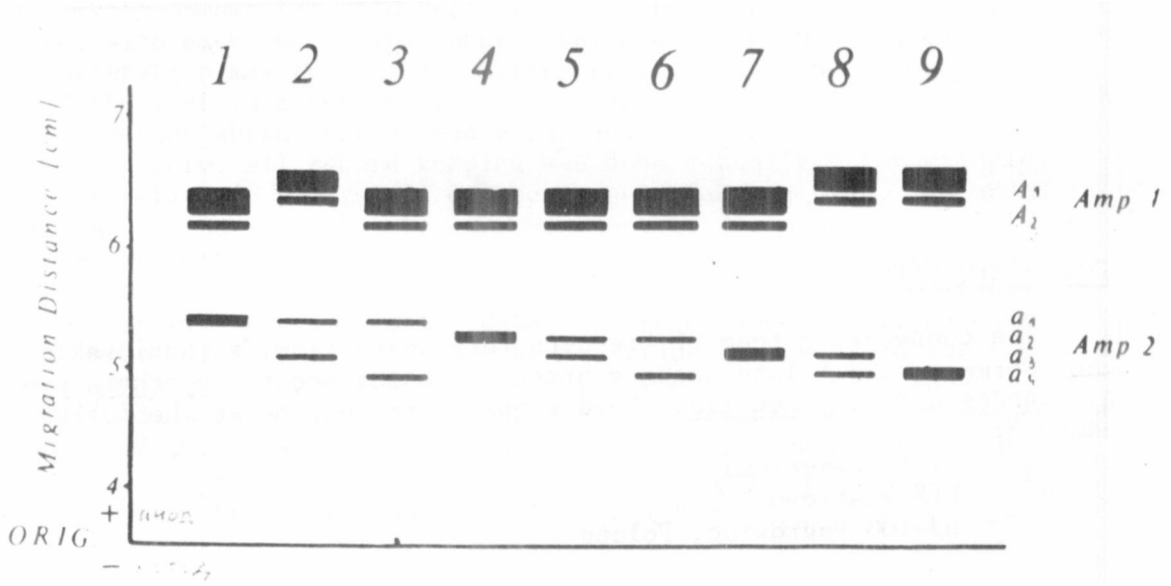


Fig. 1. Diagram of banding patterns in the Amp-1 and Amp-2 Pisum forms: 1-Wt 18, 1-Wt301, 3-Wt 4390, 4-Wt 403, 5-Wt 113, 6-Wt 504, 7-Wt 4355, 8-Wt 4348, 9-Wt 4343.

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3. Przybylska, J., H. Parzysz, and S. Blixt. 1981. PNL 13:42-43.
4. Przybylska, J., S. Blixt, H. Parzysz, and Z. Zimniak-Przybylska. 1982. Genetica Polonica 23:103-121.
5. Scandalios, J. G. 1969. Biochem. Genet. 4:279-310.
6. Scandalios, J. G. and L. G. Espiritu. 1969. Molec. Gen. Genet. 105:101-112.
7. Scandalios, I. G. and M. A. Campeau. 1972. Mutation Res. 14:397-403.
8. Swiecicki, W. K., W. Swiecicki, and S. Czerwinska. 1981. The catalogue of Pisum lines. PWRil. Poznan.
9. Weeden, N. F. and G. A. Marx. 1983. PNL 15:54.
10. Weeden, N. F. and G. A. Marx. 1984. J. Hered. 75:365-370.

Table 1. The list of lines investigated.

| Taxon | Line number | Origin | Donor |
|---|---|---|---|
| P. abyssinicum A. Br. | WT 18 | Palestine | Gatersleben |
| P. fulvum Sibth et Sm | WT 301 | - | Melbourne |
| P. sativum L. ssp.sativum | WT 4390 | Australia | Melbourne |
| P. syriacum (Berger) Lehm. | WT 403 | Palestine | VIR |
| P. elatius (MB) Stev. | WT 113 | - | Saskatchewan |
| P. sativum L.s.l. ssp. asiaticum | WT 504 | - | Sofia, IGBP |
| P. sativum L. ssp. sativum | WT 4355 | New Zealand | Christchurch |
| P. sativum L. ssp. sativum | WT 4348 | Abyssinia | Beltsville |
| | WT 4343 | | |

## STOCKS REQUESTED

The cooperating team of breeders (dry peas) from Czechoslovakia, East Germany, and Poland seeks sources of resistance to Ascochyta pisi, A. pinodes and A. pinodella. Seed samples are welcome at the following address:

W. K. Swiecicki
PES Wiatrowo
62-100 Wagrowiec, Poland