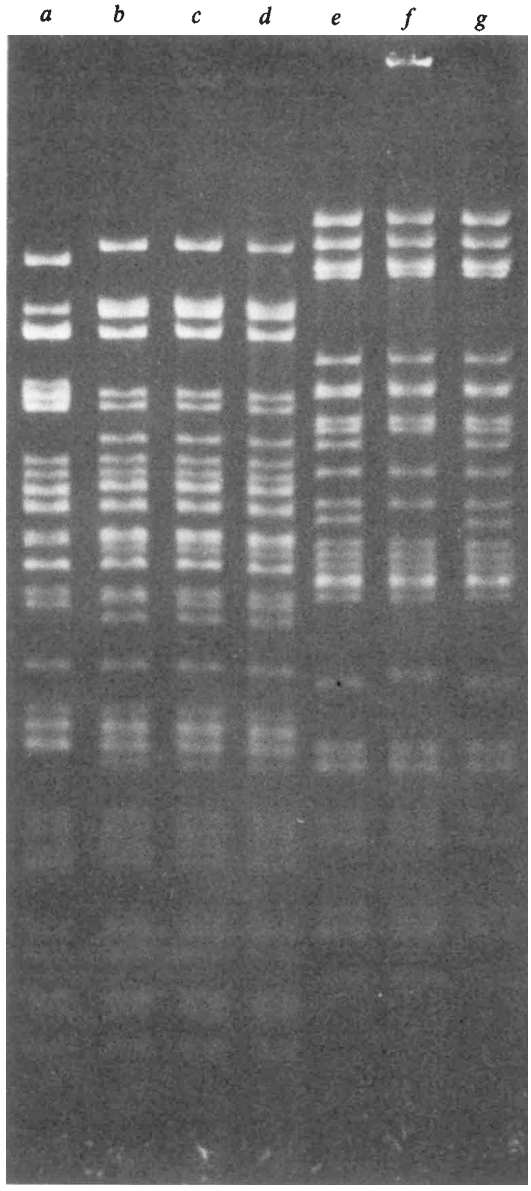

Fig. 2 *Bst*I cleavage patterns of isolated plasmids. Plasmid (0.5 μg) isolated by the Currier–Nester procedure[24] was digested with *Bst*I at 37 °C in a buffer consisting of 100 mM Tris-HCl (*p*H 7.6), 6 mm $MgCl_2$ and 100 mM NaCl. The products were separated by electrophoresis through a 0.7% agarose gel as previously described[7]. The restriction bands were visualised as in Fig. 1. Plasmid was isolated from the following strains: *a*, Ag57Tr; *b*, Ag63Tr; *c*, Ag158Tr; *d*, Ag162Tr; *e*, A277; *f*, A6; *g*, 15955.

slowly developing galls on *Nicotiana tabacum* c.v. Turkish, while the transformants formed no galls at all. Ag63Tr did form very small galls on *Nicotiana tabacum* c.v. xanthi. The data also show that although A277 has a wide host range, it is not virulent on grapevine. This inability to induce galls on grapevine must be a function of the Ti plasmid and not the chromosomal DNA as all the limited host range transformants formed large active galls on grapevine. It is clear from these data that the major determinant of host range for the strains tested is plasmid coded. The results obtained with tobacco suggest that chromosomal DNA, or possibly the other plasmids harboured by Ag57 and Ag63 might modulate host range to a limited extent.

How plasmid genes determine host range is not known. Apparently, effective binding of agrobacteria to plant cells is a prerequisite to tumour formation[17,18]. *A. tumefaciens* strains containing Ti plasmids bind more effectively to tobacco and carrot cells than do strains that do not harbour Ti plasmids[19,20]. These data suggest that it is the Ti plasmid that enables *Agrobacterium* to bind to plant cells. It is possible that the Ti plasmids from the limited and wide host range isolates allow *Agrobacterium* to bind to cells of different plant species. An analogous system for enteropathogenic *Escherichia coli* has been shown to exist. Plasmid sequences code for surface antigens that allow the bacteria to bind to animal cells; different antigens allow binding to cells from different animal species[21]. Without binding, *E. coli* strains that are able to produce enterotoxin are not pathogenic[22].

An additional ancillary conclusion that may be drawn from these data is that all octopine Ti plasmids do not form a homogeneous group as previously thought[16]. Current studies in our laboratories are aimed at determining the extent to which these and other limited host range octopine Ti plasmids differ from their wide host range counterparts.

Since submission of this letter we have transferred a wide host range Ti plasmid into strain Ag63. The transconjugant assumes the wide host range of the donor strain (V. Knauf and A. Montoya, unpublished observations). Our data on the importance of the plasmid in determining host range agree with the conclusions of Loper and Kado[23].

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Erratum

In the News Feature 'Recombinant DNA: have recent experiments assessed all the risks?', *Nature* **282**, 773, 1979, column 3 lines 5–7 on page 773 should read ';intact recombinant λ or plasmid DNAs with single polyoma inserts gave variously 0, 6 and 9% tumorigenicity'. (Not 0.6 and 9%.)