

**UNIVERSITA' DEGLI STUDI DI PARMA**  
FACOLTA' DI SCIENZE MATEMATICHE, FISICHE E NATURALI  
CORSO DI LAUREA IN BIOTECNOLOGIE

**INTEGRONI DI CLASSE I E RESISTENZE AD  
ANTIBIOTICI IN STIPITI DI *Aeromonas sp.***

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## ABSTRACT:

Integrans are genetic elements composed of a gene encoding an integrase and an integration site (*attI*) at which gene cassettes (mainly resistance genes) can be integrated by site-specific recombination. A class I integran is basically structured in two conserved sequences, 5'CS and 3'CS, and a variable part (gene cassettes). The integrase is encoded in the 5'CS in the *intI* gene. In the 3'CS are coded other resistance determinants as *qacEΔ1* that gives resistance to quaternary ammonium compounds, and *sulI* for sulfonamide antibiotics.

Spreading and maintenance of these structures can be influenced by the origin of the strains and/or the selective pressure generated by the environment. Different factors can be implicated in this selection, like residues of antibiotics in water. We therefore investigated the relationship between integrans, resistance profiles and origin of the strains.

The presence of class I integrans was investigated by PCR in 55 *Aeromonas* strains. The *intI* gene was found in 24 out of 55 strains, whereas the entire structure was found only in 14 isolates. Their gene cassettes were characterised by DNA sequencing. Bioinformatic analysis of sequences let us identify completely 4 different integrans. One of these had a particular structure containing a fragment of the *tn5393d* transposon. Others had conventional integran structures with different resistance determinants.

Generally, any relation was found between resistance profiles and gene cassettes coded in integrans. On the contrary, a link existed between environment and resistances: the most resistant strains were isolated from the most antibiotic contaminated waters.