

## GENE GUN = BIOLISTIC

A method (biological ballistics) of transfecting cells by bombarding them with microprojectiles coated with DNA.

**How the Gene Gun Works:** The gene gun is part of a method called the biolistic (also known as bioballistic) method, and under certain conditions, DNA (or RNA) become “sticky,” adhering to biologically inert particles such as metal atoms (usually tungsten or gold). By accelerating this DNA-particle complex in a partial vacuum and placing the target tissue within the acceleration path, DNA is effectively introduced ([Gan, 1989](#)). Uncoated metal particles could also be shot through a solution containing DNA surrounding the cell thus picking up the genetic material and proceeding into the living cell. A perforated plate stops the shell cartridge but allows the slivers of metal to pass through and into the living cells on the other side. The cells that take up the desired DNA, identified through the use of a marker gene (in plants the use of GUS is most common), are then cultured to replicate the gene and possibly cloned. The biolistic method is most useful for inserting genes into plant cells such as pesticide or herbicide resistance. Different methods have been used to accelerate the particles: these include pneumatic devices (**what we have in the CIG**); instruments utilizing a mechanical impulse or macroprojectile; centripetal, magnetic or electrostatic forces; spray or vaccination guns; and apparatus based on acceleration by shock wave, such as electric discharge.

([Christou and McCabe, 1992](#)).

**Location LAB 2022**

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