



**FACULTY OF AGRICULTURE SCIENCES AND
ALLIED INDUSTRIES**

(Principles of Biotechnology)

For

M.Sc. Ag (GPB)



RAMA
UNIVERSITY

www.ramauniversity.ac.in

Course Instructor

Dr Shiv Prakash Shrivastav

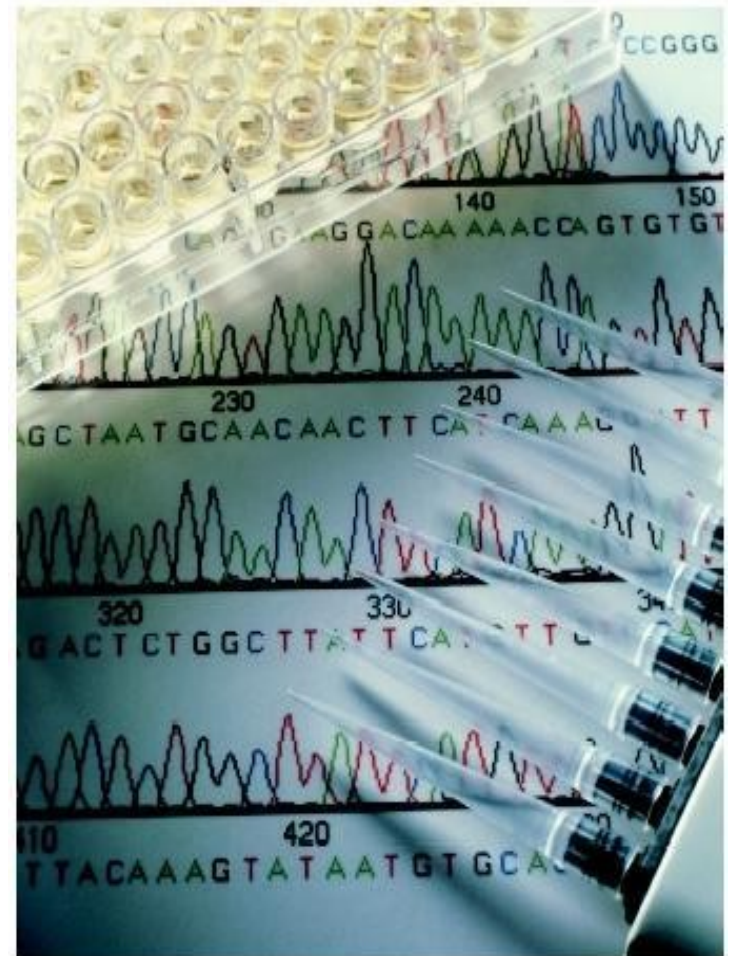
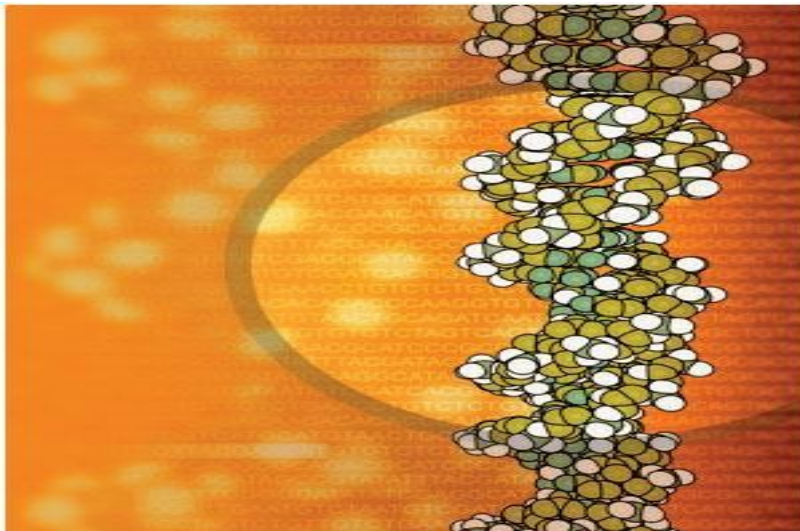
FASAI(Genetics and Plant Breeding)

Rama University, Kanpur

Applications of Gene Cloning



Genome Sequencing and studying Human genes



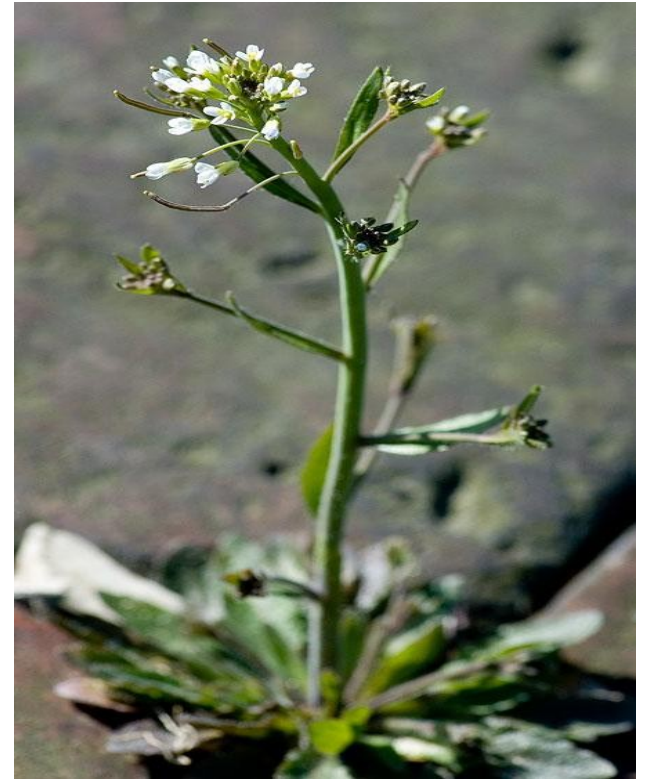
Golden Rice

Invent the Future

Citrus fruits, green peppers, strawberries, tomatoes, broccoli and sweet and white potatoes are all excellent food sources of vitamin C (ascorbic acid)

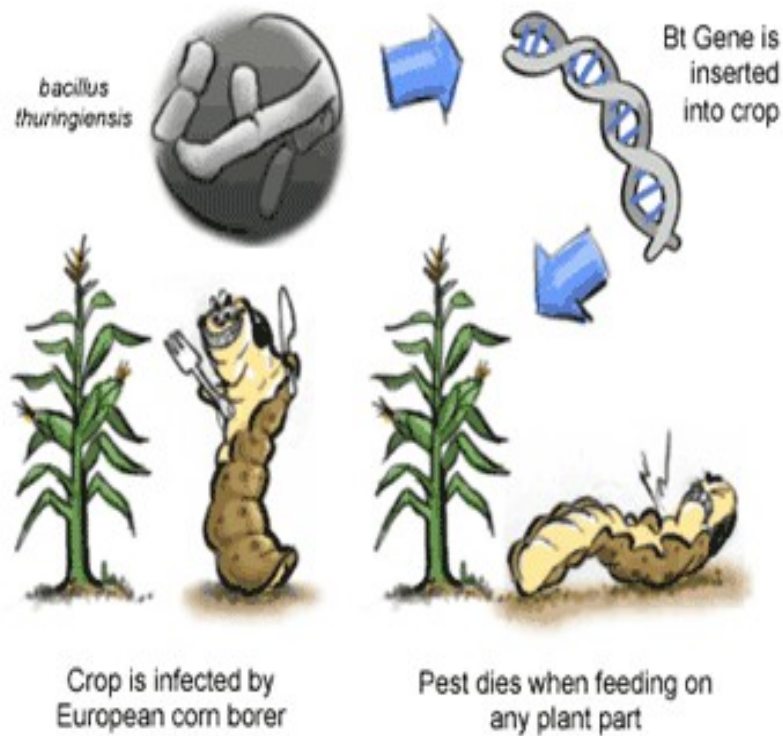


4XSalt



*Arabidopsis
thaliana*

Friendly Insecticides



Bacillus thuringiensis bacteria produce a protein toxin that kills insect larvae pests and is 80,000 times more toxic than the typical chemical insecticide.



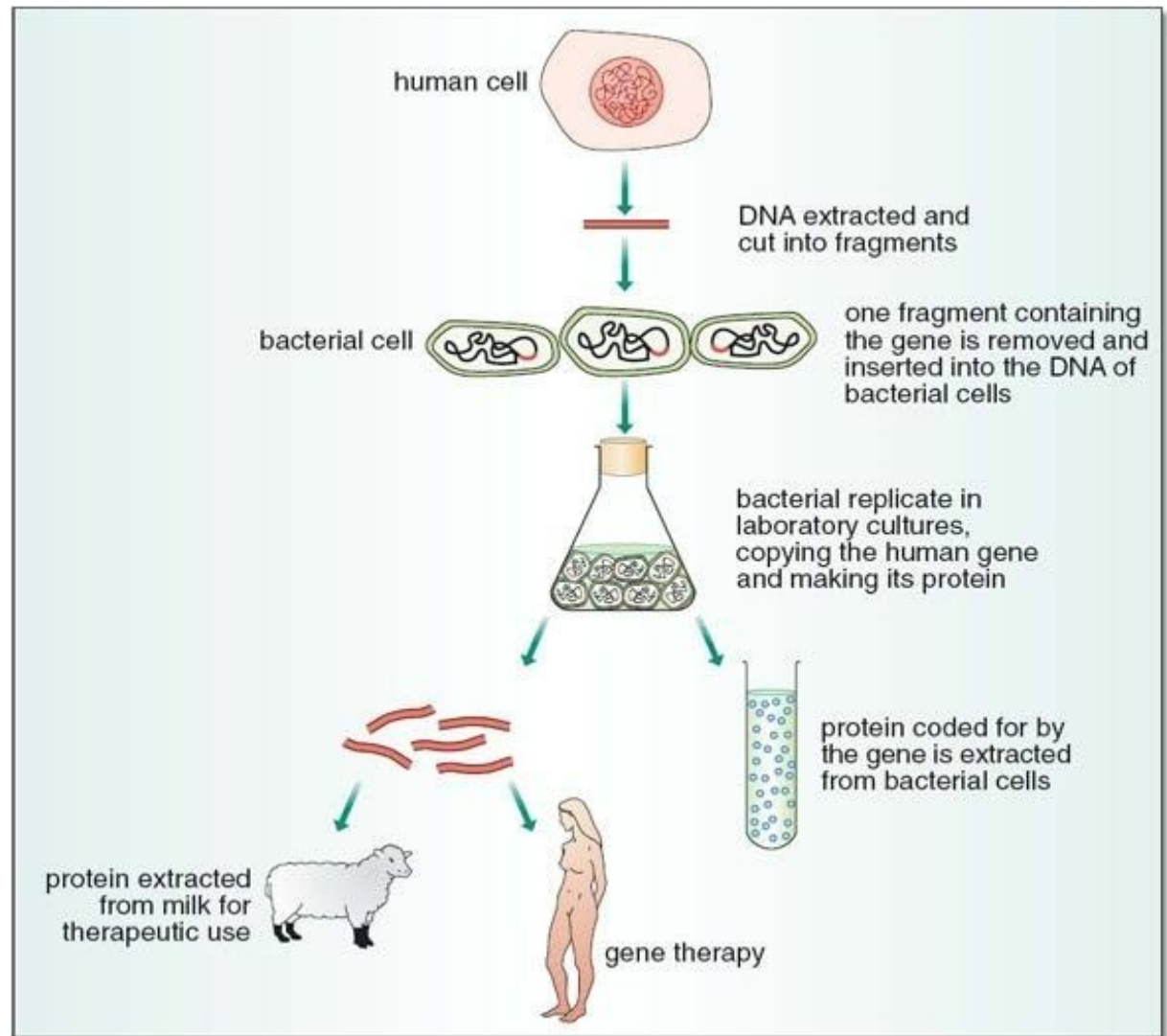
Resistant to Herbicides

Glyphosate
Roundup

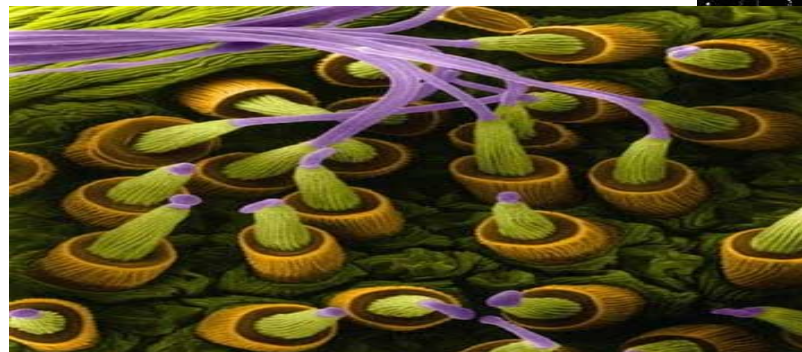
(corn, cotton, soybeans)



Synthetic Insulin

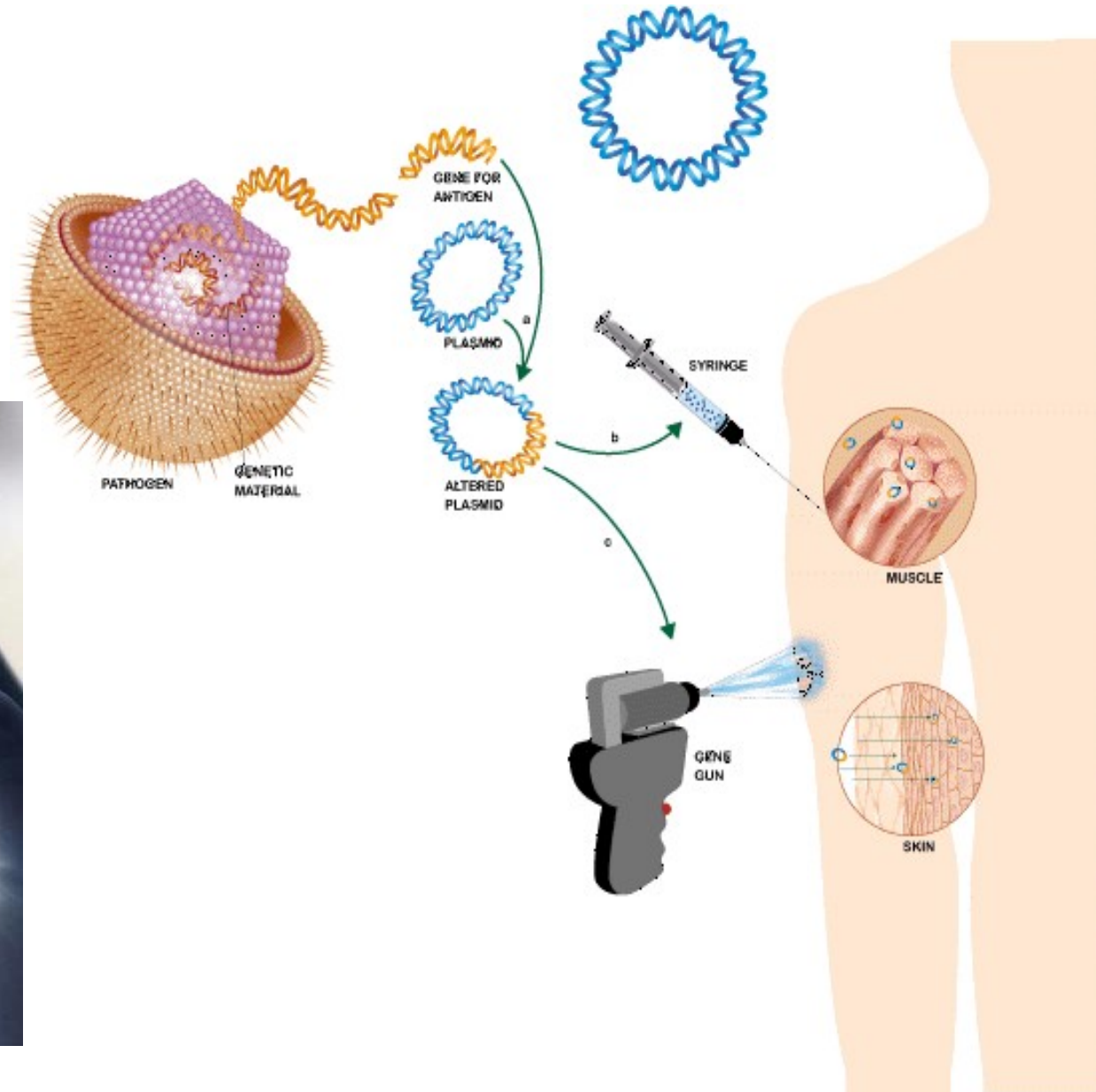
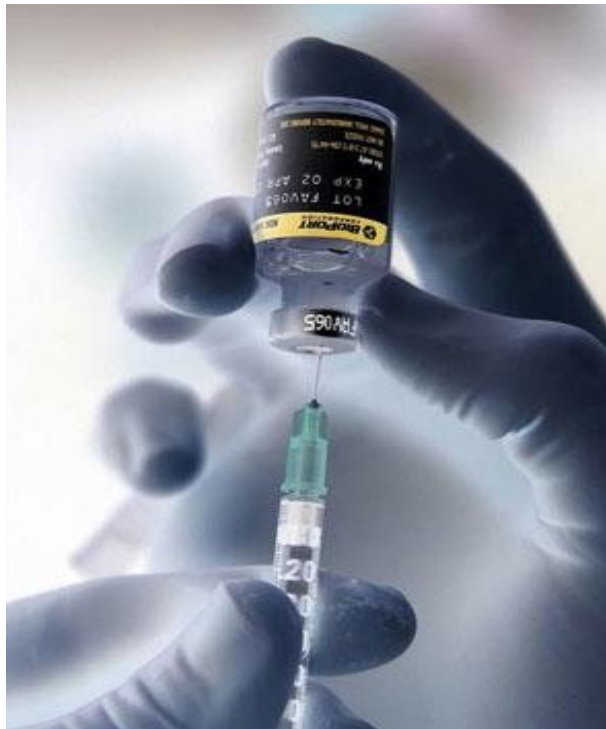


Spider Silk



5X stronger than steel

DNA Vaccine

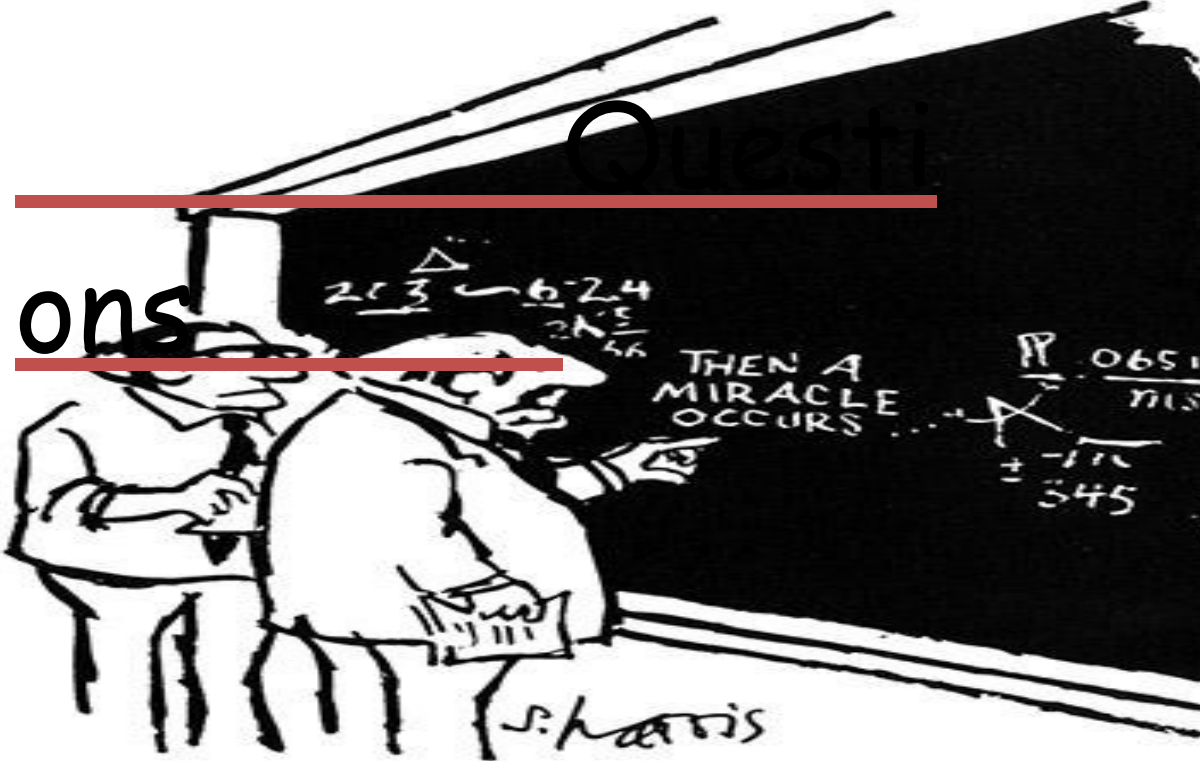


One Vaccine Many Diseases



16.1 *Some Medically Useful Products of Biotechnology*

PRODUCT	USE
Colony-stimulating factor	Stimulates production of white blood cells in patients with cancer and AIDS
Erythropoietin	Prevents anemia in patients undergoing kidney dialysis and cancer therapy
Factor VIII	Replaces clotting factor missing in patients with hemophilia A
Growth hormone	Replaces missing hormone in people of short stature
Insulin	Stimulates glucose uptake from blood in people with insulin-dependent (Type I) diabetes
Platelet-derived growth factor	Stimulates wound healing
Tissue plasminogen activator	Dissolves blood clots after heart attacks and strokes
Vaccine proteins: Hepatitis B, herpes, influenza, Lyme disease, meningitis, pertussis, etc.	Prevent and treat infectious diseases



"I think you should be more explicit here in step t