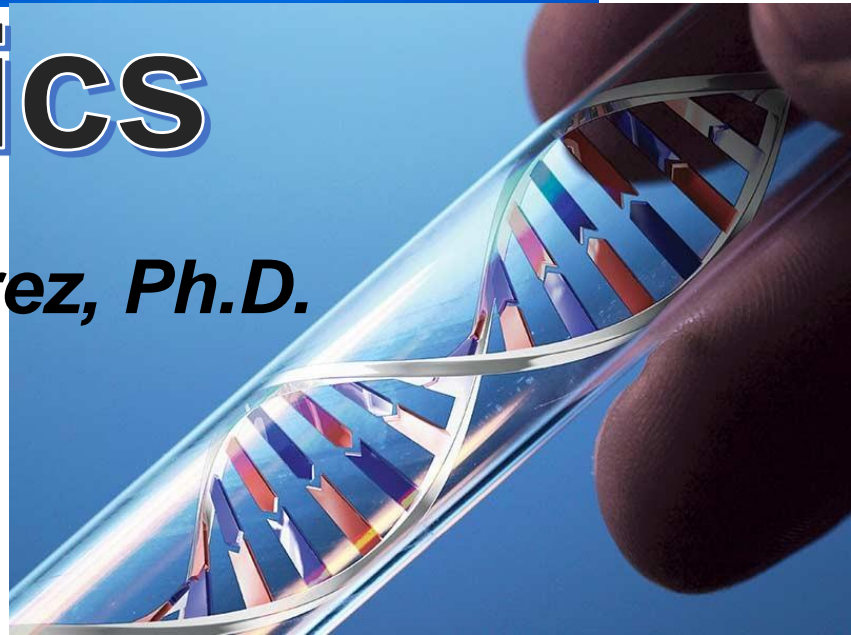


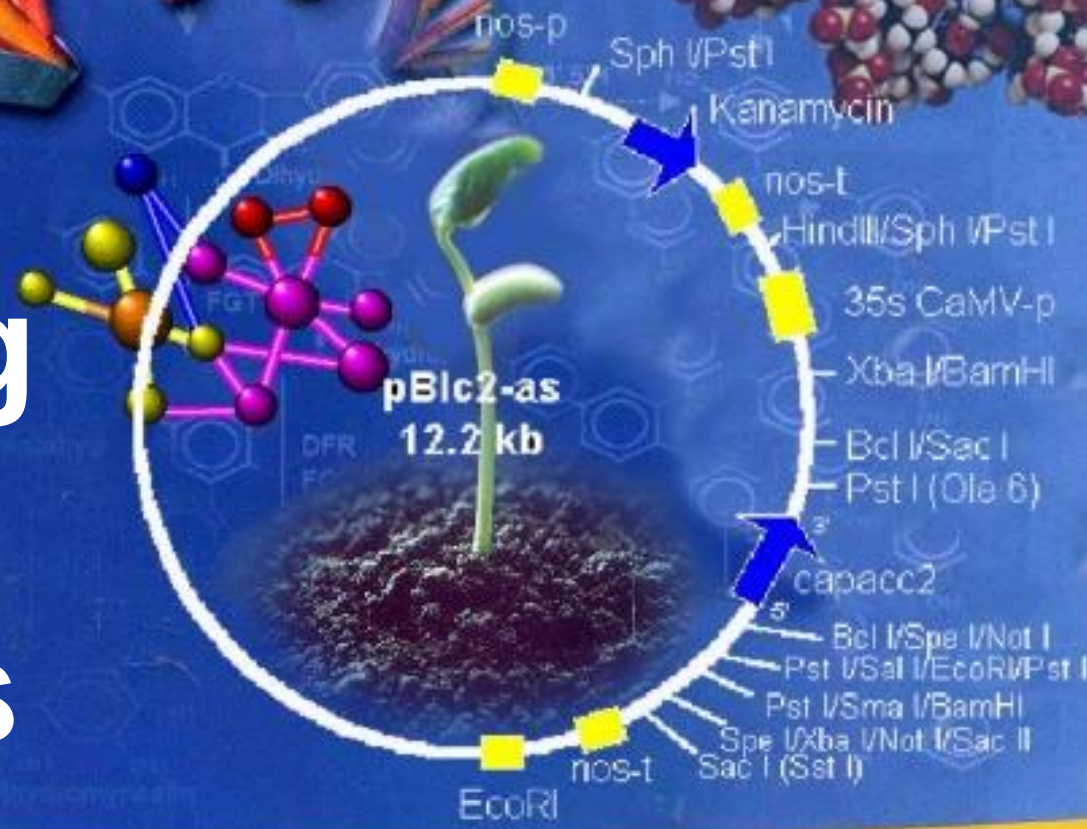


Adventures in Genetics

Dolores A. Ramirez, Ph.D.



From Plant Breeding to Genetics



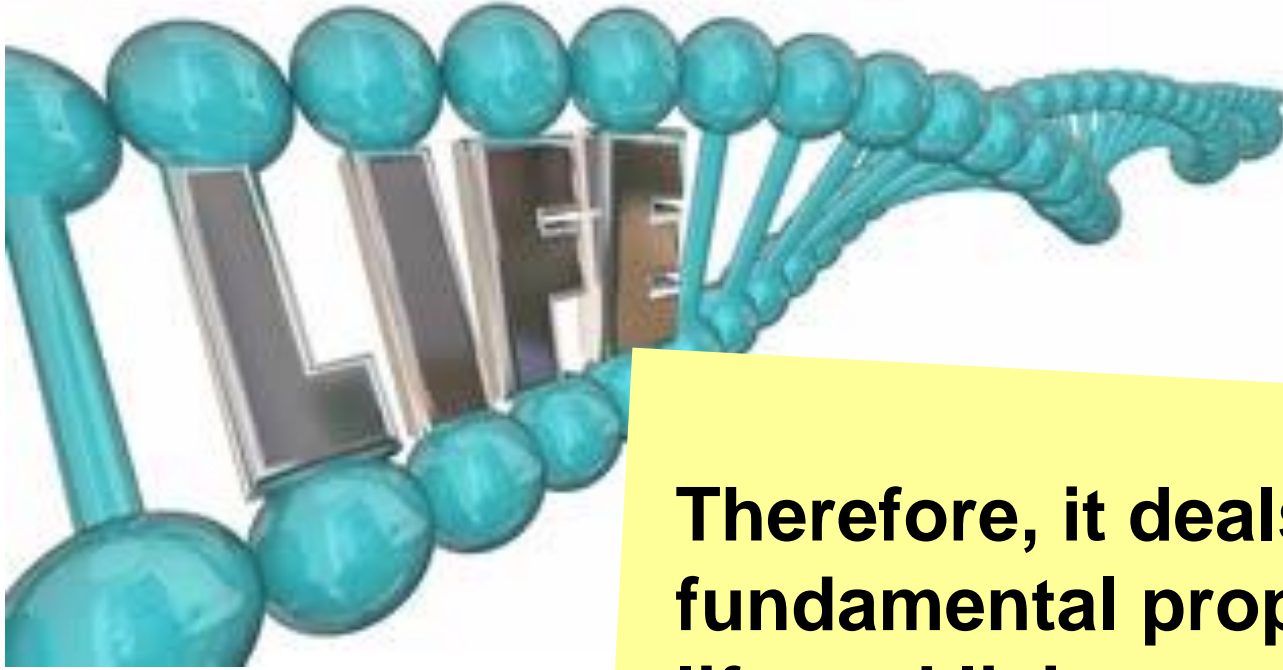




**Branch of biology that
deals with heredity and
variation**

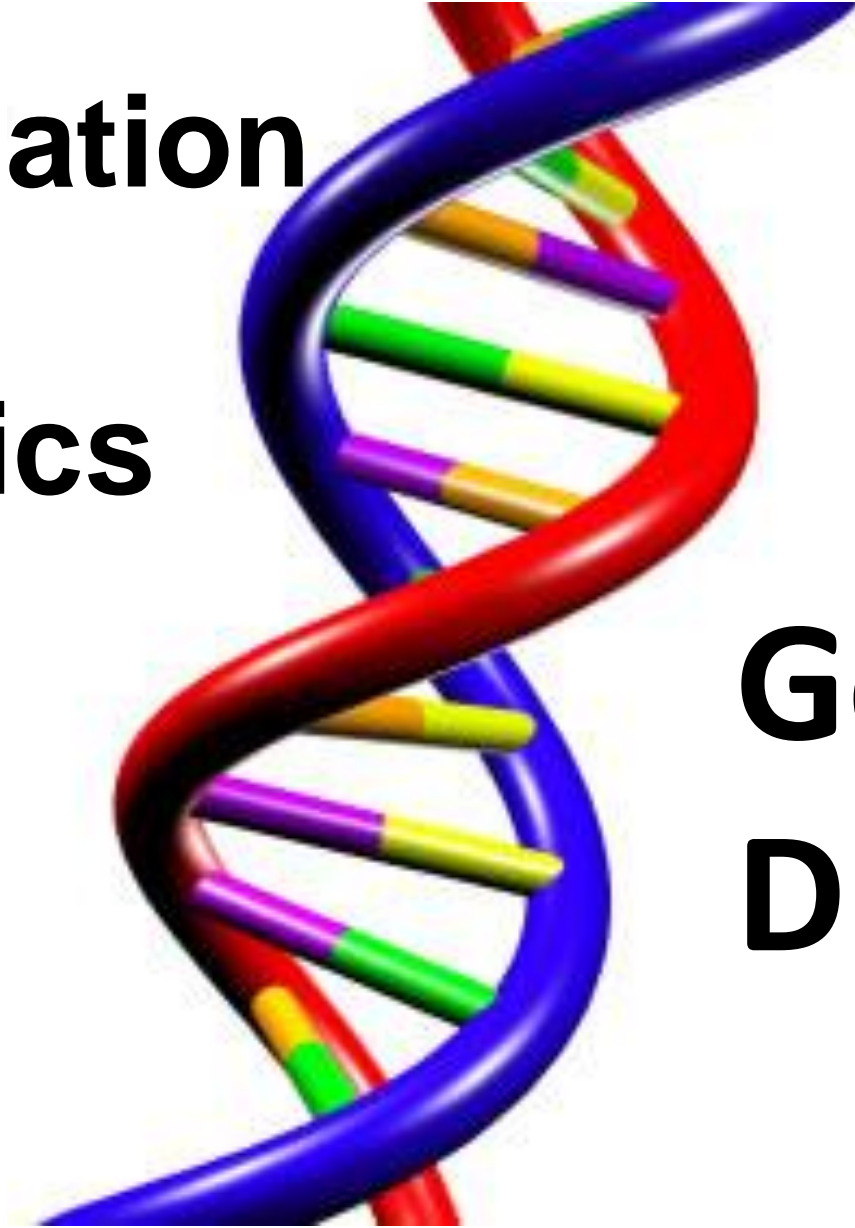


It seeks to understand the molecular and physical basis of biological diversity, the mechanisms resulting from these diversities and the principles that govern their heredity

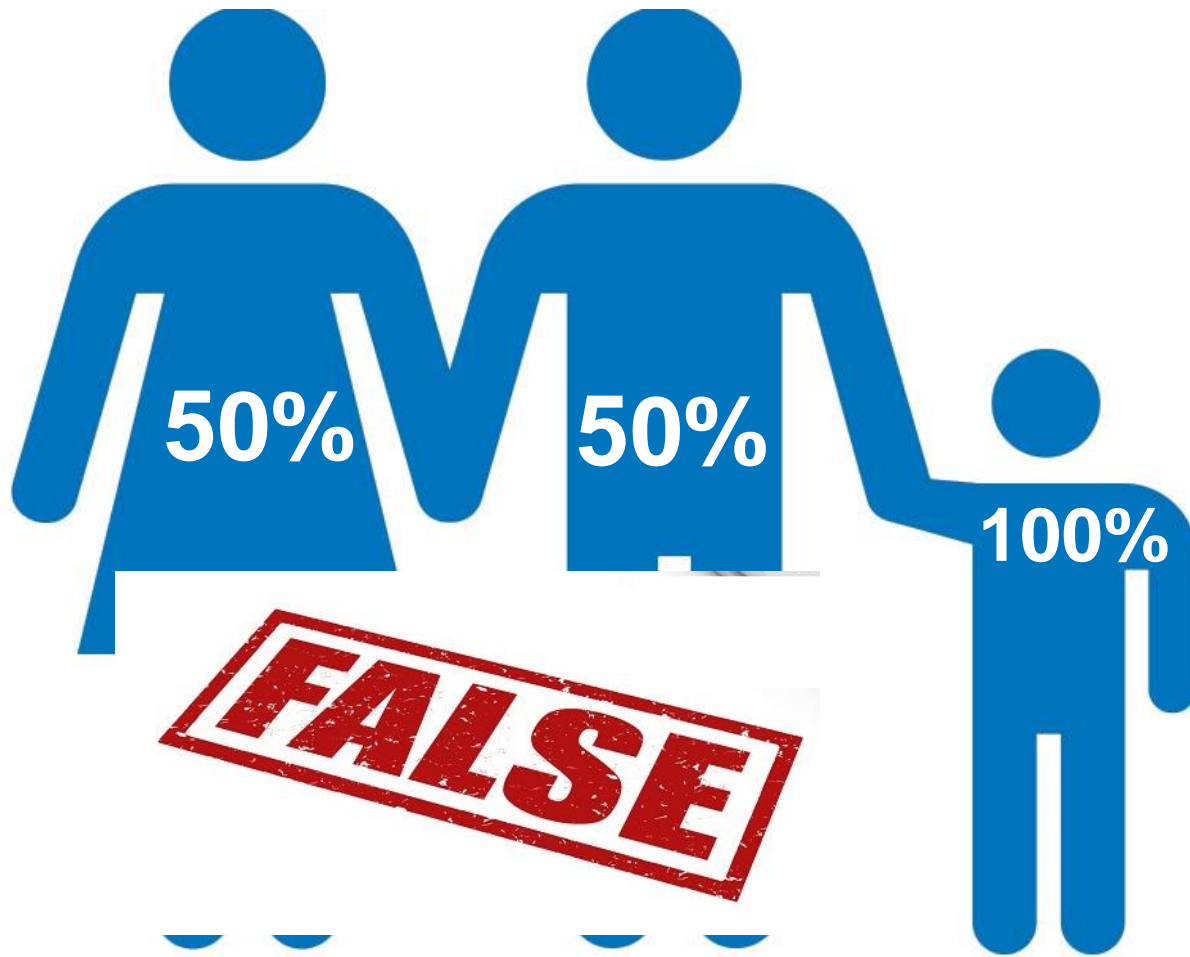


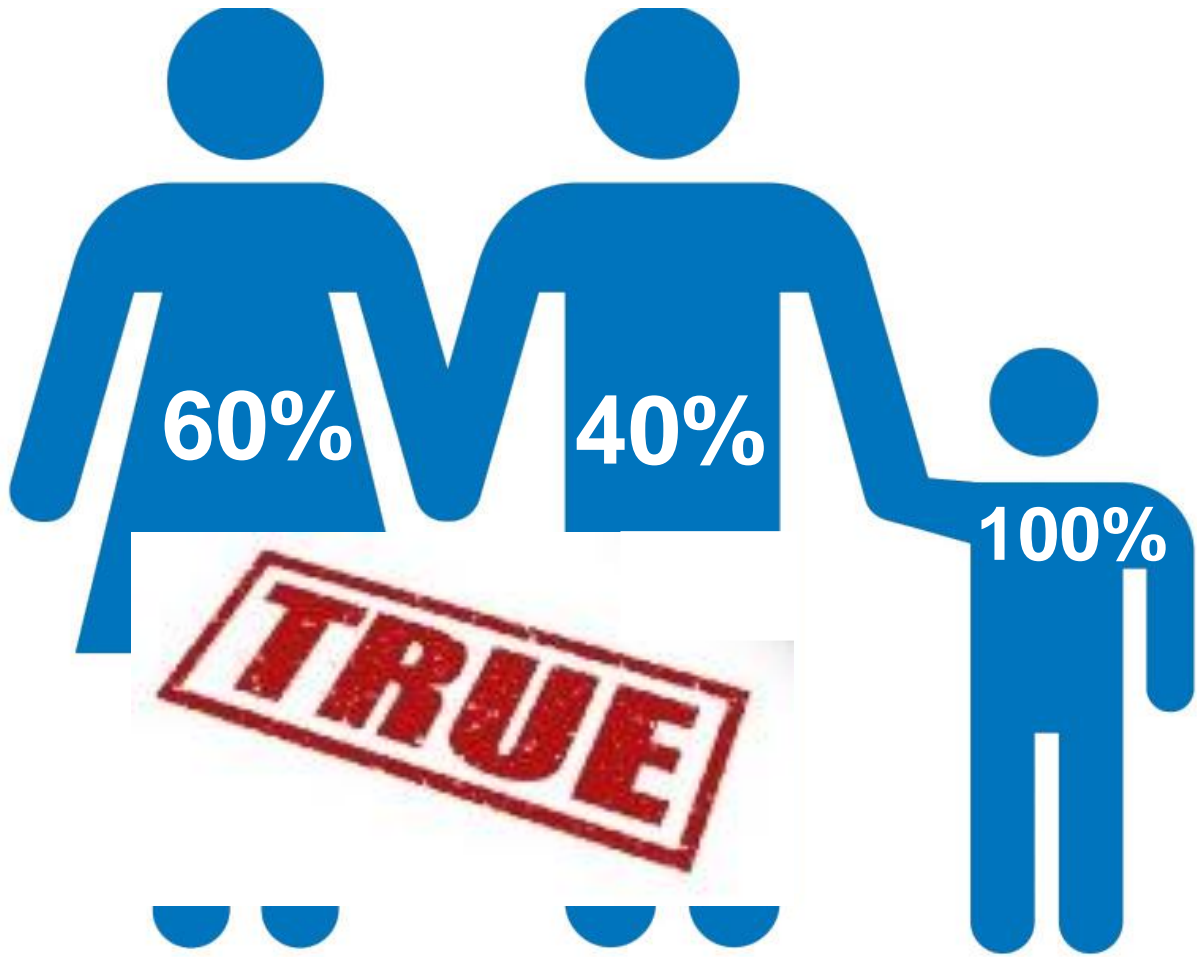
Therefore, it deals with the fundamental properties of life and living and impinges on all branches of biology and other natural sciences as well as behavioral sciences

Basic Foundation of Genetics



**Gene or
DNA**





TRUE



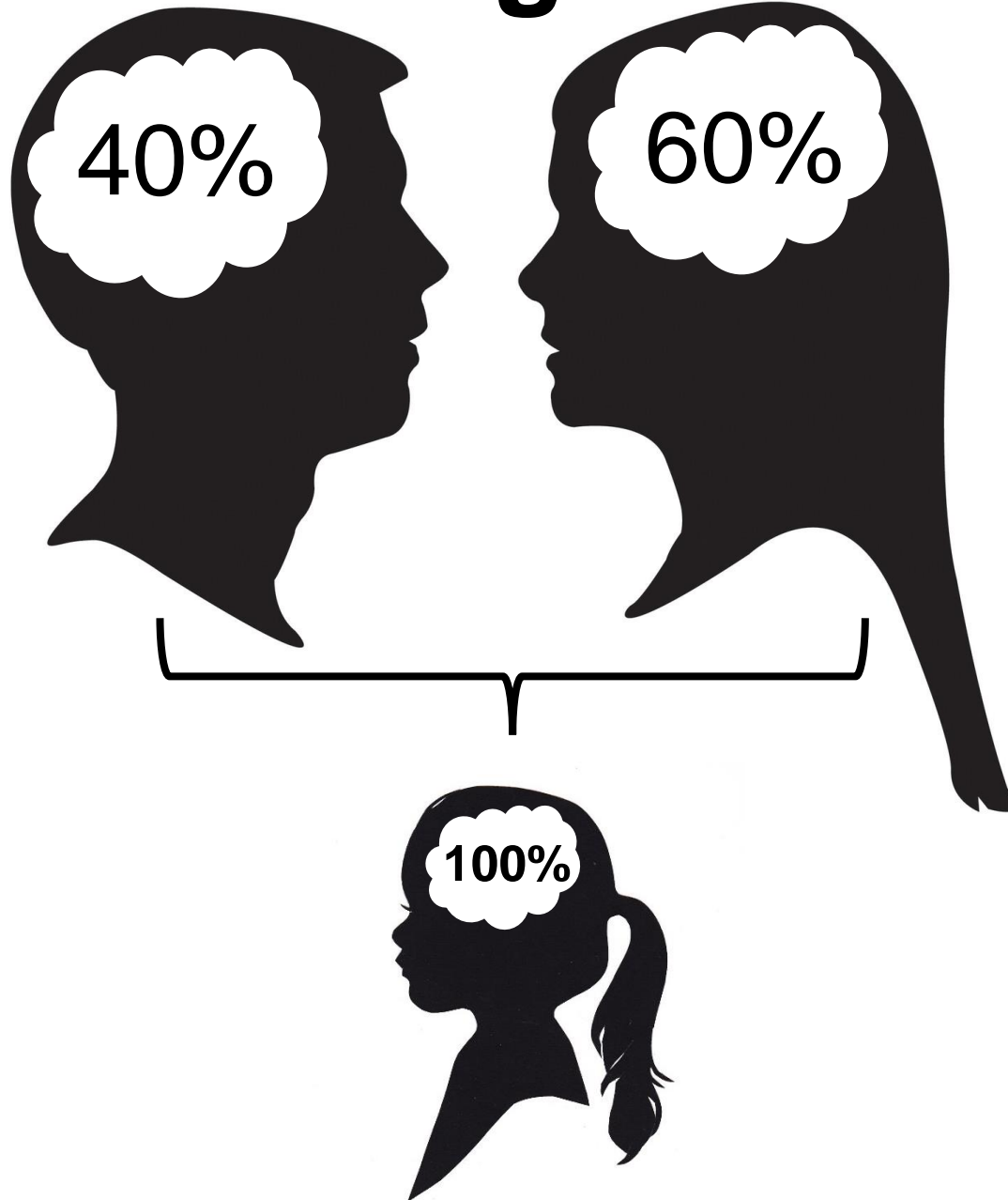
Weight – 78% Heritability



Verbal Aptitude – 68% Heritability



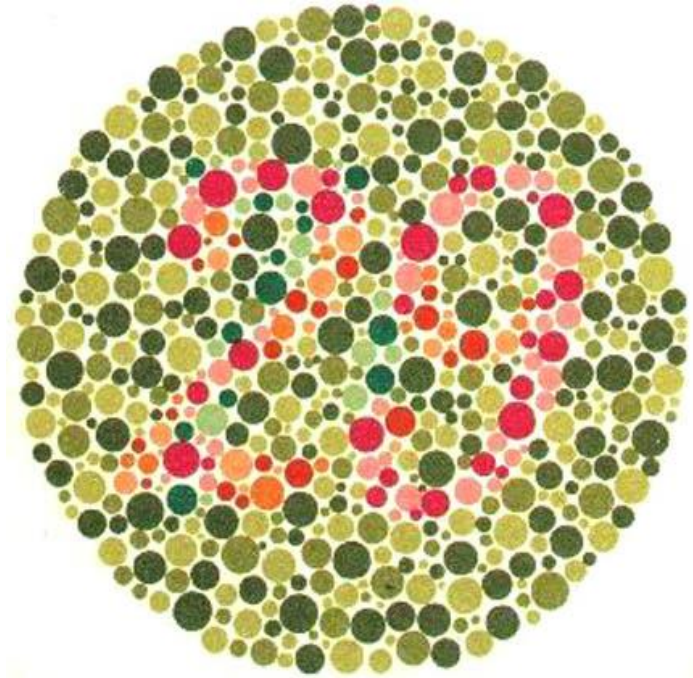
Intelligence





**Aptitude for
Mathematics
12%
Heritability**

X^c = Red-Green colorblindness



Females:

$X^C X^C$ = Normal

$X^C X^c$ = Normal

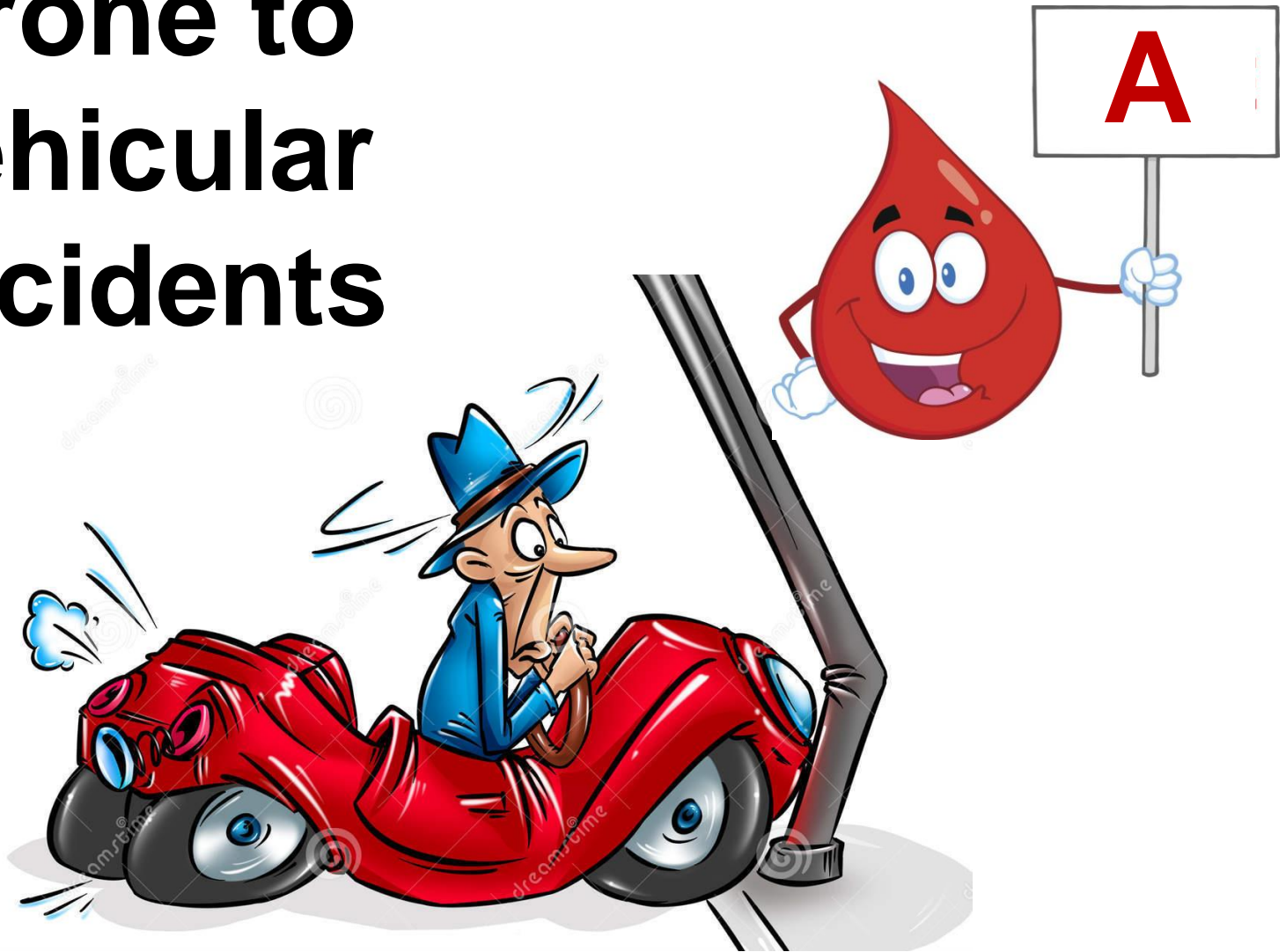
$X^c X^c$ = Red-Green colorblind

Males

$X^C Y$ = Normal

$X^c Y$ = Red-Green colorblind

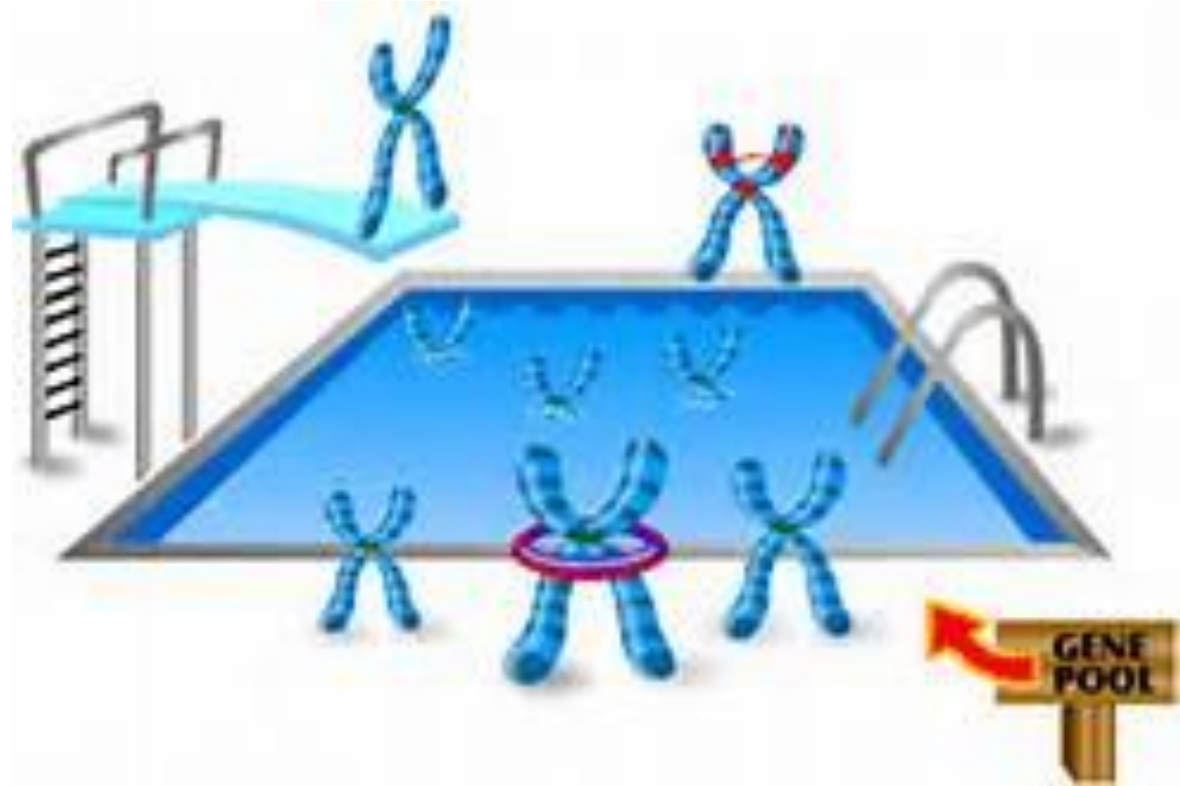
**Prone to
vehicular
accidents**



Generation 1 – Your Parents' Gene Pool

Generation 2 – Your Gene Pool

Generation 3 – Your Progenies' Gene Pool



Therefore, if Generation 2 have no offspring, there will be no Generation 3

Evolution of crops by intergeneric or interspecific hybridization



Nicotiana sylvestris



Nicotiana tomentosiformis



Nicotiana tabacum



Tobacco

Evolution of crops by intergeneric or interspecific hybridization

Triticum monococcum



Aegilops speltoids

Triticum dicoccum



Aegilops squarrosa



**Common
Bread
Wheat**



Triticum aestivum

Evolution of crops by intergeneric or interspecific hybridization



Raphanus sativus
(Radish)



Brassica oleracea
(Cabbage)



**Karpechenko's
Raphanobrassica**



Researches in Genetics

Coconut: the Makapuno



EVENT

Altered transcription

Altered enzyme systems involved in hormone metabolism

Altered hormone metabolism

Altered metabolic pathways

Altered cellular behavior and properties

MAKAPUNO

INDICATOR

Lower level of cyclic AMP

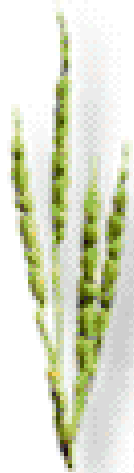
Altered activity of peroxidase, tryptophan aminotransferase, catalase

Highly elongated makapuno cells; differential response of carrots cells grown *in vitro* with makapuno extract; higher growth promoting activity and cytokinin-like activity in makapuno

Accumulation of galactomannans; very low levels of α -D-galactosidase and β -mannosidase changes in respiration

Amitosis, high polyploidy, multinucleated cells, polymorphic nuclei, loss of intercellular adhesion, highly elongated cells

Alien Gene Transfer via Interspecific/Intergeneric Hybridization of Crop Plants



Teosinte



Teosinte x Corn



Corn

Bt Corn

Bacillus thuringiensis



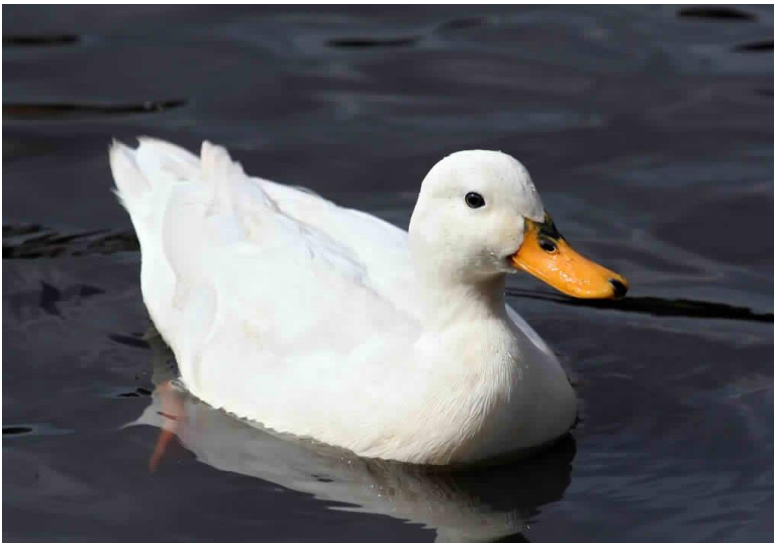
Bt gene is inserted into crop



Crop is infected by Asian corn borer



Pest dies when feeding on any plant part

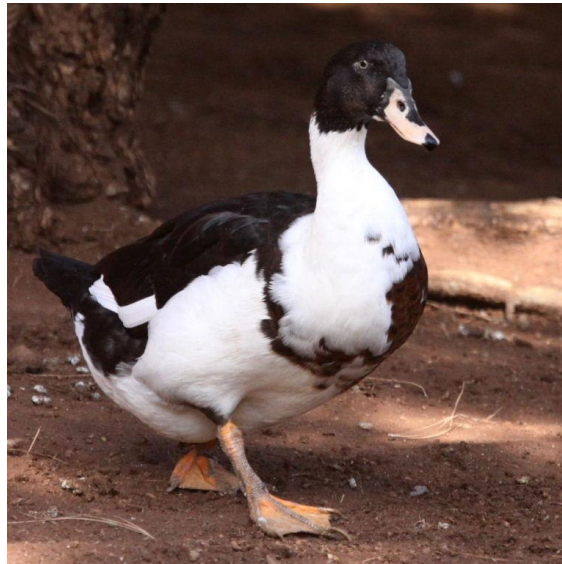


X



Bibe

Itik

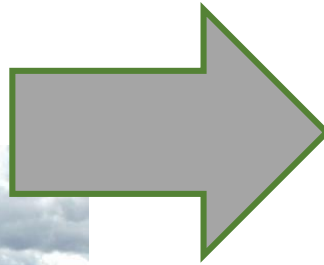


Bitik

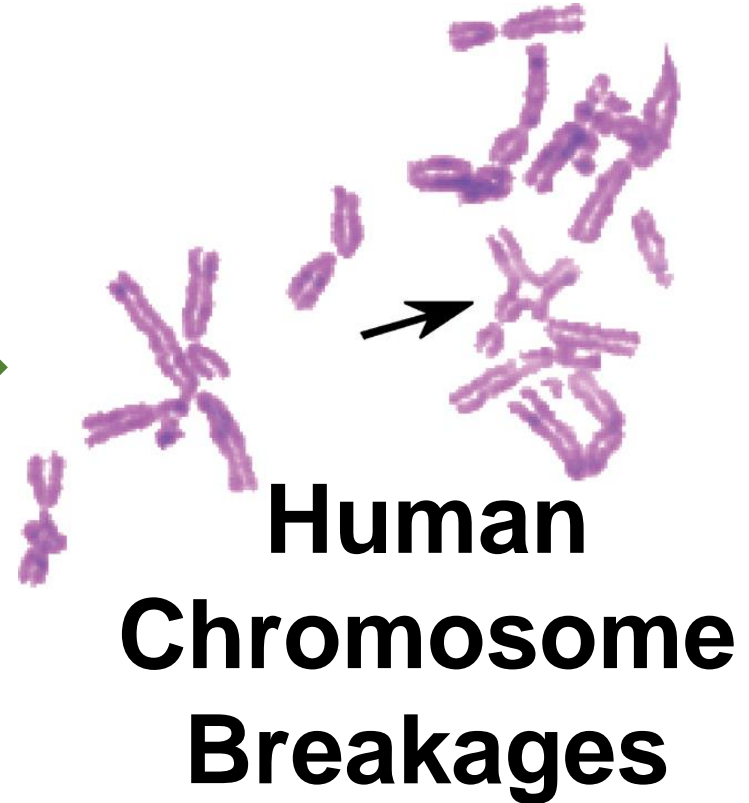
Effect of Drugs and Pesticide



Illegal Drugs



Pesticide



Microorganisms for Alcohol Production

Starch



Sugar



Saccharomycopsis

Saccharomyces

Alcohol







Medical Doctor



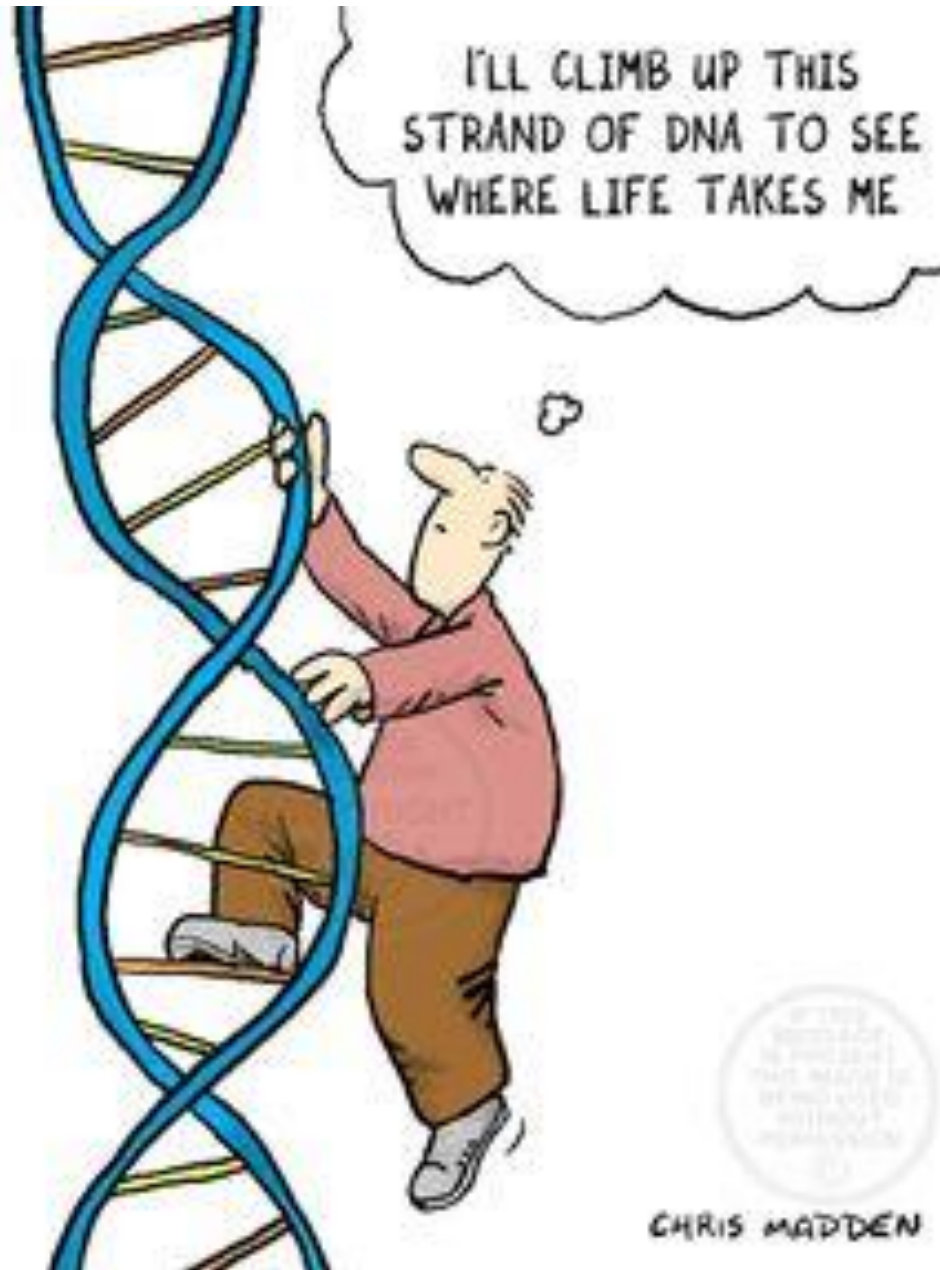
Professor



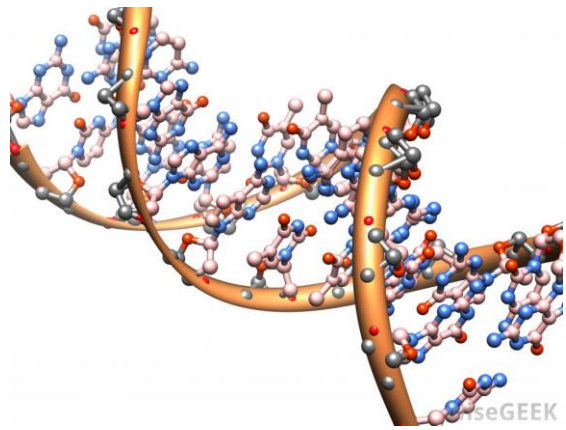
Administrator



Business Entrepreneur



CHRIS MADDEN



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salinlahi.nast@gmail.com

