

Ayini AmaGMO ?

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GMO = Izidalwa (izitshalo noma izilwane) eziguqulwe izimpathafuzo.

Izimpathafuzo ezithathwe esidalweni esithile, zifakwa ngokunzelelwa kwesinye isidalwa esingahlobene naso ngokwendalo-esingesona uhlobo lunye.

Amanye Amagama asetshenziswayo

Genetic Modification = ukushintshwa kwezimpathafuzo ezidalweni zemvelo ngososayensi.

Genetic Engineering (GE) = (Kusho into efanayo)

GenModified Organisms (GMOs) = Izidalwa eziphilayo ezishitsintshwe izimpathafuzo.

Traditional plant breeding = Okwenzeka phakathi kwezidalwa ezifanayo ngokwemvelo.

Amagama Okwenza kubelula ukuqonda ngezimpathafuzo

- Imizimba yethu yakheke ngendlela ethile, futhi ibukeka ndlela thizengoba sithole ufuzo kubazali bethu.
- Loku okuphethe ufuzo kutholakala ezinhlayiyeni ezakha izicubu zemizimba yethu.
- Inhlayiyana (cell) iyisitho somzimba wesidalwa esincane kunazo zonke, isakhiwo esibalulekile nesisebenzayo kuzo zonke izidalwa eziphilayo. Izidalwa ezincanyane (ezingabonakali kalula ngeso) zinenhlayiya eyodwa, kanti kanti izitshalo nezilwane ezinkulwana zinenhlayiyana eziningi, eziquqelwe ndawonye ukwenza izicubu, lezicubu ezenza izitho ezinjegengqondo, amathambo kanye nezithelo okunye.

Yileyo naleyo nhlayiyana (cell) yenziwa ngalokhu:

- Ulwelwesana olugoke konke okuphakathi kwihlayiyana leyo.
- Izithwana ezincane ezenza imisebenzi enjengokugaya ukudla, ukukhipha ukungcola, ukugcina ukudla okunye okudngwa inhlayiyana leyo.
- Isizinda senhlayiya (nucleus) eyisakhiwo esiyimbulungana omzimba wonke wesidalwa leso ukuthi usebenze, ukhule ube nenzalo.
- Lonke lolulwazi lugcinwe ezinhlayiyeni (cells) zokwakha ezibizwa ngama-(chromosomes).

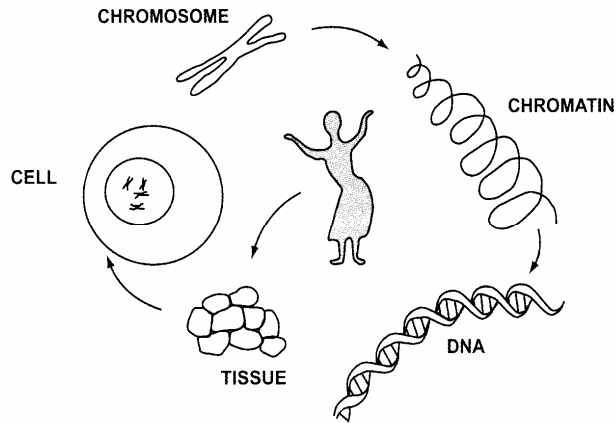
Lonke ulwazi olutholakala kuma-'chromosome' lubizwa nge-genome (okuphethe ufuzo lwezinto eziphilayo) ezidalweni.

Zonke izinhlobo lwezitshalo nezilwane zihlukile ngazinye. Indlela eyodwa ivela kowesimama enye itholakala owesilisa. I 'chromosome' iyinye injengosungulu olude olubizwange -DNA (deoxyribonucleic acid) noma isizinda sezimpathafuzo, olwakhiwe njengezintambo ezimbili ezixhumene ukuze zenze insonga ehlanganise lezizintambo

ezimbili kuze kubukeke sengathi isitebhisi esiphothaphothene. Usungulu lulunye lwalezizintanga ze-DNA lukwazi ukuziphindaphinda ukuze lesosidalwa sigcwele yonke imibiko equkethwe kulezozimpathafuzo iphinde edluliselwe enzalweni enjongoba injalo.

From 'Living with the Fluid Genome'. Mae-Wan Ho. 2003

Izingxenye ze -DNA (Okuyisizinda Sezimpathafuzo) kuphathelele nokugcinwa kwama-khodi(loko okunikeza imiyalezo ngezakhamzimba okufanele zenziwe ekwakhiweni kwesidalwa) esimo sezinsiza(proteins). Uma izimpathafuzo ziziphilela noma zisebenza kuthiwa izimisele - ikhodi laleyompathafuzo ihumusheka emzimbeni njengama-'amino acids' okuyimo uqobo akha izinsiza. Izinsiza



yiwo angameli ukhwakheka ukukhula nokwakheka kwezicubu zomzimba nokuthi umzimba ungazikhulisa kanjani uzandise. Izinsiza angama-enzymes(izakhamzimba) okuyizo eziqala ushitsho lokukhulisa izicubo ezidalweni. Kukhona izimpathafuzo ezibalelwa ezinkulungwaneni ezingamashumi amathathu-(30 000) emzibeni womuntu kepha indlenye engama-phenesenti amathathu (3%) yiyo eyakhiwe yizimpathafuzo (genes).Okumangalisayo ukuthi uhlamvu lwelayisi(rice) luqukethe izimpathafuzo eziyizinkulungwane ezingamashumi amahlanu -50 000! Ososayensi abakawazi kahle hle umsebenzi wazozonke izimpathafuzo.

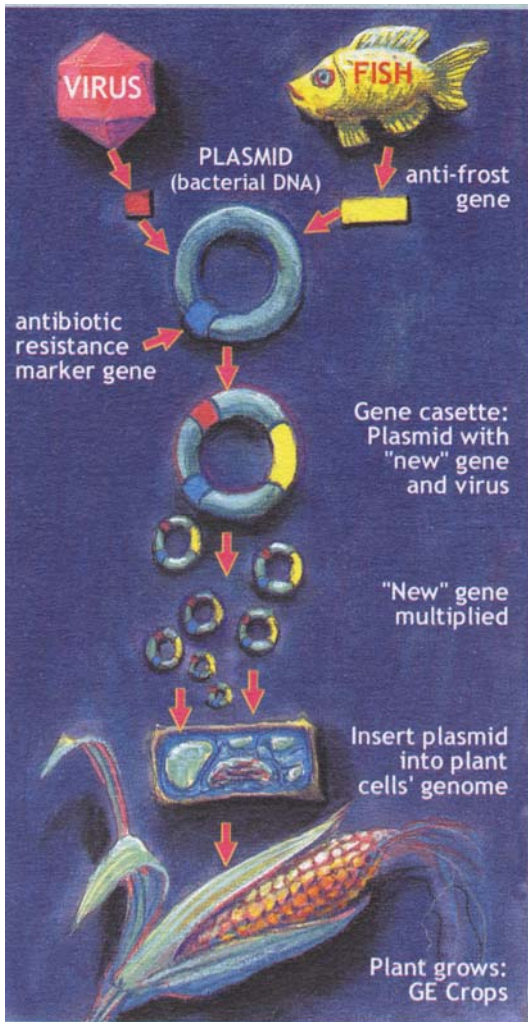
Izidalwa Ezishintshwe Izimpathafuzo

Izidalwa Eziguqulwe Izimpathafuzo(GMO's) njengezilwane, izitshalo kanye namagciwane adaleke ngenxa yokwakheka kwezimpathafuzo, lapho iziqephu ezingaphandle noma izimpathafuzo ezithathwe esidalweni esahlukile zifakwa kwezinye. Ama-GMO aphindwe abizwe ngelinye igama ekuthiwa ngama-(transgenic organisms) - kusebenzisa izidalwa ezingafani ngokwemvelo.

Ukuguqulwa kwezimpathafuzo kwenzeka kakhulu ezidalweni oma ezitshalweni ezintsha ebezingeke zizenzekele ngokwemvelo.Ngokwemvelo inhlanzi ihlangana izale enye inhlanzi kanjalo futhi utamatisi uhambisana otamatisi.Loku kudlulisa izimpathafuzo ngokwendalo okuyiyona ndlela okwakudalwe ngayo zonke izidalwa eziphilayo kusukela ekudalweni komhlaba. Ama-GMO akhandwe ezindlini zokuthaka imithi!

Loku kuhluka kakhulu kunokuhlukaniswa nokuhlanganiswa kwezidalwa ezifanayo ukuze Kutholakale konke okungcono nokuhle ngalezozitshalo zombili. Abalimi kudala baqala ukusebenzisa loluhlobo lokuxhuma izitshalo ezifanayo ukuze imfuyo kanye nezitshalo zabo zimelene nesimo sendawo abakuyona (njenge-simo sezulu). Ngisho nezinye izitshalo-ezixhumene zesimanje zisebenzisa lezizindlela ukuze kukhuliswe izitshalo ezifanayo noma ezicishe sifane.

Enziwa Kanjani Ama GMO ?



From Biowatch briefings: GE in South Africa:
Barren harvest or fields of plenty

akwazi ukulutha inhlayiya (cell) ukuthi ifunde umlayezo kube sengathi uthi inhlayiya ayenze izakhamzimba (proteins).

Ososayensi abasebenza nezimpahthafuzo bsebenzisa lindlela yokuhlanganisa izinsiza... Bashintshi bezimpahthafuzo basebenzisa loluzwazi ukuze bakhume ukhondolo ukuze izimpahthafuzo zivumelane nalezozimpahthafuzo ezintsha kube sengathi zingaphakathi kuzo. Ngaphandle kwalomqhubuzeli, impahthafuzo enokhondolo olusha kuyenzeka izihlalele ingazivezi noma inganyakazi kwi-DNA.

AmaGM amaningi atshaliwe kulezizinsuku avela kumgqubuzeli ovela kwi gciwane elincane elitholakala emfinweni noma ko kholiflawa "cauliflower" elibizwa nge [CaMV355] ehlasela izitshalo zeklabishi. Ososayensi basebenzisa i-CaMV inamandla okwenza izinsiza ezixubekile (ezixubene) -nezimpahthafuzo (transgene proteins) ukuba ziziveze noma zenzeke, isebenza kwi DNA yazo zonke izitshalo. Kepha lesositshalo sisala singenamandla noma ukuzikanisa lalomgqubuzeli ovela ngaphandle 'foreign-promoter', futhi asibe sisakwazi ukuziphatha nokuphila ngaphandle kokuziveza kwalensiza eququlwe izimpahthafuzo. Sizobona ukuthi indlela yokufaka izimpahthafuzo esitshalweni esimiselwe ukuzamukela kunzima futhi ayibekezeleki (ayilindeleki). Ososayensi badinga

Ukuze kwenziwe Ushintsho Lwezimpahthafuzo usosayensi uqala ngokukhethisisa ukhondolo oluthile acabanga ukuthi lungaxhumeke ukuze kuguquleke ezinye izimpahthafuzo. Amanye amagciwane akhipha obuthi obubulala isihlava, ngakhoke ososayensi bakubona kulungile ukuthi izitshalo ezidliwayo zibukhiqize nazo lobobuthi ukuze zivikele ukulinyazwa isihlava, Ososayensi babheka impahthafuzo yalelogciwane elakha lobobuthi bese besika ucezu lalalogciwane. Bakhapha ingxenyana yempahthafuzo yalelogciwane, lengxenyane bese beyifaka kwimpahthafuzo yesitshalo lesososayensi abaqonde ukuyiguqula ngendlela eqinisekisa ukuthi impahthafuzo efakiwe, yenza ukuthi kuphumelele lolukhondolo ngokulindelekile. Kodwa ke akuyona into elula...

"Gene cassette"

Ukuze impahthafuzo yokhondolo oluthize isebenze yakhe izakhamzimba (proteins), idinga isinqamu se DNA ebizwa nge 'Promoter' (noma umgqubuzeli) exhunywa echopheni ukuvusa impahthafuzo ngokuvamile, asiyivumi kalula i-"promoter" ephuma egciwaneni eliyi "bacteria" amagciwane angama "viruses" wona ayakwazi ukufunzelela izimpahthafuzo

zazo esitshalweni bese ezandisa wona, ngoba esathuthuka

Aba nabagqubuzeli ngaphakathi kuwo

indlelathize yokuqiniseka ukuthi yiziphi izinhlayiya esitshalweni ezamukelekile, lezimpathafuzo ezifakiwe esizindeni sezimpathafuzo zayo (DNA). Ngokuvama bakwenza loku ngokuxhuma ngenye impathafuzo ebizwa phecelezi 'antibiotic marker gene', kwimpathafuzo yokhondolo abalufunayo. Uma zonke izinhlayiya ezikhona kulolucwaningo zivezwa obala kule "antibiotic", lezo ezisala ziphila kuba yizo eziphumelela ukuhlangana nezimpathafuzo ezifakiwe. Zonke lezicucu ezilungiselwe ukwenza izimpathafuzo ezintsha, zixhunywa ndawonye phakathi kuloku okubizwa nge " gene cassette".

Ukungeniswa Ngempopo Kwinhlayiya

Zimbalwa izindlela ezisetshenziswa ososayensi ukufunzelela leliqoqo lenhlanganisela yezimpathafuzo:

1. Amagciwane (njenge-agrobacterium tumefaciens) avamise ukuhlaselela izitshalo ngokufaka indlenye ye DNA yawo esitshalweni eyenza isitshalo sibe nezimila. Ososayensi abasebenza ngezimpathafuzo, bathatha inxenye ye DNA yesitshalo kanye nazo lezimpathafuzo ezintsha.
2. Izinkulungwane zezinxenye ze nsimbi 1" tungsten" noma igolide, zembathiswa leliqoqo elixhunywe nezimpathafuzo ezizofakwa bese zifunzelelwa ezinkulungwaneni zezinhlayiya ngokusebenzisa okusasibhamu sezimpathafuzo.

Emva kokungeniswa kwaleliqoqo elihlanganisiwe, lezo zinhlayiya ezisindayo ekubulaweni i "antibiotic", ziyandiswa ngokusebenzisa izindlela zakhona, bese zize zikhule zibe izitshalo. Lezike ziyahlolwa ukuthola ukuthi kutholakale lezo ezinokhondolo olufunwa ososayensi. Ezitholakala zilungile ziqhubeka zandiswe ngezimbewu noma ngokwandisa uhlobo olulodwa ngokukhulisa izicubhu zesitshalo.

Zonmbili lezindlela zokufaka izimpathafuzo kwenza ukuthi lezimpathafuzo ezifakiwe zamukelweinhlayiya ngezindlela ezahlukene, akukho yisiqiniseko ukuthi ukubikezela zizofika zizinze kuphi esakhiweni sedan nokuthi kungenzeka esikhathini esizayo ewumphumela wendawo ezifike zazinza khona izimpathafuzo.

Ngakhoke yileyo naleyo ndlela yokufaka izimpathafuzo ngempumelelo ayifani nanye, futhi zonke izitshalo eziqhubeka zizalisaniswe zisuselwa kwezokuqala zibizwa nge "event", okusho ukuthi "isenzeko", bese kube yileso naleso senzeko sinikwe igama njengo " MON863.

Ukugoqa: "I GE (Genetic Engineering) ithatha inhlanguanisela izinhlanganisela yezimpathafuzo ezingeyona indalo, ezingazange zaphila ngaphambilini, izifunzelele ezindaweni ezingahleliwe esakhiweni sesidalwa, bese izalanisa imiphumela; kuyacacake ukuthi lokwenza kuhluka kakhulu endleleni yokuzalanisa ngokwendalo".ngu (Jeffrey Smith,2007)

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