

ROMANTeCH





ROMANTECH IS DEDICATED TO THE DIALOGUE BETWEEN SCIENCE AND SOCIETY. THIS BOOKLET IS FOCUSING ON ARABADOPSIS THALIANA OR THALE CRESS WHICH RECENTLY HAD ITS GENOME MAPPED. THE REASON SCIENTISTS CHOSE THIS PLANT IS THAT IT HAS A VERY SMALL GENOME, THEREFORE EASIER TO MAP. PLANTS ALSO SHARE SOME OF THE SAME GENES, MAKING IT EASIER TO MAP OTHER PLANTS. ARABADOPSIS WAS A PROJECT THAT WAS WORKED ON BY SCIENTISTS ALL OVER THE WORLD, SHARING INFORMATION TO COMPLETE THE PROJECT.

THE ART GALLERY IS A FORUM FOR DISCUSSION AND A PLACE WHERE A MUCH WIDER DEBATE CAN HAPPEN THAN IN A STRICTLY SCIENTIFIC CONTEXT. THE IMPORTANT ETHICAL QUESTIONS SURROUNDING GENETICALLY MODIFIED PLANTS ARE SOMETHING THAT NEED TO BE DISCUSSED BY SOCIETY AS WELL AS SCIENCE. THE ONLY WAY FOR THAT DISCUSSION TO OCCUR IS FOR SOCIETY TO GAIN A BETTER UNDERSTANDING OF GM PLANTS AND CONTINUE TO BE INFORMED ON WHAT IS BECOMING A FAST CHANGING INDUSTRY.

⊕ BIOLOGICAL EFFECTS UNKNOWN

⊕ DECREASE IN BIODIVERSITY BECAUSE OF STRONGER PLANTS

⊕ LOSS OF PROPAGATING SPECIES WITH CONSEQUENCES ON BIOSYSTEM

⊕ SUPERBUGS

⊕ COULD RESULT IN LOSS OF WILD TYPE

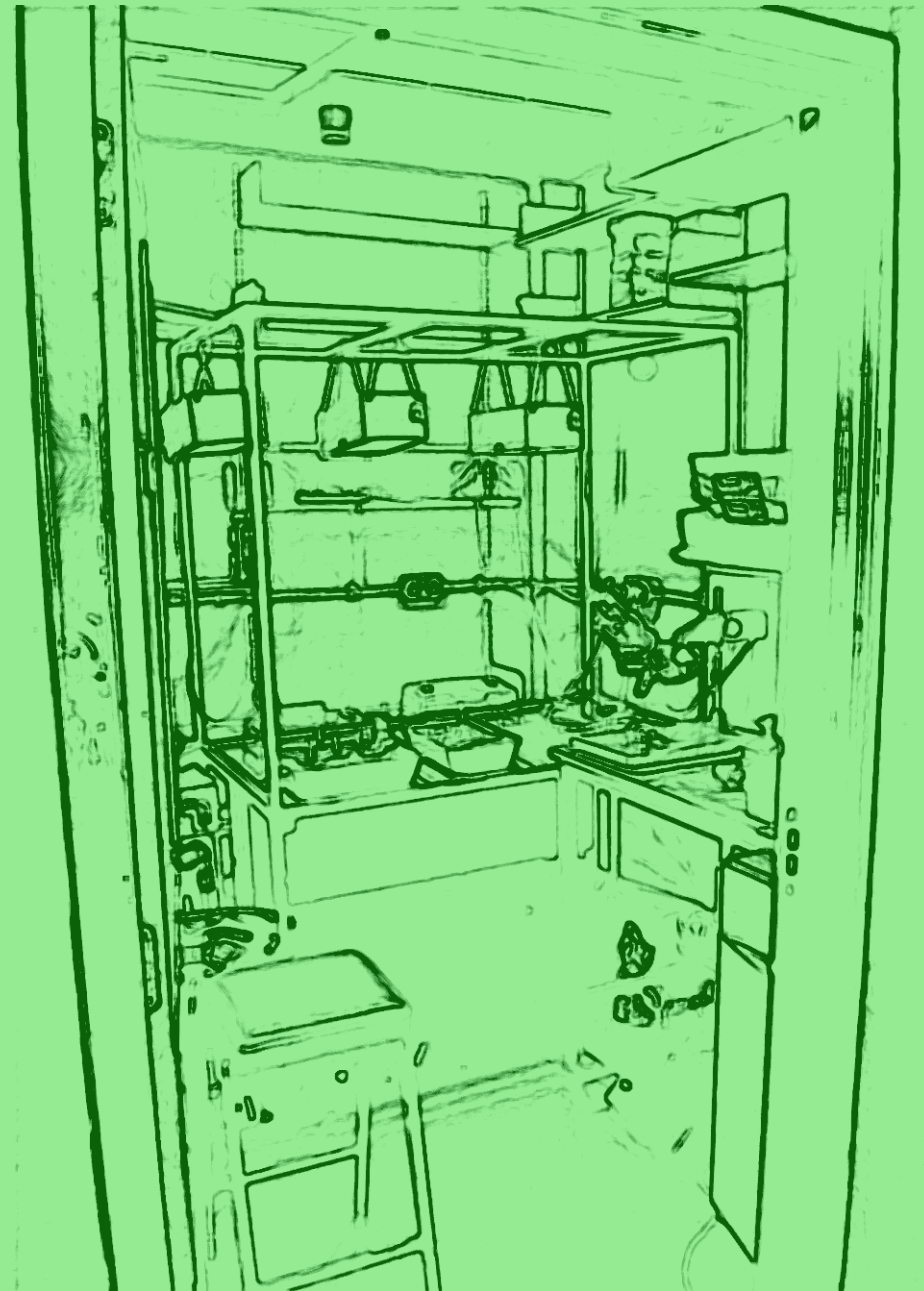
⊕ NEWLY INSERTED DNA COULD TRANSFER TO OTHER GENES CAUSING UNDESIRE EFFECT

⊕ NEW DISEASES AND NEW CANCERS

⊕ NEGATIVE EFFECTS COULD TAKE A LONG TIME TO APPEAR

⊕ DESTRUCTION OF LARGE ECOSYSTEMS

⊕ ECONOMIES DEPENDENT ON MULTINATIONAL SUPPLIERS



Anthropocentric: (Gr. Anthropos, a man; L. centrum, centre.) Taking mankind as the pivot of the universe.

Base: Part of the building blocks of nucleic acids, the sequence of which encodes genetic information; cytosine (c) , guanine (g) , adenine (A) and thymine (T) are the bases in DNA; C, G, A and uracil (U) are the bases in RNA.

Biochemistry: The study of the chemistry of living things.

Biogenetic waste: Biological waste that contains genetically modified organisms; includes sewage, refuse and effluent from biotechnological processes.

Biological containment: The use of organisms in genetic engineering applications and research which are genetically engineered so as to minimise their ability to survive, persist and replicate; also applies to the use of genetically deficient cloning vectors, which are deficient in their ability to move to a new host strain; also known as 'genetic enfeeblement' and 'crippling'.

Chromosomes: (Gr. chroma, colour; soma, body.) Darkly staining structures, composed of DNA and protein, which bear and transmit genetic information; they are found in the nucleus of eucaryotic cells and free in the cytoplasm in the cells of prokaryotes; the number of chromosomes in each somatic cell is characteristic of the species.

Clone: A collection of genetically identical molecules, cells or organisms which has been derived (asexually) from a single common ancestor.

Conjugation: (L. cum, together; jugare, to yoke.) Term used to describe mating between bacteria.

Diffusion (of an innovation) : The spread of an innovation, with or without modification, through a population of potential users.

DNA: Deoxyribonucleic acid; the molecule which for all organisms except RNA viruses encodes information for the reproduction and functioning of cells, and for the replication of the DNA molecule itself; information encoded in

DNA molecules is transmitted from generation to generation.

DNA sequence: The order of base pairs in the DNA molecule; genetic information can be encoded in the sequence of bases.

Down-stream process: A process in industrial biotechnology which occurs after the bioconversion stage; for example, product recovery, separation and purification.

Ecology: Term coined in 1866 by Ernest Haeckel (1834-1919) to describe the branch of biology dealing with inter-relations between organisms and their environment.

Ecosystem: (gr. oikos, home; L. systema, an assemblage of things adjusted into a regular whole.) A unit made up of all the living and non-living components of a particular area that interact and exchange materials with each other.

Enzyme: (gr. en, in; zyme, leaven.) A biological catalyst produced by living cells; a protein molecule which mediates and promotes a chemical process without itself being altered or destroyed; enzymes act with a given compound, the substrate, to produce a complex, which then forms the products of the reaction; Enzymes are extremely efficient catalysts and very specific to particular reactions; the active principle of a ferment.

Gene; (Gr. genos, descent.) A gene is a section of a nucleic acid molecule in which the sequence of bases encodes the structure of, or is involved in the synthesis of a protein.

Gene expression: the mechanism whereby the genetic instructions in a given cell are decoded and processed into the final functioning product, usually a protein.

Genetic marker: An identifiable feature encoded in the genetic material of an organism; an example of the use of genetic markers is the insertion of a small unique and inactive piece of DNA into the genome of organisms to be released into the environment to enable such organisms to be identified upon recovery from the environment.

Genome: A collective noun for all the genetic information that is typical of a particular organism; every somatic cell in a multicellular organism contains a full genome; the term is also applied to the genetic contents characteristic of major groups or of a species; not all portions of a genome are genes; genomes can be regarded as an ecosystem of genetic elements.

Green Revolution: Term used to describe the replacement of traditional crops by high-yield varieties requiring irrigation systems and inputs of fertilisers and pesticides to sustain them.

Host: A cell (microbial, animal or plant) whose metabolism is used for the reproduction of a virus, plasmid or other form of foreign DNA, including vectors and recombinant DNA.

In vitro: (L. Vitrum, glass.) Literally in the glass; biological processes studied and manipulated outside of the living organism.

In vivo: (L. vivo, Live.) Within the living organism.

Innovation: The first introduction of a new product, process or system into the ordinary commercial or social activity.

Invention: The first idea, sketch or contrivance of a new product, process or system.

Micro-organism: An organism belonging to the category of viruses, bacteria, fungi, algae or protozoa.

Mutation: A change in the genetic material; can refer to changes in a single DNA base pair or in a single gene, and also to changes in chromosome structure and number which are recognisable under the microscope; mutation in the germ-line or sex cells could result in genetic illness or changes of evolutionary significance.

Neo-Luddite: Person actively opposed to the introduction of new technology: after the Luddites, an organised band of mechanics which went about destroying machinery.

Patent: The exclusive right to a property in an invention; this monopoly on invention gives its owner the legal right of action against anyone exploiting the patent research without the patentor's consent.

Physical containment: Measures that are designed to prevent or minimise the escape of recombinant organisms.

Protoplast: Plant cell whose cell wall has been deliberately removed; used in plant cell fusion.

Recombinant DNA techniques: A type of microgenetic engineering; the combination of in vitro genetic recombination techniques and techniques for insertion, replication and expression of recombinant DNA inside living cells.

Scientism: The belief that the scientific approach is objective and the only rational way to approach any problem. It is argued that this belief promotes passive acceptance of techniques and technologies which are scientifically based and thus apolitical.

Sentient: (L. sentiens, feeling.) Having the faculty of perception; a sentient being is one who perceives; refers to all animals which have the capacity to have conscious experiences such as pleasure or pain.

Species: (L. species, particular kind.) A unit of biological classification; sexually reproducing organisms are classified as belonging to the same species if they can interbreed and produce fertile offspring; it is especially difficult to apply the concept of species to bacteria which are not subject to reproductive isolation.

Sustainable development: Environmental policy which requires the sustainable use of natural resources; each generation shall pass on to the next generation an undiminished aggregate of capital assets, including certain natural assets considered to be inviolable, such as the earth's stock of biological diversity.

Transgenic manipulation: A type of microgenetic engineering in which genetic material from one species is inserted into the genome of a different species; an application of recombinant DNA technology.

Vectors: Self-replicating entities used as vehicles to transfer foreign genes into living cells and then to replicate and possibly also express them; examples are plasmids and viruses.



- ⊕ HIGHER YIELD
- ⊕ ABILITY TO OVERCOME CATASTROPHIC EVENTS
- ⊕ IMMUNITY FROM DISEASE
- ⊕ UNDERSTANDING OF GENE FUNCTIONS
- ⊕ MORE BIOCOMPATIBLE WAY OF PRODUCING CHEMICALS, LIKE PLASTIC
- ⊕ ABILITY TO BE GROWN IN EXTREME ENVIRONMENTS
- ⊕ PRODUCTION OF NEW DRUGS
- ⊕ FOOD PRODUCTS WILL PRODUCE BETTER TASTE, LARGER QUANTITIES AND MORE NUTRITION
- ⊕ LONGER SHELF LIFE
- ⊕ LOWER PRODUCTION COSTS
- ⊕ RECOVERY OF LOST SPECIES

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