Classification of Intentional Misuses of Genetics

Application of genetic engineering in criminal intent to cause dysfunction of a specific physiological function constitutes a misuse of science and technology. With genetics as a basic science, affected are all its branches like human genetics, population genetics, pharmacogenetics, genetics of behavior and gene technology; in the sciences and their branches following it biology, zoology, bio-chemistry, molecular biology and bio-technology; in its related sciences and their branches chemistry, medicine, neurology, pharmacology and toxicology.

Genetic incisions affect first the anatomy and physiology of an organism by imbalances, impairments, diseases, disabilities and death and change the level of performance and general health. Primarily manipulated is an elementary trait, where the phenotype with a hereditary, morphological or functional distinction is traceable to a specific genotype and the individual gene or gene group as functional unit is identified and described with its bio-synthetic pathway.

Misuses of genetic manipulations, an arsenal of methods, are classified to demonstrate a) systematic structure, b) selection criteria, c) modus of operation, d) method of detection, e) threats to public health and f) required legal safeguards by:

1) Targets of Attack

2) Transport Paths of Attack

3) Breath of Attack

4) Affected genetic and bio-chemical Processes

5) Population Genetics

6) Degree of Impairment

7) Goal of Attack

8) Genome incisive Agents and Toxins

1) Targets of Attack

Taxonomic classification of all living organisms according to cell structure distinguishes the realms of prokaryotes (eg bacteria), eukaryotes (eg one cell Amoebozoa, one cell flagella Excavata, legged Rhizaria, Chromalveolata like alga, Archaeplastida like plants and Opistho-konta like animals) and mushrooms.

1a) Plants
Plants can be grouped according to eg living environment of sea or land, climate zone, species, anatomy, metabolism, age, stage of life cycle, health, colors, fruits, nutritional value, ...

1b) Animals
Animals can be grouped according to eg living environment of sea, land or air, climate zone, habitat, species, genetic characteristics, rank in the food chain, anatomy, metabolism, gender, age, weight, length, stage of life cycle, health, average life expectancy, colors, breeding grounds, communication, social behavior, nutritional value, ...

1c) Humans
Humans can be grouped according to eg race, descent, population, genetic characteristics, anatomy, physiology, weight, height, gender, age, health, average life expectancy, marital status, profession, organization, income, nationality, place of birth, residency, language, education, religion, culture, ...

Each group can be further subdivided, eg physiology into eg body parts, organs, local cell tissues, cell parts, somatic and sexual cells, morphological structures, physiological functions, regulatory bio-chemicals, ...

2) Transport Paths of Attack

2a) Physical delivery to target: Bypassing surgical incision and its recognition by the victim, toxic agents and genome altering segments in suitable genetic envelopes are packaged for transport and applications mostly into small gelatine skins. 'Poison pellets', microscopically tiny toxic pellets and tiny listening and video devices and bio-chemical-electronic sensors are produced by the millions in a process of microchip precision engineering. As depot poison pellets with an effective range of about 30 feet, they are spun off several times out of multiple layers of equally tiny, hair like pneumatic guns. Placed by an undercover agent on a selected carrier, for example an unknowing person or any object of daily life or into a water reservoir or at any step of the food chain or on a space based gliding – flying drone device, they are channeled electronically path monitored into the vicinity of the body of the target and shot in. A set off mechanism (3f) releases the toxins.

2b) Physical transfer of genetic material: The foreign genetic material, achieving heterologous gene products with defined parameters, is transferred into host cells and nuclei by: in vivo or in vitro concentration increase in form of a precipitate or a charged complex; in vitro protoplast fusion or lipofection, effecting fusion to the plasma membrane of the cell; in vitro laser poring or micro-injection, physically opening the cell; in vitro electroporing, widening membrane pores.

2c) Transformation of genetic material: Insertion of a mutant or recombinant or synthesized base sequence proceeds by means of independent replication within the cell plasma or by integration into the host chromosome by transposition, a change of position of a transposable genetic element from one site of the genetic material to another. By cutting, strand transfer, joining of ends, the donor DNA is being covalently bonded. A transposable or mobile genetic element can insert, exit or relocate into non-homologous DNA independent of the host's recombinant functionality. As transposition carriers serve mostly bacterial and viral 'envelopes': bacterial, transposable genetic elements are e.g. IS elements (insertion sequence), TN elements (transposon), transposable phages; viral elements are e.g. classical transposons, retroposons, alu-like sequences; with mammals polyomaviruses, vacciniaviruses and retroviruses are employed. The gene targeting rate, the frequency of integration of an exogenously added DNA sequence into the nucleus per quantity of host DNA per added sequence, depends mainly on: transfer and transposition methods; homology between exogenous and host DNA; the vector system; length of the inserted string; accessibility of a target locus; environmental factors.

3) Breath of Attack

3a) Number: Attacks can be single, multiple, mass application.

3b) Time: Attacks can be one time, random, intermittent, repetitive, periodical, continuous.

3c) Location: Attacks can be at every part of the body of a single target, nano robots carrying toxin capsules via bloodstream from one tissue to the desired place of impact.
A single or group of targets can be hit in any environment, region, territory, country.

3d) Modus: Attacks can be preparatory or present, target specific or random, selecting targets by one or more criteria, selecting targets of several groups or as entire population, in closed or open medium, contained or epidemical.

3e) Concentration: Attacks with toxins of chemically high purity and concentration of less than one milligram can cause an incisive effect on a physiological of genetic function.

3f) Set off mechanism: Attacks can release a toxin instantaneously by dissolution of its soluble pellet skin in body fluid or set off from an insoluble pellet by an electronic mechanism, eg timed, time locked delayed, by code signal, sound, voice, toxin concentration or physiological process recognition.

3g) Operation: Attacks can be set up by elaborate planning, research, testing, organization, infra-structure, logistics, methods, means.

4) Affected genetic and bio-chemical Processes

4a) A mutation induces a structural change in the genotype of an organism to cause a modification of the phenotype. The mutation spectrum encompasses changes in the number of chromosomes (ploid mutation), changes in the composition of a chromosome (chromosome mutation) and changes in the structural or regulative region of a single gene (gene mutation).

Distinguished are haploid sets, n = 1 single, complete sets; diploid sets, n = 2 double, complete, homologous sets; polyploid sets, n > 2 multiple complete, corresponding sets.
Resultant structures of a ploid mutation are cells with an aneuploid set of chromosomes, which is increased (hyperploid) or decreased (hypoploid) by a fraction of a set. Autoploid sets are species specific, - alloploid sets are species non-specific.

Mutational inheritable changes by mutant gamets in genetic variability constitute a basic mechanism of evolution, leading to new varieties. They arise spontaneously or induced on application of chemical agents or physical means like radiation or by means of genetic engineering. The mechanism can be a reaction between DNA and a mutagen, an error in DNA replication or recombination, an error in transcription or translation, introduction of a mutagen altered precursor.

Misapplications:
An induced ploid mutation is almost always a lethal mutation, a lethal defect, because of abnormally developing, non-functional cells leading to cell death, death of organism or still birth.

An induced chromosome mutation with a change in the order of genes between two or within a chromosome by addition, elimination or rearrangement of a region results in a bio-chemical mutation, leading to a replication dysfunction with loss of an entire trait out of the phenotype or to transcription or translation dysfunction with growth transformation like tumorous growth in local body tissue.

An induced gene mutation, a change in a base sequence of a gene, a structure or regulation changing, amplifying or repressing, forward or backward, single or complementary (synonymous), expressive or conditional, sometimes point, also nonsense (neutral) mutation, can destroy the function of a gene at the site of incision, or cause additional large scale rearrangements of adjacent DNA sequences, or alter the efficiency of gene expression (gene penetrance), the degree of trait formation also in growth, differentiation and final structuring of a function.

4b) Recombinant DNA technology comprises all physical, bio-chemical and genetic processes (recombination system), which independent of naturally occurring processes produce a new gene combination by methods of introduction, elimination or distortion of a DNA sequence in a chromosome. A small amount of manipulated or foreign DNA in the genome, mostly changing the relative amount of DNA in the host cell, is being active in gene expression, in gamets hereditarily passed on to the progeny and transgressing in nature found species (chimera).

The transfer of a passenger DNA strand (transfection) is based ether on existing genetic material or on synthesized amino acid sequences. It is achieved by the in vitro steps of: recombination or de-novo synthesis or single strand synthesis of a DNA sequence with a sought for quality; construction of a vector system (replicon) to stably modulate transcription and as a carrier for the passenger DNA for integration (transposition) into the host genome; ligation, binding the passenger DNA to a vector system, - each step requiring the techniques of localization, isolation by cleavage and separation, characterization, generation, selection, verification. As carrier serve as with transposable, mutant elements often a bacterial or viral vector system, which can be integrated efficiently into the host chromosome. Main commercial application is in vivo gene amplification (of an amplicon) for production of a specific protein with sought for properties.

Gene expression: Gene action is mainly regulated via transcription and translation (modulation) rates, which respond also to external stimuli of radiation, light, heat, hormone treatment and virus infections. Both rates depend in first degree on the initiation rate as the rate limiting step, initiation being facilitated by cell specific, regulative genes of the required number at the required time in coordination with metabolic conditions like product concentrations, mix, transport and adjustments of protein synthesis rates.
In the elongation step of mRNA synthesis from a template, transcription efficiency depends on: the basic vector system, function specific enzymes like promoters, enhancers, repressors, anti-repressors, stabilizers, terminators of suitable concentration, special arrangement and transport paths, the fine structure of chromosomal base orientation in accessibility, attachment and winding - unwinding processes.
After mRNA processing and transport to the cytoplasm of the cell, the new protein is polymerized by addition from the mRNA strand, the matrix. In the elongation step translation efficiency relies on ribosomal binding sites, tRNA, GIP, ATP concentrations and on regulative, function specific enzymes. The folding process begins immediately with base sequence copying, enzyme assisted, forming out inhibitory or stimulatory structures, which with end group modifications specify the protein's transport path, function, efficiency, solubility, membrane association and anchoring.

Misapplications:
In vitro manipulated targeting sequences can contain elements to manipulate genome structures and genetically controlled processes in their entire spectrum: any parameter affecting gene expression, leading to amplification, depression, destabilization, dysfunction, toxin production, cell death, disablement of a function; any singular phase in meiotic and mitotic cell division, leading to irregular chromosome assortment, chromosome deformation and fragmentation, phase inhibition, cell and cell line dysfunction, cell death, sterility, malignant tumorous growth; any regulatory process of ontogenesis, mainly controlled by the homoeobox, leading to a change in development in timing, rate, location with de- and malformation of cell morphology, diverging growth and differentiation of functions, causing changes in functional capacity, cell unit dysfunction, uncontrolled growth, death of organism.

4c) Hybridization encompasses all processes of cell fusions with and without ensuing fusion of cell nuclei, of somatic and germ cells, of genetically close and distant (transgenetic) species. In sexual reproduction of higher animals in the sex cycle of alternation of meiosis and karyogamy, individual gamets differ in composition of genetic material from each other and from the parent organisms (gametogamy) and male and female ones are distinct in size, form and mobility (heterogamets).

Gametogenesis: In all higher plants and animals, gamets, sexually differentiated copulating germ cells, arise in meiosis, in animals to form primordial germ cells in the gonads, the male (testis) and female (ovary) sex organs. They develop over several stages from spermatogonia to spermatocytes to spermatids to spermatozoa (male) or from oogonia to oocytes to ootides to ova (female), the mature germ cells. By two meiotic cell divisions (M I + M II) with recombination and random segregation of chromosome pairs, in all from one primordial germ cell mature four germ cells with a haploid set of chromosomes, where of the female three abort.

Meiosis I: The first meiotic division proceeds along 9 stages of leptotene, zygotene, pachytene, diplotene, diakinesis, prometaphase I, metaphase I, anaphase I, telophase I, interkinesis (gap phase). An intra- and interchromosomal recombination takes place from zygotene to diplotene. The homologous chromosome strands (sets A,B) pair along their lengths: 1a-1b, 2a-2b, … 23a-23b. Held together by contact points, they form a synaptonemal complex with open, branched, four armed base chains, facilitating a crossing over (chiasma), a free, reciprocal exchange of different chromosome segments, gene combinations or single alleles by strand break, recombination and strand repair. A random assortment of chromosome pairs takes place from prometaphase I to anaphase I. The halves of the diploid set on the equatorial plane are pulled by a spindle apparatus into opposite hemispheres of the nucleus, e.g. C: 1a, 2b, 3b, … 23a and D: 1b, 2a, 3a, … 23b.
Meiosis II: The two nuclei with a haploid chromosome set replicate once in a short gap (G1) - synthesis (S) - gap (G2) phase, restoring the diploid set and leading to a second meiotic cell division, a mitosis, proceeding in 5 phases of prophase II, prometaphase II, metaphase II, anaphase II, teleophase II. During metaphase II and anaphase II the sister chromosomes align lengthwise on the equatorial plane to be separated as in meiosis I. The two mitotic daughter nuclei remain each with a haploid chromosome set. In all out of one primordial germ cell result after two meiotic divisions 2 genetically distinct and 2 genetically equivalent (C, C', D, D') gamets.

Manipulation of germ cells:
Mutant and recombinant DNA sequences are introduced into germ cells, zygotes and embryos in the early cell stages (surrogate genetics): into a cell group to manipulate an entire cell line; into the homoeobox to manipulate a genetic strain through subsequent stages of ontogenesis; for technical reasons, as a small amount of foreign DNA affects an entire cell type evenly, in time stable modulation, hereditarily fixed and within a short developmental time span.

Misapplications:
Meiotic poisons can cause in recombination and cell division processes: partial or perfect misalignment and misassortment of chromosomes, chromosome deformation and fragmentation, cytoplasma deformation, phase inhibition, cell death, sterility. Mitotic poisons act like meiotic poisons, affecting: chromosome alignment, assortment and form, cell division processes, nucleic and cytoplastic morphology and in consequence cell functions with phase inhibition, cell death, sterility. Aside from noxious agents, meiosis is affected by heat, radiation, insertion of a function disrupting DNA strand, all toxins by impairment of regulatory processes able to lead to tumorous growth and death of organism.

5) Population genetics describes the genetic demographic structure of a reproductive community, its allelotype by allele frequencies in the common gene pool, the genetic composition being derived by count of all singular genes at a specific locus in the genome of each organism, as well as the dynamic forces (Origin of Species, 1859, Charles Darwin), which effect changes in the genetic structure to render them predictable from theory.

All closed, equally dispersed, autogame populations, reproducing by panmixia (Mendelian population), exhibit genetic variability, leading to variability of phenotypes in morphology, physiology and behaviour, which by the laws of inheritance are passed on to succeeding generations. In the evolutionary process out of genetic variability develop various forms, specialization of functions and adaptations to environmental changes. Through genetic flexibility and natural selection, a genotype survives more successfully within its own or in competition with another population or under limited resources or in a hostile environment by means of its relative fitness, the average probability of survival in one or more aspects of its phenotype like normal life span, fertility, pairing behaviour, body weight, metabolism. Through continuing genetic differentiation over geological time spans of part of a population, mostly after geographic isolation, the evolutionary process forms out new species (intraspecific evolution) and new genera (interspecific evolution).

On the genetic level, the wealth of variability, much larger within a population than between different races, is determined by all evolutionary forces: by mutation; by hybridization (with a recombination) in the process of sexual reproduction; by migration, an introduction and spreading of a gene from another population; by gene drift, a random shift of the mean of a trait distribution; by genetic correlation, their interaction and harmonization to maintain genetic cohesion; by genetic homeostasis, the tendency to maintain and to restore a dynamic equilibrium by own regulatory mechanisms.

Quantitatively the rate of change in the frequency of an allele a^- depends mainly on: mutation and recombination rates; its mean of fitness in relation to the total fitness of its own and competing populations and in relation to its heterozygote allele a^+ and alternate alleles b, c, … ; its relative frequency in relation to equivalent parameters; magnitude and direction of selection with elimination of alleles; its degree of dominance; the spread of genetic variability.

Misapplications:
Criminal intent employs population genetics with bio-chemical, function specific strain manipulations as rational, 'scientific' tool to model the allele composition of a targeted individual, a selected group or an entire population. Population genetics serves as 'basis' for a human hand directed 'evolution'.

In a systematic, clandestine, monitored process of repetitively cataloguing, correcting incisions, every individual of the target group is subject to strain manipulations. The allele distribution of the common gene pool is tailored to a designed structure and frequency by means of introduction of de-sired and modification or elimination of undesired dominant and recessive traits. Individuals with genodeviant, 'substandard' traits are eliminated.

6) Degree of Impairment

6a) Death of organism trough disablement of an indispensable function or through a morphological malformation via a lethal genetic factor (defect), classified according to degree of penetration, phase activity, gene location, bio-synthetic pathway, degree of dominance, synergistic effects, internal and external environment, - also camouflaging a natural cause of death.

6b) Disease or invalidity through a mostly temporal, local, graded disruption of a physiological, often neurological function via a malign genetic alteration, classified like lethal factors, leading to destabilization, dysfunction, loss of control, tumoral growth, - also camouflaging a commonly occurring illness.

6c) Change in level of a physiological, often neurological capacity via a malign genetic modulation of a nucleic activity by amplification or depression of gene expression.

6d) Altered growth and differentiation of a physiological capacity to predetermine physical performance (genetics of constitution), of a neurological capacity to predetermine mental performance (genetics of the mind) and of the psychological profile (genetics of behavior) via a malign genetic incision into germ cells and embryonic tissue to affect an entire cell type with development and functions or into the homoeobox to direct ac- or deceleration of developmental processes in the stages of ontogenesis or by introduction of a host foreign DNA strand to form out a new trait in the phenotype.

7) Goals of Attack

A malign incision into an organism's genome or a group's or population's gene pool can serve as weapon, social steering mechanism and performance advantage according to eg political, military, economic, sociologic-cultural and demographic criteria.
Politically gross misuses of power and legally grave physical injuries, not to be realized against public opinion, intended genome manipulations are set up as secret policy goals and executed as 'black projects' under extensive, repressive cover.

8) Genome incisive agents and toxins are listed with eg production, storage, functional groups, critical dosage, incubation times, symptoms, proof, counter agents and medical treatment.

8a) Physical means, eg mechanical, thermodynamic, electromagnetic, radioactive.
8b) Chemical means, eg inorganic, organic, bio-chemical.
8c) Genetic means, eg mutation, recombination, hybridization.

(without further data)