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The environment in Jewish law

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JEWISH INVOLVEMENT IN GENETIC ENGINEERING

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QUESTION: May a Jew genetically alter a mouse, or may a Jew use a mouse if it has been genetically engineered by a gentile? What is the status of animals in Jewish law? (Arthur P., Gershman, Arlington, VA)

ANSWER: Genetic engineering is a field that is still in its infancy, but we can expect major advances in this area in the future. At the moment it is possible to introduce permanent genetic changes in plants, animals, and human beings. There are many questions about exercising control and about the dangers that may arise from new, altered, or hitherto unknown substances formed through these methods. Unusual safeguards have been proposed by both the scientific community and national and international agencies. Such caution is wise and we should proceed carefully even when we are dealing with animals. This responsum is not intended to discuss genetic engineering in human beings.

We will, perhaps, begin with the question of the status of animals in relation to human beings and then turn to genetic engineering.

The biblical statement in Genesis (2:26) placed people above animals enabling humans to rule them and therefore use them in any way that seemed appropriate and certainly to save a life (*pikuah nefesh*). So, for example, cattle could be used for food or

for various kinds of work (B.M. 86b; Hag. 3b; Meila 13a; A.Z. 5b, etc.). Consumption or sacrifice was limited to those deemed clean (Lev. 11:3ff); the list included animals, birds, and fish. Other animals that were unclean could be used by humans in various ways. There were few limits on the manner of catching or housing animals as long as it was humane, so a varieties of means of catching birds were discussed in the Talmud (B. M. 42a; Taanit 22a; Shab. 78b; Ber. 9b; etc.). Animals that endangered human beings, such as wolves and lions, could be destroyed (Ber. 13a). This was even more true of pestilent creatures such as grasshoppers, mosquitoes, scorpions and ants. Crop eating field mice and rats could also be destroyed (Taanit 14a, 19a; Shab. 121b; M.K. 6b). The Midrash that sought to find a use for animals such as fleas and mosquitoes stated that they were created in order to plague evil people (*Midrash Rabbah Vayikra* 189).

Animals could be used by humans as long as they were treated kindly. It is prohibited to consume a limb from a living animal (B.M. 32b). An animal that was threshing may not be muzzled; it must be permitted to eat as freely as a human being (Deut. 23:25f.; B.M. 87b, 90a; *Yad, Hil. Zekirut* 13.3; *Shulhan Arukh, Hoshen Mishpat* 338). Furthermore, one should not consider acquiring an animal unless one has the means to feed it (J.T. Ket. 4.8), and a person should then feed his animals before feeding himself (Git. 62a; *Yad, Hil. Avadim* 9.8).

Unnecessary pain may not be inflicted on animals (Ex. 23:5; B.M. 32a; *Yad, Hil. Rotzeah* 13.9; Solomon ben Aderet, *Responsa* 252, 257). Some of the medieval scholars who were concerned with the protection of animals felt that those precautions needed to be stricter than those for human beings, as animals do not have the intelligence to care for themselves or to take a longer view of matters (*Yad, Hil. Zekhirut* 13:2; David ibn Zimri, *Responsa* I 728; Yair Hayim Bacharach, *Havat Yair* 191; *Shulhan Arukh, Hoshen Mishpat* 337:2). Biblical law prohibited the killing of a mother with its young (Lev. 12.28; Hul. 83a; *Yad Hil. Shehitah* 13; *Shulhan Arukh, Yoreh Deah* 16). The later Jewish codes also insisted that a seller inform a buyer of the relationship between any animals sold so that a mother and its offspring would not be slaughtered together on the same day. A similar kind of provision forbade the taking of both a mother and a chick from the same nest (Deut. 12:6; Hul. 138b *Shulhan Arukh, Yoreh Deah* 292).

Kindness to animals included the lightening of the load from an overburdened animal (Ex. 13:5). Domestic animals were required to rest on Shabbat as human beings were (Ex. 20:10; 23:12; Deut. 5:14). Provisions were made for animal care on Shabbat, an animal that was normally milked by a non-Jew. If an animal needed to be rescued, it was to be done even on Shabbat (Shab. 128a; *Yad, Hil. Shabbat* 25:26; *Shulhan Arukh, Orah Hayyim* 305:19).

We should also note that the castration of animals was always prohibited and considered as a form of maiming, which was forbidden (*Shelat Yaabetz* 1.:1). We may summarize this by relating that our tradition demands kind treatment of animals. They may be used by human beings but not treated cruelly. We should note that the medieval discussion by some Jewish philosophers about the soul of animals was left as a speculative issue.

Now let us deal with genetically induced changes in mice that are to be used as experimental animals. Systemic genetic changes are a recent scientific achievement. The only area that approached this field in the past was controlled breeding. Our tradition had very little to say about breeding animals, as long as no attempt was made to do so with unlike species. There was great interest in maintaining separate species of both plants and animals, based in part on biblical verses (Lev. 19:19; Deut. 22:10). An entire section of the Mishnah (*Kilaim*) dealt with the problem of sowing various kinds of seeds together, grafting one plant onto another, and the interbreeding of animals. This segment of the Mishnah contains eight chapters that dealt with various kinds of mixtures such as the prohibition against interweaving wool and linen and the crossbreeding of certain species of animals or plants. The Mishnah and *Tosefta Kilaim* indicated a fascination with mixtures and sought to explain the natural world from this perspective. The Mishnah *Kilaim* presented two points of view, according to a recent scholarly volume by Avery-Peck. The circle of Yavneh argued that species were to be kept separate, as God created order in the universe and it was Israel's duty to maintain this separation.

Those of Usha argued that Israel imposed order onto the natural world and Israel now had to maintain it. Neither group ultimately included non-edible plants in their scheme. (A.J. Avery-Peck, *The Mishnah's Division of Agriculture* [Chico, CA: Scholars Press, 1985])

When the Mishnah *Kilaim* dealt with animals, it was mainly concerned about unlike species harnessed together or interbred. Neither the Mishnah nor later Jewish literature prohibited ownership of animals bred in such a manner. Interest in this subject, however, diminished, so there was no Babylonian Talmud to these chapters of the Mishnah and later discussion of this material is sparse.

The chief biblical section that deals with this issue, aside from the legislation mentioned above, is the story in Genesis in which the young Jacob promised to maintain the flock of Laban and as payment asked for the speckled, spotted, and dark-colored sheep and goats. He then proceeded to influence the breeding in that direction. Ostensibly this was done through the placement of shoots of poplar, almond, and plane tree, but there has been some speculation that he possessed some knowledge of genetics which helped him to his goal for a large flock. That theory has been advanced by Judah Fliks (*"Yorashah Usvivah Bemaaseh Yaakov Betzon Lavan," Tehumim, Vol. I III pp. 461ff.*). We should note that the biblical commentators do not single this story out for special comment and to the best of my knowledge do not use it as an example of animal breeding.

Occasionally commentaries, such as Rambam who stated that human beings should not change nature as that would imply imperfection in God's creation. (Rambam to Lev.19:19). That medieval view was found frequently in church literature. It has not been followed by Jewish thinkers.

Jewish law said nothing about changing the characteristics of a particular species or breed. Throughout the centuries every effort was made to assist nature and to produce animals suited to specific purposes as well as plants that would yield abundantly. Despite Jewish involvement in agriculture through the centuries, this matter has not been discussed in the older responsa literature, to the best of my knowledge. In modern times, these efforts have been accelerated through selective breeding and an understanding of the genetic process. More recently, cloning of plant tissues has been used successfully to produce plants that are absolutely true; this method holds great promise as well as potential dangers.

Genetic engineering of plants or animals within a species poses few old *halakhic* problems, though it raises many other issues. Human beings have selectively bred plants and animals

since the beginning of herding and agriculture in order to adapt them to specific human needs and environments. Genetic engineering will vastly accelerate this process. This may eliminate poverty, famine, and disease, but may also bring scourges and problems that we cannot foresee.

We are standing at the edge of a new scientific era. We certainly wish to utilize the potentials of genetic engineering for the benefit of humanity. That may be partially within our power. It is not within our power to stop the scientific experimentation. The human yearning to understand the divine creation and everything in it as fully as possible cannot be halted, nor can the desire to alleviate the problems of hunger, disease, and poverty.

As we learn more about the nature of genetic engineering, we must discuss its moral implications with regard to both animals and human beings. We realize that the line between plants, animals, and human beings is thin and in some ways does not exist at all. So we must proceed with caution. In consort with others we must set limits and provide direction. We have, of course, become especially sensitive to all of these issues since the Holocaust and the terrible medical experimentation that occurred during the Holocaust.

We may be ready to accept genetic changes made for medical purposes and experimentation, as *pikuah nefesh* is an overriding consideration (Shab. 132a; Yoma 85b; *Tosefta* Shab.17 and Alfasi; *Shulhan Arukh, Orah Hayyim* 328:1; Hatam Sofer *Responsa Hoshen Mishpat* 185). Human life must be saved if it is at all possible and even some pain to animals is permitted for this purpose. Economic reasons, however, could not justify such a course of action. They should always be reviewed carefully.

A mouse engineered genetically for a specific set of experiments, which will eventually help human beings, lies within the boundaries of utilizing animals for the benefit of human beings. Naturally the humane treatment of the animals in accordance with our tradition must be observed. It would be appropriate for Jews to be involved in this kind of genetic engineering and to use the animals that they themselves have genetically changed.