

Editorial

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Ornamental animals

Everybody knows what ornamental plants are, and that they are the result of selective breeding through the ages. Actually, modern genetics started when Gregor Mendel wondered about the white and purple flower colours in the garden peas he grew in his Abbey's greenhouse. However, chrysanthemums, gladioles, pelargoniums, petunias have also been modified by genetic engineering, to result in even more appealing, better vendable colour varieties.

So far so good. "Ornamental animals" – if you consider e.g. brachygnath or chondrodystrophic cats and dogs aesthetically pleasing – have only been obtained by classical means. They sometimes require veterinary intervention, like artificial insemination and/or cesarean section. The European Commission has issued Guidelines for the revision of breeding policies in pets, the reason being animal welfare issues – the surmised suffering of these poor creatures. It is the "suffering" and the "poor" that direct legislators, it is the "surmised" that intrigues scientists. There are no objective measures of animal suffering, and legislation operates from the anthropocentric vantage point, where my opinion is as good as yours.

The statement that ornamental animals have only been obtained by classical means is no longer true. Yorktown Technologies, an Austin/Texas based company has developed the world's first genetically engineered pet, the transgenic GloFish®. The animals are normal zebrafish (*Danio rerio*) in every way, except that they glow fluorescent red. Scientists had engineered the fish as a means to detect pollution - whenever they encountered toxins in the water, the fish would glow. Technically, 'creating' such an animal is rather straightforward: genes from jellyfish and sea anemones that allow them to glow green and red, respectively, are identified and cloned; they are inserted behind a DNA promoter sequence to turn the gene on in fish muscle cells; the cassette is injected into zebrafish embryos; as fish grow, fluorescent protein is incorporated into muscle cells causing the entire fish to glow. The development took place at the National University of Singapore; zebrafish have long been favored by researchers because they are cheap, fecund and genetically malleable.

Fluorescent fish are just one of the latest innovations in the biotechnology march. American researchers are seeking approval for a quickly-growing salmon expressing two sets of growth hormone genes. A Canadian company has inserted spider genes into the goat genome to produce milk that can be refined and woven into "BioSteel", for use in surgical sutures, ballistic protection etc. – all very useful. To market the ornamental fish in California, the company must win an exemption to a recent state ban on lab-engineered aquatic species. State biologists have concluded that glofish pose no threat to the gene pools of wild populations and recommend that the state should grant the exemption. Environmental and commercial fishing groups oppose it, because of the precedent it would set. Animal rights groups have not yet reacted. California has now indeed blocked the fish from going on sale, citing ethical concerns. The Fish and Game commissioner is basically arguing that it is morally wrong to create a genetically modified organism for something so trivial as a pet.

Well, what about something less trivial: what about ornamental humans – if you consider e.g. the Barbie phenotype aesthetically pleasing – they, too, have only been obtained by classical means, so far. They sometimes require medical intervention though, like liposuction, cosmetic surgery ...