Creating Albino Hedgehogs — Should We?

By Jennifer Plombon, Minneapolis, MN and Blaine, WA

Most hedgehog guardians have rather strong feelings about albino hedgehogs. At least they do about the true albinos, who have red or pink eyes, pale feet, ears, noses and tails, and who, to some, look a little spooky. I have met people who refused to take in an albino hedgehog, citing their “scary red eyes” and overall strange appearance. Others actually prefer or seek out albino animals, finding their transparent red eyes and pale features to be appealing. Most people wouldn’t normally have an option to see or own an albino animal, since albinism is rare in nature. Most albino animals do not survive long enough to breed or create more albinos, since their white color stands out and predisposes them to higher predation rates. The fact that there are so many pet albino hedgehogs is due to selective breeding, and, while the colors might look “cool” or interesting, this selective breeding comes with a price for the animals.

WHAT IS ALBINISM?

Albinism is a congenital (meaning existing at or before birth, or developing within one month of birth) disorder marked by the complete or partial absence of pigment (melanin) in the skin, hair and eyes caused by deficient or disordered tyrosinase, a copper-containing enzyme involved in the production of melanin. Albinism is caused by inheritance of recessive genes. If a breeder trying to breed albinism bred two albino hedgehogs with each other, they would normally produce 50% albino animals, 25% non-albino-appearing animals carrying the recessive albino factor, and 25% non-albino animals without the albino factor. Albino animals usually have white fur, feathers, and/or skin, pink extremities, and red, pink, or pale blue eyes. The words albinoid, albinistic, and partial albinism refer to animals who are not completely without melanin, and may have
patches or spots of white, and paler-than-usual eye color. Our pinto, apricot, cinnamon and similarly-colored hedgehogs are examples of this. These albino variants may be affected to varying degrees by the health problems that affect albinos. These problems are listed in this article.

WHY IS IT RARE?

In the animal world, albino animals are at far greater risk of early death and thus have a decreased opportunity to live long enough to breed more albinism. Breeding itself may be problematic. Some studies have shown that birds reject and refuse to mate with albino versions of their own species. Albino prey animals, such as squirrels and rabbits, are more easily seen and eaten by predators, both in daylight and at night. Albino predators are also more easily seen by their prey, and thus have a more difficult time obtaining enough food and surviving long enough to breed. This is partly due to the fact that a white animal contrasts more strongly against a natural background than a naturally-colored animal does, and partly due to the fact that many animals see colors differently than humans do, thus the usual colors of an animal that allow it to blend into the background are compromised in albinos.

Here’s an example: It has been demonstrated that in dogs, the colors green and orange look essentially the same. Thus an orange and black tiger in green vegetation is extremely difficult for them to see, and the tiger has the advantage. An albino tiger loses that advantage in hunting, especially if we assume that other animals have similar responses to color. And, of course, there are animals which are both prey and predator and can be adversely affected by being albino. While I’m not certain that the slugs and snails, which are wild hedgehog food, can see an albino hedgehog glimmering in the dusk and be forewarned, I am certain that the foxes and badgers that eat wild hedgehogs can more easily see an albino one! Unfortunately, the risks posed to albino animals are not limited to predator/prey interactions, there are also significant health problems.
WHAT HEALTH PROBLEMS ARE ASSOCIATED WITH LACK of MELANIN & ALBINISM?

Melanin’s primary function is to protect the skin and underlying tissues from ultraviolet radiation from the sun. It’s found in most organisms on earth, although interestingly, it is not found in arachnids (spiders and scorpions). In its role of providing protection from solar radiation, melanin is naturally found in the skin, eyes, and hair. It is also found in the inner ear, brain, and adrenal cortex, so it seems to have other roles in the body not yet clearly understood. Melanin deficiency is known to be associated with diseases and genetic abnormalities.

*Albinism is associated with eye and visual problems* such as photophobia or sensitivity to light, poor or almost absent vision, decreased visual acuity, and abnormal development of the optic nerve.

The connection between albinism and decreased melanin states has long been associated with deafness in animals. Cats and dogs with blue eyes, or dog species that are largely white, are often deaf.

Melanin’s role in brain function, particularly in animals, is not yet completely understood, but its absence in humans affects neuro-motor function.

Albino animals can also have an impaired sense of smell, which presents an additional hardship for our hedgehogs who rely so heavily on their sense of smell to navigate in the dark.

Animals that use their eyesight less (as in our dark-prefering hedgehogs) need acute hearing, and animals already prone to neuro-motor problems such as WHS (Wobbly Hedgehog Syndrome) need healthy neuromotor function. Thus the health problems associated with albinism can have a large effect on our hedgehogs’ functioning.

WHAT HEALTH PROBLEMS ARE ASSOCIATED WITH BREEDING FOR ALBINSIM?

As mentioned above, albinism is normally naturally bred OUT of an animal population that is left alone, due to the related health problems and poor breeding success. Purposely creating albino or albinistic animals requires inbreeding. Inbreeding has long been associated with health problems in the population inbred and, since the complicated relationships between genes that are selected for are rarely completely understood, the health problems created are often misunderstood or serious and untreated. Inbreeding by its very nature creates animals who are homozygous-recessive (meaning they have inherited the same recessive gene, controlling a specific trait, from both parents.) This decreases the biological fitness of the population involved (referred to as inbreeding depression) Homozygosity is the opposite of heterozygosity (inheritance of different genes for specific traits), which is generally

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believed to be the best method by which populations can change, adapt, survive and reproduce in changing environments. When selective and/or inbreeding is deliberately done in animal populations, it is often for specific traits such as greater milk production or meat production, and there may be some economic justification (if not moral or ethical) for doing so.

In America the pet hedgehog population is captive. I mean captive both in the *physical* sense, since we keep them in enclosures, and in the more *metaphysical* sense, since we humans usually control and manage their breeding and reproduction. Inbreeding is often deliberately used to create unusual colors and patterns of quills and eyes. This captive population already labors under the threat of homozygosity, since no new African Hedgehogs have been allowed into the U.S. for many, many years. Thus no new genetic material has been able to impact their lines and increase heterozygosity. We have observed a steady increase in specific diseases in our hedgehogs, some of which are *known* to be genetically linked (such as WHS or Wobbly Hedgehog Syndrome) and some of which are strongly suspected of being genetically linked (such as oral cancers, lymphoma). Anecdotally, we are also seeing a decline in overall longevity since the very early days of African Hedgehog presence and breeding in North America. What’s unclear at this point is whether the health problems of inbreeding can be “fixed,” since any genetic tinkering is necessarily being done on a captive population with little hope of new genetic material appearing. Albinism and albinoid traits can at least be seen by breeders early in the life span of the breeding animals and their offspring. Diseases such as WHS and cancers take time to manifest. Thus it would be possible, and I believe wise for our pets’ sakes, to stop breeding for those traits that can be seen and controlled. Hopefully this might cause some inbreeding consequences to disappear and the fitness of our population of hedgehogs’ population might be improved.

I realize this is a very small sample, but of the 2 albino hedgehogs that have been in my care, one was blind AND deaf and died from WHS. The other developed a severe cataract in one eye that rendered it blind and painful and led to an enucleation. This hedgehog has also had neuromotor problems (head tilt, tipping, circling, quivering,) for her entire life. In both cases, I wish that they would NOT have had to deal with these issues and I wish that the desire to create unusual colors had not harmed them.

**Sources:**


Hedgehogs and Salmonella

By Margaret Myhre

Salmonellosis is an infection caused by a type of bacteria known as Salmonella. Salmonella germs were discovered more than a 100 years ago by Daniel Elmer Salmon, an American scientist.

Most people who are infected with Salmonella develop fever, abdominal cramps and diarrhea within 12 to 72 hours after infection. They may be ill for 4 to 7 days and recover without treatment. However, in some cases the diarrhea is so severe the patient must be hospitalized. The Salmonella infection can potentially spread from the intestines to the blood stream and from there to other body sites. The infection can be fatal if the patient is not treated promptly with antibiotics. The illness is likely to be more severe in elderly people, infants, and those with impaired immune systems. Most people with diarrhea recover completely, although in severe cases recovery can take several months.

A small percentage of those infected with Salmonella may develop reactive arthritis. The symptoms include painful joints, painful urination and irritation of the eyes. It can persist for an extended period of time and may lead to chronic arthritis. Treatment with antibiotics does not determine whether or not the patient will develop chronic arthritis.

According to the Centers for Disease Control, cases of Salmonellosis have increased in the United States over the last few years. Initially only one or two illnesses from a specific salmonella strain were reported annually. Unfortunately in 2012, twenty people were infected with the same rare form of salmonella bacteria. Seven of the cases occurred in Washington state, including that of an elderly man in Spokane County who passed away in January, 2013. The other cases occurred in Alabama, Illinois, Indiana, Michigan, Minnesota, Ohio and Oregon. The illnesses were linked to contact with pet hedgehogs.

Depending on the species of pet you have, salmonella can be a normal inhabitant of their GI tract and so it does not need to be treated. It is very difficult to tell if your pets have salmonella because they intermittently shed it in their feces. You can test the feces, but a negative salmonella test just means they were not shedding at the time the test was performed. ¹

The preferred solution to this dilemma is to develop the habit of washing your hands after handling ALL animals. Children who play with animals must be consistently monitored to be certain that pets are not being held too close to the face or mouth and that animals are not placed on any surface that will come into contact with food. Be sure everyone washes their hands and faces after they have played with pets.


After you touch your pet rodents, rabbits, and other small animals, wash your hands so you don’t get sick!

- Contact with pet rodents (such as mice, rats, hamsters, gerbils, and guinea pigs), rabbits, and other small non-traditional pets (such as hedgehogs, sugar gliders, chinchillas, and ferrets) can be a source of human Salmonella infections.

- *Salmonella* germs can cause a diarrheal illness in people that can be mild, severe, or even life threatening.

- Small pets can carry *Salmonella* germs and still appear healthy and clean.

- *Salmonella* germs are shed in their droppings and can easily contaminate their bodies, habitats, toys, bedding, and anything in areas where they live and roam.

- Children younger than 5 years of age, elderly individuals, or people with weak immune systems should use caution when handling or touching these small pets and other animals. These groups are at a higher-risk for infection and serious illness.

**Protect Yourself and Your Family from Germs**

**Do:**

- Wash your hands thoroughly with soap and water right after handling your pets or anything in the area where they live and roam.

- Adults should supervise hand washing for young children.

- If soap and water are not readily available, use hand sanitizer until you are able to wash your hands thoroughly with soap and water.

- To prevent contamination, keep your small pets out of kitchens and other areas where food and drink is prepared, served, stored, or consumed.

- Habitats, toys, feed or water containers, and any other equipment or materials used when raising or caring for your small pets should be cleaned outside the house. To prevent cross-contamination with *Salmonella* germs, avoid cleaning these items in the kitchen sink or in bathrooms.

- If bathtubs must be used for this purpose, they should be thoroughly cleaned afterwards and then disinfected with bleach.

**Don’t:**

- Don’t keep habitats containing small pets in a child’s bedroom, especially children younger than 5 years of age.

- Don’t snuggle or kiss small pets, touch your mouth after handling small pets, or eat or drink around them.

For more information, call 1-800-CDC-INFO or visit www.cdc.gov.

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National Center for Emerging and Zoonotic Infectious Diseases
Division of Foodborne, Waterborne, and Environmental Diseases

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Poster courtesy of the Centers for Disease Control. Used with permission.
Thoughts from the CVO

By Deb Weaver

Recently we’ve had an influx of questions about pet stores and breeders who have hedgehogs in unclean or unsafe conditions, and what the HWS can do about it.

Reports such as these, are best filed by the person “on the scene”, and not by an organization with no direct ties to the situation. Below are some resources available to use in the reporting of animals in deplorable conditions.

1. USDA

This is the organization that granted the license to the pet store to sell exotic animals or to the breeder to breed. The Mississippi River divides the country in to the Eastern or Western Region.

This is the link to register a complaint with the USDA: http://tinyurl.com/k8poe9g

**Eastern Region Contact Information**

USDA/APHIS/AC
920 Main Campus Drive, Suite 200
Raleigh, NC 27606-5210
E-mail: aceast@aphis.usda.gov
Phone: (919) 855-7100
Fax: (919) 855-7123

**Western Region Contact Information**

USDA/APHIS/AC
2150 Centre Ave.
Building B, Mailstop 3W11
Fort Collins, CO 80526-8117
E-mail: acwest@aphis.usda.gov
Phone: (970) 494-7478
Fax: (970) 494-7461

2. You can also file a report with the [USDA's Animal and Plant Health Inspection Service](http://www.aphis.usda.gov).

   Click on the Animal Welfare link

   Then click on the [File an Animal Welfare Complaint](http://www.aphis.usda.gov) link

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3. Your state government also has Animal Control Offices and Officers. Once you get to your state government’s web site, click on the Department of Agriculture, Trade and Consumer Protection link and then look for the Animal Welfare Link.

4. Your local government may also have an Animal Control officer with whom a report could be filed (or you may have a Humane Society in your area with resources to help). In my city, the link is under Environmental Health and Nuisance Control.

5. If the pet store is part of a larger chain, you can try filing a complaint with the headquarters of that chain.

6. You can also file a grievance with your local Better Business Bureau against the store.

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**Hedgehog Birthdays**

**November**

Nov. 2   Iowa Hannigan  
Nov. 14  Nutella Dunham

**December**

Dec. 6   Hedwig   
Dec. 25  Shannon Matarase

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The Literary Hedgehog: *Hedgehug’s Halloween*

This gentle Halloween story depicts some of the hazards of wearing a Halloween costume when one is a hedgehog. Hedgehug, the hedgehog, has just put on his slippers one evening when he is startled by his friend, Hannah, who has come to his burrow to escort him to the Halloween party of a mutual friend, Reginald.

Poor Hedgehug has forgotten all about the party and now he has to scramble to come up with a costume! His first solution is to slip on a white paper bag to disguise himself as a ghost. Unfortunately as soon as Hannah yells BOO!! Hedgehug’s quills come to full attention and reducing his costume to shreds!

His friend Edie the Owl, offers purple balloons and leaves from a cottonwood tree to disguise Hedgehug as a bunch of grapes. Hedgehug is delighted — until his quills pop all the balloons! In despair he heads for home alone.

Soon there is a knock at his door. His friends have arrived with the perfect costume for Hedgehug. He will attend the party dressed as a cactus!

The story is sweet and should appeal to children 4--8 years old. However, there is a problem with Hedgehug’s appearance. In most of the illustrations he is portrayed as a golden brown character with a pointy nose. There isn't a quill in sight! He looks more like an animated *Hostess Twinkie* than a hedgehog! The only explanation I can offer is that Benn Sutton, the author, lives in Australia where there are said to be no hedgehogs; and artist Dan Pinto lives in Brooklyn, New York, where hedgehogs are illegal. Could it be that neither the author nor the artist have ever seen a hedgehog? Wouldn’t it have occurred to them to look at a few actual hedgehogs, or even photographs of actual hedgehogs, before attempting to illustrate this book?

Look What I found!

These thick felt hedgehogs mounted on small wooden clothespins were sold in sets of six at the World Market a few years ago.

ARTISTS WANTED

Would you like to help illustrate the Newsletter? We are always looking for drawings, photographs and art work to include here.

Send your submissions in JPEG Format to:
newsletter@hedgehogwelfare.org

WRITERS WANTED

Would you like to write for the Newsletter? We are always looking for stories, poems, craft, projects, recipes, puzzles, and articles to include here.

Send your submissions or article proposals to:
newsletter@hedgehogwelfare.org