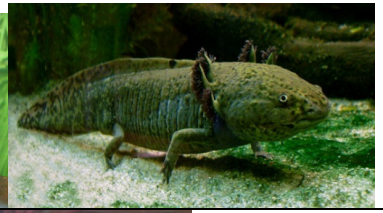
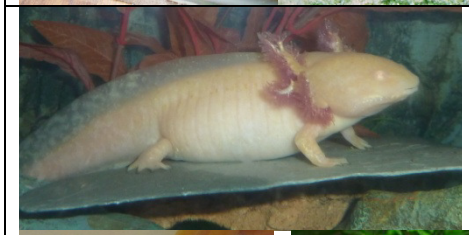
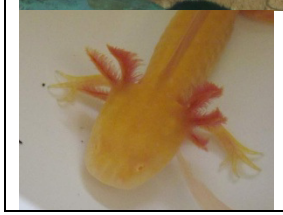
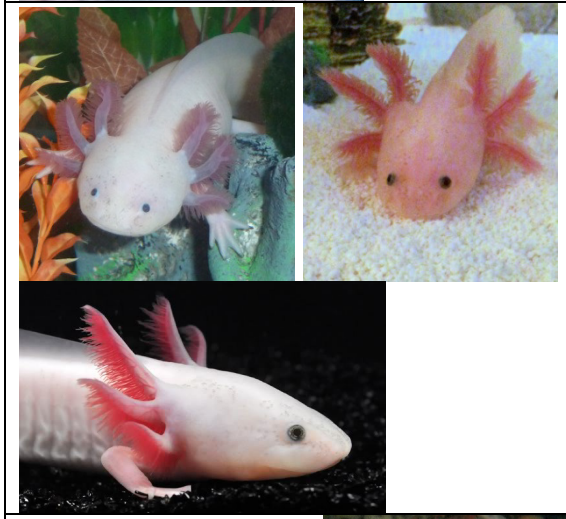
Axolotl colours

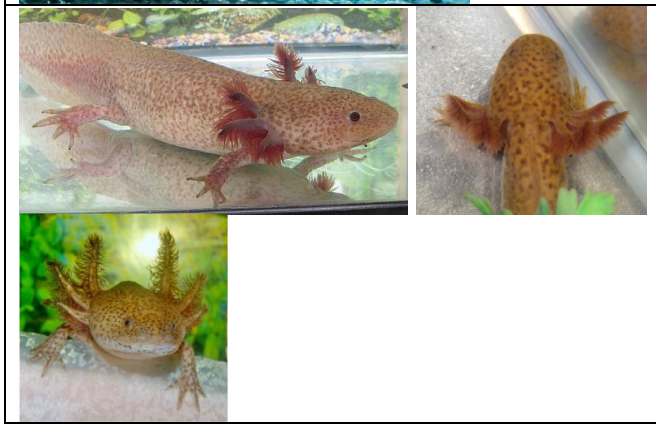
Here is a quick guide to axolotl colours, what they are called and a brief guide to their genetics. But first you need to understand the different pigments and the notation involved.

There are 3 main types of pigment cells: melanophores that produce a brown/black pigment, xanthaphores that produce a yellow/orange pigment, and iridophores that produce a shiney reflective pigment.

Genes always act in pairs, so genes are written as “X/X” to show the 2 different parts. Genes can be dominant, written as a capital letter, and recessive which is written as a lower case letter. Dominant genes are apparent in an animal’s colouring, recessive genes only show when there is a matching pair of recessive genes. Animals inherit one gene from each parent at the point of fertilisation.

Pictures	Name	Details
  	Wildtype	This is the ‘natural’ colour for axolotls, the type that was found in the wild. They come in various shades of spotted or mottled brown, tan, grey, green and black with iridophores. Genetically their gene pairs all contain dominant genes: A/- M/- D/- AX/- C/-
  	Golden albino	These axolotls lack melanophores. They have an abundance of xanthaphores and iridophores, making them quite yellow or gold, and they often have a lacy pattern of iridophores on their tails. They have pink or yellow eyes. Genetically they have a pair of recessive genes for albinism, but no other recessive pairs: a/a M/- D/- AX/- C/-

	White albino	These axolotls come in 3 different types, and it is very difficult to tell the difference. They are leucistic, melanoid or axanthic albinos – where the animal has a pair of albino recessive as well as another set. These are all white/pink animals with pink eyes. Leucistic albinos will have an iridophore ring around their eyes, melanoid albinos may have a few xanthaphores across their head and no iridophores ring, axanthic albinos are almost pure white/pink with no iridophore ring. Genetics: Melanoid albino: a/a m/m D/- AX/- C/- Leucistic albino: a/a M/- d/d AX/-C/- Axanthic albino: a/a M/- D/- ax/ax C/-
	Leucistic	Leucistics are not a 'true' colour in term of genetics. The leucistic genes are a developmental pattern – it restricts any pigment cells to the head and spine of the animal. Leucistics are pale pink with black eyes, and sometimes some grey or black freckles over their face. They can also be melanoid but the visual difference is only in the iridophores ring around their eyes: Normal leucistic: A/- M/- d/d AX/- C/- Melanoid leucistic: A/- m/m d/d AX/- C/-
	Dirty leucistic	Dirty leucistics are leucistics with an abundance of melanophores across their face. Genetics: A/- M/- (or m/m) d/d AX/- C/-

	Piebald	Piebalds are leucistic, but they have an overabundance of melanophores on their head and spine. Genetics: A/- M/- (or m/m) d/d AX/- C/-
	Harlequin	Harlequins are leucistic that show black and yellow patches, often in random abstract patterns. This is thought to be caused by an incomplete expression of the pattern restriction of the leucistic gene, meaning that the colours show through.
	Copper	Copper axolotls are a relatively new colour. It cannot produce normal brown-black melanin, and produces an orange-brown pigment instead. These axolotls are copper in colour, having xanthaphores, iridophores and the altered melanophores. They also have red eyes. Genetics: A/- M/- D/- AX/- c/c

  	Melanoid	These axolotls lack iridophores and have reduced xanthaphores. They appear dark, in shades of dark brown, grey and black. The obvious way to distinguish them from wildtypes is the lack of iridophore ring around their eyes. Genetically they have a pair of recessive genes for melanism, but no other recessive pairs: A/- m/m D/- AX/- C/-
	Melanoid copper	Like all melanoids a melanoid copper doesn't have iridophores. They are usually a chocolate brown colour with no iridophores rings. Genetics: A/- m/m D/- AX/- c/c
 	Chimera	These animals are technically mosaics, where they actually have 2 different sets of genes in one body. It usually shows as the animal being different colours on each half. The most common combination is wildtype/leucistic, but can occur with any 2 colours.
	Purple / Lavender	These are axanthic axolotls, meaning they have no xanthaphores. Most of these don't survive as the recessive axanthic gene allows a certain type of virus to attack the animals. However, in recent years some of these animals have been produced that survive to adulthood. Genetics: A/- M/- D/- ax/ax C/-

	GFP	GFP stands for Green Fluorescent Protein. This is the result of a jellyfish gene that was inserted into lab animals to map regeneration patterns in axolotls. However, over the years this has been propagated in subsequent generations. GFP animals are illegal in many countries, but common in the USA. This is a simple gene – the animals either have or they don't – but this is an addition to the other colours.
 yellow leucistic  enigma	Oddballs	There are some odd colours that pop up from time to time that seem to defy conventional genetics. You might hear of colours such as silver dalmatian (pale grey spotted melanoid), golden leucistic (leucistic with overproduction of xanthaphores) enigma (a super-harlequin – leucistic with overproduction of pigments), and wildtypes that lose their colour to look like leucistics (vitiligo).