

New colour genes in the guppy, *Poecilia reticulata* (Peters, 1859)

Neue Farbgene beim Guppy, *Poecilia reticulata* (Peters, 1859)

Michael Kempkes

Am Mühlenberg 25, D-46419 Isselburg-Anholt, Germany, michael.kempkes@web.de

Zusammenfassung: Reziproke Verpaarungen vier verschiedener spezifisch gefärbter domestizierter Guppy-Stämme (Caeruleus, Maculatus, Lutino, Metallicus/Pink) mit Stämmen bekannten Erbgangs (Pauper/Grau, Maculatus/Grau, Albino, Gold) ergaben, dass diese Farben auf fünf Farbgenen beruhen, von denen drei autosomal-rezessiv vererbt (Lutino, Pink, Metallicus) und zwei (Moscow, Caeruleus) vom Y-Chromosom kodiert werden.

The guppy, *Poecilia reticulata*, is the first fish species in which a colour gene (*Maculatus*) was discovered strictly linked to the Y-chromosome (SCHMIDT 1920, WINGE 1922a, b, 1927). In the first decades of the last century further phenotypes and colour genes have been described, also since the 1940's some colour genes from domesticated strains have been described (for review see LINDHOLM & BREDEN 2002). The present note describes five new colour genes in four strains of guppies bred since many years in aquaria and named herein Caeruleus (latin = sky blue), Lutino (derived from luteus, latin = deep yellow), Metallicus (latin = metallic) and Pink/Moscow.

Caeruleus-males have a light blue metallic colour extending from the head to the base of the caudal fin; in the middle of the body a black spot is present and the colour nearby is a little bit greenish. The unpaired fins are slightly white, light yellow with little black spots or transparent (fig. 1 a). Females are uncoloured. Lutino-males have a double sword; the body colour of both sexes is intensely yellow; eyes are dark-red (fig. 1 b). Metallicus-males have a double sword and a body-wide blue-metallic colouring (fig. 1 c). Females are uncoloured. Pink/Moscow-males have a tail like wild guppies. The anterior part up to the middle of the body and the pectoral fins are dark blue. Intensity may slightly change. Body colour of both sexes is similar to the mutant Gold (GOODRICH et al.

1944), which, however, is more yellow in the latter and a dark border of scales is largely missing ventrally. Especially juveniles show a pink pectoral region (fig. 1 d).

The known strains used for crosses were Pauper, in which males have a horizontal red spot at the caudal peduncle and a black spot just behind the red one. The body colour is grey (fig. 1 e). And Maculatus, in which males have a red spot in the middle of the body and a black spot at the dorsal fin; the body colour is grey (fig. 1 f). In both strains females are uncoloured and male colouration is determined by loci on the Y-chromosome (WINGE 1922b, 1927). To check more thoroughly the strains Lutino and Pink I used the strains Albino and Gold in some crosses.

All strains were kept at 26-27 °C in 120 l tanks, which were planted with *Cryptocoryne moebli*, *Riccia* sp. and *Vesicularia dubyana*. The guppies were fed with *Artemia salina*, *Daphnia* sp., crushed *Spirulina* and high quality flake food.

For each cross two of three males and two of three females were mated and kept in 45 l tanks under similar conditions. The offspring of each breed was raised separately until colouring was fully developed. Tables 1-4 show the guppy strains, the number of crosses and guppy strains (abbreviated), the crosses (males first, females last) and data of the F₁ generation.

Abbreviations: Caeruleus (Ca), Lutino (Lu), Metallicus (Me), Pink/Moscow (Pi/Mo), Pauper (Pa), Maculatus (Ma), Albino (Al)