S1 Materials; Slide Specimen Photos
The Cellular Expression and Genetics of Purple Body (Pb) in *Poecilia reticulata*, and its Interactions with Asian Blau (Ab) and Blond (bb) under Reflected and Transmitted Light

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**Materials**
**Strain ID, Breeding Strain, Description & Source**

**D.** Bias Panda Moscow. Based on breeder results this strain produces no Purple Body phenotypes; i.e. is a pure bred “green with orange spots” strain. The phenotypic expression is the product of several primary genes in co-expression (YMw, XSsb and/or YSsb, pp). Y-linked Moscow (Mw) produces blue iridophore anterior shoulder coloration, and autosomal recessive Pink (p, Luckmann 1990) produces light, often translucent white leucophore posterior peduncle coloration. In co-expression pattern is light anterior and dark posterior. Moscow (Mo) and Pink (pi) were described in the scientific literature (Kempkes 2007), although breeders had described both of them before that in hobbyist publications. **Note:** “Mo” is an earlier symbol for Mosaic (Mo, Khoo and Phang 1999) and therefore Kempkes’ use of Mo for Moscow is invalid. We use the “Mw” symbol for Moscow following the usage by Shaddock (2010a, 2010b). Kempkes’ use of pi for pink is also invalid since Luckmann used p for pink in an earlier publication. In like fashion, the previous use of “pk” for pink by this senior author (following the usage by Shaddock, 2010a, 2010b [5]) is also invalid. Sex-linked X and/or Y-linked Snakeskin body pattern (Ssb - Phang, et. al 1989) can be present in this strain. Stock maintained by Alan S. Bias, Lewisburg, WV, USA.

**E.** Bias Vienna Lower Swordtail (Ls). The Purple Gene has been maintained in a percentage of both males and females in homozygous & heterozygous fashion for over 60 generations. Homozygous Purple Body fish do not express the all-purple phenotype of the Roebuck Purple Delta. All males have green coloration as well. The lower sword gene (Ls) is Y linked in this strain, though crossing over to the X is periodic, resulting in X and/or Y-linked Ls co-expression. It can be difficult to distinguish between homozygous and heterozygous Pb fish by phenotype alone. Stock maintained by Alan S. Bias, Lewisburg, WV, USA.

**F.** Magoschitz Vienna Emerald Green Double sword (Ds). Based on breeder conversation and breeding results, this strain does not produce any Purple Body fish; i.e. is a pure bred “green with orange spots” strain. The double sword gene (Ds) may be X and/or Y linked depending upon the strain. Stock courtesy of Hermann Ernst Magoschitz, Schwarzenbruck, Bavaria, Germany.

**L.** Feral Pingtung (*P. reticulata* Pingtung, Taiwan BG-2016). A feral population collected by Carl Groenewegen and Alan S. Bias 3.22.2016, Pingtung County, Taiwan. GPS collection coordinates: 22°36'41.0"N+120°35'56.9"E. A high percentage of population is homozygous for Pb, and all others appeared heterozygous Pb. Males express a high degree of orange ornament spotting in broken series and also same patterns connected in linear extensions. A small percentage of males express dorsal coloration and / or
caudal ornaments. Females are color and / or tail neutral. All collected fish were wild-type grey body, though blond (b) has been produced in captive reared offspring.

**M.** Feral Kelly Warm Springs (*P. reticulata* Kelly Warm Springs, ID TC-2016). A feral population collected by Thomas Coggins, Sept., 2016, Kelly Warm Springs, Teton County, Idaho, USA. A high percentage of the population is heterozygous or homozygous for Pb, others appeared to be non-Pb. Males express a high degree of orange ornaments in the body and yellow in the caudal fin. A percentage of males express dorsal coloration and / or caudal ornaments. Females are color and / or tail neutral. All collected fish were wild-type grey body, though blond (b) has been produced in captive reared offspring.

**O.** Ginga Rubra (*P. reticulata* wingei [*Cumana’ Guppy*] x *P. reticulata*). Blond hybrid variant strain. Line-bred multi generations and generally fixed to type. Expresses unique peduncle pattern in the form of Zebrinus (Ze, Winge 1928) with color pigment overlaying structural iridophore barring. Both Pb and non-Pb present in study population. Known for increased reflective qualities of structural color and co-expression of color pigment types.

**ID Number, Pb or non-Pb, Color / Strain, Genotype**

![Fish Image](image1)

2 non-Pb [Reticulata Female] (grey E) *pb/pb*.

![Fish Image](image2)

2 Pb [Top] male (grey E x F) *Pb/pb* and 2 non-Pb [Lower] male (grey E x F) *pb/pb*. Note: The lower male rear ornament spot is orange.
3 non-Pb male (grey E x F) pb/pb.

3 Pb [Reticulata Female] (blond E) Pb/-. 

4 non-Pb Ab male (grey E) pb/pb Ab/ab.

5 Pb Ab male (grey E) Pb/Pb Ab/ab.

5 non-Pb male (blond) pb/pb.
6 non-Pb male (grey E x F) pb/pb.

6 Pb male (grey E x F) Pb/pb.

7 non-Pb male (grey E x F) pb/pb.

7 Pb male (blond) Pb/pb.

8 Pb male (grey E) Pb/pb.
9 Pb male (grey E x F) \( Pb/pb \). Note: dried sample photo with constricted pigments, see 2 Pb for accurate color comparison.

13 Pb male (grey E) \( Pb/Pb \).

14 non-Pb male (grey E x F) \( pb/pb \).

15 Pb male (grey L - Pingtung) \( Pb/pb \).

16 non-Pb male (grey M - Kelly) \( pb/pb \).
17 Pb (grey E, litter mate – not actual male) Pb/pb.

24 non-Pb (grey) pb/pb.

25 non-Pb (McWhite) pb/pb.

28 non-Pb (blond Ginga) pb/pb.
References