

Kin recognition in guppies, *Poecilia reticulata* Peters, 1859

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Kin recognition refers to the ability of individuals within a population to distinguish between kin (close relatives) and non-kin (unrelated individuals). In the context of guppies (*Poecilia reticulata*) (Figure 1), kin recognition has been studied in the context of both social behavior and mating preferences (Petrescu-Mag 2007a; Miller et al 2010).



Figure 1. *Poecilia reticulata* Peters, 1859 (Photo: Roșca Mircea; source: Petrescu-Mag 2007b,c).

Maternal kin recognition. Female guppies are known to exhibit maternal kin recognition, where they preferentially associate with their own offspring or the offspring of close relatives (Daniel & Rodd 2021). This recognition is believed to be facilitated by chemical cues. Females can detect and respond to the olfactory signatures of related individuals, allowing them to preferentially interact with their kin (Daniel & Rodd 2021).

Paternity and mating preferences. Male guppies may also exhibit kin recognition in the context of mating behavior (Daniel & Williamson 2020). Studies have suggested that male guppies can discriminate between kin and non-kin based on visual and olfactory cues (Daniel & Rodd 2021). Female guppies may also exhibit preferences for mates that are not closely related to them, possibly to avoid inbreeding and enhance the genetic diversity of their offspring (Hain & Neff 2007).

Genetic basis. Kin recognition in guppies is likely to have a genetic basis, with individuals possessing the ability to recognize kin more effectively (Hain 2015). The

specific genes and molecular mechanisms involved in kin recognition in guppies are areas of ongoing research.

Social structure. Guppies are known for their complex social structures, and kin recognition plays a role in shaping these social dynamics. Understanding kin relationships helps in predicting the behavior of individuals within a group and their interactions (Croft et al 2012).

Evolutionary implications. Kin recognition in guppies is thought to have evolved as a mechanism to promote cooperation among close relatives and to avoid the potential costs associated with inbreeding (Hain et al 2017).

Conclusion. The ability to recognize and interact preferentially with kin has important implications for the ecology and behavior of guppy populations.

Conflict of interest. The author declares no conflict of interest.

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