Resource Summary Report

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Guppy Project

RRID:SCR_006255
Type: Tool

Proper Citation

Guppy Project (RRID:SCR_006255)

Resource Information

URL: http://cnas.ucr.edu/guppy/

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Description: A project that observes the processes of adaptive evolution in nature, and tests evolutionary hypotheses, by studying populations of guppies on the Caribbean island of Trinidad. Darwin thought that evolution by natural selection occurred very slowly, over hundreds if not thousands of years. Evolutionary biologists now know that evolutionary changes in species can happen very quickly, over a relatively few generations. The National Science Foundation (NSF), through its Integrative Biological Research (FIBR) program, is funding a 5-year study by 13 biologists from colleges, universities, and research institutions throughout the United States and Canada, to study the relationship of adaptive evolution and environmental circumstances. The Trinidadian guppy (Poecilia reticulata) is an excellent species for these purposes because: * It matures rapidly (one generation = 3-4 months) * It inhabits different ecological environments that can be easily manipulated On Trinidad, guppies live in streams, or portions of streams, that can differ in the species of predators that the guppies have to contend with. Some streams are high-predation environments, others low-predation. Different predation environments are often right next to one another, separated by a waterfall (which neither guppies nor predators can cross). Guppies from high-predation environments experience much higher mortality rates than do guppies in low-predation environments. High mortality is associated with the following characteristics, all of which have a genetic basis: * Earlier maturity * Greater investment of resources in reproduction * More and smaller offspring. We have found that mortality rates can be manipulated by: * Transplanting guppies from high-predation localities into sites from which they and their predators had previously been excluded by natural waterfalls, thus lowering mortality rates; * Introducing predators into low-predation sites, thus increasing mortality rates. Such experiments have shown that species evolve as predicted by theory. We have also found that evolution by natural selection can be remarkably fast, on the order of four to seven orders of magnitude faster than had been inferred from the fossil record.

Abbreviations: Guppy Project

Resource Type: data or information resource, organism-related portal, portal, topical portal, video resource

Keywords: adaption, evolution, adaptive evolution, environment, trinidadian guppy, poecilia reticulata, image, natural selection

Funding: NSF

Resource Name: Guppy Project

Resource ID: SCR_006255

Alternate IDs: nlx_151840

Record Creation Time: 20220129T080235+0000

Record Last Update: 20260905T132549+0000

Ratings and Alerts

No rating or validation information has been found for Guppy Project.

No alerts have been found for Guppy Project.

Data and Source Information

Source: SciCrunch Registry

Usage and Citation Metrics

We found 6 mentions in open access literature.

Listed below are recent publications. The full list is available at Kravitz .

Wang H, et al. (2022) A Chromosome-level assembly of the Japanese eel genome, insights into gene duplication and chromosomal reorganization. GigaScience, 11.

Garc??a-Olivares V, et al. (2021) A benchmarking of human mitochondrial DNA haplogroup classifiers from whole-genome and whole-exome sequence data. Scientific reports, 11(1), 20510.

Hendrix J, et al. (2021) Intraspecies plasmid and genomic variation of Mycobacterium kubicae revealed by the complete genome sequences of two clinical isolates. Microbial genomics, 7(1).

Simon S, et al. (2021) Genome and transcriptome analysis of the beet armyworm Spodoptera exigua reveals targets for pest control. G3 (Bethesda, Md.), 11(11).

Michaelsen TY, et al. (2020) The Signal and the Noise: Characteristics of Antisense RNA in Complex Microbial Communities. mSystems, 5(1).

Fodor I, et al. (2020) Identification, presence, and possible multifunctional regulatory role of invertebrate gonadotropin-releasing hormone/corazonin molecule in the great pond snail (Lymnaea stagnalis). General and comparative endocrinology, 299, 113621.