A bird in the lab

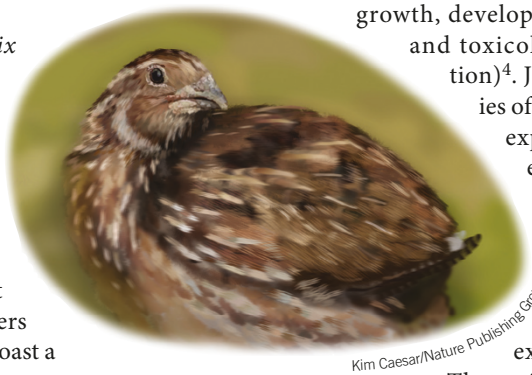
by Monica Harrington

SCIENTIFIC NAME
Coturnix japonica

TAXONOMY
PHYLUM: Chordata
CLASS: Aves
ORDER: Galliformes
FAMILY: Phasianidae

Physical description

The Japanese quail, like many *Coturnix* species, is a small, round bird. In the wild, adults weigh 95–105 g, but domesticated birds can be twice as heavy. Quail are sexually dimorphic, with males being slightly smaller than females and bearing different plumage patterns. Adults of both sexes are predominantly brown in color, often with buff mottling, but females have light-colored breast feathers marked with dark spots whereas males boast a uniformly reddish breast.



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Domestication

Records suggest that Japanese quail were domesticated from common quail as early as the 11th century and originally kept as songbirds[1]. In the early 1900s, quail were bred for eggs and meat. Many domesticated lines of quail were lost during World War II, and modern populations are largely derived from the few that remained. Japanese quail are small in size and easy to care for, they grow quickly and they are prolific egg-layers; as a result, they have been farmed in large quantities across the globe. These qualities are also desirable in laboratory species, and the Japanese quail is commonly used in several areas of scientific research[2].

Research résumé

Interest in the Japanese quail as a research model grew rapidly after researchers first extolled its value in 1959 (ref. 3). *C. japonica* has since been involved in research on genetics, growth, development, nutrition, physiology, behavior and toxicology (particularly endocrine disruption)[4]. Japanese quail have contributed to studies of such diverse phenomena as fetal alcohol exposure[5], the effects of microgravity on embryonic development[6] and behaviors associated with addiction to substances like nicotine[7] and cocaine[8].

In 2005, researchers first created transgenic quail by using lentiviral vectors to achieve tissue-specific expression of green fluorescent protein[9]. The availability of a transgenic avian model has proven useful in studies of embryonic development[10], obesity[11] and neurobiology[12]. The Japanese quail genome sequence, published in 2013 (ref. 13), enables more detailed genetic analysis that could identify additional applications of this species as a model organism.

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