Study shows genes may play a role in promiscuity

June 14 2011, by Bob Yirka

Captive Zebra Finch *Taeniopygia guttata* at Bodelwyddan Castle Aviary, Denbighshire, Wales. Image: Arpingstone/Wikipedia.

(PhysOrg.com) -- In a recent study, in what is likely to stir some controversy, researchers from the Max Planck Institute in Germany have shown that finches in the wild, normally a monogamous type of bird, tend to cheat on their "spouses" and what's more, it appears to be an inherited trait; but that's not the end of it, the researchers also suggest in their paper, published in the *Proceedings of the National Academy of Sciences*, that such inherited traits may also exist in other species, including man.

It has actually been known for quite some time that finches tend to stray, and while the male behavior seemed clear and well understood, the

female behavior was somewhat of a puzzle. The males, by straying were spreading their seed around, thus keeping things in the finch world, richly diversified. But why would the females go along with the whole game, as there didn't seem any reward for them?

To find out, the team, led by Wolfgang Forstmeier, studied 1,554 zebra finches over five generations; taking DNA samples along the way. In addition to studying their natural behavior, they also swiped the eggs from some nests and deposited them in others to make sure the birds weren't learning their errant behavior from a parent.

What they found was that male finches with a father that strayed, were more likely to stray themselves, regardless of whether that father was around to help raise them. They also found the same was true for the females, a surprising result, but one that makes sense when you consider that if birds in any given area are to remain diversified, at least some of the females are going to have to stray as well; but not all, as clearly finches benefit from having nearly monogamous mates to help raise their young.

The authors, even as they step out on a limb to suggest the same traits may hold true for human beings as well as for birds, immediately backtrack, making it clear they realized that there is far more going on when people stray, than when birds do so. Even so, it's an interesting idea; one some people might use after learning about the results of this study, when looking for a rationale to excuse their behavior.

More information: Female extrapair mating behavior can evolve via indirect selection on males, *PNAS*, Published online before print June 13, 2011, doi: 10.1073/pnas.1103195108

Abstract
In many species that form socially monogamous pair bonds, a

considerable proportion of the offspring is sired by extrapair males. This observation has remained a puzzle for evolutionary biologists: although mating outside the pair bond can obviously increase the offspring production of males, the benefits of such behavior to females are less clear, yet females are known to actively solicit extrapair copulations. For more than two decades adaptionist explanations have dominated the discussions, yet remain controversial, and genetic constraint arguments have been dismissed without much consideration. An intriguing but still untested hypothesis states that extrapair mating behavior by females may be affected by the same genetic variants (alleles) as extrapair mating behavior by males, such that the female behavior could evolve through indirect selection on the male behavior. Here we show that in the socially monogamous zebra finch, individual differences in extrapair mating behavior have a hereditary component. Intriguingly, this genetic basis is shared between the sexes, as shown by a strong genetic correlation between male and female measurements of extrapair mating behavior. Hence, positive selection on males to sire extrapair young will lead to increased extrapair mating by females as a correlated evolutionary response. This behavior leads to a fundamentally different view of female extrapair mating: it may exist even if females obtain no net benefit from it, simply because the corresponding alleles were positively selected in the male ancestors.