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## Origin of a controversy

By **Brendan Borrell**

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When Anders Pape Møller published his now-infamous 1992 *Nature* paper on barn swallows,<sup>1</sup> it was a leap of faith to test whether females might choose males based on asymmetry between the left and right sides of the body. Such asymmetry had been known to correlate with stress and other environmental factors, but not to mate selection.

Møller is a strong proponent of the "good genes" model of sexual selection,<sup>2,3</sup> which holds that certain characteristics,

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selection,<sup>2,3</sup> which holds that certain characteristics, for example, the tail feathers of a peacock, signal the presence of genes that will be beneficial to offspring, and therefore make an individual more attractive to potential mates. Møller began to think that perhaps more subtle signals of a mate's quality, such as tail symmetry, also mattered.<sup>4</sup> He used to measure only the length of one side of the tail, but he says, "There was one year that the swallows came back from Africa and there were lots of individuals that were asymmetric." To test his theory, he captured wild males and varied the asymmetry between the left and right outermost tail feathers by 20 mm. Sure enough, males with more symmetric tail feathers received more visits from females, mated earlier, and had greater reproductive success.<sup>1</sup>

**"Males with more symmetric tail feathers received more visits from females, mated earlier, and had greater reproductive success."**

As Andrew Balmford and Adrian Thomas indicated in their reply to Møller's paper,<sup>5</sup> invoking sexual selection was not necessary to explain why birds have symmetrical tails: Lopsided birds would have trouble flying. Gerald Borgia and Gerald Wilkinson found that Møller's standard errors were less than one-tenth of those Møller had reported previously. Moreover, the differences among treatments were so great, Borgia and Wilkinson suspected that males were assigned nonrandomly to treatments.<sup>6</sup> Richard Palmer has pointed out that Møller's manipulations of asymmetry were ten times as great as the natural variation of 2-3 mm. However, Møller's barn swallow studies have never been investigated for scientific dishonesty.

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