

## **Sexual selection maintains whole-body chiral dimorphism in snails**

### **Abstract**

Although the vast majority of higher animals are fixed for one chiral morph or another, the cause for this directionality is known in only a few cases. In snails, for example, rare individuals of the opposite coil are unable to mate with individuals of normal coil, so directionality is maintained by frequency-dependent selection. The snail subgenus *Amphidromus* presents an unexplained exception, because dextral (D) and sinistral (S) individuals occur sympatrically in roughly equal proportions (so-called 'antisymmetry') in most species. Here we show that in *Amphidromus* there is sexual selection for dimorphism, rather than selection for monomorphism. We found that matings between D and S individuals occur more frequently than expected by chance. Anatomical investigations showed that the chirality of the spermatophore and the female reproductive tract probably allow a greater fecundity in such inter-chiral matings. Computer simulation confirms that under these circumstances, sustained dimorphism is the expected outcome. © 2007 The Authors.