Chapter 52

Evolutionary Aside 52.3--Marsupial Versus Placental Reproduction: Is Either Superior?

Traditionally, placental reproduction has been considered superior to marsupial reproduction, which has often been thought of as more primitive because it evolved first. The fact that in Australia, almost all mammals are marsupials has fed into this story, the idea being that Australia broke off from the rest of the continents prior to the evolution of placentals; once placentals evolved, the story goes, they outcompeted marsupials everywhere except Australia, where the marsupials had safe haven and were not challenged by placentals.

We now realize that this viewpoint is mistaken, and that marsupial and placental modes of reproduction each have their own advantages. Although placentals produce more highly developed offspring, such offspring require considerably more energetic investment. Marsupial young, born at a much earlier stage, are much cheaper to produce. A marsupial mode of reproduction thus is better suited for living in an unpredictable environment in which conditions may turn bad quickly—in that case, even if the young is lost, it does not represent a huge loss of genetic and energy investment. Moreover, marsupials are able to simultaneously have offspring at three stages of development at one time. Kangaroos, for example, can have a joey (the name for a baby kangaroo) in the pouch, a newborn offspring attached to a teat, and a fertilized embryo in a state of suspended development. This is only possible because the relatively minor cost of embryos and offspring at early stages of development. Thus, a marsupial mode of reproduction seems quite suited to highly variable and sometimes unpredictable environments, which characterizes much of Australia.