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Nature

The Mystery of Metamorphosis: A Scientific Detective Story
Frank Ryan
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In 2009, retired zoologist Donald Williamson published a radical theory shocking the scientific world. His paper, published in the *Proceedings of the National Academy of Sciences* (PNAS) suggested the dual stages of an insect's life, larval and adult, are a result of hybridization rather than through more orthodox evolutionary methods.

The majority of the uproar came not from the audacity of Williamson's suggestions, but from his bypassing the journal's peer review process. His paper had been accepted through a now defunct system unique to PNAS that afforded publication to papers providing they had two referees. The scandal overshadowed Williamson's arguments. The academy faced accusations of nepotism and, in the words of one Duke University biologist speaking to *Scientific American*, of publishing a paper "better suited for the 'National Enquirer than the National Academy.'"

Now, almost two years later, physician and evolutionary biologist Frank Ryan examines Williamson's claims on the basis of their scholarship in *The Mystery of Metamorphosis: A scientific Detective Story*. The author of several books, Ryan sparked discussions among academics and casual readers alike with *Darwin's Blind Spot* and in 1993, the *New York Times* selected his book *The Forgotten Plague* as the non-fiction book of the year. *The Mystery of Metamorphosis* marks Ryan's return to the stormy waters of modern science in an attempt to understand evolution's dynamic concepts, and their relationship to the mystifying lifecycle of many marine and terrestrial creatures.

The enormity of Ryan's task and the complexity of the cross-disciplinary research would have overwhelmed a lesser writer. Part history lecture and part science class, Ryan brings an accessible passion to the subject comparable to Carl Sagan's popularization of astronomy. As he builds the case for hybridization in *The Mystery of Metamorphosis,* Ryan leads readers through the earliest ideas put forth by Darwin and his contemporaries to the modern questions raised by the Cambrian explosion. Like Sagan, Ryan is able to communicate complex theories without

becoming simplistic while challenging basic evolutionary concepts.

Opening with a foreword by biologist Lynn Margulis, who refereed Williamson's paper, and Dorian Sagan, Ryan nods at the past controversy but avoids revisiting its *ad hominem* accusations. Regardless of the scandal, however, Williamson's idea is inescapably radical. To be accepted, a massive amount of testing, proof, and elucidation is needed. This is where *The Mystery of Metamorphosis* ultimately leads the reader: not to a limiting declaration, but rather to a call for greater understanding and exploration.

Joseph Thompson