

Painting by numbers

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Professor Richard ffrench-Constant of the University of Exeter in Cornwall has worked with an international team of experts to ‘decode’ the patterns on butterflies’ wings.

Together with teams from Edinburgh and the USA, Richard and his colleagues discovered a ‘supergene’ that paints the beautiful and diverse range of patterns that decorate the wings of a group of South American butterflies. The research, published in the prestigious journal *PLoS Biology*, revealed that the same molecular processes can create very different kinds of patterns.

Butterflies, like some other kinds of insects, evolve patterns to deal with predators. Some, for example, mimic the warning patterns of other distasteful species of butterfly in order to improve their own chance of survival.

The researchers examined three different species of Heliconius butterflies – *Heliconius melpomene* and *Heliconius erato*, which look the same and *Heliconius numata*, which has quite different wing patterns. They crossed differently patterned groups within each species and traced the source of variation to the same spot on their genetic code. They discovered a ‘supergene’ region that is responsible for producing wing pattern diversity in this group. The research shows that surprisingly few genes control most of the amazing visual diversity in butterflies. They also begin to explain how a simple strand of DNA can colour a three dimensional structure like a butterfly wing.

Professor French-Constant of the Centre for Ecology and Conservation at the University of Exeter in Cornwall says: ‘We’re very excited about these findings and believe this research will help us to learn more about how new species evolve. Having a molecular handle on the genes that control colour pattern will now also enable us to look at the signatures of natural selection that surround these important genes.’

Source: University of Exeter

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