

## EDITORIAL

# Genetic variation, selection and evolution: special issue in celebration of the 50th anniversary of the population genetics group meeting

*Heredity* (2017) **118**, 1; doi:10.1038/hdy.2016.97; published online 9 November 2016

In the last half-century, population genetics has seen many exciting advances. As Brian and Deborah Charlesworth discuss in this Special Issue, fundamental questions about the nature and extent of genetic variation within and among populations form a consistent backbone for the field but they have been tackled with ever greater power and resolution. Throughout this period, the annual Population Genetics Group meetings in the United Kingdom have provided a stimulus to research for scientists, particularly young scientists, from the UK and many other countries, particularly in the rest of Europe. The first meeting was held in Birmingham in January 1968 and the 50th Anniversary meeting will be held in Cambridge in January 2017. This Special Issue forms part of the celebration of that milestone.

Anyone who has attended 'PopGroup' will know that its meetings manage to combine friendly informality with scientific rigour, generating a highly stimulating environment, in which all ages and stages, and many specialist interests and nationalities, mix freely. Over the years, the numbers of presentations, both oral and in poster form, have grown, but junior scientists who have not yet submitted their PhD and the most eminent population geneticists continue to be treated equally in creating the programme. Many of today's leading population geneticists gave their first conference talk, on their PhD work, at PopGroup. The mixture of subjects at the meetings has always encompassed measures of genetic variation in the wild and the forces acting on this variation, and there has been a constant search to interpret experimental and observational results in the light of underlying evolutionary and population genetic theory.

We have been attending for many years (RKB since the 1979/80 meeting and JFYB since the 1976/7 meeting, missing very few between us) and we are very happy to show our appreciation for the importance of PopGroup in our scientific careers by editing this collection. It is particularly appropriate that *Heredity* agreed to publish the Special Issue because there has been a close association between the journal and these meetings throughout. We are grateful to the Editor and his team for their support. Clearly, a small set of papers cannot properly represent the diversity of the current PopGroup community, with a typical meeting now having well over 200 participants and about 100 oral presentations, plus posters. However, we hope that we have captured some of the range of interests, with authors who are relatively new to the meetings as well as some very familiar contributors.

The Charlesworths' historical overview (Charlesworth and Charlesworth, 2017) emphasises the interplay between theory and empirical work that is one of the great strengths of PopGroup meetings. Each of the other contributions reflects this general theme, challenging theoretical expectations in areas from inbreeding depression (Pemberton *et al.*, 2017) to the genetic basis of quantitative trait

evolution (Franssen and Schlötterer, 2017), with the data ranging from colour phenotypes (Johannesson and Butlin, 2017) to high-throughput sequencing (Pinharanda *et al.*, 2017; James *et al.*, 2017). Some of the questions have been debated at many PopGroup meetings, such as the evolution of self-incompatibility (Mable *et al.*, 2017) and metal tolerance (Sobczyk *et al.*, 2017) or the importance of epistasis (Barton, 2017), while others are relatively new, such as the evolutionary significance of heritable symbionts (Corbin *et al.*, 2017). All of these topics have one thing in common: they would attract an interested and constructively critical audience at a PopGroup meeting, with lively debate both within the sessions and around the bar. They represent the shared conviction of the population genetics community that only through studying genetic variation within- and between-populations can a full understanding of evolutionary change be derived.

We are confident that the Population Genetics Group will continue to thrive, with many excellent young scientists attending recent meetings and appreciating their value. Long may it last!

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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- Barton NH (2017). How does epistasis influence the response to selection? (This issue).  
Charlesworth B, Charlesworth D (2017). Population genetics from 1966 to 2016. (This issue).
- Corbin C, Heyworth ER, Ferrari J, Hurst GDD (2017). Heritable symbionts in a world of varying temperature. (This issue).
- Franssen SU, Kofler R, Schlötterer C (2017). Uncovering the genetic signature of quantitative trait evolution with replicated time series data. (This issue).
- James J, Castellano D, Eyre-Walker A (2017). DNA sequence diversity and the efficiency of natural selection in animal mitochondrial DNA. (This issue).
- Johannesson K, Butlin RK (2017). What explains rare and conspicuous colours in a snail? A test of time-series data against models of drift, migration or selection. (This issue).
- Mable BK, Hagmann J, Kim S-T, Adam A, Kilbride E, Weigel D *et al.* (2017). What causes mating system shifts in plants? *Arabidopsis lyrata* as a case study? (This issue).
- Pemberton JM, Ellis PE, Pilkington JG, Bérénos C (2017). Inbreeding depression by environment interactions in a free-living mammal population.
- Pinharanda A, Martin SH, Barker SL, Davey JW, Jiggins CD (2017). The comparative landscape of duplications in *Heliconius melpomene* and *Heliconius cydno*.
- Sobczyk MK, Smith JAC, Pollard AJ, Filatov DA (2017). Evolution of nickel hyperaccumulation and serpentine adaptation in the *Alyssum serpyllifolium* species complex.