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► **COVER:** 'Mobile generations' by Patrick Morgan

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Advances in sequencing and genotyping technologies, and enhanced bioinformatics tools, mean that now more than ever genomics can be married to statistics to reveal patterns of susceptibility to common, multifactorial disease.

Given that the ultimate aim of medical research is to understand and cure human maladies, most of which are multifactorial, these research efforts are surely to be applauded. In their Opinion article (page 277), Stylianos Antonarakis and Jacques Beckmann do not disagree with this view, although they stress that monogenic disorders are an unfortunate casualty in the race to find the determinants of complex disease. We still have much to learn from monogenic diseases: they are an invaluable treasure trove of information on genome function and disease aetiology — knowledge that applies equally to monogenic and polygenic inheritance.

As monogenic disorders are, overall, mechanistically simpler than complex traits, they offer the best opportunity to apply a growing number of genetic medicines. As discussed by Timothy O'Connor and Ronald Crystal in their Review (page 261), the aim of genetic therapies is to correct or compensate for an abnormal phenotype by using the transfer of DNA and/or RNA. The routine use of these medicines is still in the future, once the technical, economic and societal hurdles to working on humans have been overcome.

One can, of course, turn to more conventional means to treat human diseases — pharmaceutical drugs. The pharmaceutical industry is facing a problematic decrease in the number of novel drug targets. As Ryan Brinkman and colleagues explain on page 249, monogenic disorders can aid the target discovery and validation process, as rare but highly penetrant mutations identify potential rate-limiting steps in disease processes.

These three articles make up this month's special issue on Monogenic Disorders, which is also accompanied by a web focus (http://www.nature.com/nrg/focus/monogenic).