From daffodils to oak trees, the diversity in plant architecture is enormous, and different branching patterns underlie much of this variation. Now, Greb et al. in Arabidopsis, and Li et al. in rice, have identified a regulatory gene that is needed for branch formation throughout the flowering plants.

Branches are secondary shoots that grow from axillary meristems — mitotic cells that are located in leaf axils. There has been considerable interest in the mechanisms that control the formation of axillary meristems and determine whether or not they grow out into branches. The tomato lateral suppressor (ls) mutant, fails to produce branches during leaf-producing vegetative development, and so provides a good starting point to study axillary meristems. With this in mind, Greb et al. identified the Arabidopsis orthologue of LS, which they call LATERAL SUPPRESSOR (LAS). Like the tomato ls mutant, transposon-generated las mutants do not produce branches during vegetative growth, but do so in later reproductive development. Indeed, the similarity between the genes is high enough that the wild-type Arabidopsis LAS gene can rescue the tomato ls mutant.

They grow up so fast

From Adam and Eve to Genghis Khan, genetic inferences about human history provide some of the field’s biggest headlines, but just how realistic are the assumptions on which such studies are based? Agnar Helgason and colleagues show that the answer is ‘not very’ in the case of the comparative rates of genetic drift for exclusively maternally or paternally inherited genes.

Large-scale studies that look at how a contemporary population is linked to successive generations of ancestors are rare, despite the fact that they are the best way to test the standard demographic models that are used in population genetic analyses. Helgason and colleagues have now done the ‘granddaddy’ of all such studies by tracing back the matrilineal and patrilineal ancestry of the 131,061 Icelanders that were born after 1972.

Using a genealogical database that includes all living Icelanders, matrilines and patrilines were traced back from contemporary females and males, respectively, to ancestral cohorts. The authors used coalescent analyses of these genealogies to show that contemporary genes that are exclusively maternally (mtDNA) or paternally (Y chromosomes) inherited have originated from relatively few ancestors. For example, 61.8% of the mtDNA in the contemporary female population comes from just 6.6% of the females that were born between 1698 and 1742.

Moreover, it emerged that contemporary Icelandic women have fewer matrilineal ancestors than the men have patrilineal ancestors, and that there is greater variation in the number of matrilineal descendants from female ancestors than in patrilineal descendants from male ancestors. This implies a greater rate of genetic drift for mtDNA than for Y chromosomes. The main cause of this difference is the shorter average time between female generations compared with male generations, and a stronger correlation in reproductive behaviour in the female line.

**Branching out**

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**IN THE NEWS**

Genetics hits the headlines

Much has been made of the release of the completed human genome sequence, which was heralded as a “cosmic triumph for biology” (Washington Post), and of the 50th anniversary of the DNA double helix, which “marked a turning point in history and sparked a revolution in molecular biology that continues to change the world today” (The Guardian).

Indeed, the impact of genetics on society is obvious in the diversity of genetics-related articles. “A body is to be exhumed for DNA testing” (The Times) in a high-profile paternity case to test the claims of five Italians on the £300 million estate left by Harold Acton to New York University. In the United States, the death of a nine month-old baby with a treatable, but undiagnosed, genetic disease has prompted a federal advisory panel to debate whether to “increase the list of diseases considered a minimum for newborn testing in every state” (Associated Press).

Negative genetic modification (GM) publicity continues to crop up on both sides of the Atlantic, as a biotech company was fined when GM corn “contaminated nearby crops on Hawaii” (New York Times) and a 12-strong panel of the British public viewed GM foods “as unnecessary and not worth the risks to public health” (The Times).

The successful sequencing of the severe acute respiratory syndrome (SARS) virus, described by Julie Gerberding as “a critically important step” (New York Times), also made headline news. The million dollar question is “in this amazing age of molecular genetics and medicine ... can scientists stop it?” (New York Times).

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**POPULATION GENETICS**

From daffodils to oak trees, the diversity in plant architecture is enormous, and different branching patterns underlie much of this variation. Now, Greb et al. in Arabidopsis, and Li et al. in rice, have identified a regulatory gene that is needed for branch formation throughout the flowering plants.

Branches are secondary shoots that grow from axillary meristems — mitotic cells that are located in leaf axils. There has been considerable interest in the mechanisms that control the formation of axillary meristems and determine whether or not they grow out into branches. The tomato lateral suppressor (ls) mutant, fails to produce branches during leaf-producing vegetative development, and so provides a good starting point to study axillary meristems. With this in mind, Greb et al. identified the Arabidopsis orthologue of LS, which they call LATERAL SUPPRESSOR (LAS). Like the tomato ls mutant, transposon-generated las mutants do not produce branches during vegetative growth, but do so in later reproductive development. Indeed, the similarity between the genes is high enough that the wild-type Arabidopsis LAS gene can rescue the tomato ls mutant.

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**HIGHLIGHTS**

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**PLANT DEVELOPMENT**

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