Diabetes in Latin America

Unskinny genes

New research suggests a genetic susceptibility to the disease

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IF STRAINING waistlines were still a sign of prosperity, Mexicans would be rich. These days, girth is more likely to signal sickness. Diabetes is a particular scourge. The type-2 (or late-onset) variety, which is linked to obesity, is thought to afflict 11m Mexicans. It kills 73,000 of them a year, seven times as many as organised crime.

Lack of exercise and a penchant for fatty treats and fizzy drinks—of which Mexicans quaff 40% more, on average, than Americans do—are largely to blame. But that does not explain why, despite similar obesity rates, nearly one in six Mexican adults is diabetic but less than 10% of those north of the border are.

Scientists have long suspected that genes are at work. Writing in the journal *Nature*, researchers for the appositely named Slim Initiative in Genomic Medicine for the Americas (SIGMA) have now fingered a culprit: a variant of a little-known gene called *SLC16A11*, which regulates one of the ways that fat is stored in cells. Inherit a copy from one parent and your risk of diabetes rises by 25%. Get one from both and it rises by 50%.

Researchers at the consortium—named after Carlos Slim, a Mexican telecoms mogul and its biggest benefactor—found at least one copy in half of the genomes of the 8,000-odd Mexicans living in Mexico City and Los Angeles they looked at (some diagnosed with type-2 diabetes, others healthy). The variant seems to come from the cohort’s Native American ancestors. Indeed, it is all but absent from better-studied European and African genomes, one reason it had not been spotted earlier. The Native Americans, in turn, appear to have inherited it from Neanderthals: a version of the gene was recently discovered in Neanderthal remains in Russia.

Most non-African humans carry around 2% of Neanderthal DNA, the result of interbreeding when both species lived side by side in Europe up to 30,000 years or so ago. Why, then, did Native Americans, and not Europeans, get stuck with the diabetes gene? Jose Florez of Massachusetts General Hospital, one of the paper’s co-authors, thinks the answer lies in the Bering Strait.
As small bands of humans, some carrying the gene, headed east, the variant appears to have spread, leaving one in ten contemporary East Asians with a copy. The smaller the initial population, the likelier a random mutation is to become ubiquitous. If the variant had hitched a ride with the pioneers who crossed the land bridge from Siberia to Alaska, it might have proliferated among their offspring.

Dr Florez cautions against genetic fatalism. In 1993 Mexican genomes were no different to today’s but diabetes rates were about half what they are now. What changed was diet and exercise. Now they know which gene to look for, boffins should be better able to diagnose and treat people most at risk—cajoling them to eat less and move around more, for example. If Dr Florez is right about the prehistory, SIGMA’s findings will also be relevant to other countries in the region with large mestizo populations descended from indigenous peoples.

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