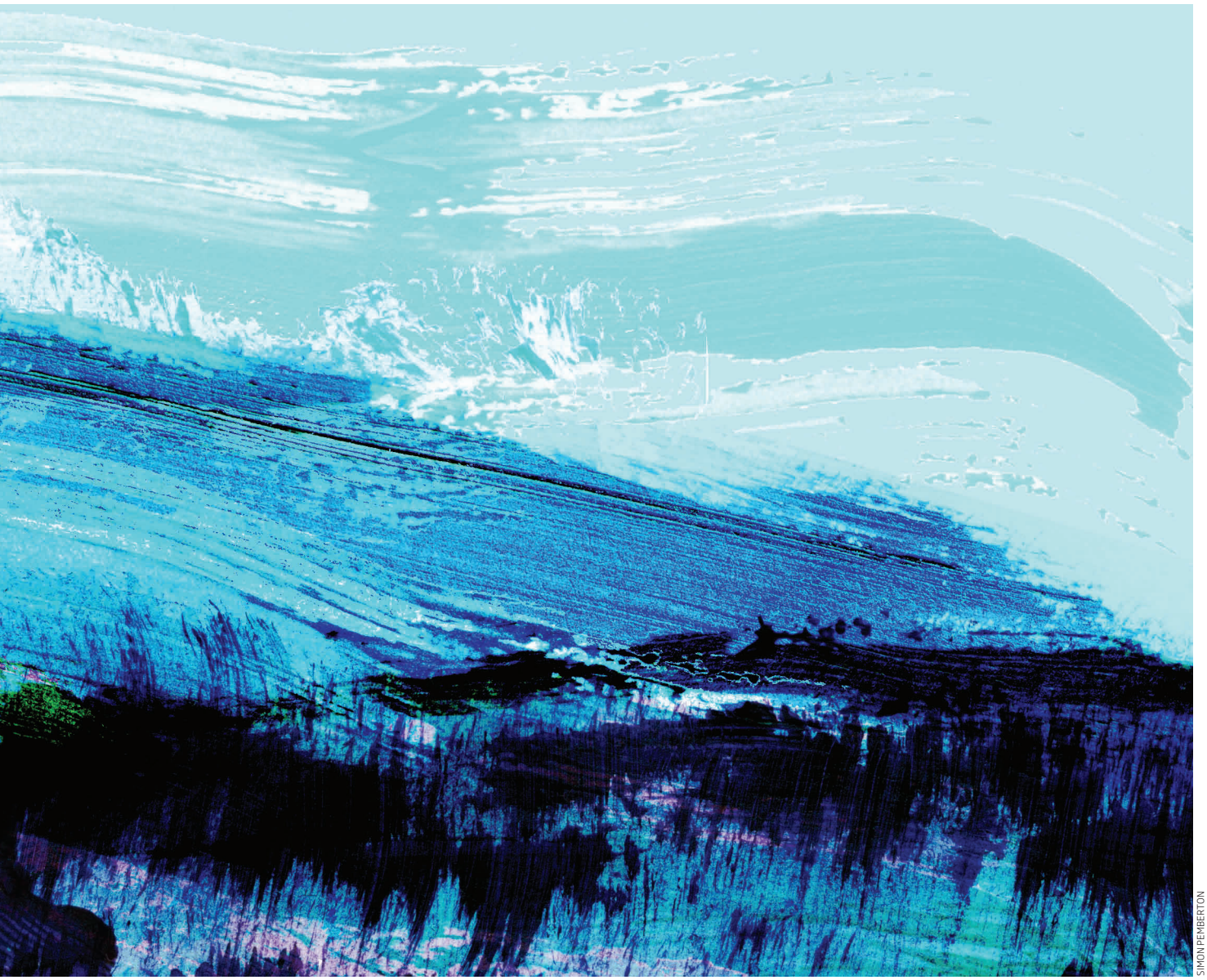
COVER STORY

Mystery relations

We have shared the planet with them for most of our existence, yet until recently we didn't even know they existed. Who were the Denisovans, asks **Michael Marshall**



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THERE was very little to go on – just the tiniest fragment of a finger bone. What's more, it was clear that whoever it had once belonged to was long dead. This was the coldest of cold cases. Yet, there was also a suspicion that the remains, discovered in a cave high up in the Altai Mountains of southern Siberia, had a story to tell. So Michael Shunkov from the Russian Academy of Science bagged and labelled the shard, and sent it off for analysis.

At his lab in the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, Svante Pääbo was just about to finish the first sequencing of a Neanderthal genome when the package arrived. He was perfectly placed to confirm Shunkov's suspicion. By comparing ancient DNA from the bone fragment with his sequence, Pääbo would surely show that it belonged to a Neanderthal. But they were all in for a surprise. The Siberian genome was quite unlike the Neanderthal's. And it didn't match that of any modern human. It was something completely new. Here was evidence that a previously unimagined species of humans had existed some 50,000 to 30,000 years ago – around the time when our own ancestors were painting their masterpieces in the Chauvet cave in France. "It was really amazing," says Pääbo.

Six years on, the new species has a moniker – Denisovan, after the cave where its remains were discovered. Our picture of these mysterious people is still being painstakingly pieced together. That first sliver of bone, together with a couple of teeth, is all we have to go on – there is still no body – but what these meagre remains have revealed is remarkable. The more we find out, the more we are forced to reconsider our own species. Far from being confined to Siberia, the Denisovans were more widespread than the Neanderthals with whom early *Homo sapiens* also shared the world. And they are not merely a historical curiosity – their genes live on today in some of us. The Denisovans challenge our conceptions of what it means to be human (see "Humanity in 96 genes", page 37).

The Denisova cave is named after a hermit called Denis who lived there in the 18th century. Human habitation there stretches back much further, however, as Russian palaeontologist Nikolai Ovodov discovered in the 1970s when he visited, looking for remains of cave bears, and found ancient stone tools. Excavations have since unearthed several hundred artefacts revealing a human presence, on and off, lasting at least 125,000 years. Human fossils are rare, but by 2008, ›