very good in the Netherlands, but of course here, it is much more affordable," Wlodarczyk-Biegun says.

COLLABORATIVE RESEARCH

Germany has more than 270 collaborative research centres that are funded by the German Research Foundation (DFG) for periods of up to 12 years, giving researchers the time to work on complex, long-term, multidisciplinary projects across universities and institutes. In 2017, the DFG spent nearly €3.2 billion on research funding. Such spending efforts are paying off, says cancer researcher Ivan Dikic, who is originally from Croatia but has been in Germany for 15 years and now heads the biochemistry department at Goethe University Frankfurt. "The German government has invested a lot more money in top-class science, and that attracts a lot of highly talented people," he says.

OPEN-MINDEDNESS

Historically, Germany's strong economy has been spurred by migration. More than 10 million people living in Germany are not German citizens, with the majority of migrants coming from Turkey, Poland and Syria. Every fifth German has a 'migrant background' in that they were either not born as a German citizen or have at least one parent who migrated to Germany. When it comes to research, too, Germany has started to attract more talent from abroad, says Dikic. "I've been here for 15 years, and what I can say is that the scientific landscape has become more international and more collaborative, with more talent from other countries," he says.

FREE HIGHER EDUCATION

Small fees of a few hundred euros per semester are charged to students in some provinces to cover administrative costs, but otherwise higher education is generally free. ■

Denise Hruby is a writer and editor in Austria.

SCIENTISTS IN GERMANY IDENTIFY FIRST HYBRID HOMININ

DNA sequencing reveals the earliest recorded incidence of interbreeding between human ancestors.

THOMAS HIGHAM, UNIVERSITY OF OXFORD; BENCE VIOLA, MAX PLANCK INSTITUTE FOR EVOLUTIONARY ANTHROPOLOGY

Bone fragments that represent the daughter of a Neanderthal mother and a Denisovan father (left). Excavation works inside (centre) and the view from above the Denisova Cave, Russia.

BY NEIL SAVAGE

Roughly 90,000 years ago, a Neanderthal female mated with a Denisovan male and gave birth to a daughter — the earliest known offspring of two distinct hominin groups. The researchers who sequenced her genome from a bone fragment found in a cave announced the discovery in August 2018 (Slon, V. *et al. Nature* **561**, 113–116; 2018).

Scientists knew from DNA evidence that the two extinct groups of humans must have interbred, but they had never found a first-generation offspring before. The closest they had come was finding a *Homo sapiens* specimen that had Neanderthal ancestry from four to six generations previously.

Viviane Slon and Svante Pääbo, palaeogeneticists at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, were part of the team that made the hybrid DNA discovery, which provides new insights into the lives of ancient hominins. "It tells us that these groups interacted more than we thought," says Slon, who earned her PhD at the institute and is the first author on the paper.

ANCIENT DNA

A team from the Russian Academy of Sciences excavated the bones from a cave in the Altai Mountains of Russia, and researchers from the University of Oxford and University of Manchester in the United Kingdom used mass spectroscopy to examine the remains for signs of human proteins. They were then passed to Slon and Pääbo's institute for DNA sequencing. Pääbo has been working with the Russian Academy for a long time, Slon says, and his lab has developed techniques to deal with the special challenges of ancient DNA, which degrades over time and has gone through certain chemical modifications. In addition to its department of evolutionary genetics, where Slon and Pääbo are based, the institute has departments of primatology, of human evolution and of human behaviour, ecology and culture, and interdepartmental collaborations have helped scientists to piece together pictures of ancient humans from different lines of evidence. "You can tackle questions from different angles, so I think that's why the institute is quite well known," Slon says.

Slon, who earned her bachelor's and master's degrees at the University of Tel Aviv in Israel, says she applied to do her doctoral studies in Leipzig specifically because she wanted to work with Pääbo, who is Swedish. She says that the institute is international in nature, with researchers from many countries, and gives her the freedom to pursue her interests as well as travel to conferences and anthropological sites. Although Slon doesn't speak German, she notes that this hasn't caused many difficulties and that the institute has given her help with various tasks, such as finding an apartment. "There's a lot of people here who help out for the research but also for your personal life, even if you don't speak the language." **N.S.**

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