What action May will take remains unclear: prospects for science are inextricably entangled with the wider Brexit issues of freedom of movement and UK access to the EU's single market. David Davis, a Member of Parliament who had campaigned on the 'leave' side of the referendum, leads the DEEU. He has announced plans to conduct a "huge consultation" ahead of the start of formal EU exit negotiations, which May has postponed until at least 2017.

SCIENCE IN THE BREXIT MINISTRY

Davis's team is talking to "the research institutes", he told Sky News on 17 July — but his department could not confirm which bodies this referred to. UK national academies have written jointly to Davis and "look forward to working with him to ensure that science's voice is heard in Brexit negotiations", the Royal Society told *Nature*.

Some hope that the Brexit ministry will contain specific advocates for research. "There should be some sort of champion for science within the department," says John Beddington, a population biologist at the Oxford Martin School, and a former UK chief scientific adviser. An obvious choice is science minister Johnson, Beddington says, although the DEEU could also dedicate a group of civil servants to the job. Johnson could be a "very strong, very early voice" in DEEU deliberations, Sharon Witherspoon, policy chief at the UK Academy of Social Sciences, told a House of Lords inquiry on 19 July. She added that research needed "urgent attention, and cannot wait to be an afterthought".

Giving more-formal responsibilities to Johnson, whose role in May's government is split between the education and business departments, might be a stretch. "If anyone can do it, Jo can. But I'm not confident that the best voice for the science community would be to add another job on for Jo," says Nick Hillman, director of the Oxford-based Higher Education Policy Institute.

A different potential conduit for scientific input could be the DEEU's departmental board, an advisory body that, in other departments, often includes senior business figures. And another idea is for Davis's department to appoint a chief scientific adviser (CSA), as most other UK ministries already have. But Beddington says that although the DEEU and the newly created Department for International Trade should each have a CSA, their role should not be to advocate for science, but to feed advice into the negotiations on issues such as environmental regulations, product standards and health and safety. "Whether to appoint a CSA is the kind of thought process they should be going through," says Hillman. "It doesn't mean they are there yet, though." ■

Daniel Himmelstein, pictured at his previous research post at the University of California, San Francisco.

STEVE BABULJAK

INTELLECTUAL PROPERTY

Legal maze threatens to slow data science

Researcher who spent months chasing permission to republish online data sets urges others to read up on the law.

BY SIMON OXENHAM

Knowledge from millions of biological studies encoded into one network — that is Daniel Himmelstein's alluring description of Hetionet, a free online resource that melds data from 28 public sources on links between drugs, genes and diseases. But for a product built on public information, obtaining legal permissions has been surprisingly tough.

When Himmelstein, a data scientist at the University of Pennsylvania in Philadelphia, contacted researchers for permission to reproduce their work openly, several said they were surprised that he had to ask. "It never really crossed my mind that licensing is an issue here," says Jörg Menche, a bioinformatician at the Research Center for Molecular Medicine of the Austrian Academy of Sciences in Vienna.

Menche rapidly gave consent — but not everyone was so helpful. One research group never replied to Himmelstein, and three replied without clearing up the legal confusion. Ultimately, Himmelstein published the final version of Hetionet in July — minus one data set whose licence forbids redistribution, but including the three that he still lacks clear permission to republish. The tangle shows that many researchers don't understand that simply posting a data set publicly doesn't mean others can legally republish it, says Himmelstein.

The confusion has the power to slow down science, he says, because researchers will be discouraged from combining data sets into more useful resources. It will also become increasingly problematic as scientists publish more information online. "Science is becoming more and more dependent on reusing data," Himmelstein says.

DATA-SET LAWS

Because a piece of data — a fact — cannot be copyrighted, many scientists think that a publicly posted data set that does not place explicit terms and conditions on access can simply be republished without legal problems. But that's not necessarily correct, says Estelle Derclaye, a specialist in intellectual-property law at the University of Nottingham, UK.

The European Union assigns specific database rights, independent of copyright, that aim to protect the investment made in compiling a database. Legally speaking, these rights prevent researchers such as Himmelstein from

republishing data sets created by scientists in EU states without their consent.

Other countries have different layers of legal protection. But even in jurisdictions such as the United States, where no separate rights exist to govern databases, there is still room for confusion. Although facts don't qualify for copyright, the way they are compiled arguably might — if the act of making that compilation requires sufficiently creative expression. "The default legal position on how data may be used in any given context is hard to untangle," according to a guide on licensing data issued by the Digital Curation Centre in Edinburgh, UK.

Advocates of data-sharing accordingly recommend that researchers who are creating public databases add clear licences explaining how they intend their data to be reused and redistributed, and whether they waive any database rights.

LACK OF CONFIDENCE

In Himmelstein's case, some of the data sets that he wanted to use had clear licences — and some of these prevented unrestricted redistribution, but others did not. The most frustrating part of his project, he says, was the feeling that good data were going to waste because their creators could not clarify whether he could republish them.

Andrew Charlesworth, an intellectual-property expert at the University of Bristol, UK, says that this may be because few researchers were confident enough of the law to give Himmelstein clear guidance. "What you tend to find is that if nobody has a remit to answer those kinds of questions, they are not in a hurry to take it on," he says.

Even without clear permissions, Himmelstein is unlikely to face legal penalties for publishing Hetionet, says Jonathan Band, an intellectual-property lawyer with the law firm Policy Bandwidth in Washington DC — unless, that is, he mistakenly breached terms and conditions placed on the data sets. Academics who put their data sets publicly online usually intend their work to be available for others to republish freely; and no one has ever got into trouble for doing Himmelstein's kind of project, Band adds.

"These are largely untested waters, and most academics aren't in the position to risk setting off a legal battle."

But Himmelstein is not convinced that he is legally in the clear — and feels that such uncertainty may deter other scientists from reproducing academic data. If a researcher launches a commercial product that is based on public data sets, he adds, the stakes of not having clear licensing are likely to rise. "I think these are largely untested waters, and most academics aren't in the position to risk setting off a legal battle that will help clarify these issues," he says. ■

CORRECTIONS

The News Feature 'Physics on two wheels' (*Nature* **535,** 338–341; 2016) contained several biographical inaccuracies. Michael Papadopoulos moved his family to the United States more than a decade before taking a job at Oregon, not in 1967. Jim Papadopoulos spent a whole academic year at Oregon before starting at MIT. He did not write to bike companies asking for work until the 1990s. His time at the US Geological Survey was part of an internship, not a full-time job. The e-mail list he moderated was also founded by him, and is called Hardcore Bicycle Science. He has actually published three first-author papers, but just one related to bicycle science. He was also not given a chance to respond to a comment about his ability to finish things.

The News Feature 'The beer geeks' (*Nature* **535,** 484–486; 2016) misattributed the quotes in the last paragraph. They came from Kevin Verstrepen, not Stijn Mertens.