

NEUROSCIENCE

Human Brain Project releases computing tools

Move signals effort to benefit wider community.

BY QUIRIN SCHIERMEIER & ALISON ABBOTT

Europe's major brain-research project has unveiled a set of prototype computing tools and called on the global neuroscience community to start using them.

Release of the tools, which marks the start of the operational phase of the Human Brain Project (HBP), could help to allay concerns about the €1-billion (US\$1.1-billion) venture's benefits to the wider scientific community. But it is not yet clear how the platforms will resonate with researchers outside the project.

"At this point, no one can say whether or not the research platforms will be a success," says Andreas Herz, chair of computational neuroscience at the Ludwig Maximilian University of Munich in Germany.

The computing platforms include brain-simulation tools, visualization software and a pair of remotely accessible supercomputers that researchers can use to study brain processes in real time. Some will be freely accessible, others available only on the success of a peer-reviewed application (see go.nature.com/rlpjz).

The HBP's general mission is to combine different types of neuroscience data to reconstruct the human brain computationally at different scales, and to simulate it. But the project has attracted controversy. In 2014, around 150 neuroscientists from outside the project signed a petition claiming that it was running off its scientific course, and pledged to boycott it unless their concerns were addressed. An independent review completed in March 2015 stressed, among other things, that the computing infrastructure created by the HBP must be useful to the wider scientific community.

Release of the neuroscience tools is a sign that the HBP's leadership accepts that the project needs to focus on providing concrete services for the neuroscience community at large, says Herz. But he cautions that the project still hinges on "logical flaws", such as "the dream" that sparse recordings from neurons can generate dense data.

The platforms are to be developed with a view to eventually becoming part of a permanent, pan-European research infrastructure, say the HBP's organizers — a step that would require the project to secure permanent funding commitments from governments. ■



DAVID FLEETHAM/VISUALS UNLIMITED/CORBIS

The high seas host a wealth of marine life but lack comprehensive rules to guide conservation.

MARINE BIOLOGY

Talks aim to tame marine Wild West

Nations debate how to protect biodiversity in the high seas.

BY DANIEL CRESSEY

They might host habitats of huge ecological importance, but two-thirds of the world's oceans lie beyond the authority of national governments. On 28 March, members of the United Nations began negotiating the first global treaty to impose conservation and sustainability on the high seas. As well as vastly increasing the areas that could be set aside to protect endangered species, a legally binding treaty could usher in laws on the use of marine organisms in the search for drugs and cosmetics.

"This is something that could change the future of how we manage our oceans," says Elizabeth Wilson, director of international ocean policy at the Pew Charitable Trusts in Washington DC, which has advocated for such a treaty.

Currently, nations can claim waters up to 200 nautical miles (370 kilometres) from their shorelines as 'exclusive economic zones'; everything beyond these is designated the

high seas (see 'Sea change'). There are treaties that govern specific high-seas activities, such as mining the sea bed for minerals or laying cables, and agreements that regulate some kinds of fishing in various areas. But there is no comprehensive set of regulations on biodiversity and conservation.

The ongoing treaty discussions, which are at the UN headquarters in New York, are the first talks of a preparatory committee, known as Prep Com — and the result of years of wrangling between member nations. If they, and three more meetings before the end of 2017, are successful, a text could be voted on by UN members as soon as 2018, Wilson says.

One goal of the UN negotiations is a mechanism for the creation of marine protected areas (MPAs) on the high seas. As part of the UN Convention on Biological Diversity, most governments are now committed to designating at least 10% of the oceans as protected areas by 2020 — currently, around 2% lies in MPAs. But legally, they can create MPAs only in their own waters, so some of

the most ecologically important areas remain out of reach.

Moreover, in a study published last month, marine scientists Calum Roberts, Bethan O'Leary and their colleagues at the University of York, UK, conclude that the 10% target is much too low. On the basis of a review of 144 studies that assessed the adequacy of the UN target, they estimate that more than 30% of the ocean must be protected to achieve goals such as protecting biodiversity and minimizing the risk that fish populations will collapse (B. C. O'Leary *et al. Conserv. Lett.* <http://doi.org/bdxw>; 2016). But it would be near impossible to set aside this much-larger portion without being able to create MPAs in the high seas, notes Roberts. "These negotiations over the next two years are going to be vitally important," he says.

BROAD APPROACH

Others say that MPAs aren't necessarily the best way to protect the oceans, because they can lead to problems such as overfishing in non-protected areas. Rather than setting aside large areas for protection, a better approach would be to manage activities properly across the ocean, says oceanographer James Cowan

SEA CHANGE

Negotiations have begun to allow the creation of marine reserves not just in the exclusive economic zones that can be claimed by nations, but throughout the oceans.



at Louisiana State University in Baton Rouge.

Another issue being discussed during the negotiations is how to govern the search for genetic resources — plants and animals that could yield products such as drugs or cosmetics.

Bioprospecting is on the rise in the oceans, particularly in the high seas, says Glen Wright, a marine-policy researcher at the Institute for Sustainable Development and International Relations in Paris.

The G77 group of developing nations argues that genetic resources from the high seas are part of the 'common heritage of mankind', so any profits from them should be shared among all nations. Other groups, including the European Union would rather avoid such a formal status, says Wright, and focus instead on a practical mechanism for sharing the benefits. But at this stage, say Wright and Wilson, it is unclear what rules might be brought in, and what mechanisms might be used to enforce them. ■

CORRECTIONS

In the News story 'Clash over killer-whale captivity' (*Nature* **531**, 426–427; 2016), we erroneously referred to Jeffrey Ventre as a veterinary surgeon. He is, in fact, a physician. And in the story 'Scientists say "no" to UK exit from Europe in *Nature* poll' (*Nature* **531**, 559; 2016), the labels numbered 2 and 4 in the graphic 'What impact would a UK exit from the EU have on UK science?' were the wrong way round. The opening paragraph also potentially implied that the poll was more representative of scientists in the UK and greater EU than perhaps was warranted.