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Participants in clinical trials of cancer drugs must often meet a lengthy list of eligibility criteria.

it to them without a concern."

A joint project by the FDA, the American Society of Clinical Oncology (ASCO) in Alexandria, Virginia, and the advocacy group Friends of Cancer Research in Washington DC has found that five common criteria for cancer-trial eligibility could often be amended without harming participants or the integrity of the trial. The team published its results last October (E. S. Kim *et al. J. Clin. Oncol.* **35**, 3737–3744; 2017).

People with HIV, for example, were once excluded from trials because of their poor prognosis. Now, with treatment, they often live as long as people without the virus and should be included in many cancer trials, the group concluded.

The team also recommended that in some cases, researchers should ease restrictions on people with organ dysfunction. That could be particularly important in light of the ageing populations in some countries, including the United States, says Lichtman. The restrictions were put in place when cancer treatments were more broadly toxic, he notes, and might not be necessary for the more targeted drugs available today.

One recommendation that could generate some controversy, he says, is a push to lower the age of eligibility for many adult cancer trials from 18 to 12. This reflects an understanding of basic drug metabolism, says Edward Kim, an oncologist at Atrium Health in Charlotte, North Carolina, who chaired the ASCO effort. "There is nothing magical about 18," he says. "Your body pharmacologically metabolizes drugs the same way at age 12 as it does at age 18."

But some adult-cancer physicians might feel uncomfortable treating younger people, and often treatment of these individuals takes place in specialized children's hospitals, unlike adult clinical trials. Furthermore, most adolescent cancers are rare, and they can differ from adult cancers — even when they start in the same organ. This means the change might have little impact on research overall, says paediatric oncologist Peter Adamson of the Children's Hospital of Philadelphia in Pennsylvania. But it could still help individual adolescents who might otherwise have been excluded from trials, he adds: "It's the right thing to do."

Kim and others are now working to see their changes implemented, and have submitted their suggestions to an influential programme that coordinates clinical development of new therapies at the US National Cancer Institute. Kim says he has been contacted by researchers at large pharmaceutical companies who are eager to make the changes in their upcoming trials.

The result, he says, could be data that are more relevant to the people whom he and his colleagues treat every day. "These patients have these characteristics and they're going to be treated eventually by their doctors," says Kim. "This is the real world." ■

ASTROPHYSICS

Dark-matter detector in Italy strikes again

Upgraded experiment sees a beguiling data fluctuation.

BY DAVIDE CASTELVECCHI

A group of physicists says that it is still detecting signs of dark matter — the mystery substance thought to make up 85% of matter in the Universe — 20 years after it saw the first hints of such a signal.

DAMA, a collaboration of Italian and Chinese researchers, has announced long-awaited results from six years of data-taking, which followed an upgrade to the experiment in 2010. The findings are a boost for the multiple groups attempting to reproduce DAMA's results, which have been controversial and contradict those of other experiments. But DAMA's improved sensitivity also makes its results harder to explain, physicists say.

Observations of galaxies and of the Universe's primordial radiation imply that the vast majority of matter is of a type that is invisible and interacts almost exclusively through gravity. Many theories exist for explaining the nature of this dark matter, and lots of experiments have been attempting to detect it through its subtle interactions with ordinary matter.

Rita Bernabei, a physicist at the University of Rome Tor Vergata who has led DAMA since its early days, presented the latest results on 26 March at a meeting at central Italy's Gran Sasso National Laboratory, where the experiment sits in a cavern under a mountain. Like many detectors, DAMA aims to measure the tiny amount of energy given off when atoms of ordinary matter on Earth interact with unseen particles in a 'halo' of dark matter thought to envelop the Milky Way.

DAMA works by recording flashes of light that occur inside crystals of sodium iodide when subatomic particles hit the nucleus of a sodium or iodine ion. Interactions with dark-matter particles should make that signal vary throughout the year. That's because, as the Sun moves around the Galaxy, Earth ploughs through the dark-matter halo more quickly in some parts of its orbit around the Sun than in others. The signals should peak in early June and be at their lowest in early December, says Katherine ▶

Freese, a theoretical astroparticle physicist at the University of Michigan in Ann Arbor, who was part of the team that first proposed looking for such a signal, in 1986 (A. K. Drukier *et al. Phys. Rev. D* **33,** 3495–3508; 1986).

When DAMA first announced that it had seen such a fluctuation in 1997, soon after an early version of the experiment was turned on, the physics community was sceptical. Critics doubted that this effect was a genuine sign of dark matter. Instead, they said, terrestrial sources or quirks in the apparatus might be mimicking a real signal. There was also a possibility that the blip would vanish after parts of the detector were replaced with newer technology. But that didn't happen. "The modulation is still there, loud and clear," says Freese.

A number of increasingly sophisticated experiments that should also see dark matter — although using different techniques — have so far found none. But the DAMA team has continued to see a fluctuation. The group confirmed that it had seen the signal in 2013 (R. Bernabei *et al. Eur. Phys. J. C* **73,** 2648; 2013), with a previous incarnation of the experiment. The latest findings from DAMA come as other experiments attempt for the first time to corroborate or disprove the claim using the same type of sodium iodide crystal as in DAMA.

Leading that pack is COSINE-100, a US and South Korean experiment at the Yangyang underground laboratory in South Korea. Hyunsu Lee, a physicist at the Institute for Basic Science in Daejeon, says that had DAMA's signal disappeared in the new data, it would have dampened motivation for carrying out further sodium iodide experiments.

"For us, these results are very encouraging," says Susana Cebrian, a physicist at the University of Zaragoza in Spain who works on another replication attempt, called ANAIS, in the Canfranc Underground Laboratory in the Pyrenees.

The DAMA experiment in Italy is hunting for signs of dark matter.

S. SCHIAVON/LNGS-INFN

UNEXPECTED DEVIATION

But DAMA's latest results have a twist. The upgrade has made the detector sensitive to lower-energy collisions — signals from slower-moving particles. For typical dark-matter models, the timing of the fluctuations, as seen from Earth, should reverse below certain energies: "It should peak in December and be at a minimum in June," says Freese. The latest results don't show that.

The deviation "is refreshing, and food for thought", says Juan Collar, an experimental physicist at the University of Chicago in Illinois who works on dark-matter detection.

But many physicists still express scepticism. Dan Hooper, a physicist at the Fermi National Accelerator Laboratory in Batavia, Illinois, tweeted on 26 March: "I cannot come up with a viable model that can produce this signal."

Freese, who isn't part of the DAMA collaboration, is more sanguine. She says that the data at low energies are still tentative, and could yet be compatible with a flip.

"It is more urgent than ever that an independent experiment based on the same technique, like ANAIS, could reproduce the effect," Cebrian says. Other experiments are planned in Australia and Japan.

Although DAMA's latest upgrades removed some potential concerns that the effect might have been generated inside the detector, Collar says: "The mystery, however, remains of why their result is incompatible with just about every other finding in this field." ■

POLICY

Copyright reforms draw fire from scientists

Planned changes to EU regulations prompt concerns that they will impede open science.

BY QUIRIN SCHIERMEIER

An influential committee of the European Parliament is due to vote this month on changes to copyright regulations, but the latest drafts of the rules have triggered a wave of criticism from open-science advocates. They say that the proposals will stifle research and scholarly communication.

Intellectual-property experts agree that existing EU copyright rules need an overhaul for the digital age, and a proposal first circulated by the European Commission in 2016 had this goal in mind. But critics worry that some provisions in more-recent proposals for the law — known as the directive on copyright in the digital single market — conflict with Europe's principles of open science and freedom of expression.

"Copyright law must not hamper open science," says Vanessa Proudman, European director of the Scholarly Publishing and Academic Resources Coalition (SPARC), a science-advocacy group in Apeldoorn, the Netherlands. "The EU has made significant headway towards open access of research funded by European citizens. The proposed new rules would clearly impede further progress, threatening the visibility of Europe's research," she says.

Concerns focus on a provision that would let publishers claim royalties for the use of snippets