SANTIAGO DAVID-RIVERA

Bright chick plays tricks on would-be predators

FOOL me once, shame on you. Fool me twice, I don't eat you… The chicks of the cinereous mourner (*Laniocera hypopyrra*), a drab grey bird from South America's tropical forests, look – and act – like a poisonous species of caterpillar to avoid being eaten by snakes and monkeys.

Gustavo Londono, now at the University of California, set up cameras to observe what happens inside the birds' nests in the Peruvian Amazon. Cinereous mourner parents spend a lot of time foraging away from the nest, which gives ample time for predators to eat chicks in a habitat where predation can be as high as 80 per cent.

To try to prevent being eaten, the chicks have bright orange feathers, with a tip of white (see photo), which when they lie down makes them look like a caterpillar. They assume any arrival to the nest, including a parent, is a predator and so they start moving their head from side to side, giving the appearance of a sliding caterpillar (*American Naturalist*, doi.org/xpk).

Movement and appearance combined would probably be enough to deter predators, Londono says. But the just-hatched chicks have another trick up their sleeve. Their bright orange colour could double as camouflage, as they blend in with the dried leaves lining the nest. "Mimicry plays a major role in deterring predators, but camouflage is also likely to occur when the nestling is on the nest," says Londono.

"Mini-LHC" ramps up to record energy

TABLE-TOP particle accelerators can now rival the real thing. A laser-powered device just centimetres long can boost electrons to energies previously seen only in giant smashers.

The world's biggest accelerator, the Large Hadron Collider at CERN near Geneva, Switzerland, is a 27-kilometre ring that next year will slam particles together at energies of 13 teraelectronvolts (see page 23). But even standard-size facilities require tunnels hundreds of metres long to reach gigaelectronvolt (GeV) energies.

Physicists have been working to develop accelerators that could run on an ordinary lab bench. Now Wim Leemans of the Lawrence Berkeley National Laboratory in California and his colleagues have got particles in their 9-centimetre-long device up to 4.2 GeV (*Physical Review Letters*, doi.org/xpr).

The trick is to use a high-powered laser pulse to create waves in a plasma, which electrons can ride like surfers. The team were able to better control their waves than in previous table-top accelerators, letting them build a longer tube and thus reach higher energies. More advanced lasers are needed to sustain the pulses before big facilities can be replaced, says Leemans.

How DNA folds itself into our cells

MANY things look clearer in 3D, and that goes for genomes too.

The human genome was sequenced about 10 years ago, but we still have a lot to learn about its structure and function. One puzzle was how the 1.8 metres of our DNA fits into our cell nuclei, which are 10,000 times shorter.

Now the way our genetic material folds and loops in on itself has been mapped in unprecedented detail in nine cell types, including immune, lung and skin cells. The work is the first draft of the 3D genome, also known as the "loopome".

It is important to map these undulations because where a gene ends up and what it is next to can influence whether it is active. "The loopome will lead to amazing insights into how cells work, normally and in disease," says team member Suhas Rao of Baylor College of Medicine in Houston, Texas (*Cell*, doi.org/xqj).

We share singing genes with birds

CHRISTMAS carollers rejoice: you sing like a bird. Genes involved in vocal learning in humans are also active in some birds, but are not found in other animal species.

Researchers looked at maps of gene expression in the brain tissues of birds that can learn vocals and those that can't, and compared them with expression maps in human brains. They found 55 genes that show a similar pattern of activity in the brains of humans and vocal-learning birds (*Science*, doi.org/xqh).

Such systematic similarities mean that songbirds could be used to study disorders that affect speech, such as Huntington's disease, says Andreas Pfenning from the Massachusetts Institute of Technology.