

Science & technology | See-through mice

A common food dye can make skin transparent

The discovery allows scientists to see inside live animals

Sep 5th 2024

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The discovery will be reported in a paper published in *Science* on September 6th by researchers from Stanford University. They found that a yellow food dye called tartrazine, used to colour everything from M&Ms to Gatorade, can, if applied to the skin of a live mouse, make the tissue transparent. The effect was pronounced enough for researchers to see blood vessels beneath the animal's scalp, some of its abdominal organs and a number of the more delicate muscles in its legs—sights hitherto only directly visible through dissection. When the dye was washed off, the skin's natural opacity returned. The dye also seems safe. Whatever mice absorbed through their skin they excreted through their urine. (The National Science Foundation, an American government agency that funded some of the research, has created a tip sheet for amateurs who want to turn a chicken breast see-through in their own kitchens.)

more than simple physics. Skin is ordinarily opaque because each of its many constituents (including fats, proteins and water) bends incoming light by different amounts. The net result is that light is scattered, rather than allowed to pass straight through. Molecules of tartrazine can, if dissolved into the water present in skin, bring that water's light-bending tendencies into line with those of its surroundings. This eliminates the scattering and allows light to travel in and out in a straight line.

It will take more work before humans are added. As human skin is ten times thicker than that of mice, replicating the tartrazine experiment would require far longer application periods, says Dr Ou. It is also unclear just how reversible such a process would be. The long-term possibilities, though, are enticing: from measuring blood-sugar levels by shining light through the skin, to increasing the depth at which tumour-killing lasers can operate. Forget Superman; pass the Gatorade. ■