



Science Magazine Podcast

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Promo

The following is an excerpt from the *Science* Podcast. To hear the whole show, visit www.sciencemag.org and click on “*Science* Podcast.”

Music

Interviewer – Kristy Hamilton

Finally today, David Grimm, editor for our daily news site *ScienceNOW*, is here to talk about some recent stories. I’m Kristy Hamilton. First up we have a story on lice. Lice have been pestering the scalps of children and beleaguered parents for years. But the real head scratcher for scientists is whether late hatching lice can actually thwart traditional treatment options. So how do lice latch on to people’s heads?

Interviewee – David Grimm

Well they actually don’t stick to our skin—at least not directly—they deposit their nits, which are their eggs, at the base of our hair shafts. It’s long been thought, well it’s actually been a little unclear on how long it takes these eggs to hatch. In fact, a lot of the research that was done on lice was done in the 1920s and the 1930s, so it’s almost a century old. And a lot of this research involved actually rearing lice inside of boxes that were strapped to a person’s arm or ankle, so it seems like kind of unpleasant research. But the upshot of that research was that scientists thought that it, you know, maybe took about a week, maybe a little bit longer, for these eggs to hatch. But this new study suggests that it could take even longer, maybe up to two weeks.

Interviewer – Kristy Hamilton

So why are researchers revisiting this topic?

Interviewee – David Grimm

Well the problem is that a lot of the current treatments for lice only work for about seven days. So if you’ve got eggs that are hatching up to two weeks after they are laid, then a lot of these topical treatments that are around now may not be doing a good job, and you may be getting lice appearing after you think you’ve sort of cleared your head of the problem.

Interviewer – Kristy Hamilton

So assuming that the researchers didn’t use a box attached to someone’s arm...

Interviewee – David Grimm

No. Right.

Interviewer – Kristy Hamilton

So how did they go about testing this?

Interviewee – David Grimm

Well what they did is they actually looked at, they analyzed about 20 previous studies that investigated killing lice through a variety of means like lotions, and what they found when they put all these data together was that, you know, again the eggs were really taking a lot longer to hatch than was previously thought. Also the person's scalp temperature also seemed to play a big role, the warmer the scalp the faster the lice developed. And also lice were more fond of the thick hair at the nape of the neck than on the thinner hair on the top and the front of the scalp.

Interviewer – Kristy Hamilton

So what does this mean then for beleaguered parents and their itchy-headed kids?

Interviewee – David Grimm

Well what it means is that it actually may be sort of overtaken by some new treatments for lice. Some of the new treatments on the market are actually oral insecticides, which are very effective at killing lice and eggs right away, and they don't have these lag times where the eggs can stick around for a while. So it may be the case that even though we know a lot more about how lice infest us, the new medications might take care of them anyway.

Interviewer – Kristy Hamilton

Next up we have a story on mummifying meat. According to archeologists, pharaohs relished their beef ribs too. So much so that the meat was mummified to enjoy in the afterlife. And now those ribs are providing food for thought on ancient preservation methods. So first of all, where did they find all this meat?

Interviewee – David Grimm

Well they're finding it in the tombs of pharaohs. So for example, in King Tutankhamun's tomb there were 48 wooden cases of butchered cuts of beef and poultry. And these so called meat mummies also been found in other tombs. There's some samples of them at Egypt's Cairo Museum, and the British Museum in London. Some of them are calves that have been prepared as food, and placed in tombs that are about 3000 years old. One of them is a goat leg that was mummified around 1290 BCE. And still others are mummies of beef ribs, it's making me hungry sort of just talking about it.

Interviewer – Kristy Hamilton

So archeologists have found mummified meat before, what's so special about these beef ribs?

Interviewee – David Grimm

Well what's special about the new study is that the researchers feel like they have a better idea of how this food was mummified. A lot of these pharaohs were buried with grain, which can last a long time, but you can imagine just burying meat by itself, it's going to go bad really quickly. And the point with all of this mummification was to have it available for the pharaohs well into the afterlife. So they had to find a way of preserving

this meat. And the scientists in this new study wanted to figure out what they were doing. And what they found was that there was a variety of different methods used. So for example, with the goat leg, it seemed like there was some animal fat that was smeared over the bandages around the goat leg, maybe that was used to help sort of mummify it. With the beef ribs, it looks like the ancient Egyptians used a resin from a plant belonging to the genus *Pistacia*. And this was a very expensive compound, it was imported from the Mediterranean, and it was often used by the elite members of society as incense, varnish, and food flavoring. But it was also apparently a very effective mummifier. And it seems to have been in use fairly early on, as early as 3500 years ago.

Interviewer – Kristy Hamilton

So does this change our perception of preservation methods?

Interviewee – David Grimm

Well it does a bit because this is considered sort of an advanced way to mummify. Researchers didn't think that this *Pistacia* was used until about 600 years later than they're finding it on these beef ribs, which suggests that the ancient Egyptians may have had more advanced mummifying practices earlier than thought.

Interviewer – Kristy Hamilton

Very cool. Finally today we have a story on synesthesia. People who see colors when hearing musical notes, or perceive numbers as inherently colored have synesthesia, a neurologic condition where the senses get tangled up. Synesthesia only affects a small fraction of the population, but it turns out that among people with autism, that percentage may be a lot higher. So why does someone have synesthesia?

Interviewee – David Grimm

Well it's a little unclear, but scientists believe it's caused by an overabundance of connections between neurons. And somehow this overabundance causes the senses to sort of get mixed up in the brain. And what's curious about that is that a similar defect has been proposed as a cause of autism, that, this overabundance of connections. And where a lot of synesthetes actually find the experience interesting, you know, they see, you know, what most of us would see as a black letter A, and the synesthetes are seeing it as a red A, or they hear a musical instrument playing and all of a sudden they see a rainbow of colors, a lot of them actually don't mind that. But for the autistics, that experience, this hypersensitivity, and this mixing of senses, it actually seems to be debilitating. It can cause them to become more withdrawn, or to try to soothe themselves with repetitive motions like rocking, which is common among people with autism. But it's this similarity between what might be causing autism and synesthesia that led scientists in this new study to see if there really was a connection between the two disorders.

Interviewer – Kristy Hamilton

And people with autism are notoriously hard to study. So how did these researchers go about that?

Interviewee – David Grimm

Well the researchers sent a bunch of online questionnaires to people with synesthesia, people with autism, and people that didn't have either disorder. And what they were trying to figure out is a lot of people with autism have trouble interacting with people face to face, but they have an easier time interacting with a questionnaire, which is why the researchers chose this method. And what they found was that people with autism were almost three times as likely to have some type of synesthesia than people without autism.

Interviewer – Kristy Hamilton

So how could the information help people with autism?

Interviewee – David Grimm

Well one idea is that when researchers are looking for genes that underlie synesthesia, they may also be looking for genes that underlie autism, perhaps there's some overlap there that will lead to more clues to the origin of both conditions. Another thing might be finding a new way to soothe autistics, if they really are hypersensitive to a lot of the sensory stimuli that the rest of us deal with, maybe there's a way to figure out a way to put them in a more calming environment, an environment that has less sensory overload, and that could be one potential treatment for the condition.

Interviewer – Kristy Hamilton

So what else is on the site, Dave?

Interviewee – David Grimm

Well Kristy, for *ScienceNOW* we've got a story about why female sparrows are more faithful to their mates at high altitudes. Also a story about researchers excavating dinosaur fossils by using 3D printing. For *ScienceInsider*, our policy blog, we've got a story about—speaking of dinosaurs—why a \$5 million dinosaur fossil—this is a fossil of two dinosaurs intertwined—failed to sell at auction. Also a story about whether do-it-yourself biology is safe. And finally for *ScienceLive*, our weekly chat on the hottest topics in science, this week's *ScienceLive* is about splitting water to store energy. And then we'll be taking a break for Thanksgiving, but after that we'll be returning on December 5th for a chat that I'll actually be moderating on personhood for nonhuman animals; does it make sense to grant legal rights to animals that aren't human? So be sure to check out all these stories on this site.

Interviewer – Kristy Hamilton

David Grimm is the editor for our online daily news site *ScienceNOW*. I'm Kristy Hamilton. You can check out the latest news, our upcoming live chats, and the policy blog *ScienceInsider* at news.sciencemag.org.

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