



Science Magazine Podcast Transcript, 30 November 2012

http://podcasts.aaas.org/science_news/SciencePodcast_121130_ScienceNOW.mp3

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 – Edward Hurme

Finally today, I’m here with Science staff writer Meghna Sachdev who’s here to give us a rundown on some of the recent stories from our online daily news site. First up, we have a story about making a flu vaccine without a virus.

Interviewee – Meghna Sachdev

Yes, that’s right. So researchers have managed to make a flu vaccine that doesn’t actually use cultures of the virus. In fact, when they inject it into animals, the animals make the virus proteins themselves.

Interviewer – Edward Hurme

So how exactly is this approach different from our typical flu vaccines? What’s going on here?

Interviewee – Meghna Sachdev

So, typical flu vaccines are made by infecting the chicken eggs or cell cultures with the virus, and then two proteins are isolated and used in the vaccines. This one is a little bit different because scientists made synthetic messenger RNA or mRNA, which they then injected into mice and ferrets and pigs, and this messenger RNA gets the animals to actually produce the virus proteins themselves and confer immunity.

Interviewer – Edward Hurme

Okay. So now they are actually putting it in live animals. And the animals start making parts of this virus themselves, and then their own immune system reacts to the parts of the virus they produce. So this is a really cool and interesting new way of producing a vaccine, but why is this important? Why is this different or superior to our previous method?

Interviewee – Meghna Sachdev

Well, if it works (and we don’t know if it will yet), the reason researchers are so excited is because one of the things it does is it speeds up the whole process. So with traditional vaccines, the virus has to be cultured in eggs or cell cultures, which takes a long time – it could take months. So, for example with our last pandemic, by the time they had enough virus to basically go around, we were well past the peak. So this sort of speeds up production time to about six to eight weeks. The other thing that’s quite exciting is that people who have allergies to eggs would be able to take these vaccines without worrying

too much about going into anaphylactic shock, which is nice. And the researchers say it doesn't have to be refrigerated, so it should transport a little more easily.

Interviewer – Edward Hurme

So from a new technique to prevent us from getting sick, our next story looks at coughing in another animal.

Interviewee – Meghna Sachdev

I bet you didn't know that scallops were coughing, but when they do, what they are basically doing is trying to expel waste and water from their central cavities. So they have two valves, and the friction between them makes a sharp crack and then there's a big drawn out puffing sound which is the valves closing very quickly. So that's their coughs.

Interviewer – Edward Hurme

Okay. So what do researchers hope to find out from studying these coughs?

Interviewee – Meghna Sachdev

Researchers hope that listening to scallop coughs and tracking scallop coughs will help them monitor water quality. So what they figured out is that scallops grow more slowly when there's toxic algae around. They hope that by monitoring the scallop coughs, they can figure out how the scallops metabolisms are changing and keep an eye on water quality.

Interviewer – Edward Hurme

So how is this new? How have researchers attempted to study these coughs and other behaviors in mussels in the past?

Interviewee – Meghna Sachdev

One of the things they can do is to analyze these very very fine-scale patterns in scallop shells - which is pretty labor intensive. Another thing they can do is attach motion sensors to the scallops which is, well, pretty disruptive and presumably, the scallops don't like it too much. I'm not sure. But this is exciting because these coughs are pretty sonically striking, and researchers can hear them from about 10 meters away so it's not that labor intensive, it doesn't bother the scallops, and, you know, they can track it without putting in as much work.

Interviewer – Edward Hurme

Moving from one marine peculiarity to another, our third story focuses on a mysterious technique blue whales use for foraging.

Interviewee – Meghna Sachdev

Most people don't think of the blue whale as being too agile. Really, really big blue whales are heavier than trains, they are longer than two city buses, and they've got pretty small flippers and flukes. But apparently, they are rolling around.

Interviewer – Edward Hurme

So can you describe this unique rolling behavior? What's exactly going on?

Interviewee – Meghna Sachdev

So basically, scientists were surprised to find that these whales were making full 360 degree rolls. So what they were doing was in about 4 to 5 seconds, they were rolling around 180 degrees and basically grabbing some lunch and then flipping back around to their typical belly up position.

Interviewer – Edward Hurme

So this is more like a pirouette than a flip though, right?

Interviewee – Meghna Sachdev

They are not rolling end over end. They are rolling on their sides. That would be something.

Interviewer – Edward Hurme

So how did these researchers manage to capture video of this feeding technique?

Interviewee – Meghna Sachdev

Well, the first thing that happened was that these whales were basically being tracked by these suction cups that were full of sensors. And then researchers found that the whales were doing these weird rolls, and one of the whales had a little video camera attached to its back, which showed that they were doing little rolls while they were having their lunch.

Interviewer – Edward Hurme

What do researchers think is the point of this? Why do researchers think blue whales are rolling onto their back before they catch food?

Interviewee – Meghna Sachdev

Well, they are not sure, but the thought is that the whales are flipping over, sneaking up on krill, which is their favorite food from below, and then turning back around to better gulp it down.

Interviewer – Edward Hurme

Wow. So Meghna, what else have we had on the site this week?

Interviewee – Meghna Sachdev

Well, if you check out *ScienceNOW*, we've got a story of a huge black hole in a pretty small galaxy, which is kind of weird, and check out our policy news site *ScienceInsider* to find out about ocean acidification, the CDC urging more young people to seek HIV testing, and the new head of the U.S. Science Committee, Lamar Smith. And also check out our *ScienceLive* chat next week, Thursday at 3pm eastern time. It's about whether science will ever be able to defeat flu.

Interviewer – Edward Hurme

Great. Thanks, Meghna.

Interviewee – Meghna Sachdev

Thank you.

Interviewer – Edward Hurme

Meghna Sachdev is a staff writer for *Science*. You can check out all our news at news.sciencemag.org including daily stories from *ScienceNOW* and science policy from *ScienceInsider*. While you're there, be sure to check out *ScienceLive* – a live chat on the hottest science topics every Thursday at 3 p.m. U.S. Eastern time.