Promo
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Music

Interviewer – Kerry Klein
Finally today, Kerry Klein here and online news editor, David Grimm, is with me to give us a rundown of some of the recent stories from our daily news site. So Dave, in our first story, we've got an unexpected outcome of the roller derby.

Interviewee – David Grimm
Right. And for those of you who don't know what roller derby is, it's a sport where you have two teams, and it's typically woman. And they're on roller skates, and they are, sort of, racing around a track. And one member of each team is basically trying to lap the other team, and every time you lap the other team, you get a point. It's actually a little bit more complicated than that, but that's a simplified version. But one of the interesting things about roller derby is it's a very high contact sport. There's a lot of bumping, a lot of jostling, a lot of falling down. And that was perfect for the authors of this study, because they were trying to figure out how we share microbes from person to person; how the microbial colonies that live on our skin get there, and how they change over time.

Interviewer – Kerry Klein
So this is really about a lot more than just the sport of roller derby, roller skating.

Interviewee – David Grimm
Right. The roller derby provided a nice venue to test this idea of do we share these populations of microbes when we touch each other, and does that, sort of, change the population of bacteria on our skin?

Interviewer – Kerry Klein
So we already know that, you know, the skin microbiome plays a role in immunity; it plays a role in health. You know, what did we learn from this study?

Interviewee – David Grimm
Well, right. And actually a few weeks ago, Kerry, if you recall, you and I talked about how bacteria on our faces, specifically, help protect against acne so this, these questions of these microbial communities on our skin, they aren't just academic questions. These microbes can actually play a large role in our health and even our complexion.

Interviewer – Kerry Klein

So what did we learn about sharing these communities?

Interviewee – David Grimm
Well, what the researchers did here was they actually took swabs of the players' shoulders, which are exposed, before these roller derby matches and afterwards. And what they found before, which was really interesting, was that they could tell which team a player was on just by the microbial community on their shoulder. In other words, everybody on the team had a very similar population of microbes. But after the bouts, the teams had different populations of microbes. So, say, an average player might share 28% of her microbes with a player on the opposing team before the match, but about 33% of her microbes after the match.

Interviewer – Kerry Klein
So all players, sort of, became a little more unified in their microbial communities…

Interviewee – David Grimm
Exactly.

Interviewer – Kerry Klein
But there are a lot of conditions that both teams are sharing there, you know, the heat, they are all sweating, they are all wearing similar gear made out of similar materials. Could that at all be responsible for these?

Interviewee – David Grimm
That's a great question. And actually, you know, factors like that can influence the microbial communities on our skin, but they usually take a lot longer to change the makeup of those communities. And these changes the researchers thought were pretty quick, indicating that when these players are rubbing shoulders and they are bumping into each other, they are actually transferring microbes from person to person.

Interviewer – Kerry Klein
Wow. So are these long-term, permanent changes?

Interviewee – David Grimm
That's a good question too, and the researchers don't know that yet. They haven't done that work. But they say what it does show us is how easy it is to transfer these communities, and that can give some insight into just how these microbial communities change on our skin over time and maybe a little bit more insight into the roles they play in health and disease.

Interviewer – Kerry Klein
Very cool. And in our second story, we've got a new way to determine drug interactions.

Interviewee – David Grimm
And this new way involves Google. We seem to use Google for everything so why not use Google to tell us whether we should be mixing a couple of pharmaceuticals or not –

at least that was sort of the idea behind this study. When new drugs come out, the Food and Drug Administration, at least in the U.S., requires that companies run clinical trials to show the safety of the drug. But what often goes unrevealed is how safe it is to use a particular drug with another drug, and often that stuff doesn't come out until a drug is already on the market, people start mixing that medication with another medication that they are taking, and then all of a sudden they start to have these side effects. For example, there's an anti-depressant called paroxetine and there's a cholesterol suppressant called pravastatin, and when you mix those two, it can actually cause hyperglycemia. And that was something that was not identified until after both drugs were already on the market.

Interviewer – Kerry Klein
So I'm curious about how the internet can be used to actually accurately determine these sorts of interactions. I mean, you know, if I search for side effects of Tylenol, I can find anything that I wanted or anything that I didn't want.

Interviewee – David Grimm
Right. There's a lot of, shall we say, junk out there on the internet, and it's sort of hard to determine what's real, what's useful information. What the researchers did here was they basically took a ton of information, and so they really wanted to be as statistically significant as possible. And they actually combed a database that had 82 million search engine queries made by about 6 million users in 2010 so really trolling through an enormous amount of data here. And they are not just, sort of, looking for, "does Tylenol give me rabies" or something like that, you know. They are looking for people that are searching for specific drugs. And then they looked at people that were looking for multiple drugs and a particular side effect. And they were able to correlate all this together, and they found that about one out of every 10 people searching for both the drugs paroxetine and pravastatin, also were looking for terms related to hyperglycemia, things like dry mouth. So people even without knowing that combining these drugs would cause those symptoms, were already searching the internet for saying like, I take this and I take this and I'm having this symptom. And by pulling out that data, the researchers show that Google is sort of confirming what the FDA only discovered after both of these drugs were on the market, was that the concerns people are having about these drugs are actually revealing about the actual side effects of mixing these two particular drugs.

Interviewer – Kerry Klein
Interesting. So this isn't necessarily, you know, an effective tool for people who might be worried about symptoms that they have, but it's a good statistical tool for researchers.

Interviewee – David Grimm
Exactly. And what's really nice about this is millions of people are searching Google every day. And there's a bunch of drugs out there on the market right now that we don't know if it's good or bad to combine them, and rather than waiting for a clinical trial or for doctors to make these discoveries after the fact, researchers, based on this study, can actually start going into Google now looking for these correlations and maybe finding

some red flags that they can start testing. And actually what the researchers did was when they were done with this particular experiment, they looked for 62 other drug pairings, half that were known to cause hyperglycemia and half that were known not to. And they found that through their data mining procedure, they were able to correctly predict whether the drug combination did or did not cause hyperglycemia about 81% of the time. So this seems like it could be a really powerful tool for predicting some of the risks of mixing drugs.

Interviewer – Kerry Klein
Indeed. And speaking of Google, this last story has been all over the internet this week.

Interviewee – David Grimm
This is a story not about Google this time, but you can find it definitely on Google, about Facebook and what we like on Facebook, what that reveals about ourselves, things like sexual orientation, drug use, even religious affiliation.

Interviewer – Kerry Klein
Right. So, I mean, I can see how if I like Obama's Facebook page, I'm telling the world that I'm a democrat, but how can we determine more, sort of, subtle parts of my personality from those things?

Interviewee – David Grimm
Right. And there's some very obvious things, right, just like what you mentioned. What the researchers in this study wanted to figure out is are there even more, sort of, profound aspects of our personality. Things that we don't feel like we're revealing when we, say, like a crazy cat video or like a picture of curly fries, that actually are telling Facebook and potentially advertisers what some of our most intimate personality traits are.

Interviewer – Kerry Klein
So how did, how did we determine this?

Interviewee – David Grimm
Well the researchers, rather than scanning Facebook, they actually used an app called MyPersonality, which users could get into, answer a bunch of survey questions, and then the researchers were able to correlate that with their likes data on Facebook, which is public information. And they combine all this into a statistical model. And they found that the like data was very predictive in terms of somebody's gender – it was 93% predictive based on things that people liked, 95% predictive of race when race was limited to Caucasian versus African American – but even other traits that are potentially less obvious traits like homosexuality, religious affiliation, and even drug use. Some were really easy to explain, like your Obama example. People that like a lot of things that had to do with Jesus tended to be Christian. So that seemed pretty obvious. There were some things what were a little bit more unusual. There was a strong correlation between liking curly fries, which I mentioned earlier, and having a high IQ. So there were some interesting correlations there. Researchers don't know exactly what they mean, but what they are saying the big deal is here is that we may not really feel like

we're revealing a lot about ourselves when we just sort of randomly click that like button on Facebook. But we actually may be really revealing a lot to Facebook, and because Facebook shares this information with advertisers, we may actually be sharing a lot of information with advertisers that we don't realize that we're sharing.

Interviewer – Kerry Klein
Alright. Well, maybe I'll dig up that old MySpace profile then instead…

Interviewee – David Grimm
Exactly.

Interviewer – Kerry Klein
Alright. And what else have we had on the site this week, Dave?

Interviewee – David Grimm
Well, Kerry, for *Science*NOW, we've got a story about how our bones grow and what factors influence the shape of our skeletons. Also a story about whether we're accurately reading our dogs' emotions by looking at their facial expressions. For *Science*Insider, our policy blog, we've got a story about a controversy over supposed life found underneath Lake Vostok, whether or not a new species of bacteria have been found or whether there's really no life at all there. Also a story about numerous cases of plagiarism in National Science Foundation proposals. Finally, for *Science*Live, this week's *Science*Live is about arts and smarts, the intersection between science and culture. And next week's *Science*Live is about emerging diseases. What are some of the growing threats out there in terms of the diseases that can infect us, and what are scientists doing to combat them? So be sure to check out all these stories on the site.

Interviewer – Kerry Klein
Great. Thanks, Dave.

Interviewee – David Grimm
Thanks, Kerry.

Interviewer – Kerry Klein
David Grimm is the online news editor of *Science*. You can check all of our news at news.sciencemag.org including daily stories from *Science*NOW and science policy from *Science*Insider as well as *Science*Live, a live chat on the hottest science topics every Thursday at 3 p.m., U.S. Eastern time.