



# Making Science Sexy

HOW TO GRAB—AND HOLD—AN AUDIENCE TO PROMOTE SCIENCE

By Dan Riskin



Credit: Darren Goldstein/DSGPhoto

Dan Riskin, Ph.D., is a zoologist, author, co-host of the science-news show "Daily Planet" on Discovery Canada, and contributor to the Animal Planet show "Monsters Inside Me."

I'd like to pass on a tip about science outreach that I got from a guy who nearly ran me over while he was being chased by three police cars. It happened last year during a two-day trip to Los Angeles for a taping of *The Late Late Show* with Craig Ferguson. I would be the second guest that night, following some up-and-coming actor named Keanu something. It was my sixth appearance on the show and, like every time before, my challenge was to throw out hilarious and out-there science factoids that would (hopefully) blow Craig and his audience away. For tonight, I was preparing a zinger about a flatworm mating behavior called penis fencing.

Even though the Craig Ferguson appearance was happening in just a few hours, I wasn't ready. I'd been told by the producers that each of my stories had to be down to 30 seconds or less, but I was struggling to get the flatworm story down to less than a minute. I needed to explain that these were free-living flatworms (not to be confused with the parasitic ones), that they were hermaphroditic, and that their unusual genital morphology had resulted

in the genus name *Pseudobiceros*, or "two false horns." But every time I rattled the story off, it felt like a laundry list of disconnected facts, and when I shortened it, what was left seemed disjointed. I was starting to worry that I'd have to throw the story out altogether, but it was the best one I had. I mean, seriously... penis fencing.

I'm not really trained to be a late-night television guest. In fact, I'm not even trained in science outreach. I did my Ph.D. in biomechanics, and I've had to figure this media stuff out along the way. Because my Ph.D. research involved high-speed videos of vampire bats running on a treadmill, it caught the attention of the press, so my introduction to science outreach came when I began doing interviews about my work with newspapers like the *New York Times*, radio shows like *As it Happens* and *Quirks and Quarks*, and a few TV stations. My work also showed up on websites like science writer Carl Zimmer's blog for *Discover*, and even the offbeat Boing Boing.

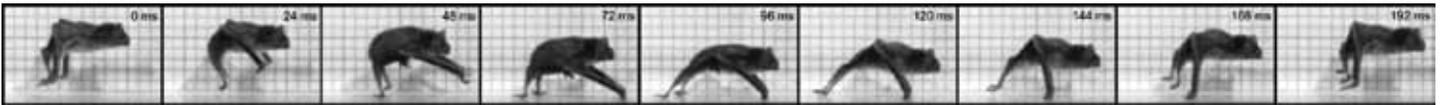
I enjoyed seeing my work in the popular press, so I actively sought those kinds of outreach opportunities as a postdoc, contacting those people who had interviewed me before, to tell them about new papers I had coming out. I started networking with TV people, making my enthusiasm for science as clear to them as I could. One day, I was asked to provide some commentary on-screen for a show about evolution, and then other odd jobs started coming in. Eventually, I found myself choosing between traditional research jobs and ones focused on making science accessible to others. After a lot of thought, I leapt the fence.

I now have the great fortune of co-hosting the world's only daily science TV show, *Daily Planet* on Discovery Canada. I also get to work on an internationally broadcast Animal Planet show about parasites called *Monsters Inside Me*. And I appear on Canadian news shows several times each week to highlight different science stories happening around the world, from space station leaks to unusual undersea videos and everything in between. In the past few years I've discussed hundreds of scientific issues and interviewed



Courtesy of Dan Riskin

Bringing science to light, Dan Riskin films a scene for the Animal Planet series *Monsters Inside Me* about parasites that can live in humans and the stories of people who get them. Riskin's job is to explain the biology of the bacteria, protozoans, fungi, worms, and insects featured on the show.



Credit: Dan Riskin and John W. Hermanson

more than a hundred scientists, engineers, and inventors about their work. Through it all, my goal has been to convince people that science makes the world more interesting, exciting, and beautiful than it would otherwise be.

That goal hasn't changed, but the way I try to accomplish it has evolved a lot. For example, when I was a Ph.D. student in 2005, one of the interviews I did about my vampire bat work was on *Daily Planet*, the very show I now co-host. When I watch that interview now, I cringe. My answers to the interviewer's questions were logical and thorough, but I looked almost bored. I had believed that my high-speed footage of running bats was so compelling that it could speak for itself, so I hadn't bothered to think about what I'd say. I just showed up and answered the questions, confident that one look at a vampire bat using a forelimb-powered running gait would make people instantly see the intrinsic beauty of biomechanics research.

Looking back now, I clearly see I was wrong. I've learned that to give a successful media interview, you need to decide ahead of time what will be discussed, create a list of talking points, and then look for ways to hit those points no matter what the questions might be. That way the interview will highlight what *you* think are the best aspects of your research, and you won't waste time on material that isn't as interesting. (It also helps to wear a decent shirt and to smile, for crying out loud—two simple things I failed to do in that interview.)

### Preparing to Look Relaxed

Even though I've done the show multiple times, I still get nervous before Craig Ferguson tapings. Most of the TV I do is pre-recorded, but *The Late Late Show* happens in front of a live audience, with no chance for second takes. It's also totally unscripted—you never have any idea where Craig's going to take the conversation. That makes it fun, but it also means you have to be ready to fire your stories off in whatever order works best, and to deliver the material naturally so as not to look over-prepared. It's like cramming for an exam (old familiar territory for this academic), except that when you're sharing what you know, you will need to act like you're enjoying a cocktail with your best friend at the most fun party ever.



Credit: Dan Riskin

Part of my prep routine for Craig Ferguson appearances is to go for a run the morning before the taping to get that nervous pace-around-the-room energy out of my system. That day last year, I headed out from my hotel hoping the run would also help me figure out the flatworm story. Approaching an intersection, I heard sirens coming my way. I jogged across the crosswalk, but just as I stepped onto the opposite curb, a gray car squealed past, only a few short feet behind me. I spun around and then saw three police cars screaming past in pursuit.

My heart was pounding, and my mind was scrambling with questions. Who was that guy in the car? Why were the cops after him? Was this going to be on the news? What if I'd been hit? Was Los Angeles always like this? How many car chases were going on there at this very moment? How would that compare to other cities? How would you graph that?

About ten minutes later, I got back to my hotel room, and looked out the window. An entire street about a block from my hotel had been closed off and was full of police cars. At one end of the street, news crews were setting up. Passers-by had stopped to watch. Soon there were news helicopters, SWAT team vans, and ambulances. More and more police kept on coming.

I got on the Internet and saw that Twitter was lighting up about this guy. The car chase had apparently happened because he stole a car, but now he had

High-speed video of a vampire bat on a treadmill (top) reveals the species' unique bounding gait, powered by robust forelimbs (above). This research into bat biomechanics—which Riskin did as a graduate student at Cornell—drew media attention that ultimately helped launch him into science outreach.



Credit: Amanda Buckiewicz

Riskin explains the physics of frog jumps and landings during a segment of Discovery Canada's science show *Daily Planet*. By making biological sciences accessible to a broad audience, such shows contribute to public appreciation of science, and thus public support for research.

climbed up on the roof of a house and the cops were trying to get him down. No doubt he'd end up in jail, but for now you had to hand it to him—he really knew how to keep an audience's attention.

That's when I realized what my flatworm story had been missing.

## How Conflict Can Sell a Story

I needed to do to the Craig Ferguson audience what the guy in the car chase had done to me. I needed to catch their attention and make them so curious about penis-fencing flatworms that if I weren't there to tell them, they'd go hunt the answers down themselves. To do that, I would turn my assorted flatworm facts into a story, with a conflict that needed resolution.

Conflicts that need resolution are what scientists live for. They spend their days wrapped up with challenging *unsolved* puzzles. But those challenges and mysteries don't always come out when they talk about their work because they are almost always interviewed about the questions that they *have* solved. The secret, then, is to weave the excitement into the story.

Consider what's fun about *doing* science. There's an incredible thrill when you walk up to a mist net, wondering what species of bat you've caught, or when you first plot a dataset and see whether it behaves the way you think it should. Doing science means peeling back layers to see parts of the world no one else may have known before you—and that's exciting, no matter what kind of research you're doing.

Now consider what an audience gets when listening to someone *talk about* science. The best they can usually hope for is second-hand knowledge, with nothing to learn that isn't already known by someone else. It's like watching a slide show from someone else's trip to Europe as opposed to going there yourself. Since those who are hearing about science can't experience one of the most fundamental joys that comes from actually doing science, it can help to use dramatic story-telling tools—like conflicts that need resolution—to send the audience on a journey, even if it's a slightly different one from that of the scientist.

With that lesson from my unlikely teacher fresh in my mind, I closed my hotel window, had a shower, ate some oatmeal, and got my story worked out:

*There's this worm that lives in the water off the coast of Australia, with both male and female sex organs, but it has a problem. Every time it meets a member of its own species and the two worms want to have sex, they have to decide who will be the male and who will be the female. Neither of them wants to play the part of the female, because the female will have to spend lots of energy growing and protecting eggs. All the male will have to do is ejaculate sperm and then swim away. So the worms have a penis fight—it's actually called penis fencing. Whichever one stabs the other with its penis first injects sperm into the other, and then gets to be the dad. The stabbed worm is stuck being the female.*

Boom. I was down to 33 seconds. With the adrenaline of the actual performance I'd probably shave several seconds off that. By framing the facts as a story with conflict, I had learned what to cut. Better yet, the conflict-resolution approach would help make people *want* to hear the story. I was finally ready to go.

Three hours later, the show was taped. We talked about the lengths of rhino penises, about male marsupials that die from stress after mating, about eating dog poop, and about how, generally, nature will kick your ass. Ironically, I never did manage to get that penis-fencing story in there. But of course, like an experiment that took a year to perform but somehow didn't make its way into your final manuscript (we've all been there), a great story can always find a home. I'm working on a book now (titled *Mother Nature is Trying to Kill You*, coming March 2014), and I plan to sneak the flatworms into that.

To me, the most important aspect of science outreach isn't helping people understand all the details of what we already know, but about role modeling the spirit of curiosity that drives the whole process. Maybe next time you're talking about your own science to a news reporter, a politician, or a late night talk show host (trust me, *you just never know!*), have your talking points ready. And when you're crafting those talking points, use the 'conflict with resolution' tool to give your story an edge. After all, the whole point is to get your audience to listen to you. Assuming you don't plan on stealing a car and getting up on a roof, telling a good story might be the best way to keep that audience's attention—and to make them care. ■