

# Dissecting the anatomy of a 'superheroic' science class

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What do superheroes Deadpool and Elastigirl have in common? Each was used in a college anatomy class to add relevance to course discussions—Deadpool to illustrate tissue repair, and Elastigirl, aka Mrs.

Incredible, as an example of hyperflexibility.

Instructors at The Ohio State University College of Medicine created a "SuperAnatomy" course in an attempt to improve the experience of undergraduate students learning the notoriously difficult—and for some, scary or gross—subject matter of [human anatomy](#).

Surveys showed that most students who took the class found the use of superheroes increased their motivation to learn, fostered deeper understanding of the material, and made the content more approachable and enjoyable.

A couple of the many [content examples](#) also included considering how Wolverine's claws would affect his musculoskeletal system and citing Groot in a discussion of skin disorders.

The effort was aimed at bringing creativity to the classroom—in the form of outside-the-box instruction and as a way to inspire students' imagination and keep them engaged, said Melissa Quinn, associate professor of [anatomy](#) at Ohio State and senior author of a study on the course's effectiveness.

"In these introductory courses, it's a little tougher to talk about clinical relevance because students don't fully understand a lot of the mechanics," Quinn said. "But if you bring in pop culture, which everybody is inundated with in some way, shape or form, and tie it to the foundational sciences, then that becomes a way to apply it a little bit more."

The study was published recently in the journal *Anatomical Sciences Education*.

First author Jeremy Grachan, the mastermind behind the course's

creation, led design of the curriculum as an Ohio State Ph.D. [student](#) and is now an assistant professor of anatomy at Rutgers New Jersey Medical School.

SuperAnatomy was created as a 1000-level three-credit-hour undergraduate course open to students of all majors. The class consisted of three 55-minute lectures each week and lab sessions offered twice in the semester. The course's curriculum borrowed heavily from Human Anatomy 2300, a four-credit-hour course taken primarily by pre-health profession majors, consisting of live and recorded lectures, review sessions and one lab per week.

Students from both classes were invited to join the study over three semesters in 2021 and 2022; 36 students in SuperAnatomy and 442 students in Human Anatomy participated. Researchers collected data from 50-question quizzes given during the first week of classes and at the end of the semester intended to gauge how well students learned and applied course content. The students also completed pre- and post-course surveys.

The quiz results showed that [student learning](#) and application of material in the two courses was essentially the same. To be clear, the SuperAnatomy content was not all cartoons and comic books.

"We looked at courses already running in our anatomy curriculum and took the relevant parts of those courses and added in the superheroes," Quinn said. "So we actually elevated the curriculum."

The follow-up survey of SuperAnatomy participants suggested the inclusion of superheroes strengthened their class experience, with nearly all students reporting that [pop culture](#) and superhero references expanded their understanding of course material and boosted their motivation to do well in the class.

"Collectively, if the [students](#) are enjoying the course and motivated to learn the material, it could be better not only for their [academic success](#), but their mental health and social well-being too," the authors wrote.

Human anatomy is tough stuff—on top of the high volume of unfamiliar medical terms rooted in Latin, it can be unsettling to learn about the body in such a scientific yet intimate way.

"If you don't have a good tour guide to help you, you might be inclined to give up pretty quickly," Quinn said. "And none of us wants to be stale in our teaching.

"Here, we've seen that you can take a course like anatomy, which has been around forever, and bring it very much to whatever generation that we're going to be teaching. And it's not just about having fun—but a way to really make anatomy very interesting."

Mason Marek and James Cray Jr. of Ohio State also co-authored the study.

**More information:** Jeremy J. Grachan et al, Effects of using superheroes in an undergraduate human anatomy curriculum, *Anatomical Sciences Education* (2023). [DOI: 10.1002/ase.2312](https://doi.org/10.1002/ase.2312)

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