Call it origami for nerds. Foldit players rack up points for twisting, bending, and canoodling chains of amino acids to make realistic proteins. And, unlike rewards for blasting aliens or eating ghosts in Space Invaders or Pac-Man, the points in Foldit count toward science. Players are “spending their time not tending to an imaginary farm,” says Seth Cooper of the University of Washington, Seattle, a member of the team that developed the game. “They’re doing something with real implications.”

Foldit takes advantage of the human mind’s savvy for solving spatial problems, Cooper says. Puzzles start with a snaking arrangement of amino acids, identical to the sequence of an actual protein. Players then have to fold that sequence into a complex 3D structure that fits the laws of chemistry. The closer players get to folding a realistic-looking molecule, the higher they score. Tiny warning blobs, for instance, pop up when water-insoluble amino acid side chains point to the outside of a protein. To make those blobs go away, competitors need to tuck the side chains into the molecule’s interior.

But Foldit isn’t just a fun exercise for puzzle fiends, Cooper says. It’s also a great platform for turning at-home gamers into researchers. The efforts of Foldit’s 200,000-plus players have helped researchers understand how a number of important proteins loop and scrunch inside cells. Players, for instance, recently resolved the 3D conformation of a protein critical to the functioning of the Mason-Pfizer monkey virus. Cooper and his colleagues published their results in 2011 in *Nature Structural & Molecular Biology*. The team also added a new feature: Gamers can play cellular architect and build proteins never before seen in nature. Scientists will then be able to draw on these player designs to construct brand-new molecules in the lab.

“I love the way Foldit crowd-sources the power of the people to solve real science problems, a feat that makes it a supremely useful citizen science project,” says challenge judge Tierney Thys. And although the science of protein folding may be complicated, Foldit is accessible to a wide range of gamers, says challenge judge Thomas Wagner. And, he adds, “it was fun to play.”
Meta!Blast 3D may be the closest science education comes to Halo. While the game aims to teach novices about the cell, it’s rooted, like the favorite Xbox shoot ‘em up, in action. Gamers play a lab dishwasher who discovers that her entire study group—undergraduate adviser, grad students, and all—have been sucked into a photosynthetic cell. So it’s time to pilot a microscopic craft around chloroplasts to the rescue. If that sounds exciting, wait until you have to dodge the ranging proteosomes that try to gobble your intracellular spaceship whole.

Adventure aside, Meta!Blast helps students “to understand that the cell is a very complex and beautiful world,” says game designer Eve Wurtele, a biologist at Iowa State University in Ames. Case in point: your ship is powered by ATP. If you use too much of the cellular fuel, you sputter to a stop.

Instead of playing Angry Birds on their iPads, high school–age students can use their hand-held devices to take a trip into the hand itself. In Powers of Minus Ten, developed by Laura Lynn Gonzalez of Green-Eye Visualization, players take a scavenger hunt through the skin on the human hand and into individual cells—just by flicking their fingers.

Gonzalez’s game, also available on the PC, is loosely based on the famous 1968 short film Powers of Ten, which traveled from outer space, then deep into the human body. When players zip past the skin on the hand and enter a cell, they see animated chromosomes and proteins buzzing like Las Vegas street signs. Kids can tap on these cellular structures to learn more about them. The app is constantly evolving: Players will soon be able to delve inside the mitochondria and even zoom down to the atomic level, Gonzalez says.

Too often at this magnification, “people get lost,” Gonzalez says. She hopes her interactive tour will help students learn their way around a cell. So, no angry birds but a lot of happy teachers.