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Art of medical animation

Cardiff firm uses 3-D technology to explain science

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It's not that subjects such as growth factor initiating angiogenesis aren't riveting. But some drug companies concede that trying to convey a complex medical concept to a would-be investor, potential physician-client or bewildered patient can induce a state of glassy-eyed stupor.

Enter Jeff Hazelton, who hopes to do for microbes and molecules what Walt Disney did for a mouse.

The founder and president of Cardiff's BioLucid Productions is helping biotechnology and pharmaceutical companies to explain how an advanced technology or an experimental drug works through the use of 3-D animation. The same animation software that helped special-effects wizards work Hollywood magic in *The Matrix* and the *Lord of the Rings* movie trilogy allows Hazelton and his multi-person staff to transform cells and drug molecules into stylish performers.

"When you look at these two industries - biotech and visual effects - they are both exploding with technological innovation," said Hazelton, 33. "We try to put them together in a way that is mutually beneficial. "The researchers bring to us the science, we bring in the animation and the art of telling a story, and that synergy is what makes it work."

A two-to-four minute 3-D mini-movie can cost anywhere from \$25,000 to \$75,000 - the productions are also versatile. BioLucid clients such as Pfizer, Amgen, and San Diego's Santarus and Prometheus Laboratories have used the productions for large trade shows, medical meetings, on roadshows to attract investors, on Internet sites, as training films for salespeople and as sales tools to educate potential clients.

Brian Meshkin, senior product manager for Prometheus, hired BioLucid to produce a sequence that will be used to help launch a new laboratory test later this year. Meshkin said the challenge was to educate potential client-physicians about the value of the genetic test, which can help predict which patients are likely to respond well to methotrexate, a commonly used generic rheumatoid arthritis drug. Prometheus aims to market the test to rheumatologists as a way to better tailor and monitor individual therapy in their patients, said Meshkin.

Prometheus debuted the production, which illustrated how the drug is metabolized in the human body, at the American College of Rheumatology meeting in October. It received rave reviews from rheumatologists who visited the company's trade show booth, Meshkin said.



CHARLIE NEUMAN / Union-Tribune
Jeff Hazelton, founder of BioLucid Productions, with one of his company's animation productions - white blood cells in motion. The company aims to explain how advanced medical technology works through the use of 3-D animation.

"You know the saying 'a picture paints a thousand words,' " Meshkin said. "But this isn't just a picture, you're talking about 3-D animation where things almost become a character in a story."

The process for producing a piece of medical animation is much like producing a mainstream feature film, Hazelton said. Meetings are held to discuss the "plot" or message the drug company wants to convey, then an outline is produced. Detailed storyboards are created, laying out the action frame by frame. Once the storyboard is approved, BioLucid works with medical writers to create a script that will provide narrative for the action. Rough drafts of the animation, called motion studies, are devised and, once approved, the script is recorded and timed with the animation until they fit together seamlessly.

Finally, the motion studies are used as the foundation for the finished project, which utilizes computer-generated special effects and photo-like textures and colors. Professional readers are brought into the studio to record the narrative, music is composed, and sound effects added. Then it is all transferred onto a DVD or other viewing vehicle of choice. Voila! *Metabolism of Methotrexate - the Movie*.

Hazelton comes to the job with the sensibilities of a scientist and an animator. At his New Hampshire college, Hazelton took pre-med courses to prepare to be a surgeon, but he soon got hooked on art and oil painting. Once he graduated with a degree in biology, Hazelton went to Hollywood to study at the Gnomon School of Visual Effects, which specializes in training for high-end 3D computer graphics and animation. From there, Hazelton landed a job at the The BioGenesis Group, a medical advertising agency in San Diego.

When the now-defunct agency drastically cut its work force in 2001 - Hazelton's interactive media division was the first to go - the animator started BioLucid Productions.

"Scientists love what we do," said Hazelton. "They get to see what they are working on come to life."



Animator Rob Hackle uses Leonardo Da Vinci's famed anatomy sketches in an animation project. The process for producing medical animation is much like producing a mainstream feature film.