

## Hollywood Is Dressed Lab Coats

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Hollywood Math and Science Film Consulting thanks Li Jinjing

The main theme of Hollywood filmmaking is to use the sciences as devices to create a credible realistic foundation for virtual fantasies. Thus, science consultants play an important role behind the success of Hollywood films.

(Photo)

Dr. Jonathan Farley, one of the founders of “Hollywood Math and Science Film Consulting,” stands with his colleague, Dr. Tony Harkin, in front of the board. He thinks a qualified science consultant should have the ability to keep the balance between scientific accuracy and the spirit of entertainment.

“Find me a scientist! A geologist! Tell me what’s going on!” Tommy Lee Jones shouted in the disaster movie *Volcano*. This represents the attitude of Hollywood with respect to how it should treat a scientist.

In the list of the top box-office Hollywood movies, 20% of them employed science consultants. “Every major film has a science consultant,” says Dr. David Kirby, author of the forthcoming *Lab Coats in Hollywood*.

“Just a sign of the modern times—the science has to be there,” says director Roland Emmerich. “We are all looking for great themes out there, and science has those.” Audiences agree. With a spate of science-themed flicks like *2012* and *Avatar*, innumerable thoughts and considerable attention on different elements of science could be found among the comments of media and audiences.

How could these elements of science convince the audiences? Find a scientist! They will dress the science-fictional lab coats, the special suitable ones.

### **Botanist behind *Avatar***

The studio in L.A. is one hour away by car from the lab of Jodie Holt, chairwoman of the Department of Botany and Plant Sciences at UC Riverside. Every time when she went down to the studio, she was regarded as the honored guest and asked a lot for her opinions about flora on Pandora, including by director James Cameron.

As she had signed a confidentiality agreement with FOX, Prof. Jodie Holt did not tell any person around about her job. She told our *Newlore* journalist that she spent most of time before her computer at home except for the necessary appearance for the movie shooting occasionally.

“So I could not be disturbed, more important, to avoid being questioned closely before I could talk about this job with others.” Because her notebook and film script stood out full of images about fascinating alien creatures, she didn’t want others to find her “little secrets” in an untimely fashion.

Prof. Jodie Holt was called by producer Jon Laudau’s assistant in early 2007 and was asked if she would be interested in advising actress Sigourney Weaver in Cameron’s *Avatar* on how to be a credible botanist.

“Although there are many universities in Southern California, UC Riverside has the only botany department. I am the one who got lucky and was asked to be the consulting botanist! ” Her first time touching a movie, Jodie Holt gave Sigourney Weaver advice on topics like how a botanist would approach a plant and take samples. She shared information with the set designer about plant physiology and plant sampling. For the whole summer, they exchanged a number of images about equipment that a botanist

might use to study plants and she helped him learn botany.

Jodie Holt did not see Cameron until 2008 in his company Lightstorm. They discussed this movie and Pandora for two hours, which was already being shot. This made her work come out a new direction.

Her challenge was to come up with explanations for Pandora's plants and environment which had already been fabricated by Cameron. What she did was infuse the crew's invention with basic biological principles and make this invention credible. Jodie Holt had to define the plants that must be convincing, such as these strange plants in Pandora's tropical forests that yet had a deserticolous texture. Under sufficient water conditions in the tropical forests, the plants should not have such appearance to be ready for the storage of water or other materials.

She also handled the bioluminescent flora, the plants that hunt for food with toxic thorns and the ones with nerves for communication. According to the plants she had known and researched in the earth, she could always find reasons for these alien strange plants to exist. She categorized the plants, gave them Latin names and wrote the descriptions for their characters as well.

However, it did not mean that Jodie Holt accepted Cameron's creations without question. When she saw that the initial color scheme of the flora was blue, she "challenged" Cameron with the objection of the impossibility of photosynthesis for the plants with this color. Finally, as you saw, the plants in *Avatar* were applied with the color of green on the silver screen.

### **Scientists add value to movies**

Jodie Holt obviously felt lucky and proud as the movie's science advisor for the first time,

when her suggestions were greatly respected and accepted. Actually, her opinions had not completely been accepted easily. In Hollywood, the science consultants should clearly know their own position. After all, films are not made by these consultants. Sometimes they have to accept some degree of snub.

“In fact, how greatly the influence on a movie from science consultants depends on how important the consultants are regarded by directors,” Dr. David Kirby writes to *Newlore* in reply. “Some directors, such as James Cameron and Ron Howard, would have interest in listening to consultants’ opinions, when others like Michael Bay would not have much.” The latter made *Transformers*, which focused on the expression of scientific visual effects. The transformation and fighting of different robots don’t need too many scientific explanations.

Dr. David Kirby, who has studied science fiction and mass communication for a long time, tells *Newlore* that the science consultants have engaged in movies in Hollywood since long ago. There was a precedent in the early 20th century that the film director invited the science advisors to join the shooting process. Later on, *Jurassic Park* realized the possibility that science fiction could also be definitely vivid and its success led to a rule that Hollywood’s directors have used to employ sciences consultants.

“Writers and directions have discovered there is a higher tolerance, maybe even an interest or a demand, for better science,” says *Angels & Demons* director Ron Howard, “Audiences are getting smarter by the minute.” Audiences’ common sense of science has increased greatly. If they see something that is not credible, they will shut it off at once. It might not be correct in every culture, but in general the American audiences require more credible details of movies in order to enjoy them.

On the other hand, the science consultants can add value to movies and in essence they provide new promotional devices for the movies. David Kirby points out that filmmakers frequently highlight famous scientists in the films’ press and marketing materials. In

addition, the filmmakers encourage these scientists to present or speak with the press about their film work during the promotion period. Scientists also often attend press conferences surrounding the films.

It was proved by *Avatar* during its promotion. At the time, Paul Frommer, another science consultant of *Avatar*, was more famous than Jodie Holt. After its having been reported by the media, every *Avatar* fan around the world knows a new language for usage by Na'vi which was created with the help of Paul Frommer.

Although there are only 1000 words in this language, many curious movie fans can not wait to learn it so that Paul Frommer has to make an explanation in his email auto-responder, "Due to a huge number of Emails, it will take me some time to give you a reply. " In addition, you will see some fantastic Na'vi words: Ayftoza lefpom ayngaru n i wotx! That means "happy holidays to all"!

Nobody could refuse such serious entertainment!

### **Rewards come from fun and reputation**

Could a science consultant be paid a lot? "No, mostly I got almost even no pay, maybe maximally hundreds of dollars." Wayne Grody considers their work about science consultation not for payment but because they find such a job funny and interesting.

Scientists would rather receive research funding, which is sponsored by filmmakers in relation with scientists' names, or the film's producing list included with their names, than money, as payment. They think that to do research as scientists with money from taxpayers should be to provide public services for everyone who desires scientific knowledge. The difference between the sponsorship in the form of "research funding" and payment for one's individual pocket is that the funding could keep their creation of

new knowledge moving on.

“(Scientists) help modify scripts; guide actors or actresses to perform; discuss with set designers to make the sets; and discuss with special-effect designers about technology and visual effects; as advisors for directors...” David Kirby thinks they as consultants make science popular for audiences and film producers, or have the opportunity to spread their attitudes. However, it’s still difficult to industrialize this profession, as not enough money could be earned from it.

Nevertheless, it doesn’t mean that no one will try. A Harvard mathematician and an Oxford biochemist established a consulting firm called “Hollywood Math and Science Film Consulting”. Similar to that, another firm called “Factual Footage Inc.” provides a wide range of science consulting services, involving movies, series, dramas , PC games and fiction creations.

“I think it could be profitable!” says Dr. Jonathan Thon from “Factual Footage Inc.” in the reply to the *Newlore’s* journalist. With professional knowledge, they are allowed to spread more accurate science through mass communication. Meanwhile, he highlights that their members will not do it for a living but all of them have their own jobs. The motivation behind the founding comes from the devotion for science or media and the desires for providing social services.

Dr. Jonathan Farley from “Hollywood Math and Science Film Consulting” tells their embarrassing situation about Hollywood’s closeness about money or expenditure by filmmakers. They do earn some money but from other aspects, for example to advertise for business giants like GM [*sic*].

In fact, facing the demand for science consultants, Hollywood enjoys “cheap or even free lunch” all along. NASA set up the “Entertainment Industry Liaison” in the 1960s and the US National Academy of Sciences started a program, the “Science and

Entertainment Exchange," in November 2009. These institutes provide the movie industry free services and play a role in introducing scientists who intend to be consultants to filmmakers who are seeking professional assistance.