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## SCIENCE From Page 1

*Physics and Astronomy at the University of Denver.*

"Let me check something," Manbi/Corbin responds. "I can reset the map — sometimes it gets stuck." He presses a button, and fresh data rushes in from the National Oceanic and Atmospheric Administration's network of airport weather stations. The clouds over the East shift slightly. Los Angeles goes orange, meaning it's cooled off a bit. But there's still a spot of indigo over Vegas.

"I guess it's feeling blue," he jokes.

"The Washington Times, the AP is coming out with one soon, MSNBC, the local papers..." Manbi muses over the pleasant flood of publicity that the SciLands is attracting.

"We get a regular flow of [Linden Lab employees] at the Science Friday show," Manbi notes as he reviews traffic figures in the various sims. "Particularly Prospero — he is here every week. Funny guy, and gets some of his intelligent questions on the [Science Friday] show. Ira Flatow, host of the program, known in SL as Ira Flatley, 'loves SL,'" Manbi smiled.

"What we at [the University of Denver] are doing is a distance learning graduate course in Environmental Impact statements for Nuclear Power... and some of the lab experiments will take place here. This is going to be a joint venture with the National Physical Laboratory in the UK."

He showed a photo of a proposed build. "This is a generation three reactor model we will build here... the model itself is a pain — like 3400 pieces." Manbi explained that Aimee Weber Studios has been enlisted to construct the model. "So this will be quite a job, but at least we have a floor plan. One island won't hold it all, though."

Manbi explained that he has been working in SL on his own since last October, with a fellow professor. They finally got a grant for their work and started pretty much full time in SL in September.

"I have been associated with Dr. Robert Ameer [Professor of Physics at the University of Denver] since the mid 80s. See, back in the 80s I was with a hands-on science museum, and we were somewhat associated with the Exploratorium... that is when I met Patio [Plasma]. We closed the doors due to lack of funds in about 1989. I went to work for the Soviet oil industry in Denver."

Manbi said he saw a Popular Science story on SL in August 2006. "Then I heard Harvard [University] was here, so I pursued DU through my friend that we needed to make science in

SL... I met with Kat [Lemieux] and Troy [McLuhan, of the ISM] and we talked about [creating an] archipelago... so I got an island immediately. It there in the ocean for about two weeks, and they started to appear," he smiled.

"In my mind, Patio was behind some of this," Manbi said. "I was going to go where Patio went, and Lori Bell at Info Islands [the SL Library sims] wanted us up there... Larry [Pixel] wanted us to be part of NMC [the New Media Consortium education sims]. We decided that we could hold our own... and we are holding our own quite well."

"We now have, also, Piet Hut — he's a famous astrophysicist, doesn't have an island yet," said Manbi. Hut, for the record, is professor of Interdisciplinary Studies at the previously mentioned Institute for Advanced Studies in Princeton, which is the old stomping grounds of no less a luminary than Albert Einstein.

### Genetics at Genome Island

"We bio types are definitely in the minority!" said Max Chatnoir, who runs Genome Island, home of a multitude of genetics exhibits. "Genetics is a natural because it's so mathy," she added. "For example, you can get a sequence from the sequencer, and then compare it to known sequences for a match, or compare fossil DNA to living examples to see who the nearest living relatives are."

"I put [Genome Island] together for teaching genetics for [University] undergrads, or anybody else who wants to drop in," Chatnoir said. Many of the exhibits are similar to the diagrams in old biology texts showing what number of fruit fly offspring will have red eyes and what number will have white eyes for a given pair of parents — but these are interactive.

An exhibit in the animal area uses tortoiseshell cats to explain genetics; most of the objects generate some kind of data which appears in the chat record, so it can be transferred to a notecard, spreadsheet or notebook.

The Abbey contains historical information about Gregor Mendel, an Austrian priest who is known as the "father of genetics" for his studies on how characteristics are inherited. It also contains informational slideshows, but the Abbey is mostly used for meetings and discussions.

"Most of the experiments are out in the greenhouse and gardens," said Chatnoir. "Lots of experiments with peas in here!" There are several testing objects such as a game where students have to figure out which genes are in all of the parent peas by doing the crosses. There are ex-

amples of various types of genetic-related topics," Chatnoir continued.

Chatnoir teaches at Texas Wesleyan University in Fort Worth. "I started this to try to develop an online laboratory environment for online science courses," she said. "I'm going to try a full immersion course for non-majors next fall. We just got new computer labs last spring, so I couldn't run the program at school until then. So I'm just beginning to get students in here... That's the acid test, of course!"

A tour of the Tower showed off information on molecular genetics. Each floor has a small set of experiments. The Tower contains 18 floors, but the top few are still open, providing room for expansion.

Displays in the Tower explain topics such as Watson and Crick's discovery of the DNA double helix, DNA and RNA replication and the like. Another display includes mice which are a reproduction of one of the first experiments with DNA. It showed that DNA from dead bacterial cells could enter live cells and transform them into virulent cells.

Another display is an entire floor of the Tower ringed with models of the human chromosomes. "Each chromosome has info about some gene. If you click on a chromosome you'll get a little gene story," Chatnoir said. "I think this is the heart of the island. You can either start with Mendel or start with DNA. There isn't a fixed order for the experiments."

At this point, she asked whether I had a favorite chromosome. I replied that I had never considered it, and asked what her favorite was. "I like [chromosome] 2, because of its origin," she replied. She explained, "In other primates, the material in human 2 is found in two different chromosomes.

"Apparently they fused to make one big chromosome in humans. I think a lot of speciation has to do with chromosome rearrangement, rather than getting new genes. Humans pretty much have chimp genes, but the order is a little different." Well, I'll be a chimpanzee's great-great-grandson.

"There are little experiments like this all over the island," Chatnoir said, explaining that visitors should feel free to drop in and poke around any time. "The island is totally public access."

It's amazing what you can do with prims and scripts. SL is an incredible medium for education.

Visit the SciLands by searching on the Map for the SciLands sim or any of the others mentioned in this or the sidebar and then exploring from there.



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