

Yeast researcher uses sabbatical to study dogs

By Kerry Mullin
For the Oregon Daily Emerald

Professor George Sprague has spent much of his career conducting research on yeast.

Though the yeast organism is an excellent medium for genetic experimentation, it doesn't provide much companionship for the researcher. Sprague took advantage of his recent sabbatical to pursue research on a more friendly organism — dogs.

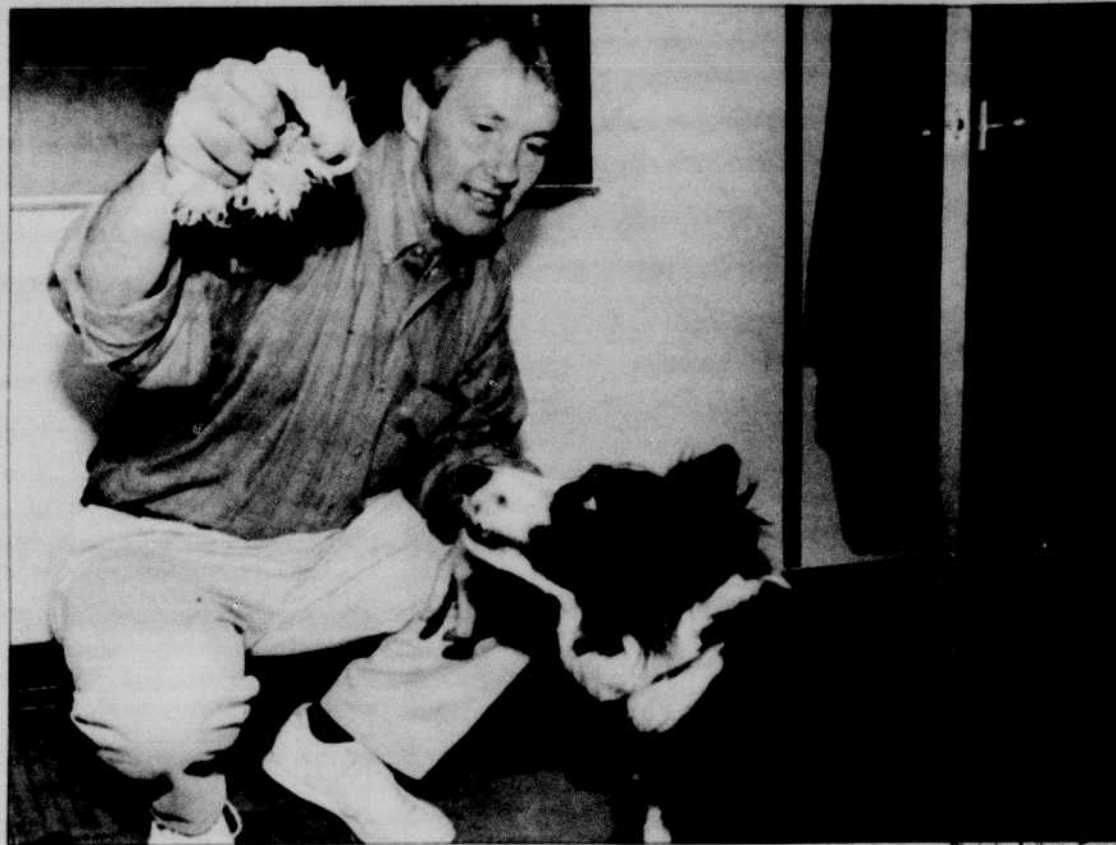
"I wanted to do something interesting and something different from what I do here," said Sprague, who said a project at the University of California in Berkeley provided the perfect opportunity.

The project is centered around identifying what specific genes, if any, control particular behaviors in dogs. Sprague previously worked with the project's organizer, Jasper Rine, when Rine was working on his doctorate in the late 1970s at the University.

According to a paper published by Rine, the idea that genes control behavior is not a new one, but until recently the research tools to explore the concept were not sufficiently developed. Sprague said it was Rine's ingenuity in pairing newly developed technology with knowledge of dogs that sparked his interest in the project.

Different breeds of dogs have markedly different behaviors. Furthermore the behaviors are present in every member of an individual breed.

Sprague said this leads to "the view that a large component of that must have a genetic basis." Using recent advances in genetic technology, the researchers should be able to locate the specific genes or sets of genes that control behavior.



As a result of generations of breeding, Meg, a Border Collie, will not break her concentration on a ball held by her owner, University Professor George Sprague.

The research efforts are two-fold. One part involves researchers mapping the entire set of canine genes. The second part requires the breeding of dogs with different behaviors and studying the behaviors and genes of the offspring. Sprague has been involved in both parts of the research.

While at Berkeley he conducted mapping experiments. He also volunteered his dog, Meg, as part of the study.

Meg, who is a border collie, has been bred with Rine's pet border collie to produce purebred offspring that serve as a control to compare the mixed-

breed dogs.

Border collies were chosen for the project because they are docile and they show a specific set of pronounced herding behaviors that start at a very young age. Also, as Sprague points out, "there are people who say border collies are the most intelligent dogs."

Newfoundlands are the other breed involved in the study. Like border collies, they are docile, but their dominant behaviors include swimming and rescuing drowning victims. The two breeds' temperaments and unique behaviors made them ideal for the research.

The original mating took place between Rine's border collie and a Newfoundland last year, and six puppies were born. Each puppy has been placed in a home, where it will be raised just like any other American dog, with the exception of periodically having to perform for a video camera and donate blood.

"The animals will have no experiments done on them," Sprague said. "They will all be people's pets."

When the puppies are old enough, they will be bred. Sprague said it is from the third generation of dogs that the researchers expect to get the

most significant genetic information. Despite their increasing significance to the research, these puppies will only be required to do what the parents did: donate blood and play in front of cameras.

While the puppies play, the researchers will work. They will be trying to identify and locate specific genes that correspond to the behaviors the puppies show in their play.

Sprague said three or five genes may be responsible for a specific behavior. If that is the case, the researchers will be able to identify them. However, some behaviors may be governed by 10 to 20 genes, in which case the technology available today is not sophisticated enough to identify them all.

On the other hand, Sprague said, "To our surprise, I expect there will be cases where it will be one gene."

It will be a few years before Sprague will know if his expectations are correct. A study on dogs takes time, Sprague said.

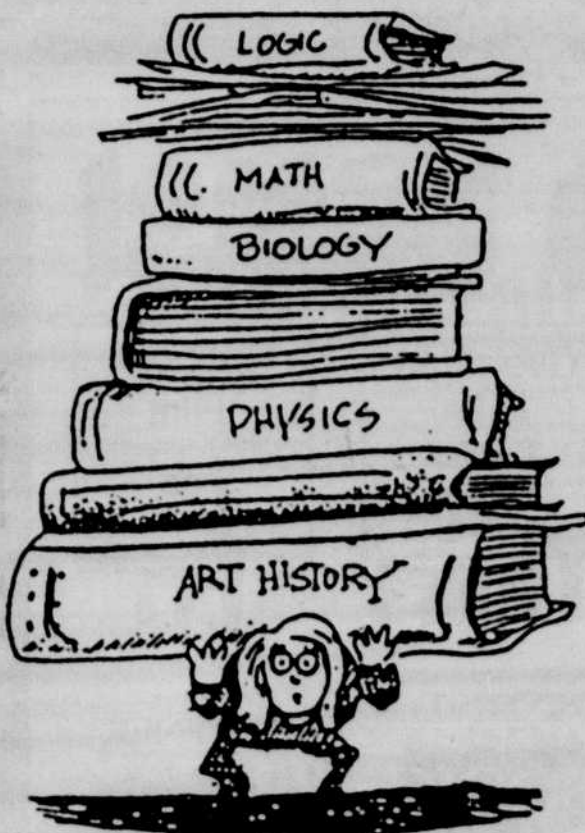
"This is a very different world than what I'm use to. Each generation of dog takes a lot longer than yeast," he said.

Since returning to Eugene, Sprague's involvement in the project has been limited. However, he does entertain ideas of returning to the project someday.

Even if Sprague did secure grants to bring some aspect of the dog project to the University, students should not expect to see more dogs on campus.

"What I would look at next is what the gene codes for," Sprague said. He said that would require returning to working on the molecular scale.

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