

# State welcomes world of

## Despite ups and downs, research vital for education

By Michelle Paulman

You eat it. You drive by it on Interstate 80. You can even test the water in your house with it. The applications are endless. And it's happening all around you.

Research is big at the University of Nebraska. And Bill Splinter, vice chancellor for research, predicts the university will continue making a name for itself in the discovery game.

Splinter said NU ranks fourth in the nation in its main field of research — agriculture. Farmers in Nebraska were some of the first to adopt conservation tillage, a product of NU research that saves fertilizer, soil moisture, pesticides and fuel.

And if crop stubble hadn't been left on many Nebraska fields during heavy flooding a few weeks ago, Splinter said, much of the soil might be in the Missouri River now.

But there's more to agriculture than farming.

The Agricultural Research Division, part of NU's Institute of Agriculture and Natural Resources, boasts "everything from conception to consumption," said Gene White, director of the Institutional Animal Care Program. The ARD includes more than 300 research projects, from water conservation and wheat varieties to plastics made from corn to how car accidents affect society.

And there's more to NU

than agriculture.

Many people don't see Nebraska as high-tech, but "we're moving that way," Splinter said.

One of the fastest growing new fields is biotechnology, and NU is growing along with it.

BioNebraska, a commercial enterprise started by three UNL professors, had a kit on the market for testing

mercury in water or soil and is developing a product to test lead levels in blood that will be available soon.

Also, a DNA sequencer is being made in a joint venture between UNL and Licor Inc., a scientific equipment manufacturer in Lincoln. With so much emphasis on DNA these days, Splinter called this project "the best one going" in the field of biotechnology.

But research isn't limited to laboratories. Other disciplines also conduct experiments, in a variety of environments, in order to grow up and out.

"We have everything from foreign languages to theoretical physics," Splinter said of NU.

In a field that includes a little of everything — elemen-

tary and secondary education — NU is at the forefront of research, Splinter said, thanks to an "excellent base" in areas from architecture to engineering.

Currently, the Teachers College is working on a multimillion-dollar business education program for high-school kids. A nationally recognized program called WISE — Women in Science

and Engineering — opens the eyes of girls in rural areas to science with experiments and access to computers.

But to play the game, NU needs funding. Professors draw grants to the university through unique and useful research proposals. In March 1992, NU had garnered \$34.5 million in research awards. By March of this year, that number had risen to almost \$48 million.

Grants aren't the only things that propel research. Experiments born in the laboratory can grow into something profitable. Ideas turn into products, which develop into companies, which employ people, which means the state's economy has a lot to gain from the university.

UNL controls the patents

on the Licor sequencer, Splinter said, so the university can use money from sales to further its research.

But research isn't all roses and royalties.

Often things don't pan out as planned. Hypotheses fall apart. One wrong turn can wreck a project.

A glitch was found in Licor's first DNA sequencer, developed by a business

graduate student's company, Splinter said. Luckily, the bugs were discovered before Licor marketed the equipment; otherwise, Licor could have lost millions of dollars on the venture.

As for the venture, "the little company went kaput," Splinter said. "They were just ahead of their time.

"A very significant amount of research comes up with negative results; you just have to expect that," Splinter said.

But not all failures mean that years of work must be thrown out the window. Innovative researchers can take a dead end and turn it in a new and better direction.

BioNebraska is a good example of a profitable 180-degree turn, Splinter said. The researchers had a grant

from a company in Finland to improve the process of manufacturing sugar from sugar beets. During the course of their experiments, Splinter said, they developed ideas that "had nothing to do with sugar."

Because of the unexpected turn, the company withdrew its funding for the project. But the sidetrack turned into seven patents for BioNebraska.

"You just can't predict what will happen," Splinter said.

Since research can be so unpredictable, it can also be dangerous.

These hazards became apparent in September 1992, when a graduate student was injured during a chemistry procedure. Besides chemistry, other areas such as radioactivity studies, veterinary medicine or even psychology pose a risk to those conducting the research and any live subjects involved.

"We do everything we can to guard against" potential dangers, Splinter said. Several regulatory committees check everything from human subjects in the social science experiments to infectious wastes and microorganisms.

These faculty-run groups, such as the Institutional Animal Care and Use Committee led by Rodger Johnson, inspect areas like the livestock grounds on East Campus unannounced to

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*vice chancellor for research, UNL*