A major university has a dual personality — it's a center of higher learning for our youth and the lifeblood of research in this country.

Education has become something tangible that students and the general public come in contact with everyday. Research, though, has remained a behind-the-scenes facet of Texas A&M. But not for long.

A&M is slowly joining the ranks of nationally recognized research facilities and is drawing attention to the innovative research programs found in departments throughout the University.

One research program has gained worldwide recognition as well.

In 1983, A&M was chosen as base for a unique global research project whose aim is to explore the Earth's structure and history beneath the ocean.

You shall know the truth . . .

By Mandy Mikulencak

The Ocean Drilling Program (ODP), whose main office is at the Texas A&M Research Park, is actually the offspring of the Deep Sea Drilling Project which lasted from 1968 to 1983. When the project ended, the consensus in the oceanographic community was that further research was needed. With the help of the principal funding agent, the United States National Science Foundation, the ODP was born.

Dr. Philip Rabinowitz, director of the program and professor of oceanography at A&M, says there is no other deep ocean project like ODP in the world. "It's certainly the crown jewel of the earth sciences today," Rabinowitz says.

As Science Operator for the program, A&M operates and staffs the one-of-a-kind drill ship that's responsible for the exploration.

The 470-foot ship, JOIDES Resolution, is named after the Joint Oceanographic Institutions for Deep Earth Sampling, an organization of 10 major oceanographic institutions and the international partners in the project — Canada, the European Science Foundation for the Ocean Drilling Program, the Federal Republic of Germany, France, Japan and the United Kingdom.

Rabinowitz says his first job as director was to find a ship capable of deep-sea exploration. The JOIDES Resolution fit the bill. Equipped with 12 laboratories and a drilling system capable of reaching depths of 27,000 feet, the ship is home to a 65-man crew and up to 50 scientists from around the world on each cruise.

Typically, a cruise lasts two months. During this time, the crew drills until a core barrel, which fits inside a 9.5-meter joint of pipe, is filled with sediments or rock. When the barrel is filled, the crew sends a wire down through the drill pipe, latching onto the core barrel and bringing it up onto the deck of the ship for study. A new core barrel is then lowered and the process continues.

The drilling is a tedious and time-consuming process, Rabinowitz says, but the samples provide a wealth of knowledge about the ocean floor composition and history of the earth.

The physical and chemical properties of the cores are analyzed in the on-board labs. A section is studied by sedimentologists who examine the sample to determine how the layers were deposited on the ocean floor. Rabinowitz says further study is done by petrologists who study the origin and structure of the rocks, and by paleontologists who look to the samples to provide clues about the Earth's past climate.

Texas A&M's responsibilities include curating the cores and distributing samples, as well as editing and publishing the scientific results. The samples are then stored for future scientific investigation at three sites: the Lamont-Doherty Geological Observatory at Columbia University, Scripps Institution of Oceanography at the University of California, and at Texas A&M, which houses ODP cores in specially refrigerated warehouses. Rabinowitz says the refrigeration retains the moisture content of the samples.

JOIDES Resolution has drilled at several sites in the Atlantic Ocean and the Eastern Pacific. It has also drilled inside both the North and South poles and has completed the most extensive scientific drilling ever done in the Indian Ocean.

Through the program's work, Rabinowitz says the world has a greater understanding of the earth's origin and evolution, the tectonic evolution of the continental margins and the processes of plate subduction.

In the next 10 years, we should hear more about the adventures of the JOIDES Resolution as it explores the once uncharted territory of the ocean depths.

Not all research at A&M, though, has the global impact that the ODP does. Many researchers deal with problems that affect us right here in Texas such as drought problems, enviromental protection and wildlife protection.

On first sight of Dr. Ron Newton's tree tissue culture laboratory in the Horticulture/Forest Science building, one's thoughts turn to test tube babies — but these babies are trees.

Newton and the Department of Forest Science, in conjunction with the Texas Agricultural Experiment Station, are developing a technique for propagating plants through a process of reproducing plant cells in the lab.

"We're interested in the propagation of plants without going through sexual reproduction," says Newton of his studies. "Clonal propagation isn't new. It's just taken a long time to understand the processes of woody plants to the point where we can clonally propagate them."

The lab works with two varieties of pine currently — loblolly pine, the chief commercial species in the state, and the Virginia pine.

Newton says a piece of tissue from a plant is put in the right chemical environment, with the right nutrients, and that environment encourages the tissue to start developing into a plant.

The advantages of such a process should be obvious, Newton says.

"If you see a plant out there with a certain attribute — it's very straight or very tall, very drought resistant —then we can select it and take a piece of tissue from it to propagate," Newton says. "By clonally propagating, you eliminate those long periods of time you have to wait in order to get a tree to reproduce."

Because the term clone means that traits passing to offspring are identical to those of the parents, the lab is able to transfer desirable genes from one plant to another.

Newton says they are especially interested in a gene resistant to disease and drought stress, which are two major concerns in Texas.

"We want to take genes from plants that exhibit those resistance qualities and transfer them to pines that do not," Newton says. "Natural revegetation is not as efficient as man revegetating with genetically

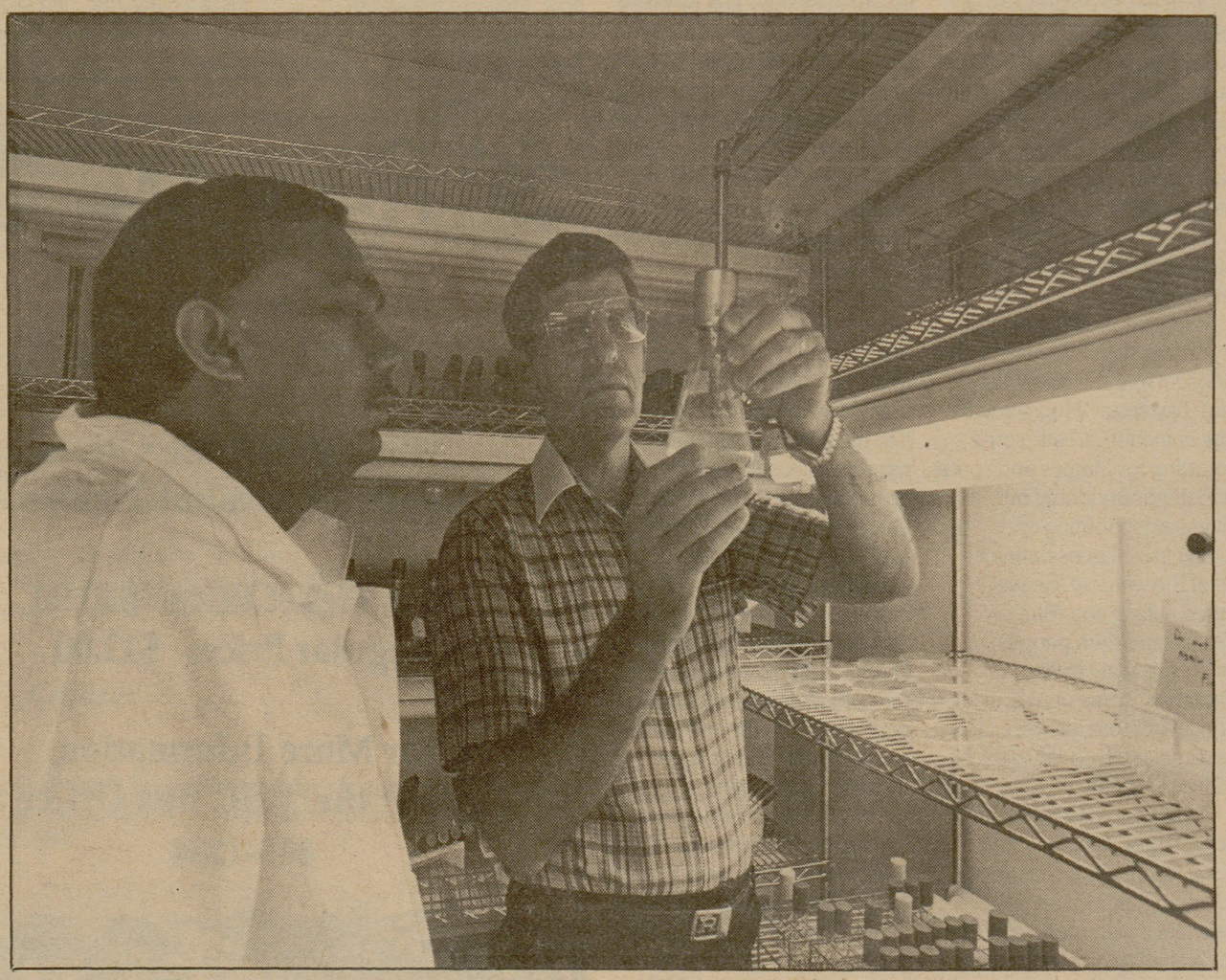

Photo by Phelan M. Ebenhack

Dr. Shri Mohan Jain (left) and Dr. Ronald J. Newton inspect plant samples in a horticulture lab.

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