From earthquakes to dreams, college labs break new ground  Page 6

Innovative Research
educated predictions
From football to earthquakes, university researchers peer into their crystal balls

By Barbara Brilliant

A car that runs on vegetable oil? It's just one of the thousands of research projects being conducted at Boston-area colleges. It should come as no surprise that New England universities outperform schools in other parts of the country when it comes to research and development. New England colleges and universities annually invest $1.8 billion in research and development, and capture 12 percent of the patents awarded to higher education institutions in the United States.

Local research and development accomplishments have changed history: Radar research at MIT altered the course of World War II; ether was first used as an anesthetic at Massachusetts General Hospital.

Researchers are now brewing cancer-fighting drugs, designing the next-generation Internet and cloning cattle. A Harvard researcher is studying smog; Tufts is doing research on the effects of cellular phones on pacemakers; Brandeis is studying women and body images.

From DNA to tobacco marketing, almost any area of interest, no matter how obscure, is represented. Research centers, institutes and workshops range from the Center for Space Physics at Northeastern to the Tufts Center for Animals and Public Policy.

Shake, but don't stir

If you wonder why anyone would live in Los Angeles — "earthquake central" — you might want to reconsider New England.

According to earthquake expert Mishac Yegian, professor and chairman of civil and environmental engineering at Northeastern University, "probable predictions indicate that we too are vulnerable." A quake of 6 to 6.5 on the Richter Scale could cause major damage to landfill areas such as the Buck Bay.

Yegian's research "is aimed at reducing potential damage to people through the protection of the public infrastructure: buildings, bridges, dams and tunnels." For the past five years, Yegian and his colleagues have been studying how to keep structures isolated and unmoving while they experience earthquake ground motions.

He puts models of buildings and bridges on a table that simulates earthquake movements. Using results from these tests, his team develops new materials and analytical tools that can have practical engineering implications.

Now that's groundbreaking research indeed.