

# Accident Leads to New Project in Breast Cancer Research

BY KARINA DAHLIN

SCIENTISTS AT THE TORONTO Hospital and Sunnybrook Health Science Centre have found a new way to predict the severity of breast cancer. It's an exciting discovery and is attracting the attention of pharmaceutical firms, says Professor Eleftherios Diamandis of the Department of Clinical Biochemistry.

Breast cancer is the leading cause of cancer deaths among women and the leading cause of all deaths in women aged 35 to 55. A cure for the disease may never be found but Diamandis' research shows that progress is being made in the area of prognosis.

A complicated accident in the laboratory led to Diamandis' discovery. He and his team were developing a new way of measuring PSA in prostate cancer tumours. PSA is the prostate-specific antigen and, as the name suggests, researchers used to think the antigen was only found in the prostate. At the time, therefore, it seemed a good idea for Diamandis and his team to use blood samples from women as the control negative

sample in their study.

He asked one of his students to supply 100 female sera from breast cancer patients but by mistake she gave him 96 female samples and four from men with colon cancer. The test showed that 96 were negative (showed no PSA) and four were positive. Diamandis, who did not know a mistake had occurred, asked his student to analyze a large number of breast tumour extracts. If PSA was present in a small percentage of (what he thought was) female sera from breast cancer patients, he thought it might also be present in breast tumours.

He was right, but for the wrong reason. The mistake that was made with the samples in the first place was eventually discovered, but by then Diamandis had shown that PSA also occurs in breast cancer tumours.

Later he conducted a study of 200 breast cancer tumours. The samples were imported from Italy and were five years old. His research showed that 30 percent of the patients had PSA and demonstrated a significantly better survival rate than those whose tissue samples did not indicate

the presence of PSA. Consequently, Diamandis suggests, women without PSA should be treated more aggressively.

PSA does not show up in regular blood samples. To discover if PSA is present, a tumour must first be detected by other means before physicians can take a biopsy and test for the antigen. One of the promising features about PSA is that it is associated with smaller tumours in the early stages of the disease as well as a longer disease-free and overall survival rate, said Diamandis. "That is why it is a good prognostic indicator." The sooner a physician knows the prognosis of a cancer, the sooner the appropriate therapy can be selected.

Diamandis and his team are publishing their findings in four papers over the next couple of months. But their work is not complete. Over the last eight months they, in collaboration with Dr. Donald Sutherland of the Bayview cancer centre at Sunnybrook, have examined the breast tumours of 1,275 women who are patients at the centre and they plan to follow the progress of these patients for a number of years.