



# RESEARCH2REALITY

Shining a light on research & innovation.

## 'It's an Incredibly Gratifying Experience'

An interview with **Susan Band Horwitz**, Biochemist, Albert Einstein College of Medicine

2019 Canada Gairdner International Award Laureate

I started looking at Taxol in the 1970s. It is an amazing structure, just amazing. It's very hydrophobic; that means that it's a drug that doesn't dissolve very well in water. And the structure is extraordinarily complex, very architecturally complex. So it has always been a problem as to how to give this drug to patients.

We were able to show that this drug had a unique mechanism of action. No one had described a drug that had a specific binding site on the microtubules and was able to stabilize microtubules so that they could not do their normal activities in cells.

Microtubules are part of the cytoskeleton of a cell, and they have to be dynamic. That's their normal process because they pull the DNA apart so that each daughter cell gets an equal amount of DNA when a cell is going to divide.

When Taxol binds to its binding site in tubulin, which is the protein that makes up microtubules, that microtubule cannot be dynamic. It becomes stable, and then it cannot carry out its normal activities in the cell. And therefore, it inhibits the division of cells, and it is today an anti-tumour drug that has been given to millions of people, particularly women who have ovarian and breast cancer.

I'm thrilled by so many people who can say, I'm alive partly because of Taxol. It's an incredibly gratifying experience.

TODAY'S RESEARCH. TOMORROW'S REALITY.