

PROFILE

Luceome Biotechnologies

Cell behaviors are like traffic signals to husband and wife team's new company

By Nicholas Smith
Inside Tucson Business

Though Neel Ghosh and Reena Zutshi deal in molecular cell science, it's easier to think of their work as if they were traffic engineers.

The husband and wife team have started an offshoot company through the University of Arizona that is an integral part to the drug development process. While the cost of bringing a new drug to market continually exceeds a billion dollars and years of research, knowing what effect the drug will have on the human body is just as crucial as inventing it in the first place.

"What we are trying to do is develop a technology that determines what a safe drug is and what an unsafe drug is," said Ghosh, who also teaches organic chemistry at the UA.

That's where Luceome Biotechnologies comes in. The company specializes in the identification of drugs that selectively stop the function of specific kinase. Cells typically have hundreds of functions, which are each directed by kinases, a kind of enzyme.

"Think of it like a traffic signal," Zutshi said. "If the signal goes green, traffic moves forward, if a signal goes red, traffic stops."

"The worst case scenario: you have a traffic jam," added Ghosh, who serves as Luceome's chief scientific officer.

Much like a traffic signal directs where and when to go, a kinase tells the cell what duty to perform and when to stop performing it. Having kinases that misfire is akin to stoplights going haywire; you end up with traffic jams or traffic accidents.

What Luceome Biotechnologies does is develop an assay, or catalogue, of which kinases are affected by different amounts of a drug. Obviously, drugs that affect the proper

 **Biz Facts**
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University of Arizona start-up specializing in assay solutions utilizing luciferase fragment complementation for drug diagnostics.

kinases are more effective than drugs that affect more kinases than needed. This is what causes side effects. It's all about knowing which traffic signals to shut down.

Luceome joins a number of companies to sprout from the university.

"In the last 10 years, there's been about 37 formal start-ups out of the university," said Pat Jones, director of the UA's Office of Technology Transfer. "Of the 24 formed in the last 4 years, all of them are still in existence."

Seven companies were formed in the recently closed fiscal year, a record for the school. The previous record was set the year before, with the foundation on six companies.

The new start-ups aren't restricted to one area of study. The UA has seen new ventures in the areas such as epidemiology, network and software security, solar power and biological detection.

Luceome has been around since last summer and is currently courting several companies for the drug diagnostics work. The presence of larger biotech companies



Neel Ghosh, left, speaks with UA graduate students Ben Jester (far right) and Jason Porter. Jester and Porter helped work on the technology patent that eventually became Ghosh's UA start-up, Luceome Biotechnologies.

in the area such as Sanofi-Aventis and Ventana Medical Systems add to the chances of Luceome's success.

"Everybody wants to work with a company that's next door," Zutshi said, adding that the physical proximity to simply makes it easier to do business. The pair also mentioned that groups like the UA's Bio5 and Angel Investors have helped their company get on its feet.

While Ghosh sees the states biotechnology industry throughout the state growing over the next five years, much of it relies on

the state's willingness to fund education.

There is a key component to any start-up growing out of the university.

"We couldn't have done this without really, really good students," Ghosh said, adding that while students don't work for the company, some of them were involved in the patents that Luceome eventually became founded upon.

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