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Elisabet de los Pinos

Aura Biosciences

Using chemotherapy to fight cancer is a little like using TNT to demolish a condemned house: the whole neighborhood tends to suffer. In cancer patients, that can mean everything from hair loss and nausea to fatal complications. Scientists have long sought more precision in delivering drugs directly to cancer cells while avoiding healthy ones.

Elisabet de los Pinos, 37, is one of the scientists leading that race. De los Pinos, a molecular biologist, is the founder and president of Aura Biosciences, start-up in Cambridge, Mass., launched early this year. In late 2007, the Barcelona native learned that a cancer-research institute in Germany had created a nanoparticle with dimensions that would allow it to pass easily through blood vessels. (One nanometer equals a billionth of a meter.) And because nanoparticles are multifunctional, she figured they'd be the perfect vehicle to carry a homing device, a technology she then located at a British research center.

De los Pinos got exclusive licenses for both technologies and then went to work. "We genetically modified the nanoparticle by adding a targeting peptide to it," she says. "The result is a structure that can protect, target and deliver the drug inside it." And, she says, if you can restrict the drug to the cancer site, oncologists will be able to up the dosage without inflicting damage elsewhere. "Higher doses mean higher efficacy," she says.

"Anticancer nanomedicines are very hot," says David Scheinberg, who heads the experimental-therapeutics center at Memorial Sloan-Kettering Cancer Center. "The hope is, this technology will provide drugs with the ability to simultaneously treat, target and be monitored in the body."

De los Pinos, who has trademarked her new technology as Nanosmart particles, is part of a cadre of nanoentrepreneurs, many of whom have found particles as potential delivery vehicles but are not necessarily using new medicines. "We already know a lot about the good and bad effects of approved drugs," says Scheinberg. "If you have one that's effective and widely used and have a way to make it better, it makes sense to do that." The target is well known; it's the aiming of the drugs that's improving.

—Coeli Carr

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