

Pharmaceutical startup creates prefabricated drug dosages to support patient-centric medicine

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Rodolfo Pinal, left, and Andrew Otte of Biokorf work on their process to create prefabricated drug dosages for compounding pharmacists. Biokorf is one of more than 20 startups created in fiscal year 2014 from Purdue University innovations. Credit: Purdue Research Foundation photo

Officials of a pharmaceutical startup based on a Purdue University innovation say their company is creating prefabricated drug dosages that could be used by compounding pharmacists to support patient-centered medicine.

Teresa Carvajal, [chief operating officer](#) at Biokorf LLC and a faculty member in Purdue's Department of Agricultural and Biological Engineering, said compounding pharmacists fill prescriptions for individual patients, whereas the pharmaceutical industry makes a reproducible product in very large quantities for the general patient population.

"The one-size-fits-all approach used in industrial pharmacy does not work for individual prescriptions," she said. "Prescription drugs require dosing flexibility with a very high level of precision in order for them to work as intended for the specific patient."

Rodolfo Pinal, chief scientific officer at Biokorf and associate professor in Purdue's Department of Industrial and Physical Pharmacy, said the company has developed [technology](#) that provides the necessary level of precision. It could strengthen a compounding [pharmacist](#)'s ability to provide a patient-centered approach to medicine.

"We have created 3D Integrated Pharmaceuticals, which provides prefabricated components that compounding pharmacists assemble according to pre-established blueprints," he said. "These components include the drug dosage as well as performance traits such as solubilization control and taste masking."

3D Integrated Pharmaceuticals technology has been exclusively licensed to Biokorf through the Purdue Office of Technology Commercialization.

Andrew Otte, chief executive officer, said Biokorf begins the process to create prefabricated drug dosages with a solution of a known amount of a drug.

"We cast this solution in a Petri dish, which allows us to optimize physical properties and minimize material usage. We know the geometry and amount of the drug, so we know how much can be put into one dish," he said. "We then use a film caster to cast the solution on a substrate, which is then transferred to small-scale manufacturing. The manufactured film can be cut with tooling machinery into final dosage forms."

Pinal said orally disintegrated films used by Biokorf work well, are firmly established in the pharmaceuticals industry and are familiar to the public.

"Film configurations of pharmaceuticals are terrific in terms of the ease of manufacture, obtainable quality, reproducibility, methods to monitor quality, scalability, precision dosing and drug release properties and performance," he said.

Otte said Biokorf looks to provide compounding pharmacists with prefabricated parts with known specifications that can be designed and assembled by the pharmacist into a final dosage form.

"Pharmacists could readily load capsules with whatever size disc they need. Instead of blending bulk powders, filling capsules and testing, pharmacists can use the discs," he said. "Another advantage is that the discs would be tested in advance by Biokorf, and specs would be provided to the pharmacists."

Otte said the company has begun contacting pharmacists in Indiana to determine what they need from the prefabricated drug dosage

technology.

"We are building the system around what our in-state contacts want. They are helping us determine which pharmaceuticals we should start with, which is initially leading us to look at hormone replacement therapy. We are building prototype products they may use in their pharmacy. Our contacts could help us with customer validation, too," he said. "Additionally, Biokorf is looking to connect with partners and funding to move this process from the laboratory to the market."

Otte said the Purdue Office of Technology Commercialization and Purdue Foundry have supported Biokorf officials throughout the process to translate the Purdue technology into a startup.

"OTC and the Foundry have supported us from company inception to licensing the technology and now toward customer and partner development," he said. "Without the guidance and expertise these two organizations have provided us, we could not have moved forward with the technology. They play a vital role in aiding faculty, student and community entrepreneurs to launch and commercialize their ideas."

More information: biokorf.com/

Provided by Purdue University

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