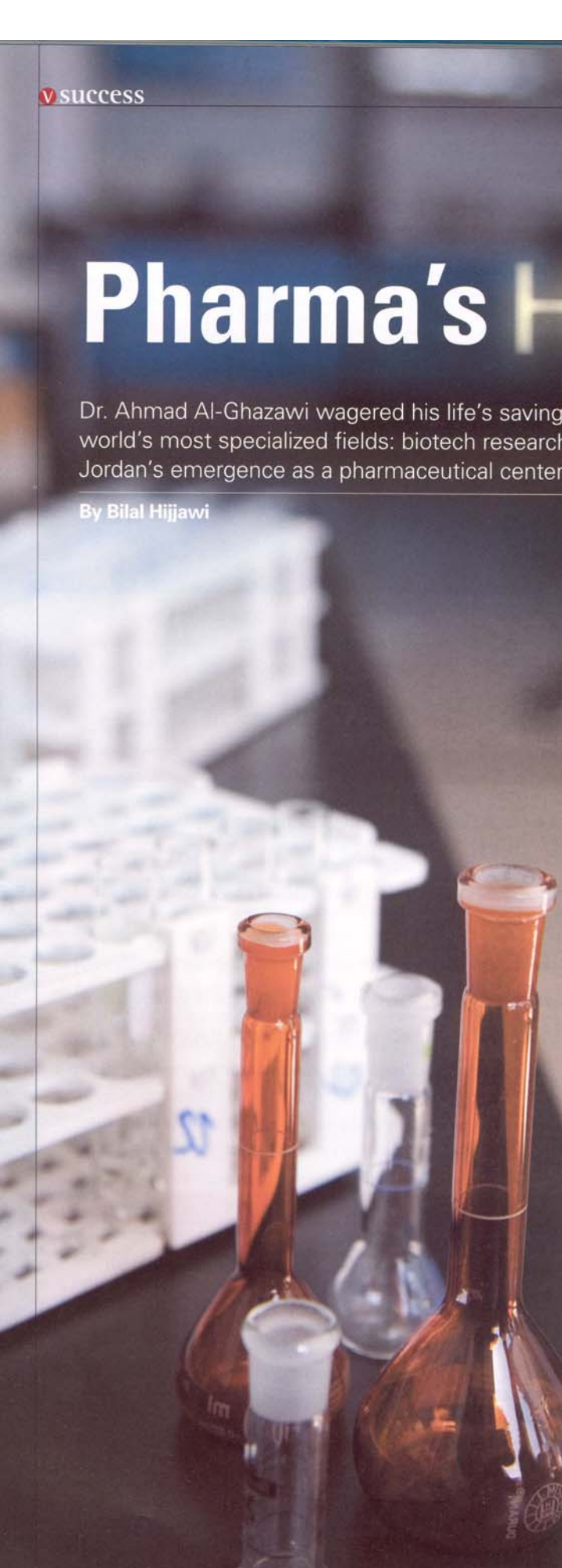


Pharma's Holy Grail

Dr. Ahmad Al-Ghazawi wagered his life's savings and a successful international career on one of the world's most specialized fields: biotech research. His success is a tribute to hard work, smarts and Jordan's emergence as a pharmaceutical center.

By Bilal Hijawi



BIOTECH HAS ITS SHARE OF GO-liaths. Meet Jordan's David; Dr. Ahmad Al-Ghazawi, founder and CEO of Triumpharma. He's on the path to one of big pharma's "Holy Grails": Managing diabetes via oral means.

"We've already filed four international patents and are now almost ready to move some products to the clinical phase on patients," said the researcher-entrepreneur. His company is currently testing a promising insulin oral delivery system on lab mice and rabbits, and the results have been "very encouraging."

At 42, Al-Ghazawi knows what is possible in Jordan. He is also aware of what is impossible. He left a two decade career with global pharmaceutical leaders SmithKline (now GlaxoSmithKline) and Merck to pursue his own company. As co-inventor of

SmithKline's *Paroxetine* patent – the main component of an anti-depressant drug which currently brings over \$2 billion in annual worldwide revenues – he has already established his industry worth

Al-Ghazawi took his big decision to go solo following a meeting with His Majesty King Abdullah II, who encouraged expatriate Jordanian entrepreneurs to become more involved in the country. He left the UK in 2002 and set up Triumpharma, a biotechnology company, in Amman. "I wanted to do something high-tech," he said. "And I didn't want to do it elsewhere."

Al-Ghazawi praised the introduction of legal reforms to intellectual property laws as a motivator for setting up in Jordan. "The country is now very suitable for doing biotech research." Indeed, according to the World Intel-

lectual Property Organization (WIPO) six out of the twelve Jordanian pharmaceutical companies now own patents. The Jordan Pharmaceutical Manufacturing Company (JPM) alone, for example, has built a portfolio of 30 patents estimated at \$200 million.

Al-Ghazawi noted that Jordan requires low initial investment for managing biotech research and development (R&D). Additionally, time-to-market can be cut to 3 to 4 years, compared to 10 to 12 years in more established markets. He estimates the cost of setting up Triumpharma at a bit less than JD10 million.

As a service-oriented biotechnology company, Triumpharma makes its cash flow from bio-analytical and clinical research, and pharmaceutical R&D services. It also provides in-vivo and in-vitro tests, toxicity studies, and animal and human trials on behalf of U.S. and European clients.

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On its website, Triumpharma sells itself as provider of tomorrow's delivery technologies. This specialization allowed the company to pursue higher-end innovations that enhance the delivery systems of existing drugs, and specifically for insulin. "This is where our main expertise in research and development lies," said Al-Ghazawi.

Once the company successfully delivers a patented pilot drug or a more efficient new method, it then moves to producing the drug in small quantities for clinical trials. When a pilot product gains approvals from health sector regulators in Jordan and in later stages internationally; the search begins for an international partner. "Then we look into licensing the product to big pharma

to produce it in bigger quantities for global markets ...we're not set up to mass produce drugs."

It's Not that Simple

Delivering insulin through oral methods has thus far been an unattainable dream, with many aborted attempts. The massive insulin market remains wide open for a killer app, less the injection delivery. The US alone has roughly over 21 million diabetics aching for non-injectable insulin. According to some estimates, the annual global market for diabetes drugs could reach at least \$25 billion 2011, up from \$15 billion today.

The oral delivery dilemma has been highlighted by Pfizer's failure to market the *Exubera* inhaler device in the US. Licensed from a biotech company called Nektar, it delivers insulin through bursts of air. It was pulled off shelves after Pfizer realized much weaker sales than they expected in the first year.

The inhaler was bulky and difficult to operate, produced respiratory side effects which required post-sale patient monitoring and some patients with Type One diabetes still had to supplement it with insulin injections. Doctors hated it and didn't support its success. The cost to Pfizer was approximately \$2.8 billion, and the shares of both companies took a nose dive.

Another company, Novo Nordisk, scrapped its own short-acting insulin inhaler potential AERx during late stage clinical trials, citing reasons similar to Pfizer's.

The Taiwanese however are beating a different path. They're testing with delivering insulin in the form of pills. Their pitch is a tiny sphere made from shrimp cells that would help it survive the acids of the stomach, so it can move forward to the small intestines where the insulin dosage can be absorbed. But the drawback is that the method will require a larger dose of insulin.

In other research labs, work is underway to attach insulin to vitamin B-12, which protects it as it travels through the

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gastrointestinal tract—a method dubbed "Trojan horse." Little information is available on its progress.

Also, some groups are studying how *resveratrol*, an ingredient in red wine or in the skin of grapes, can counter the high levels of glucose. Sirtris, a biotech company, has been testing a *resveratrol*-based drug against diabetes.

The research however is controversial, as some of the therapies pack *resveratrol* concentrations that equal hundreds of glasses of wine. Sirtris has benefited from its current research and developed three new promising chemicals, other than *resveratrol*, that could play lead roles in resisting diabetes.

In Australia, scientists want to develop a drug that can block PKCepsilon, an enzyme that they found in diabetics which prevents the production of insulin. In the animal testing stage, they've been successful with mice.

The Bet from Jordan

Triumpharma is taking the road less traveled to insulin delivery. Al-Ghazawi opted for the pill delivery method and he believes he has struck gold. His method seems to have been working flawlessly with lab mice and rabbit, and he says that clinical trials on humans will commence soon.

Triumpharma has focused on delivery system innovations for expired patents. Many of these were killed in early stages of development after they proved to have side effects and absorption problems.

"Many potentially very-promising drugs are abandoned in discovery stages because the body cannot absorb them efficiently," Al-Ghazawi explained. "This is where we come in."

"I've known for long that there's a huge market niche in this area of research... many companies will want to use our research to bring back some of these drugs," said Al-Ghazawi.

Comparing his insulin-delivery discovery to Pfizer's, Al-Ghazawi explained: "Our method is unique ... and has emerged from extensive research on the interactions between physical and chemical substances in the human body environment." With that, he abruptly halted. "Unfortunately, with our patent pending, I can't be too generous with information," he said with a smile.

Investors in the Lab

Starting a biotechnology research company is one thing, but growing it into a powerhouse is another. Clinical trials and patent applications are capital-intensive undertakings.

In the earlier stages, Al-Ghazawi was not in a hurry to raise capital. But with products in the pipeline, he admitted that the time has come for fresh capital.

"In the business of R&D, it's not wise to jump right into the market; it's better to enter with solid discoveries in hand and some market presence," he explained. "We're very focused on developing inventions that will aid the solubility of certain difficult drugs to help the body absorb them." The company hasn't licensed any of its inventions yet, but expects to deliver its insulin delivery discovery for licensing by year's end.

But in developing markets like Jordan, venture capital cultures and IPO markets are weak and underdeveloped. Al-Ghazawi, however, isn't betting on Arab investors. Instead, he said, he has been eyeing international sources for capital. "Most Jordanian and Arab investors are more interested in short and medium term rewards, in areas where tangibles are involved," he complained. "They cannot value the high potential that these discoveries would, once successful, offer in the medium and long term."

As costly as it would be, a single

successful commercially viable invention would translate to massive fortunes to its owners. Last year, Pfizer's Lipitor drug – the world's best selling drug – generated over \$13 billion in sales and one-fifth of the company's overall revenues.

Al-Ghazawi estimated the rewards at a minimum of 100 times conventional investment returns in Jordan. "It's sad that what will truly drive the Arab world's future is something that most investors don't value or understand and thus isn't something that interests them," he says. "They need to educate themselves in the investment venues of complex industries."

Triumpharma may be a good bet. Al-Ghazawi has put a lot at stake to develop his business, betting his own savings and receiving backing from friends and family.

The company's capital assets include some of the best available R&D infrastructure in the world. Al-Ghazawi is renowned in Europe's and America's life science and biotechnology circles. Triumpharma already has a number of innovations in the pipeline. It has also jointly concluded various product developments and has ongoing clinical trials with European and American pharmaceutical companies.

When one prominent US-based pharmaceutical company was canvassing the



markets of Turkey, Israel and the Middle East to find strategic regional partners, they praised Triumpharma as a unique operation.

"They said we had the only product development center with all the relevant and required activities ... [under one roof]. This advantage allows us to turn out products from concept to test markets faster," Gazawi recalled.

WIPO has featured Triumpharma, along with another company from Malaysia, as potential

R&D success stories in the developing world.

As a company operating in Jordan, the environment's core advantages are the availability of an extremely low-cost base for research, the high

supply of experienced multilingual workers and PhDs from Western universities, and the large pool of patients and volunteers. This, Al-Ghazawi, concluded, allows Jordan to build a competitive biotech industry. ●

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