Ahmed Alaskar – Executive Director, King Abdullah International Medical Research Center (KAIMRC)

The future is bright and we are witnessing tremendous support and commitment from everyone involved in this ecosystem

24.03.2025

Tags: Saudi Arabia, MEA, KAIMRC, Clinical Trials, R&D

Dr Ahmed Alaskar, Executive Director of KAIMRC, provides an update on the development of Saudi Arabia's growing biotech ecosystem over the past four years. He shares insights into the Kingdom's National Biotech Strategy and the development of early-stage clinical trial capabilities. Dr. Alaskar also highlights the Kingdom's unique advantages in areas such as gene therapies, genomics, and the growing importance of public-private partnerships to solidify Saudi Arabia's reputation as a biotech hub.

Since being interviewed in 2021, what have been some of the key achievements and highlights of the King Abdullah International Medical Research Center (KAIMRC) and Saudi Arabia's biotech ecosystem?

I would like to start off by introducing the most exciting achievement during this time: our National Biotech Strategy which was launched in early 2024. This initiative represents a significant milestone in Saudi Arabia's ambition to move beyond the traditional oil industry and to place biotechnology as one of the country's alternative industries. The strategy is guided by a national committee led by His Royal Highness Crown Prince Mohammed bin Salman—highlighting the government's commitment to advancing biotechnology.

This National Biotech Strategy focuses on four main priority areas—vaccine development and manufacturing; biomanufacturing and localization including areas such as cell and gene therapies; genomics with an emphasis on expanding the Saudi genomics database to support precision medicine; and plant optimization and agricultural biotechnology aiming at self-sufficiency and improving agricultural practices. These four domains are expected to drive the future of biotech development in the Kingdom—advancing our capabilities in life sciences in particular for novel treatments discoveries, innovative diagnostics and preventive strategies.

To support this strategy, several programs have been launched. These initiatives focus on attracting investors, creating funds to support the industry, and developing the talent needed for biotech advancement—including training and talent acquisition. Additionally, there are efforts to build key facilities such as Riyadh BioCentral, which will serve as a hub for the biotech industry. By 2030, we hope to achieve the establishment of biotech clusters as a result of continuous growth in this sector.

We at KAIMRC, along with other organizations such as the Research, Development and Innovation Authority (RDIA) and the Saudi National Institutes of Health (Saudi NIH), are actively contributing to the implementation of this strategy through our own areas of expertise. Along with Riyadh BioCentral, we are all working to strengthen and empower Saudi Arabia’s growing biotech ecosystem.

Could you provide an update on the scope and primary areas of focus for KAIMRC driving the biotech strategy under Saudi’s Vision 2030?

KAIMRC was established as the research and development arm of the Ministry of National Guard Health Affairs with multiple sites across Saudi Arabia. We are strategically located alongside healthcare facilities and academic institutions, creating a complementary environment for the R&D ecosystem. KAIMRC has been in operation since 2006 and focuses on areas such as vaccine development, genomics, cell and gene therapies, stem cells, and innovative medical devices.

Our research spans from basic research to translational studies and clinical trials. We have a comprehensive clinical trial setup that includes all phases, from Phase 1 to Phase 4. In fact, KAIMRC is the only facility in Saudi Arabia authorized by the Saudi FDA to conduct first-stage in-human clinical trials. As therapies are developed in the country, we are positioned to support the development of these products by conducting the required clinical trials for regulatory approval.

What advancements have been made in developing the Kingdom's expertise in clinical trials and how is Saudi Arabia establishing itself as a prominent clinical trial and biotech hub?

I am pleased to say that Saudi Arabia has made significant advancements in clinical trials and biotech development. We are progressing in several key areas with projects that take several years to develop. One of the key developments is our work is on CAR T cell therapy, which we have been able to produce domestically. We are now waiting to submit these cells to the Saudi FDA for approval to utilize in clinical trials. Additionally, we are working on stem cell projects, including the production of induced pluripotent stem cell (iPSCs) lines, which are essential for regenerative medicine. These stem cells can generate various tissues and are expected to play a major role in regenerative medicine in the future. In addition, our vaccine platform is nearing completion and will be ready for future vaccine developments such as for dengue fever.

In terms of genomics, we have conducted hundreds of whole genome and whole exome sequencing projects on the Saudi population. This effort is part of a larger initiative to link specific gene mutations to particular diseases. Through our work, we have discovered new syndromes and genetic abnormalities that were previously undetected in the Saudi population. This is a major step forward in understanding genetic disorders and advancing precision medicine in the Kingdom.

How important are partnerships and collaborations within the Kingdom's biotech ecosystem in driving clinical advancements and enhancing the overall industry?

Partnerships are absolutely crucial to the growth of Saudi Arabia's biotech ecosystem. With the evolution of this segment, we are seeing both investors and industries moving into new areas of discovery. In the past, the pharmaceutical industry in Saudi Arabia primarily focused on generic medications and on importing innovative products developed elsewhere. However, we are now witnessing the dawn of new era in biotechnology where local academia and industries are collaborating through public-private partnerships, and international players are also entering Saudi Arabia and forging alliances with local companies. For example, KAIMRC has several ongoing partnerships with industry players that span various areas including nanomedicine, gene therapies and other discovery efforts.

In your previous interview, you mentioned a “valley of death” in translating research into market-ready products. Has this challenge been addressed, or is it still an ongoing issue?

This challenge of translating research with real world impact remains a significant issue even in countries with mature biotech ecosystems—not only in Saudi Arabia. The real question is how many products can successfully make it out of this valley. Some may progress quickly, while others may struggle and ultimately not make it through. This is a natural part of the innovation process and we are still learning how to navigate through it.

However, there are significant efforts underway to bridge this gap and create a stronger commercialization pipeline. Entities such as the RDIA, the SNIH, and Riyadh BioCentral, have been established to support this process, and universities in Saudi Arabia are increasingly focusing on developing products. Meanwhile, government initiatives like Monshaat are helping startups, entrepreneurs, and scientists bring innovative products to market. These efforts link scientists with industry leaders, investors, and other key players—a crucial initiative for driving innovation.

Furthermore, the national vision 2030 programs such as the National Industrial Development and Logistics Program (NIDLP) are designed to support an open economy that welcomes the injection of foreign capital—creating an even larger platform for innovation. The RDIA also has specialized programs to foster the development of new products and industries with a focus on facilitating global partnerships between Saudi organizations and foreign MNCs. Other programs, such as those focused on improving specific health outcomes such as aging and life expectancy, for instance through Hevolution Foundation, contribute to the vast landscape of priority areas under Vision 2030.

From a financial perspective, the Ministry of Investment is also playing a key role in attracting investors to Saudi Arabia by offering incentives like tax exemptions for exports and entrepreneurial support in the form of loans, these efforts aim to fuel the biotech industry. These initiatives will support the industry’s growth and increase the business opportunities for the translation of research—helping move more products through the valley of death to reach the market and ultimately making an economic and health impact.

KAIMRC has established its Biotech Park to bridge the “valley of death” in biomedical innovation. Through this initiative, we have successfully attracted foreign companies for collaborative research and development.

During our last conversation, you highlighted the establishment of the Saudi Clinical Trial Enterprise to improve Saudi Arabia's clinical trial ecosystem. What progress has been made in advancing research and attracting more international clinical trials to the Kingdom?

The Saudi Clinical Trial Enterprise (SCTE) continues to make significant progress by enhancing communication among stakeholders including hospitals, the pharmaceutical industry, and regulatory authorities. These efforts have already resulted in a notable increase in the number of clinical trials being conducted in Saudi Arabia as more hospitals are joining this initiative. We have successfully launched multi-center clinical trials led by local institutions with some of these trials even being international in scope. This expansion is ongoing and we are seeing continued success in attracting global clinical trials to the Kingdom.

One aspect we are leveraging is to help ensure the diversification of populations in clinical trials. Since new products must reflect a broad range of participants, Saudi Arabia's population and the broader Gulf region are critical to this effort as these populations have historically been underrepresented in global clinical trials. Given our strategic geographic location between Asia, the Middle East, and Europe, Saudi Arabia is well-positioned to play a leading role in this area by offering easy access to neighboring countries.

Additionally, the presence in Saudi Arabia of large number of rare genetic disorders and with higher frequencies than in Europe or North America, due to factors like consanguinity and first cousin marriages, makes the Kingdom an important hub for genetic research. This challenge is being regarded as an opportunity for Saudi Arabia to lead in gene therapy and the broader genetic industry—attracting more international research and clinical trials focused on these rare conditions.

To position KAIMRC as a leader in clinical research, we have developed strong capabilities in clinical trials, spearheading multi-center studies with a dedicated team of clinical research coordinators, associates, auditors, monitors, and quality managers. Trained to the highest industry standards, our experts ensure that every trial is conducted with the highest level of quality and precision.

Do you feel that Saudi Arabia is gaining recognition and attracting attention from the global biotech ecosystem beyond the region?

Absolutely. Almost on a weekly basis, we receive development teams from global industry players who are interested in what we are doing here at KAIMRC. We often hear expressions of amazement

with many industry leaders in cell and gene therapies surprised to discover some new insights from their visit. During site inspections, they have consistently found that we meet and even exceed the global high standards. This positive feedback is a testament to the progress we have made in developing and promoting our cutting edge capabilities. As more experts and partners become aware of our work, we are seeing more opportunities come our way as they begin to trust our ability to deliver.

The progress we have made is a significant opportunity to showcase Saudi Arabia's capabilities to global partners. While it will take more time to fully promote and establish this recognition, we are already seeing early results reflected in the growing number of opportunities and partnerships that continue to emerge.

Saudi Arabia has a unique genetic disease profile due to consanguinity. Is this area the Kingdom's main focus for clinical development, or are there other areas you would like to emphasize as priority areas for research?

At KAIMRC, we are open to all innovative and impactful products that can positively affect the health of the population and contribute to economic diversification. Our primary focus is on the potential impact of these products—how they can improve human health and benefit society at large. We are not restricted to specific diseases but are driven by the potential significance of the product.

While certain diseases, like rare genetic disorders, may require a higher prevalence of cases for testing, we are open to exploring any impactful discovery or therapy. If a product or therapy addresses a major health need or provides a valuable diagnostic solution, it will certainly attract our attention and support. Ultimately, our goal is to advance clinical development in areas that can make a real difference to both public health and the economy.

As a country that did not have the history of more mature biotech markets, how has Saudi Arabia been able to construct the necessary capacity to pursue Vision 2030 and establish itself as a regional and global biotech hub?

Saudi Arabia has made significant strides in building the necessary capacity to develop its biotech ecosystem. The National Biotech Strategy has addressed all the key elements required for success with talent development and training being a cornerstone of this effort. Many of our staff and

colleagues have been trained abroad in leading institutions with the government providing scholarships and support for this training. Our scientists, physicians, healthcare workers, and administrators have obtained international qualifications and are now returning to Saudi Arabia to contribute to the biotech sector. Some continue their postdoctoral fellowships or other advanced training, often in collaboration with international institutions.

In addition to training abroad, there are numerous local programs supported by the government and new educational institutions have been established to further support talent development. However, training is only part of the equation. Retention is another challenge we have faced. While we train skilled professionals, some have moved to other industries or even countries. To address this, the government has developed strategies to support the retention of trained talent, ensuring that they remain in the biotech sector and continue to contribute to the Kingdom's goals.

In addition, the government is also enabling the set up of private entities to contribute to establishing a vibrant biotech ecosystem such as the new companies established by the Public Investment Fund (PIF) to establish biotech and medtech companies including Lifera and ALAT Smart Health.

Furthermore, the regulatory framework has also evolved to keep up with the requirements necessary to enhance the transformation toward biotechnology development.

Looking ahead, how do you perceive the future of KAIMRC and Saudi Arabia's biotech aspirations in the coming years?

I am excited to one day see biotech cities and clusters emerging from Saudi Arabia. The future is bright and we are witnessing tremendous support and commitment from everyone involved in this ecosystem. Over the past few years, we have seen the development of new, young Saudi talents—ambitious individuals who are all aligned with the goals of Vision 2030. These people, along with the various programs in place, are working together toward one common goal of accomplishing impactful innovation projects that will drive Saudi Arabia's biotech aspirations forward. I envision KAIMRC as a key player in driving the implementation of the national biotechnology strategy. With its Biotech Park and the anticipated establishment of its commercial arm, KAIMRC will transform its R&D efforts into tangible economic products, fostering innovation and economic growth.

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