ELEM Biotech creates a virtual you on Oracle Cloud

"Our challenge is to make our simulation program as accurate and efficient as possible. We need a cloud platform that is flexible, powerful, and secure. We get that from Oracle."
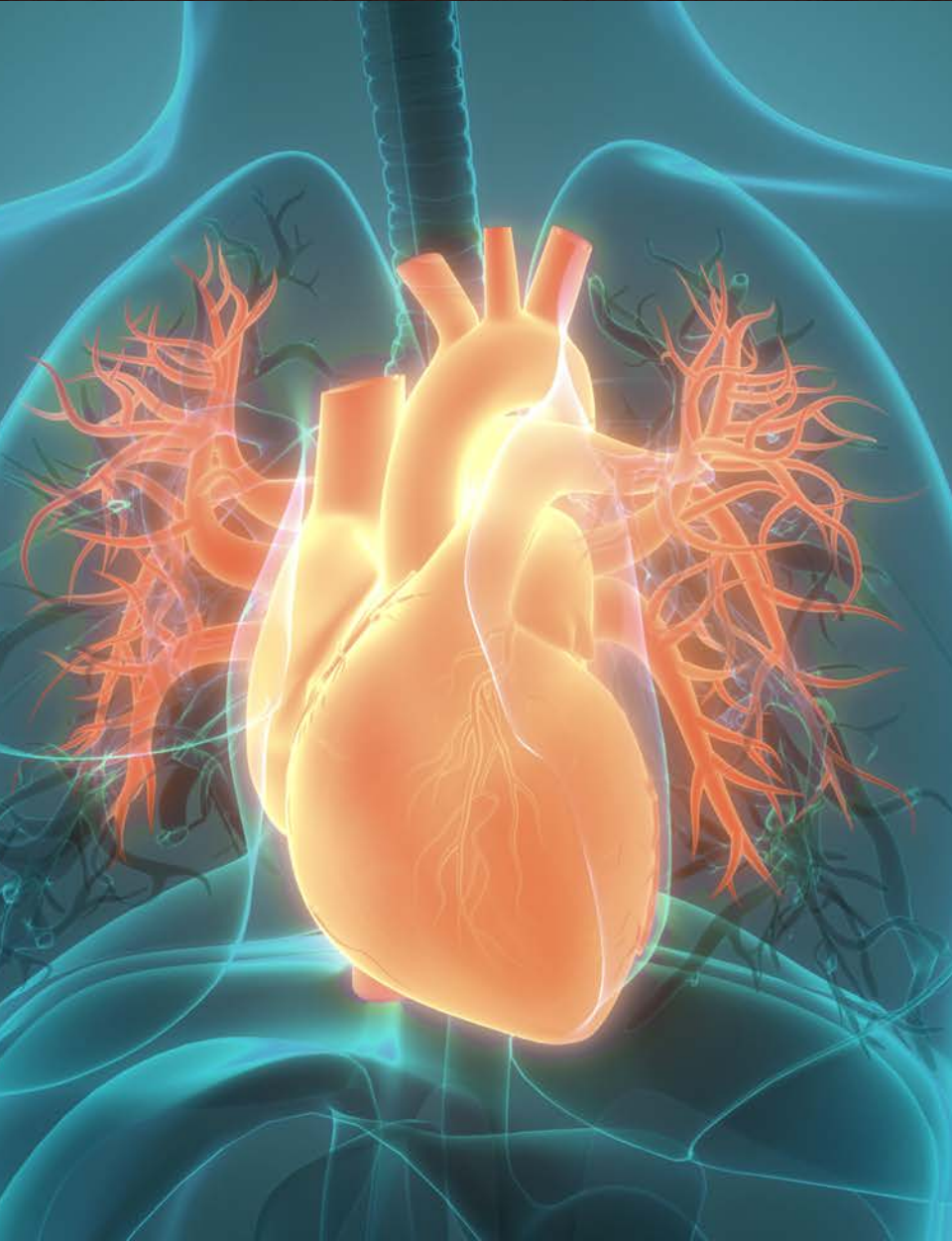
— *Mariano Vazquez, Chief Technology Officer, ELEM Biotech*

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Summary

ELEM creates models of the human body, which, thanks to the compute power of **Oracle Cloud Infrastructure**, build virtual populations representing diverse pathologies.

Business Challenges

Imagine a digital model of your body. Its heart beats like yours; its lungs breathe like yours. By building models based on medical scans of people with real health conditions, researchers from ELEM Biotech allow medical device manufacturers, pharma companies, and contract research organizations to test and improve products such as replacement cardiac valves, stents, drugs, and pacemakers, as well as improve procedures and therapies, such as COVID-19 antivirals.

The company's Alya Red "virtual human" can even be used to analyze virtual populations in clinical trials, reducing the need to use people and animals. The opportunities to improve healthcare are enormous—as is the compute power required to do so. That's why ELEM Biotech, which grew out of work at the Barcelona Supercomputer Center, needed high-performance computing capabilities that are affordable, scalable, and available on demand.

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Results

ELEM Biotech is seeing the same scalability on its Oracle Cloud Infrastructure bare metal compute instances that it sees on its **dedicated cluster at the Barcelona MareNostrum supercomputer center**, and it's able to deliver the results faster because there's no queue. The underlying code tuned for MareNostrum was compiled and run on Oracle Cloud Infrastructure without requiring any additional libraries or tuning—truly "lift and shift," explains ELEM Biotech CTO Mariano Vazquez.

Researchers can now quickly fine-tune simulations to best match a specific patient's conditions. That saves more lives, faster. For example, using Oracle Cloud, researchers can test a pacemaker on a virtual heart that has all the physiological and anatomical characteristics that are relevant to an actual patient, or the cardiac safety of any drug, such as those administered in COVID-19 treatment. ELEM Biotech plans to offer the virtual human modeling it built on Oracle Cloud Infrastructure to individual medical practices and hospitals in the near future.

Why ELEM Biotech chose Oracle

Oracle offered ELEM Biotech the high-performance cloud computing capabilities it needed to optimize the use of simulations for personalized patient care. With **Oracle Cloud Infrastructure**, there's no limit to how many tests ELEM Biotech can perform on virtual human systems.

Products

Oracle Cloud Compute

Oracle Cloud Infrastructure