



Investigating Innovative Antibacterial Solutions in Egypt

Before arrival

We applied for the KTH Field Studies travel grant to carry out our project in Egypt, as it offered not only an exciting academic opportunity but also a unique chance for deep cultural immersion. For both of us, choosing Egypt meant embarking on an exciting adventure and stepping out of our comfort zones. Hassan, despite speaking fluent Arabic and having personal connections in the region, experienced Egypt in a completely new way, discovering a culture distinct from his own background. For Jannik, it was a chance to explore a new country and culture firsthand.

Before we left, we got our three-month tourist visas from the embassy in Stockholm and the needed Hepatitis A+B vaccinations. We booked an Airbnb for the first month, made sure our bank cards would work for getting cash, and read up on local customs to be ready for the culture. Learning about Egypt's amazing history just made us even more excited.

Upon arrival

We arrived in Alexandria at 2 am. Despite the late hour, Karim from the university's international relations office was kind enough to meet us and take us to our accommodation. Right away, we noticed the big differences between Egypt and Sweden. The roads in Alexandria were super busy and crowded, unlike Sweden's quiet streets. Outside the city, we saw huge, flat deserts, a big change from Sweden's green forests. The infrastructure looked different too; roads sometimes needed fixing, and the city planning seemed a bit chaotic. The city's energy felt like a lot at first, arriving so late.



We took the first day to rest and settle in. The following day, we got a warm welcome at Pharos University. Our supervisor, Dr. Alaa Khalil, introduced us to everyone in the faculty staff. They were so friendly right away and interested in our project, which helped us feel more comfortable. We were even invited early on to a faculty lunch that happens after each exam period. We received our project plan for the next seven weeks, which would be full-time work. We started by visiting the Pharmacy faculty and reading background papers for our research.

Financials

One thing we noticed quickly was that Egypt was significantly cheaper than Sweden, and our money went a lot further. Everyday things like food, local transport, and groceries generally cost about a third, or sometimes even just a fifth, of what we'd pay back home. Some imported goods, such as imported meat or Nutella, were more expensive and had comparable prices to Sweden. The scholarship we each received from KTH (15,000 SEK) turned out to be enough to cover all our main expenses comfortably: flights, accommodation, daily food, and even some travel and leisure activities on the side for 8 weeks.

Accommodation

We started our stay in the Airbnb apartment we had booked before arriving, which worked well for the first month while we found our feet. After that, we decided to move into an apartment rented directly from a local owner. Both apartments were very conveniently located, just a 10-minute walk from the university. They were also generally clean and had everything we needed for our stay. Choosing to live locally like this, rather than in a tourist hotel, was a conscious decision to immerse ourselves more fully in the daily life of Alexandria. It gave us a much more authentic experience, letting us shop at local stores and interact with neighbours.



Project



Our project aimed at improving the effect of antibiotics by combining them with electromagnetic pulses and tiny carriers called chitosan nanocarriers. Simply put, bacteria have protective membranes, making it hard for antibiotics to enter and effectively kill them. Our hypothesis was that applying very low-frequency electromagnetic pulses might temporarily make these membranes easier to pass through, potentially allowing antibiotics to enter more effectively. The chitosan nanocarriers help protect the antibiotics and deliver them directly into bacterial cells, further enhancing their impact.

A typical day involved spending most of our time at the university conducting literature research, laboratory experiments, and data analysis, frequently consulting with Dr. Alaa, who structured our activities effectively. After finishing our thesis, we plan to continue collaborating with Pharos University by publishing the results together in a scientific paper. We're hoping this research will help reduce the amount of antibiotics needed, slow down antibiotic resistance, and provide more affordable and efficient treatments, especially valuable in developing countries.

Country

Living in Egypt was an eye-opening experience in so many ways. Those initial sharp contrasts we noticed upon arrival—the sheer density of people and traffic compared to Sweden, the vast desert landscapes bordering the city, and the different ways buildings and roads were maintained—stayed with us. It constantly reminded us we were somewhere very different. We saw firsthand the significant differences in wealth and living standards compared to Sweden, which made us reflect on societal structures and the things we often take for granted, like widespread social safety nets.

But beyond the contrasts, what truly left a lasting impression was the warmth and character of the Egyptian people. We consistently encountered incredible kindness and generosity, even from strangers, and a remarkable resilience in the face of daily challenges. Experiencing Ramadan during the final weeks of our project was a particularly profound cultural immersion. We decided to try fasting alongside our new friends and colleagues, which was challenging but also deeply rewarding. The nightly Iftar gatherings, where everyone comes together to break the fast as the sun sets, were unforgettable. Sharing food, stories, and laughter around large tables created a powerful sense of community and belonging. It was during these moments, despite occasional language barriers (especially when conversations flowed quickly in Arabic!), that we felt most connected, learning to communicate through patience, gestures, and shared goodwill. It really highlighted the amazing hospitality that felt like the heart of the culture.

Leisure and social activities

Soon after arriving we formed friendships with university students who warmly welcomed us, regularly inviting us to meals, introducing us to new dishes, and playing sports together. Weekends offered us opportunities to explore Alexandria's historical landmarks, beaches, and lively markets. We regularly visited historic sites, mosques, and museums to better understand Egypt's rich history and diverse cultural heritage. Near the end of our stay, we took a memorable trip to Cairo, exploring famous landmarks such as the Pyramids and Egyptian museums.



Sustainability

The core aim of our project was to reduce reliance on antibiotics in medical healthcare, which aligns closely with the United Nations' Sustainable Development Goals (SDGs), particularly SDG 3 (Good Health and Well-being) and SDG 9 (Industry, Innovation, and Infrastructure). By exploring alternatives to antibiotics, our research seeks to combat antibiotic resistance and contribute to the development of more sustainable healthcare practices. In this way, our project supports the broader global effort to ensure better, more sustainable health outcomes for all.

During our field studies in Egypt, we faced challenges in traveling sustainably due to the country's transportation infrastructure. While there were private minibuses operating between various stations, navigating the system was difficult for us as non-locals. This led us to rely on taxis through Uber or InDrive for more convenient transportation. In Egypt, as a developing country, environmental concerns often take a backseat to more pressing issues, such as managing daily life and economic challenges. People are focused on survival and improving their living conditions, so sustainability isn't always a top priority. We did try to make conscious choices where possible, such as limiting waste and being mindful of our energy consumption in our accommodation.



Other recommendations and observations

If you're considering a similar field study, our advice is: be open-minded! Embrace the differences, be patient when things don't go as planned (which they sometimes won't!), and try to soak up as much as you can. Learning even a few basic phrases in the local language (in our case, Arabic) goes a long way; people really appreciate the effort, and it helps break the ice.

This trip was far more than just a study project. Getting used to the cultural differences take patience and effort, but the understanding, the connections, and the friendships we gained were incredibly rewarding. We came back to Sweden not only with valuable academic experience and data for our thesis but also with lasting friendships, a much broader perspective on the world, a real sense of personal growth, and a collection of amazing memories that we'll keep with us for a very long time.