The statistics for HIV/AIDS and tuberculosis (TB) in South Africa are chilling. In 2009, it was estimated that 5.7 million South Africans were living with HIV and 9.2 million with TB. Studies suggest that South Africa has the highest incidence of HIV/AIDS and the fifth highest incidence of TB in the world. While these statistics are grim, the field of nanomedicine promises to make a big difference to the treatment of HIV and TB. Saloshnee Naidoo, a nanomedicine researcher at the CSIR, states, "I was in grade 6 when I first heard about HIV/AIDS. From that time on, my dream was to become the first researcher to find a cure for this virus."

Nanomedicine Researcher

By Jeanne du Plessis

What exactly is nanomedicine?

"Nanomedicine is an emerging field of medicine that involves the application of nanotechnology for the diagnosis, treatment and prevention of disease and injury using molecular tools and molecular knowledge of the human body," she explains. Currently, Saloshnee is part of a research team designing nanoparticle-based controlled release drug delivery systems for the treatment of HIV/AIDS and TB, which HIV/AIDS sufferers are particularly vulnerable to.

A career in research

"Researchers contribute towards new scientific knowledge, develop new products or improve existing products," Saloshnee explains. In order to achieve these aims, researchers spend a lot of time on generating concepts, planning, conducting experiments and analysing the results. Along with these tasks, they also collaborate with stakeholders and fellow scientists, obtain funding for projects and disseminate their knowledge in the form of publications, patents and conference presentations.

Because of the nature of research, it's difficult to define a typical day, but it goes without saying

"HIV/AIDS and TB are national priorities in South Africa. Every day is rewarding, as we're contributing towards improving the lives of those affected by these diseases."

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Quick facts

Salary
Varies greatly according to experience and qualifications
Qualifications
A BSc in Life Sciences or Chemistry, or BEng in chemical/biomedical engineering is acceptable for research, but a Masters or PhD is preferable
Working hours
Office hours with frequent overtime
Places of Employment
Research institutes
Universities
The pharmaceutical industry
Hospitals

that every day is guaranteed to be busy. "There're many stages to research, so each day varies depending on which stage you're at. Today, I'm busy with an experiment with a four-hour reaction time. While the reaction is in progress, I'm preparing a new experiment and analysing samples. As it's important to keep up with the latest trends in the field, if I'm not conducting experiments you'll find me reading up on the latest developments and techniques in nanomedicine. On other days, I prepare presentations and reports, or attend internal meetings," Saloshnee states. While this career certainly sounds demanding Saloshnee insists, "This is a great environment to work in. Being able to explore and discover new things is always fun and exciting!"

The personality traits of the ideal researcher include an enquiring mind, out-of-the-box thinking and problem-solving skills. With such a busy schedule, time-management is crucial, and Saloshnee adds that patience, dedication and determination are essential, as it could take several years of research to transform an idea into a product. There's also the possibility that a project may be unsuccessful, even after months or years of research.

The future of nanomedicine

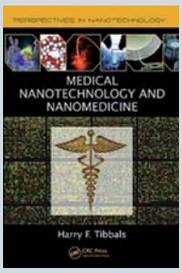
If you're passionate about science and aren't deterred by the thought of obtaining a BSc or BEng Masters, perhaps a career in nanomedicine research is the perfect choice for you. If so, you can look forward to an exciting and highly rewarding career which has the potential to dramatically improve many lives. Saloshnee states, "HIV/AIDS and TB are national priorities in South Africa. Every day is rewarding, as we're contributing towards improving the lives of those affected by these diseases."

As nanotechnology is such a new and diverse field with a vast number of applications, the future of nanomedicine will be continually exciting and ever-changing. "Knowledge is endless here. Whether you're learning about the latest trend in your field, furthering your studies, attending a skills development course or discovering the mechanisms of an instrument to conduct your analyses, you're always learning something new," she says.

Saloshnee concludes, "My motto in life is 'I would rather fail at success than achieve anything less than the best'. If you're passionate about something, you should pursue it; if you don't try, you'll never know!" ■

Read about it

Medical Nanotechnology and Nanomedicine
Author: Harry F. Tibbals



A highly accessible overview of alternative and conflicting concepts in the rapidly developing nanotechnology revolution, this friendly guide reviews current research and development in nanoscience and illustrates the accomplishments and possibilities for application in nanomedicine. Providing an introduction to the science and infrastructure, it offers clarity and understanding to the medical professional and layperson alike. Divided into three parts, the first presents an historical background including definitions and recent trends. The second investigates the current status of the field and its application to medicine and the biomedical sciences. The third looks at future directions and possibilities.

Review by Kalahari.net

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Interesting websites

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