

Smoking chimneys and chemical waste streams are side effects of modern living standards. Can we find more environmentally friendly alternatives from Mother Nature in the form of enzymes?

Who can help us unlock the potential of enzymes in our factories, for nutrition and for medicines?

The Enzymologist!

Meet Bethuel Nthangeni,

Research Scientist at the CSIR in Johannesburg

BSc (Biochemistry, Microbiology and Physiology),

BSc Hons

(Biochemistry),

MSc (Biochemistry),

PhD (Biochemistry)

... the future:

“Most people do not understand the potential of enzymes! I believe we will get to a future where enzymes will have replaced chemical synthesis of products! No more chimneys with dark smoke!”

... career satisfaction:

“Sometimes you have to dig really hard into your intellectual resources to get an enzyme to perform a certain job. Once you do – especially if it has commercial value – it feels great!”



What does Bethuel do?

Enzymes, which are a type of protein that speed up biological reactions (catalysts), are found in every living thing (plants, animals, humans, insects and microbes). Enzymes are made in the cells, according to their specific genetic recipe. To work, an enzyme needs a very specific target called a “substrate” with which it matches like a key fitting into a lock. Like other catalysts, an enzyme does its job without being used up or destroyed, but being a protein, it is completely biodegradable. Some enzymes found in nature work at very high or low temperatures. All of these factors make enzymes good environmental-friendly alternatives to chemical methods used for making products.

Bethuel’s research aims at finding and making enzymes of the highest quality for use in the pharmaceutical industry. He is also interested in enzymes from extreme environments (extremophiles) that occur, for example, very deep under the ground in the South African goldmines, for use in chemical and food industries.

What do I need to become an enzymologist?

Characteristics: Natural curiosity about all living things, good observation and analytical skills, patience

Important school subjects: Mathematics, Biology, Physical Science

Relevant training and qualification:

B Tech - Biotechnology, M Tech – Biotechnology; BSc – Biochemistry/Natural Sciences/Biological and Life Sciences/Biotechnology/Microbiology/Molecular and Cell Biology/Chemical and Biological Sciences or similar

Note: You need an MSc or PhD for higher positions in lecturing and research

Where can I find a job as an enzymologist?

Pharmaceutical, food, brewing and agrochemical industries, research organisations, universities, medical research institutes, vaccine producing companies

Related careers:

Biochemist, Molecular Biologist, Molecular Geneticist, Microbiologist, Cell Biologist, Bioprocess Engineer