

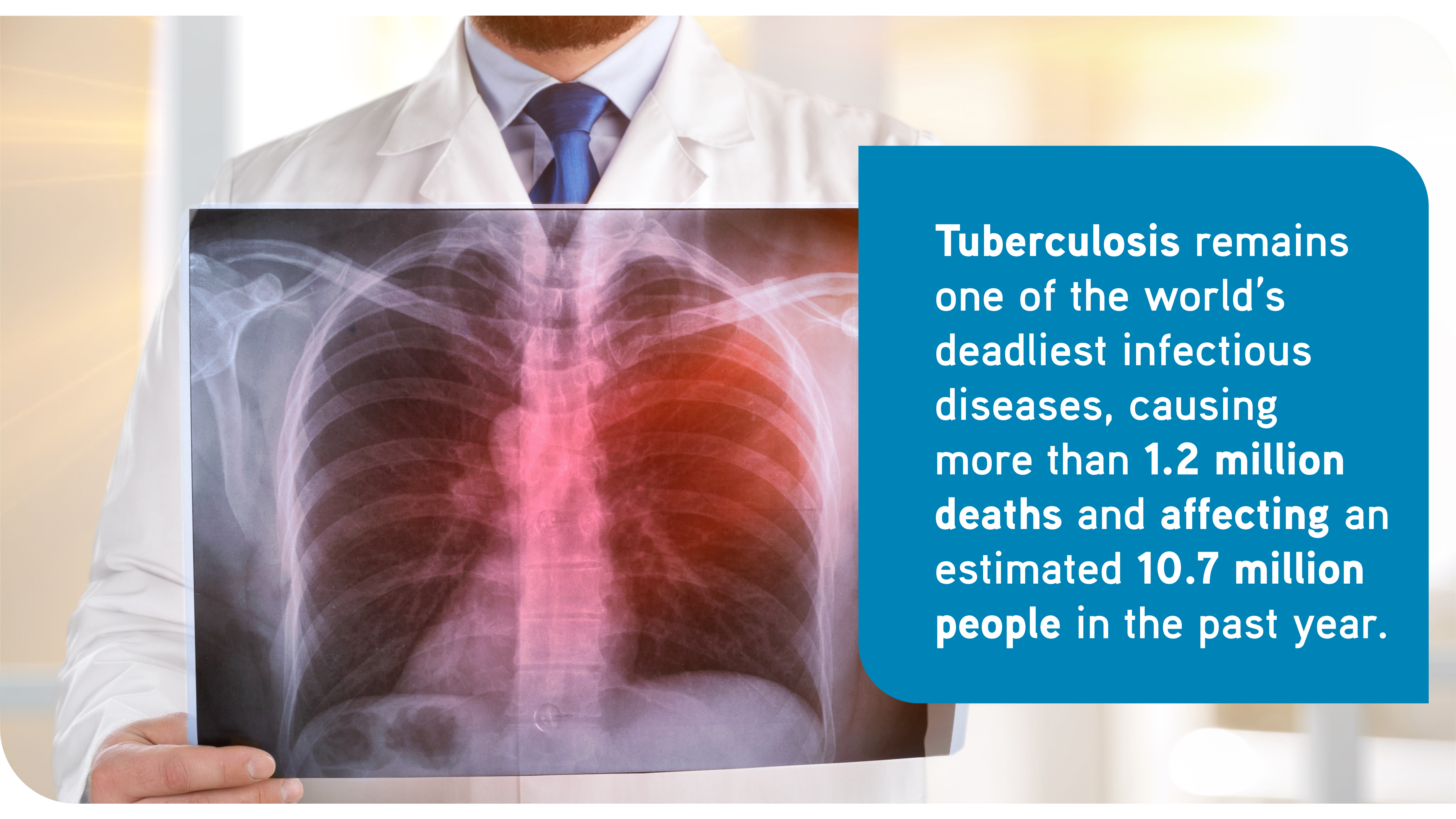
Meet the scientists exploring fungus-derived peptides to fight tuberculosis

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Koehler**



Tuberculosis remains one of the world's deadliest infectious diseases, causing more than 1.2 million deaths and affecting an estimated 10.7 million people in the past year.

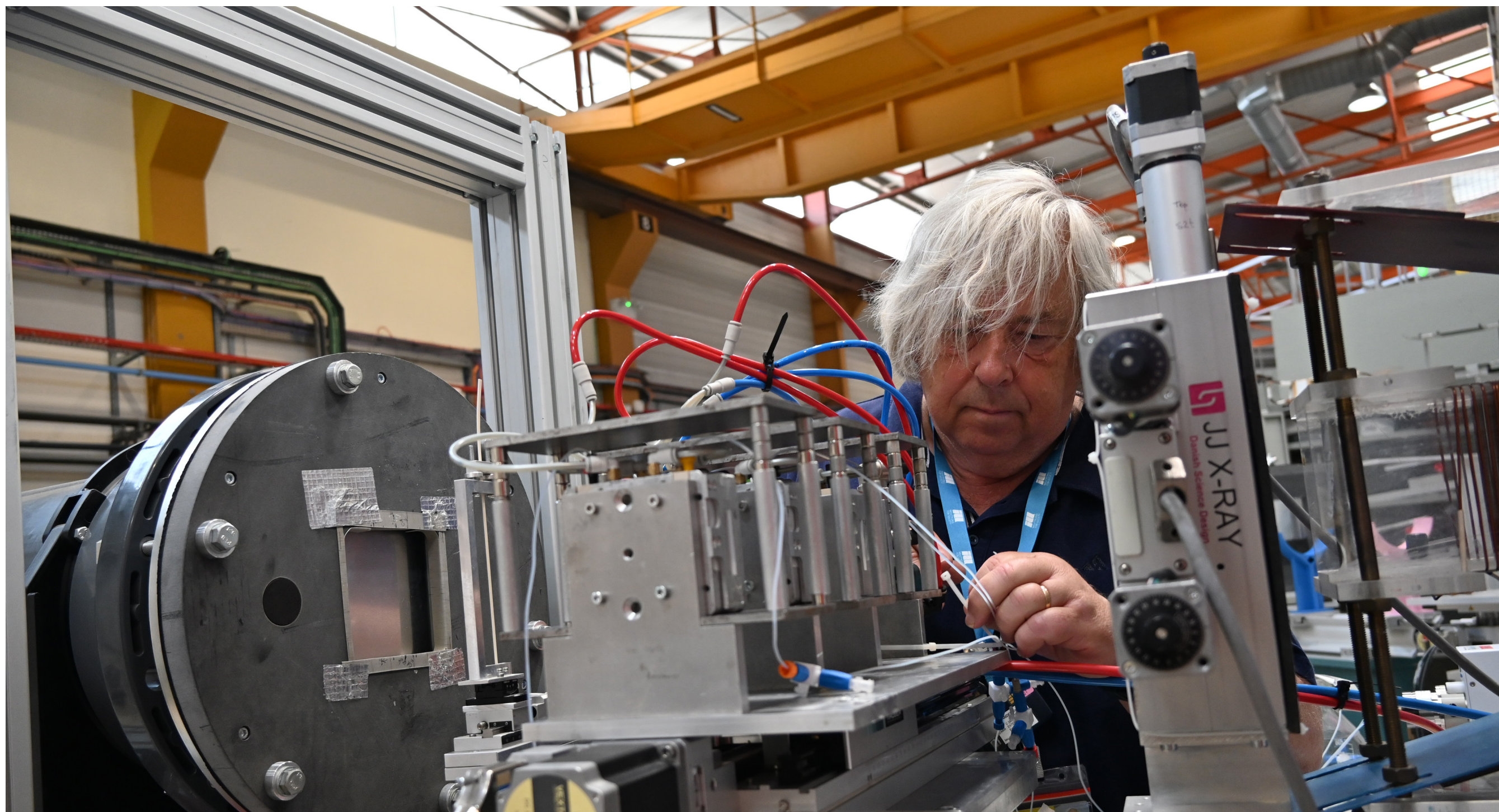
A close-up, microscopic view of numerous purple, rod-shaped bacteria. The bacteria are elongated and have a textured, slightly granular surface. They are scattered across the frame, with some in sharp focus and others blurred in the background, creating a sense of depth. The overall color palette is a range of purples, from deep magenta to a lighter, almost white, lavender hue.

As multidrug-resistant strains spread, scientists are searching for new ways to fight the bacterium, including antimicrobial peptides inspired by nature.

One promising candidate is NZX, a non-toxic antimicrobial peptide derived from the fungal peptide plectasin, originally isolated from *Pseudoplectania nigrella*.

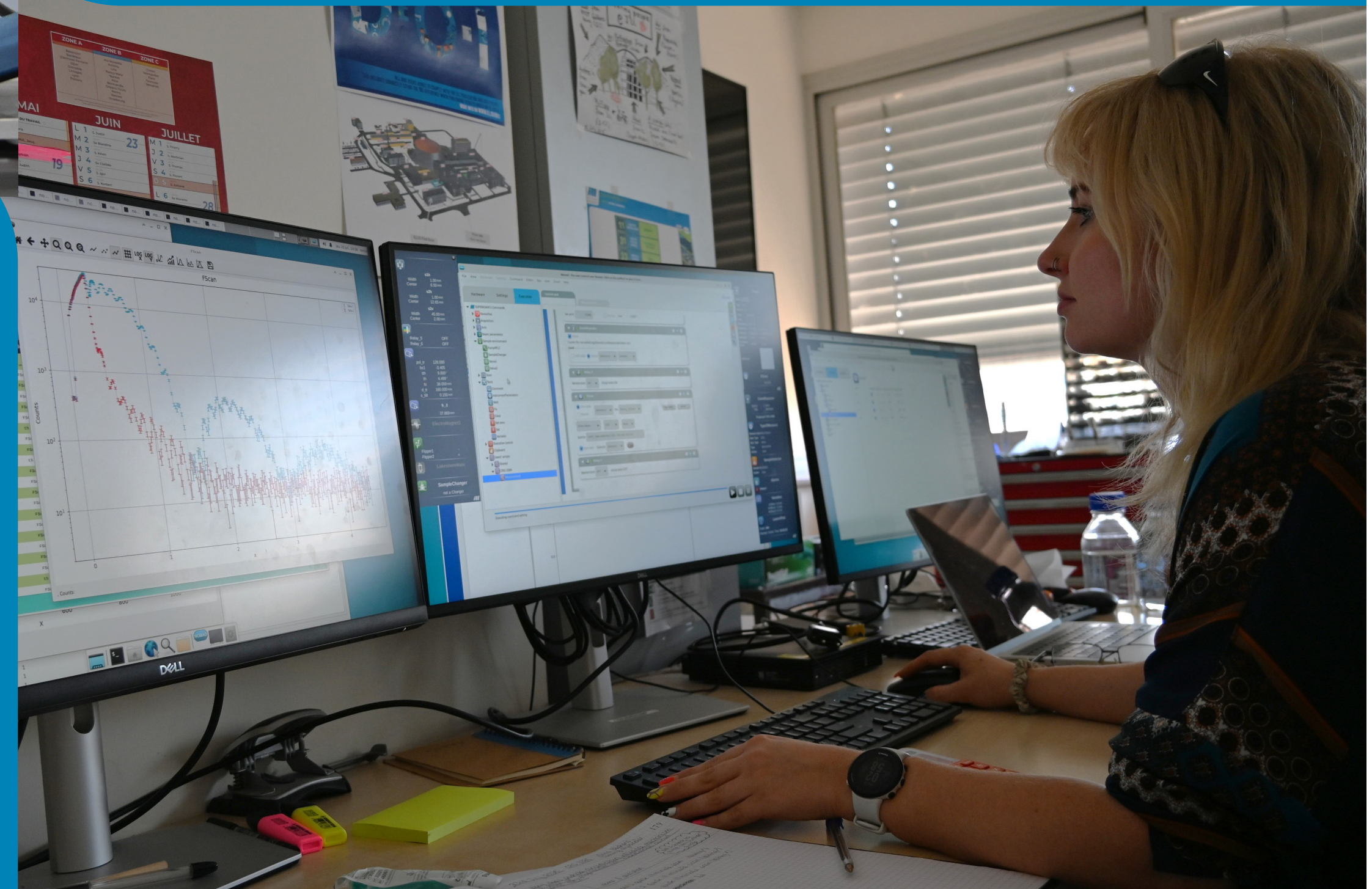
NZX can kill *Mycobacterium tuberculosis*, but how it damages the bacterial envelope remains unclear.





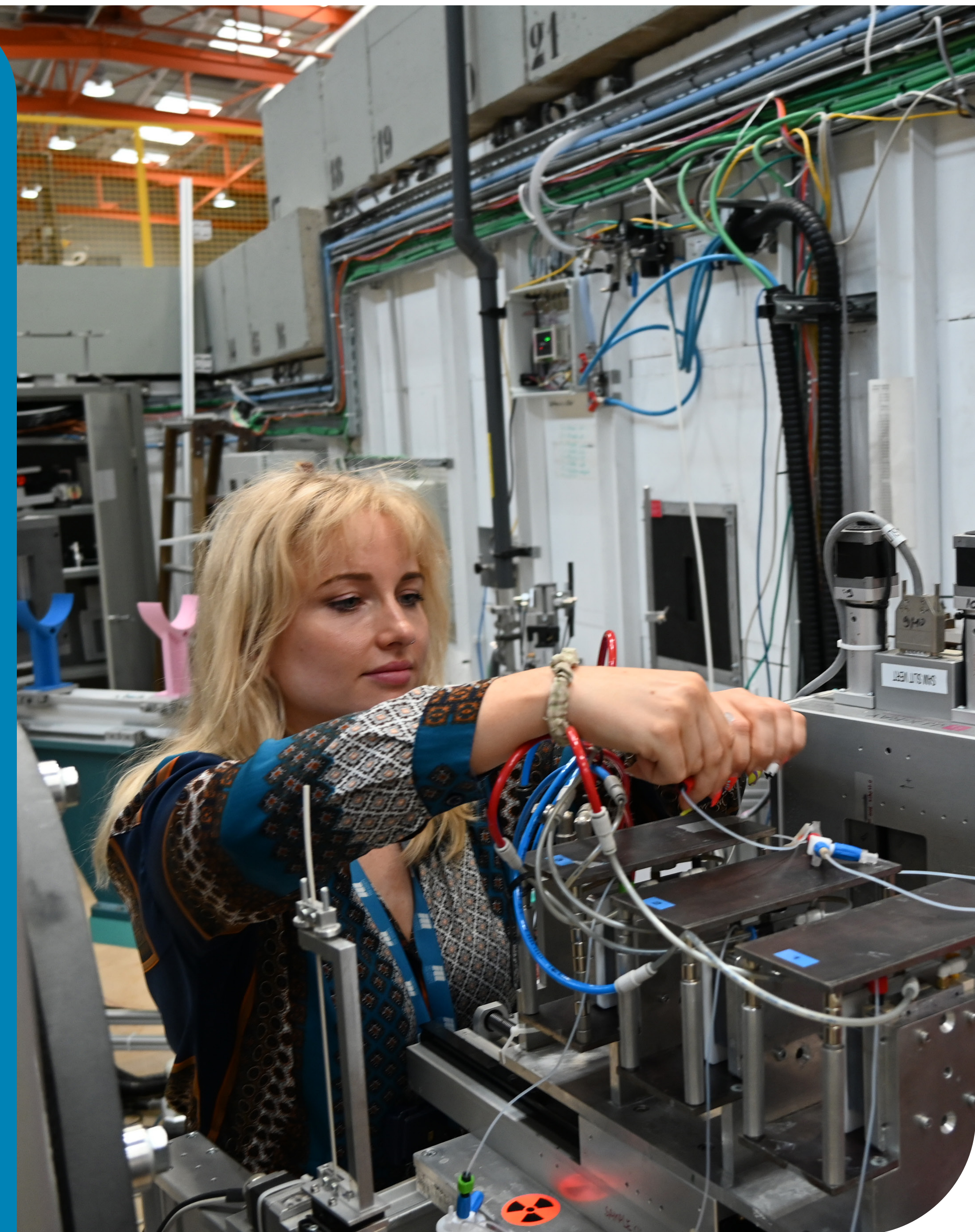
On SuperADAM, the team uses neutron reflectometry to look inside model bacterial membranes as NZX interacts with them.

By comparing two peptide concentrations, they can test whether NZX simply binds to the membrane or begins to penetrate, and destabilise it.



“ The question is how deeply NZX enters the membrane, and how the bilayer responds. **Polarised neutron reflectometry** gives the extra contrast needed to resolve these subtle changes without altering the biological sample. Combined with solvent and chain-deuteration contrasts, it allows us to locate NZX and measure changes in membrane thickness, roughness and hydration. ”

Anna Stephens



New treatments do not begin in the clinic.
They begin with understanding.

By revealing how promising molecules like NZX work,
why they work and how they might be made more
effective, researchers take one of the first essential steps
toward future treatments for drug-resistant disease.

