New protocol to detect three species of Legionella in just eight hours

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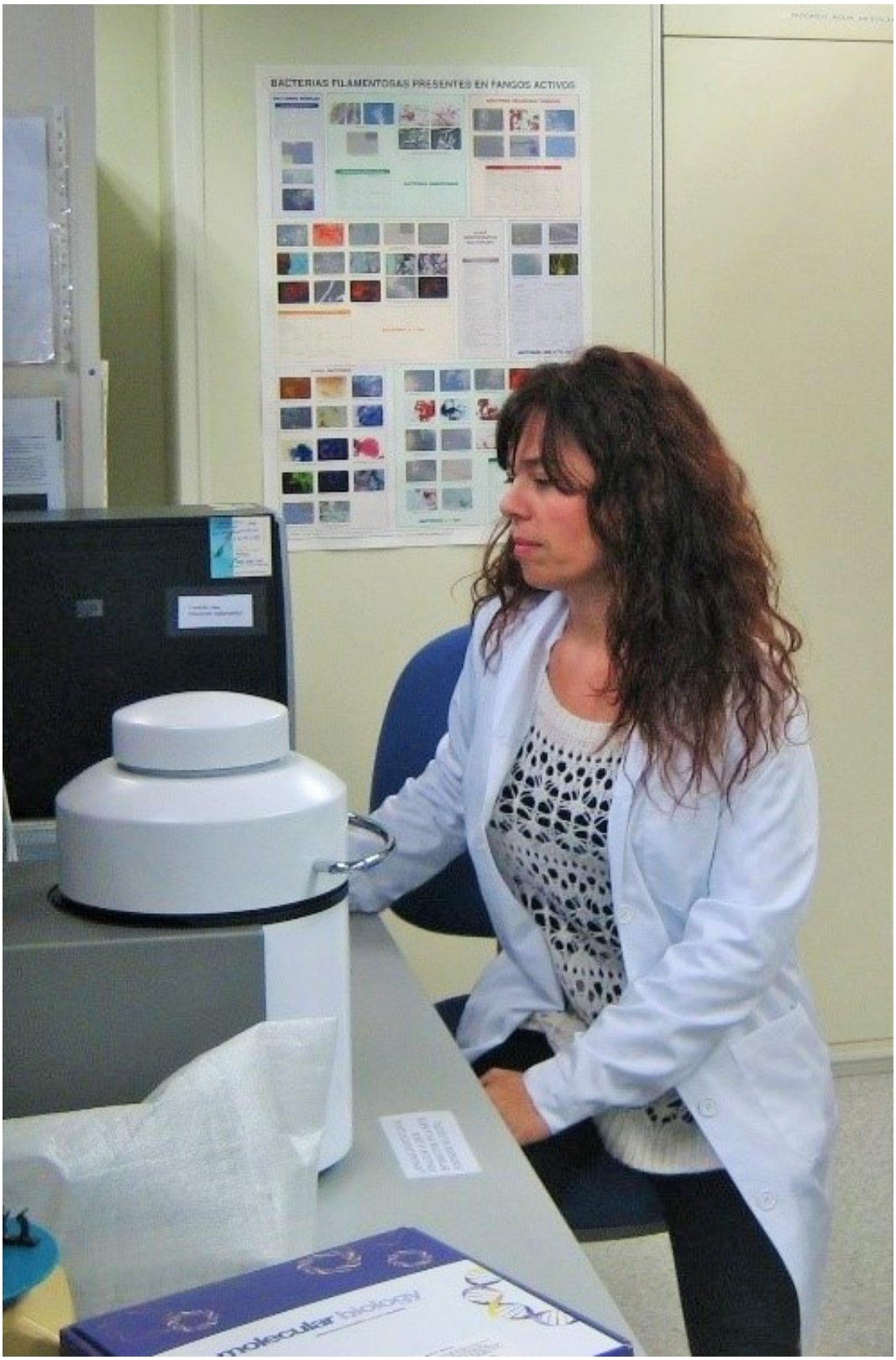

Yolanda Moreno at the IIAMA-UPV laboratories

Scientists at the Polytechnic University of Valencia have developed an innovative protocol for the detection of the three most prevalent Legionella species, enabling the source of the infection to be located in just eight hours. The breakthrough lies in the combined use of a multiplex polymerase chain reaction (Multiplex PCR) and pre-treatment with propidium monoazide (PMA).

The study, carried out at the Universitat Politècnica de València (Polytechnic University of Valencia, UPV), was part of a final year dissertation supervised by researchers Yolanda Moreno Trigo and Jorge García Hernández at the university's Institute of Water and Environmental Engineering (IIAMA). Initially based on a study carried out by a Japanese research group aiming to detect as many as four Legionella species simultaneously, UPV researchers found that this approach was not viable and began devising a protocol for just three species: L. pneumophila (the bacteria responsible for 90% of human Legionella cases), L. micdadei and L. longbeachae.

The new protocol combines the use of Multiplex PCR and pre-treatment with PMA. Moreno Trigo explains: "We concentrated the sample, broke the bacteria in order to extract its DNA and then used Multiplex PCR to identify the different Legionella species". Multiplex PCR amplifies the DNA of the target species, making it easier to identify them. "Pre-treatment with PMA allows us to immediately discard the DNA of the dead cells, which we are not interested in", she adds.

The new protocol brings detection time down from 14 days to just eight hours, which is a marked improvement on the most commonly used detection method.

It can also be used successfully in very contaminated samples, where existing methods cannot.

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