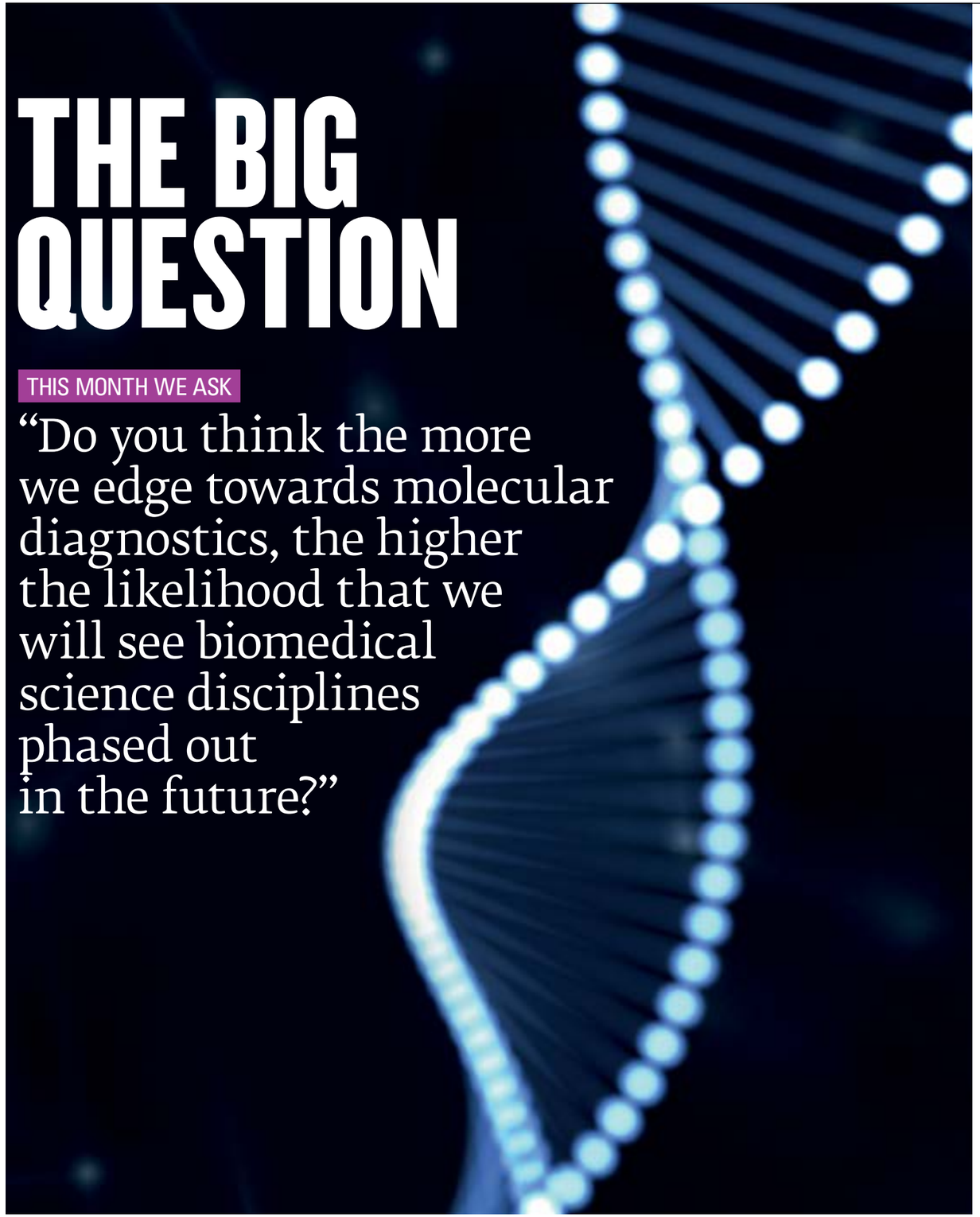
# THE BIG QUESTION



THIS MONTH WE ASK

"Do you think the more we edge towards molecular diagnostics, the higher the likelihood that we will see biomedical science disciplines phased out in the future?"

IMAGE: ISTOCK

## Gary Reynolds

**Cellular Pathology Lead Scientist**
**Liver Unit, Queen Elizabeth Hospital, Birmingham**

Beginning my biomedical scientist journey, I was one of the last to benefit from rotation through all disciplines before specialising. At that time, rotation was regarded as a key underpinning component of training in biomedical science. Prior to this, it was not unusual for biomedical scientists to take specialist examinations in two disciplines. The transferable, generic skill sets we learned are, I believe, essential to a well-rounded education as a biomedical scientist. Molecular diagnostics should be a natural, evolutionary extension of our academic and technical armoury, to be embraced and not seen as an emerging separate field that could ultimately lead to the demise of existing disciplines.

Screening programmes for cytology and HPV are perhaps one example. It is my belief that HPV testing could be encompassed within extended roles for cytology staff; PCR is now routine and perhaps less challenging than the interpretation of cervical smears. It is unlikely, in the short- to medium-term, that the expert skills of cytologists will become obsolete. The biology of disease is complex, the genetic and epigenetic landscape is but a piece of the jigsaw and we don't know how the complete picture will finally look. The big questions will take years to unravel and should be the remit of biomedical scientists, requiring a strong discipline-specific knowledge, capable of understanding disease and the skills to implement new tests and clinical interpretation.

## David Muskett

**Cellular Pathology Service Manager**
**Pathology at Wigan and Salford**

I think the short answer is no! The longer answer is no, not in the way we use laboratories, current technology or diagnostic pathways. Use of molecular diagnostics is rapidly increasing, but it is being used specifically within each laboratory discipline. Molecular diagnostics are being used as a tool to answer specific diagnostic questions – for example, to identify positive COVID samples, or specific genetic mutations.

Looking at this from my own discipline, cellular pathology, it depends on a range of sample types and initial analytical tests, which preclude homogenisation of the laboratory service with those of other areas. Each discipline has a separate pre-analytical pathway and, from the current position, it is difficult to merge.

It is important to bear in mind samples from patients are not just for diagnostic purposes, but may be removed for therapeutic purposes; this does not work with a molecular-only approach. The slightly different "bias" of each department in their scientific and analytical approach is a protection for patients under their care. This specific aspect of patient care is not something we should discard lightly, or without great thought. Integral to the use of the tests is the appropriate use of clinical interpretation.

It is possible in the future that a laboratory will receive a sample, and the result will pop out later, following molecular testing, but not yet and probably not for some time to come.

## Siobhan Taylor

**HER2 and Molecular Pathology Lead Scientist**
**Gloucestershire Hospitals NHS Foundation Trust**

No. Speaking from a cellular pathology perspective, rapid advancements in molecular diagnostics are revolutionising cancer care. We can give improved diagnostic and prognostic information, provide information to enable clinicians to give personalised treatment as well as monitor the effects of treatment and give an early indication of disease relapse.

But histological diagnosis underpins molecular diagnostic testing; all of this can only be performed after the diagnosis of the type of tumour a patient has, which is not always possible from patient examination or clinical assessment.

Many scientists working in cellular pathology labs already have the required skill sets to assess and prepare patient samples for molecular diagnostic testing, or work closely alongside consultant colleagues to receive training in this area. We have the appropriate knowledge and skill sets to either deliver rapid in-house testing on easy-to-use platforms, or deliver specimens for more complex testing at centralised locations. In some instances, immunohistochemistry remains a cheap and rapid alternative to DNA and RNA extraction. For specimens with limited remaining material, this can be the difference between gaining some useful information to enable treatment options or patient re-biopsy.

This is an opportunity for healthcare scientists to extend their knowledge and skills and expand their scope of practice.