MARSHALL®
BIORESOURCES

Understanding NAMs: Progress, Potential & Limitations

WHAT ARE NAMS?

As it applies to research, a NAM can refer to a non-animal method, new approach method, or novel alternative model. The acronym represents a class of technologies designed to mimic human and animal tissues and organ response to disease and drugs, with the intent of reducing the reliance on human and animal testing.

WHAT ARE THE MOST COMMON TYPES OF NAMS?

- In vitro methods, which use lab-grown cells. These include organoids that attempt to represent the functions of organs such as the liver or brain.
- In silico methods, which use algorithm-based computer simulations to predict response.
- Chemical techniques that evaluate biological molecule interaction outside of an organism.
- Organ-on-a-chip, which fuse cells to digital devices with the intent of mirroring the mechanics and biology of organs like the heart or lung.

ARE NAMS EFFECTIVE?

In some narrow domains, NAMs are now accepted instead of traditional animal-based tests. These include specific types of skin sensitization, skin corrosion, and eye irritation, with progress in areas such as liver toxicology. However, they cannot yet replicate complex pharmacokinetic, immunology, or multi-organ interactions—all critical factors to ensure the safety of drugs and devices.

WHEN WILL NAMS REPLACE ANIMAL TESTING?

Although that is impossible to predict, there continue to be outstanding improvements in NAMs thanks to the scientific and research communities. While most regulatory agencies are advocates for NAM development, very few accept NAM-only data for comprehensive safety reviews. NAMs and animal models will continue to complement each other for the foreseeable future in the interest of human and animal health.

DOES MARSHALL BIORESOURCES USE NAMS?

Marshall does not conduct pharmaceutical or medical device testing with our animals. We support NAM use by our customers, and we are an advocate for continued progress in this area to help advance science and health.

WHERE CAN I LEARN MORE?

A recent commentary published in *Nature* by **K. C. Kent Lloyd**, professor and NAMs expert at the University of California, Davis, offers balanced information and perspective.

Dr. Lloyd can be reached at kclloyd@ucdavis.edu.