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Lost in Translation: Why the Rush to Impact is Starving Fundamental Science

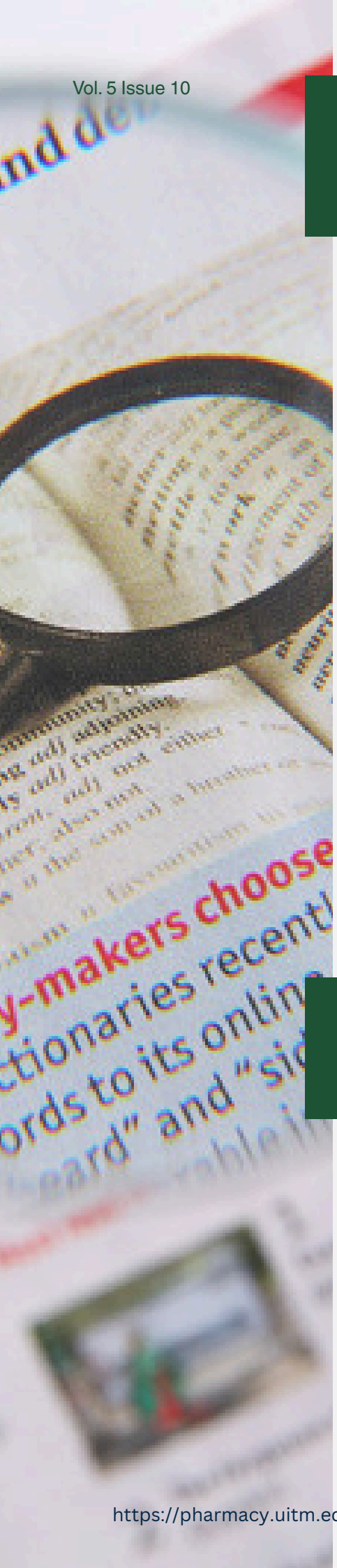
By Fazleen Haslinda Mohd Hatta

All of us want our research to matter. Today, however, the academic ecosystem demands that we prove that it matters immediately. We are increasingly pushed to think beyond publications. Grant applications require exhaustive 'pathways to impact' statements. Grant committees probe us on commercialisation, technology transfer, and intellectual property potential. The prevailing narrative is clear: research must evolve quickly from laboratory to clinic, and from university to industry.

These are vital goals. We absolutely must pursue translational research. But in the systemic rush to monetise and apply our findings, the academic ecosystem has created a structural trap. We are increasingly mandated to translate our science before we are funded to fully understand it.

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The Systemic Mandate to Translate

The narrative that researchers are simply too enthusiastic to move to translation ignores the economic reality of modern academia. The rush is rarely born of scientific impatience; it is a survival mechanism.

Early-career researchers face two-to-three-year grant cycles and unforgiving year-by-year performance evaluations. If a young investigator pitches a proposal based purely on fundamental biological curiosity with no immediate product or patent in sight, they are likely to face rejection from major funding bodies. Universities, increasingly reliant on industry partnerships and patent portfolios to offset shrinking public funding, structurally reward the applied over the foundational.

We cannot expect researchers to slow down and take the time to understand when their livelihoods and labs depend on proving immediate, translational utility. If we want better translational science, we have to look closely at the bedrock it stands on and the system that funds it.

The Cost of Skipping the Foundation

To appreciate what we risk when we starve fundamental research, consider an example from pharmacogenetics. This discipline mainly asks why the same medicine, at the same dose, triggers a severe adverse reaction in one patient while doing nothing for another.

For years, clinical trials focused on the patient, the disease, and the drug. But the answers lay deeper in fundamental biology.

Early work on the cytochrome P450 enzyme CYP2C9 explored how genetic variation, environmental factors, and ethnicity influence enzyme activity. At the time, these were questions of biological curiosity. Yet, before we could develop today's commercially viable genetic tests for precision medicine, we needed to know which genetic variations actually mattered. We needed the fundamental knowledge that dictates what to measure and how to interpret the results.

We see this same tension today with CRISPR/Cas9. The ability to precisely modify genetic material has revolutionised our toolkits. But the availability of a sophisticated tool creates a dangerous temptation to ask, what can we do with it? Before asking, what are we looking at? Before we edit a gene to cure a disease, we must understand its biological pathways, its unintended systemic consequences, and whether our experimental models accurately reflect human biology. Technology gives us the ability to intervene. Fundamental research gives us the knowledge to intervene wisely.



Embracing Use-Inspired Basic Research

The solution is not to view fundamental and translational research as opposing forces, nor as a strictly linear pipeline where one must end before the other begins.

Instead, the academic community must embrace use-inspired basic research. The COVID-19 messenger RNA (mRNA) vaccines were an astonishing feat of rapid translation, but they were built on decades of foundational lipid nanoparticle and RNA biology research. That foundational work was deeply fundamental, yet it was driven by the long-term desire to solve applied problems. Translation often reveals systemic mysteries that send us back to the bench; unexpected bench observations routinely open doors to unimagined applications.

If we want robust, safe, and effective translational outcomes, asking researchers to simply be more curious is insufficient. First, we must change the institutional incentives. Funding agencies must carve out protected, long-term funding streams (3–5 years) explicitly for foundational research, stripping away the requirement for immediate commercial impact statements. Second, university promotion committees must recognise and reward the creation of essential foundational datasets, experimental models, and biological characterisations with the same weight given to patents and commercialisation outputs. Third, universities should provide gap funding and structural support that allows researchers to deeply characterise a mechanism before forcing them to pitch it to investors.

The next generation of researchers will inherit a world desperate for scientific solutions. Let us ensure they inherit an ecosystem that allows them to do good science. The strongest translation does not begin by asking: What can we commercialise? It begins by asking: What do we truly understand, and how far can that understanding take us?
When we fund the understanding, the impact will follow.