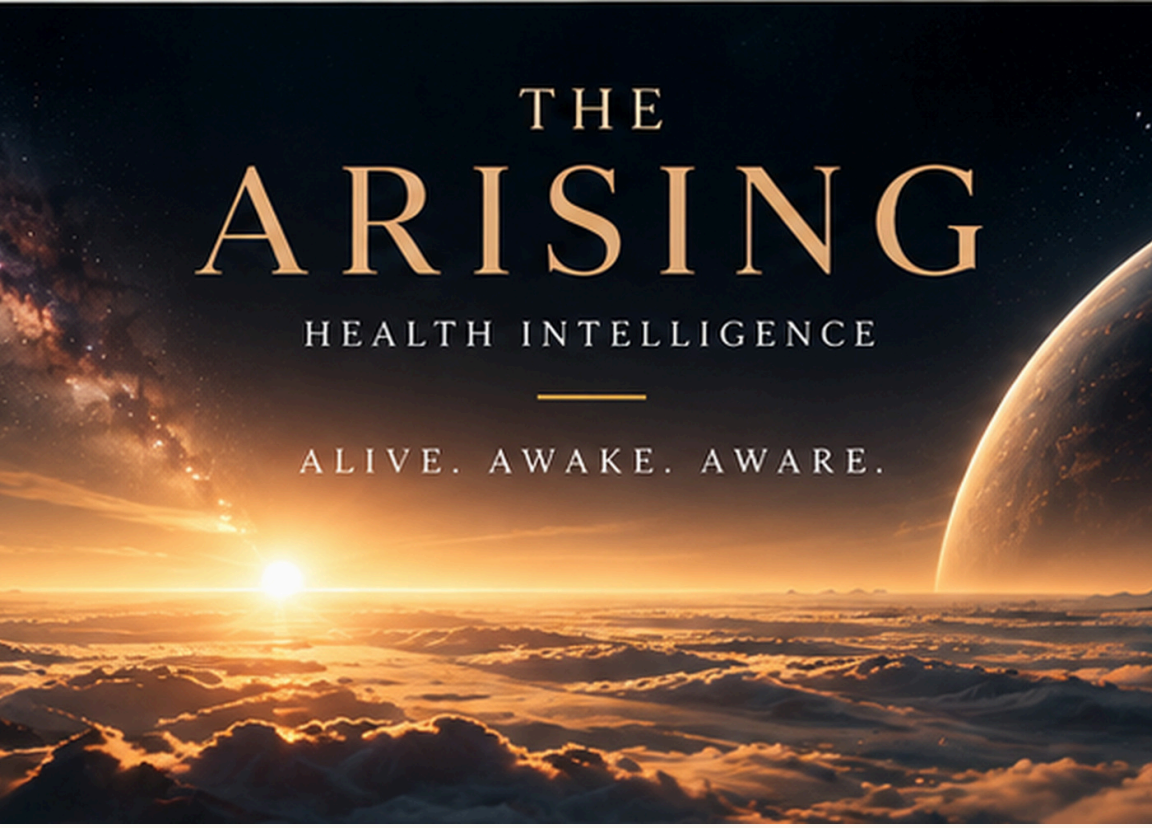


35 / INTELLIGENCE AND DISCOVERY

The Laboratory That Learns

Automated experiments, corrected discoveries, and why faster science still needs criticism.

JOHN GRIFFIN, MD

REVIEW EDITION · OCTOBER 2026

Close the loop carefully

A self-driving laboratory connects a proposed experiment, an automated action, a measurement, and a decision about what to try next. Its appeal lies in repeating that cycle more efficiently.

The loop is only as useful as its measurements and objectives. If a system rewards the wrong result, greater speed can produce more of the same error. Scientific oversight remains part of the process.

Two examples of the idea

The mobile robotic chemist reported in 2020 combined physical experimentation with algorithmic search in a defined photocatalysis problem. [1] The A-Lab materials platform later combined calculations, literature-derived recipes, robotics, and active learning to pursue synthesis targets. [2]

The A-Lab record also shows why corrections matter. A 2026 correction clarified that the original novelty language did not necessarily mean new to science. Reanalysis supported 36 of 40 reported successes, with four inconclusive; one additional compound had been mistakenly included in training data and was removed from discussion. The original “41 novel compounds” headline should not be repeated without this correction. [3]

A correction is part of the evidence

The correction changes the account of what was established. It does not erase the broader idea of automating experiment selection and execution. It makes the need for trustworthy identification, transparent data, and outside scrutiny concrete.

A useful benchmark should report failed experiments and ambiguous results as well as successful ones. It should also

distinguish a material's novelty to a dataset from novelty to science.

Speed should buy understanding

The most valuable laboratory may be the one that answers a difficult question with fewer wasted experiments, not simply the one that performs the largest number. Human expertise still helps choose the question, inspect surprising results, and recognize when the system's assumptions no longer fit.

For readers, the practical test is whether a claim survives contact with its methods, data, corrections, and independent examination. The field can remain ambitious while becoming more exact. A laboratory that learns should also be a laboratory that can be corrected.

SOURCES & READING SCOPE

Keep the claim beside its evidence

1. Benjamin Burger, Phillip M Maffettone, Vladimir V Gusev, et al. A mobile robotic chemist. Nature. 2020 Jul;583(7815):237-241. doi:10.1038/s41586-020-2442-2. PMID:32641813. Open source →

2. Nathan J Szymanski, Bernardus Rendy, Yuxing Fei, et al. An autonomous laboratory for the accelerated synthesis of novel materials. Nature. 2023 Dec;624(7990):86-91. doi:10.1038/s41586-023-06734-w. PMID:38030721. Open source →

3. Nathan J Szymanski, Bernardus Rendy, Yuxing Fei, et al. Author Correction: An autonomous laboratory for the accelerated synthesis of inorganic materials. Nature. 2026 Feb;650(8100):E1. doi:10.1038/s41586-025-09992-y. PMID:41554984. Open source →

Selected primary publication records and abstracts checked 25–26 October 2026. This is a focused reading companion, not a systematic review, a treatment protocol, or a complete appraisal of methods, supplements and later evidence. The 2026 A-Lab author correction was read in full; the correction governs the relevant claims.

KEEP FOLLOWING THE IDEA

Part of a connected collection

Return to a subject, follow a related booklet, or explore the wider projects. These links organize reading; they do not imply that one scientific finding proves another.

This booklet online →

Booklet directory · all 48 →

Atlas · Lab automation and self-driving labs →

Arising Health website →

The Arising book →

The Long Game →

Listen & watch →

Related booklets

34 · When Intelligence Gets Hands →

32 · Molecules We Could Not Previously Make →

45 · Arising Intelligence →

The online review collection is hosted in the shared Atlas. Its existing access settings apply. The public website remains a separate destination.