

Two AI-based science assistants succeed with drug-retargeting tasks



Taking those summaries, Robin then formed a series of hypotheses about disease mechanisms for macular degeneration and used these tools to provide a detailed report on the evidence for each mechanism. An LLM judge then made pairwise comparisons among the hypotheses, which resulted in relative rankings—a bit like Google’s tournament system.

In a similar manner, the system was redeployed to suggest cell lines and culture conditions that could provide a model of macular degeneration, and it prepared reports on 30 candidate drugs. “These reports contained both justification for why each drug is suitable for mitigating the disease mechanism represented in the in vitro model and potential limitations the drug may pose,” according to the FutureHouse team. Again, these reports were evaluated by human experts to determine which tests to go ahead with.

Robin also suggested assays to test the drugs, which humans evaluated (in most cases, it appears they used variants of the suggested ones).

The key difference with Robin is that it includes a tool, Finch, that can automate the evaluation of data from some standard biological screening assays, like flow cytometry and RNA-seq. So, as long as your tests involve one of the assays that Finch can handle, then there's an additional step that can be performed by the system.

As above, Robin came up with a novel hypothesis: Increasing the ability of retinal cells to pick up debris outside the cells could provide some protection against the disease. And it identified a drug that seemed to provide just that sort of boost in the experiments it proposed.

As Google found, having tools designed specifically to interface with the scientific literature mattered. Swapping out Crow for OpenAI's o4-mini took the rate of hallucinated references from zero percent all the way up to 45 percent. FutureHouse also took a look at the performance of OpenAI's research-focused tool and found that, in all cases where it suggested drugs that Robin hadn't come up with, those drugs failed to have an effect on these cells.

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