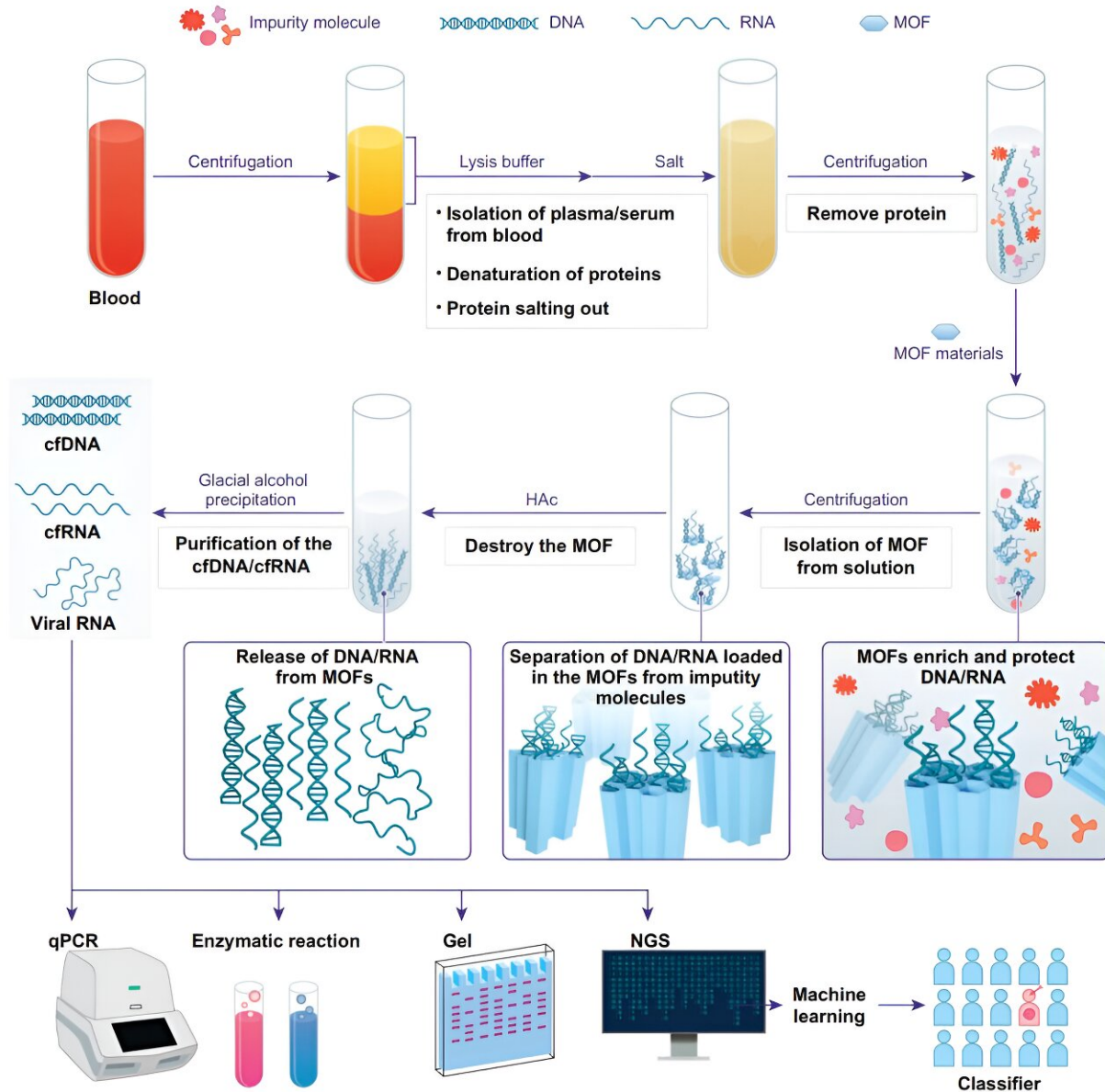


# Revealing characteristics of circulating cell-free RNA in the blood of liver cancer patients

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MOF materials efficiently enrich circulating nucleic acids (cfDNA and cfRNA) in blood through a simple operational process, enabling various downstream nucleic acid detection techniques including PCR, gel electrophoresis, sequencing, etc., thereby providing technical support for liquid biopsy. Credit: Science China Press

Recently, the research findings of the team led by CAS Academician

Xiang Zhou from Wuhan University were [published](#) in the *National Science Review*. The team successfully developed an efficient technique for enriching trace amounts of circulating nucleic acids in blood.

Early diagnosis of diseases can significantly improve clinical treatment outcomes and survival rates. Circulating cell-free nucleic acids in blood represents a promising avenue for non-invasive early disease diagnosis.

However, the lack of efficient tools for obtaining cell-free [nucleic acids](#) has been a challenge. The team developed a blood-circulating nucleic acid enrichment technique based on MOF ([metal-organic framework](#)) materials, which exhibited higher enrichment efficiency compared to commercial reagent kits and prevented RNA degradation.

Additionally, the team applied this technique in combination with high-throughput sequencing and bioinformatics analysis to identify cell-free RNA serum biomarkers for non-invasive diagnosis of [liver cancer](#). They constructed a detection model to identify liver cancer, which achieved a diagnostic accuracy of 90% when validated in another sample cohort, demonstrating its potential for non-invasive liver cancer diagnosis.

**More information:** Yuqing Sun et al, Method for the extraction of circulating nucleic acids based on MOF reveals cell-free RNA signatures in liver cancer, *National Science Review* (2024). [DOI: 10.1093/nsr/nwae022](#)

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