

Opportunities you do not want to miss and risks you cannot afford to take in urine biomarker era

Abstract

Change is the most fundamental characteristics of biomarker. Urine is a better biomarker source because it lacks homeostasis mechanism. There are huge amount of clues accumulated in biomarker studies in blood. New intellectual properties can be produced if any of the biomarkers works better in urine. There are great opportunities and risks in the coming urine biomarker era.

Keywords: urine, biomarker, opportunities, risks, intellectual property

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The fast development of proteomics and bioinformatics started early last decade ignited the hope that biomarkers would be discovered in bulk. But the hope has not been turned into reality. Is that because the sensitivity is not high enough or have we been looking for them at a wrong place? Change is the most fundamental characteristics of biomarker, but changes in the blood cannot be tolerated for long before being removed by homeostasis mechanisms of the body. On the contrary, urine, by accumulating all kinds of changes, may prove to be a better source for biomarker discovery. There have been at least a few examples showing the same biomarker working better in urine than in blood.¹⁻⁵

If the above analysis holds true, there will be a new era for biomarker development-the urine biomarker era. There will be great opportunities that anybody in the biomarker field does not want to miss. There are huge amount of clues accumulated in 300,000 papers in the past few decades for biomarkers in blood. Only a very small fraction of those papers had the word “urine” in them, which implies that those biomarkers have probably never been tested in urine. Researchers and/or companies in biomarker field may easily take advantage of the free information and try to validate them in urine. New intellectual properties can be produced if any of the biomarkers works better in urine. There are great chances of finding a considerable numbers of new biomarkers in a rather short period of time.

Biomarker researchers who insist on working only in blood may face great risks of losing the value of their findings in blood, if somebody else validates them in urine independently. Although there are blood-only biomarkers, having a comprehensive validation protocol will help eliminate any possible loopholes.

There are great opportunities and risks in the coming urine biomarker era.

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Conflict of interest

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