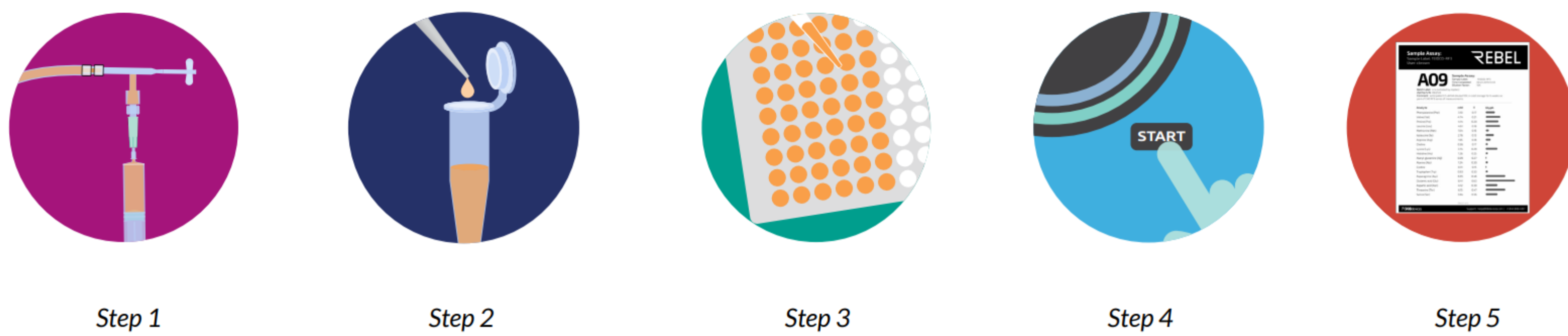


An at-line analyzer capable of quantitating amino acids, vitamins, amines, and dipeptides from cell growth media

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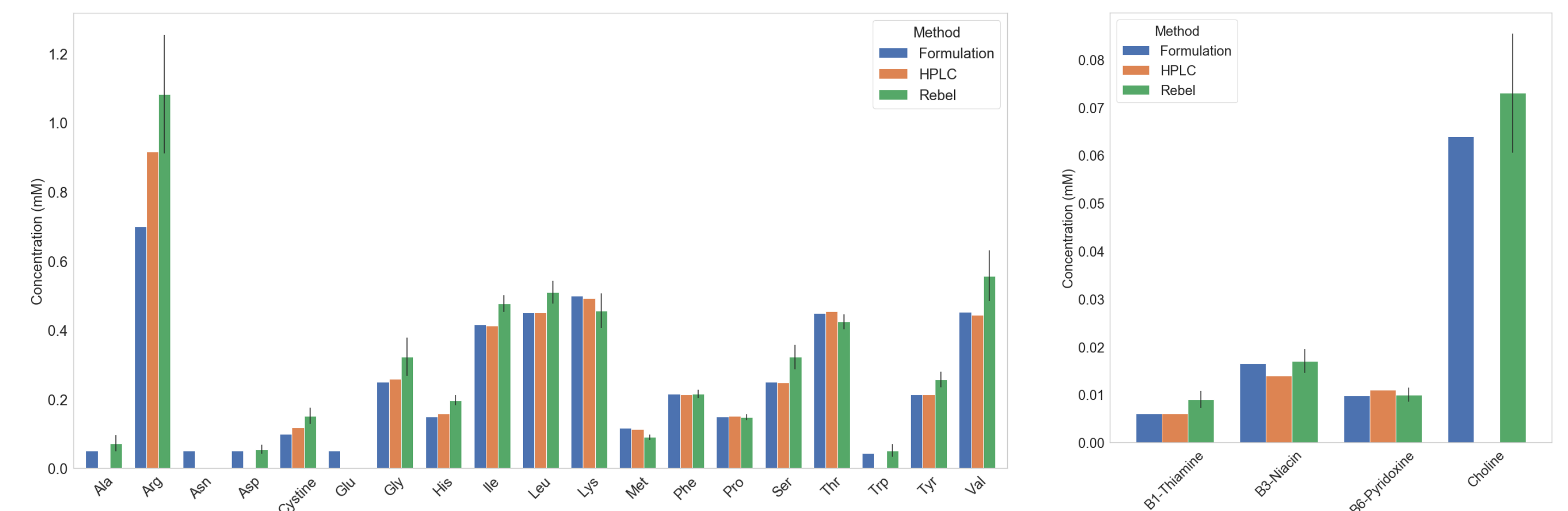
The growing need for advanced process analytic technologies extends past monitoring CQAs of the biotherapeutic, to revealing critical process parameters that affect both cell health and productivity. Cell media selection plays a vital role in how well the culture proceeds as the nutrient profile in the media needs to be optimized to maintain cell health and productivity. Shown here is a new benchtop analyzer dedicated for the analysis of cell culture media with tiny samples (< 10 μ L), no derivatization, and rapid run time that expedites process development, media optimization/formulation, and cell culture decisions.

Methods and workflow



Samples taken from a bioreactor (1) are spun down to remove cells and diluted with the formulated solution (2). Samples are then loaded into the device (3) and the analyst presses 'start' (4). All the calibrants, reagents and standards are already within the system for tuning and validation of the method. The data is automatically processed into a report (CSV or PDF) which can be exported onto a network drive or a USB stick (5).

Validation with cell media



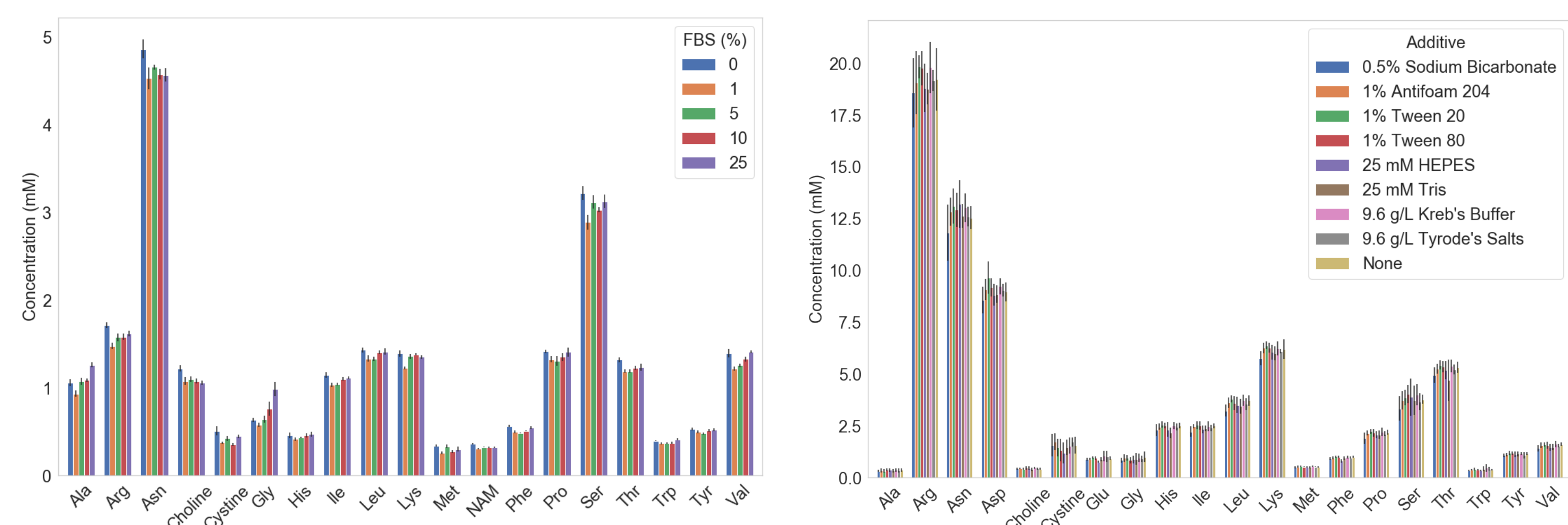
DMEM/F12 was run on both the Rebel and HPLC. The Rebel ran the sample in a single 7 min run while the HPLC method required two separate runs – one for amino acids and one for vitamin analysis. The HPLC amino acid analysis required derivatization to add UV absorbent tags for detection. Data was aligned very well between the Rebel (n = 5) and HPLC (n = 1). Note: the standard B vitamin method for HPLC did not cover choline so it was not detected.

What you see is what you get. There are no external computers, compressed gas cylinders, waste or reagent containers off to the side. The Rebel compliments your cell health, gas and biochemical analyzers. Simply provide power, ethernet and your samples, and the Rebel takes care of the rest.



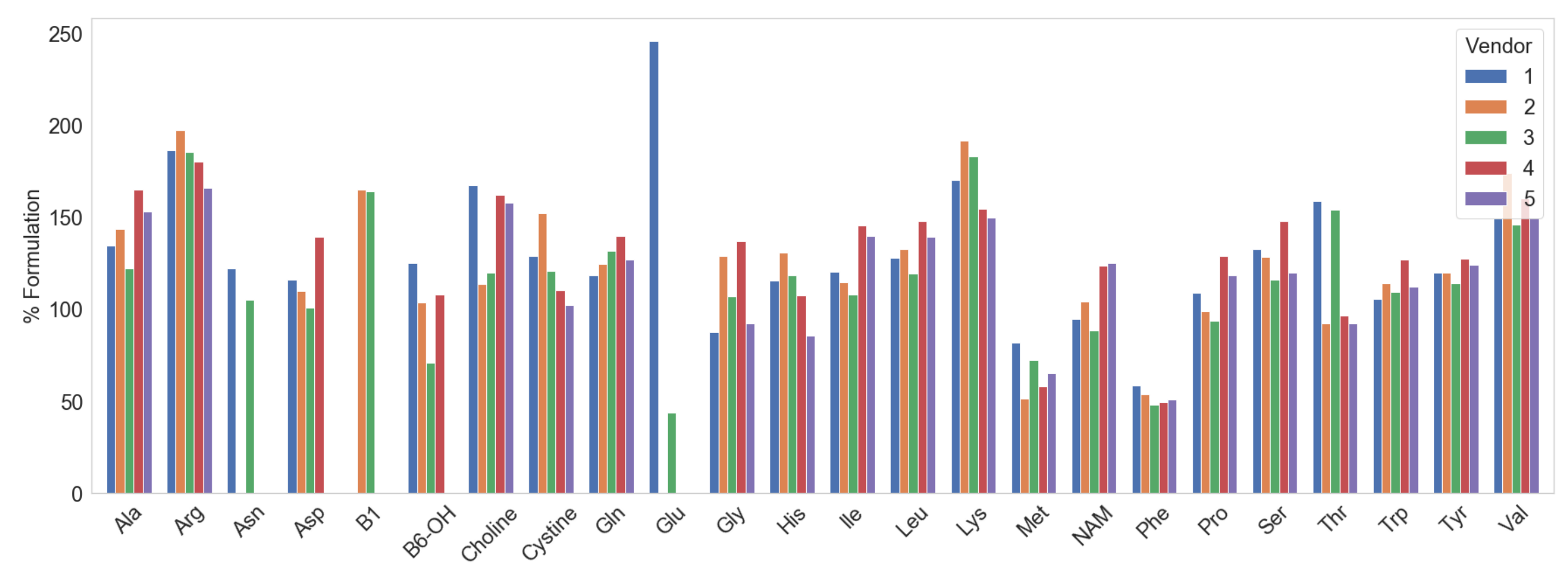
The kits provide everything you need to run up to 200 samples. Inside are the calibrants, standards, diluent, fluidic cartridge and 96-well plates. We've stayed up late to ensure that we made your life easier.

Media analysis with additives



Media analysis is complicated by the presence of serum and/or high protein concentrations. Here, the nutrient levels in chemically-defined CHO media were unaffected by the presence of FBS (0-25 %, left). In a second experiment (right), reported nutrient levels in another CHO media were unaffected by several common additives. In both cases, no sample preparation other than dilution with Rebel diluent by 100x was required.

Vendor comparisons of cell media



The same liquid DMEM/F-12 formulation from five vendors was diluted 10x, placed into a vial and ran immediately (n = 5). The values shown here were normalized to the known vendor supplied concentrations. In some cases, certain media components were as high as 2.5x the expected values (e.g. Glu in vendor 1) whereas other components were not detected at all (e.g. Asn, Asp, B1, and Glu).

It is vital for researchers to work with established cell media providers to ensure that their cell media choice is appropriate for their application. Researchers should consider frequent analysis of their cell media whenever cell media is delivered, periodically during storage, and during processes to ensure that any variations in cell growth and health were not due to unknown changes in expected cell media formulation. Want to learn more? Scan the code or contact us to run a few samples on the Rebel.