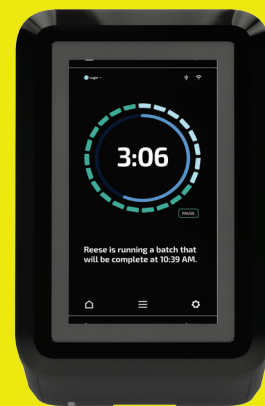


### Supplementing IMDM media with different amounts of fetal bovine serum.

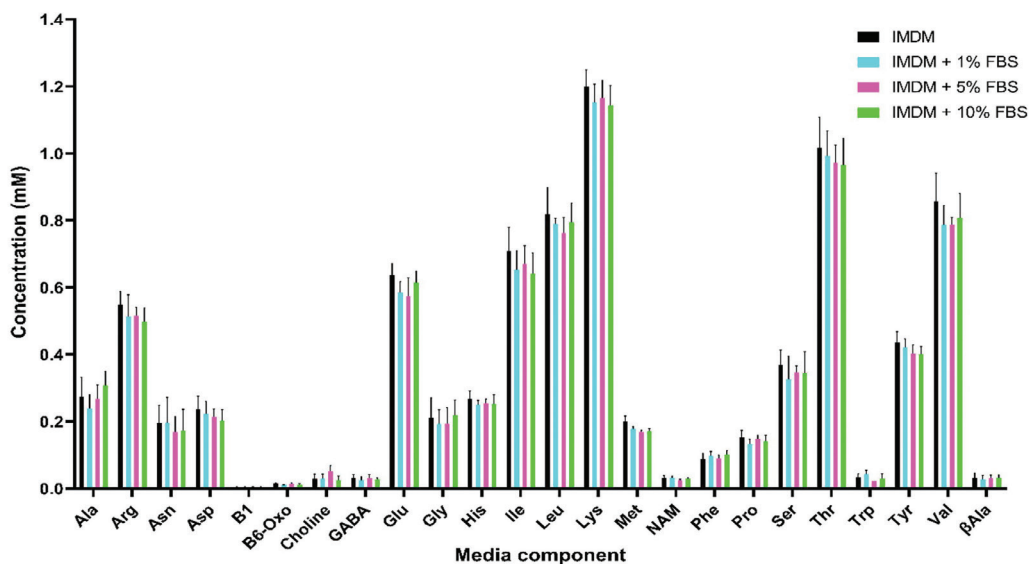


#### BACKGROUND

Iscove's Modified Dulbecco's Medium (IMDM) is an amino acid, vitamin, and inorganic salt enriched version of Dulbecco's Modified Eagle Medium (DMEM). IMDM is commonly used for high-density and high-proliferating cell cultures of fibroblast-like cell lines (e.g., COS-7), hematopoietic stem cells, macrophages, and T lymphocytes (e.g., Jurkat cells). Since IMDM is a chemically-defined media, it lacks growth factors, proteins, and lipids. To support cell growth, IMDM is often supplemented with fetal bovine serum (FBS) at various levels (e.g., 1 to 10%) depending on the cell line. When using chemically-defined cell media like IMDM supplemented with FBS, media analysis can be burdensome. Interferences arise between the high levels of the proteins in the added FBS with standard chromatography columns. Additional sample preparation may be required to remove and precipitate the proteins from the sample media. These added steps may affect recoveries of the trace media components (e.g., amino acids and vitamins), resulting in issues with conventional analytics approaches for media analysis.

#### THE EXPERIMENT

A commercially available IMDM media without glutamine and cell culture grade FBS (USA origin) were mixed at the listed levels below. All media samples were handled following the manufacturer's instructions. Final solutions were diluted 20x before analysis on the Rebel with no additional sample preparation. (Figure 1)



**Figure 1:** Media component concentrations from IMDM and IMDM with FBS supplementation. Error bars are from the standard deviation of n = 6 replicates.

#### DISCUSSION

At a single dilution of 20x with Rebel diluent, the analysis was able to quantitate 24 different media components, including 18 amino acids and three B vitamins. There were virtually no differences in the media components' concentrations between the base IMDM media alone and the IMDM samples with up to 10% FBS added. Amongst the amino acids, Trp had the lowest levels averaging 0.032 mM, and lysine had the highest average concentration of 1.165 mM across the four formulations tested. Vitamin B1 (thiamine) was the lowest concentration of all the media components detected with an average concentration of 0.004 mM. Gamma-aminobutyric acid (GABA) and beta-alanine (βAla), which are not universally present in all chemically-defined media formulations, were detected across all samples at average concentrations of 0.028 mM and 0.030 mM, respectively. With the Rebel, one can quickly and confidently screen serum-supplemented media formulations. This test ensures batch-to-batch supplemented media consistency before introducing the media to cell cultures.

