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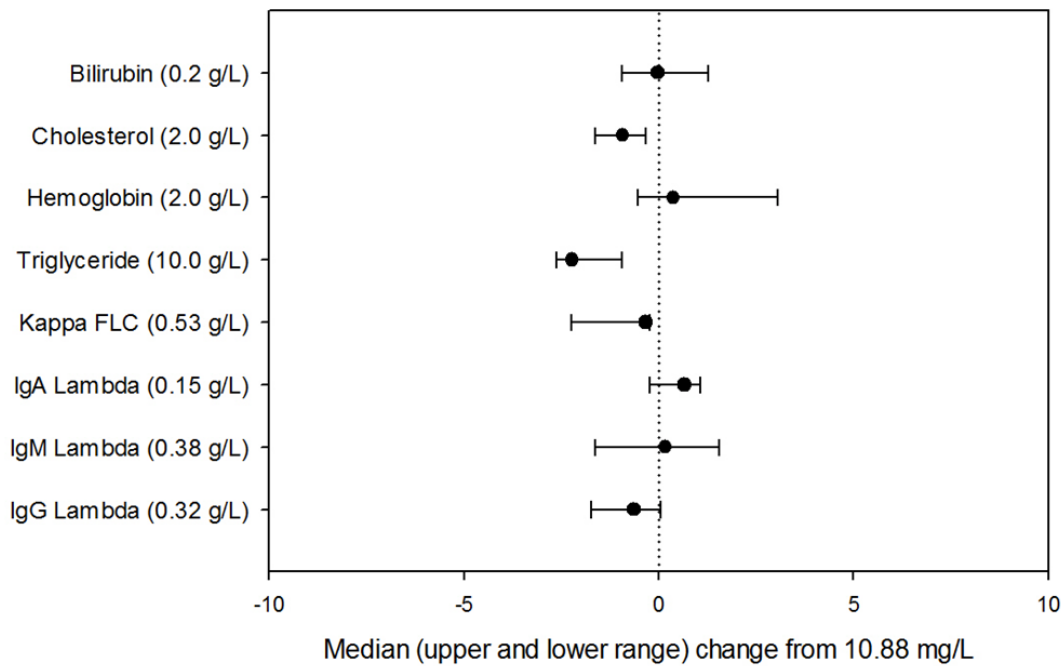
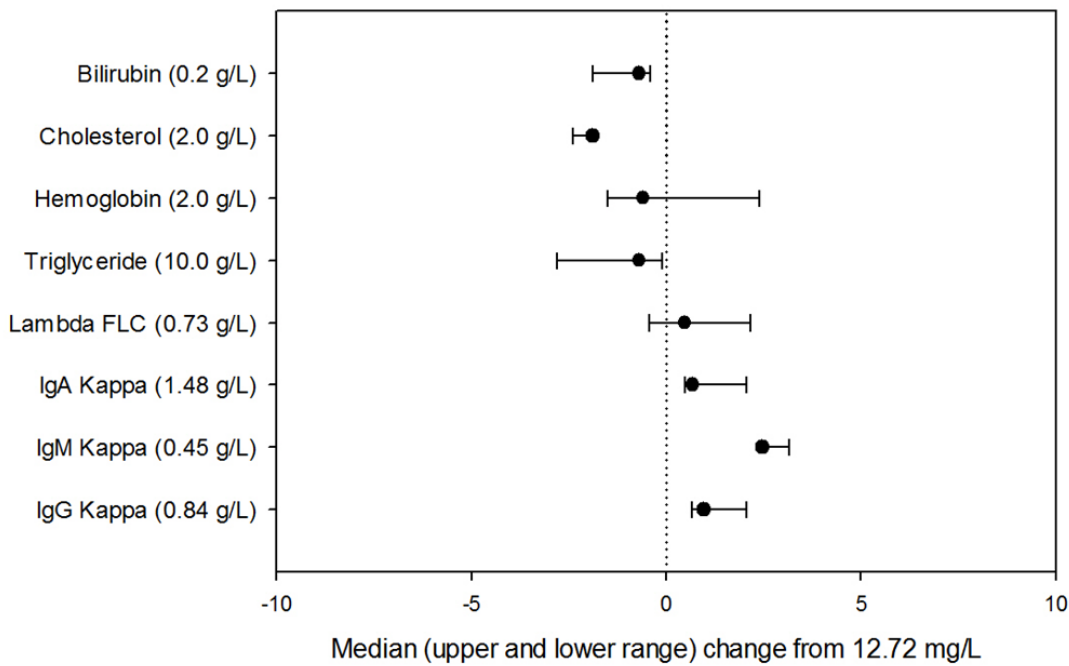
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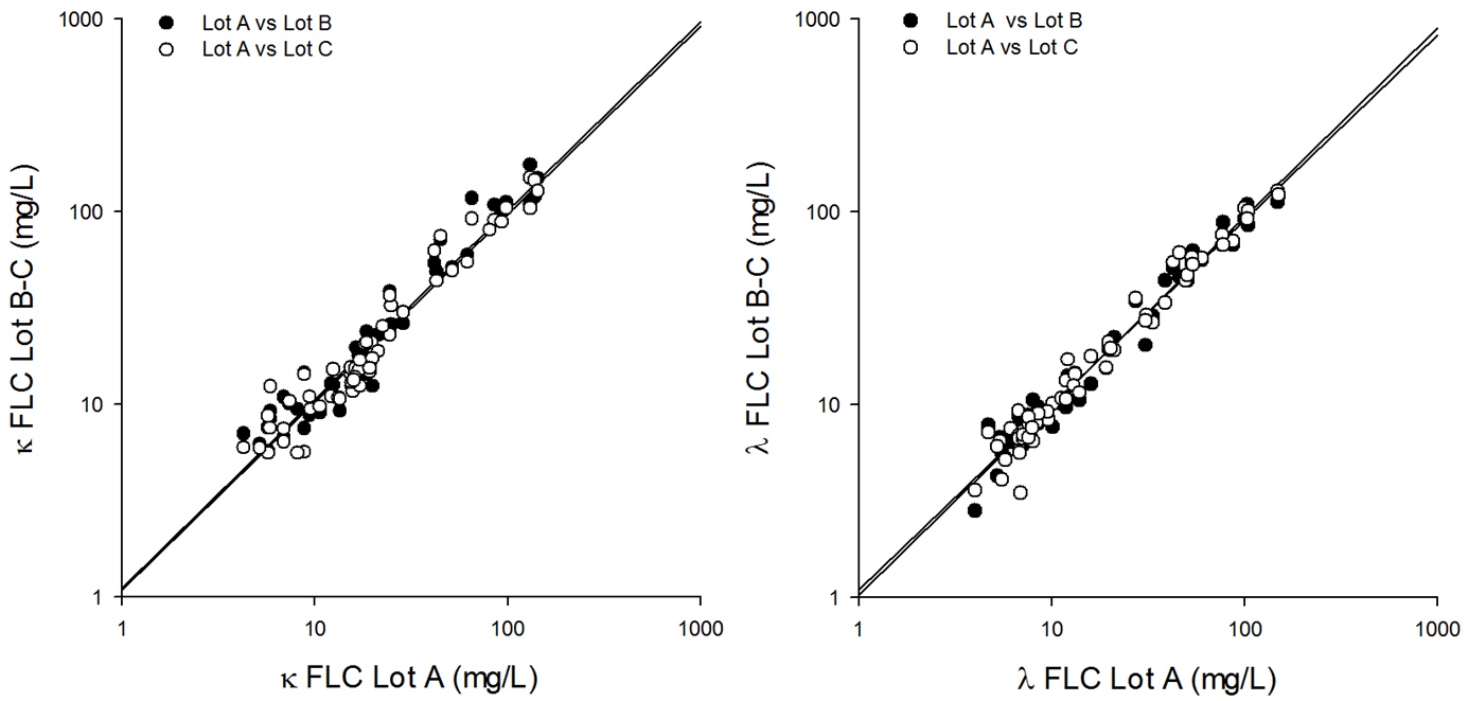
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Supplementary Figure 1. Assessment of interference from common interference agents in the measurement of κ FLC (top) and λ FLC (bottom) by Seralite[®]. Change (mg/L) as a result of interference (x-axes) was assessed by adding interference agents (y-axes) to serum containing normal κ (12.72 mg/L) and λ (10.88 mg/L) FLC levels. The concentration of interference agents is the final concentration in the sample.



Supplementary Figure 2. Lot-to-lot variation from three independent lots of Seralite[®] for κ (left) and λ (right) when measuring 65 samples containing varying levels of free light chains.

Supplementary Table 1. Precision data using samples with varying concentrations of free light chains For intra- and inter-day precision samples with the following concentrations were used: normal (15.9 mg/L κ FLC, 13.4 mg/L λ FLC), elevated (51.8 mg/L κ FLC, 40.5 mg/L λ FLC) and highly-elevated (136.6 mg/L κ FLC, 136.7 mg/L λ FLC). For intra-reader precision samples with the following concentrations were used: normal (11.7 mg/L κ FLC, 8.8 mg/L λ FLC), elevated (42.1 mg/L κ FLC, 48.6 mg/L λ FLC) and highly-elevated (156.7 mg/L κ FLC, 147.6 mg/L λ FL

CV %	Intra-day	Inter-day	Intra-reader
K FLC			
Normal	8.1	5.7	5.5
Elevated	8.1	3.6	3.1
Highly-elevated	9.6	3.9	4.5
λ FLC			
Normal	8.5	5.1	4.8
Elevated	7.4	4.6	2.0
Highly-elevated	9.0	7.1	2.6

Supplementary Table 2. Stability of FLC concentrations measured using Seralite for samples with varying concentrations of FLCs: low, normal, elevated and high.

Data shown is the median change in FLC concentration from baseline (mg/L) across three different testing conditions: ambient room temperature (21–24°C), refrigeration (3–5 °C) and freeze-thawing. Samples stored at room temperature were tested at 0, 1, 8, 24, 48 and 72h. Samples stored in the fridge were tested at 0, 1, 2, 3, 4 and 7 days. To test the effects of freeze thaw cycles, samples were tested on day 0 then frozen and re-tested daily over 6 consecutive days.

	Low		Normal		Elevated		High	
	K 4.5 mg/L	λ 6.7 mg/L	K 13.5 mg/L	λ 10.9 mg/L	K 38.8 mg/L	λ 40.4 mg/L	K 124.8 mg/L	λ 122.0 mg/L
Ambient room temperature 21–24°C: 0–72h	0.7	1.4	-2.1	-0.4	-3.1	-0.2	-7.8	-7.8
3–5°C: 0–7 days	0.7	1.3	-0.1	-0.3	0.4	1.3	2.3	1.6
Freeze thaw 6 cycles	0.8	0.4	1.1	1.4	-0.5	2.9	3.3	4.7

Supplementary Table 3. Samples from multiple myeloma patients previously shown to give erroneously low results by Freelite® due to antigen excess were analysed using Seralite®. Grey boxes highlight where antigen excess resulted in incorrect diagnosis using the standard dilution on Freelite®: patient 1 changes from a lambda to kappa diagnosis with re-dilution; patient 5 initially demonstrated a ratio within the normal diagnostic range (0.26–1.65) but then indicated a monoclonal lambda FLC with re-dilution. Seralite® was able to correctly identify all monoclonal FLCs in these patients using the ratio obtain from the standard dilution.

Sample and involved FLC	Freelite® (RocheHitachiCobas®C501) Standard dilution (κ 1 in 5, λ 1 in 8)			Freelite® (RocheHitachiCobas®C501) Offline dilution (1 in 100)			Seralite® dual K and λ lateral flow device Standard dilution (1 in 3)			Seralite® Offline dilution (1 in 20/1 in 400)		
	K	λ	K:λ	K	λ	K:λ	K	λ	K:λ	K	λ	K:λ
1 - κ	0.77	6.35	0.12	664		105	78.8	< 2.5	> 32			
2 - κ	37.64	8.66	4.3	31594		3648	> 200	3.4	>58	22320		6565
3 - λ	5.63	39.86	0.14		695	0.01	< 2.5	184.2	< 0.013			
4 - κ	41.47	24.27	1.7	454		19	54.5	11.7	4.7			
5 - λ	6.51	15.63	0.42		1772	0.01	< 2.5	> 200	< 0.01		39480	>0.0006
6 - κ	22.09	10.77	2.05	5435		505	> 200	6.7	> 30	4960		740
7 - κ	51.05	8.58	5.95	562		66	> 200	< 2.5	> 80	530		>212
8 - κ	31.31	5.00	6.26	3652		3652	135.5	< 2.5	> 54			
9 - κ	44.35	6.31	7.02	6640		1052	57.2	< 2.5	> 23			
10 - κ	46.85	9.48	4.94	1611		170	59	13.7	4.3			