

Freelite®

What is Freelite®?	Freelite is the trade name for a test that measures the amount of free light chains in the blood
What are free light chains?	<ul style="list-style-type: none"> Free light chains are the light chains of myeloma protein (M-Protein) These light chains can be kappa (κ) or lambda (λ) in type They are called “free” light chains because they are not bound to the rest of the immunoglobulin (antibody) molecule that may be produced by myeloma cells, which are malignant plasma cells. There is a separate test for total or “bound” light chains that is not useful in myeloma testing. Myeloma cells typically produce extra light chains not used to manufacture a full immunoglobulin molecule. Sometimes myeloma cells only produce free light chains, and this type of myeloma is called “Bence Jones” or “light chain” myeloma
Normal assay ranges and ratio	<p>The Freelite test consists of two assays:</p> <ul style="list-style-type: none"> one for free kappa light chains Normal range: 3.3–19.4 mg/L one for free lambda light chains Normal range: 5.71–26.3 mg/L <p>The ratio of free kappa to lambda is then calculated: Normal range: 0.26–1.65</p> <p>If the free kappa / free lambda ratio is outside this range and greater than 1.65, then a kappa myeloma is indicated; conversely, if the ratio is less than 0.26, a lambda myeloma is indicated. Following diagnosis, the individual light chain levels and the ratio can be used to monitor the response to treatment</p>

Why is the Freelite test used?

- The International Myeloma Working Group (IMWG) and the NCCN Guidelines* recommend the use of serum free light chain assays in the initial diagnostic work up of suspected myeloma patients to increase the diagnostic sensitivity
- In patients with non- or oligo- (non-secretory) myeloma, there is not enough M-Protein in blood or urine to measure using protein electrophoresis serum (SPEP) or urine (UPEP). Approximately 70–80% of myeloma patients with non-secretory disease can be tracked, however, using the Freelite test – which can thus be used for accurate monitoring of the tumor marker
- Since the Freelite test is very sensitive, very low levels of myeloma tumor burden can be detected and monitored. For Bence Jones myeloma patients normally tracked using UPEP (24-hour urine collection) the Freelite test can be used for low-level disease monitoring to assess maximum response and even possible early relapse. (Studies are underway to determine if the serum Freelite test can substitute for 24-hour UPEP testing in monitoring Bence Jones myeloma.)

* referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) for Multiple Myeloma V.1. – © 2010 National Comprehensive Cancer Network, Inc. All Rights Reserved. www.nccn.org

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818.487.7455

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Why is the ratio important?	<ul style="list-style-type: none"> The ratio is important because the free light chain levels can increase if there are kidney problems, or sometimes for other reasons Since both light chain levels will rise in this situation, any additional increase in the light chains produced by the myeloma will give an abnormal ratio. This is an important double-check. An abnormal ratio means there is still extra light chain production coming from the myeloma
What does it mean if the light chain levels and the ratio are all in the normal range?	<ul style="list-style-type: none"> This is the best situation: <ul style="list-style-type: none"> no extra light chain production from the myeloma no kidney problems This is part of the definition of stringent complete response (sCR) when there is CR and a normal Freelite level and ratio
If both light chain levels are increased, but the ratio is normal?	<ul style="list-style-type: none"> This usually means that the myeloma is in remission, but that kidney function is not normal

How accurate is the Freelite test?

- The Freelite assay is a very accurate test that detects very low levels of free light chains
- It is **extremely** important, however, to be aware that there are normal fluctuations (\uparrow and \downarrow) in free light chain levels, especially within or close to the normal ranges, i.e., at very low levels
 - even 25–50% changes can occur at these low levels
 - with serial monitoring, it is **important to not overreact** and to **discuss all changes/fluctuations/concerns** with the treating physician
- Progressive increase in free light chain levels is of the greatest concern, particularly sequential increases of $\geq 50\%$ in successive measurements

How can my doctor order the test?

- The Freelite test is readily available in most hospitals and clinics – performed either within the center or by a central testing laboratory. It is important that your doctor specify “free” light chains when ordering the test to ensure that the correct test is run.
- Results from different laboratories can be slightly different. Check which laboratory was used for testing. If there is a change in the results, it is important to check the units used: (for example – mg/L or otherwise) as results can be expressed differently, creating a 10-fold difference in lab values.

Is Freelite covered by insurance?

- Freelite is reimbursed by Medicare and most private insurers – it is a relatively inexpensive test which can be used, for example, as a part of a monthly myeloma testing package.

INTERNATIONAL MYELOMA FOUNDATION

800.452.CURE (2873)
in the US & Canada

818.487.7455

International Myeloma Foundation
12650 Riverside Drive, Suite 206
North Hollywood CA 91607-3421

myeloma.org



“Until there is a cure, there is the IMF.”