



**What is a Dark Ground illumination?** The dark field microscopic examination of freshly collected, vital blood is a pillar of the Paracelsus Clinical Ronc holistic medical diagnosis. It provides information on the internal milieu and function of the blood cells, as well as the amount and development of endobionts, from which microorganisms and more sophisticated structures, such as bacteria, fungi, and viruses, develop.

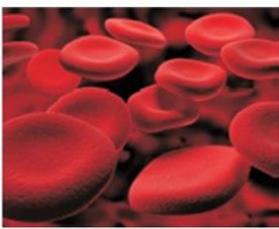
### **How to make the darkfield illumination ?**

It is very easy to make darkfield illumination yourself. What you have to do is place an opaque round stop in the condenser. An easy way is to cut a piece of black paper and put it on a filter in your filterholder. You can put the stop on a piece of clear acetate sheet. You can even try to draw the stop on it with black paint. The most important thing is to have it big enough to stop all light going directly into the objective. Only the light that is reflected by the objects in the sample reaches the objective then. Stronger objectives are more difficult because their NA is often too high. The NA of your condenser should always be higher than the NA of the objective. If patch-stops of 8, 10, 12 and 15mm are made you can't go wrong really. For objectives of around x10 the middle sizes prove best. If you like to make the patchstop as precise as possible: The best way is to set up as normal (brightfield), remove the eyepiece and close/open the substage iris until it is \*just\* visible. Then, either bending your neck over double, or carefully removing the condenser, measure the diameter of the iris diaphragm as it is now set. A pair of calipers is useful here. This diameter is that for the patch stop. Very often, to be on the safe side it is best to add about 10% to this figure, this avoids leakage, especially if you have no means of centering the stop in the filter holder. If you have a phase contrast condenser, the largest phase contrast annuli often make excellent patch stops for darkfield! The real connoisseurs must have recognized the skills of Klaus Kemp in the arranged (cleaned) diatom slide photographed by Mike Samworth.

### **What Different Dark Ground illumination from conventional microscopy?**

In conventional bright field illumination, your specimen is lit from a central light source (you can read more about bright field microscopy in this Bitesize Bio article). This results in a large contrast image. However, in dark field microscopy this light source is blocked by a condenser or a 'stop' below the stage. This condenser or stop scatters the light allowing only oblique rays to reflect and refract off your specimen which in turn creates a bright image on a dark background.





## Live Blood Analysis

Achieve optimal health by identifying your hidden imbalances

**This test may uncover the real reasons why you are:**

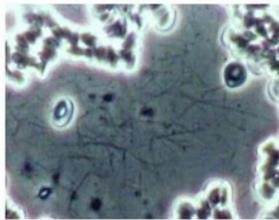
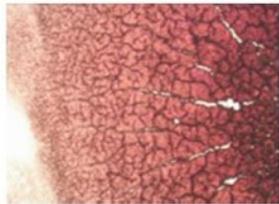
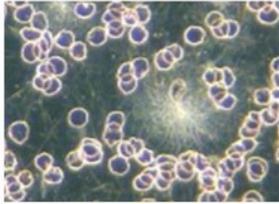
- Feeling sick and tired
- Not losing weight
- Suffering with headaches
- Suffering with allergies

This insightful test helps to take the guesswork out of choosing the correct natural program and combination of supplements for you.

**By analysing a single drop of blood taken from the finger under a powerful microscope, we can uncover many hidden imbalances including:**

Nutritional Imbalances - Anti-Oxidant Levels - Mineral Imbalances - Immune Weakness - Adrenal Stress - Hydration Levels - Acidity - Digestive Problems - Liver Stress - Kidney Stress - Oxidative Stress - Circulatory Congestion and Poor Tissue Oxygenation

Other factors such as Cellular Fatigue, Lymphatic Congestion, Anaemia, Bowel Toxicity & Inflammation, Parasite Activity, Chemical and Heavy Metal Toxicity and Yeast / Candida can be picked up as well and may be contributing factors to a wide range of health problems.



## Nutritional Live Blood Analysis

Achieve optimal health by identifying your hidden imbalances

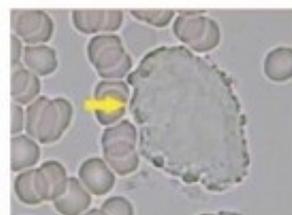
**this test may uncover the real reasons why you are:**

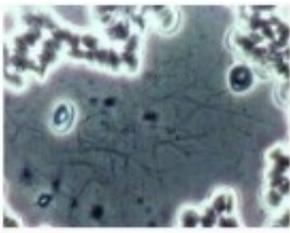
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### **What Dark Ground illumination Applications**

- Viewing blood cells (biological darkfield microscope, combined with phase contrast)
- Viewing bacteria (biological darkfield microscope, often combined with phase contrast)
- Viewing different types of algae (biological darkfield microscope)
- Viewing hairline metal fractures (metallurgical darkfield microscope)
- Viewing diamonds and other precious stones (gemological microscope or stereo darkfield microscope)
- Viewing shrimp or other invertebrates (stereo darkfield microscope)

In darkfield microscopy, contrast is created by a bright specimen on a dark background. It is ideal for revealing outlines, edges, boundaries, and refractive index gradients but does not provide a great deal of information about internal structure. Ideal subjects include living, unstained cells (where darkfield illumination provides information not visible with other techniques), although fixed stained cells can also be imaged successfully. Darkfield imaging is particularly useful in haematology for the examination of fresh blood. Non-biological specimens include minerals, chemical crystals, colloidal particles, inclusions and porosity in glass, ceramics, and polymer thin sections.

### **What is Advantages of Dark Ground illumination?**

A dark field microscope is ideal for viewing objects that are unstained, transparent and absorb little or no light.

These specimens often have similar refractive indices as their surroundings, making them hard to distinguish with other illumination techniques.

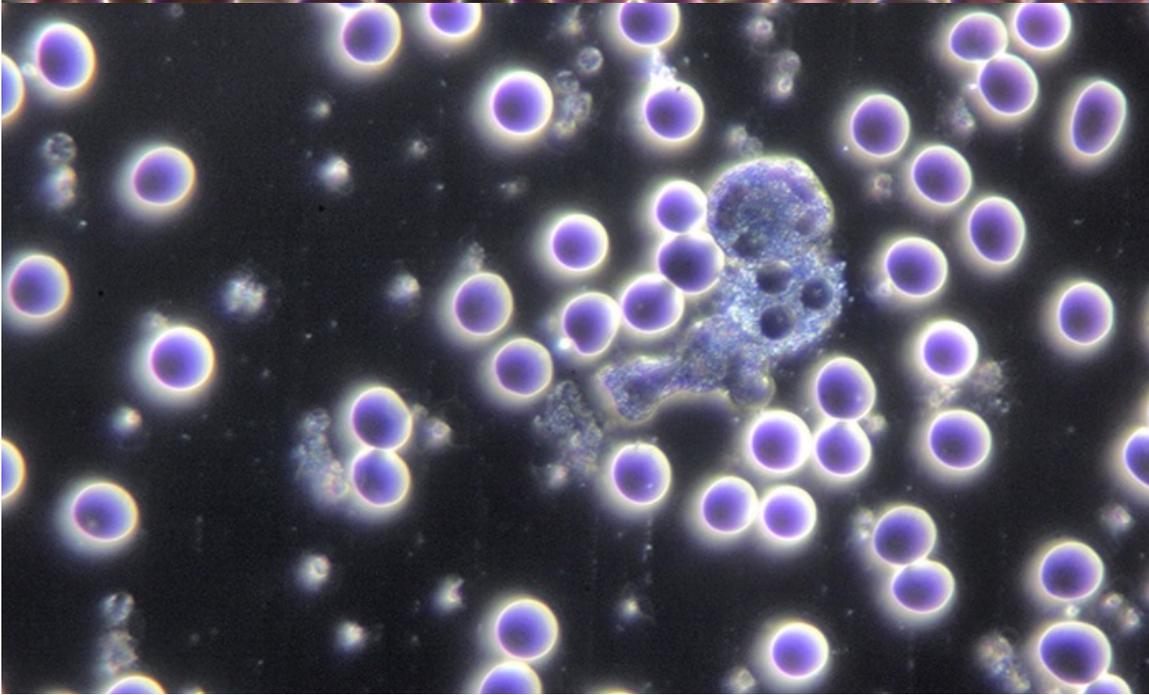
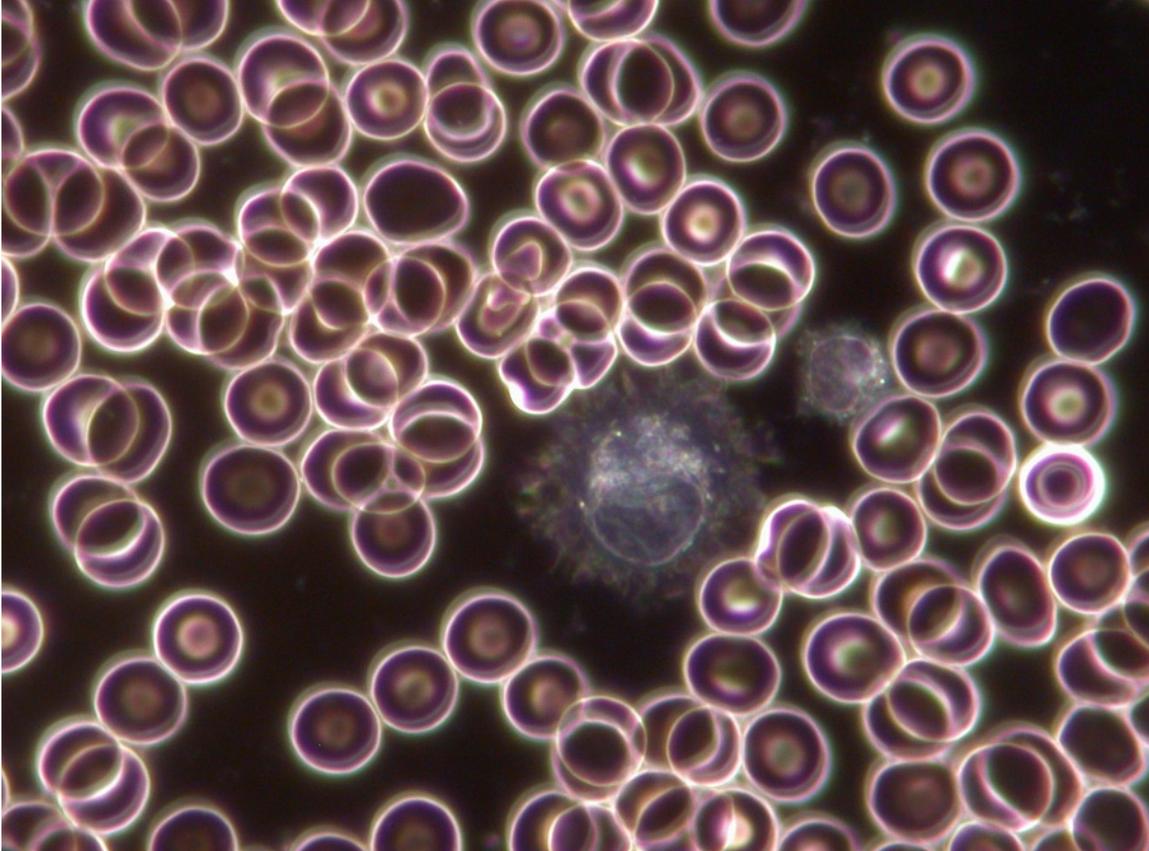
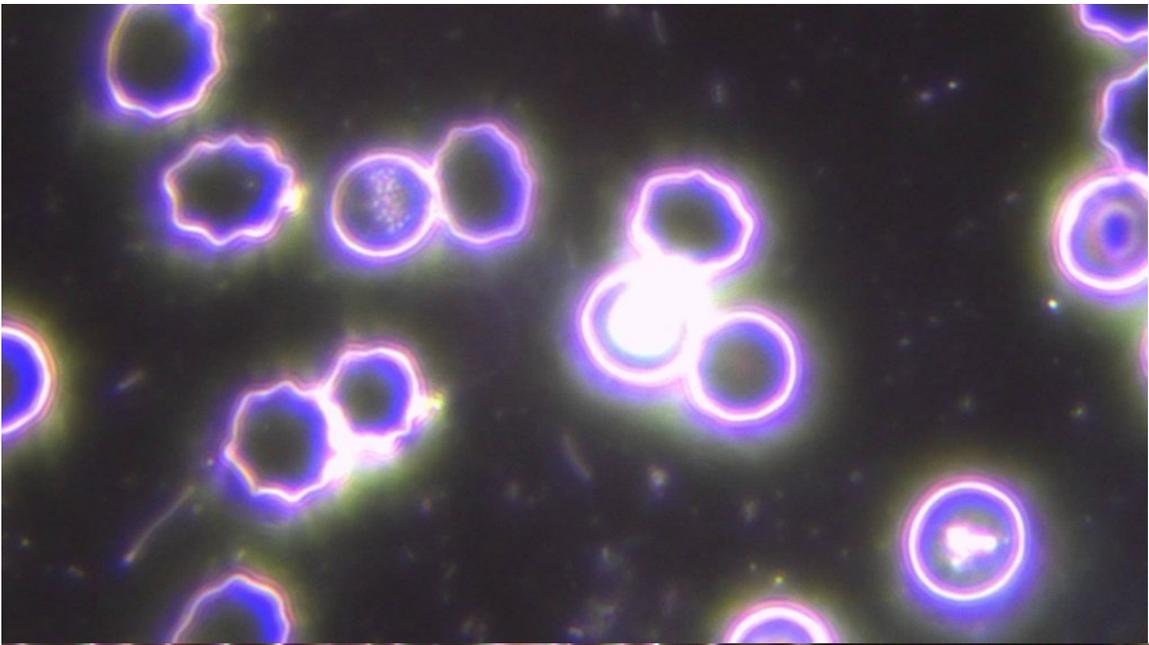
You can use dark field to study marine organisms such as algae and plankton, diatoms, insects, fibers, hairs, yeast and protozoa as well as some minerals and crystals, thin polymers and some ceramics.

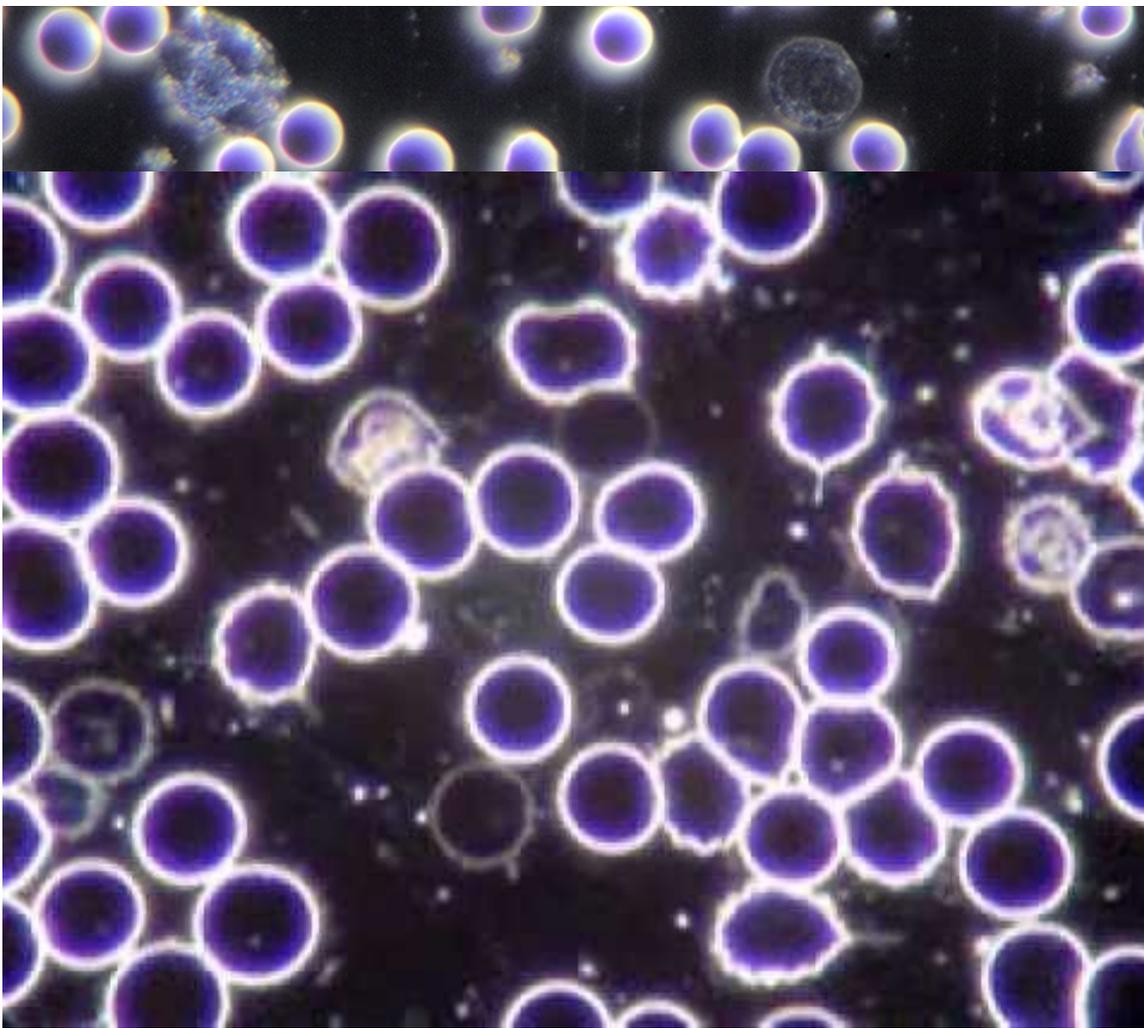
You can also use dark field in the research of live bacterium, as well as mounted cells and tissues.

It is more useful in examining external details, such as outlines, edges, grain boundaries and surface defects than internal structure.

Dark field microscopy is often dismissed for more modern observation techniques such as phase contrast and DIC, which provide more accurate, higher contrasted images and can be used to observe a greater number of specimens.

Recently, dark field has regained some of its popularity when combined with other illumination techniques, such as fluorescence, which widens its possible employment in certain fields.





Dark Ground illumination (<http://www.dark-field-microscope.com/2017/12/20/why-we-use-dark-ground-illumination/>)

bright field and dark field microscopy (<http://www.dark-field-microscope.com/2017/11/21/bright-field-and-dark-field-microscopy/>)

microscope dark field what is it (<http://www.dark-field-microscope.com/2017/11/24/microscope-dark-field-what-is-it/>)

dark field microscopy blood analysis (<http://www.dark-field-microscope.com/2017/11/02/dark-field-microscopy-blood-analysis/>)