Darkfield Microscopy Overview

Wayne Anderson ND

What is Darkfield Microscopy?

- **Darkfield Microscopy** can also be termed **“Live Blood Analysis” (LBA)** as we are taking a drop of capillary blood and observing it without the use of stains.
- No stains are used which has the effect of killing the forms in the blood leaving a static presentation on the slide.
- This microscopic uses light from the illuminator and passed through a optical device known as the condenser.
- One purpose of the condenser is to provide uniform light intensity over the entire field of view.
- As a result the only light entering the eye is that scattered or diffracted by the specimen.
- Illumination is generated from the side of the field so that all visible particles appear bright (usually white) against a dark gray or black background.

Why is this an Important Tool that can help us Understand our Patients?

- **We do not use this technique to make a diagnosis.**
- LBA is a quick and efficient way of **assessing the health of the patient.**
- The darkfield microscope makes it possible to **observe in real time** the micro-organisms which inhabit the blood.
- It is possible to observe **disruptions in terrain that can be correlated with disease processes**. Strong correlation indicates a close, predictable relationship between two variables.
- Tracks **immune system vitality.**
- This tool is also useful in **monitoring a patients response to treatment**.
- Has a specific treatment moved the patient to bring about a more harmonized presentation in the blood.

Why The Blood?

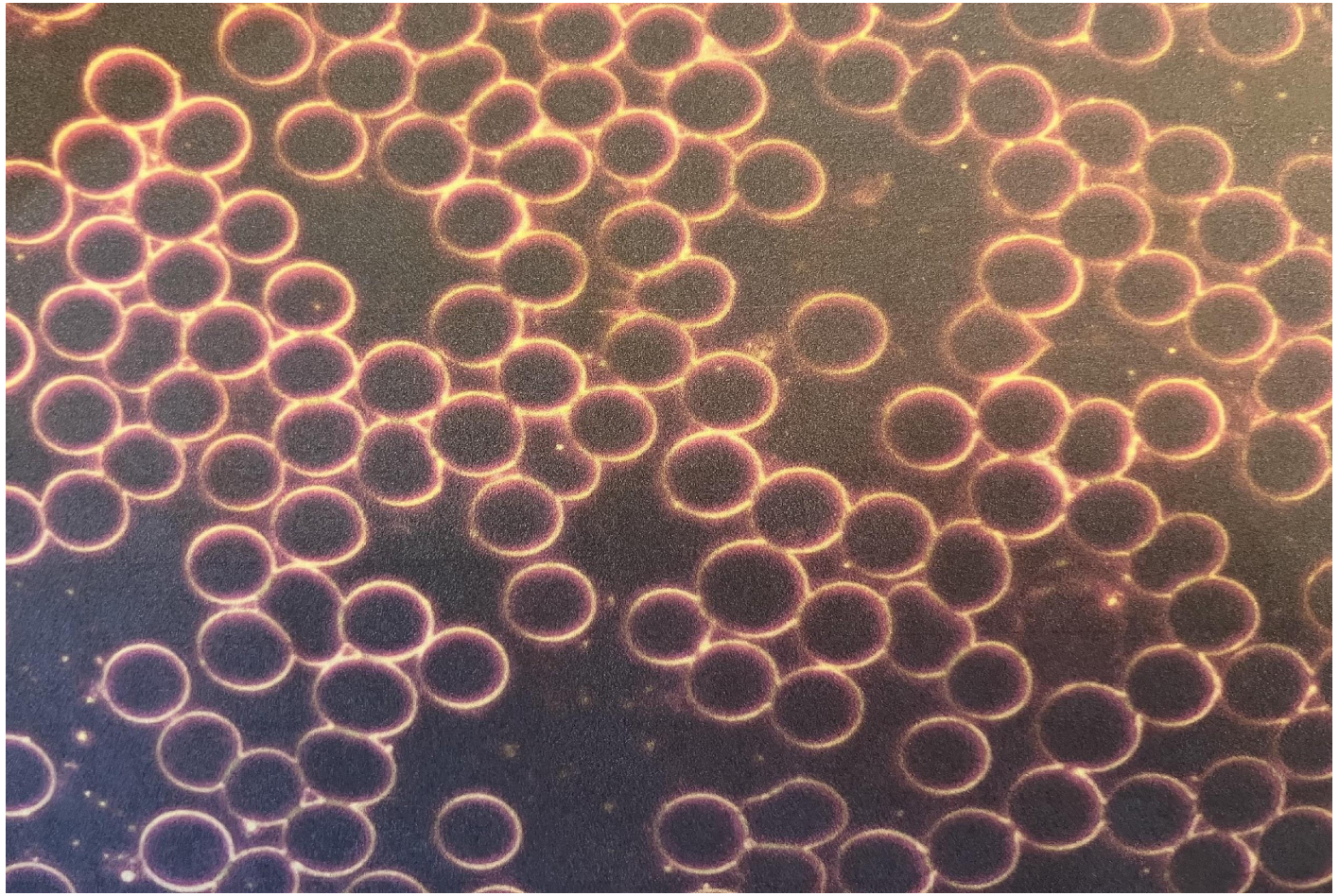
- The blood is tightly controlled maintaining a homeostatic balance.
- Observation of the blood gives patient and provider the unique opportunity to witness the function of the blood in real time.
- We can see how the blood reacts to various stresses can give a clear picture of one's health at a cellular level.
- The condition and quality of one's RBC's has a direct impact on one's present and future health.
- Signs of disease processes can appear in the blood years before they manifest as symptoms in the body. Thus it can be important as a insight into preventive medicine measures.
- **We are not looking to make a diagnosis from the patterns seen, but one is assessing the biological terrain.**

Normal Healthy Specimen

RBC morphology:

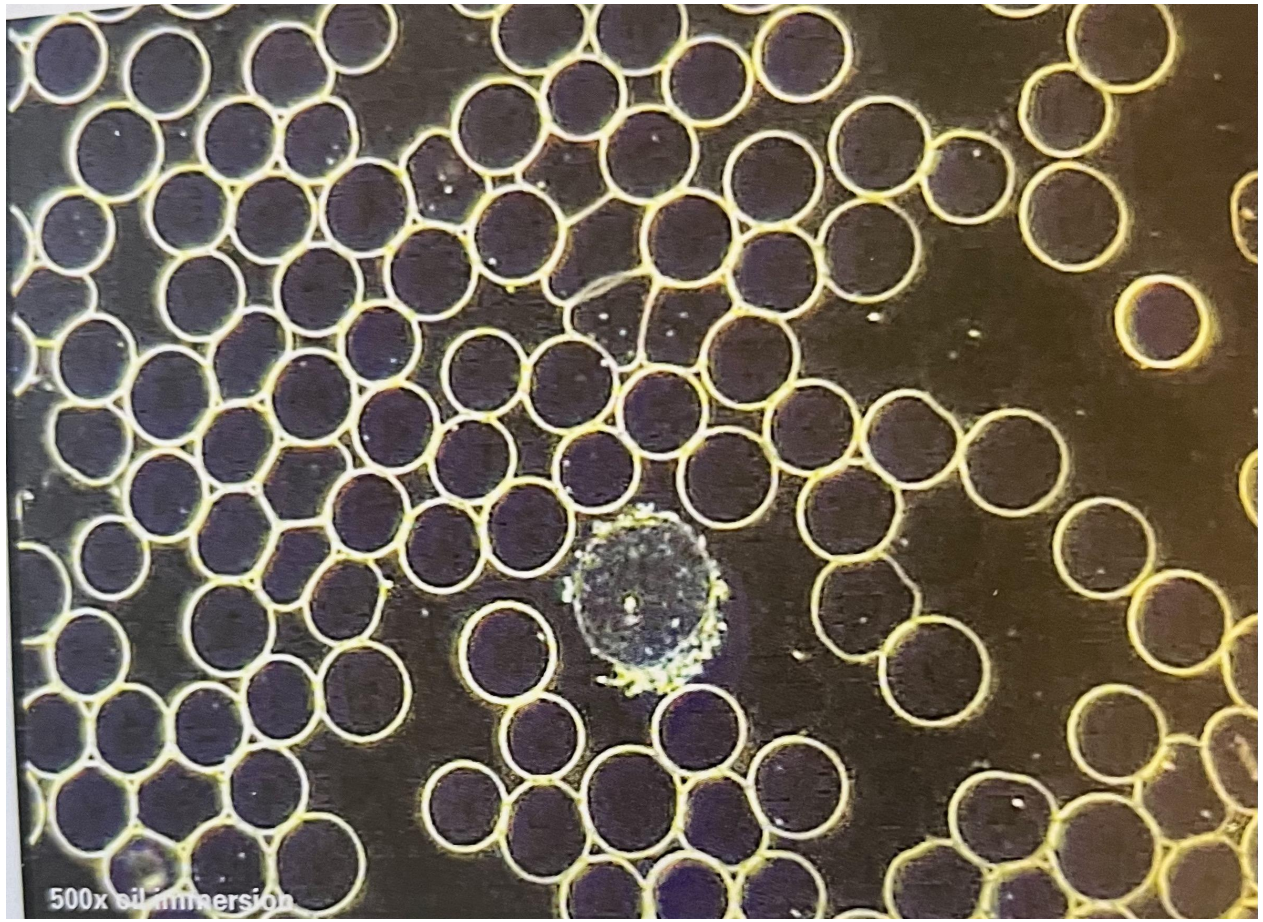
- Good separation of the Cells,
- Membranes intact
- Cytoplasm clear

- A few platelets



This is how Normal Blood looks.

• Normal **Erythrocytes** uniform in size and shape,
• With good separation between the cell (Zeta Protentional).
• Just below the center is a **lymphocyte** that has an accumulation of cellular material on its outer membrane.



Various Disruptions of the Red Blood Cells.

- Irregular sized RBC's large **(macrocytes)** or small **(microcytes).**
- Cell membrane distorted.
- Inside the RBC can have vacuoles, spheroid shapes or opacified inclusions of internal contents. These inclusions can be termed the **parasitizing** of the cytoplasm of the cell.
- The RBC's should be spacing properly, without sticking together.

  (reaction to **Acute Phase Proteins** controlled to a greater extent by

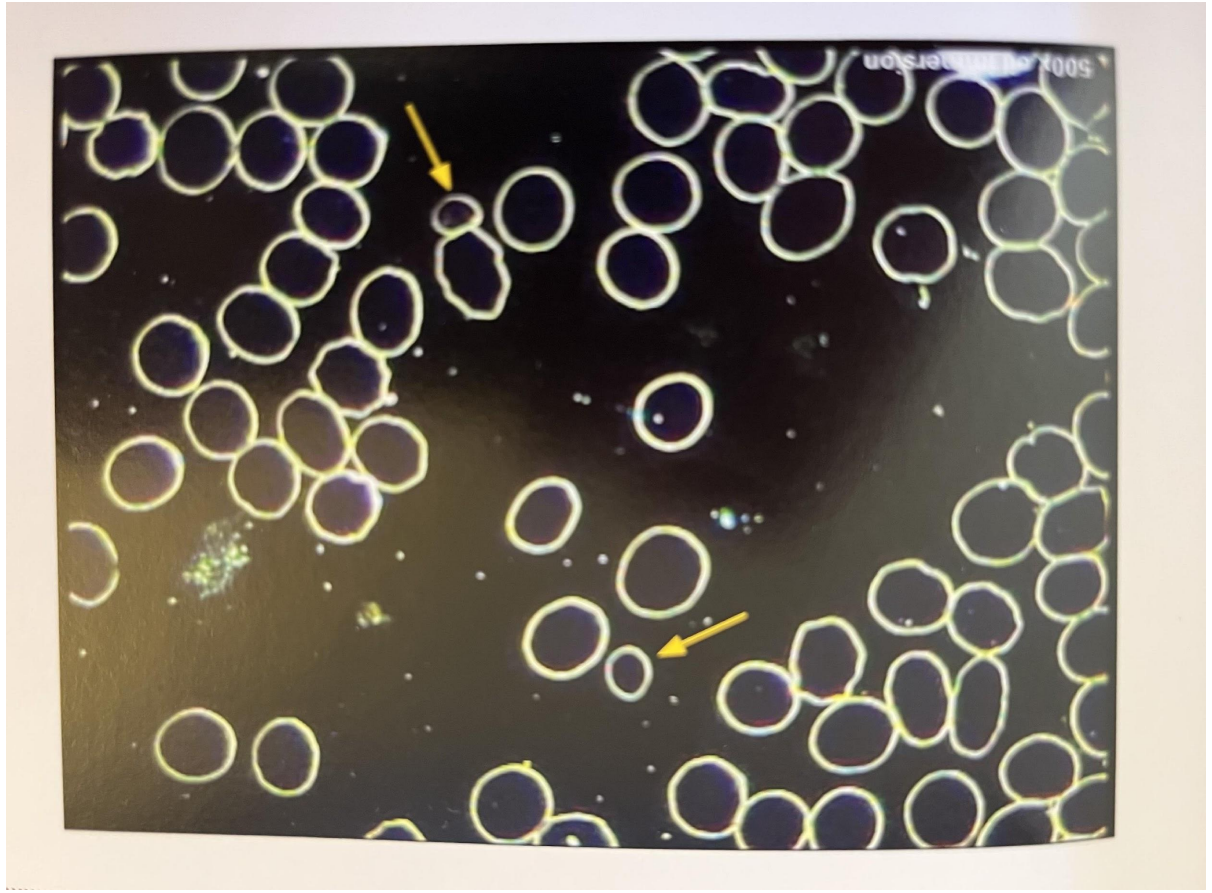
  the **Zeta Potential**).
- The RBC membrane can develop extensions and the membrane can rupture with progressive compromised. Spleen should pull these diseased cells out, recycling what it can use and sending the rest to the filtering organs

RBC Size Variants: Microcyte

- RBC normal diameter 6-8 micron.
- Microcyte < 4 micron

Associated with:

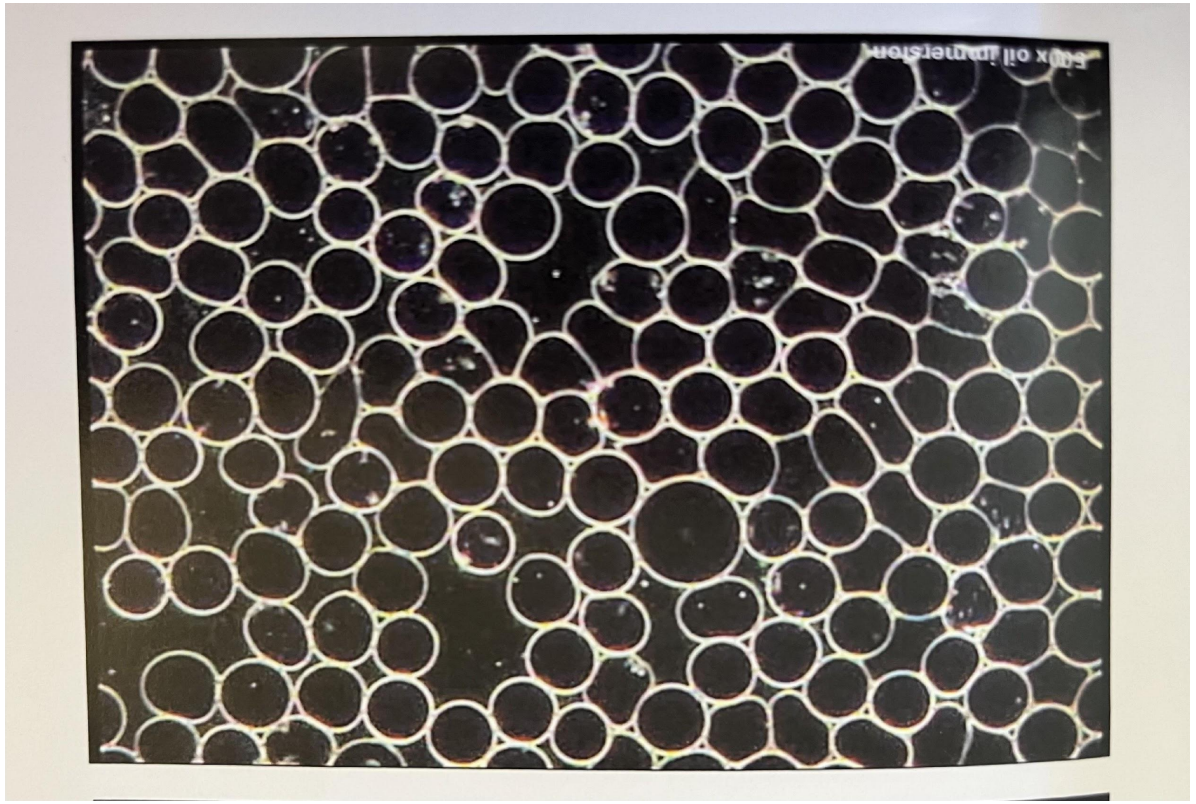
- B12 and Folic Acid Def.
- Iron deficiency,
- chronic blood loss,
- poor digestion,
- osteoporosis,
- heavy metal= lead.



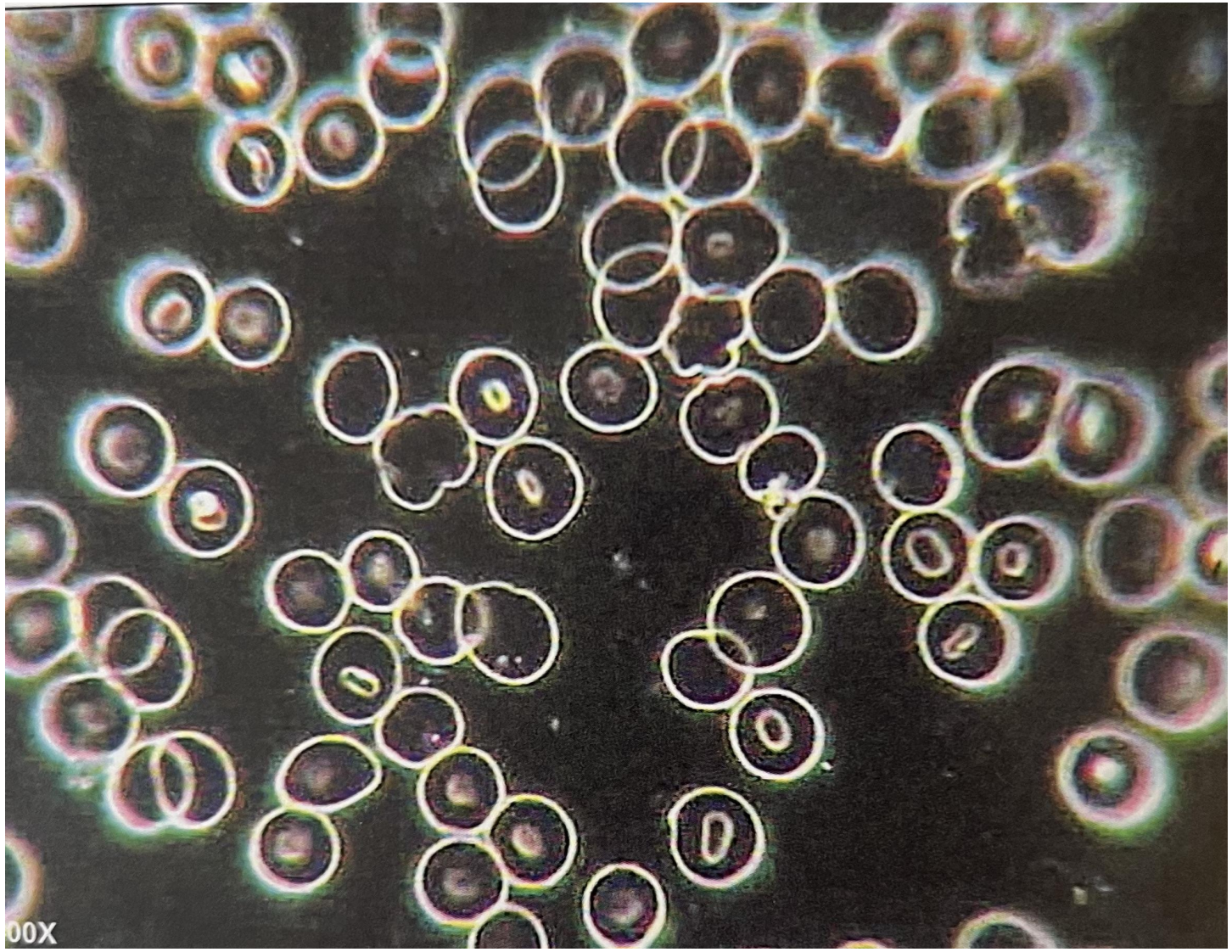
RBC Size variants: Macrocyte

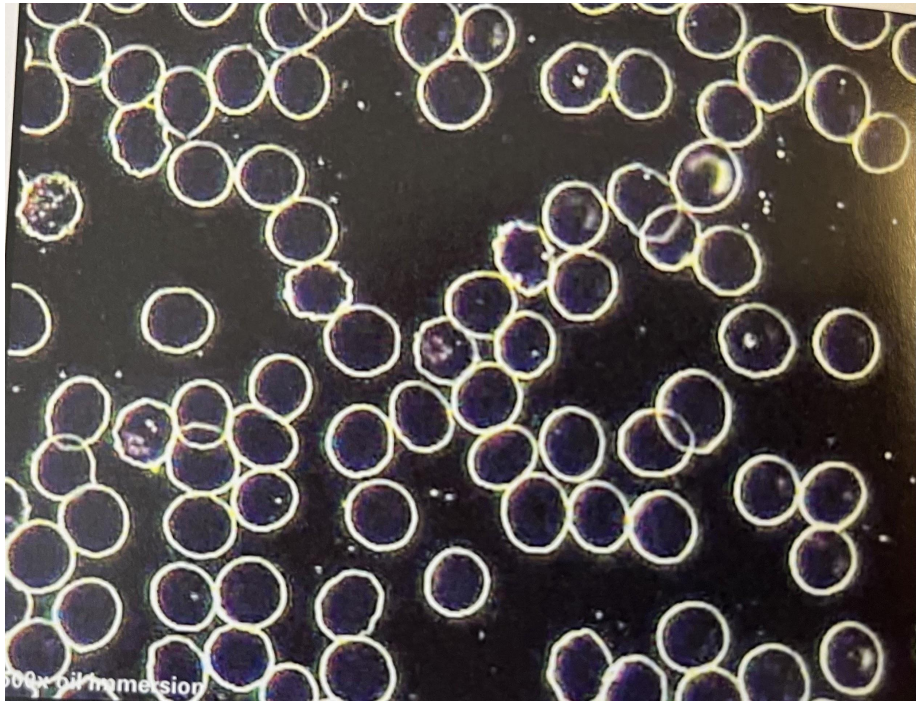
- Normal RBC diameter 6-8 micron
- Macrocyte diameter > 9 micron

- **Can Be associated with:** Hemolytic anemia,
- liver dysfunction,
- compromised gas exchange, heavy metal lead,
- hypothyroid.



RBC pathological variants.

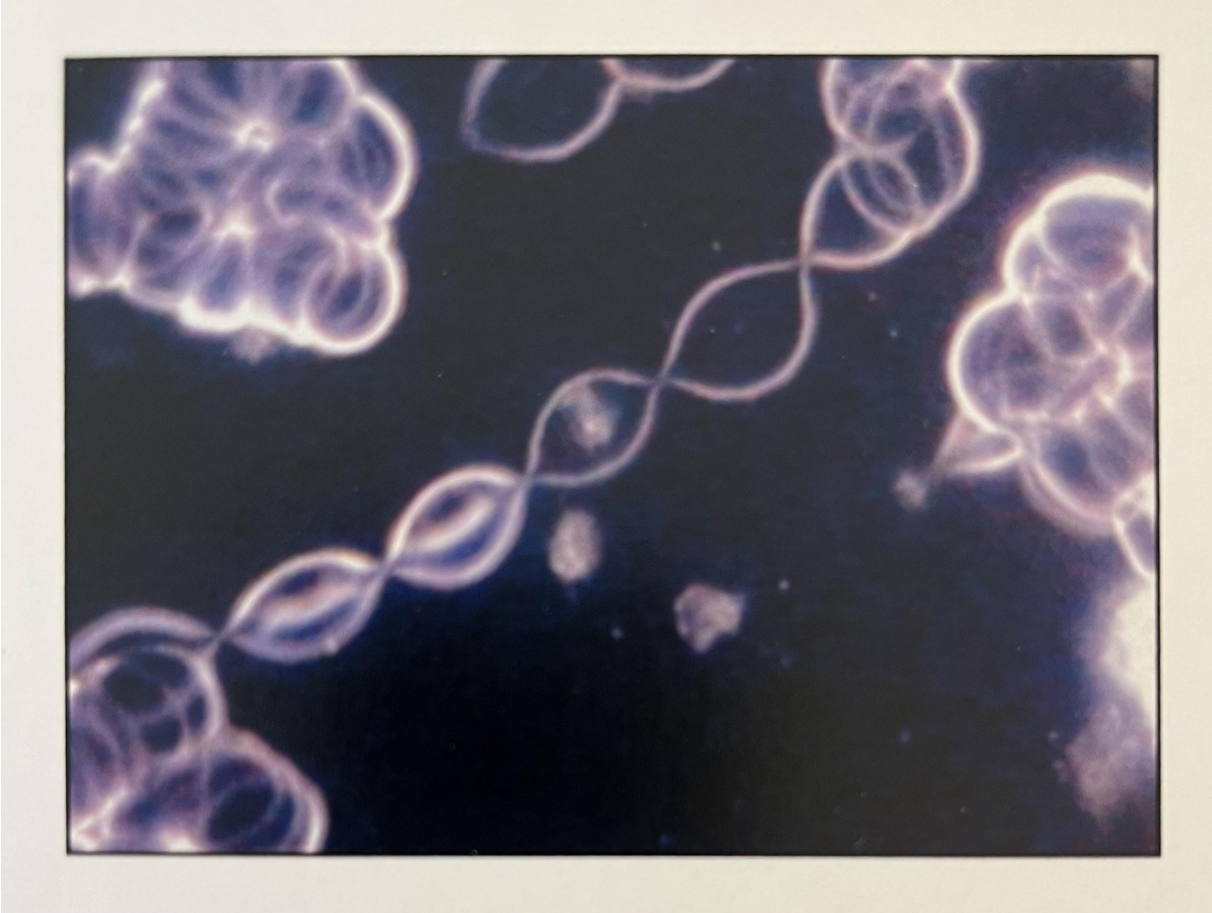




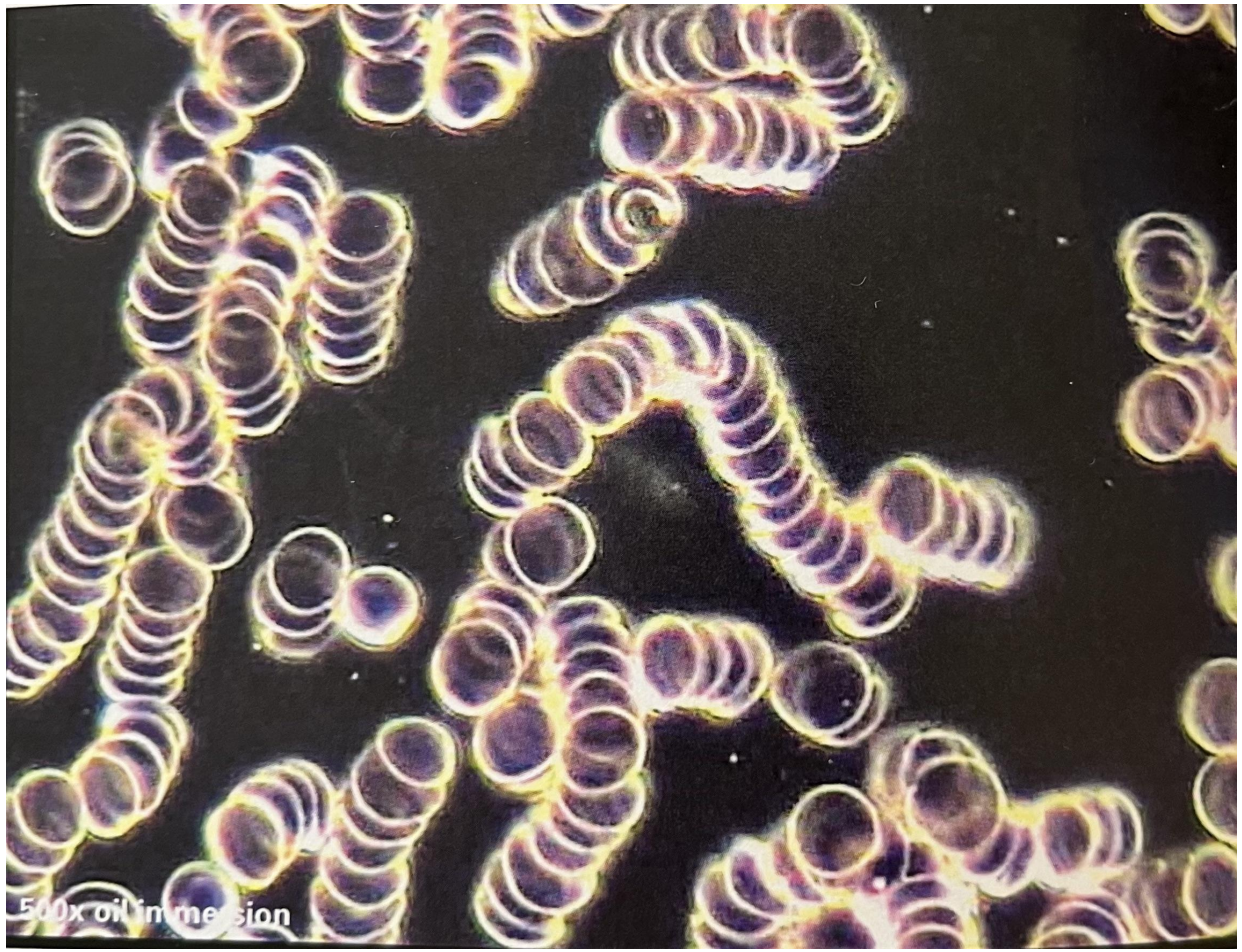
Heinz bodies (above)

Stomatacytes (to the left)

The Progressive Acute Phase Proteins effect of RBC Forms in the Plasma.

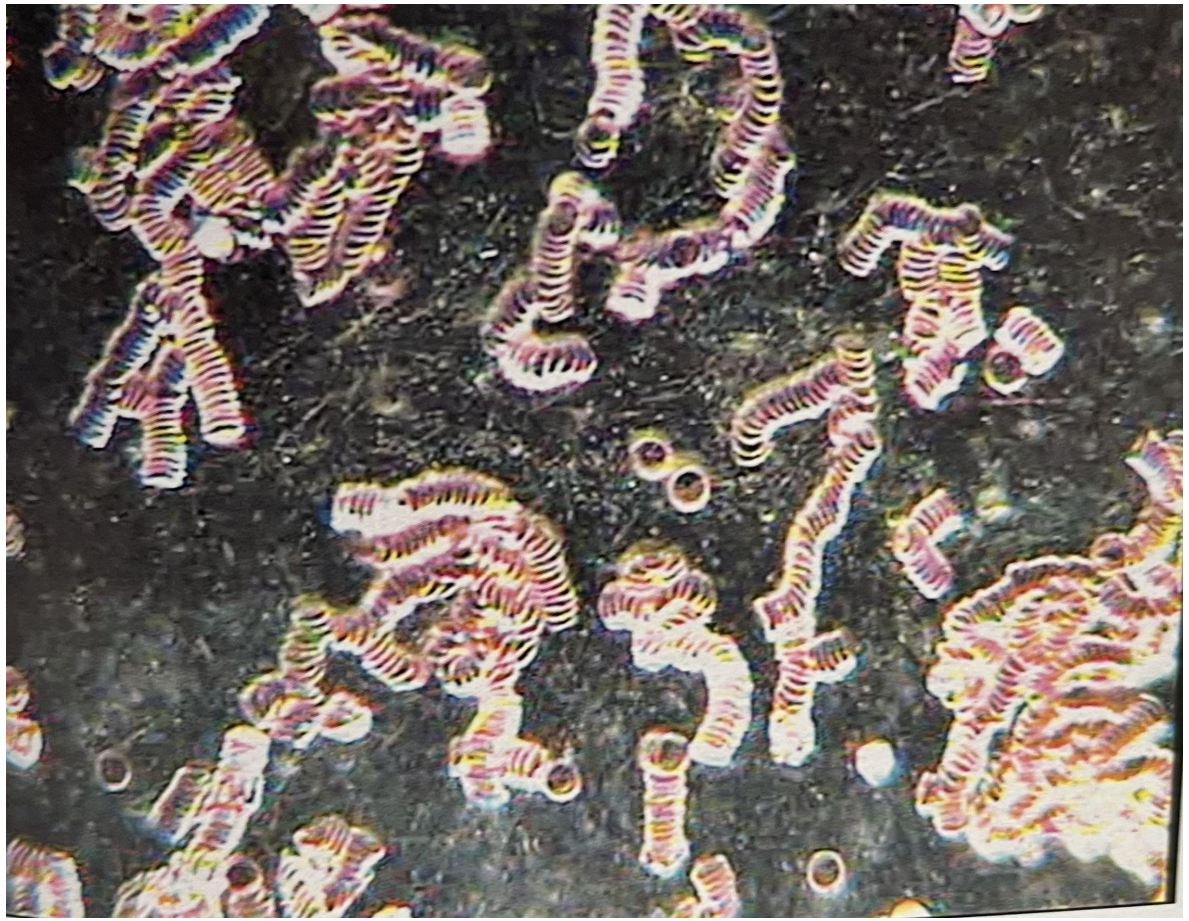


RBC protein linkages

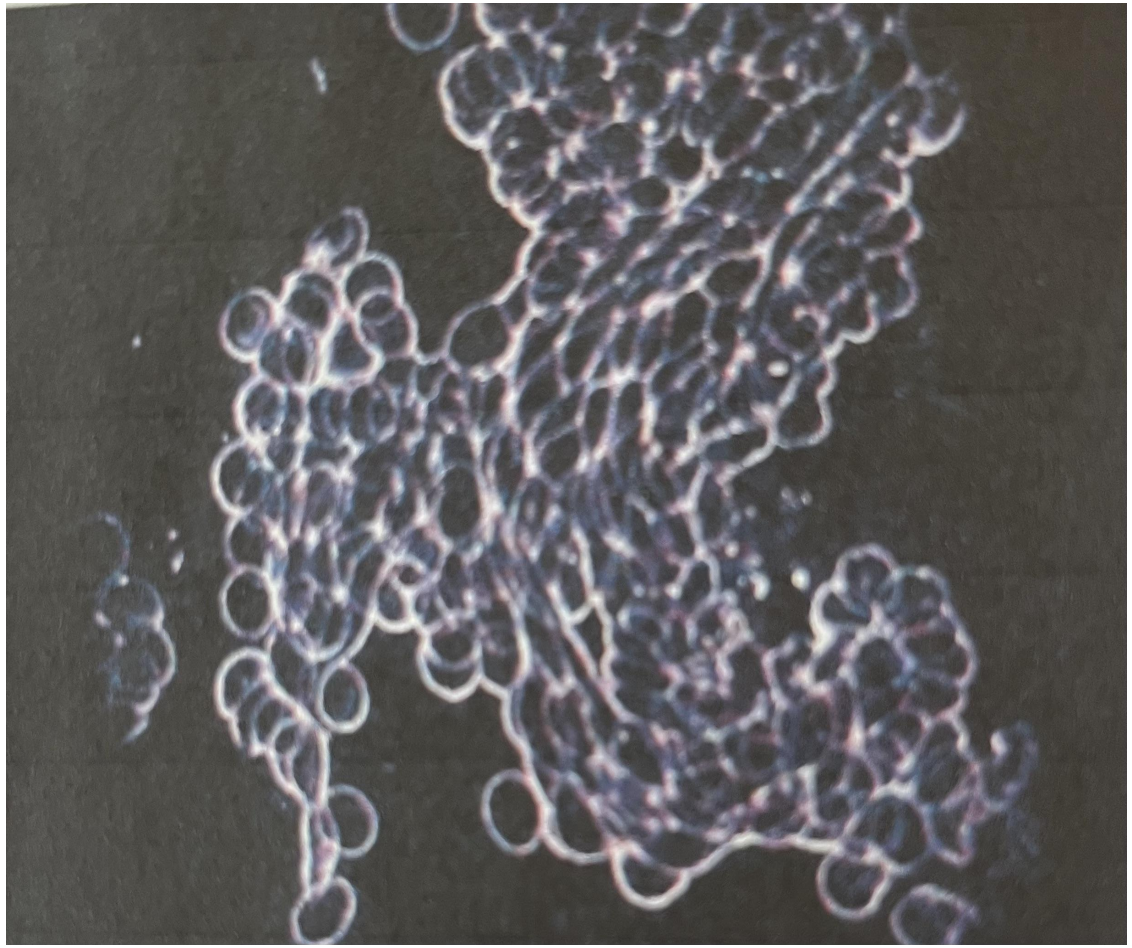


Rouleaux configurations

Rouleaux – Advanced disruption.



Densely stacked RBC’s.



Blood sludge- advanced pathology

What information can be gathered using Darkfield?

1. We can observe the blood from a **hematological perspective**:
   - **Erythrocytes**.
   - **White blood cells** : neutrophils, lymphocytes, basophils, monocytes and eosinophils.
   - **Plasma forms**: Fibrin, platelets.
   - **Bacterial forms**: cocci, rods, mycoplasma, cell wall deficient forms,

2. We can look between these hematological forms to the **pleomorphic forms, between the cells, in the plasma**.

White Blood Cells

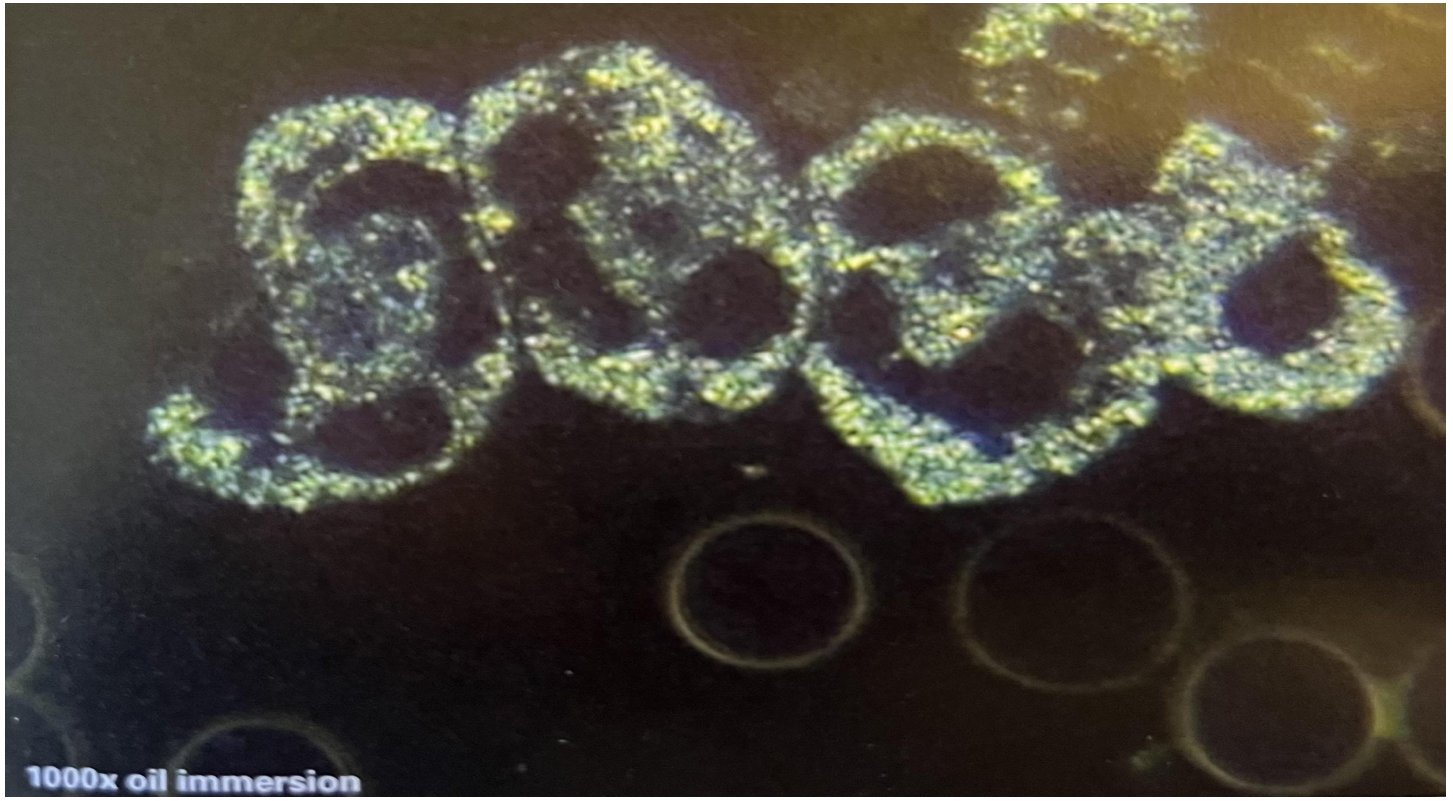
Cytoplastic Granules:

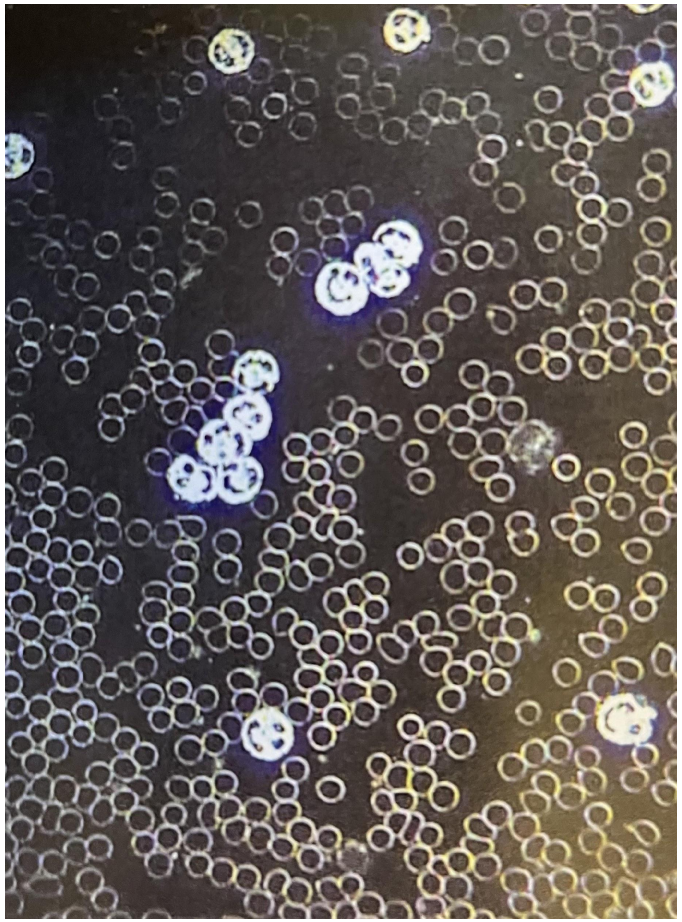
- **Neutrophils:** Diameter—12-20 microns, Nuclear—3 to 4 lobes connected,
  Number should not exceed 30 per 200X
- **Basophils:** diameter--10-16 microns, Nuclear--oval, coarse cytoplasmic granules
- **Eosinophils:** diameter—10-20 microns, Nuclear--oval

Agranule cytoplasm:

- **Lymphocytes:** diameter--6-18 micron, Nuclear—round, no cytoplasmic granules
- **Monocytes:** diameter--12-20 microns, Nuclear—round, cytoplasm may contain fine dust like particles.

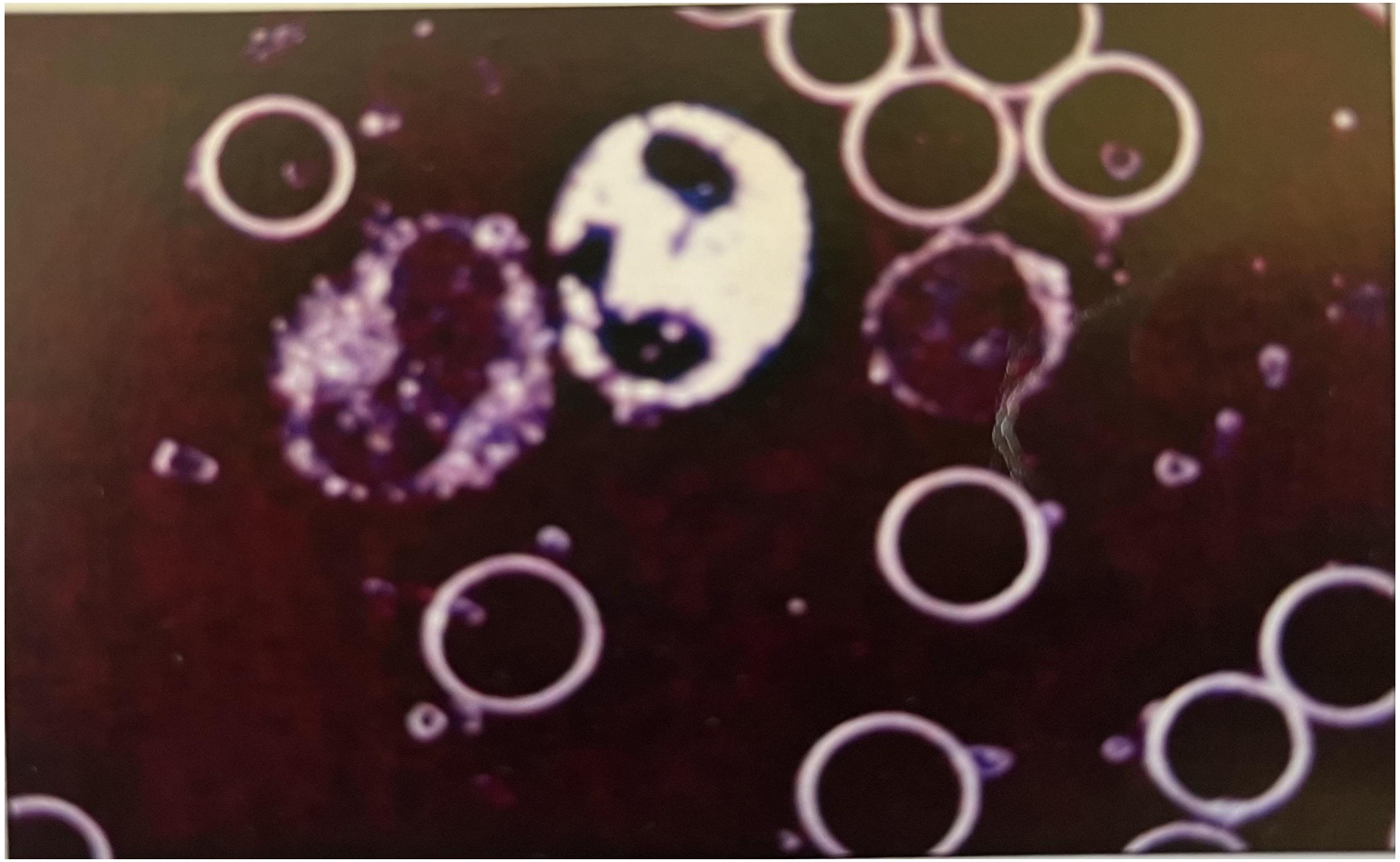
Neutrophils: mature and healthy





- **Cohesion of neutrophils:** stacked membrane to membrane.
- **Associated with** acute phase proteins due to inflammation caused by infection, an allergy, liver and bowel toxicity or autoimmunity.

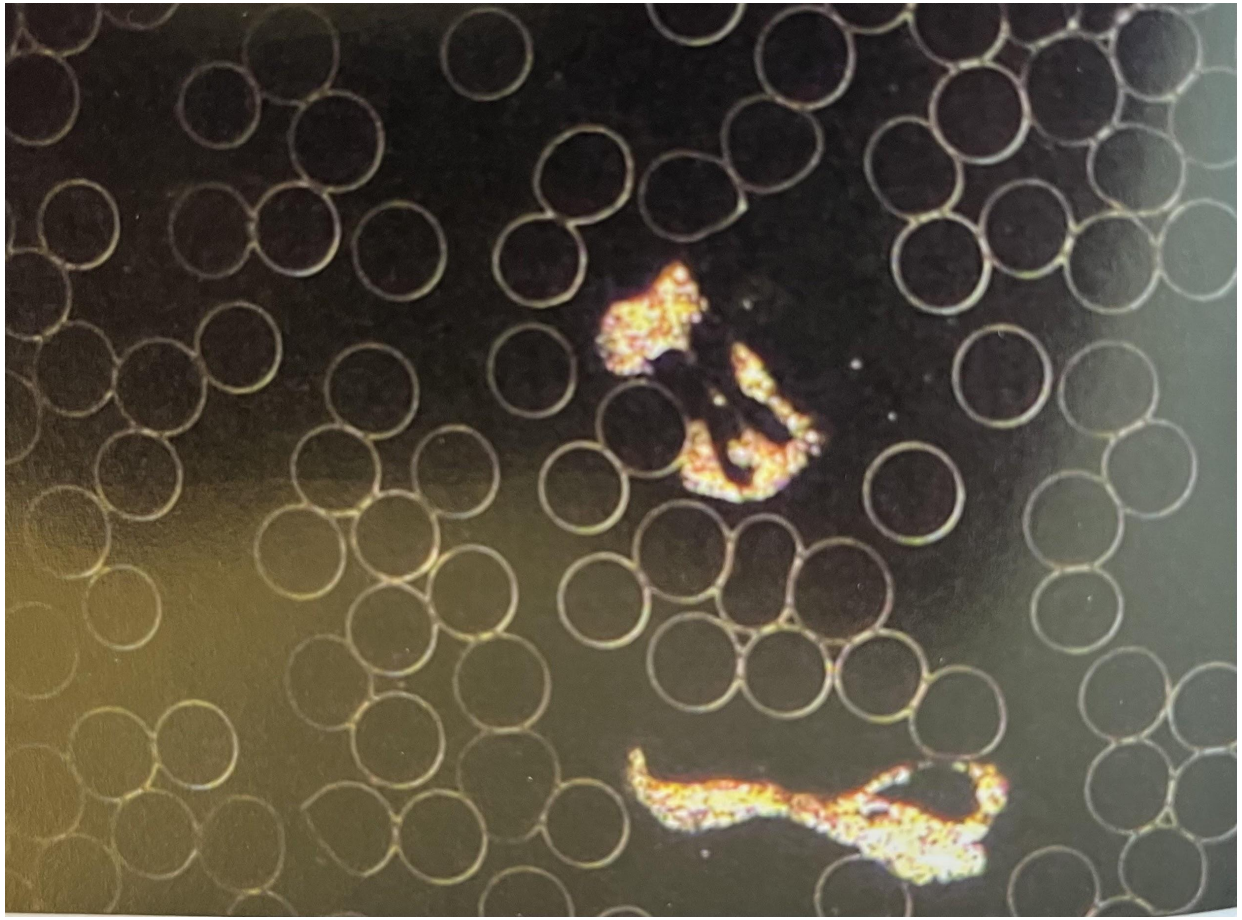
Monocyte — Neutrophil -- Lymphocytes



Eosinophils

- Two **Eosinophils** with two elongated nuclei.
- These WBC are on the move, engaged in **phagocytosis.**
- These granular WBC have a golden-pinkish colorization.

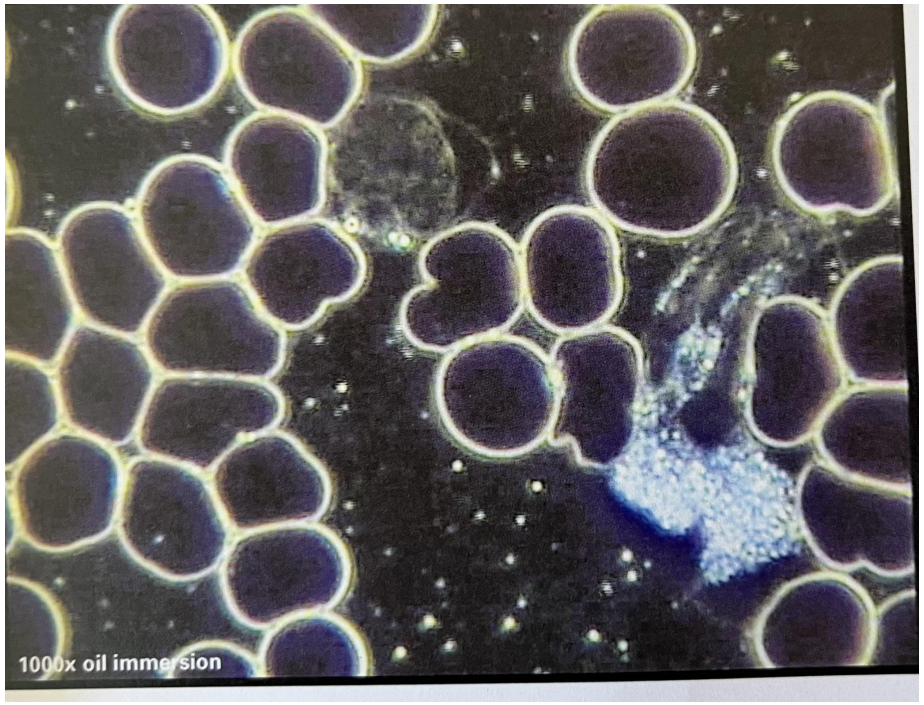
- Normal RBC’s



Neutrophil in attack mode, very motile!

Neutrophil stretching to envelop pathogens that need scavenging.

Also a **lymphocytes** with its outer membrane stretching revealing the WBC is stressed by probable viral infection.



Biological Terrain or “Milieu Interior”

- First described in the 19th century by **Dr. Claude Bernard.** He proposed that most disease is due to imbalances in the body’s interstitial cellular environment.
- He stated that disturbances in this cellular environment affected the integrity of the body’s cells. Compromising the body’s ability to maintain health and resist disease.
- A balanced terrain will promote health.
- An unbalanced terrain will lead to disease as it affects normal function of the body.

What are the Adverse Factors Affecting Terrain

The state of the terrain include:

1. Acid Alkaline balance or the pH of the blood.
2. The electric/magnetic charge (Zeta Potential).
3. The level of toxicity, infection, heavy metal, etc.
4. Nutritional status and oxygenation.

Integrity of the Biological Terrain can be compromised by: dietary choices, poor lifestyle, excessive stress, too little sleep, certain drugs, alcohol, smoking, poisons, chemicals and toxins in the air, food, water and the environment.

Our aid is to improve the condition of the terrain so that all functions in the body are optimal and harmonious and the terrain is unsuitable to infection and disease.

As Terrain becomes more Disrupted Resulting in Multiple Progressive Imbalances.

In an unbalanced terrain:

- The immune system will be less active, increasing susceptibility to bacterial growth (both internal growth and externally exposures).
- Enzymes, hormones and other chemical messengers do not function properly.
- Elimination of toxin is less effective.
- Pro-inflammatory chemical accumulate.
- Digestive becomes inadequate.

Zeta Potential

- **Zeta potential** indicates the electric charge on a particle's surface, which is a key factor in determining the stability of colloidal dispersions and emulsions.
- A **high zeta potential** (either positive or negative) suggests strong repulsion between particles, leading to a stable dispersion,
- While a **low zeta potential** indicates a greater chance of particles clumping together (aggregation) and destabilizing the system.
- **Zeta potential** is influenced by several factors. These include the pH of the solution, the ionic strength (concentration of dissolved ions), the nature of the particle's surface, the presence of surfactants or polymers, the temperature and exposure to radiation and or Electro Magnetic Fields.

What is Pleomorphism?

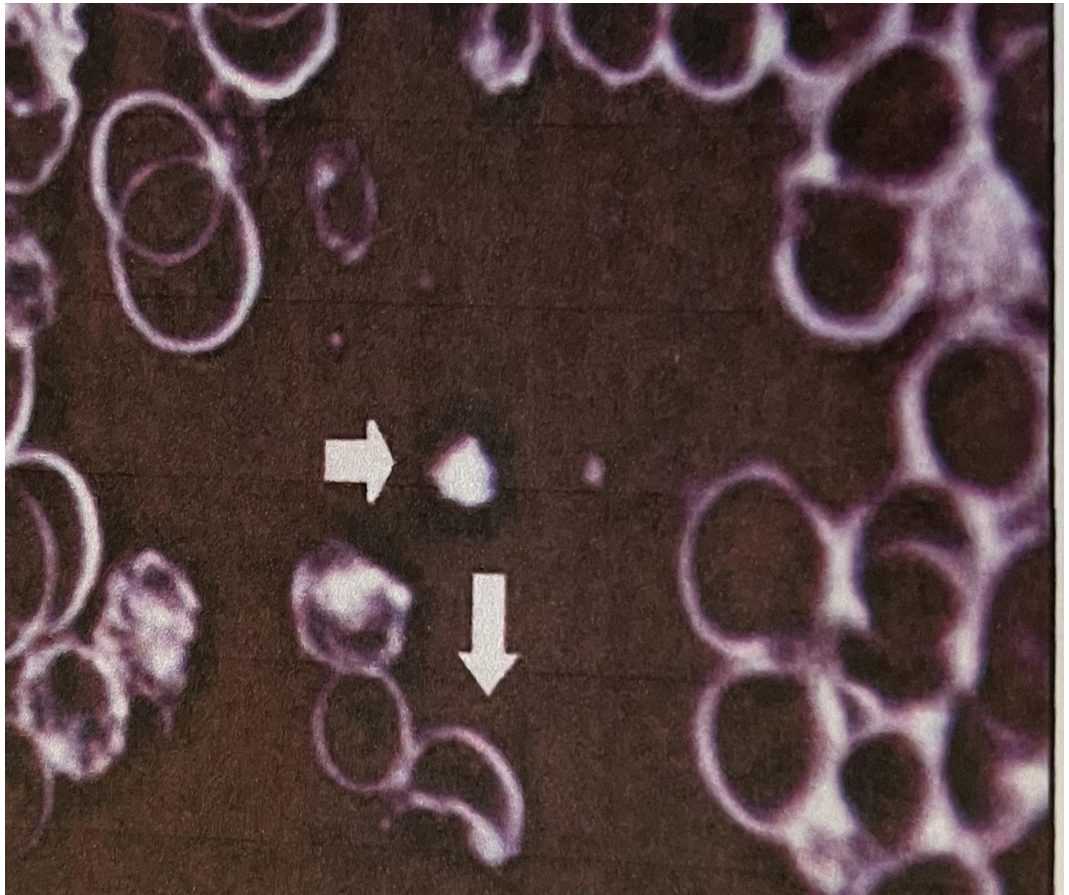
- The origin of **disease often comes from within.**
- Enderlein observed and documented the **life cycle of a microorganism** that is related symbiotically to the bodies of all mammals.
- As the blood becomes more disrupted, the **forms become more complicated and of a higher valence** (developmental intensity or level).
- Forms can develop from microorganisms like bacterial forms can transmute into to fungal forms and even cancer.
- As the blood becomes more chaotic, the valence of the microorganisms becomes more complex. **More aggressive pathogens develop.**
- **This process is dependent on factors related to terrain.**

What do we mean by Monomorphism?

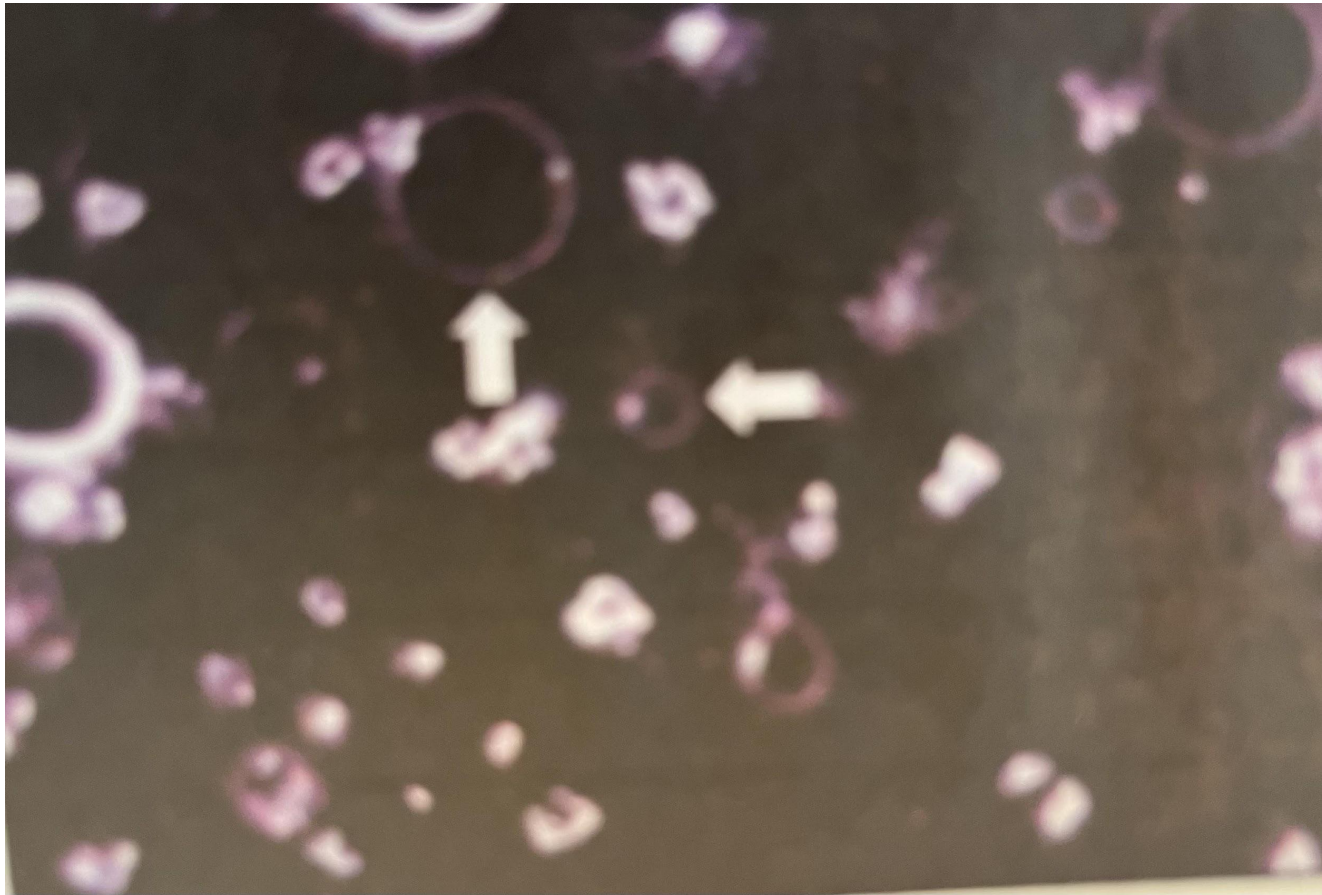
- Disease is caused by a bacteria that enters the system from outside the body. We “catch” the disease.
- Bacteria does not change and is casual to the disease process.
- We have sought to cure these diseases by isolating the invader and then creating a medicine that will kill that particular form.
- Thus the use of antibiotics, anti-fungals, anti-virals, etc. have been widespread.
- Treatment of a specific pathogen with the pharmaceutical agent specific to this.
- **One bacteria (unchanging) □ one disease □ one treatment**

Early Bacterial Forms

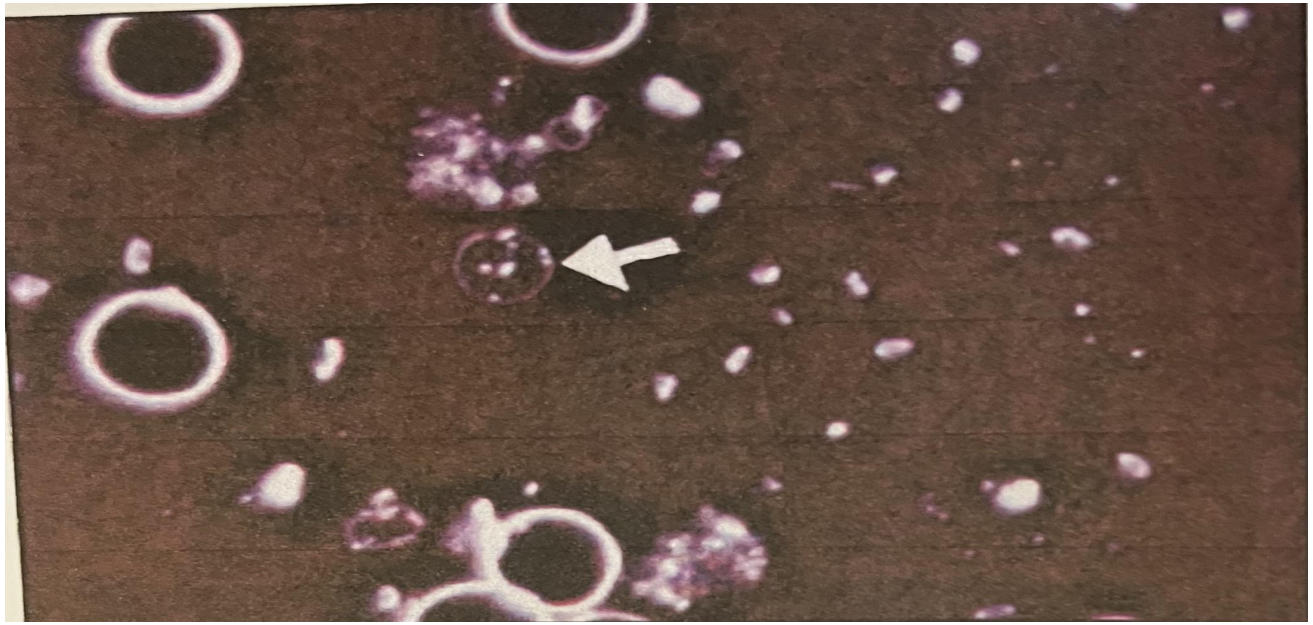
L form (and a Bite cell)



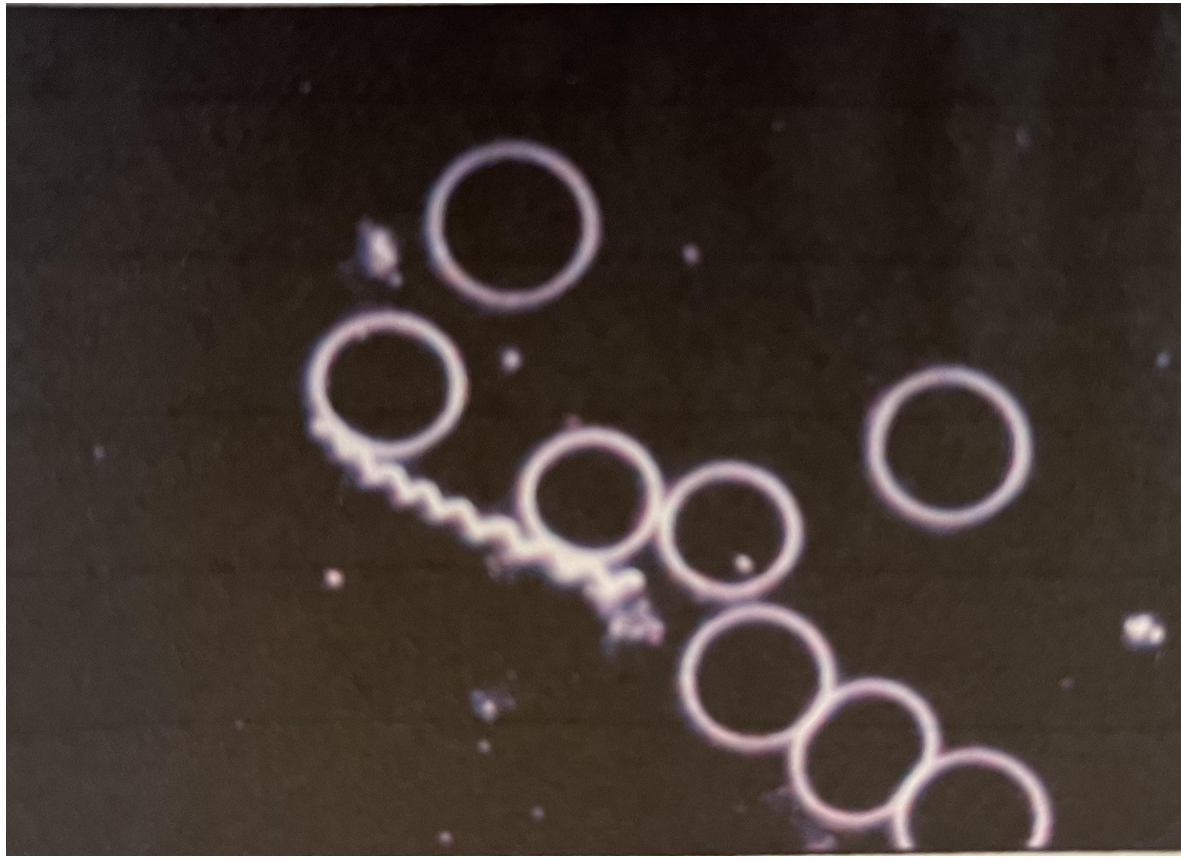
Mychit with developing nuclei



Early development bacterial phase and spirochete

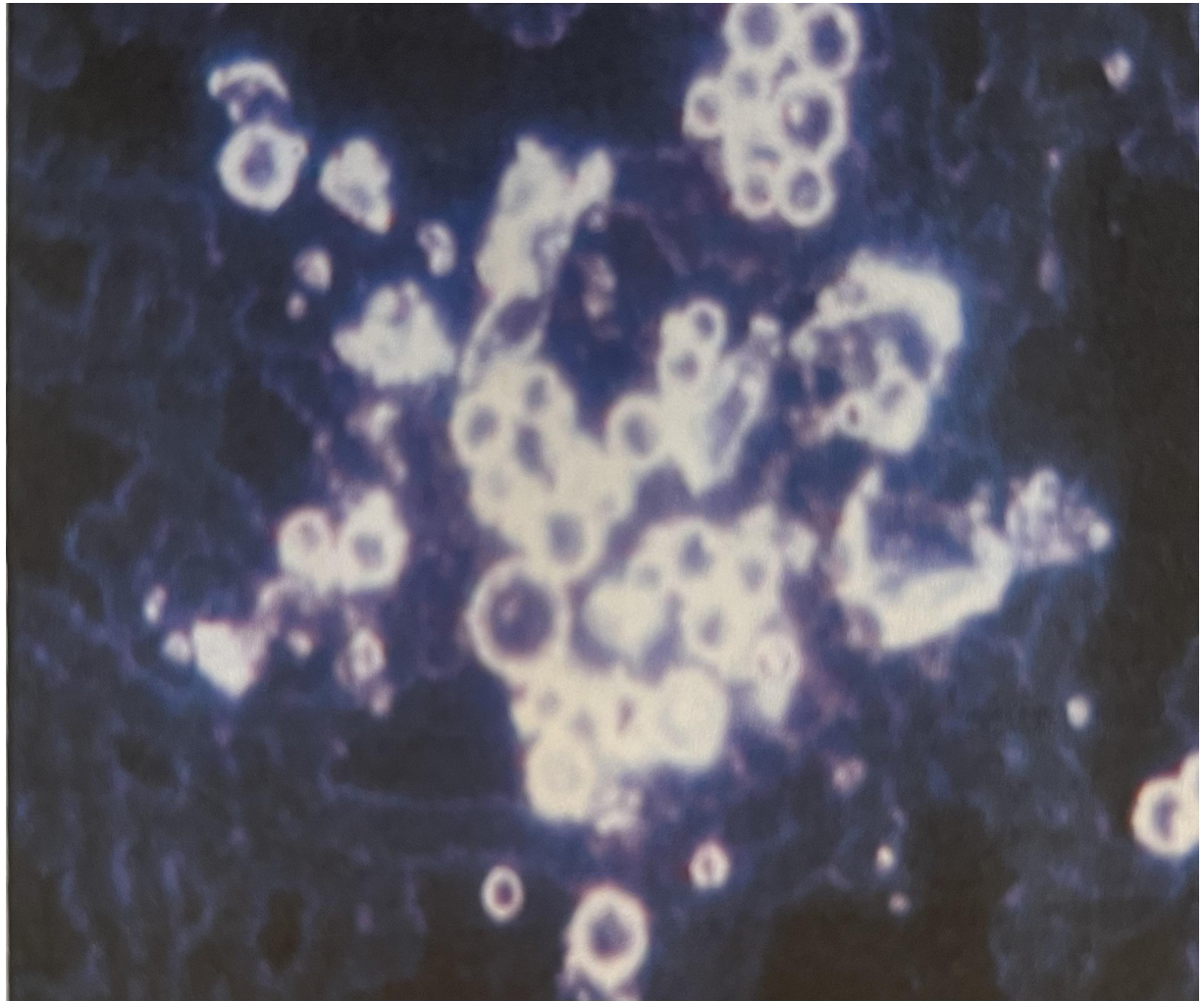


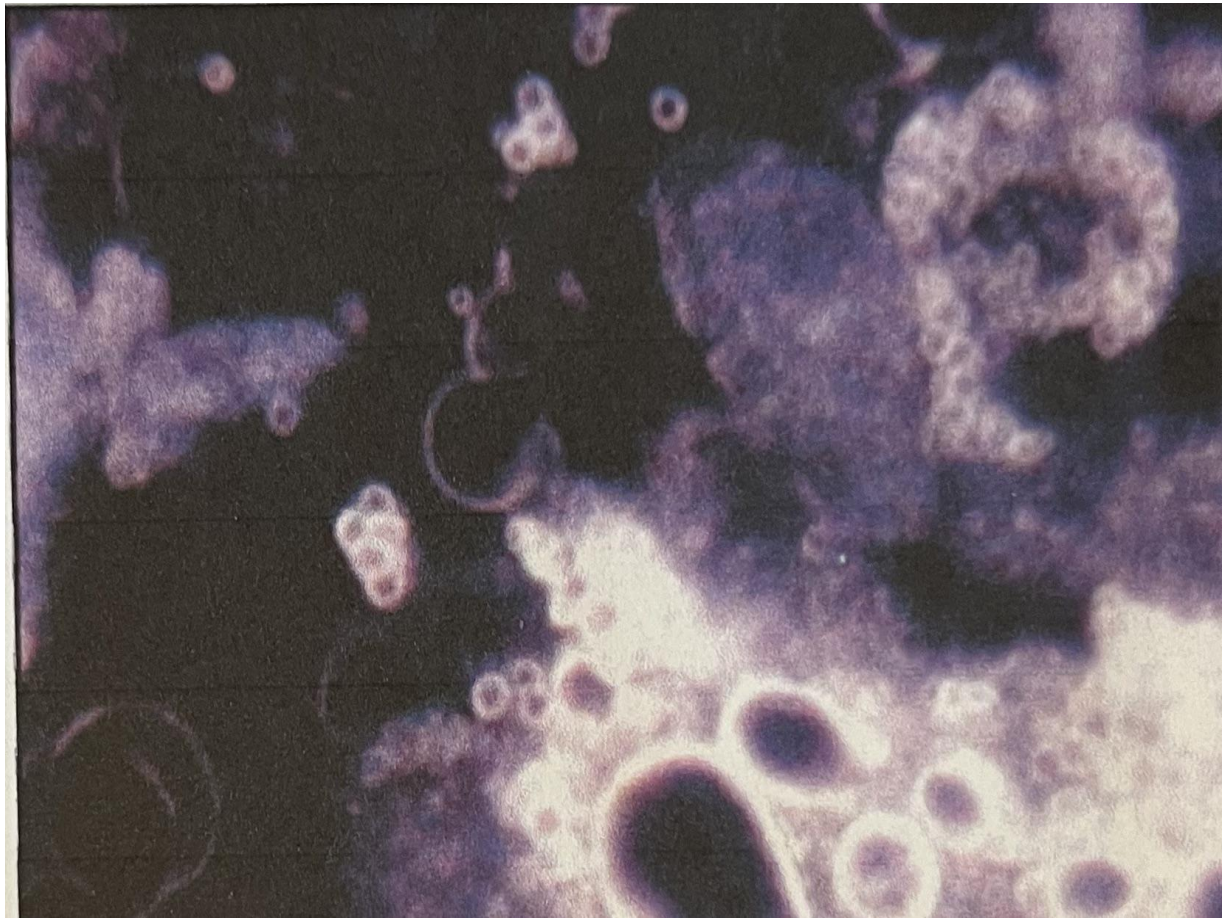
The **Thecit** is the beginning of the bacterial cycle and it can go on to create more advanced bacterial form or it could reverse course and be a regenerative form **Regressive Pleomorphism.** Less than 7 nuclei can be regenerative, more than 7 nuclei can become a more advanced bacteria. **Progressive Pleomorphism**



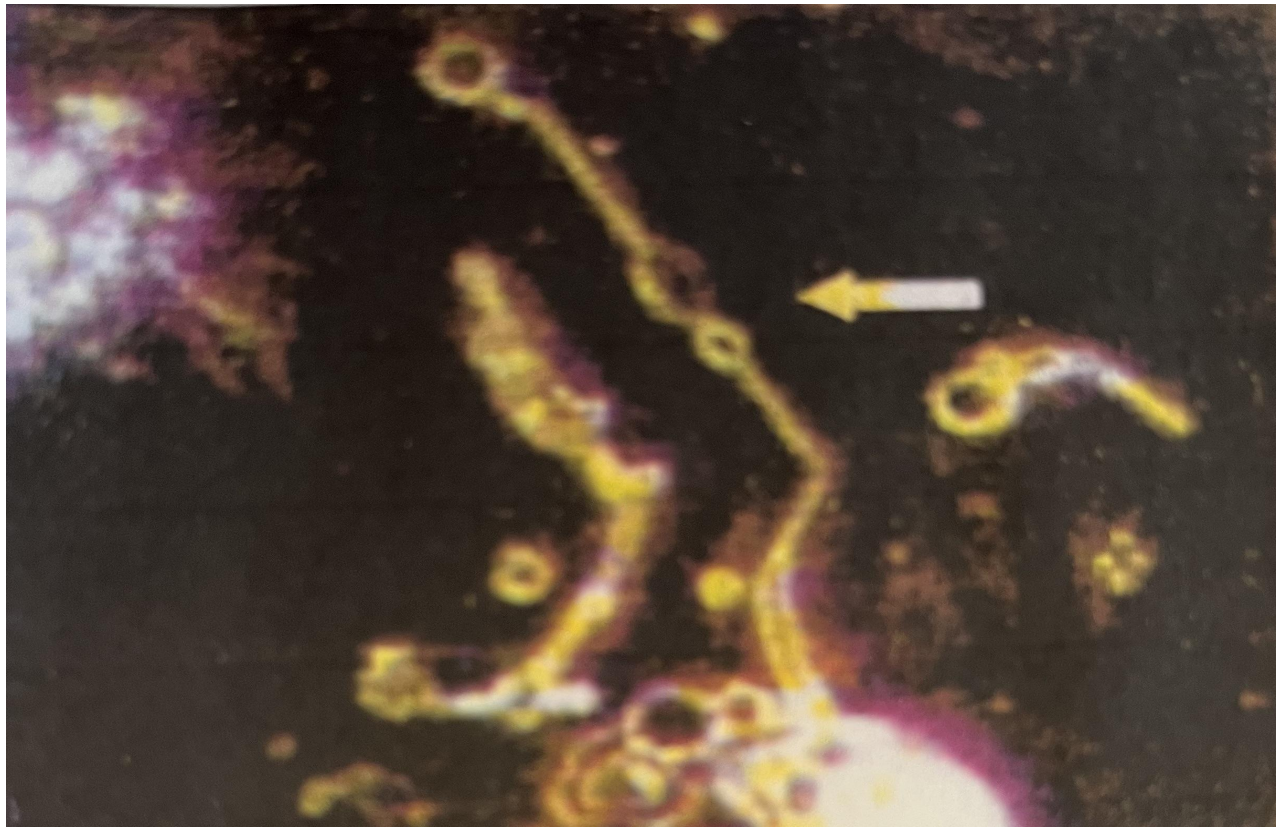
Spirochete

More Advanced Bacterial Forms

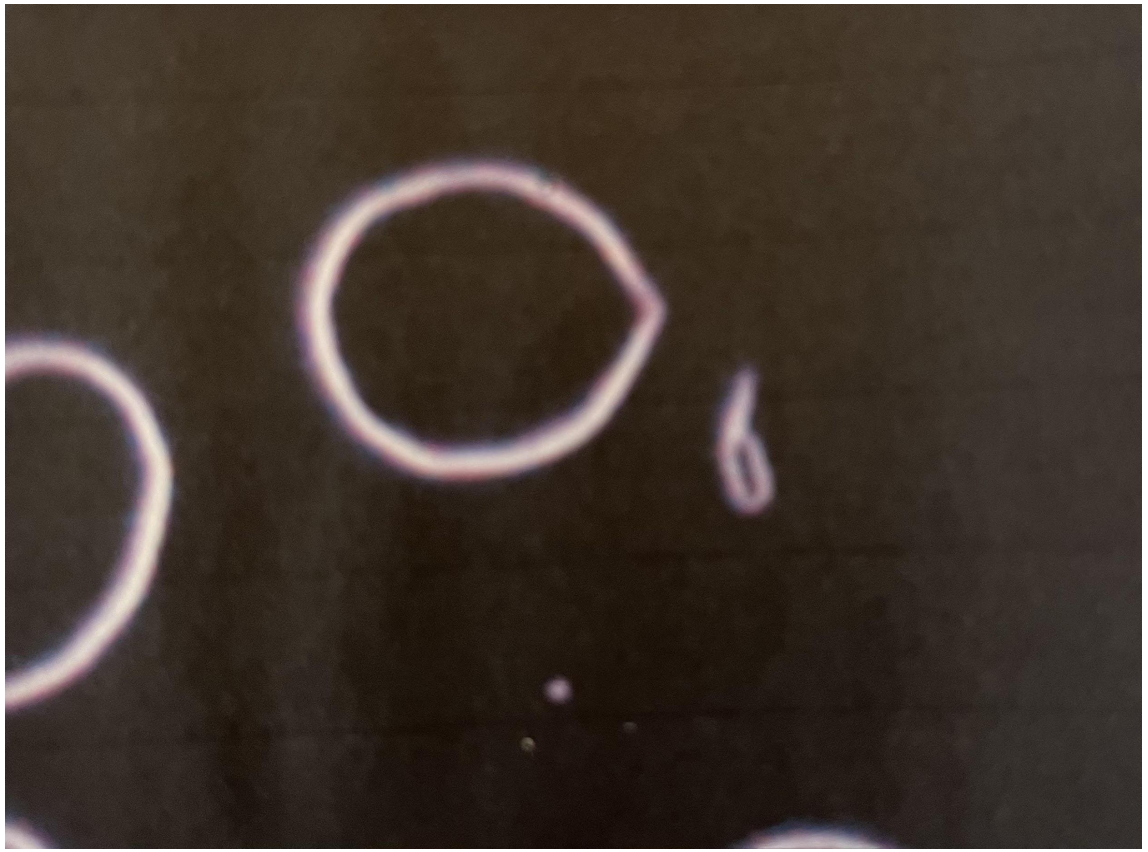




We can find many bacterial form as the terrain becomes increasingly disrupted.



Cell wall Deficient forms



Bacterial form with Flagella

Historical Overview Pleomorphic: Antoine Bechamp (1816-1906)

- The most important microbiologist of the 19th and early 20th Century.
- Considered the **father of pleomorphism** promoting the belief that viruses and bacteria, yeast, fungi and mold are the evolution from *microzyma* depending upon conditions in the biological terrain.
- Bechamp discovered that all organisms contain tiny molecular granules which he call *microzyma* and that under certain conditions, *microzyma* will evolve into bacteria.
- These microscopic forms can develop into higher and progressively more pathogenic forms and that they assist in the breakdown of the cell structures of the host.
- He showed that the cell was not the smallest unit of life and germs definitely are the result of terrain imbalance, not the cause of disease.

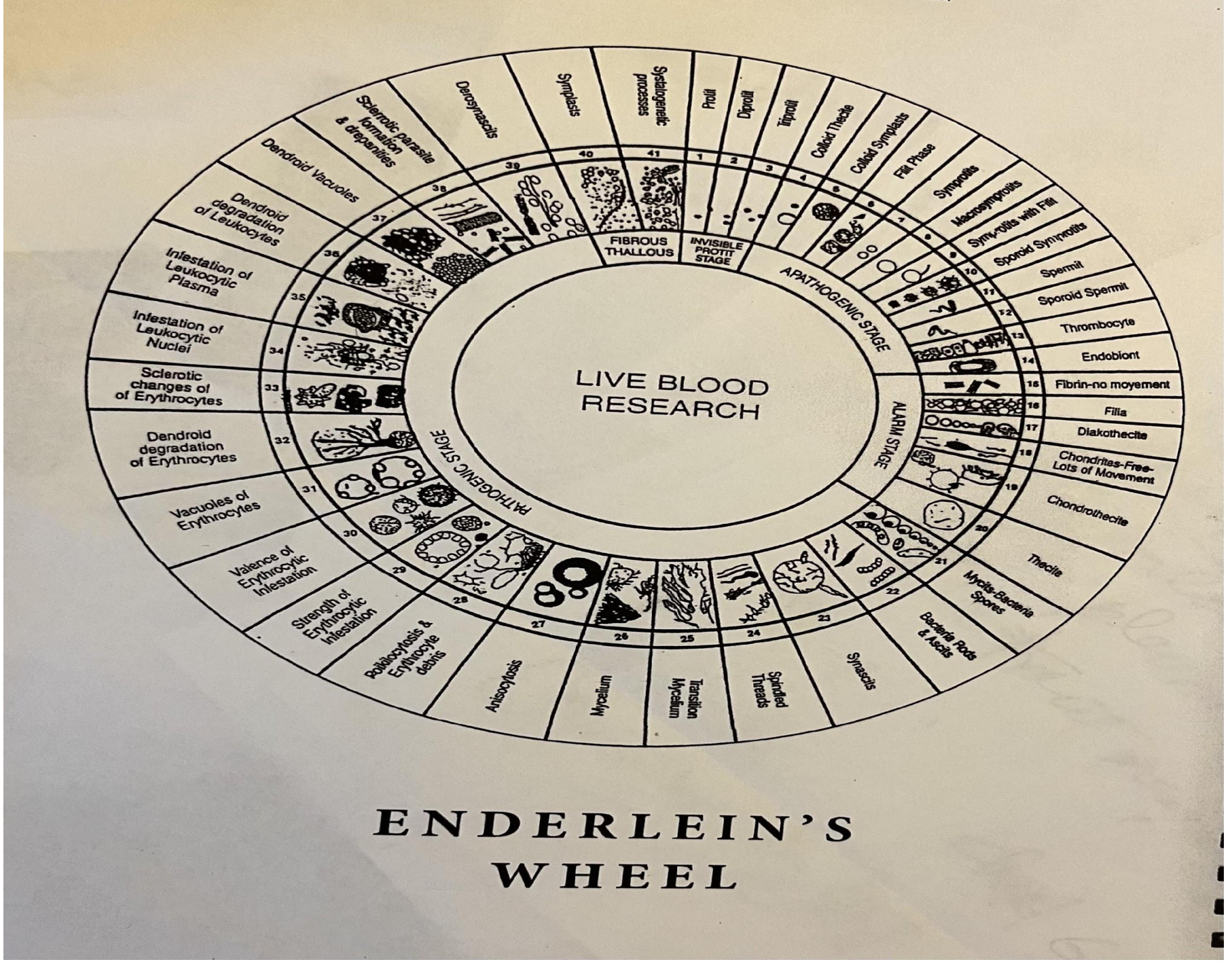
Louis Pasteur (1822-1895)

- Pasteur was a pioneer in microbiology in France in the 19th Century.
- He was the father of **monomorphism (having one form**) stating that bacteria appears in a constant growth form and can not change.
- Pasteur overshadowed Bechamp and attempted to discredit him, plagiarizing many of his concepts and discoveries.
- Bechamp and Pasteur strongly disagreed in their bacteriological theories and agued heatedly about who was correct. Pasteur championed the theory of disease that described nonchargeable microbes as the primary cause and which Bechamp declared to be the “greatest scientific silliness of the age”.
- **On his death bed it is said that Pasteur acknowledged that Bechamp was correct.**
- Pasteur’s “germ theory” remains the dominant accepted point of view to this day and is still taught in medical schools and universities.

Gunther Enderlein (1872-1968)

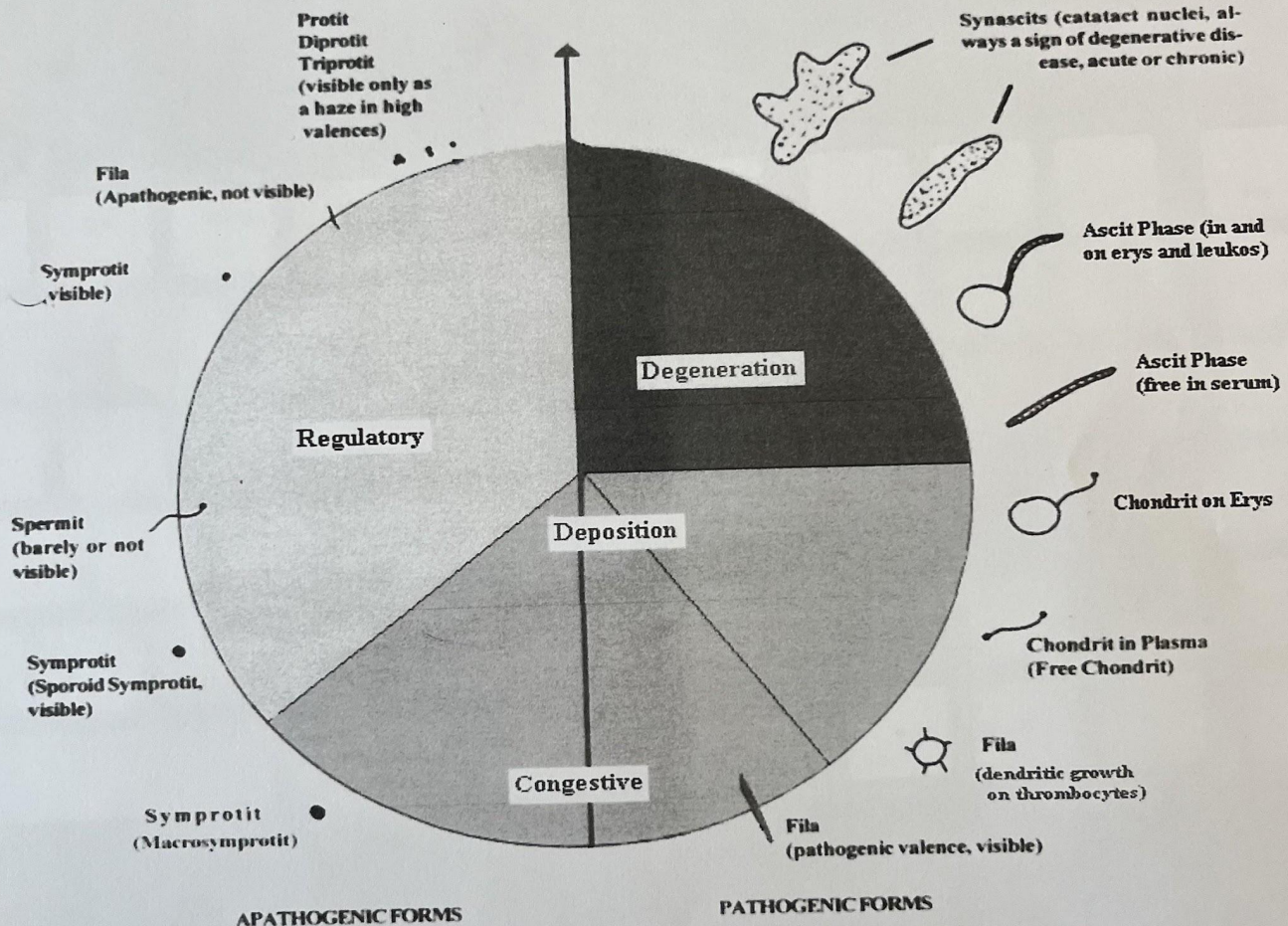
- 60 years of research in pleomorphism gave us a comprehensive appreciation of the development of the pleomorphic forms.
- The cell is not the smallest visible living unit.
- The proof that bacteria have a nucleus or nucleic equivalent (mych).
- The scientific proof of pleomorphism of microbes.
- He proving that blood is not sterile or germ-free.
- Disease means symbiotic disturbance or dysbiosis.
- Certain microorganisms under go an exact scientifically verifiable growth cycle. Pathogenic agents exist and progress within a cycle.
- Apathogenic microorganisms can mutate into higher, disease related, toxic phases of development depending on the effects of trauma from diet chemicals, radiation, emotions, etc.
- Pathogenic microbes can be reverted to their lowest primitive developmental state and then be excreted by the body.

Enderlein's Wheel

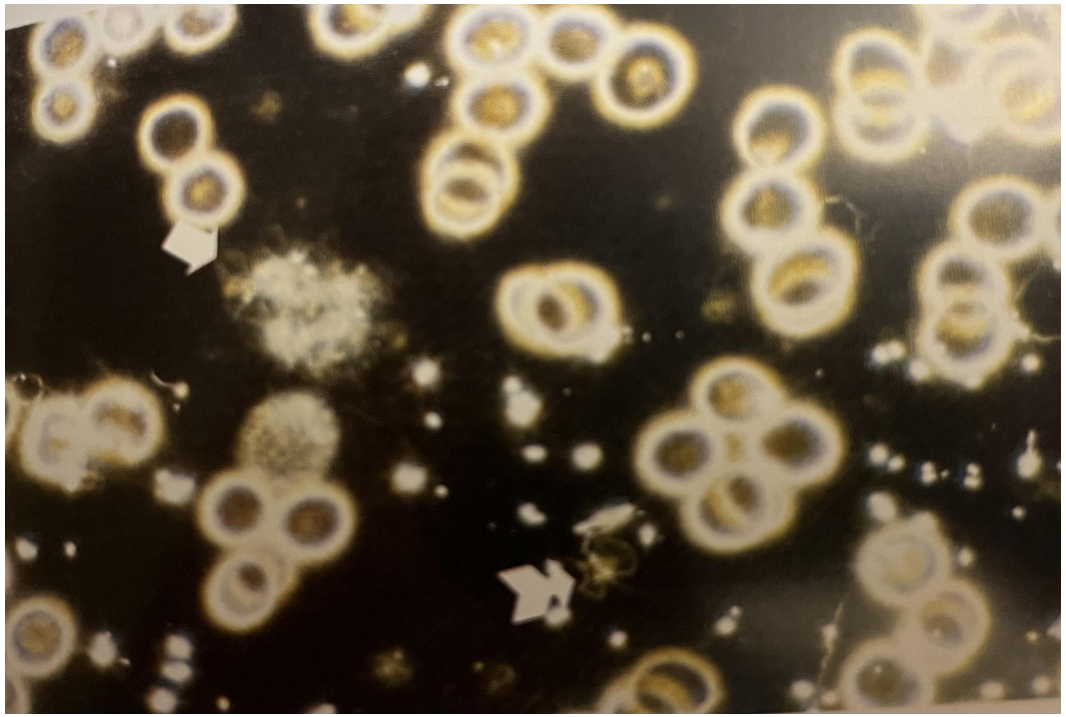


The Lifecycle of Polymorphic Microorganisms

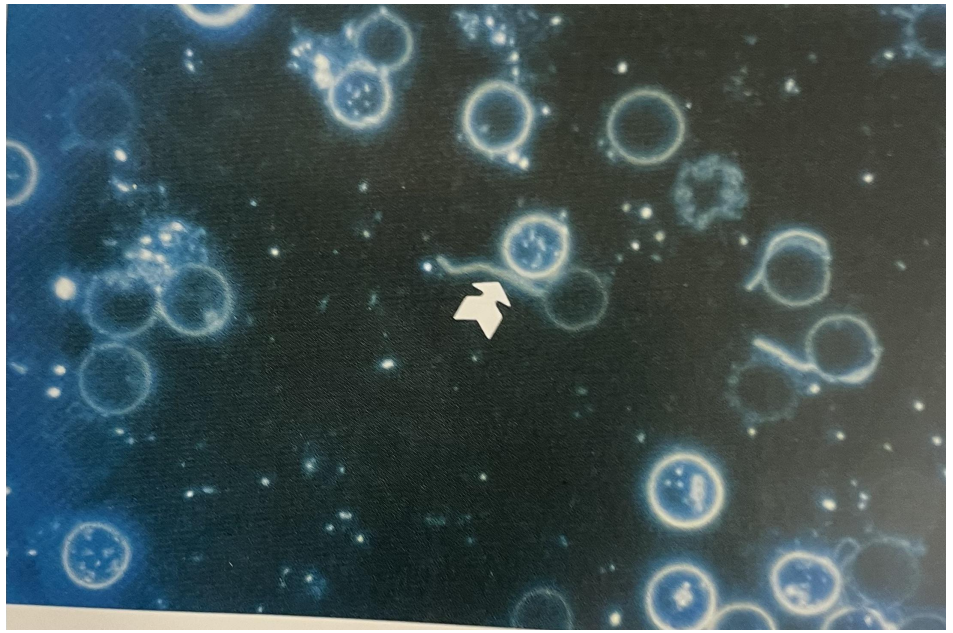
as viewed in the live blood
per Dr. Gunther Enderlein
revised by Michael Coyle 7/2000



Pleomorphic Early Forms

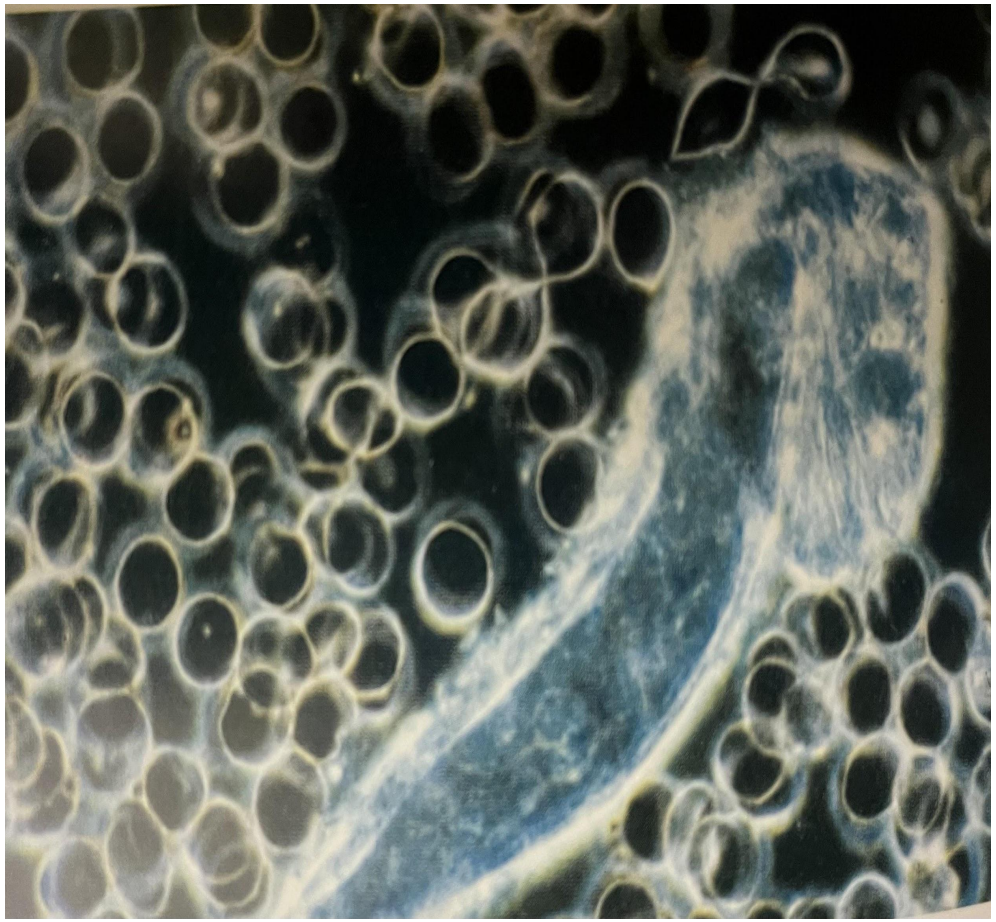


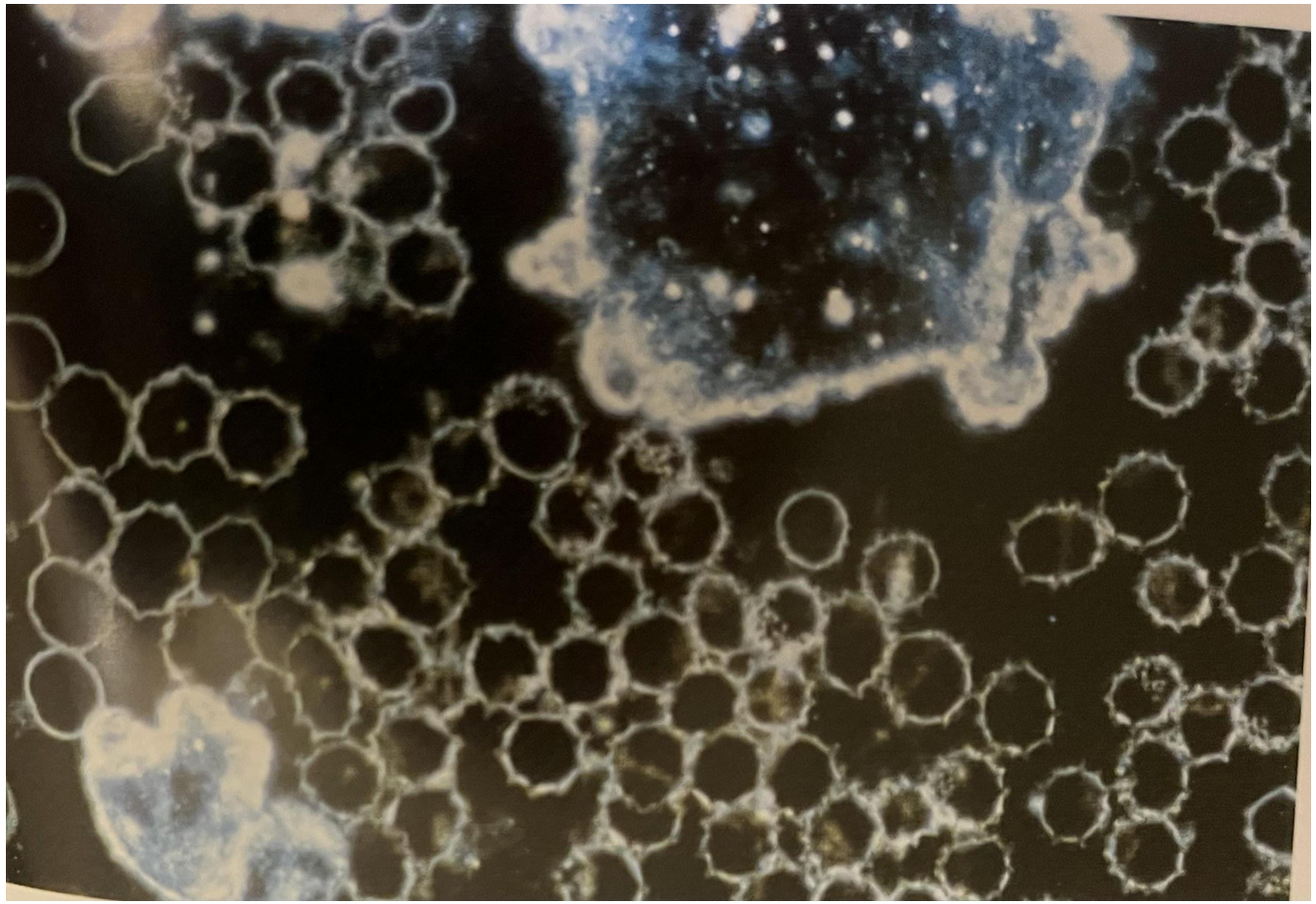
Pteroharpe and Lymphocyte with chondrit-dendroids



Chondrits

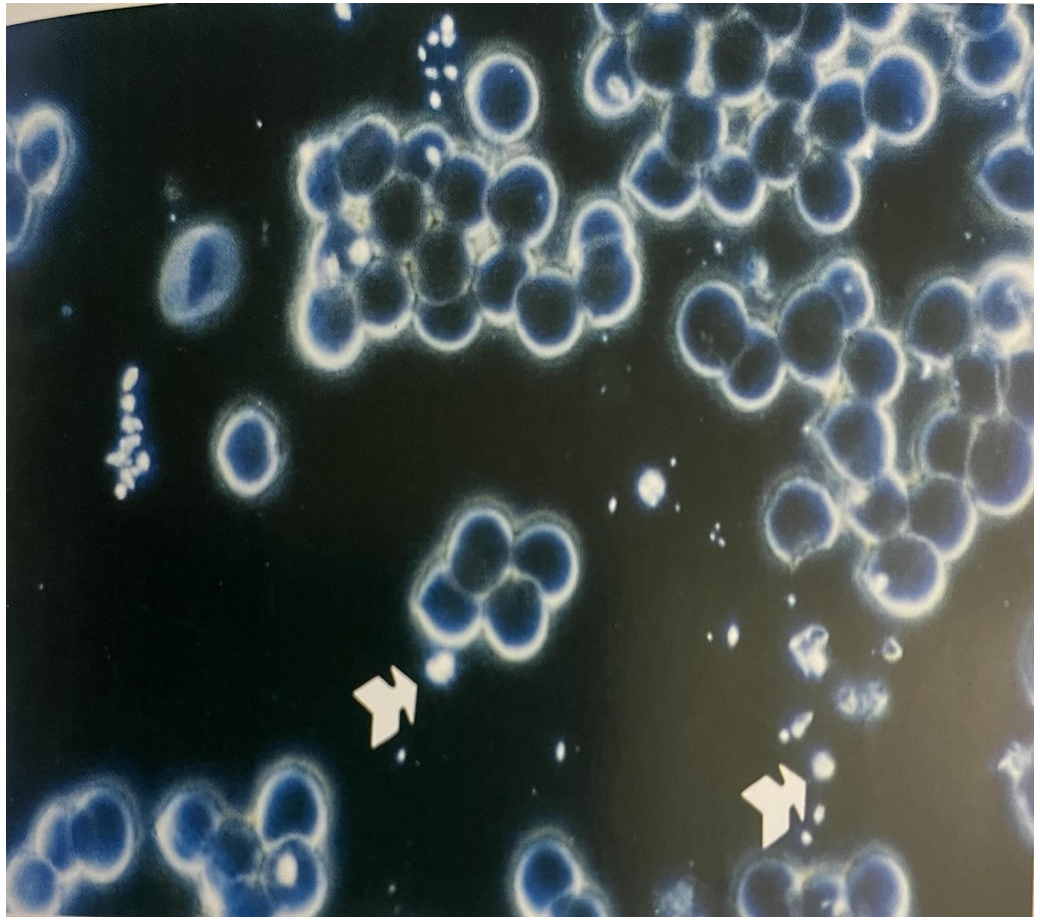
Pleomorphic Crystals/Pseudo Crystals



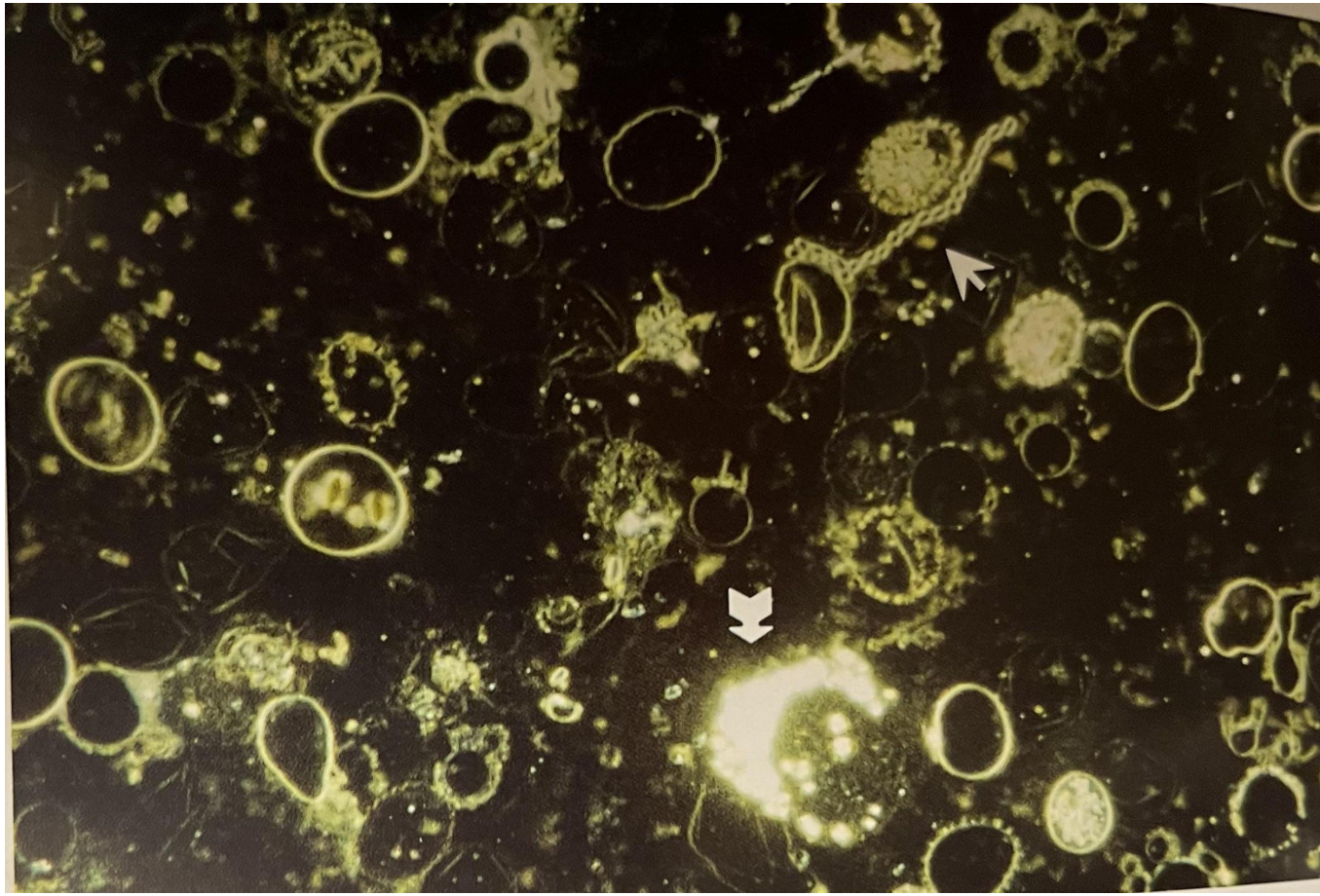


Pseudo crystal can be an accumulation of toxic debris that is consolidated to then be broken down by WBC's to be removed from the body.

Progressive Pleomorphism



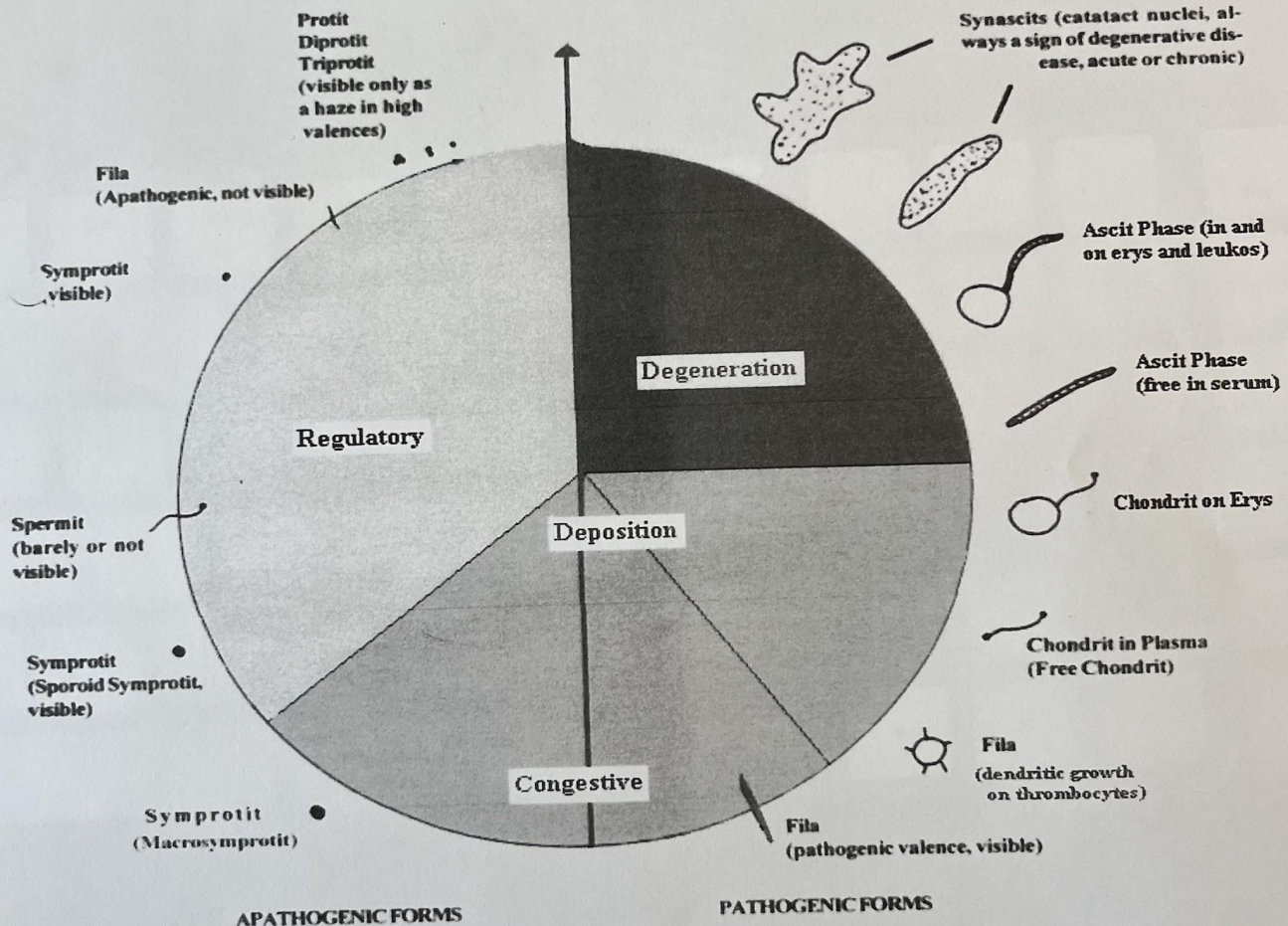
Sporoid symprotit



Lots going on !!!
Severe degenerative disease

The Lifecycle of Polymorphic Microorganisms

as viewed in the live blood
per Dr. Gunther Enderlein
revised by Michael Coyle 7/2000



Lyme Disease

- Studying Lyme disease we appreciate its “shape shifting” nature.
- Borrelia bacteria are spirochetes. But shortly after infection they convert to Cell Wall Deficient pleomorphic variants that evade detection by the immune system.
- For this reason, they also evade most conventional testing which looks for antibodies against cell wall epitopes that no longer exist!
- The strategy that fools nature fools medicine.

The Great Biological Debate: Who Won This Argument?

Bechamp vs. Pasteur and the great debate.

- Pasteur's "Germ Theory" as we know has developed into the primary medical approach since the 1930's.
- Orthodox medicine is based on **cellular pathology**. This states that the cause of every illness is a disturbance of individual cells.
- Monomorphism is still the standard that we use today.

- **One pathogen One disease diagnosis one treatment.**
- Pasteur got the credit Bechamps has been forgotten.

Remembering the Various Aspects of RBC Presentations

- Irregular sized RBC's large **(macrocytes)** or small **(microcytes).**
- Cell membrane distorted.
- Inside the RBC can have vacuoles, spheroid shapes or opacified inclusions of internal contents. These inclusions can be termed the **parasitizing** of the cytoplasm of the cell.
- The RBC's should be spacing properly, without sticking together.

  (reaction to **Acute Phase Proteins** controlled to a greater extent by

  the **Zeta Potential**).
- The RBC membrane can develop extensions and the membrane can rupture with progressive compromised. Spleen should pull these diseased cells out, recycling what it can use and sending the rest to the filtering organs

Let’s look at Variations of Disruptions to the Red Blood Cells membrane.

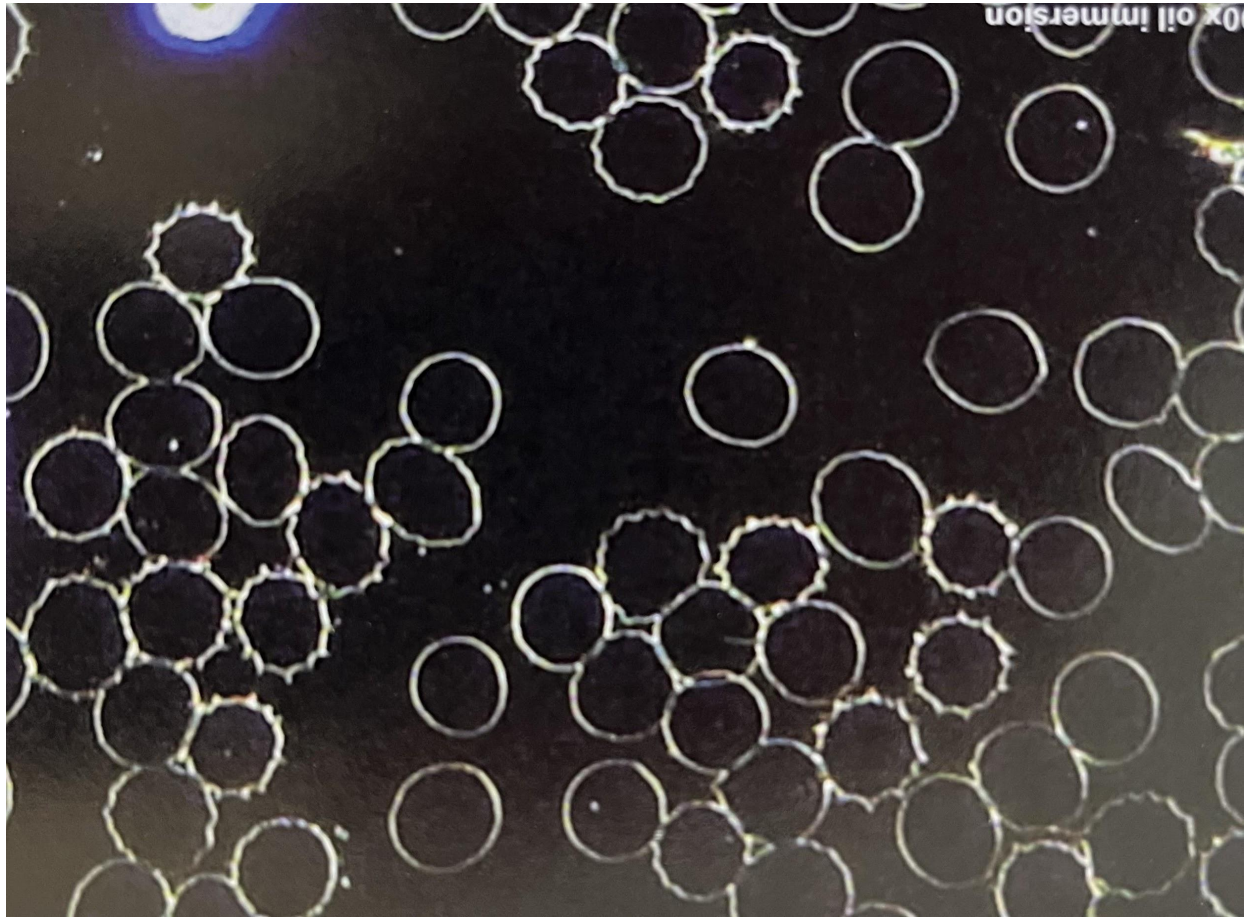
Spiculated RBCs (spiked, needle like or small projection on a membrane):

- Poikilocytoses (irregular) all abnormal shaped RBC’s.
- Acanthrocytes (thorn like projections advancing to crenated cells)
- Echinocytes (Burr cells, Berry Cells, can advance to crenated cells)
- Keratocytes (Helmet cells, Bite cells, RBC Horn cells)
- Schistocytes (Broken membranes)

Echinoctyes
(Burr Cells, Crenated Cells, Berry Cells)

Has been associated with:

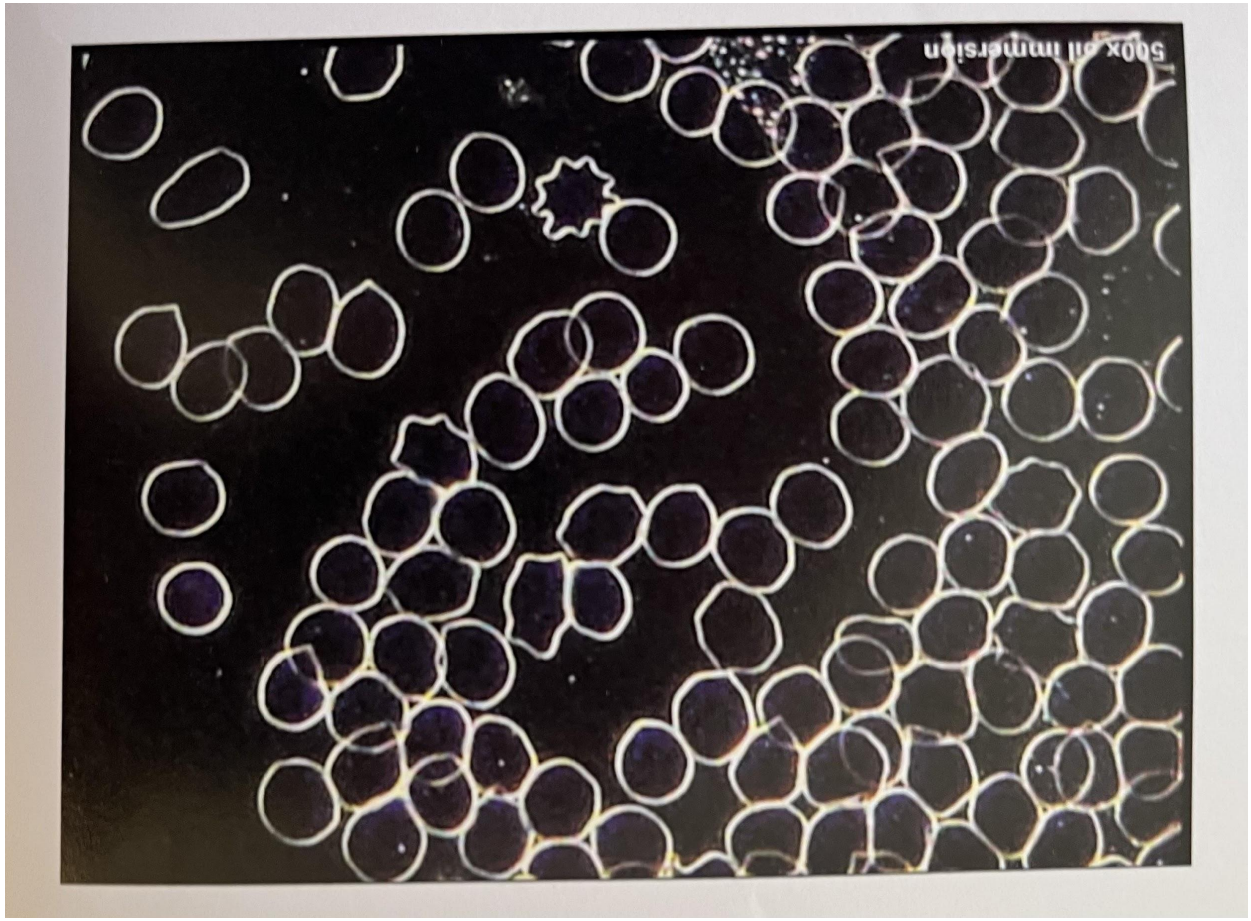
- free radical damage/ oxidative stress.
- Kidney stress
- Inability to control fluids leading to loss of intracellular water
- Pyruvate kinase deficiency
- High pH or increased calcium
- Abnormal lipid content in the plasma



Acanthrocytes
(spur cells, thorn cells, crenated cells)

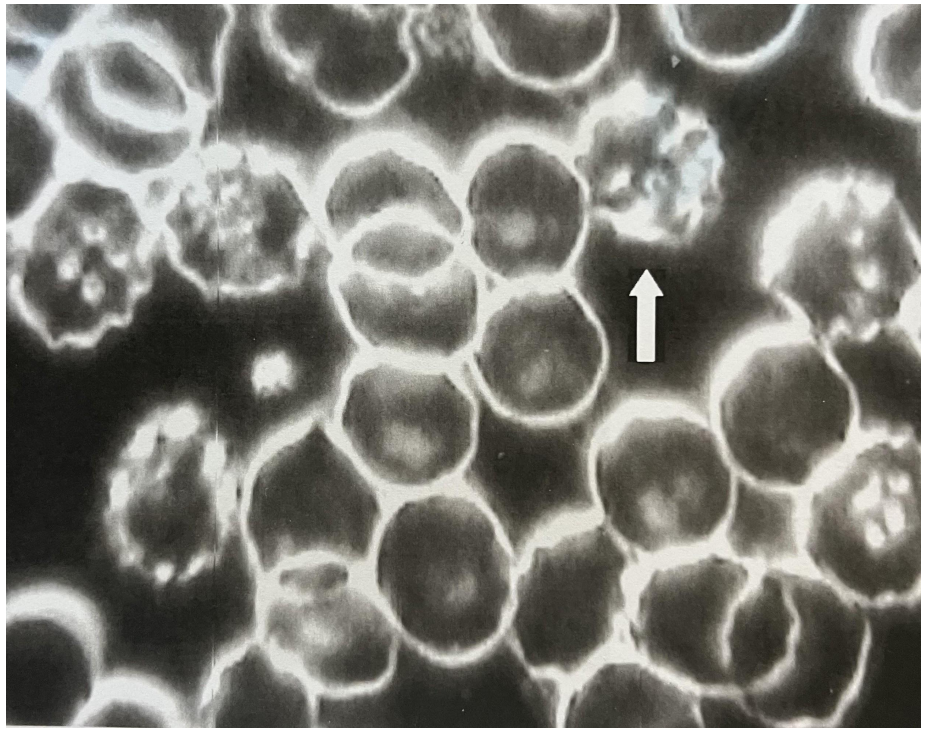
Can be associated with:

- Inflammation,
- oxidative stress,
- High cholesterol
- Incorrect synthesized beta-lipo protein from the liver,
- Kidney stress and potassium loss,
- Dietary fat digestion
- Suggestive of liver and spleen dysfunction,
- Vitamin E deficiency



More Acanthrocytes--Crenated Cells

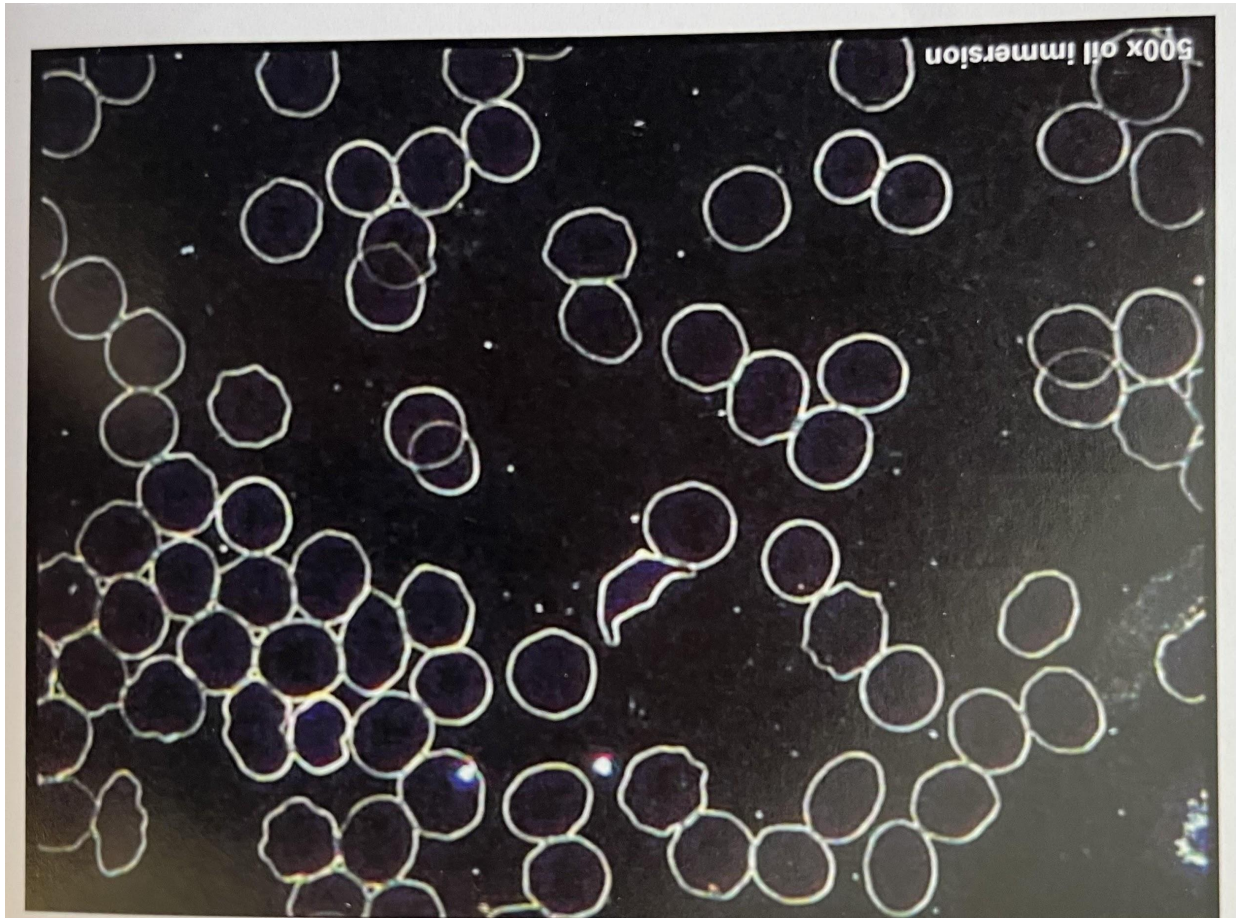
The **Red Blood Cell membrane** can further devolve into a crumpled up crenated cell, severely compromising its ability to function and should be cleared through the phagocytic process in the spleen.



Kerotocytes (RBC horns, Helmet cells, Bite cells)

Has been associated with:

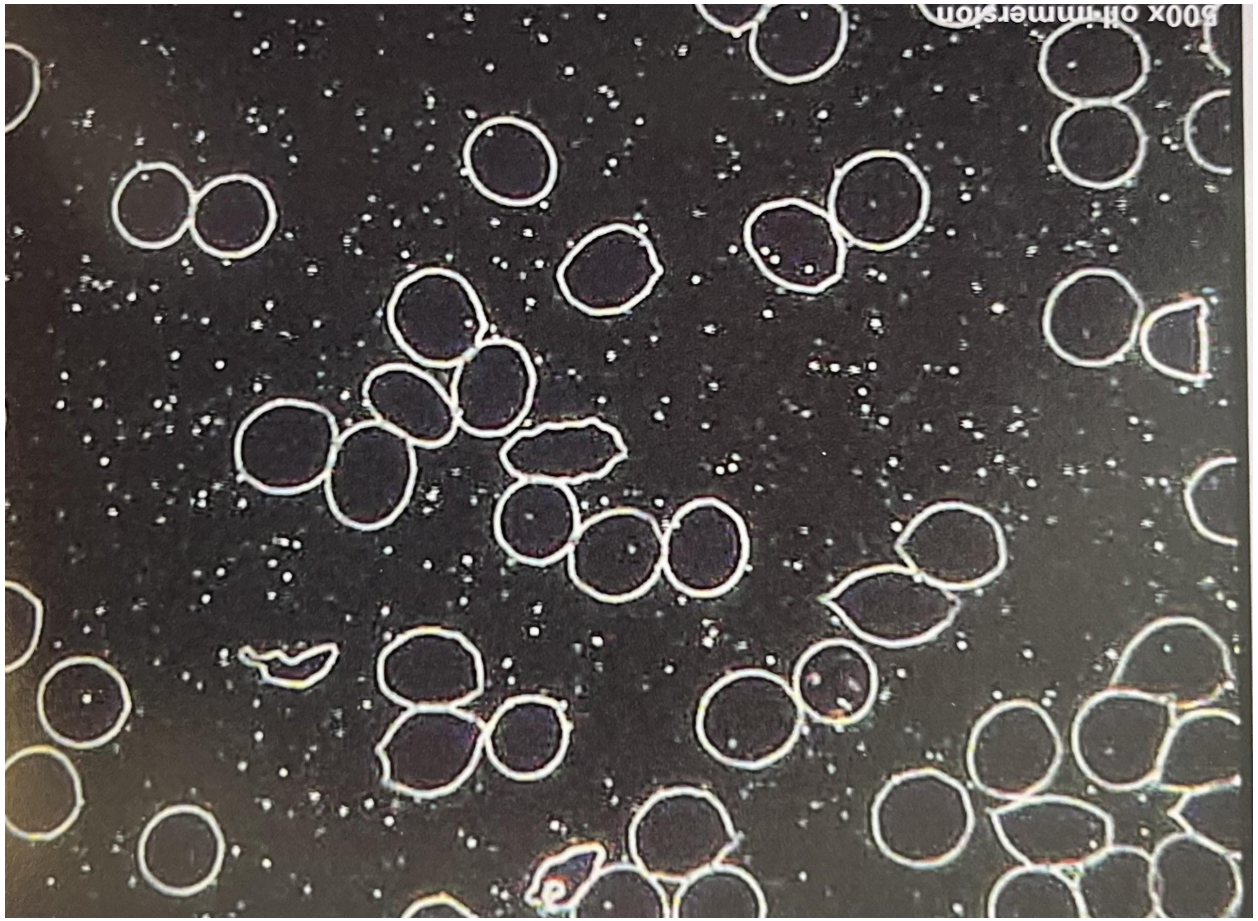
- Intracellular oxidative stress,
- Mechanical trauma d/t RBC's passing through intrafascular fibrin strands,
- Spleen dysfunction (macrophages should remove).
- Possible virus
- Pulmonary emboli,
- hemolytic anemia,
- hepatic disease,
- glomerulonephritis,
- iron deficiency anemia,
- Chronic fatigue



Schistocytes
(Broken membrane, cell fragments)

Has been associated with:

- High free radicals can be d/t toxic fumes, ingestion of toxins, stress, certain drugs tobacco, coffee, lack of assimilation.
- Hemolytic or megaloblastic anemia,
- Severe burns,
- Damage by mechanical trauma related to cardiac and vessel abnormalities,
- Diseases of the small vessels and microcirculation,
- Turbulent blood flow + hypertension, valve diseae



What is German Biological Medicine?

- A fully integrated, scientifically grounded system of holistic therapy.
- A set of unique remedies and protocols that can restore critical immune, endocrine, cellular and neurological relationships.
- A way of working with the vast complexity of the body's interior terrain.

Why Haven’t I Heard More about this?

- In Europe, Biological Medicine had a chance to demonstrate its clinical efficacy before it’s theoretical foundation was discredited.
- It therefore became a respected part of medical and popular culture, especially among innovative medical practitioners.
- But in the US and other parts of the world Biological Medicine sought acceptance long after its core theories were no longer scientifically variable.

Why Should I Care about Biological Medicine?

- Biological Medicine is an absolutely remarkable tool that can address many chronic conditions at their deepest biological roots.

- No therapy is a panacea, but in the hands of a skilled practitioner Biological Medicine can reach into layers of the body that are difficult if not impossible to access with other modalities.

- The core elements of Biological Medicine are like nothing else in the healing world.

Isopathic Preparations—
The Sanum Remedies

- Isopathic remedies are based on the discovery that microbes are in general pleomorphically variable.
- This means that most microbes can change their morphology and biology including their relationship to a host's internal ecology and immune system-in response to different cues and challenges from their environment.
- Enderlein was able to isolate the microbial metabolites that encourage this restorative transformation to take place in the body.
- Isopathic remedies are therefore derived from the same pathogen that, in a more complex pleomorphic form, can be the cause of disease.

Isopathic is not Homeopathic

- This is superficially similar to homeopathy byt works by a very different mechanism.
- Isopathic and other biological remedies are delivered in homeopathic dilutions and therefore have a bioenergetic component.
- But their primary effect is biomolecular.
- Therefore, lower dilutions (such as 3x vs. 5x) are more potent than higher dilutions.
- Also isopathic remedies do not test well using kinesiology and other bioenergetic methods.
- Their impart is how they will change the body over time-not how they scan during testing.