

Aggregation & Dis-aggregation

Methodology

- Measurement of optical light reflection & intensity of RBC, while in shear rate

Condition

- Shear rate with STOP in time

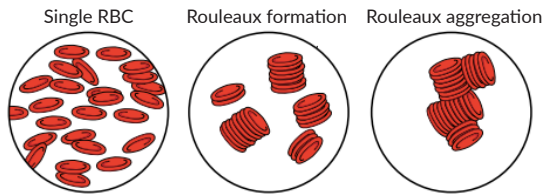
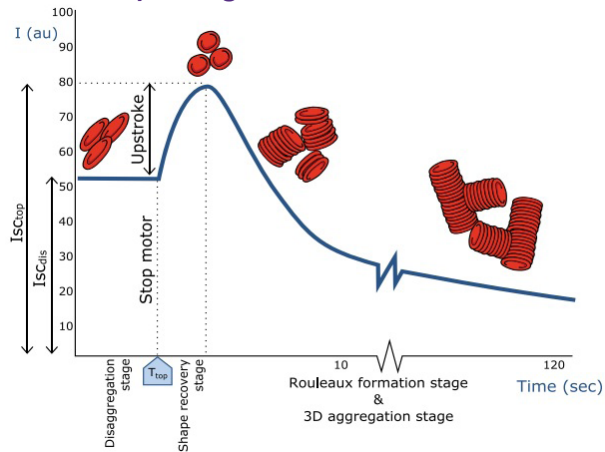


Fig.4 At low shear stress, RBC form larger stacks (rouleaux), followed by side-to-end formation of 3D-aggregates

RBC Sylectogram



Research fields:

- Blood storage
- Blood quality; defining optimum shear rate for RBC to aggregate (by iteration)
- Malaria, RBC Parasites

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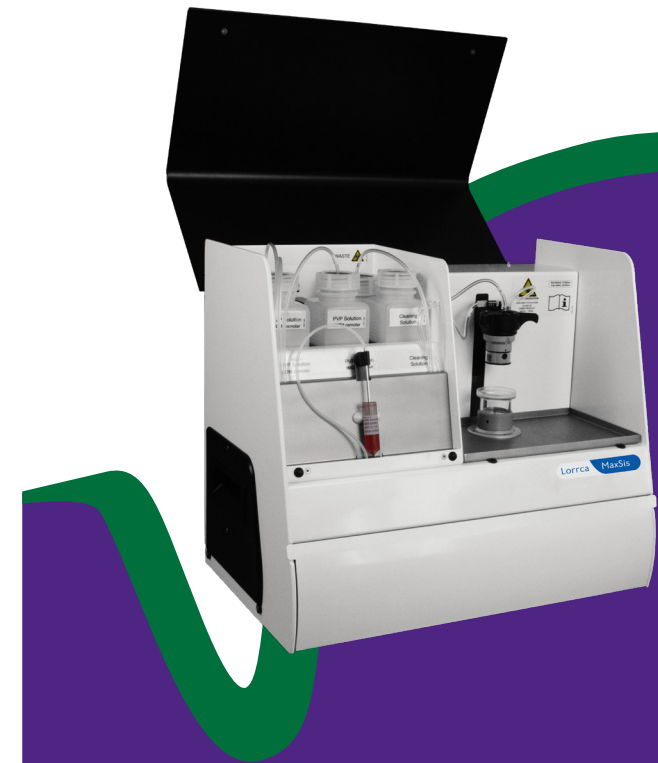
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Elongation/Deformability

Methodology

- Measurement of laser diffraction pattern of RBC, while in shear stress

Condition

- Shear stress, in specified viscosity

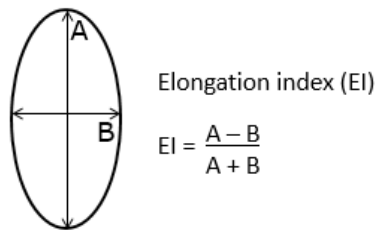
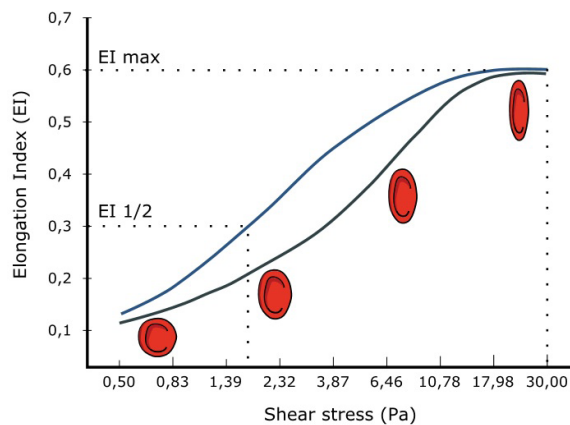


Fig.1 Change in Elongation Index (EI) with applied shear stress

RBC Deformability



Research fields:

- Membrane disorders RBC; Spherocytosis
- Enzyme deficiencies; G6PD
- Storage, Lesion, RBC Rejuvenation
- Sepsis, Oxidative stress

Osmoscan

Methodology

- Measurement of laser diffraction pattern of RBC, while in shear stress

Condition

- Shear stress, in specified viscosity, in osmolality gradient

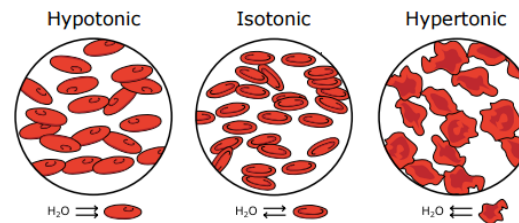
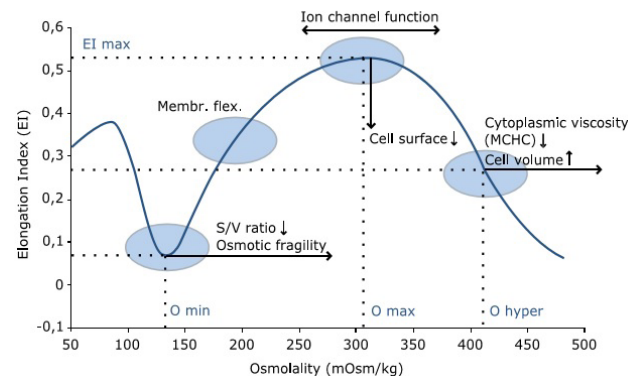


Fig.2 Cell condition under different osmotic values

RBC Osmoscan



Research fields:

- Hereditary anaemias
- Membrane disorders; Spherocytosis
- Enzyme deficiencies; G6PD
- Thalassemia
- Sickle Cell Disease

OxygenScan

Methodology

- Measurement of laser diffraction pattern of RBC, while in shear stress

Condition

- In shear stress, in specified viscosity, in pO₂ - gradient

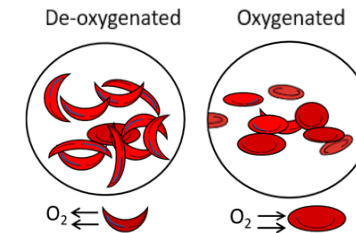
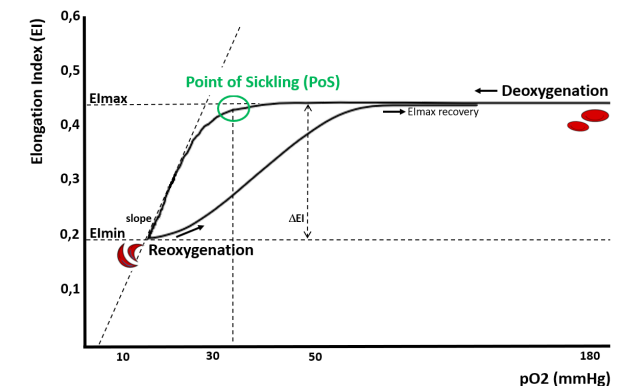


Fig.3 Cell condition under different oxygen conditions

RBC OxygenScan



Research fields:

- Sickle Cell Disease; defining the individual sickling susceptibility and treatment monitoring