



A New Optics-based Quantitative Method for Assessment of RBC Flickering

BIDMC #1049

Background:

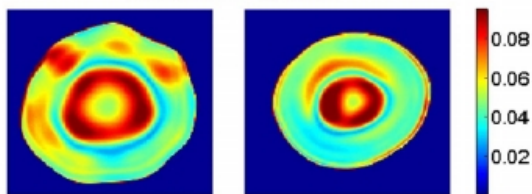
The red blood cell (RBC) membrane has a vibratory motion called "flickering", the bioenergetic basis of which remains unknown.

Investigators at BIDMC have developed a novel optics-based method to quantitatively assess RBC flickering and have demonstrated that the movement exhibits complex patterns that significantly degrade with the *in vivo* age of the cell.

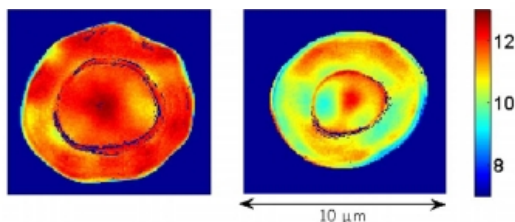
Stage of Development:

Images of RBCs from time lapse phase contrast and dark field microscopy are analyzed using algorithms developed to quantify the complexity of the membrane flickering patterns.

Newly formed RBC Older RBC
Coefficient of variation



Multiscale Complexity



Ongoing studies include correlation of the observed flickering complexity maps with RBC structural and functional properties.

Opportunities for Commercialization & Collaboration:

- As a Screening Tool / Biomarker
- To test new storage techniques for banked blood on RBC functionality
- To test the effects of pharmaceutical agents on RBC functionality
- To monitor the effectiveness of resealed 'ghost' RBCs for drug delivery

Patent Status:

US Patent pending

Publication:

Physical Review E, 78 (2008): 020901

Competitive Advantages:

- ✓ Easily used with commercially available microscopes
- ✓ Fast, computer-based analysis
- ✓ Potential for high-throughput screening

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