The Future of Automated CBC Analysis
Digital Holographic Microscopy

By Bonnie Bragdon, DVM, MS

Do you ever doubt the results from your CBC analyzer? While automated CBCs performed by point of care analyzers are efficient and accurate, they often provide limited information about cell morphology. Many indices are reported through indirect measurement methods or calculations. For ill patients and flagged or abnormal results from automated analyzers, a manual blood smear is typically indicated.

However, this need for manual smears is set to change with the advent of new methods for digital microscopy. With increased computing power and the integration of artificial intelligence, three-dimensional measurements of cells and their morphology can be made and interpreted, potentially replacing current methods for reporting a CBC. Expect new methods for assessing blood cell morphology to be available in your clinic in 2025.

What New Methods for Blood Cell Microscopy are in Development?
New methods for digital microscopy are in development and digital microscopy is an emerging technology that allows label-free cell imaging by capturing phase contrast images of cells. This method provides rich intracellular information due to subtle refractive index changes at internal structures.

Advantages of DHM
- **Accuracy**: Provides detailed three-dimensional measurements of cells and their morphology.
- **Efficiency**: Capable of high-throughput imaging without time-consuming procedures.
- **Automation**: Reduces the need for manual blood smears, streamlining the diagnostic process.

Clinical Implications
Veterinarians can expect more accurate and comprehensive automated CBC analyses, leading to better-informed clinical decisions and improved patient care. The integration of this technology into routine practice will enhance diagnostic capabilities and reduce the reliance on manual smears.

Conclusion
Digital holographic microscopy represents the future of automated CBC analysis. By leveraging advanced computing power and artificial intelligence, this technology promises to revolutionize the way we analyze blood samples, providing more detailed and accurate information about cell morphology.