Abstract

The objective of the present study is to develop an automatic tool to characterize the morphology of bacterial cells in digital microscopic cell images. Geometric shape features are used to identify the morphological characteristics, namely, flagella and fimbriae or pili of bacterial cells. The current methods rely on the subjective reading of cell profiles by a human expert based on the various manual staining methods for visualization of these characteristics. In this paper, an automatic method is proposed for bacterial cell characterization based on their morphological characteristics by segmenting digital bacterial cell images and extracting geometric shape features that define cell morphology. The experimental results are compared with the manual results obtained by the microbiology expert and, thus, demonstrate the efficacy of the proposed method.

References

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Identification of Flagellated or Fimbriated Bacterial Cells using Digital Image Processing Techniques


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Index Terms

Computer Science

Image Processing
Keywords

Bacterial cell image analysis  flagellum  fimbriae  bacterial cell morphology  digital image analysis
edge detection