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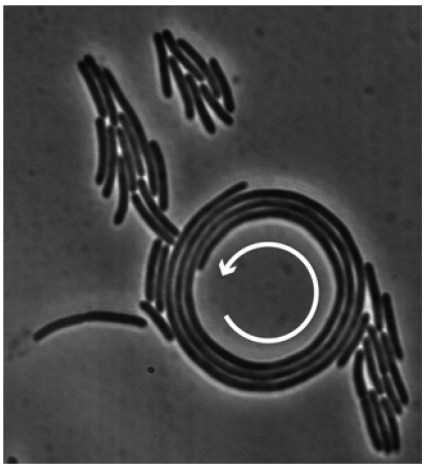
Size matters



Filamentation in bacteria is normally associated with defects in cell division leading to exceptionally long cells. Research reported in this issue demonstrates that these supposedly "defective" cells in fact play the lead role in the spread of *Paenibacillus vortex* biofilms. Using groundbreaking methods that permit precise delineation and tracking of cells, Vallotton demonstrates that filamentous cells are not only those most effective in pushing forward at the leading edge of the biofilm, but also they are responsible for the celebrated phenomenon of vortex formation in *P. vortex*, which had remained an enigma for over 20 years. An unusual interstitial geometry between the agar growth media and a glass cover slip was used to enable high resolution microscopy and thus reveal the astonishing cellular ballets that culminate when millions of bacteria move coherently in circle. The full potential of the interstitial geometry for cytometry is only starting to be appreciated

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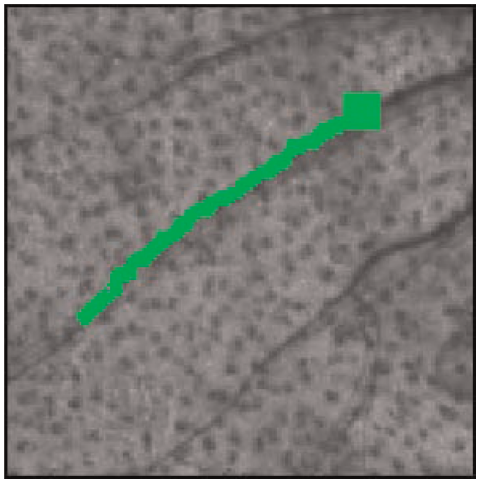

Computer vision cytometry of rare circulating cells

In vivo sensing, counting, and tracking of circulating cells in the bloodstream are important in many areas of biomedical research, but existing methods are limited in their detection sensitivity. Markovic and coworkers developed a wide-field fluorescence imager and cell tracking algorithm to study rare circulating cells in the vasculature of the mouse ear. The wide field-of-view allowed sampling of large peripheral blood volumes without the need for drawing blood samples, but this necessitated the use of high imager gain and produced noisy image sequences. A computer vision algorithm was developed to automatically analyze these video sequences, resulting in a highly sensitive and accurate method for enumerating circulating cells and visualizing their trajectories *in vivo*. The system was validated with multiple myeloma, but could be used with virtually any circulating cell population.

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