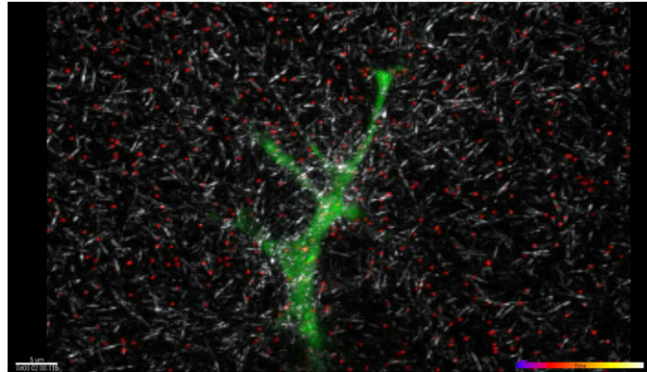


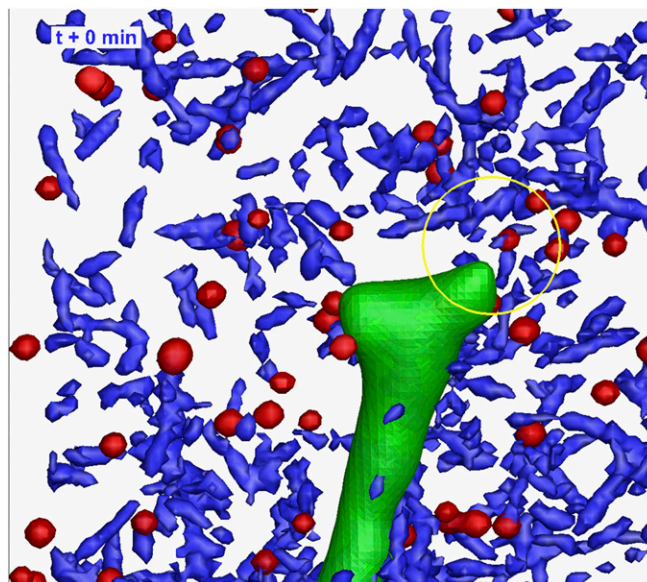
Supporting Information

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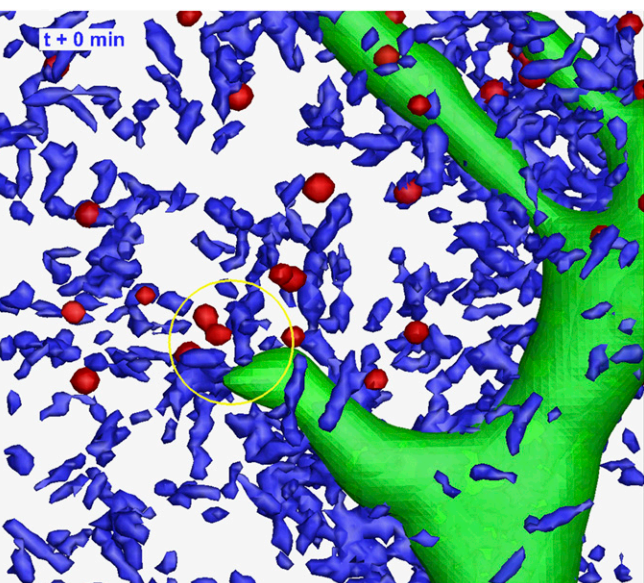
Movie S1. Filopodia protrusive and retractive motions in collagen type 1 fiber network.

[Movie S1](#)



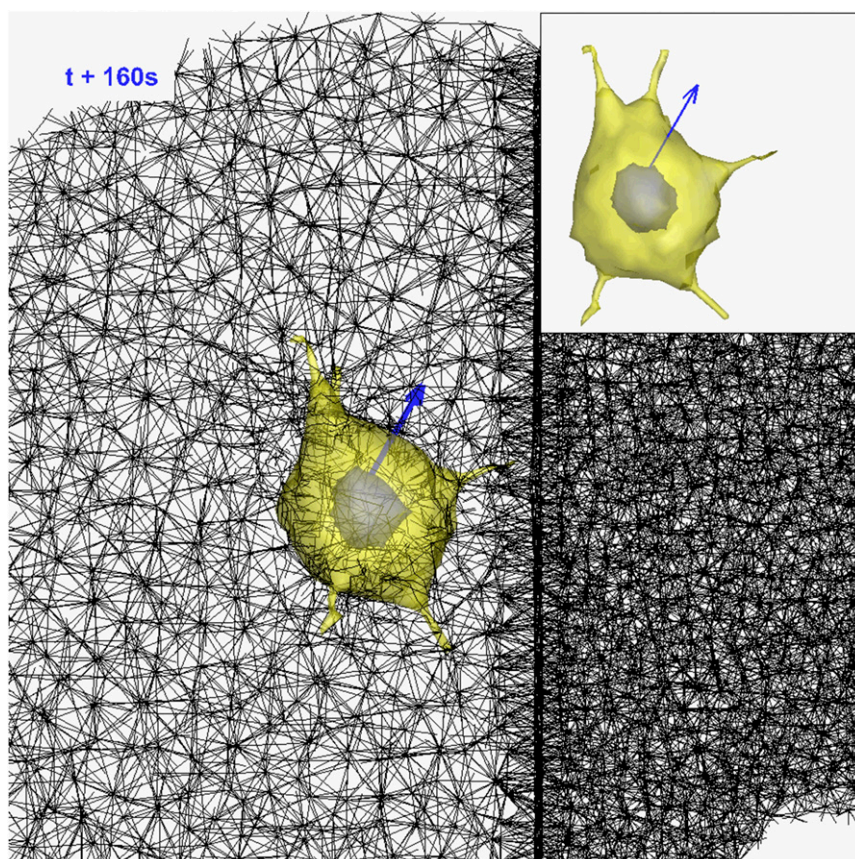
Movie S2. Three-dimensional reconstruction of retractile filopodium.

[Movie S2](#)



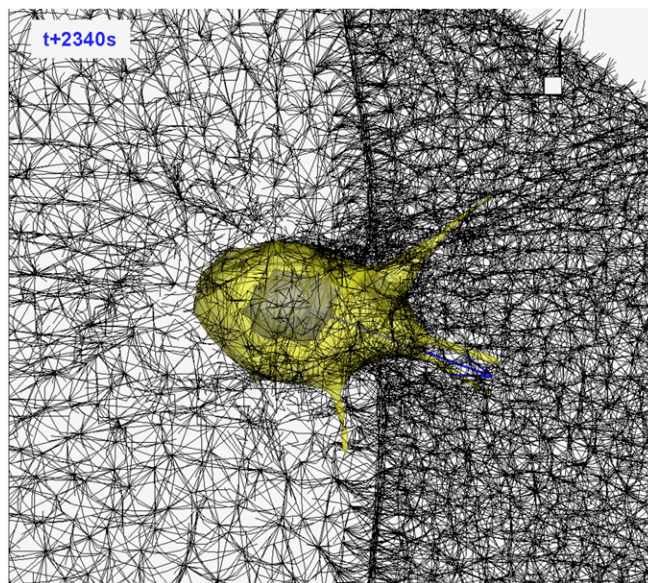
Movie S3. Three-dimensional reconstruction of protrusive filopodium.

Movie S3



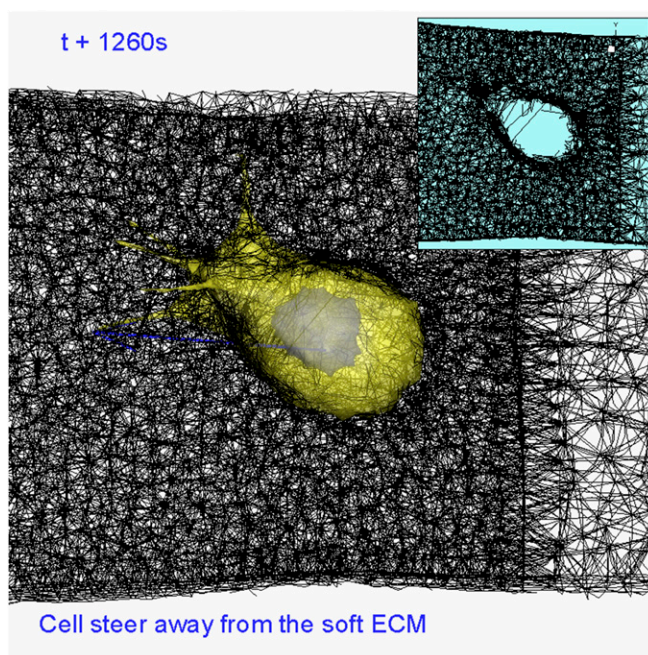
Movie S4. Simulated cell migration toward stiffer ECM for 500 s.

Movie S4



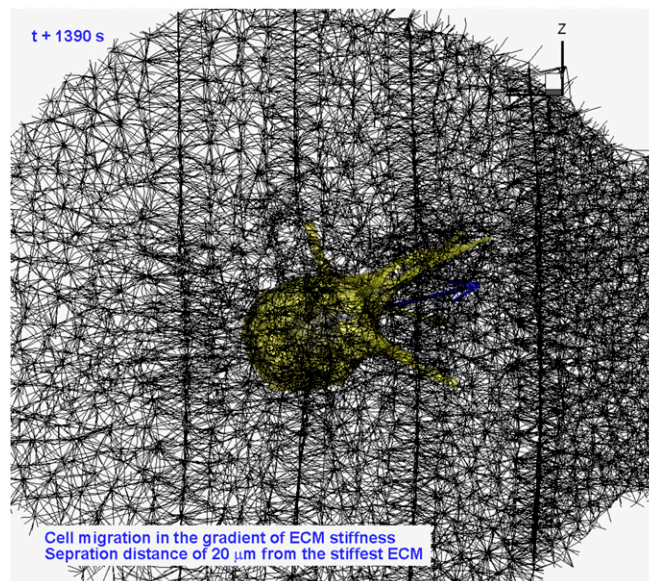
Movie S5. Simulated cell crossing the sharp interface when the cell starts migrating from the soft ECM for 2,390 s.

[Movie S5](#)



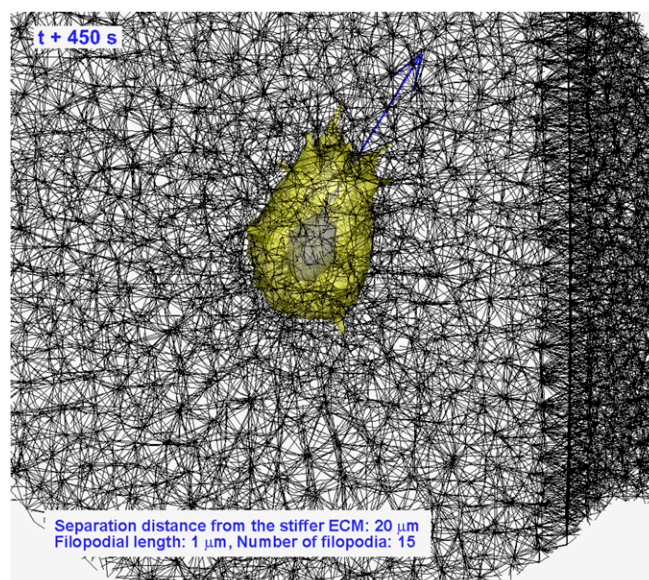
Movie S6. Simulated cell steering away from the sharp interface when the cell starts migrating from the stiff ECM for 1,260 s.

[Movie S6](#)



Movie S7. Simulated cell migration along the stiffness gradient for 1,510 s.

Movie S7



Movie S8. Simulated cell migration toward stiffer ECM by tuning unstressed filopodial length of 1 μm and filopodial number of 15 for 500 s.

Movie 58

Other Supporting Information Files

[SI Appendix \(PDF\)](#)