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A new method for shrinking tumor based on microenvironmental factors: Introducing a stochastic agent-based model of avascular tumor growth

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***Highlights (for review)**

Highlights:

- The presented model can satisfactorily interpret microevolution to macroevolution in a complex biological system; tumor growth.
- Our model introduces a new approach for controlling tumor growth.
- By controlling a critical point via a model parameter; *Nmm*, the dependency to microenvironment can be controlled.
- We can shrink the tumor or slow down its growth rate by controlling dependency to microenvironment via parameter *Nmm*.
- Model simulations are compatible with *in vivo* experimental data.