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α2, β1, β2) be een he s a and end poin s (Fig. 1a).

The plasmodium pseudopodia eaching dead ends in he laby in h sh ank (Fig. 1b), esul ing in he fo ma ion of a single hick pseudopodium spanning he minimum leng h be een he nu ien con aining aga blocks (Fig. 1c). The e ac posi ion and leng h of he pseudopodium as diffe en in each e pe imen , bu he pa h h ough α2 hich as abou 22% sho e han ha h ough α1 as al ays selec ed (Fig. 1d). Abou he same numbe of ubes fo med h ough β1 and β2 as he diffe ence (abou 2%) in hei pa h leng hs is los in he meande ing of he ube ajec o y and is i hin e pe imen al e o .

The addi ion of food leads o a local inc ease in he plasmodium's con ac ion f equency, ini ia ing a es p opaga ing o a ds egions of lo e f equency[1–5], in acco dance i h he heo y of phase dynamics[6]. The plasmodial ube is ein fo ced o decays hen i lies pa allel o pe pendicula , espec i ely, o he di ec ion of local pe iodic con ac ion[7]; he final ube, follo ing he a e p opaga ion, ill he e fo e link food si es by he sho es pa h.

To ma imize i s fo aging efficiency, and he efo e i s chances of su i al, he plasmodium changes i s shape in he maze o fo m one hick ube co e ing he sho es dis ance be een he food sou ces. This ema kable p ocess of cellula compu a ion implies ha cellula ma e ials can sho a p imi i e in elligence[8–10].

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