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Development of a multiscale model of limb morphogenesis

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The limb bud development exemplifies the complexity of organogenesis, whereby the organ's macroscopic state feeds back on cellular decisions. Digital twins are an exciting approach towards understanding such systems. Regarding limb bud elongation, diverse hypotheses have been proposed. Involving ectodermal constraints, proliferation, motility, migration, as well as PCP induced intercalation. We develop a computational approach, allowing to systematically simulate the individual hypotheses, examining which cellular behaviours are consistent with morphogenesis.

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