A study on the role of epidermal tissues in limb regeneration in a ladybird beetle, *Cheilomenes sexmaculata* (Coccinellidae)

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Larval systems are de-differentiated and reorganized in insects undergoing complete metamorphosis, and body plan of adults are established during pupal stage. In ladybirds, limbs amputated in larval stages are regenerated during pupation. Given that changes in pupa are akin to embryogenesis, does the lost limbs are redeveloped as a part of metamorphosis or has some pre-patterning initiated prior pupation? To test this, we exposed third larval instars of *Cheilomenes sexmaculata* to amputation and scraped off the epidermal tissues from the amputation site every 24 h post amputation. We observed that the limb regeneration did not occur in the treatment where scrapping was done. Thus, the present study highlights the critical role of epidermal tissues at the wound site in limb regeneration, emphasizing that these tissues probably contain essential pre-regenerating cues.

Keywords: Amputation, holometabolous, leg development, metamorphosis, pupa.