



**Supplementary figure 3.** Minimum principal strain contour plots for different tested cranial configurations: (a-c) Original model, (d-f) medium-sized interpterygoid vacancies, (g-i) small interpterygoid vacancies, (j-l) closed palatal region. Different loading conditions: (a, d, g, j) unilateral bite on left side, (b, c, h, k) bilateral bite, (c, f, i, l) lateral pull to left side. Each in ventral and dorsal view. Location and size of the vacancies highlighted by stippled line.