Supplementary Figure 1: Bilaterally synchronized and intrinsically rhythmic parafacial domains form the e-pF oscillator. (a) Photomicrograph of an E14.5 isolated brainstem preparation (ventral view, anterior at top) loaded with Calcium-Green 1AM showing (red outlines) the right e-pF (r. e-pF) and the left e-pF (l. e-pF). (b) Same field as (a) showing the relative fluorescence change (deltaF/F) during one burst of e-pF activity denoting the e-pF bilateral co-activation. (c) Reconstructed map of individual e-pF cells (red dots) flanking the left facial motor nucleus (nVII, anterior at top, the dotted line marks the lateral limit of the hindbrain). (d) Co-active spontaneous rhythmic fluorescence changes in the right (top trace) and left (bottom trace) parafacial domains. (e) Transverse facial slice preparation showing the location of the right parafacial domain (white inset) shown at higher magnification (f) allowing the optical recording, of eight e-pF cells (red outlines), showing rhythmic fluorescence changes (h, stacked black traces) and the corresponding averaged signal (red trace). (g) Map of e-pF cells in facial slices reconstructed from 4 distinct experiments showing their restricted location lateral and beneath the nVII (blue outline). Bars : 500 μm in a, b, e; 200 μm in c, g and 50 μm in f.
**Supplementary Figure 2:** Bilateral co-activation of the e-pF requires glutamatergic neurotransmission. (a) Optical recordings of co-active right (r.) and left (l.) e-pF in an E14.5 whole hindbrain preparation in control (top traces). In the presence of CNQX (middle traces), the rhythmically active left and right e-pF regions de-synchronized. In transverse facial slices (bottom traces) left and right independent e-pF rhythms (about 1.5 times faster than that of whole hindbrain preparations) are also observed, (b) corresponding right/left e-pF cross-correlograms. (c) Bar plot of correlation coefficients (at lag=0) in control, CNQX, Bic/Stry cocktail, and in transverse facial slices. *: p<0.05.
Supplementary Figure 3: The e-pF oscillator frequency is increased by a low pH challenge at E14.5. (a) On E14.5 slice preparations, the response to extracellular acidification from 7.4 (top trace) to 7.2 (bottom trace) is an increase of the frequency of the e-pF. (b) Graph summarizing the effects of low pH on the frequency of the e-pF in whole hindbrain preparations (WHB, black bars, n=10), in transverse facial slices (grey bars, n=3) and of the pre-Bötzinger (white bars, n=6) in slices. *: p<0.05.