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TRANSMISSION OF HORMONE INFORMATION BY NON-MOLECULAR MEANS. P.C. Endler,* W. Pongratz,* R. van Wijk,[†] K. Waltl,* H. Hilgers,[‡] R. Brandmaier,[§] (SPON.: T. Kenner). *LBI HOM, Dürerg. 4, 8010 Graz, Austria; [†]U. Utrecht, NL; [‡]U. Vienna, Austria; [§]Cent. Biometr., Munich, GFR.

Substances so dilute that no original molecule is present exert biological effects (1, 2). We studied the metamorphosis of the amphibian *R. temporaria* from 2- to 4-legged stage. In blind experiments (P.C.E., W.P., R.v.W.) 3 drops of either 6-30 M thyroxine (T) or similarly diluted water (W) were added dropwise to the basin (8 liters) every other day. Cumulative frequency (F_c) of 4-legged frogs dropped by $\approx 10\%$ compared to the control group (T: $N_{\text{animals}} = 562$; W: $N_{\text{animals}} = 568$). In further blind experiments (P.C.E., W.P., K.W. also confirmed in H.H. lab.) dilutions (8 ml) were sealed in glass vials hung in the basin water. F_c were (% , mean ± 1 SD; T: $N_{\text{animals}} = 612$; W: $N_{\text{animals}} = 612$):

T1	W1	T2	W2	T3	W3	T4	W4
11.8 \pm 5.7	18.5 \pm 5.4	27.5 \pm 8.8**	48.2 \pm 8.6	50.4 \pm 8.7**	67.3 \pm 9.4	69.2 \pm 6.9	83.1 \pm 9.5

1-4, depending on the experiment: 1 or 2 days. Comparison T vs W, ** $p < 0.001$

(chi-square test). Data also significant in "survival analysis" ($p < 0.001$).

The molecular signal can also be transmitted to water by electronic amplification (3, 4). Water may receive specific molecular information via water dipole polarization (5-8).

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