Press Release
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Tactile Trunks - New findings on the sensory system of elephants

A new study investigated the sensory system of elephants and found these animals to be highly specialized for trunk touch. The study will be published on January 20, 2022 in Current Biology.

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An African elephant grasping a roll. Novel data suggest exquisite tactile sensitivity of the elephant trunk (Photo: Lena Kaufmann/HU)

The sensory worlds of different animal species differ vastly as different animals use different types of sensory information for survival. Such sensing differences are often already apparent in the sensory nerves of animal and researchers from Humboldt-Universität zu Berlin and the Leibniz-Institute for Zoo and Wildlife Research (IWZ), Berlin investigated sensory nerves of elephants.
The two trigeminal ganglia of elephants, which contain the nerve cells, that innervate the trunk, weigh each about 50 g and are together larger than the brain of a mid-size monkey.
The tactile nerve branches innervating the trunk are thicker than elephant spinal cord, i.e., trunk innervation is more substantive than connections of the elephant's brain to the rest of the body. The tactile nerve innervating the trunk is three times thicker than the optic nerve (which provides visual information) and 6 times thicker than the nerve mediating hearing.
Professor Michael Brecht, who led the study, says: 'The sensory innervation of elephant trunk is most impressive and these animals might be more tactile than previously recognized. The

findings fit with the observation that elephants constantly touch each other and their environment with their trunks’.

Publication

Purkart, L., Tuff, J., Shah M., Kaufmann, L. V., Altringer, C., Maier, E., Schneeweiß, U., Tunckol, E., Eigen, L., Holtze, S., Fritsch, G., Hildebrandt, T. & Brecht, M. Trigeminal Ganglion and Sensory Nerves Suggest Tactile Specialization of Elephants. Current Biology, in press (2022)

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