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Cat tongue Velcro ALEXIS NOEL, ANDREA MARTINEZ, HYEWON JUNG, TING-WEN TSAI, DAVID HU, Georgia Institute of Technology, Mechanical Engineering — A cat's tongue is covered in an array of spines called papillae. These spines are thought to be used in grooming and rasping meat from bones of prey, although no mechanism has been given. We use high-speed video to film a cat removing cat food deeply wedged into a 3-D printed fur mat. We show that the spines on the tongue act as Velcro for particles. The tongue itself is highly elastic. As the cat presses it against a substrate, the tongue flattens and the spines separate. When the tongue is removed from the substrate the spines come together, wedging particles between them. This elasticity-driven entrapment permits the surface of the tongue to act as a carrier for hard to reach particles, and to increase the efficacy of grooming and feeding.

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