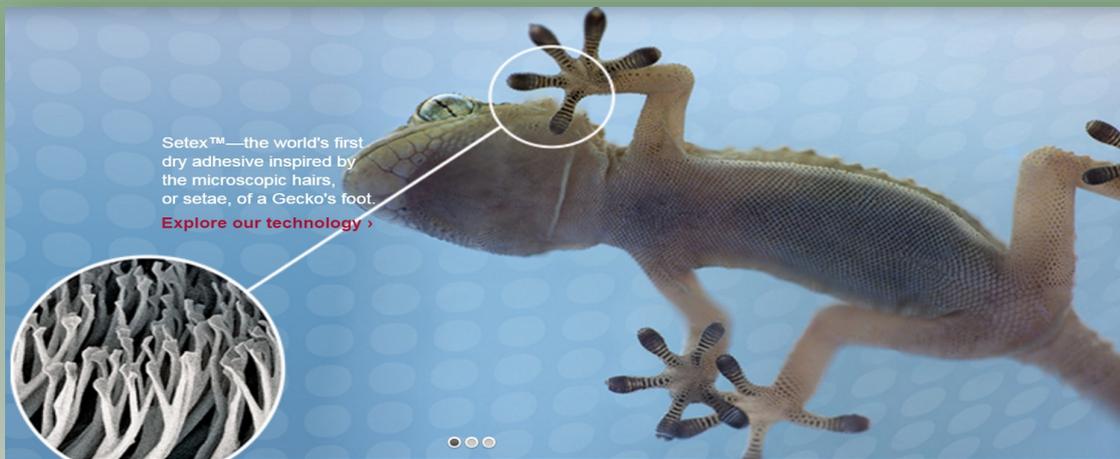


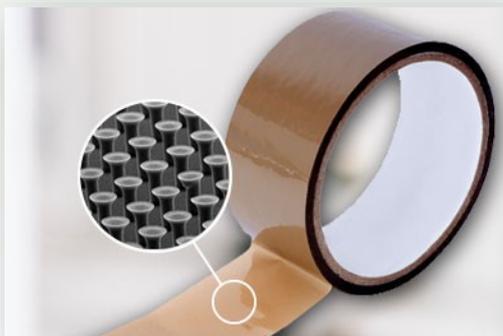
GECKOS



From climbing up walls, trees to being upside-down. The gecko has mastered the skill of climbing and sticking to any surface at any angle. The ability to scurry up and down surfaces at blistering pace is what has allowed the gecko to escape predators and catch its own prey. The most crucial ability to the survival of this species. But how are these animals able to defy gravity? The answer; Nanohairs.



These hairs on the pads of their toes are called setae, and they possess about two million of them. (lerch) But how do microscopic sized hairs allow a gecko to not only stick but climb up walls? These hairs are spread out when pushed against a surface. This drastically increases the surface area a gecko has on a surface. A gecko can simply relax the force it has against the surface causing less hairs to be spread out leading to a smaller surface area and van der Waals forces, allowing it to lift its foot off.



Comparing a gecko to our adhesive technologies, there is clear superiority that the gecko's feet possess. Suction adhesives are expensive and costly, while ones that rely on chemical bonds are sticky and permanent. Using inspiration from gecko nanohairs though, these flaws have been eliminated. Creating synthetic setae with nanotechnology, adhesives have been able to be made that have incredible adhesive capacities, however like the gecko are not sticky nor are permanent.