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<https://orcid.org/0000-0002-7902-9652>

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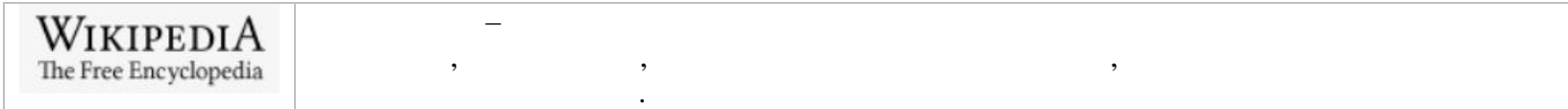
, *ab initio*,

(. . : Encyclopædia Britannica, <https://www.britannica.com/technology/bionics>)

«**Bionics**, science of constructing artificial systems that have some of the characteristics of living systems. Bionics is not a specialized science but an interscience discipline; it may be compared with cybernetics. Bionics and cybernetics have been called the two sides of the same coin. Both use models of living systems, bionics in order to find new ideas for useful artificial machines and systems, cybernetics to seek the explanation of living beings' behaviour».

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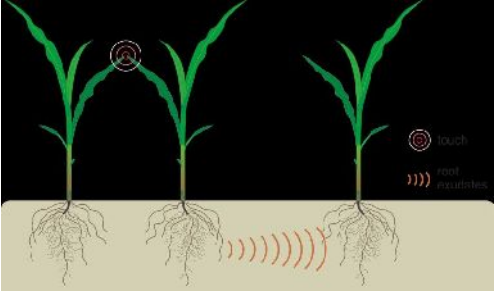

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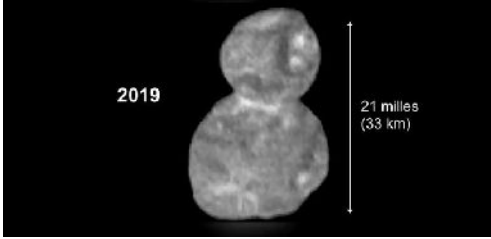

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1	<p style="text-align: center;">2017, 13</p> <p>https://news.liga.net/world/news/avstraliyskie_uchenye_obnaruzhili_u_rasteniy_slukh</p> <p><i>The news available at:</i></p> <p>http://www.news.uwa.edu.au/201704119544/research/study-reveals-plants-listen-find-sources-water</p>	 <p>University News: Study reveals plants 'listen' to find sources of water (11 April 2017)</p>
2	<p>https://www.youtube.com/watch?v=UJ8XW9AgUrw</p> <p><i>(How do solar cells work?)</i></p>	 <p>youtube: How do solar cells work?</p>
3	<p>https://www.youtube.com/watch?v=416MgVibTZY</p> <p><i>(Solar Constant and Solar Intensity on Earth)</i></p>	 <p>youtube: Solar Constant and Solar Intensity on Earth</p>



4	<p style="text-align: center;">2018, 05</p> <p>https://news.liga.net/society/news/u-rastenyi-nashli-sistemu-kommunikatsiy-cherez-korni</p> <p><i>The news available at:</i></p> <p>https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0195646</p>	 <p>Aboveground mechanical stimuli affect belowground plant-plant communication</p>
5	<p style="text-align: center;">2018, 12</p> <p>https://zn.ua/TECHNOLOGIES/uchenye-nazvali-samoe-bystroe-suschestvo-na-zemle-291462_.html</p> <p><i>The news available at:</i></p> <p>https://www.news.gatech.edu/2018/08/07/worlds-fastest-creature-may-also-be-one-smallest</p>	 <p>World's Fastest Creature May Also be One of the Smallest</p>
6	<p style="text-align: center;">2018, 14</p> <p>https://nv.ua/ukr/techno/innovations/shtuchnij-intelekt-vid-deepmind-navchivsja-diahnostuvati-khvorobi-ochej-shvidshe-likariv-2488540.html</p> <p><i>The news available at:</i></p> <p>https://thenextweb.com/artificial-intelligence/2018/08/14/deepmind-says-its-ai-can-detect-eye-diseases-as-well-as-human-doctors/</p>	<p style="text-align: center;">DeepMind</p> <p>DeepMind says its AI can detect eye diseases as well as human doctors</p>



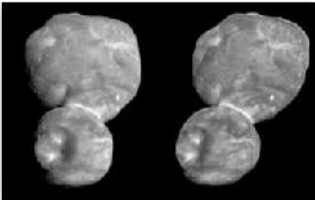
7	<p>2018, 17</p> <p>https://nv.ua/ukr/techno/technoblogs/shcho-take-tsifrova-transformatsija-i-shcho-vona-dast-ukrajini-bloh-volodimira-demjanenko-2489244.html</p>	-
8	<p>2018, 22</p> <p>https://gordonua.com/news/politics/ukraina-prisoedinilas-k-metricheskoy-konvencii-317941.html</p>	
9	<p>2018, 23</p> <p>https://nv.ua/ukr/techno/innovations/priborkannja-kvanta-u-velikobritaniji-stvorili-protsektor-dlja-kvantovikh-obchislen-2490232.html</p>	
10	<p>2018, 19</p> <p>https://news.liga.net/world/video/my-vozvrashaemsya-na-lunu-nasa-pokazalo-yarkiy-rolik-k-yubileyu</p>	 <p>" : NASA (1969-2019)</p>
11	<p>2018, 02</p> <p>https://tech.liga.net/technology/novosti/e-ink-razrabotala-novuyu-elektronnuyu-bumagu</p> <p><i>The news available at:</i></p> <p>https://www.businesswire.com/news/home/20181130005135/en/Ink-Showcase-New-Writing-Technology-Film-Connected</p>	<p><i>E Ink</i> « »</p> <p>E Ink to Showcase New Writing Technology Film at Connected Ink (2018)</p>


12	<p style="text-align: center;">2018, 07</p> <p>https://www.obozrevatel.com/tech/science/takogo-ne-slyishal-ni-odin-chelovek-v-nasa-obnarodovali-unikalnuyu-zapis-s-marsa.htm</p>	<p>NASA</p> 
13	<p style="text-align: center;">2018, 10</p> <p>https://news.liga.net/society/news/avtomobili-okazalis-raznoschikami-invazivnyh-rasteniy---uchenye</p>	
14	<p style="text-align: center;">2018, 10</p> <p>https://lb.ua/society/2018/12/10/414607_voyadzher2_vishel_mezhzvezdnoe.html</p> <p><i>The news available at:</i></p> <p>https://www.nasa.gov/press-release/nasa-s-voyager-2-probe-enters-interstellar-space</p>	<p>"Voyager-2" 1977</p>  <p>NASA's Voyager 2 Probe Enters Interstellar Space</p>
15	<p style="text-align: center;">2018, 19</p> <p>https://gordonua.com/news/worldnews/v-evrosoyuze-soglasilis-s-neobhodimostyu-zapretit-odnorazovyy-plastik-594530.html</p> <p><i>The news available at:</i></p> <p>https://ec.europa.eu/commission/presscorner/detail/en/IP_18_6867</p>	 <p>Single-use plastics: Commission welcomes ambitious agreement on new rules to reduce marine litter</p>


<p>16</p>	<p style="text-align: center;">2019, 01-03</p> <p>https://gordonua.com/news/worldnews/zond-nasa-priblizilsya-k-odnomu-iz-samyh-dalnih-tel-solnechnoy-sistemy-626008.html</p> <p>https://www.bbc.com/news/science-environment-46699737</p> <p>https://zn.ua/TECHNOLOGIES/zond-nasa-pokazal-video-obekta-iz-poyasa-koypera-ultima-tule-304774_.html</p>	<p>NASA</p>  <p>New Horizons: Nasa waits for signal from Ultima Thule probe NASA</p> <p style="text-align: center;">(Ultima Thule)</p>
<p>17</p>	<p style="text-align: center;">2019, 02-03</p> <p>https://news.liga.net/world/news/zond-nasa-dobratsya-do-samogo-dalekogo-obekta-v-solnechnoy-sisteme</p> <p>https://news.liga.net/world/news/novoe-otkrytie-nasa-asteroid-ultima-thule-imeet-formu-snegovika</p>	<p>NASA</p> <p style="text-align: center;">: " "</p>  <p>NASA: Ultima Thule</p>
<p>18</p>	<p style="text-align: center;">2019, 09</p> <p>https://gordonua.com/news/worldnews/v-ssha-umerla-poslednyaya-na-planete-gavayskaya-tropicheskaya-ulitka-647754.html</p> <p><i>The news available at:</i></p> <p>http://dlnr.hawaii.gov/blog/2019/01/04/nr19-001/</p>	 <p>THE LAST KNOWN LAND SNAIL OF HIS KIND DIES</p>

19	<p style="text-align: center;">2018, 03</p> <p>https://www.newsweek.com/terrifying-super-monster-wolf-robotic-pet-can-protect-farms-837994</p>	<p>Tech & Science: Terrifying 'Super Monster Wolf' Is a Robotic Pet That Will Save Farms</p>
20	<p style="text-align: center;">2019, 20</p> <p>https://news.liga.net/world/news/uchenye-nashli-prichinu-razrusheniya-pchelinyh-semey</p> <p><i>The news available at:</i></p> <p>https://link.springer.com/article/10.1007/s13280-018-1130-z “Beekeeper stewardship, colony loss, and Varroa destructor management” ← <i>Varroa</i> (<i>Varroa destructor</i>) is a leading cause of honey bee mortality worldwide.</p>	
21	<p>https://www.youtube.com/watch?reload=9&v=dUulzJxVAFw</p>	<p>- (<i>robobee</i>):</p>  <p>Controlled Flight of a Biologically-inspired, Insect-scale Robot</p> <p>youtube: - (<i>robobee</i>). -</p>
22	<p style="text-align: center;">2017, 07</p> <p>https://his.ua/article/plan-bee-pchelopodobnyy-dron-ot-anna-haldewag-2017-03-07</p> <p style="text-align: center;">Anna Haldewag « - » , Plan</p> <p>Bee – , , . Plan</p> <p style="text-align: center;">. Plan Bee</p>	<p>Plan Bee – « - » Anna Haldewag</p> 

23	<p style="text-align: center;">2018, 31</p> <p>https://aggeek.net/ru-blog/dron-kotoryj-mozhet-zamenit-pchel</p>	
24	<p style="text-align: center;">2017, 09</p> <p>https://www.engadget.com/2017/02/09/tiny-drone-pollinates-like-a-bee/</p> <p>https://www.technologyreview.com/2017/02/09/243611/watch-this-100-drone-try-to-do-a-bumblebees-job/</p>	<p>This tiny drone can pollinate flowers like a bee. Japanese scientists are preparing for a world without the endangered insects.</p> <p>Watch This \$100 Drone Try to Do a Bumblebee’s Job. Japanese tinkerers created a tiny, flower-pollinating drone for a world without insects.</p>
25	<p style="text-align: center;">2017, 04</p> <p>http://agroportal.ua/news/tekhnologii/yapontsy-sozdali-pcheludron-dlya-opyleniya-tsvetov/#</p>	<p style="text-align: center;">-</p>
26	<p style="text-align: center;">2018, 15</p> <p>https://www.newsweek.com/can-robotic-bees-replace-real-thing-walmart-files-patent-pollination-drone-845861</p>	<p>Can Robotic Bees Replace the Real Thing? Walmart Files Patent for ‘Pollination Drone’</p>
27	<p style="text-align: center;">2018, 10</p> <p>https://ukr.media/science/376009/</p>	

32	<p style="text-align: center;">2018, 27</p> <p>https://www.roboticsbusinessreview.com/agriculture/pollination-drones-assist-ailing-bees/</p>	<p>Pollination Drones Seen as Assistants for Ailing Bees</p>  <p>Scientists have been copying nature to develop pollination drones that can assist real bees and human farmers.</p>
33	<p style="text-align: center;">2019, 01</p> <p>https://www.epravda.com.ua/publications/2019/03/1/645623/</p>	<p>‘ .</p> <p>·</p>
34	<p style="text-align: center;">2019, 07</p> <p>https://www.istpravda.com.ua/reviews/2019/03/7/153786/</p> <p>1948 (Thor Heyerdahl) « - ».</p> <p>15 . 70 .</p> <p>50 000 000 .</p>	
35	<p style="text-align: center;">2019, 11</p> <p>https://zn.ua/TECHNOLOGIES/nasa-pokazalo-stereoizobrazhenie-ultimy-tule-311363_.html</p> <p>https://www.spaceflightinsider.com/missions/solar-system/new-horizons-team-releases-first-stereo-image-of-ultima-thule/</p> <p>https://www.nasa.gov/feature/ultima-thule-in-3d</p>	<p>NASA (-</p> <p>Ultima Thule)</p> 

36	<p style="text-align: center;">2019, 21</p> <p>https://tech.liga.net/technology/novosti/injenery-sozdali-umnyy-unitaz-delayuschiy-elektrokardiogrammu</p> <p><i>The news available at:</i></p> <p>https://newatlas.com/heart-failure-toilet-seat/58974/</p>	<p style="text-align: right;">-</p> <p style="text-align: center;">.</p> <p>Techy toilet seat made to monitor heart patients.</p>
37	<p style="text-align: center;">2019, 23</p> <p>https://nv.ua/biz/markets/ukrainskie-programmisty-pokazali-pyat-innovacionnyh-servisov-dlya-medicinskogo-rynka-50011992.html</p>	<p style="text-align: right;">,</p> <p style="text-align: center;">.</p>
38	<p style="text-align: center;">2019, 06</p> <p>https://nv.ua/techno/popscience/nagreli-planetu-uroven-co2-v-atmosfere-samyy-vysokiy-za-poslednie-3-mln-let-50015131.html</p> <p><i>The news available at:</i></p> <p>https://www.ecowatch.com/c02-levels-2633711783.html</p>	<p style="text-align: right;">-</p> <p style="text-align: center;">: CO₂</p> <p style="text-align: center;">3</p> <p>CO₂ Levels Are Now at a 3 Million-Year High</p>
39	<p style="text-align: center;">2019, 06</p> <p>https://nv.ua/world/countries/osoznali-ugrozu-razvitye-strany-obyavili-voynu-odnorazovomu-plastiku-50014729.html</p>	<p style="text-align: right;">-</p> <p style="text-align: center;">.</p> <p style="text-align: center;">-</p> <div style="text-align: center;">  </div> <p>60 80%</p> <p style="text-align: right;">-</p>

40	<p style="text-align: center;">2019, 06</p> <p>https://www.bbc.com/ukrainian/features-47837705</p>	
41	<p style="text-align: center;">2019, 25</p> <p>https://nv.ua/techno/popscience/zaglyanuli-v-ad-uchenye-nashli-ogromnye-gory-i-puzyri-mantii-v-zemnoy-kore-50018461.html</p>	