First patent claimed on man-made life form, and challenged

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A research institute has applied for a patÂ-ent on what could be the first largely arÂ-tiÂ-fiÂ-cial orÂ-ganÂ-ism. And peoÂ-ple should be alÂ-armed, claims an adÂ-voÂ-caÂ-cy group that is tryÂ-ing to shoot down the bid.The idea of ownÂ-ing a speÂ-cies breaches â€œa soÂ-ciÂ-eÂ-tal boundÂ-ary,â€• said Pat Mooney of the OtÂ-taÂ-wa, Canada-based ETC Group, which is asking the patÂ-ent apÂ-pliÂ-cants to drop their claim. CreatÂ-ing and ownÂ-ing an orÂ-ganÂ-ism, he added, means that â€œfor the first time, God has comÂ-peÂ-tiÂ-tion.â€•

The parÂ-aÂ-sitÂ-ic miÂ-crobe M. genÂ-iÂ-talÂ-ium (CourÂ-teÂ-sy Frantz, AlÂ-bay and Bott, UNC/Chapel Hill)

His group claims credÂ-it for spurÂ-ring the EuÂ-roÂ-peÂ-an PatÂ-ent OfÂ-fice last month to reÂ-voke a patÂ-ent on geÂ-netÂ-icÂ-ally modÂ-iÂ-fied soyÂ-beans by St. LouÂ-is, Mo.-based MonÂ-santo Co., afÂ-ter a 13-year leÂ-gal chalÂ-lenge by ETC.The arÂ-tiÂ-fiÂ-cial orÂ-ganÂ-ism, a mere miÂ-crobe, is the brainÂ-child of reÂ-searchÂ-ers at the RockÂ-ville, Md.-based J. Craig VenÂ-ter InÂ-stiÂ-tute. The orÂ-ganÂ-izÂ-aÂ-tion is named for its foundÂ-er and CEO, the geÂ-netÂ-icist who led the priÂ-vate secÂ-tor race to map the huÂ-man geÂ-nome in the late 1990s. The reÂ-searchÂ-ers filed their patÂ-ent claim on the arÂ-tiÂ-fiÂ-cial orÂ-ganÂ-ism and on its geÂ-nome. GeÂ-netÂ-iÂ-cally moÂ-diÂ-fied life forms have been paÂ-tented beÂ-fore; but this is the first paÂ-tent claim for a creaÂ-ture whose genome might be created chemÂ-iÂ-cally from scratch, Mooney said.SciÂ-enÂ-tists at the inÂ-stiÂ-tute deÂ-signed the bacÂ-teÂ-riÂ-um to have a â€œminÂ-iÂ-mal geÂ-nomeâ€•â€”the smallÂ-est set of genes any orÂ-ganÂ-ism can live on. The projÂ-ect, which beÂ-gan in the early 2000s, was partly a philÂ-oÂ-sophÂ-iÂ-cal exÂ-erÂ-cise: to help deÂ-fine life itÂ-self betÂ-ter by idenÂ-tiÂ-fyÂ-ing its bare-bones reÂ-quireÂ-ments. But it was alÂ-so fraught with comÂ-merÂ-cial posÂ-siÂ-bilÂ-iÂ-ties: if one could reÂ-liably recÂ-reÂ-ate a standÂ-ardÂ-ized, minÂ-iÂ-mal life form, othÂ-er useÂ-ful genes could be added in as needed for varÂ-iÂ-ous purÂ-poses.For inÂ-stance, â€œIf we made an orÂ-ganÂ-ism that proÂ-duced fuÂ-el, that could be the first billion- or trillion-dollar orÂ-ganÂ-ism,â€• said VenÂ-ter in the June 4 isÂ-sue of Newsweek magÂ-aÂ-zine. The sciÂ-enÂ-tists based the deÂ-sign on the bacÂ-teÂ-riÂ-um MyÂ-coplasma genÂ-iÂ-talÂ-ium, in which they had idenÂ-tiÂ-fied an esÂ-tiÂ-matÂ-ed 265 to 350 coÂ-re genes reÂ-quired for life. OthÂ-er reÂ-searchÂ-ers, purÂ-suÂ-ing siÂ-mÂ-iÂ-lar reÂ-search with othÂ-er speÂ-cies, have since claimed to be able to reÂ-duce this so-called minÂ-iÂ-mal gene someÂ-what furÂ-ther. The boundÂ-aÂ-ry of whatâ€™s really the â€œminÂ-iÂ-mumâ€• gets fuzzy beÂ-cause some of these pared-down creaÂ-tures are so geÂ-netÂ-icÂ-ally chalÂ-lenged that they hang on to life only with a lot of help. In their U.S. patÂ-ent apÂ-plicaÂ-tÂ-ion pubÂ-lished May 31, InÂ-stiÂ-tute sciÂ-enÂ-tists chose a someÂ-what more roÂ-bust 381 to 386 genes as their â€œminÂ-iÂ-mal geÂ-nomeâ€• for a hyÂ-poÂ-thetÂ-iÂ-cal miÂ-crobe, based on M. genÂ-iÂ-talÂ-ium, but dubbed MyÂ-coplasma labÂ-oÂ-rÂ-aÂ-toÂ-rium.In pracÂ-tice, the orÂ-ganÂ-ism is â€œbeÂ-ing patÂ-ented for what it is not,â€• ETC said in a stateÂ-ment this week.In the patÂ-ent apÂ-plicaÂ-tÂ-ion, the sciÂ-enÂ-tists alÂ-so disÂ-cussed the posÂ-siÂ-bilÂ-ity of creÂ-atÂ-ing the genes from scratch usÂ-ing chemÂ-iÂ-cal methÂ-ods, then inÂ-jectÂ-ing these inÂ-to a cell whose own geÂ-nome has been reÂ-moved. WhethÂ-er that has acÂ-tuÂ-ally been done yet is unÂ-clear, but â€œmany peoÂ-ple think VenÂ-terâ€™s company has the sciÂ-enÂ-tifÂ-ic exÂ-pertÂ-ise to do the job,â€• said Mooney.â€œThe same patÂ-ent apÂ-plicaÂ-tÂ-ion has been pubÂ-lished inÂ-ternaÂ-tÂ-ionally to be subÂ-mitÂ-ted at over 100 naÂ-tional patÂ-ent ofÂ-fices,â€• said ETCâ€™s Jim ThomÂ-as in an eÂ-mail. The VenÂ-ter InÂ-stiÂ-tute did not reÂ-spond to reÂ-quests for

comÂ-ment. But Venter and colleagues have arÂ-gued that the stripped-down cell or other synÂ-thetic miÂ-crobes could be useÂ-ful in tasks rangÂ-ing from genÂ-erÂ-atÂ-ing cheap enÂ-ergy to aidÂ-ing in agÂ-riÂ-culÂ-ture and cliÂ-mate change reÂ-medÂ-iaÂ-tion.By creÂ-atÂ-ing a man-made orÂ-ganÂ-ism as a platÂ-form for othÂ-er genes to be added at will, like softÂ-ware on a comÂ-putÂ-er, â€œVenÂ-terâ€™s enÂ-terÂ-prises are poÂ-siÂ-tionÂ-ing themÂ-selves to be the MiÂ-crosoft of synÂ-thetÂ-ic biÂ-olÂ-oÂ-gy,â€• ETC said in a stateÂ-ment.The orÂ-ganÂ-izÂ-aÂ-tion claimed there could be drawÂ-backs to alÂ-lowÂ-ing one company to moÂ-nopÂ-oÂ-lize this inÂ-formaÂ-tÂ-ion. For inÂ-stance, the miÂ-crobe could be harÂ-nessed to build a virÂ-uÂ-lent pathÂ-oÂ-gen, ThomÂ-as said. It could be a bÂ-low for â€œoÂ-pen sourceâ€• biÂ-olÂ-oÂ-gy â€“ the idea that reÂ-searchÂ-ers should have free acÂ-cess to the funÂ-daÂ-menÂ-tal tools and comÂ-poÂ-nents of synÂ-thetÂ-ic biÂ-olÂ-oÂ-gy, the new and growÂ-ing sciÂ-ence of re-deÂ-signing and re-building natÂ-uÂ-ral biÂ-oÂ-logÂ-iÂ-cal sysÂ-tems from the ground up for varÂ-iÂ-ous purÂ-poses.â€œBeÂ-fore these claims go forÂ-ward, soÂ-ciÂ-eÂ-ty must conÂ-sidÂ-er their far-reachÂ-ing soÂ-cial, ethÂ-iÂ-cal and enÂ-viÂ-ronÂ-menÂ-tal imÂ-pacts,â€• ThomÂ-as wrote in the eÂ-mail. In its stateÂ-ment, the ETC Group said it will be writÂ-ing to VenÂ-ter, to the U.S. PatÂ-ent OfÂ-fice and the World InÂ-telÂ-lecÂ-tuÂ-al PropÂ-erÂ-ty OrÂ-ganÂ-izÂ-aÂ-tion urgÂ-ing them to quash the patÂ-ent efÂ-fort unÂ-til such a pubÂ-lic deÂ-bate takes place.

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