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Playing God in the Galapagos

J. Craig Venter, Master and Commander of Genomics, on Global Expedition to Collect Microbial Diversity for Engineering Life

The ETC Group releases a new *Communiqué* today that focuses on J. Craig Venter's controversial ocean expedition that is circumnavigating the globe to collect microbial diversity from gene-rich seas and shores every 200 miles.

The full text of the 8-page *Communiqué* is available on the Internet: www.etcgroup.org

J. Craig Venter, the genomics mogul and scientific wizard who recently created a unique living organism from scratch in a matter of days, is searching for pay-dirt in biodiversity-rich marine environments around the world. Venter's yacht, the Sorcerer II, is now steaming toward the South Pacific after collecting land and marine microbes from Maine to Mexico, Panama, Chile, and – most recently – on Ecuador's famous Galapagos Islands.

Since 2002, Venter's Institute for Biological Energy Alternatives (IBEA) has been awarded $12 million from the "Genomes to Life" program of the US government's Department of Energy (DOE) to create new life forms in the laboratory that could be engineered to produce energy or clean up greenhouse gases. Exotic microbes – such as those found in the Galapagos – are the raw materials for creating new energy sources and new life forms.

"In the Sorcerer's wake, governments are left with unresolved ethical and ecological concerns about the human-made creation of novel life forms, troubling questions about public domain diversity and private patenting, and huge gaps in the capacity of society and the inter-governmental community to address new technologies," said Silvia Ribeiro of ETC Group.

Civil society organizations in Ecuador were stunned to learn that Venter's itinerant research team, with funding from the US government, has already completed "extensive sampling" in the Galapagos and that samples have been shipped to the United States for sequencing. Acción Ecológica, an environmental advocacy organization based in Quito, charges that Venter's expedition is biopiracy because the export permit granted to Venter was not authorized by the appropriate government authority, because there was no public consultation, and because nothing prevents Ecuadorian resources from being privatized through monopoly patents at some later point. They also believe that Venter's research raises profound social and ethical questions.

"Venter's microbe-hunting expedition threatens to turn a nation's biomaterials from public domain goods into patentable, private commodities," said Hope Shand of ETC Group. Although IBEA – one of Venter's three non-profit institutes and the one leading the initiative – has promised not to patent the raw microbes it collects and sequences, patents could be claimed on modified microbes or on new life forms engineered from the collected microbes.

The maverick US biologist's expedition has already discovered more new genes than scientists knew to exist including nearly 800 photoreceptor genes that convert sunlight to energy. Venter's team is also collecting microbes that survive and thrive in harsh environments (extremophiles) such as in volcanoes or hot sulfur vents on the ocean floor.

According to ETC Group, the voyage of the Sorcerer II symbolizes the convergence of two major technological trends. As Venter and biotechnologists build new life from stripped-down microbes, nanotechnologists are busy building biological machines – or hybrid machines employing both organic and inorganic matter – from the bottom-up. The two trends converge on the shifting shores of *nanobiotechnology* – the current darling of US venture capitalists. The implications are breathtaking: not just new species and new biodiversity – but life forms that are human-directed and self-replicating. Nanobiotechnology is moving science from genetically-modified organisms to atomically-modified organisms.

"The IBEA initiative challenges national sovereignty and raises more doubts about the already problematic access and benefit-sharing work of the Convention on Biological Diversity (CBD)," said Ribeiro. "More significantly, Venter's work poses ethical and environmental concerns about the use of biodiversity to build new life forms from scratch."

The United Nations must create a new mechanism that will make it possible for the international community to monitor the development of new technologies whose introduction could affect (positively and/or negatively) human health, the environment, or society's well-being. ETC Group believes this could best be achieved by the creation of an International Convention for the Evaluation of New Technologies (ICENT) at the UN. At present there is no intergovernmental body that has the capacity to monitor and evaluate trends in science and technology and their far-reaching societal impacts.

"Civil society agendas must urgently incorporate debate and action on the orientation of science and the impact of new technologies," said Hope Shand of ETC Group. "In the end, it doesn't matter how laudable Venter's goal; the creation of human-made machines – whether biological or non-biological or some combination – will have profound implications for the environment and our definition of life itself."

The full text of the *Communiqué*, "Playing God in the Galapagos," is available on the ETC Group web site: www.etcgroup.org

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