

To generate PCR amplicons for subsequent diversity analysis, bacterial 16S rRNA genes are amplified by PCR using universal primers. Two distinct PCR regimes are employed in parallel: one using normal and the other using biotin-labeled universal primers. PCR products obtained with biotin-labeled primers are mixed with streptavidin-labeled mag-

netic beads and selectively captured in the presence of a magnetic field. Less-abundant DNA templates that fail to amplify in this first round of PCR amplification are subjected to a second round of PCR using normal universal primers. These PCR products are then subjected to downstream diversity analyses such as conventional cloning and sequencing. A

second round of PCR amplified the minority population and completed the deep diversity picture of the environmental sample.

*This work was done by Parag A. Vaishampayan and Kasthuri J. Venkateswaran of Caltech for NASA's Jet Propulsion Laboratory. For more information, contact iaoffice@jpl.nasa.gov. NPO-47993*

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## **Methods and Compositions Based on Culturing Microorganisms in Low Sedimental Fluid Shear Conditions**

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The benefits of applying a low sedimental fluid shear environment to manipulate microorganisms were examined. Microorganisms obtained from a low sedimental fluid shear culture, which exhibit modified phenotypic and molecular genetic characteristics, are useful for the development of novel and improved diagnostics, therapeutics, vaccines, and bio-industrial products. Furthermore, application of low sedimental fluid conditions to microorganisms permits identification of molecules uni-

quely expressed under these conditions, providing a basis for the design of new therapeutic targets.

*This work was done by C. Mark Ott of Johnson Space Center; Cheryl A. Nickerson, James W. Wilson, and Shameema Sarker of Arizona State University; Eric A. Nauman of Purdue University; Michael J. Schurr of the University of Colorado Health Science Center; and Mayra A. Nelman-Gonzalez of Wyle Laboratories. For further information, see <http://www.wipo.int/pctdb/en/wo.jsp?WO=2009036036>*

*In accordance with Public Law 96-517, the contractor has elected to retain title to this invention. Inquiries concerning rights for its commercial use should be addressed to:*

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