

# INSIGHTS

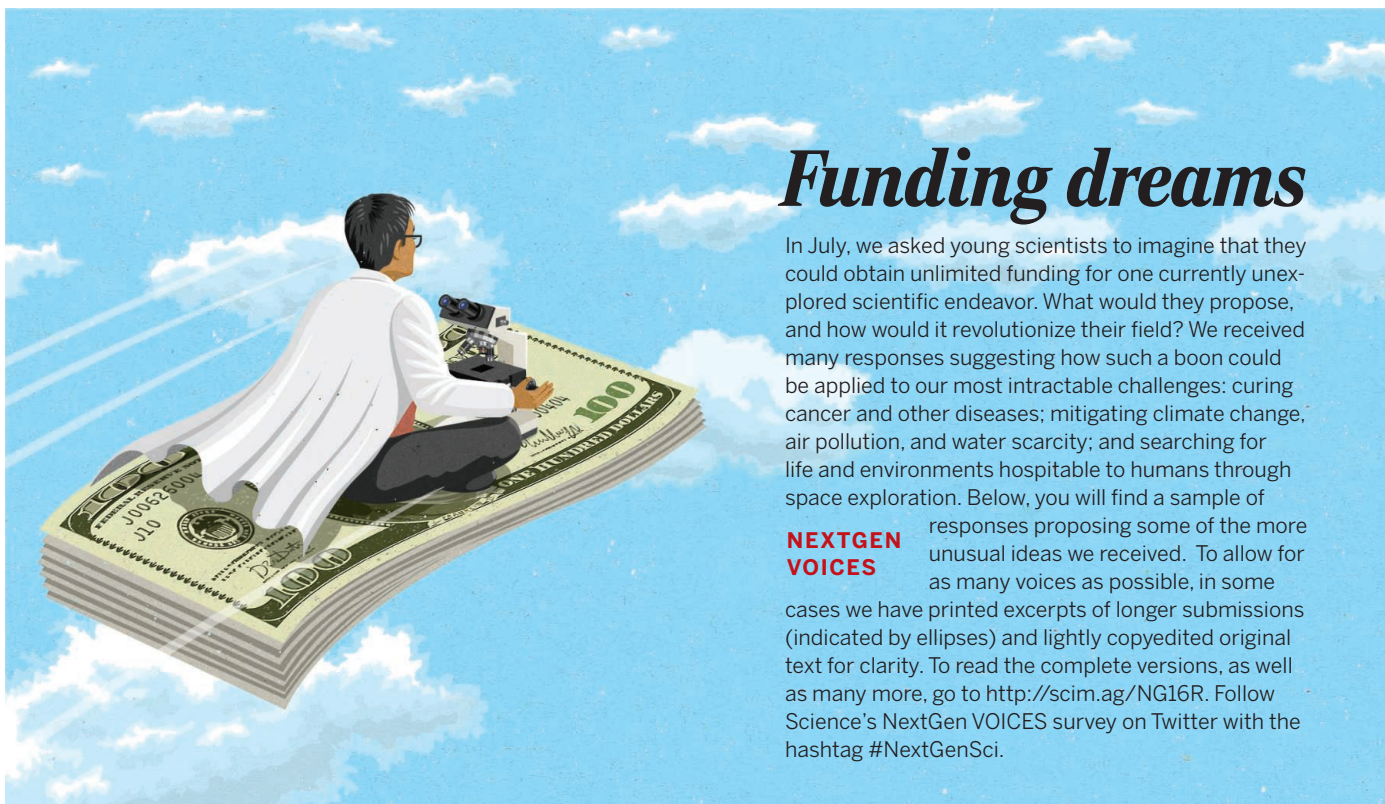
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## LETTERS

Edited by Jennifer Sills



## Funding dreams

In July, we asked young scientists to imagine that they could obtain unlimited funding for one currently unexplored scientific endeavor. What would they propose, and how would it revolutionize their field? We received many responses suggesting how such a boon could be applied to our most intractable challenges: curing cancer and other diseases; mitigating climate change, air pollution, and water scarcity; and searching for life and environments hospitable to humans through space exploration. Below, you will find a sample of

### NEXTGEN VOICES

responses proposing some of the more unusual ideas we received. To allow for as many voices as possible, in some cases we have printed excerpts of longer submissions (indicated by ellipses) and lightly copyedited original text for clarity. To read the complete versions, as well as many more, go to <http://scim.ag/NG16R>. Follow Science's NextGen VOICES survey on Twitter with the hashtag #NextGenSci.



IF I HAD unlimited funding, I would put it all toward funding the human resource needs of science. The days of applying for contracts to cover salary would be over. Postdocs would

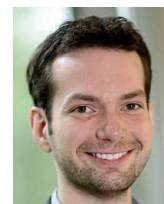
have job security and benefits, and students would not pay tuition. Adjuncts would be compensated for their work at fair market rates. Childcare would be provided, free of charge, to parents in scientific careers. In short, the basic economic needs of scientists would be met....Universal funding would completely change the scientific system, as people from all over the world and from all backgrounds would be empowered to take on science careers. Those of us privileged enough to have jobs in the field would take on riskier questions if we knew that a failed experiment would not threaten our ability to

feed our families, and more scientists would tackle questions that people in power do not want asked. The most worthy global science project is a project that opens science to all. Nothing would be more revolutionary.

**Brett Favaro**

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IF I HAD unlimited funding, I would build a state-of-the-art, free, open-source case-management system for law enforcement. Along with a case-management system, I would provide free computer equipment, support, and training to every country.... Such a system would help reduce certain types of corruption and improve police auditing. The global community would benefit from



more accurate, more standardized crime data being made available from every participating country. I would use this global crime data to better understand trends and motivations for

human trafficking and child exploitation. I would explore why countries favor the investigation of certain crimes while essentially ignoring others. I would also investigate what police strategies are most effective in fighting trafficking and exploitation, and the relation between the reduction of crime in one country and the increase of the same crime in other countries. This would let us create an organized global strategy.

**Joshua I. James**

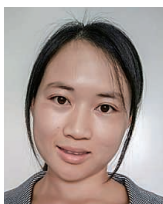
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I WOULD LIKE to explore the limits between living and nonliving systems.... With unlimited funding (and supposing that this could also acquire an unlimited powerful computational tool), I would like to start simulations with very simple collections of molecules needed for life and continuously increase the complexity of the system until the “living” behavior (such as self-replication or metabolism) arise from the nonliving parts. This could give us new information about the origin of the life in the universe and in our planet, as well as tell us the limits of free will in a chain of biochemical reactions.

**Wagner E. Richter**

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...I WANT TO build a glacier chamber in which to study huge artificial glaciers. The environment in the chamber would be similar to a real glacier’s surroundings. The difference is that we could control the factors influencing the glaciers and install sensors detecting variation in the chamber. This would help us to learn about the contribution from different factors affecting glacier melting and develop some control measures to slow down or stop the melting of the glaciers.

**Xin Wan**

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I WOULD identify a global patient cohort with familial Alzheimer’s disease (AD) mutations but no dementia over 5-year periods....I would collect biomarkers from this set to identify potential neuroprotective molecules. Neuronal iPS cells from this group would be generated and analyzed at proteomic as well as transcriptomic levels, to be compared with an age-matched, gender-matched, ethnicity-matched control set. The iPS cell study would yield mRNA and protein molecular drug targets that provide neuroprotection to the donor individuals of these cells in spite of their genetic background, which

makes them susceptible to developing AD. Functional overexpression or inhibition studies of these molecular targets with animal models of AD would follow to give more mechanistic insights....

**Sachin S. Tiwari**

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...BIOLOGY has been entirely based on what life could be on Earth, simply because this is the only environment where we know life exists.... In an unprecedented era where synthetic biology is

becoming increasingly practical to implement and we are becoming more aware of the environments of our solar system and beyond, I would propose a project to engineer unicellular life forms that can withstand various environments that would likely never occur on Earth. Human-driven evolution would unveil a host of surprising processes that may lead us to completely redefine what life itself means.

**Tommy Vo**

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WITH unlimited funding, I would endeavor to close the knowledge gap on biodiversity by discovering, cataloging, and describing all life on Earth. Current estimations on the number of

species on Earth carry great uncertainty. This is a major issue for conservation, as we cannot conserve what we don’t know, and a potentially significant number of species may go extinct before we even know of their existence. To complete the species list, I would organize extensive biodiversity sampling in yet-unexplored or difficult-to-reach areas and in environments that require expensive specialized equipment. These include ocean floors, forest canopy, soils, and underground caves and streams. The complete list of species on Earth will reveal the true scale of biodiversity loss. It will also help to detect all endangered species and allow the establishment of adapted conservation programs. New species discovery will also greatly benefit pharmacological research. Finally, taxonomic description of all species on Earth will provide an invaluable

resource for the field of evolutionary biology and would help in reconstructing the complete tree of life.

**Marie-Caroline Lefort**

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A CURRENTLY unexplored avenue in the field of stem cell biology is the clinical relevance of niche biology. Ever since Schofield coined the term “niche” in 1978, great strides have been

made to discover molecular signals and cellular support systems that maintain stem cell functionality in flies, worms, and mammals. The practical implication of this voluminous information would be to create “stem cell niche biobanks,” wherein data that has been rigorously tested and verified in the requirements for specific factors for the maintenance of stem cells of all tissue types can be consolidated. These banks would have little pockets of tissue-specific niches that allow for the maintenance of an individual’s stem cells from his brain, muscle, blood, or kidney that can be harvested on demand and continue to be maintained even after repeated usage. This endeavor would not only serve as a personalized repository of all types of stem cells, but would represent the next level in implementing the studies being conducted in niche biology....

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#### SUBMIT NOW:

#### POLITICAL SCIENCE

Add your voice to *Science!* Our new NextGen VOICES survey is now open:

How do political priorities (or political sensitivities to particular groups) affect your ability to do or communicate science?

To submit, go to [http://scim.ag/NG\\_17](http://scim.ag/NG_17)

Deadline for submissions is 13 November. A selection of the best responses will be published in the 1 January 2016 issue of *Science*. Submissions should be 200 words or less. *Science* will withhold your name from publication upon request.

# Science

## Funding dreams

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