"Science Debate" questions US political candidates on science policy

https://sciencedebate.org

Science policy is vitally important to the health and strength of society, but often takes a back seat to other issues during election season. With the US 2018 midterm elections looming, an organization called Science Debate is trying to change that dynamic by asking candidates, elected officials, the public, and the media to focus more on science policy.

Science Debate was established prior to the US 2008 election to fill the void of science and technology topics addressed in the presidential debates and candidates' campaigns. A nonpartisan, nonprofit organization, Science Debate created a petition that garnered support from individuals and organizations across the range of the political spectrum and caught the attention of both the Democratic and Republican nominees. The petition stated that "Given the many urgent scientific and technological challenges facing America and the rest of the world, the increasing need for accurate scientific information in political decision making, and the vital role scientific innovation plays in spurring economic growth, we call for public debates in which the US presidential and congressional candidates share their views on science and technology, health and medicine, and the environment." Both candidates—Barak Obama and John McCain—agreed to participate in an online science policy debate by answering "The Fourteen Top Science Questions Facing America." The inaugural debate was published in *Nature* and shared broadly online.

> The greatest accomplishments in American history have grown from decades of hard work, research and development, and scientific inquiries, many of which have been achieved through long-term federal investment in science, technology, and innovation… prioritizing long-term research over short-term economic gain is a down payment on the improvement of the world we live in and is a fundamental role of the federal government.
>
> Joseph Kopser,
> Congressional candidate,
> Texas, district 21

In 2012, both President Obama and Republican nominee Mitt Romney answered Science Debate's 14 questions. Taking the debate a step further, their answers were published and rated in *Scientific American* based on scientific understanding at that time. And in 2016, all four major presidential candidates—Hillary Clinton, Democrat; Donald Trump, Republican; Gary Johnson, Libertarian; and Jill Stein, Green Party—answered the "Twenty key science questions facing America" and their answers were again published and rated in *Scientific American*.

Building on its success in getting presidential candidates to weigh in on important science policy issues, Science Debate has expanded by asking all US House, Senate, and gubernatorial (state Governor) candidates to answer 10 questions for the 2018 elections. According to the Science Debate website, the number of questions was scaled back for the upcoming elections because "candidates running for House, Senate and gubernatorial seats typically have smaller campaign staff."

The questions asked in each election cycle come from public submissions, which are then refined with help from Science Debate's partner institutions. These 11 institutions represent scientists and engineers across the United States and some, like the National Academies of Sciences, Engineering, and Medicine (Academies) and the American Association for the Advancement of Science (AAAS), are established leaders at the intersection of science and policy. The 10 questions selected for the upcoming 2018 elections cover innovation, climate change and energy, cyber security, mental health, education, water, food, space, oceans, and scientific integrity (see **Table I**).

> Climate change is the existential challenge of our generation. Climate change is real, it is accelerating, and it is scary.… For more than two decades, fighting climate change has been the central focus of my career—first as a scientist, then as an engineer, and most recently as a clean energy entrepreneur…. Energy policy is of course about more than just climate change—but it is the prism through which all of our energy and environmental policy must be viewed.
>
> Sean Casten,
> Congressional candidate,
> Illinois, district 6

Many of the candidates who have already provided responses identify the foundational role of government investment in science and technology innovation for both achieving and maintaining economic strength within the United States. Candidates

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> In an age of rapid scientific advancement, politicians have much to learn from the field of science. Instead, some elected officials have begun to discredit scientific research and findings based not on fact, but on political convenience. This is unacceptable. The scientific method and review process is comprehensive—and scientific advancements are based on the rigorous application of trial, error, and debate. We must focus on applying the findings that are confirmed through this process, not rejecting them.
>
> Elissa Slotkin,
> Congressional candidate,
> Michigan, district 8

generally acknowledged the difficulties of tight budgets, but expressed support for boosting R&D funding.

Beyond the role of the government in funding and promoting innovation through R&D, several of the Science Debate questions raise issues that are relevant to the materials community. Materials researchers work on a range of solutions to mitigate climate change, which includes finding cleaner and more efficient energy sources. Several of the candidates agree with the scientific consensus that humanmade pollution is the predominant factor driving climate change, and have proposed a range of solutions including rejoining the Paris Climate Accord, phasing out fossil fuel use, establishing a carbon tax, investing in renewable and clean energy sources, and promoting increased energy efficiency.

The topics of science, technology, engineering, and mathematics (STEM) education and scientific integrity are also relevant to the materials community. Many of the candidates who have already submitted responses called for increased funding for STEM education, and several responses focused on the need to also diversify the STEM fields by providing additional support for women and minorities. With regard to scientific integrity, candidates generally expressed the need to develop a culture that respects scientific findings, applies science-based evidence where applicable within policymaking, and protects scientists within the government when political ideology clashes with scientific facts.

While it is clear that the majority of the candidates who have already chosen to participate and answer the questions

Table I. 2018 Q&A for US House, Senate, and gubernatorial candidates.

Innovation	Science and technology have been responsible for half the growth of the US economy since World War II. What role, if any, should government play in stimulating innovative science and technology so we continue to benefit from them?
Climate Change and Energy	What are your views on climate change and how would they affect your energy policies if at all?
Cyber Security	What will you do to protect America from cyber attacks while also protecting personal privacy?
Mental Health	PTSD, traumatic brain injuries, depression, anxiety, drug addiction, and suicide affect millions of Americans with cost of care and lost productivity greater than $400 billion a year. What mental health policies will you support if you are elected?
Education	In an age dominated by complex science and technology, how can we ensure that students receive adequate STEM education?
Water	The long-term security of water supplies is threatened by aging infrastructure, pollution, climate variability, and a growing population. What should government do to ensure access to clean water?
Food	How would you manage American agriculture so it provides healthy and affordable food grown in a just and sustainable way?
Space	What should America's goals be for space exploration and earth observation and what steps would you take to achieve them?
Oceans	Large areas of our oceans are polluted, acidification is damaging coral reefs and other habitats, and overfishing could wipe out certain species and diminish this vital source of food. What will you do to improve ocean health?
Scientific Integrity	Politicians are disputing settled science and firing government scientists for political reasons. How will you foster a culture that respects scientific evidence and protects scientists?
Open Answer	Share any science policy issues involving medicine, national security, environment, education, the economy or other pressing issues that impact your state/district that you would like to expand on.

Table credit: sciencedebate.org. Q&A, question and answer.

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posed by Science Debate are decidedly pro-science, this is not a representative picture of the candidates on the whole. All of the 435 seats in the House are open for election in 2018, as are 35 seats in the Senate and 36 gubernatorial seats. At the time of publication, only 20 candidates have provided responses across the total 506 seats open for election. Of these responses, most have been from candidates running for House seats (16 districts across 11 states), and many of the candidates who provided responses have withdrawn or have been eliminated in primary elections. Some of the eliminated candidates were particularly detailed in their awareness of science innovation, as seen by their responses to the questions. In addition, with the exception of one Green Party candidate, all responses received so far are from Democratic candidates—Republicans have yet to weigh in.

While it is unlikely that all candidates will decide to participate, the Science Debate website emphasizes that "what matters most to candidates is what their potential constituents request."

Constituents and voters can visit the Science Debate website (https://sciencedebate.org) for more information on this initiative, view full candidate responses, and find information on contacting their candidates to encourage responses to the questionnaire.

Jennifer A. Nekuda Malik

> Our nation is behind in our goal to produce up to ten million STEM-educated professionals needed over the next decade. What's worse is the gender gap that continues to exist in this area of our education system. As an engineer, I know how STEM can open up a host of opportunity for students. That's why I have promoted STEM programs at home and across the country and worked with Senator Gillibrand to improve engineering education in schools with the Educating Tomorrow's Engineers Act.
>
> Representative Paul Tonko, New York, district 20

EC proposes €100 billion for research and innovation

www.europa.eu

A new program—Horizon Europe—will build on the achievements and success of the previous European research and innovation program (Horizon 2020) and keep the EU at the forefront of global research and innovation. With a proposal of €100 billion for the next long-term budget (2021–2027), Horizon Europe is a more ambitious research and innovation program than any proposed previously.

Carlos Moedas, Commissioner for Research, Science and Innovation, says, "As part of this [proposal], we want to increase funding for the European Research Council to strengthen the EU's global scientific leadership, and re-engage citizens by setting ambitious new missions for EU research. We are also proposing a new European Innovation Council to modernize funding for groundbreaking innovation in Europe."

The European Innovation Council is to help identify and fund fast-moving, high-risk innovations with strong potential to create entirely new markets. It will provide direct support to innovators through two main funding instruments, one for early stages and the other for development and market deployment. It will complement the European Institute of Innovation and Technology.

Also new for Horizon Europe are EU-wide research and innovation missions focusing on societal challenges and industrial competitiveness. Examples could range from the fight against cancer, to clean transport or plastic-free oceans. These missions will be co-designed with citizens, stakeholders, the European Parliament, and member states.

The principle of "open science" will become the *modus operandi* of Horizon Europe, requiring open access to publications and data. According to the European Commission (EC), this will assist market uptake and increase the innovation potential of results generated by EU funding.

The proposed budget allocation of €100 billion for 2021–2027 includes €2.4 billion for the Euratom Research and Training Programme. The Euratom program, which funds research and training on nuclear safety, security, and radiation protection, will have an increased focus on non-power applications such as health care and medical equipment, and will also support the mobility of nuclear researchers under the Marie Skłodowska-Curie actions, which provide grants for all stages of researchers' careers. □

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