



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Biological and Environmental Research

BER Advisory Committee (BERAC)

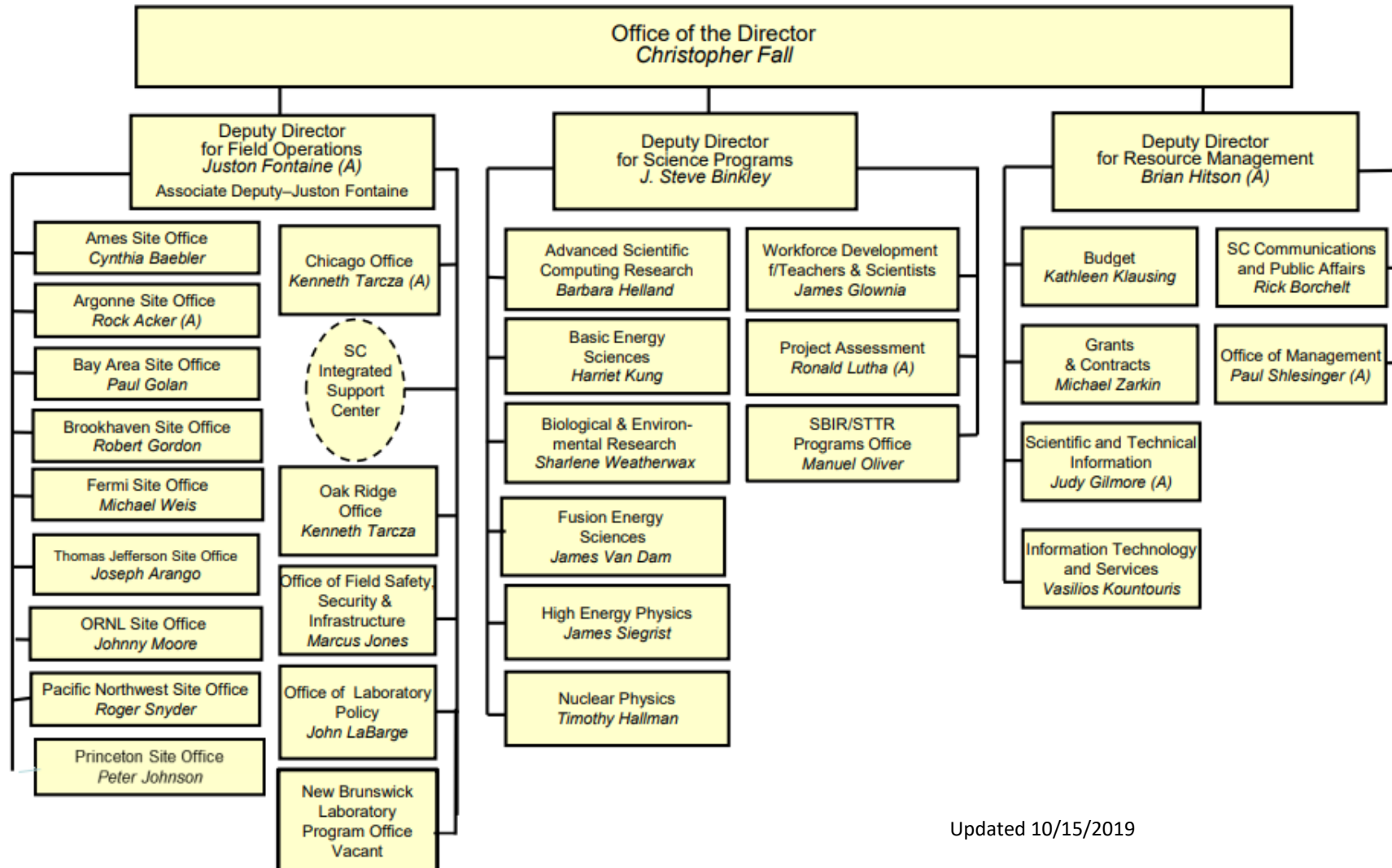
Fall Meeting

October 24-25, 2019

Sharlene Weatherwax

Associate Director

DOE Office of Science Staff Changes



Updated 10/15/2019

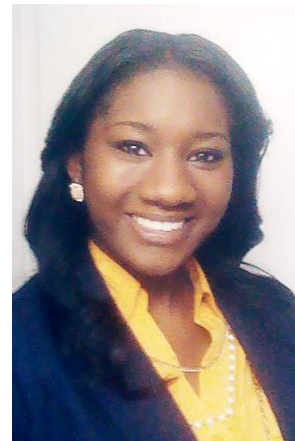


BER Staff Changes



Dr. Shing Kwok

Program Manager
Foundational Genomics Science



Ms. Brittany McMillian

Program Analyst (contractor)

BERAC Members Recognized



Dr. L. Ruby Leung

Bert Bolin Global Environmental Change Award and Lecture
(American Geophysical Union)



Dr. Gloria Muday

Awarded endowed professorship and title of *Charles M. Allen Professor of Biology*



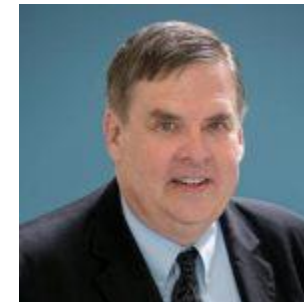
Dr. Patrick Reed

Awarded endowed professorship and title of *Joseph C. Ford Professor of Engineering.*



Dr. Maureen McCann

President-Elect
(American Society of Plant Biologists)



Dr. John Weyant

Lifetime Achievement Award
(Integrated Assessment Modeling Consortium)

BER Researchers Recognized



Bill Collins, LBNL
Tyndall History of Global Environmental Change Lecture



Neil Donahue, Carnegie Mellon
Jule Gregory Charney Lecture



Rainer M. Volkamer, Univ. Colorado, Boulder,
Atmospheric Sciences Ascent Award



Kate Calvin, PNNL
*Global Environmental Change
Section Mid-Career Award*



Allan Goldstein, UC Berkeley
*Yoram J. Kaufman Outstanding Research and
Unselfish Cooperation Award*

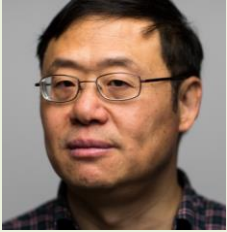
American Geophysical Union

2019 AGU Fellows

- Jayne Belnap, US Geological Survey
- Thomas Bianchi, University of Florida
- Sonia Kreidenweis, Colorado State University
- Reed Maxwell, Colorado School of Mines
- Ted Schuur, Northern Arizona University
- Carl Steefel, Lawrence Berkeley National Laboratory
- Karl E. Taylor, Lawrence Livermore National Laboratory



BER Researchers Recognized



Qiang Fu, Univ. of Washington
Jule G. Charney Medal



Matthew R. Kumjian, Penn. State Univ.
Henry G. Houghton Award (early career)



Gregory S. Jenkins, Penn. State Univ.
Charles E. Anderson Award

American Meteorological Society

2020 Fellows:

- Ping Chang, Texas A&M University
- Paul J. DeMott, Colorado State University
- Bart Geerts, University of Wyoming
- Wojciech W. Grabowski, National Center for Atmospheric Research
- Stephen A. Klein, Lawrence Livermore National Lab
- Courtney J. Schumacher, Texas A&M University
- Tammy M. Weckworth, NCAR

BER Researchers Recognized



Pamela Ronald, UC Davis (JBEI)
*Leadership in Science Public
Service Award*
(American Society of Plant
Biologists)



Susan Hubbard, LBNL
*Elected to the American Academy of
Arts and Sciences*



Kathleen Treseder, UC Irvine
Fellow
(American Academy of
Microbiology)



Scott Baker, PNNL/EMSL (JBEI)
Fellow
(Society for Industrial Microbiology)



Jennifer Pett-Ridge, LLNL
2019 Endowed Lecturer in Biogeochemistry
(Goldschmidt Conference)

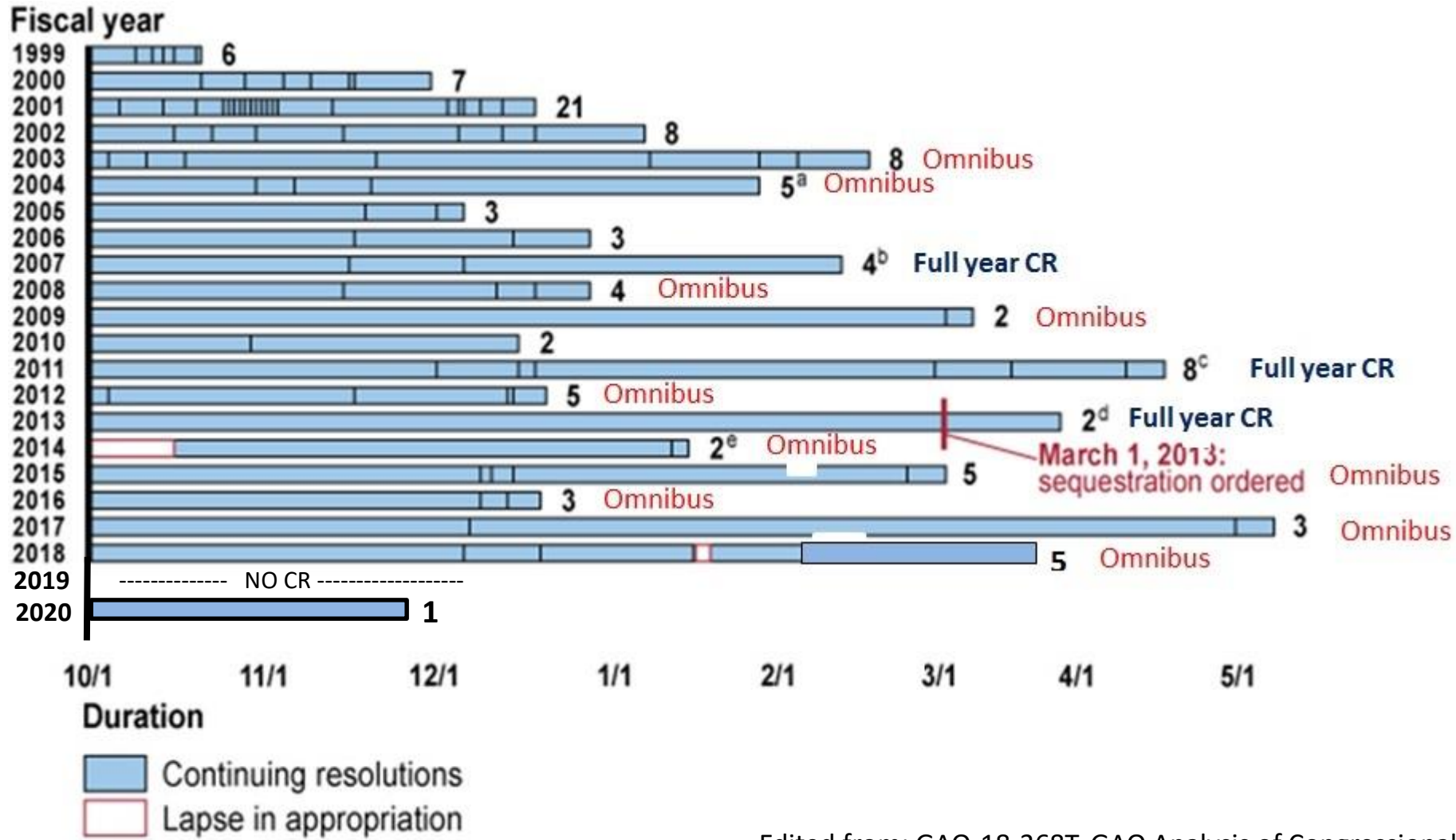
FY 2020 SC President's Budget Request and Congressional Marks

(Dollars in Thousands)

	FY 2019	FY 2020			FY 2020 Future Scenario
	Enacted Approp.	President's Request	House Mark	Senate Mark	Enacted Approp. ^A
Office of Science					
Advanced Scientific Computing Research	935,500	920,888	956,540	1,029,000	...
Basic Energy Sciences	2,166,000	1,858,285	2,143,000	2,325,000	...
Biological and Environmental Research	705,000	494,434	730,000	770,000	...
Fusion Energy Sciences	564,000	402,750	688,000	570,000	...
High Energy Physics	980,000	768,038	1,045,000	1,065,000	...
Nuclear Physics	690,000	624,854	735,000	736,000	...
Workforce Development for Teachers and Scientists	22,500	19,500	25,000	25,000	...
Science Laboratories Infrastructure	232,890	163,600	250,830	394,000	...
Safeguards and Security	106,110	110,623	110,630	113,000	...
Program Direction	183,000	183,000	186,000	188,000	...
SBIR/STTR (SC)		0	0	0	0
Total Budget Authority and Obligations, Office of Science	6,585,000	5,545,972	6,870,000	7,215,000	0
SBIR/STTR (DOE)	...	0	0	0	0
Total, Office of Science	6,585,000	5,545,972	6,870,000	7,215,000	0

^APending future appropriation, currently operating under terms of Continuing Resolution thru November 21, 2019.

Budget: Duration and Number of Continuing Resolutions

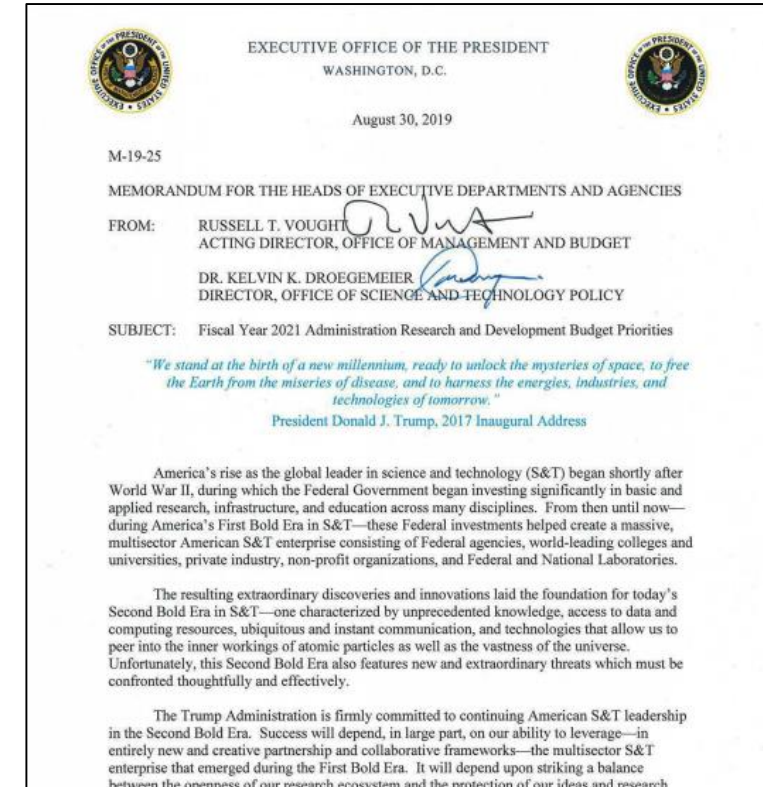


Edited from: GAO-18-368T, GAO Analysis of Congressional Research Service data.

FY 2021 Administration Research & Development Priorities

This Fiscal Year 2021 (FY2021) R&D Budget Priorities memorandum provides direction to enable this Second Bold Era as part of a longer-term, multisector, national strategy to advance bold, transformational leaps in S&T, build a diverse workforce of the future, solve previously intractable grand challenges, and ensure America remains the global S&T leader for generations to come.

- Machine Learning/Artificial Intelligence
- Quantum Information Science
- Exascale Computing
- Earth System Predictability
- Bioeconomy
- Build and Leverage a Diverse, Highly Skilled American Workforce
- And Other Crosscutting Priorities



2019 BER Early Career Focus Areas

➤ **Fundamental Systems Biology-Driven Research to Enable Advanced Biofuels and Bioproducts Production**

- Advance the development of emerging model microorganisms and/or microbial communities relevant for the production of biofuels and/or bioproducts
- Multi-omics approaches coupled with advanced predictive modeling

➤ **Environmental System Science**

- Quantify how biological behavior, abiotic-biotic interactions, and molecular transformations control the mobility of contaminants (e.g., U, Tc, Hg), nutrients (e.g., N, P, C), and other inorganic elements involved in mediating biogeochemical processes (e.g., S, Fe, Mn).
- Quantify and predict how hydrology drives fine-scale biogeochemical processes...in surface-subsurface systems.
- Translate biogeochemical behavior across relevant molecular to watershed scales to accurately and tractably predict flows of water, nutrients, and contaminants.
- Identify, quantify, and predict watershed responses to natural and anthropogenic perturbations, extreme events, and shifts to new states.

2019 BER Early Career Awardees



Name	Institution	Topic Area	Title
Kristin Burnum-Johnson	PNNL	Systems Biology	Spatiotemporal mapping of lignocellulose decomposition by a naturally evolved fungal garden microbial consortium
Isaac Larsen	University of Massachusetts, Amherst	Environmental Systems Science	Abiotic and biotic controls on chemical weathering rates and solute generation
Josh Michener	ORNL	Systems Biology	Systems metabolic engineering of <i>Novosphingobium aromaticivorans</i> for lignin valorization
Davinia Salvachua Rodriguez	NREL	Systems Biology	Elucidating Aromatic Catabolic Pathways in White-Rot Fungi during Lignin Decay
Kevin Solomon	Purdue University	Systems Biology	Genetic tools to optimize lignocellulose conversion in anaerobic fungi and interrogate their genomes
James Stegen	PNNL	Environmental Systems Science	Multi-Watershed Perturbation-Response Traits Derived Through Ecological Theory
Charuleka Varadharajan	LBNL	Environmental Systems Science	Investigating the Impacts of Streamflow Disturbances on Water Quality Using a Data-Driven Framework



Presidential Early Career Award for Scientists and Engineers



Kelly Wrighton
Colorado State University
2017 PECASE Award
(announced July 2019)



2019 DOE Graduate Student Research Program (SCGSR) Award Recipients

Name	Graduate Institution	Host Lab	Research Area
Albina Khasanova	University of Texas at Austin	LBNL	Plant Science for Sustainable Bioenergy
Hannah Shulman	University of California – Riverside	LLNL	Soil Microbiology
Margaret Capooci	University of Delaware	LLNL	Environmental Systems Science
Nicholas Reichart	Montana State University	LBNL	Computational Biology and Bioinformatics
Ryan Rae Lenz	Oregon State University	ORNL	Plant Science for Sustainable Bioenergy
Samantha Summers	University of Colorado- Boulder	NREL	Computational Biology and Bioinformatics
Wiliam Joseph Sagues	North Carolina State University	NREL	Plant Science for Sustainable Bioenergy

2019 DOE SCGSR Program

The **Office of Science Graduate Student Research (SCGSR) Program** is managed by the Office of Workforce Development for Teachers and Scientists, and was developed to prepare graduate students for science, technology, engineering, or mathematics (STEM) careers important to the DOE Office of Science mission.

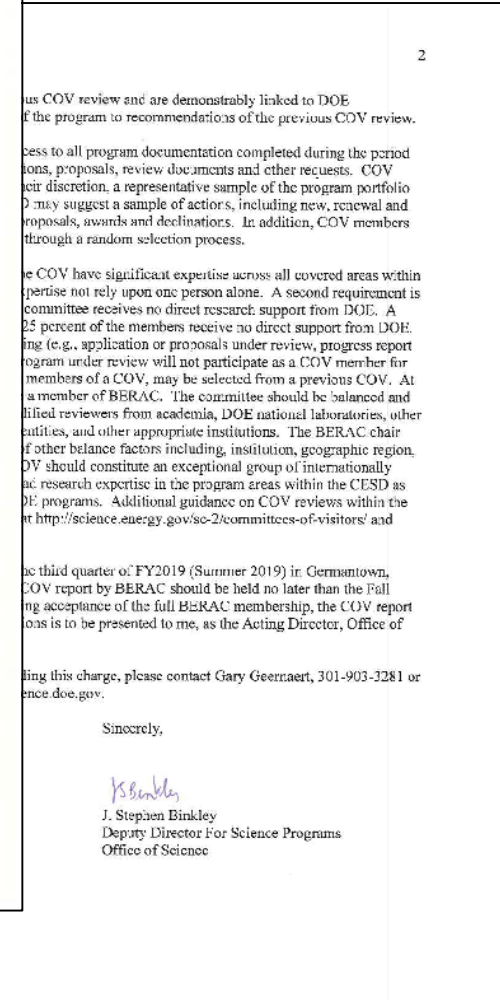
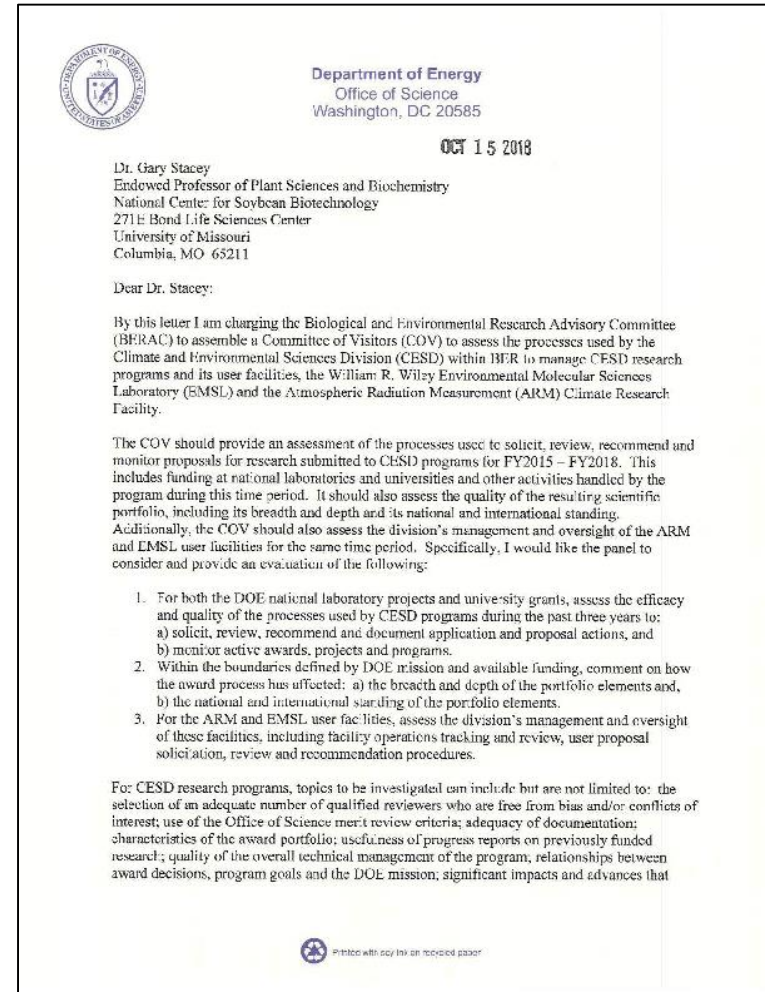
SCGSR Topics for Biological and Environmental Research (BER) in the second (current) solicitation of 2019 include:

- (a) Computational Biology and Bioinformatics
- (b) Biomolecular Characterization and Imaging Science
- (c) Plant Science for Sustainable Bioenergy
- (d) Soil Microbiology
- (e) Environmental Systems Science
- (f) Atmospheric System Research
- (g) Earth System Modeling

**Applications are due
November 14, 2019**

New BERAC Charge

Committee of Visitors (COV) to review BER processes for programmatic funding in the Climate and Environmental Sciences Division (CESD)



Thank you!