



REPORTS OF THE

NATIONAL CENTER FOR SCIENCE EDUCATION

DEFENDING THE TEACHING OF EVOLUTION AND CLIMATE SCIENCE

Volume 35, Number 3

May-June, 2015



Giuseppe Arcimboldo, The Librarian, circa 1670, via Wikimedia Commons

TABLE OF CONTENTS

UPDATES

News from the Field.
page 2

NCSE NEWS

News from the Membership.
page 5

FROM THE STAFF

News from NCSE Headquarters.
page 7

WINNERS

Two Teachers Win Adventure of a Lifetime.
page 10

THANK YOU

To Our Supporters.
page 11

FEATURE SUMMARY

Frank White
by Randy Moore.
page 13

SUMMARIES OF BOOK REVIEWS

page 14

UPDATES

News from the Field

Controversies over evolution and climate science always seem to be happening somewhere. Here is a sampling of recent news.

Florida, Pensacola: The flamboyant young-earth creationist Kent Hovind was back in a federal courtroom in early 2015. Hovind, who established Creation Science Evangelism and Dinosaur Adventure Land was, in 2006, convicted of fifty-eight federal charges, including failing to pay payroll taxes for his employees, structuring financial transactions to avoid reporting requirements, and “corruptly endeavor[ing] to obstruct and impede the due administration of the internal revenue laws” in a number of ways. In early 2007, he was sentenced to serve ten years in federal prison as well as to pay restitution to the government. While in prison, however, he filed what the *Pensacola News-Journal* (2015 Mar 12) described as “paperwork disputing the government’s right to sell his property” to comply with the order to pay restitution. Consequently, he was charged with mail fraud, attempted mail fraud, conspiracy to commit mail fraud, and criminal contempt in 2014. Hovind was found guilty on the criminal contempt charge on May 12, 2015, but the verdict was overturned by the judge, according to the *Pensacola News-Journal* (2015 May 19), on the grounds that “[t]he government has not cited any authority for the proposition that Hovind can be guilty of contempt for interfering with or evading an order that did not speak directly to his conduct.” The jury was unable to reach a verdict on the other three charges. The government planned to retry Hovind on those charges in May 2015, but later asked for the charges to be dismissed without prejudice, according to the *Pensacola News-Journal* (2015 May 19)—meaning that the charges could be raised again in the future. Hovind, now 61, is nearing the end of his original sentence.

Georgia, LaGrange: The young-earth creationist Eric Hovind (son of Kent Hovind) of Creation Today gave a presentation to students at Troup County Comprehensive High School in LaGrange, Georgia—about seventy miles southwest of Atlanta—on March 23, 2015, during the school day, and the Freedom from Religion Foundation (FFRF) is concerned. In a letter to the district’s superintendent dated April 1, 2015, FFRF complained, “his presentation included more than 100 slides, many of which appear to contain arguments undermining evolution, supporting the idea of a biblical flood, and advancing biblical creationism.” According to the *LaGrange Daily News* (2015 Apr 7), the school district replied that Hovind was invited only to discuss “critical thinking” and was instructed not to discuss religion during his presentation. But the newspaper obtained a

copy of his presentation to the class and observed that it “makes claims that the Grand Canyon was formed during a giant flood” and “goes on to cast doubt about some of the most basic [tenets] of the theory of evolution.” Tim Chowns, a professor of geology at the University of West Georgia, examined Hovind’s presentation and concluded (in the words of a subsequent article in the newspaper; 2015 Apr 8) that “Hovind’s assertions are wrong and without basis in the observable world.”

Louisiana: Louisiana’s Senate Bill 74 was deferred on a 4–3 vote in the Louisiana Senate Education Committee on April 22, 2015, which effectively kills the bill in committee. The bill, introduced by Karen Carter Peterson (D–District 5), represented the fifth attempt to repeal Louisiana Revised Statutes 17:285.1, which implemented the so-called Louisiana Science Education Act, passed and enacted in 2008.

LRS 17:285.1 opened the door for scientifically unwarranted criticisms of evolution and climate science to be taught in the state’s public schools by calling on state and local education administrators to help to promote “critical thinking skills, logical analysis, and open and objective discussion of scientific theories being studied including, but not limited to, evolution, the origins of life, global warming, and human cloning”; these four topics were described as controversial in the original draft of the legislation. It also allows teachers to use “supplemental textbooks and other instructional materials to help students understand, analyze, critique, and review scientific theories in an objective manner” if so permitted by their local school boards. Speaking to NBC News on April 12, 2013, Louisiana’s governor Bobby Jindal (R), who signed the bill into law over the protests of the state’s scientific and educational communities, acknowledged that the law allows teachers to “teach our kids about creationism.”

Since 2008, antievolutionists have not only sought to undermine the law’s provision allowing challenges to unsuitable supplementary materials but have also reportedly invoked the law to support proposals to teach creationism in at least two parishes—Livingston and Tangipahoa—and to attack the treatment of evolution in biology textbooks proposed for adoption by the state. Meanwhile, the Society of Vertebrate Paleontology urged Louisianans to repeal the law in 2008, and the Society of Integrative and Comparative Biology decided to hold its conferences elsewhere while the law remains on the books (relenting only in the case of New Orleans after the Orleans Parish School Board prohibited the teaching of creationism in its science classes).

Endorsers of the repeal effort include a group of seventy-eight Nobel laureates in the sciences and a

number of prestigious organizations including the National Association of Biology Teachers, the American Association for the Advancement of Science, the American Institute for Biological Sciences, the Clergy Letter Project, the New Orleans City Council, and the Baton Rouge *Advocate*.

Testifying in favor of the repeal bill were Zack Kopplin, who has been campaigning against the Louisiana Science Education Act since 2010, when he was a senior in high school. Kopplin told the committee about recently uncovered evidence of the effects of the law (see below), which he also presented in a column published in *Slate* (2015 Apr 21). Also testifying in favor of the bill were Scott Lane and his son CC Lane, who, as NCSE previously reported, were forced to sue the Sabine Parish School Board in 2014 over a teacher's advocacy of creationism, which included a description of evolution as "a 'stupid' theory that 'stupid people made up because they don't want to believe in God.'"

Louisiana: Writing in *Slate* (2015 Apr 21), Zack Kopplin reported, "I have evidence that religion, not science, is what's being taught systematically in some Louisiana school systems. I have obtained emails from creationist teachers and school administrators, as well as a letter signed by more than 20 current and former Louisiana science teachers in Ouachita Parish in which they say they challenge evolution in the classroom without legal 'tension or fear' because of pro-creationism policies."

In his article, Kopplin explains that he recently obtained material from various Louisiana school districts via public records requests. The result suggests that the Louisiana Science Education Act is widely regarded in the state as affording license for teachers to present scientifically unwarranted critiques of evolution. NCSE's Josh Rosenau was quoted as commenting, "Getting teachers to use attacks on evolution as a proxy for advocating creationism has a long history, especially in Louisiana."

Kopplin, who has been actively campaigning against the Louisiana Science Education Act since he was a senior in high school in 2010, concluded by noting the relevance of his findings to the repeal effort. He noted, "The Senate Education Committee will consider a new bill to repeal the Louisiana Science Education Act on Wednesday" (that is, April 22, 2015; the bill in question is Senate Bill 74, dubbed the "Intelligent Outcomes Wanted Act"), adding, "I look forward to the legislators doing their part." However, SB 74 died in committee (see above).

Maine, Brunswick: A fifth-grade teacher at Harriet Beecher Stowe Elementary School in Brunswick, Maine—about twenty-five miles northeast of Portland—"is plainly teaching intelligent design in class," the ACLU of Maine charged in a March 27, 2015, letter to the school superintendent. The letter quoted a January 9, 2015, e-mail that Lou Sullivan sent to parents of his students, as saying, "This week it was a discussion on how the universe was created. After discussing the Big Bang and Intelligent Design I realized that my worksheet for the lesson was terribly inadequate." In response to a query, Sullivan explained "the 'Intelligent Design' discussion is something I include each year." The ACLU letter reminded the superintendent that "efforts to inject religious beliefs regarding the origin of life into public-school science curricula are constitutionally impermissible" and asked for copies of all the district policies about teaching about the origin of the universe and evolution as well as for all lesson plans on those subjects. The superintendent told the *Bangor Daily News* (2015 Apr 7), however, "That teacher was not teaching creationism. He did not get up in the class and teach intelligent design"; instead, he said, Sullivan was only attempting to respond to student questions about his personal beliefs. The superintendent

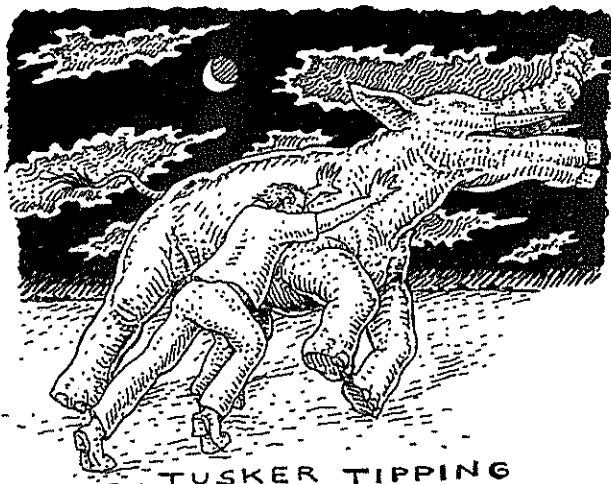
added, "The teacher cannot, will not, answer kids[] questions directly when it deals with God, unfortunately—that's an unfortunate result of all this—and will try to be as delicate as possible in making sure we don't offend anybody." Zachary Heiden of the ACLU of Maine told the newspaper that he is waiting to review the documents from the district to see whether further action will be required.

South Dakota: "The debate over choosing standards for science education in South Dakota's public schools has become a

divisive battleground with a clear split between science professionals who strongly support the new standards and opposing parents who disbelieve climate change and evolution," reported the *Rapid City Journal* (2017 Mar 17).

At the third of four public hearings on a new set of science standards for the state, one testifier described climate change and evolution as "fringe ideas" and suggested that the schools ought not to be advocating for or against them. Similar comments were heard at the second hearing in November 2014, as NCSE previously reported.

But "more than twice as many science teachers, researchers[,] and scientists" testified in favor of the standards, including Julie Olson, a high school science teacher and president of the South Dakota Science



Teachers' Association, who commented, "I am fully in support of the adoption of these standards."

Following a final public hearing in May 2015, the board is expected either to adopt the standards at its May 18, 2015, meeting, or to "direct the department to further revise them for possible final approval at the board's July 27 meeting in Rapid City," according to the *Journal*. The standards would be in use in the 2017–2018 academic year.

West Virginia: The West Virginia state board of education adopted a new set of state science standards largely based on the Next Generation Science Standards on April 9, 2015—"but," the *Charleston Gazette* (2015 Apr 9) explained, "not without adding in changes suggested by board member Wade Linger to the teaching of global warming."

Where a standard originally called for middle school students to "ask questions to clarify evidence of the factors that have caused the rise in global temperature over the past century"—which would include the burning of fossil fuel—the revised standard asks them about "the change in global temperature."

And where a standard for a high school environmental science class (not based on the NGSS) asked students to "[d]ebate climate changes as it [sic] relates to greenhouse gases, human changes in atmospheric concentrations of greenhouse gases, and relevant laws and treaties," the revised standard adds a reference to "natural forces."

"These aren't useful changes," commented NCSE's Minda Berbeco. "They make the standards less precise and they seem intended to open the classroom door a crack to climate change denial. But they are mostly harmless—especially compared to Linger's previous attempts to undermine the treatment of climate change in the standards."

The original revisions quietly made in December 2014, before the new standards were adopted, had high school students assessing the "credibility" (*sic*) of geoscience data and the results from global climate change models, and middle school students asking questions about the "the rise and fall in global temperature."

In January 2015, following a recommendation from the state department of education, the board voted to revert to the original version of the sections addressing climate science. During the ensuing public comment period, the vast majority of comments received were in favor of adopting the standards, according to the *Gazette* (2015 Apr 6).

Linger's new amendments were adopted on a 5–3 vote, and the newly revised standards were adopted on

a 6–2 vote, with at least one member who voted against them citing Linger's revisions as the reason, according to West Virginia Public Broadcasting (2015 Apr 9). The standards will be in effect starting in the 2016–2017 academic year.

NCSE's Glenn Branch told the *Gazette* (2015 Apr 11) that the new standards still represent progress, noting that they are "certainly an improvement" over the December 2014 version as well as the state's previous science standards. "Hopefully, they're now out of the hands of politicians who want to meddle with them," Branch commented.

Libby Strong, the president of the West Virginia Science Teachers Association, agreed, telling the *Gazette* that although the new changes are disappointing, they are not as problematic as the previous changes. A further delay would be unfortunate, she added: "The teachers deserve the new standards and the new materials."

The discussion of the new standards reached the pages of *The New York Times* (2015 Apr 11). NCSE's Josh Rosenau told the newspaper that the new changes were acceptable, since they do not introduce false information about climate change, but added, "I can't quite motivate myself to shout 'Victory!' from the rooftops."

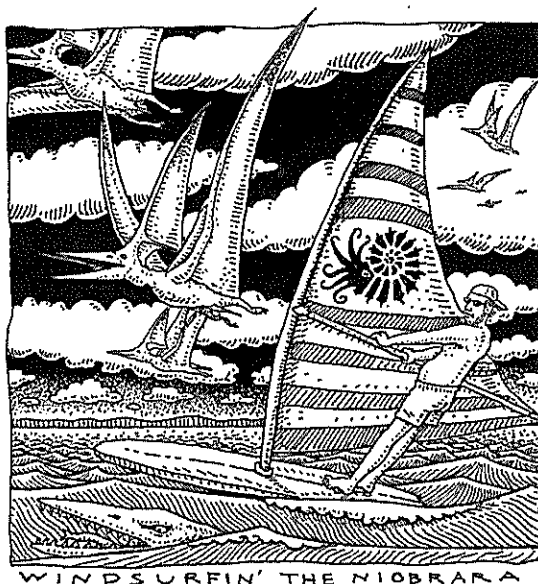
Wyoming: The Wyoming state board of education voted on March 17, 2015, to return to the task of adopting new science standards, according to Wyoming Public Media (2015 Mar 17)—but a proposal to adopt the Next Generation Science Standards outright was rejected.

Instead, the board will reconvene a committee of science educators that, after eighteen months of review, recommended the adoption of the NGSS in 2014. "The group will be asked to consider new information" before making a new recommendation.

The board was previously forbidden, by a footnote in the state budget for 2014–2016, to use state funds for "any review or adoption" of the NGSS. The treatment of climate change in the standards was cited as the reason for the footnote.

The legislature's blockage of the NGSS was widely condemned by the state's scientists, educators, and newspapers, and the board eventually declined to develop a new set of science standards independent of the NGSS.

The footnote was repealed in March 2, 2015, when House Bill 23 was signed into law. The new law directs the board to "independently examine and scrutinize any science standards proposed or reviewed as a template" for Wyoming's state science standards. ■



We regularly like to report on what our members are doing. As the following list shows, they—and we—have a lot to be proud about!

Daniel I Bolnick, Professor of Integrative Biology at University of Texas at Austin, was selected to receive the David Starr Jordan Prize for innovative contributions to the study of evolution, ecology, population, and organismal biology. The Jordan Prize is presented to a young scientist (40 years of age or less) who is making novel innovative contributions in one or more areas of Jordan's interest: evolution, ecology, population, and organismal biology. The intent of the prize is to recognize young scientists whose research contributions are likely to redirect the principal foci of their fields. In addition to a \$20 000 cash award, Bolnick will receive a commemorative medal, attend an awards ceremony, and present a lecture at Indiana University and visit the other two sponsoring institutions—Stanford University and Cornell University—where he will also give a scholarly presentation about his research. He was selected to receive the prize by a committee composed of representatives from each of the three institutions.

Duane Jeffery contributed a Darwin Day column to the *Provo Herald* (2014 Feb 12), discussing Darwin's antipathy to slavery: "Slavery was not the source of Darwin's ideas, but serving the 'sacred cause' of abolition intensified his passionate dedication to his work." Jeffery also defended Darwin, writing that although "Darwin's critics to this day love to say his ideas were the 'validation' for communism, for Naziism, for every bad political system going," "Darwin himself utterly rejected notions that his ideas had anything at all to do with political systems." A former member of NCSE's board of directors, Jeffery is professor emeritus of biology at Brigham Young University.

James Krupa contributed "Defending Darwin" to the environmental magazine *Orion* (2015), discussing his forthright and persistent teaching of evolution at the University of Kentucky, on account of which, he writes, he is "one of the most hated and loved professors at the university." Toward the end of the essay, he reflects, "I'm occasionally told my life would be easier if I backed off from my relentless efforts to advance evolution education. Maybe so. But to shy away from emphasizing evolutionary biology is to fail as a biology teacher. I continue to teach biology as I do, because biology makes sense only in the light of evolution." Krupa is Professor of Biology at the University of Kentucky; he received the Evolution Education Award from the National Association of Biology Teachers in 2012.

Responding to a letter from a local creation science organization challenging all comers to a debate on

evolution, **Sid Machalek** wrote to *The Dispatch / The Rock Island Argus* to observe, "Debates are spectacles and make little difference in the long run," and to suggest a different challenge: "Convince a school board to include creation science in science class." He warned, however, "I will make it my business to make sure a court challenge is filed, and let the taxpayers know which board members thought so little of their money." His letter appeared in the February 25, 2015, issue of the newspaper.

Along with Judi Brown Clarke, Frank Forcino, and Joseph L Graves, **Louise S Mead** contributed "Factors influencing minority student decisions to consider a career in evolutionary biology" to the journal *Evolution: Education and Outreach* (2015; 8[6]; available on-line from <http://www.evolution-outreach.com/content/8/1/6>). Observing that the field of evolutionary biology is failing to attract and retain African Americans, Hispanics, and Native Americans, Mead and her coauthors conducted a survey to try to ascertain why.

Our data suggest there are significant differences among racial/ethnic groups in factors that appear to influence their career paths, specifically African Americans and non-Puerto Rican Hispanic/Latino(a)s place greater emphasis on the presence of people of similar racial/ethnic background. Additionally we found differences between the [underrepresented minority] groups in terms of their interest in, and understanding of, evolutionary biology; which appears to result in less likelihood of choosing careers in evolutionary science. And for some African Americans, reluctance to pursue evolutionary biology may be tied to holding misconceptions about evolution and higher levels of religiosity.

Mead is the education director at the BEACON Center for the Study of Evolution in Action at Michigan State University; she worked for NCSE from 2006 to 2010.

NCSE is pleased to congratulate **Kenneth R Miller** for receiving the National Science Teachers Association's Presidential Citation, which recognizes "individuals or organizations who have significantly promoted the profession of science education."

A member of NCSE's Advisory Council, Miller is Professor of Biology of Brown University. He is the coauthor, with Joseph S Levine, of four popular high school and college textbooks, and author of *Finding Darwin's God* (1999) and *Only a Theory* (2008). Among his awards are the Public Service Award from the American Society for Cell Biology, the AAAS's Award for Public Understanding of Science and Technology, the Stephen Jay Gould Prize from the Society for the Study

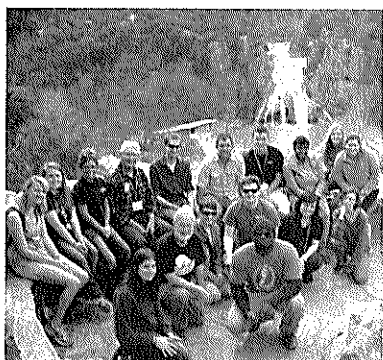
of Evolution. He testified for the plaintiffs in *Kitzmiller v Dover*, the 2005 case establishing the unconstitutionality of teaching “intelligent design” in the public schools.

The first recipients of the NSTA’s Presidential Citation, in 2006, were the science teachers at Dover High School in Dover, Pennsylvania, who defied their school board’s order to read a statement about “intelligent design” to their students.

Andrew J Petto was interviewed about the current spate of science denial by WUWM radio in Milwaukee (2015 Mar 11; available on-line at <http://wuwvm.com/post/why-have-people-lost-faith-science>). “[The public’s] expectation [is] that the purpose of science is technology, the purpose of science is to make something better for us,” he commented. “Science does have a practical application ... but, really the foundation [of science] is a better understanding... it’s a way to untangle complicated things to help us better understand them and predict things we have not seen.” A former member of NCSE’s board of directors and a former editor of *Reports of the NCSE*, Petto is a senior lecturer in science education, evolution education, and anatomy at the University of Wisconsin, Milwaukee.

Stan Rice, a professor in the Department of Biological Sciences at Southeastern Oklahoma State University and president of the Oklahoma Academy of Sciences and of Oklahomans for Excellence in Science Education, led the Oklahoma Evolution Road Trip over the 2015 spring break. Gordon Eggleton, a retired professor of physical sciences at Southeastern, assisted Rice in the course: Eggleton handled the geology and Rice handled the evolution. The Road Trip was a course in OSLEP, the Oklahoma Scholar Leadership Enrichment Program, which for about forty years has been bringing scholars from all over the country to lead week-long courses for some of the best students in Oklahoma.

Enrolled in the Road Trip were fifteen highly motivated students from seven universities in Oklahoma and from diverse academic backgrounds—most were science majors but there was a computer science major, a finance major, and even an aspiring professional trombone player.



Participants in the 2015 road trip.

The course consisted mainly of field trips and student research projects and presentations. One field trip covered

interesting geological features of south central Oklahoma, including fossil deposits and evidence of violent geological activity about 270 million years ago. The other field trip was to Dinosaur Valley State Park in Texas, where students saw dinosaur footprints and

tested their critical thinking skills by visiting a nearby creationist museum. The students noticed numerous problems with the creationist claims that the instructors had never thought about before. For example, the museum (run by the infamous Carl Baugh) contains purported “man-tracks” that overlap dinosaur footprints. One student pointed out, however, that the “man-track” must have been carved, since the silicate crystals inside the “man-track” were shiny and the ones outside were not—something that any visitor to the museum should be able to see for themselves. More information about and photographs from this trip are posted in the late March 2015 essays on Rice’s blog (<http://honest-ab.blogspot.com>).

This was the second Oklahoma Evolution Road Trip and both instructors hope it will be a recurring opportunity in Oklahoma. “Oklahoma and Texas are notorious for creationism,” Rice commented. “But the best students in Oklahoma, of which these were a sample, have their eyes wide open to understand the evidence for evolution.”

Elliott Sober’s *Did Darwin Write the Origin Backwards?* (Amherst [NY]: Prometheus Books, 2012) was the subject of a symposium in the journal *Philosophical Studies* (2015;172[3]). Sober contributed a précis (799–802), Jean Gayon, Tim Lewens, Samir Okasha contributed comments (803–811, 813–821, and 823–282, respectively), and Sober replied (829–840). A member of NCSE’s Advisory Council, Sober is the William F Vilas Research Professor and Hans Reichenbach Professor in the Department of Philosophy at the University of Wisconsin, Madison.

With Terry Bramschreiber, **David Westmoreland** contributed “Preparing students for science in the face of social controversy” to *The American Biology Teacher* 2015;77(4):284–288. The abstract of their article:

Science educators often teach topics that are largely resolved in the scientific community yet remain controversial in broader society. In such cases, students may perceive the teacher as biased. We present two exercises that foster more objective learning about the scientific underpinnings of socially controversial topics. The first exercise clarifies why the scientific resolution of an issue does not necessarily align with social perception. The second applies this concept by having students discriminate science-based claims from other claims.

Westmoreland is Professor of Biology at the United States Air Force Academy. In the same issue of the journal was **Glenn Branch** and **Minda Berbeco’s** “Déjà vu all over again: Climate as a second front for biology teachers” (228–229), arguing that “[l]ike evolution, anthropogenic (human-caused) climate change offers challenges—but also opportunities—to biology teachers.” ■

from THE STAFF

News from NCSE Headquarters

MINDA BERBECO writes: "Climate change is a children's issue!"

That was the slogan that drew me to Sacramento in early May 2015 for the California Parent Teacher Association (CAPTA) annual meeting.

That might seem a little unusual. If you are anything like me, when you think of the PTA, you probably think of bake sales, or school dances, or arguments over whether to sell soda in the lunchroom.

So you can imagine that I was a little shocked when I walked into the enormous convention hall, packed with over two thousand attendees. The room had three flashing Jumbotrons, speakers blasting music, and a surging and shouting audience of parents and teachers. It was more like a political convention than a bake sale—in fact, there were signs at the doorway that read "no food allowed!"

Why was I there? A year ago, NCSE was asked by the San Diego Unified Council of PTAs to help to develop a resolution on climate change and climate change education for CAPTA to consider. The resolution calls on schools to teach the evidence for global change and potential solutions, and urges parents to support their children's teachers in doing so.

A previous resolution on climate change was submitted to CAPTA in the past—but unsuccessfully. Each resolution must be rooted in fact, which requires its authors to cite a significant body of research

literature. The folks in San Diego simply did not have access to or the expertise to assemble that information. But NCSE helped them to find the best and latest research to support their resolution, and with that help the resolution was again brought to the CAPTA annual meeting for a vote.

If passed, the CAPTA resolution would go to the national PTA—which has taken on everything from seat belts to drug abuse—for consideration. The organization started in the late nineteenth century by fighting child labor, and it has been taking on controversial issues ever since. In fact, if you went to public school anywhere in America in the last 100 years, you have almost certainly benefited from some initiative that the national PTA started or supported.

What is really neat about the national PTA is that all of those initiatives started in one school somewhere in America—in a community where the parents and teachers in their local PTA got together and said, "Gosh, that just doesn't seem right." They rallied support in their community, brought their ideas to the state and national levels of the PTA, and then worked with schools across the country to ensure that their initiatives were moved forward.

CAPTA in particular, as the largest state PTA, has had a hand in launching some of the most ambitious programs. This year was no different, with CAPTA considering resolutions regarding synthetic marijuana

COMINGS AND GOINGS AT NCSE

NCSE is pleased to announce that **Emily Schoerning** has joined the NCSE staff as Director of Community Organizing and Research. Schoerning earned her PhD in microbiology at Arizona State University and then, as a post-doctoral research scholar at the University of Iowa, turned her attention to science education research. In Iowa, she established partnerships to support and improve science education in rural communities. At NCSE, she will be building on that work by spearheading a new initiative that aims to help local communities form and nurture coalitions to support and improve science education.



At the same time, NCSE bids farewell to **Mark McCaffrey**, who joined NCSE as a Programs and Policy Director in 2012 to launch its climate change education initiative. McCaffrey's unique combination of expertise in pedagogy, climate science, and energy literacy was invaluable in providing NCSE with the intellectual firepower to launch the initiative, and his extensive network of collaborators helped to raise awareness of NCSE's entry onto the climate change education scene. While at NCSE, he wrote *Climate Smart & Energy Wise* (Corwin 2014), a guide for educators. All of us at NCSE wish him the best in his new endeavors.



San Diego Unified Council of PTA member, Gina Shumacher, speaking in support of the resolution.

Photo: Minda Berbeco

and LGBTQ+ rights, in addition to the resolution on climate change.

A few days before the big vote in Sacramento, the authors of the resolution (including me) were sequestered in a small room with about twenty other local PTA presidents and members from across the state. They read over the resolution as a group and discussed it thoroughly. No one held back; we certainly got an earful!

"Climate change is controversial, why would we take it on?" one person griped. "And further, some people feel that climate change isn't real. Aren't we going to just scare them away from the PTA?" "Isn't the science still unclear about climate change?" someone else argued.

This small session was a rehearsal to prepare us for the larger meeting, where such questions would arise again, but in front of two thousand people instead of twenty. As we heard their questions and started developing answers, we concurrently revised and refined our planned testimony for the larger meeting. There, we knew, only four people would be allowed to speak in support of the resolution, and each person would have only two minutes to do so!

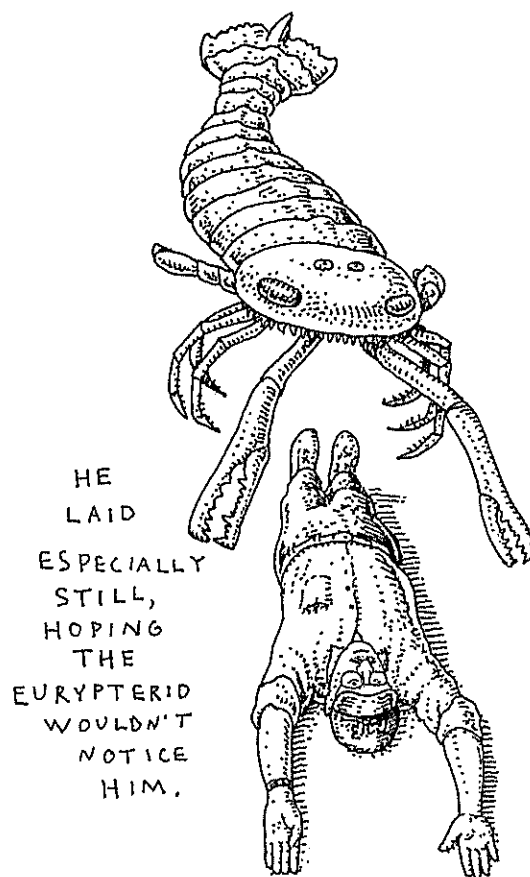
On Saturday, May 2, 2015, we all gathered in the large convention hall, clutching our notes for our speeches in support of the resolution. The first person up was the San Diego PTA president. He spoke about the resolution as a whole, why it was important for the PTA to take it on, and what the health consequences for children of climate change were. Another woman

spoke about her own experiences growing up with health issues such as asthma, explaining that she had concerns about climate change's impacts on her children's health.

I was asked to speak about the educational implications of supporting such a resolution (see sidebar, page 9). This was easy. Since California has adopted the Next Generation Science Standards, there are all sorts of opportunities for teachers to address climate change and energy challenges with their students—it was basically a no-brainer.

Our last speaker talked about climate change as a children's issue. She reminded us that when our children are sick, we do not take them to a general practitioner; we take them to a pediatrician. As it happens, the American Academy of Pediatrics recently issued a statement that children are more susceptible to the health impacts of climate change than adult populations. If we seek out our pediatricians when our children are sick because they are a trusted source, she asked, why would we ignore their words about climate change?

There were a few people who spoke against the resolution. One person argued that the science was not clear, and CAPTA would be supporting a "scientific agenda" by passing the resolution. Another person argued that climate change was not a children's issue; but rather a human issue and would therefore be

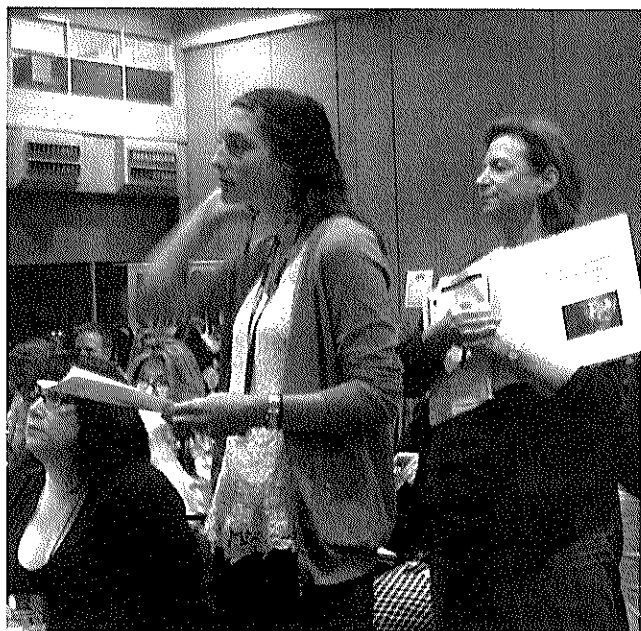


inappropriate for CAPTA to address. In the end though, the two thousand CAPTA members in the convention hall voted by a majority to support the resolution, and it was passed.

This is great news for climate change education in California—and beyond. Why? First of all, CAPTA will “urge school districts to educate students on climate and energy literacy and human sustainability.” As I said in my testimony, the new state science standards encourage climate change education. But CAPTA’s support means that schools are even more likely to comply, and to do so more wholeheartedly.

Second, CAPTA will now submit this resolution for consideration at the national PTA meeting in 2016. If passed, the national PTA will be advocating for “comprehensive local, state and national legislation to substantially reduce man-made contributions to climate change and to mitigate its impact on children’s health.” Can you imagine politicians who deny climate change going up against the PTA? They might as well spit on Mom’s apple pie.

Being invited to work with the San Diego Unified Council of PTAs on this resolution, and then to speak in support of it, was a humbling experience. Hearing the many stories shared was inspirational. Every person at that convention had a deep love of their children, and their concern for their future was woven into everything they said. What came out of that meeting was affirmation that climate change is not just a scientific or political issue, it is a children’s issue—and if we are going to do anything for the next generation, we must prepare them for the challenges ahead. ■



San Diego Unified Council of PTA members line up to speak in support of the resolution.

Photo: Minda Berbeco

MINDA BERBECO'S TESTIMONY TO CAPTA

When I was a kid, we had stickers on light switches that reminded us to turn the lights off to save energy—this was the extent of what I learned about energy. Things have changed a lot since then. Now schools are asking kids to learn where that energy comes from, the many alternative ways to generate energy, why we would want to be energy efficient, and what the impacts of that energy usage are—including climate change. This resolution is a natural extension of what schools have already started.

But, what does this resolution mean for the PTA? It means we encourage schools to actively practice what they teach. In fact, there are many schools across California that are already doing this. Some are teaching students how to do energy budgets in order to help the school lower its energy bill; others have students analyze the difference carpooling or biking to school each day makes in greenhouse gas emissions, which aligns perfectly with CAPTA's Safe Routes to Schools initiative. These are all uplifting and empowering opportunities for students to learn not just about the *risks* of climate change, but what they can *do* about them. In addition, these activities are perfectly aligned with the recently adopted Next Generation Science Standards. We are aligning ourselves as child advocates with what schools across California have started.

Climate change is a burden that we are leaving our children, but this resolution is not. By affirming this resolution, we are telling our children, their teachers, and their schools that we, as their advocates, are here for them, to support them as they learn how to navigate the challenges ahead and protect their future.

Please vote in support of this resolution.

Congratulations to the NCSE Grand Canyon Teacher Scholarship winners!



NCSE is pleased to announce the winners of the first teacher scholarships on our annual Grand Canyon raft trip: Alyson Miller of Nashua High School North, Nashua, New Hampshire, and Scott Hatfield of Bullard High School, Fresno, California. They will receive an all-expenses-paid eight-day raft trip through the Grand Canyon, guided by two members of NCSE's staff and joined by twenty other NCSE members and supporters who purchased seats on the trip. The scholarships were funded by NCSE's members.

"This trip will be the adventure of a lifetime for Miller and Hatfield," explained NCSE's Steve Newton, a geologist and one of NCSE's guides on the annual raft trip. "Teachers who work so hard for their students and the science-literate future of America deserve some time to relax on the Colorado River. But we'll be making them work, too. The Grand Canyon is the greatest geology teaching lab in the world. I can't wait to see what lesson plans they develop based on this experience." As part of the scholarship application, both teachers committed to produce a lesson plan and student assessment based on the trip, which NCSE will make available for other teachers to use.

Alyson Miller has taught zoology, physical science, plant science, physics, and freshmen seminar in Nashua since 2004, as well as middle school Earth science and life science. She was named advisor of the year in 2006, and completed her master's degree in 2012. Before entering the classroom, Miller worked in research labs at the University of Mississippi and Emory University, co-authoring over a dozen research papers on topics ranging from a non-human primate model for Parkinson's disease to the effects of drugs like amphetamines, caffeine, and cocaine on non-human primates. This school year, she was selected for an American Federation of Teachers Teacher-Leader grant. She has used that position to investigate a state law in New Hampshire which allows students to opt out of certain topics; a parent tried to opt a student in her classroom out of evolution lessons, and there are reports of students being allowed to skip entire biology courses to avoid topics like evolution and climate change. "Perhaps I'm hypersensitive to the attempts to 'wedge' the teaching of supernatural causation into science classes," she explained in her application, "but I was not going to let this one rest." She is meeting with lawmakers and working with her fellow educators to repeal the bill as soon as possible.

Scott Hatfield has taught biology in Fresno since 2000, and served in the district's music program from 1993 to

1999. He also served as music director and choir director in local Methodist churches between 1997 and 2006. He joined NCSE in 2006, after attending a talk by Kevin Padian (then president of NCSE's board of directors) at the urging of a former professor. With that same professor and other colleagues, he established the Central Valley Café Scientifique in 2007, a venue for the public to meet scientists and discuss new research. He has been active in the battles over creationism, a common source of conflict in California's Central Valley. He has appeared on local television and radio programs, sparring with creationists, and he and a student at Bullard won a contest hosted by *Discover* magazine for a two-minute video they produced explaining evolution. Of course, he also emphasizes evolution in his classroom. "I have yet to meet another high school biology teacher who gives this topic greater emphasis, in fact," he wrote in his application, adding, "Yet I have the least problems!" By introducing key concepts and exploring how science works in less contentious settings, he heads off conflict before it starts.

NCSE's Josh Rosenau, a biologist who guides the raft trip along with Steve Newton, says: "Great science education doesn't end at the schoolhouse door, and challenges to science have to be confronted in the community and the halls of power. Hatfield and Miller show how important it is for teachers—and anyone concerned with improving science education—to speak up for science in churches and legislatures, addressing misconceptions and harmful ideologies before they infiltrate classrooms. We're proud to honor their remarkable work, and that of so many other teachers who share that commitment."

One hundred forty teachers applied for the two seats, providing copies of lesson plans, explaining how they incorporate evolution and climate change in their classrooms, and how they have confronted efforts to politicize or undermine science education. Hatfield and Miller stood out not just for their excellence in the classroom, but also for their efforts to make their communities safer for science and science education.

"We were gratified by the response to this inaugural scholarship, and can't wait to offer more scholarships in future years," says NCSE executive director Ann Reid. "There were so many teachers we wished we could have brought with us, and we're grateful to NCSE's members and supporters who donated to the scholarship fund (to which donations are still welcome: <https://ncse.secure.force.com/GCScholarship>). When communities, scientists, and teachers come together, great things happen." ■

NCSE Thanks You for Your Generous Support

The NCSE Board of Directors and staff would like to acknowledge and extend their warm gratitude to all individuals, organizations, and firms that donated to NCSE. We also extend special thanks for their much-appreciated support to the following people who donated \$100 or more during the second half of 2014.

Those in the Patrons' Circle donated \$1000 or more—a level of support that we consider heroic and that gives us a firm foundation for our efforts. (An asterisk (*) indicates a member of the NCSE Board of Directors or Advisory Council.)

THANK YOU TO ALL OUR DONORS!

PATRONS' CIRCLE

The American Humanist Association
Nelson Barnhouse
Russell Beck
Peter & Terry Boyer
Peter Byers
Dawn Chamberlain
Bill Chapman
Coblentz, Patch, Duffy & Bass, LLP
Kathy Copeland
The Cox Family Fund
Joel Cracraft*
David Cross
David Crown
James Darnell*
Emily Ehrenfeld
John Felty

Russell Frehling
Alfred Gilman*
Michael Haas*
James Hanko
Philip Harriman
Evan Hazard
The Highfield Foundation
Stephen Holton
Michael Hunkapiller
Judith Jaehning
Deb Kelly
Anoush Khoshkish
Sam Kintzer
David Kornblau and
Susannah Gardiner
The Kuhn Foundation
Gordon Large

James Lippard
Lorco Holdings Ltd
Matthew & Sharon Madison
Anne Mardick
Kenneth R Miller*
Mark O'Brian
Daniel Phelps
Robert & Joanne Prochnow
David Pullen & Lynda Jenkins
Roland Ramsay
Milton & Sondra Schlesinger
Fred Schreiber
David Schrier
Daniel Schultheisz

Peter Seidel
Gary Silberstein
Frank Sonleitner*
Monroe Strickberger
Greg Swift
Edward Uehling
Dale Van Aken
John & Kimberly Venton
John Weinstein
The David F. & Sara K. Weston Fund
Igor Westra
Sheryl & Harvey White
Nancy Whitney
Charles Wilson
Michael Wolkomir

Neal Abraham
Robert Alexander
Albert Allen
Alan Almquist
Neil Ampel
Clifford Anderson
Edwin Anderson
Peter Anderson
Robin Andrews
Seward Andrews
Mark Applebaum
Jimena Aracena
Bettina Arnold
Kathleen Azhar

Patrick Boe
Mark Boettger
M Boslough
The Boston Foundation
Sean Bowden
Steve Bowden
Donald Boyd
Michael Bradley
Seth Bradley
Jessica Branch
Paul Brandon
Charles Branz
Linda Brei & Neil Jacobsen
Rowland Breidenbach
Michael Brodie
Robert Brown
Bruce Bryant
Fredric Buchholz
Michael Buckner
Dennis Buda
Eugene Burgin
Paul Busse
Terry Butcher
John Butemeyer

Robert Conde
Robert Connor
Fred Conrad
James Coors
Edith Copenhaver
Robert Corruccini
James Costa
Edward Cotter
Dean Courter
David Crafts
Barbara Crain
Charles Crawford
Roy Crawford
Elizabeth Cromwell
Arthur Curtis

Paul & Almond Eastland
Douglas Easton
Jennifer Edmondson
Mark Edry
Charles Edwards
M Edwards
Lee Ehrman
Mark Elenko
Carol Elliott
Nancy Elliott
Peter Enggass
Robert English
Jon & Susan Epperson
Donald Epstein
Marc Ernstoff
John Estill
Josie Ethwart
Margaret Evans
Russell Everts

Steve Baldwin
Alain Baland
Ronald Banks
Richard Barbieri
Phillip Barnes
Karen Bartelt
Rebecca Bartow
Barbara Bass
Jeff Baysinger
Robert Beamer
James & Hebe Beard
Jacques Beaudry
Peter Bedrossian
Gene Belknap
Martha Ann Bell
Ray & Jann Bellamy
Carl Benson
Edward Berg
Kenneth Bergman
Robert Bergman
Linda Besse
Rose Bethe
Fredrick Beyer
John Beyer
Michael Bhargava
Paul Bickart
Susan Binger
Keith Bisset
David Blewett
Robert Blodgett
Daniel Boatright

Frank & Bonnie Cahill
John Cairns
Catherine Callaghan
Aaron Caplan
Kimberly Carlson
M Rebecca Carr
Charles Casey
James Chapman
Harry Cherot
Andrew Chisholm
Andrew Chong
Gary Christenson
Kathleen Christie-Blick
Emily Church
Anne Clark
Gregory Clark
Joana Clark
Meghan Cloud
Harvey Cohen
Brian Cole
John Compton

Brent & Sharon Dalrymple*
Phil & Doris Danielson
Ellen Daniell
Jan & Lynn Dash
Sharon Davies
Bryan Davis
Jackson Davis
John Deane
Tyler De Jarnett
Eric Delson
David Demeter
Andrew Demma
Laura Demsetz
Andrew DePristo
Irwin Deutscher
Chet Dickson
Harry Dillner
Michael Dini
Michael Dobosenski
David Dobson
Paul Donohue
Robert Dott*
Alan Downes
Mary Dowse
Douglas Dreher
Glenn Drewes
H Drexler
Janet Dreyer
Norman Dudziak

Richard Falk & Francine Falle-Allen
Lois Feller
Karl & Lorraine Fezer
Matthew Fields
MG Finn
Lance Finney
Larry Flammar
Karl Flessa
Judith Flippin-Anderson
John Flynn
Barbara Forrest*
Davide Fortusini
Robert Fournier
Gary Fouty
Renny Franceschi
Donald Franzmeier
Colin Frayn
David M Freedman
Barbara Freeman
Carl & Amber Fricke
Calvin Frye
Jack & Helen Fuller
Mary Fuller & Katrina Kellogg

SUPPORTING ORGANIZATIONS

CROWN

Howard Hughes Medical Institute

BRANCH

American Chemical Society

TRUNK

American Association for the Advancement of Science
American Geophysical Union
American Society for Cell Biology
American Society for Pharmacology & Experimental Therapeutics
A Robert Kaufman Foundation
The Paleontological Society
Society for the Study of Evolution
Stiefel Freethought Association

ROOT

American Association of Physical Anthropologists
National Association of Geoscience Teachers
Society for Developmental Biology
Society for Integrative & Comparative Biology
Society of Vertebrate Paleontology

Is your scientific society, professional organization, or business firm interested in defending the integrity of science education?

Visit http://ncse.com/supporting_organizations for details on how it can become a Supporting Organization of NCSE.

Levels of support: Crown (\$10 000+/year), Branch (\$5 000+/year), Trunk (\$1 000+/year), Root (\$500+/year).

David Galas
Georgine Garblisch
David Gates
Daniel Gavin
Sandra Gelfand
Bruce Gelvin
Fredrick Gilkey
Richard Gillock
Peter Gilman
Mark Ginsberg
Helen Gjessing
Fred Glover
John Glover
Homer Goldberg
David Goldfarb
Deborah Goldsmith
Charles Good
William Goodman
Robert Goodrich
Jeff & Judy Gough
Gerakl Gould
Laurel Graham
Michael Grayson
Greater Cincinnati Foundation
Jonathan Green
Gregory Greer
John Grefenstette
Brian Gregory
Justin Griffiths
Donald Gudehus
Andrew Gunther

Lewis Gustafson
Leslie Haber
Arthur Hagar
Carl Hagerling
Scott Hahn
Sherrie Hall
George Halliwell
Daniel Hamlin
Kira Hamman
Rebecca Hammond
Alexander Harcourt
Arthur H Harris
Guy Harris
Robert Hasek
David Hast
John Hayes
Gordon Hazen
Alan Heath
Andrew Heckert
James Hein
Jenna Hellack
Patricia Helwig
Kevin Henke
Clyde & Janet Herreid
Richard Hervey
Richard Heydt
Grant Hieks
Karen Higdon
Douglas Hill
Howard Hobbs

Art Hobson	Frank Lawlor	Maurine Neiberg	Charles Rulon	Charles Vitek	Allan Williams
Michael Hochstein	Christian Lawson	Eric Nelson	John Runyan	Shawn Voss	David Wilson
Fred Hoeptner	Douglas Laycock	Paul Ness	Mark Rutherford		Laurie Wilson
Charles Hoger	Joseph Lazio	Dawn Newton		Mary Wagner	Mark Wilson
James Hoglen	Robert Leipold	Robert Newton	David & Lesli Sagan	David Wake	Mark Winter
James Holladay	Loren & Ute Lee	Sheila Newton	Chris Saia	Randall Wall	Andrew Winton
Kent Holsinger	Mark Lemkin	David Nichols	Michael Salmon	Judith Wallach	James Wise
Rae Holzman	Henri Lese	Charles Nicolet	Eric Samuel	Jerry Walters	Harry Woodcock
Lee Hornstein	Derek Lessing	Ralph Nielsen	Steven Samuels	Roxanne Warren	Reba Boyd Wooden
Daniel Horowitz	Jack Levine	Andrew Nolan	Orlando Sarnelle	David Watkins	Beulah Woodfin
Roberta Hotinski	Richard Levitt	Michael Nolan	Daniel Saroff	Jeff Watson	Ruth Ann Woodley
David Houle	Bruce Lewenstein	Jennifer Nyborg	Edwin Sather	Glenn Waychunas	Glen Wurst
Raymond Howard	Ronald Lewis		Buzz Sawyer	Mark Weaver	
Daniel Hrdy	John Lillibridge	Michael Oblath	Howard Schachman	Francis Weaver	Calvin Young
James Huff	David Lindberg	Wesley O'Callaghan	Michael Schaffer	Jeffrey Weiss	Matt Young
Michael Huppenberger	Brian Lindsey	Bruce O'Gara	Samuel Schelner	Peter Welch	
Christopher Hughes	David Little	Connie & Michael	Randy Schekman	Paul Wessel	John Zahabak
Burt Humburg	Mark Lloyd	O'Sullivan	Kevin Schiebene	David Westerman	Jerrold Zar
Robert Hungate	Nancy Lo	Link Olson	Judith Schiebout	Mary Jane West-Eberhard*	Anne Zimmerman
	Billy Lockman	Alan Orcutt	Martin Schmidt Jr	John Wheeler	Philip Zinsmeister
Pamela Irvine	Lawrence Lovell	Gordon Orians	Bob Scholl	Harold White	Cynthia Zujko
Martin Israel	Andrea Lucky & Jiri Huler	Jon Orloff	David Schuller	Charles Wieland	
Dwight Itner	Ernest Lundelius	Eduardo Oteiza	Eric Schultz		
	John Eric Lutz	Gary Overturf	Dave Schwantes		
Nina Jablonski	Michael MacCracken*	Kevin Padian*	Jerald Schwarz		
Linda Jacobs & Earl Jaffe	Russell Malchow	Eddie Palmer	Julie Schwedock		
Carl Jacobson	Allison Mann	Gary Patrik	David Scott		
Philip Jarvis	Barry Markovsky	Christian Patterson	Eugenie C Scott*		
Duane Jeffery*	Michael Marletta	John Patterson	Nadrian Seeman		
Randall Jeter	Becky Marlin	Michael Patetta	Susan Selbin		
Jewish Community Federation	Janice Martenson	Gregory Pavelka	Mary Severinghaus		
Gordon Johns	G Steven Martin	Richard Payne	Linda Shallenberger		
Barry Johnston	Robert Maslansky	Robert Payne	Frederick Shaw		
David Johnson	Herb Masters	Scott & Elizabeth Pector	Peter Shaw		
Diana Johnson	Mark & Joan Matthiesen	Grant Pedersen	John Sheets		
Mark Johnson	D Matteson	Maurice Pescitelli	Jeff Shelton		
Evelyn Johnstone	Carl May	H Kenneth Peterson	Helen Shin		
Charles A Jones	Peter Mayer	Brady Phelps	Mark Shotwell		
Daniel Jones	Jeffrey Mayne	PhilanthroPal Foundation	Alexander Shrader		
Duane Jorgensen	Keith McAllister	Claudia Phillips	Bruce Sicklesteel		
John Joyce	Brian McCann	Joel Picus	Earl Silbar		
Gene Joyner	Patricia McChesney	John Pigott	John Silberman		
Eric Jurrus	Donald McCoy	Richard Pike	Christine Simon		
	Harry McDonald	David Pilbeam	Michelle Singleton		
Lynn Kaeding	James McDonald	Armando Plata	Richard Singleton		
Ann Kah	Patrick McGirk	Ronald & Elizabeth Polidan	Matthew Smith		
Jim Kalberer	Patrick & Frances McGinnis	Emil Polisensky	David Soifer		
Anthony Kaney	Michael McKee	Barry Polisky	Phillip Solzan		
Dean Katsaros	Mark McKinlay	Duane Pontius	Rick Spanel		
Richard Katskee*	Grant McKinney	Jeffrey Powell	Paula Spence		
Jeffrey Katz	Paula McSteen	Mary Power	James Stacey		
Howard Kaufman	James McSwiggen	Elise Prayzich	James Stack		
Michael & Bonnie Kaufman	Eric Meer	Peter Preston	Frieda Stahl		
Mike Keane	David & Deborah Meinke	Roger Prince	Philip Stein		
Charles Keeling	Andrew Mentzer	Guy Purnell	Michael Steiner		
Donald Keith	Janet Merrick		Janice Steinschneider		
James Kempf	Richard Merrick	Larry Rabideau	Robert Stevens		
Rolf Kent	Charles Merwine	James Ranck	Kevin Stokker		
Robert T Kerr	Charles Messing	Stuart Rankin	Ray Stone		
Esther Kerster	James Metcalf	Britt Ravnun	Mary Strasser		
Charles Kircher	Marilyn Mettler	Jesse Rea	David Strickler		
Jay Klemme & Anne Wilson	Carolyn Meyer	Ann Reid &	Charles Strohmman		
Joseph Klems	Rob Milburn & Amy Morton	Keith Yamamoto	Joan Suit		
Frank Knell	Keith Miller*	Robert Reedy	Gofin Sumrall		
Paul Koehler	Lester Milroy	Brad Rehnberg	Raphael Susnowitz		
Andrew Koenigsberg	Clark & Jane Moeller	Mick Reichle	Ray Sutera		
Jerry Kogan	Teresa Moller	Anton Reiner	Donald Swanson		
Paul & Mary Kohlmeier	Carla Montgomery	Gary Reiness	Lowell Swartz		
Aric Korpelaar	James Moore	Robert Resnik			
Andrew Kramer	Gregory Moran	Charles Rhyne	Martin Tamn		
John & Renee Kramer	Jane Morgenstern	Dave Rich	C Tarter		
Bruce Krause	Patrice Morrow	Paul Richards	Grant Taylor		
Julian Kroluk	Nina Mosser	John Richardson	Clifford Tebeau		
James Krupa	Edward Mozley	Billie Robbins	Mark & Catherine Terry		
Alan Kruse	David Mudie	Anthony Roberts	Jeremy Thorne		
Alice Kurs	John Mulder	Celeste Roberts	Ronald Toth		
J Richard Kyle	Phillip Mullen	Sarah Robson	Clinton Townsend		
Kerry Kyle	James Mullin	Jo Rodgers	Joseph Triebwasser		
	Fred Murphy	Jonathan Rodin	Don Triplehorn		
Michael Lafferty	Ben & Mary Murray	Dan Roller	Barbara Turner		
Kate & Peter Lamdin	Christopher Murray	Nancy & Paul Rolig	John Tyznik		
David Lampe	Robert Mustacich	Richard Rollins			
Franklin Landers	Brian Myres	Neal Rosenau	Gerald Uba		
Leslie Lane		James Rosvall			
John Larsen	Sean Nalty	Paul Rothberg	Oakley Van Slyke		
Diana Latta	Jack Needleman	Pierre Rouviere	Peter Vaughan		
R Latterell					

MEMORIALS

Merik R Aaron, David Balto, the Cambridge Social Security Sunshine Fund, Maxwell Cohen, Stephen Goldstein, George Holland, William Levine, Ginger and Roy Manas, Tania Radziewicz, Eugenie C Scott, Katherine Slazak, Sheldon Smolokoff, and Frank Sonleitner, in honor of Jack Friedman

John Barr, in honor of Dixon and Charlotte Barr

Bonnie Brunkhorst, in honor of Rodger Bybee

Dickson Despommier, in honor of Dominic Casulli, an extraordinary biology teacher at Dumont High School

Jennifer Edmondson, Brian Ferguson, Elizabeth Key, and Connie Weinzapfel, in honor of Leo Schultheis

Carol Elliott, in honor of Robert Chan

John Felty, in honor of John Felty

Stuart Forman, in honor of Sarah Forman

Janette Gamble, in honor of Tanner Chel

Phillip Haberman, in honor of Harry and Margaret Haberman

Wesley Johnson, in honor of Cherise Marie Matthew

Matthias Kamm, in honor of George Nelson Kamm

Nancy Lo, in honor of Roy Crawford

Anne-Marie Mann and Claudia Phillips, in honor of Sean Nalty

James Murray, in honor of Molleen Matsumura

Glenn Pearl, in honor of Barbara Forrest

Sarah Salter, in honor of Eileen Hays and Dave Schwantes's wedding extravaganza

Eric Samuel, in honor of Andrey Fedorov

Howard Schachman, in honor of Ethel Schachman

Martin Schmidt Jr, in honor of Martin L and Grita N Schmidt and Margaret Steward Schmidt

Jeffrey Seitelman, in honor of Lily Seitelman

Mary Severinghaus, in honor of Jim Charles

Fred Turoff, in honor of Leonard Auerbach

John Weinstein, in honor of Maria Ury

Philip Wilkeson and Sheryl Wilkeson, in honor of Tiffany Mansouri

Charles Wilson, in honor of Jamin B Wilson

Beulah Woodfin, in honor of Robert B Loftfield

Frank White (1933–2003)

Randy Moore

Frank Durward White was born on June 4, 1933, in Texarkana, Texas. He graduated from the US Naval Academy and served in the US Air Force, during which time he flew a division of the 101st Airborne from Kentucky to Arkansas to help calm the racial unrest caused by integration of Little Rock's Central High School (where Susan Epperson would later teach and test the state's law banning the teaching of human evolution). White later became a banker, and from 1975 to 1977, he directed the Arkansas Industrial Development Commission. White then became president of the Capital Savings and Loan in Little Rock.

In 1980, White, a conservative Republican and born-again Christian, defeated incumbent Bill Clinton to become the forty-first governor of Arkansas. A few days after the election, White raised eyebrows by claiming his political triumph was a victory for the Lord. On March 19, 1981, White repaid Jerry Falwell's Moral Majority for its support by signing into law Act 590, which required Arkansas' public schools to give "equal time" to "scientific creationism." White signed the legislation, despite the fact that he had not read it. The entire legislative process—from its introduction to White's signing—took less than a week.

State representative Mile Wilson, an attorney who opposed the bill, predicted "the courts will hold this bill unconstitutional as quickly as it gets to court" (As-



Frank White was the governor of Arkansas who signed into law the state's law mandating "equal time" for scientific creationism in 1981.

Courtesy of the US National Archives and Records Administration.

sociated Press 1981). Wilson was right; the Arkansas "balanced treatment" statute was overturned by Judge William Overton the following year in *McLean v Arkansas Board of Education* (1982). A similar law requiring "balanced treatment" for scientific creationism had been signed into law in Louisiana by Republican governor David C Treen in 1981; that law was struck down by the US Supreme Court in 1987 in *Edwards v Aguillard* (1987).

In 1982, Clinton beat White in a rematch. After White's political career ended, he returned to banking, and from 1998 until his death he directed the Arkansas State Bank Department. White died of a heart attack at his home on May 21, 2003, and is buried in Little Rock's Mount Holly Cemetery.

REFERENCES

Associated Press. 1981 Mar 18. Bill on creationism passes in Arkansas. *The New York Times*. Available from: <http://www.nytimes.com/1981/03/18/us/bill-on-creationism-passes-in-arkansas.html>.

Edwards v Aguillard, 482 US 578 (1987).

McLean v Arkansas Board of Education, 529 F Supp 1255, 1258–1264 (ED Ark 1982).

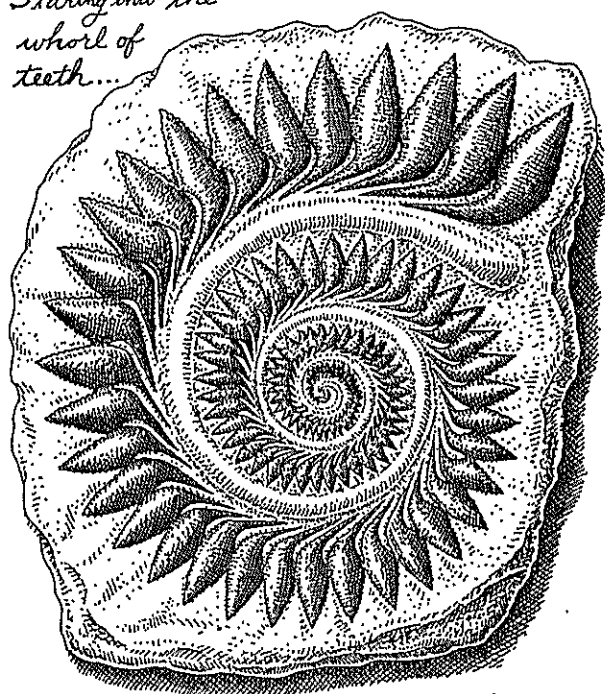
AUTHOR'S ADDRESS

Randy Moore
University of Minnesota, MCB 3-154
420 Washington Avenue SE
Minneapolis MN 55455
rmoore@umn.edu

Randy Moore is the HT-Moore–Alumni Distinguished Professor of Biology at the University of Minnesota. His latest book (with Seboya Cotner) is *Understanding Galápagos: What You'll See and What It Means* (New York: McGraw-Hill, 2013).

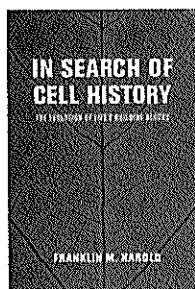
Summary of *RNCSE* 2015;35(3):1.1–1.2; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/351/670>

Staring into the
whorl of
teeth...



I knew my life was forever changed.

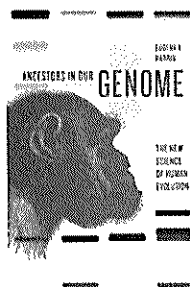
SUMMARIES OF BOOK REVIEWS



In Search of Cell History by Franklin M. Harold (Chicago: University of Chicago Press, 2014; 304 pages). "*In Search of Cell History* offers an ambitious, one-stop overview of early cell evolution that covers all major theories related to the origin of life, the early evolution and diversification of cells, and the emergence of eukaryotic cells with their structural novelties, such as nuclei,

mitochondria, and plastids," writes reviewer **David Baum**. "Harold does a marvelous job of reviewing and summarizing an unwieldy mass of literature on the origin and early diversification of life and providing some opinions about which theories and lines of research seem promising."

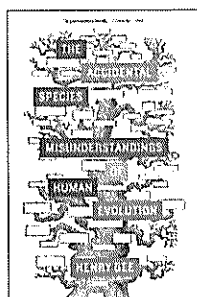
Summary of *RNCSE* 2015;35(3):2.1–2.3; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/367/671>



Ancestors in Our Genome: The New Science of Human Evolution by Eugene E. Harris (New York: Oxford University Press, 2015; 248 pages). According to reviewer **Daniel Fairbanks**, *Ancestors in Our Genome* attempts "the daunting task of explaining to a lay audience how the massive amount of genomic information currently available to geneticists has informed our understanding of human

evolutionary history." While the book is difficult, he predicts, "Readers will come away from it with a powerful and up-to-date understanding of how the science of genomics is revolutionizing our understanding of human evolution and of evolution in general."

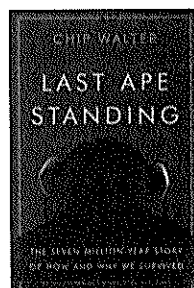
Summary of *RNCSE* 2015;35(3):3.1–3.3; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/370/672>



The Accidental Species: Misunderstandings of Human Evolution by Henry Gee (Chicago: University of Chicago Press, 2013; 203 pages). *The Accidental Species* is aimed at disputing human exceptionalism, reviewer **Jonathan Marks** explains, complaining that its "ambitious theoretical goals ... tend to be more strongly avowed than subtly argued." But he praises the book

nevertheless for "the pains it takes to contextualize paleoanthropology within paleontology more generally. ... The style is casual and the recapitulation of human paleontology is well-referenced and largely unproblematic," if sometimes idiosyncratic, Marks adds, concluding, "In sum, this is a very readable book by a knowledgeable author."

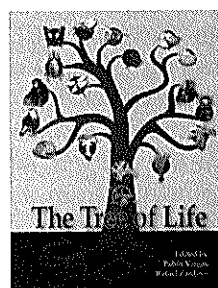
Summary of *RNCSE* 2015;35(3):4.1–4.3; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/272/682>



Last Ape Standing: The Seven-Million-Year Story of How and Why We Survived by Chip Walter (New York: Walker & Company, 2013; 221 pages). "*Last Ape Standing* is an unconventional book on human evolution, in a positive way. Missing are the usual cast of colorful paleoanthropological characters ... and many of the fossil discoveries that

have shaped the scientific history of paleoanthropology. Instead, the reader gets to explore a panoply of topics, from the co-evolution of music and language to the origins and consequences of primate curiosity. It sparks interest in the many dimensions of human evolution," writes reviewer **Jeffrey K McKee**.

Summary of *RNCSE* 2015;35(3):5.1–5.2; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/242/674>



The Tree of Life edited by Pablo Vargas and Rafael Zadoya (Sunderland [MA]: Sinauer, 2014; 713 pages). Comparing *The Tree of Life* with Guillaume Lecointre and Hervé Le Guyader's similar 2006 book of the same name, reviewer **Kevin Padian** writes, "The aim of both books is to document the phylogenetic relationships of living

groups, characterizing each one by its unique features ... and providing a sketch of its ecology and evolution. In this respect both books succeed remarkably." Vargas and Zadoya's book emphasizes molecular evidence and is not quite so accessible as its namesake: "I suggest you acquire both," Padian concludes.

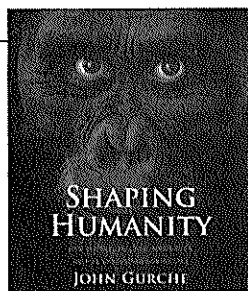
Summary of *RNCSE* 2015;35(3):6.1–6.2; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/366/675>



Animal Weapons: The Evolution of Battle by Douglas J. Emlen with illustrations by David J. Tuss (New York: Henry Holt and Company, 2014; 288 pages). "*Animal Weapons* is a hard-hitting campaign—a bit of a Blitzkrieg through major themes in evolutionary escalation, peppered with dazzling examples from across the spectrum of animals and their

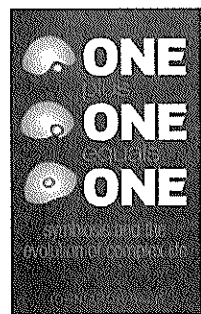
adaptations, from the horns of dung beetles to the guns of battleships," writes reviewer **Rafe Sagarin**. "Emlen is so intimately immersed in those subjects and such a good communicator that he easily weaves them into some clever new syntheses and clear comparative frameworks."

Summary of *RNCSE* 2015;35(3):7.1–7.4; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/362/676>



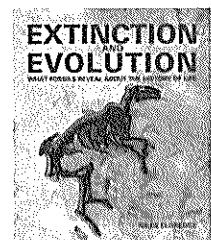
Shaping Humanity by John Gurche (New Haven [CT]: Yale University Press, 2013; 368 pages). In *Shaping Humanity*, the paleoartist John Gurche discusses his work on the hominin sculptures in the Hall of Human Origins at the Smithsonian Institution. Reviewer **Pat Shipman** writes, "he reveals how he and a Smithsonian committee selected ideas, content, and poses to be portrayed so each would reveal something of the essence of each species. He is knowledgeable about the evidence that underlies his choices for appearance, posture, and message of each creation, and although I disagree with a few tidbits, his choices are carefully made, explained, and embodied."

Summary of *RNCSE* 2015;35(3):8.1–8.3; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/270/686>



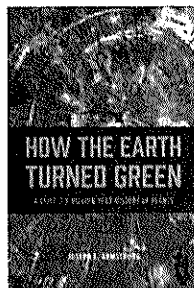
One Plus One Equals One: Symbiosis and the Evolution of Complex Life by John Archibald (Oxford: Oxford University Press, 2014; 224 pages). In his book, "Archibald relates what is now known about the origin of eukaryotes and presents the questions that remain," writes reviewer **Susan Spath**. "[H]is book is not easy for a non-specialist to read, but it is enjoyable and rewarding. It would be most useful to readers with reasonably strong science backgrounds who want to learn about the origins of the endosymbiont theory and understand where it stands today. However, *One Plus One Equals One* will leave any reader with a good understanding of the profound role that endosymbiosis has played in evolution."

Summary of *RNCSE* 2015;35(3):9.1–9.4; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/349/691>



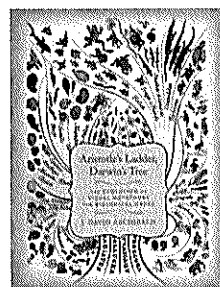
Extinction and Evolution: What Fossils Reveal About the History of Life by Niles Eldredge (Buffalo [NY]: Firefly, 2014; 256 pages). Reviewer **Corwin Sullivan** describes *Extinction and Evolution* as "a book in the Simpsonian tradition of evolutionary paleontology that is also indisputably 'full of pictures of fossils' These pictures accompany seven concise chapters, plus an epilogue, that first bring the reader up to speed on the basics of evolutionary theory and then launch into a brief but admirably clear and informative exploration of some of the ways in which that theory has been augmented and modified by paleontologists over the past few decades."

Summary of *RNCSE* 2015;35(3):10.1–10.3; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/368/679>



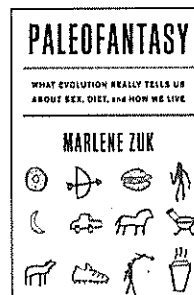
How the Earth Turned Green: A Brief 3.8-Billion-Year History of Plants by Joseph E. Armstrong (Chicago: University of Chicago Press, 2014; 576 pages). "*How the Earth Turned Green* should be required reading for all pre-service biology teachers and on the bookshelf of all K–16 science instructors," writes reviewer **Marshall D Sundberg**, for "Armstrong uses plant evolution, in the broad sense, to demonstrate how to teach the big ideas of science underlying the evolution of life on Earth. ... His refreshing wit and straightforward commentary lead the reader through an evolutionary explanation of why a predominant color of earth is green."

Summary of *RNCSE* 2015;35(3):11.1–11.3; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/350/680>



Aristotle's Ladder, Darwin's Tree: The Evolution of Visual Metaphors for Biological Order by J. David Archibald (New York: Columbia University Press, 2014; 256 pages). "This interesting and pleasantly written book takes readers on a journey through 2500 years of imagery related to the classification of life," beginning with the Greeks and continuing to the present day, according to reviewer **Erica Torrens**. She concludes, "*Aristotle's Ladder, Darwin's Tree* will be intellectually stimulating for those interested in the history and philosophy of biology, and especially for those impressed by the importance of the visual for the construction of scientific knowledge."

Summary of *RNCSE* 2015;35(3):12.1–12.3; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/342/681>



Paleofantasy: What Evolution Really Tells Us about Sex, Diet, and How We Live by Marlene Zuk (New York: WW Norton, 2013; 328 pages). Zuk "is not denying that our ancient ancestors, particularly before the advent of agriculture, had a diet and lifestyle different than those of today," writes reviewer **Linda D Wolfe**. "She is, however, suggesting that what our ancestors ate and the varied details of their lifestyle came about during different times, across many types of geographies, and over changing Pleistocene conditions." Wolfe recommends the book to anyone interested in "paleodiets" or in human evolution in general.

Summary of *RNCSE* 2015;35(3):13.1–13.2; the full text is available from: <http://reports.ncse.com/index.php/rncse/article/view/229/692>

ISSN 1064-2358 ©2015 by the National Center for Science Education, Inc., a not-for-profit 501(c)(3) organization under US law. Reports of the National Center for Science Education is published by NCSE to promote the understanding of evolutionary and climate science.

NCSE is a nonprofit, tax exempt corporation affiliated with the American Association for the Advancement of Science and an Associated Group of the National Science Teachers Association.

EDITOR

Stephanie Keep
PO Box 9477
Berkeley CA 94709-0477
e-mail: editor@ncse.com

BOOK REVIEWS EDITOR

Glenn Branch

EDITORIAL BOARD

Contributing Editor

John R Cole

Associate Editors

Cell and Molecular Biology

Michael Buratovich, Spring Arbor U

Climate Science

John P Abraham, U St Thomas

Education

Kimberly Billica, U Texas - San Antonio

Educational Technology

Leslie Chan, U Toronto

Geosciences

John W Geissman, U Texas - Dallas

History of Science

Lawrence S Lerner, California State U - Long Beach

Journalism and Media

Martha J Heil, U Maryland

Mathematics and Statistics

Rob Kusner, UMass - Amherst

Paleontology and Evolutionary Theory

Kevin Padian, U California - Berkeley

Philosophy of Science

Barbara Forrest, Southeastern Louisiana U

Physics and Astronomy

Taner Edis, Truman State U

Glenn Branch, *Production & Circulation*

Ann Reid, *Publisher*

National Center for Science Education

PO Box 9477

Berkeley CA 94709-0477

(510) 601-7203

fax: (510) 601-7204

e-mail: info@ncse.com

http://www.ncse.com

Pages 3, 4, 8 and 13 artwork © Ray Troll
For more information on Ray's work explore his website at www.trollart.com

Views expressed are those of their authors and do not necessarily reflect the views of NCSE.
RNCSE is published 6 times a year.

Address editorial correspondence to the editor.
Style guidelines can be found at <http://reports.ncse.com>

Write to the publisher regarding address changes, missing issues, purchases of back issues, reprint rights, and related issues.

NATIONAL CENTER FOR SCIENCE EDUCATION
PO Box 9477
Berkeley CA 94709-0477

CHANGE SERVICE REQUESTED

Non-Profit Org.
U.S. Postage
PAID
Berkeley CA
Permit 1197

Membership in the National Center for Science Education brings you

- One year's subscription to *Reports of the National Center for Science Education* (6 issues)
- Participation in NCSE's diverse efforts to promote and defend the integrity of science education

MEMBERSHIP / DONATION

Name

Shipping Address

City

State

Zip

Billing Address ☐ Same as shipping

City

State

Zip

Home Phone

Work Phone

Occupation

☐ Check here if NCSE may share your name with activists in your state

☐ Check here if you object to our sharing your name with other nonprofit organizations

NCSE MEMBERSHIP

One Year

US: \$35

Foreign Air: \$40

Lifetime

\$700

\$

FURTHER TAX DEDUCTIBLE CONTRIBUTION TO NCSE

\$

TOTAL

\$

☐ Check (US dollars) ☐ Discover ☐ VISA ☐ MasterCard ☐ AmEx

Credit card number

Exp Date

Name as it appears on card

Signature

Security Code

SUBSCRIBER INFORMATION

Membership is fully tax deductible. NCSE is tax exempt under Federal IRS Code 501(c)(3) and the corresponding provisions of the California law. Amounts paid to NCSE are tax-deductible to the extent permitted by law.

MISSING ISSUES If your issue fails to arrive or is badly damaged in transit, send us the date of issue and we will rush you a replacement.

Please mail all correspondence about your subscription to NCSE, PO Box 9477, Berkeley, CA 94709-0477 or call (510) 601-7203 or (800) 290-6006 or e-mail us at NCSE@ncse.com

MOVING TO A NEW ADDRESS?

Let us know your new address as early as possible and we will update our records of your subscription accordingly. Please allow 4 weeks for an address change.

ADVISORY COUNCIL

Bruce Alberts, *UC San Francisco*
Francisco J Ayala, *UC Irvine*
Frederick Borsch, *LTSP*
Stephen G Brush, *U MD*
Sean B Carroll, *U WI*
Johnnetta B Cole, *Smithsonian Inst*
Joel Cracraft, *AMNH*
Brent Dalrymple, *OR State U*
James E Darnell Jr, *Rockefeller University*
Richard E Dickerson, *UCLA*
Robert H Dott Jr, *U WI*
Niles Eldredge, *AMNH*
Milton Fingerman, *Tulane*
Douglas J Futuyma, *SUNY Stony Brook*
Alfred G Gilman, *U Texas SMC*
Laurie Godfrey, *U MA*
Ursula Goodenough, *WA U, St Louis*
James Hansen, *NASA Goddard*
Donald Hornig, *Harvard*
Duane E Jeffery, *Brigham Young*
Donald Johanson, *Inst Hum Origins*

Patricia Kelley, *UNC Wilmington*
Philip Kitcher, *Columbia*
Richard C Lewontin, *Harvard*
Michael MacCracken, *Climate Institute*
Michael Mann, *Penn State U*
Bill McKibben, *350.org*
Keith B Miller, *Kansas State U*
Kenneth Miller, *Brown*
David Morrison, *NASA Ames*
Bill Nye, *The Science Guy*
Robert L Park, *U MD*
Kevin Padian, *UC Berkeley*
James Randi, *Conjuror*
Michael Ruse, *Florida State U*
Eugenie C Scott, *NCSE (emerita)*
James W Skehan, *SJ, Weston Obs*
Elliott Soler, *U WI*
Frank Sonleitner, *U OK*
Richard Stucky, *Denver Mus Nat & Sci*
Marvilee Wake, *UC Berkeley*
Mary Jane West-Eberhard, *Smithsonian Inst*
Tim D White, *UC Berkeley*

OFFICERS & DIRECTORS

Brian Alters, *President*
Lorne Trotter, *VP/Treasurer*
Robert M West, *Secretary*
Francisco J Ayala, *Director*
Barbara Forrest, *Director*
Michael Haas, *Director*
Richard B Katskee, *Director*
Benjamin D Santer, *Director*