

Implementing Change

2016 Annual Report



RESEARCH CORPORATION
for SCIENCE ADVANCEMENT

A foundation dedicated to science since 1912.

A Mission Both Meaningful and Impactful



Daniel Gasch

The mission of Research Corporation for Science Advancement is to advance early stage, high-potential, basic scientific research.

This Annual Report is focused on the change that a dynamic, highly focused science foundation undergoes – both planned and unplanned.

A well-crafted strategic plan allows the setting of a course of direction for a decade or perhaps longer.

A foundation, as most organizations, is also subject to the change caused by unexpected events.

The piece by Gayle Jackson, our retiring Director Emerita, describes the changes that she experienced and helped effect during her years on the board. We will miss her wise counsel but continue to be guided by changes and philosophy that she helped implement.

The piece by Robert Shelton, our immediate past President, describes the thoughtful process by which a foundation effects strategic change intended to outlast both planned as well as surprise changes. We all want to thank Dr. Shelton for his excellent service while at the helm of RCSA and wish him great success on his next adventure.

RCSA is fortunate to have two long-serving and highly experienced Senior Program Directors in Silvia Ronco and Richard Wiener who allow our mission to stay on course through our current leadership transition.

We also have a highly skilled staff, management team and cohort of outside advisors who are very dedicated to our mission.

RCSA is doubly fortunate to have an outstanding Board of Directors that helps ensure that our mission over the long term remains focused as to direction and measured as to impact as well as being responsive to challenges or opportunities that arise unexpectedly. Special recognition must be given to Liz McCormack, Board Chair, and Brent Iverson, Search Committee Chair, for leading RCSA in its search for our next President.

As a small foundation, our ability to be successful and to have an outsized impact is not only directly related to our ability to be selective in whom or what we fund but also in our ability to select the people who help us chart and implement our course.

I am honored to serve as Interim President until our next president is identified and able to begin service. There is no greater pleasure in life than to be able to pursue a mission that is both meaningful and impactful. And RCSA gives all of us the opportunity to do just that.

Daniel Gasch

Interim President/Chief Financial Officer
Research Corporation for Science Advancement

A Modest Foundation with Unsurpassed Impact



Robert N. Shelton

For over 105 years, Research Corporation for Science Advancement (RCSA) has stood as a shining example of how a clearly defined mission and the discipline to maintain unswerving focus on that mission yield significant, positive achievements in our society. By emphasizing support for creative young minds working in the physical sciences, RCSA has launched generations of teacher-scholars. In turn, they have multiplied thousands of times over the RCSA impact on quality as they have influenced their students launching their own new professional careers. This impact has not occurred by chance or luck. Rather it has been the product of the cumulative efforts of Cottrell Scholars and Scialog Fellows who have been active members of the RCSA Family insisting on excellence in all they do. Similarly, the leadership of RCSA in the persona of the governing board and staff has never wavered in commitment to the mission of the organization. With this record of accomplishment, RCSA is an exemplar for persons seeking to create foundations with societal impact. The core requirements are focus, long-term perseverance and the commitment always to invest in quality. These characteristics, more than any monetary largess, will yield success over the long term. I challenge any individuals considering launching a new foundation to study the RCSA model and interact with its leadership.

Frederick Cottrell's admonition ("*Bet on the youngsters. They are long shots, but some of them pay off.*") calls us to a mission that is even more relevant today than when he issued the statement in 1948. Attracting and supporting the very best creative young persons from diverse backgrounds is essential for the success of US science – and thus for the US economy and societal advances. The continued erosion of federal support for research hits early career scientists hardest and just at the critical fertile period when they are initiating their research and willing to test dynamic new concepts. Our nation simply cannot afford to lose to alternative career paths significant numbers of each generation of scientists who may be among the next Nobelists and outstanding mentors to succeeding generations of US scientists. RCSA's pledge to each generation of scholars provides a source of stability and serves as an example for other foundations.

Equally important to the RCSA mission to support early career scholars is the core emphasis on the teacher-scholar. This model comes under periodic attack as too expensive or unrealistic. What nonsense! Our creative youth thirst for instruction by those who are on the cutting edge of discovery. RCSA knows the value of having young scholars exposed to the latest innovative ideas and then having them challenge and refine these concepts, moving US science to ever higher levels in this internationally competitive world. RCSA's commitment to the teacher-scholar reinforces this position in the finest colleges and research universities across the nation.

Throughout its long history, RCSA has attracted and supported generations of diverse talent dedicated to the magic of creating and teaching scientific discovery. It was my great privilege to lead RCSA as its president for almost three years.

Robert N. Shelton

President/Chief Executive Officer
Research Corporation for Science Advancement

Robert Shelton came to Research Corporation for Science Advancement (RCSA) following a distinguished career as an experimental condensed-matter physicist. He assumed the presidency of RCSA in March 2014. Prior to this presidency, he held top-level leadership positions in highly ranked, public research universities and in a not-for-profit foundation. Dr. Shelton resigned his RCSA presidency in February 2017 to assume the presidency of the Giant Magellan Telescope Organization.

An Unfaltering Passion for Innovative Science Coupled with a Modernized Governance Platform



Gayle Jackson

In May 2017, I will have had the honor of serving 14 years as an RCSA trustee. To be a research scientist and asked to serve on the RCSA board is daunting enough; to join the board as a “soft” scientist and businessperson raises the humility factor by an order of magnitude. I have always felt I had to s-t-r-e-t-c-h to make a contribution commensurate with that of my esteemed scientist brethren.

By coincidence, my RCSA board service started two years after the Enron collapse of 2002, and while I was serving as a director of the Federal Reserve Bank of St. Louis. The Sarbanes Oxley (SOX) Act was enacted in 2002 as a reaction to several major corporate financial scandals to increase the accountability of a public corporation’s board of directors. The Federal Reserve System adopted SOX requirements and governance reform with a zeal that deeply impressed me.

I carried that experience into the RCSA boardroom and was quickly heartened by the commitment of my colleagues to strive for practices that would put RCSA on a par with the best-run organizations. With the RCSA’s centennial year fast approaching, we were motivated to couple the institution’s unfaltering passion for advancing innovative science with a modernized governance platform. We saw governance best practices and a culture of continuous improvement as keys to ensuring that founder Frederick Cottrell’s vision could be pursued in a sustained and highly effective way as the organization embarked on its second century.

We governance geeks have accomplished much of what we aimed for: systematic strategic planning; careful trustee skills assessment and recruitment; increased board diversity; a rigorous impact assessment protocol for programs; presidential succession management; more flexible committee and task force structures to meet dynamic and changing needs; and greater decision-making transparency.

These are improvements, to be sure, but hardly ends in themselves. They are scaffolding. The real pay-offs are the accomplishments in the basic science research programs that these initiatives have helped enable. I refer to the deepening and strengthening of the Cottrell Scholar program, the successful launch and expansion of the multi-disciplinary Scialog program and playing a founding role in the Science Philanthropy Alliance supporting basic research at American colleges and universities in an era of declining Federal support for such activity.

The real pay-offs are the accomplishments in the basic science research programs that these initiatives have helped enable.

As the dedicated RCSA staff, board and outgoing, revered RCSA president Robert Shelton know, much is packed into those three programs singled out for commendation. A big part of their value is their long “tail.” We believe in nurturing a lifelong relationship with our honorees through networking and coaching to help them realize their full leadership potential.

I transition soon from active board member to keenly interested observer and adamant supporter as RCSA pushes the envelope for greater impact. What a humbling privilege my board service has been and how delightful and deeply rewarding are the friendships I have enjoyed as a part of the RCSA family. I will cherish this experience for many years to come. Thank you to all.

Gayle Jackson

RCSA Board of Directors, Emerita

Gayle Jackson served on the RCSA Board from 2004-2017, and was Board Chair from 2007-09 and 2011-13. She is President & CEO of Energy Global Inc., a consulting firm that advises companies in the energy sector on corporate growth and partnering strategies. She has served on numerous publicly traded company and nonprofit boards. Gayle Jackson received a BA with honors from Smith College and an MA and Ph.D. in Political Science from Washington University.

Implementing Change 2016

While implementing change is a process that varies among organizations, a fundamental requirement for success, both in the process and in the end result, is that values central to the change are clearly identified from the beginning. In the case of Research Corporation for Science Advancement (RCSA), those values have been burnished by decades of theory and practice. The foundation exists to advance early stage, high-potential basic scientific research. And it has done so for more than a century by supporting: early career faculty; innovative ideas for basic research; integration of research and science teaching; interdisciplinary research; and building academic leadership for America's future.

These values were well established when Robert Shelton became president of RCSA in mid-2014, at a time when the foundation had already begun a strategic planning process. Shelton ran with the ball, holding a rapid-fire series of face-to-face "airport" conferences around the country with individual members of the foundation's Board of Directors to develop a clear consensus about what was perceived as the future of the organization.

Subsequently, in consultation with the board at several regular executive sessions, Shelton created a process to execute the completed strategic plan, which involved a significant redistribution of the foundation's funds. The plan called for focusing on and increasing the impact of two signature programs, the Cottrell Scholar and Scialog programs.

RCSA's Cottrell College Science program, which greatly improved the research climate at primarily undergraduate institutions (PUIs) for three decades, was merged into the Cottrell Scholar program, and early career faculty from PUIs became eligible for Cottrell Scholar Awards.

A series of new competitive career advancement awards were created within the Cottrell Scholar program, which has been funding cutting-edge research and teaching in the physical sciences since 1994.

RCSA also increased the number of initiatives in its Scialog program, which seeks to accelerate the work of 21st-century transformational science through research, dialog and scientific community building, and significantly involved other private foundations in support of these initiatives.

In 2016 the results of these efforts achieved full flower, not only through Shelton's leadership but also through the leadership of RCSA's longtime senior program directors, Silvia Ronco and Richard Wiener, and the rest of the foundation's staff.

Thus, in 2016 RCSA named its first recipient of a \$250,000 Frontiers in Research Excellence and Discovery (FRED) Award, the largest of the new awards within the Cottrell Scholar program.

The FRED Award supports the early stages of exceptional high-risk/high-reward research that may potentially transform a field of scientific research. Carlos Meriles (CS 2007), physics, CCNY, is using his FRED Award to study the spin and electrical quantum behavior of an impurity in the otherwise uniform crystal-lattice structure of diamond. If successful, Meriles will use this quantum behavior to create a new means to store data, with information density many orders of magnitude greater than current data storage technology.

The plan called for increasing the impact of the Cottrell Scholar and Scialog programs.



Carlos Meriles



Rigoberto Hernandez



Vincent Rotello

Also within the Cottrell Scholar umbrella of competitive career awards is SEED – Singular Exceptional Endeavors of Discovery. The 2016 SEED recipients are Stacey F. Bent, chemical engineering, Stanford University; Bert D. Chandler, chemistry, Trinity University; Martin Gruebele, chemistry, University of Illinois at Urbana-Champaign; Teri W. Odom, chemistry, Northwestern University; and Charles Sykes, chemistry, Tufts University.

In addition, two outstanding Cottrell Scholars have been named the 2016 recipients of RCSA's TREE Award – Transformational Research and Excellence in Education – intended to recognize and advance truly outstanding research and education. The winners: Rigoberto Hernandez (CS 1999), chemistry, Johns Hopkins University, and Vincent Rotello (CS 1996), chemistry, University of Massachusetts, Amherst.

Meanwhile, 2016 also saw RCSA hold the second *Scialog: Molecules Come to Life* conference, co-sponsored by the Gordon and Betty Moore Foundation with additional support from the Simons Foundation. Grants were made to six teams comprised of 15 individual investigators probing fundamental physical processes at the cellular level essential to living organisms. Also, two team projects which originated in 2015 received additional funding, based on their outstanding progress. RCSA also held the second *Scialog: Time Domain Astrophysics* conference. RCSA, with additional support from the Heising-Simons Foundation, made grants to seven teams comprised of 16 scientists investigating supernovae and other rapidly changing, often cataclysmic, astrophysical phenomena.

By late 2016 discussions were underway regarding potential future Scialog topics and co-sponsors in keeping with the foundation's strategic plan.

While many of the changes in the plan developed by the board and executed by President Shelton and the RCSA staff were fully implemented in 2016, the process is not over. In 2016 the board worked with Shelton, Ronco and Wiener to develop meaningful metrics to measure the foundation's impact and effectiveness in the advancement of science. RCSA then shared its approach with other foundations which are fellow members of the Science Philanthropy Alliance, as part of a multi-foundation effort to improve assessment of the impact of science philanthropy. Stay tuned for additional consequential changes in future years as RCSA works to achieve its mission and vision!

Financial Summary 2016

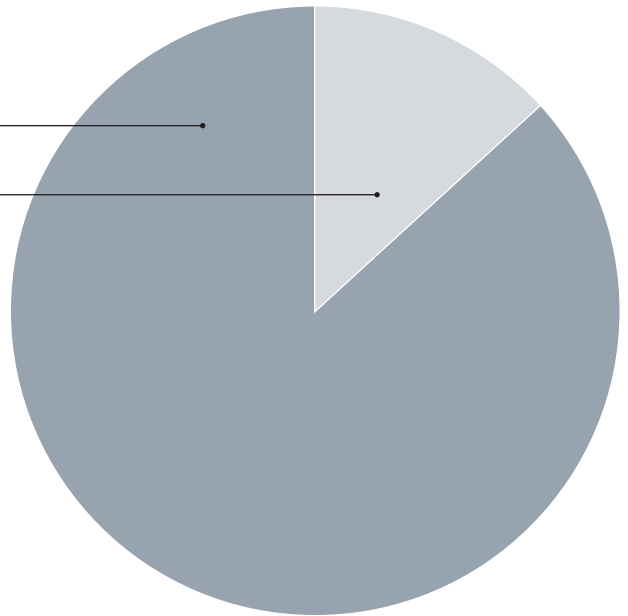
The financial activities of Research Corporation for Science Advancement were audited by Beach Fleischman, PC. For the complete audited financial statements, please visit our website at rescorp.org.

Where Our Money Goes

Total Expenses \$7.1 million

Program Expenses, Including Grants & Awards **86%**

General & Administrative Costs **14%**



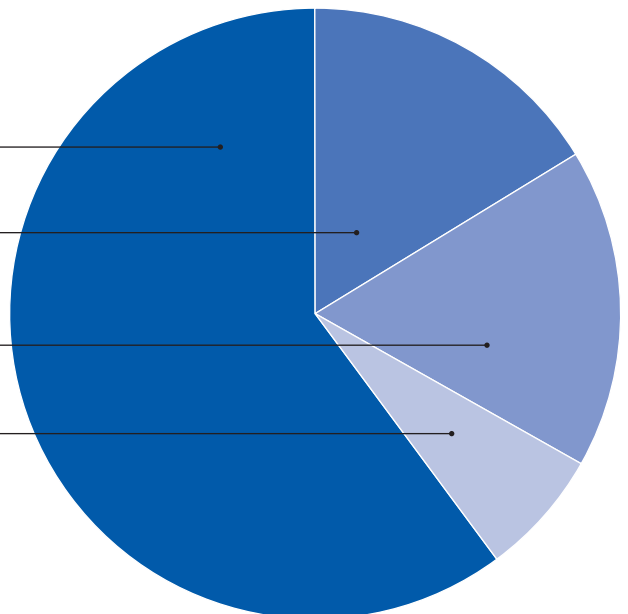
Grants and Awards \$4.0 million

Cottrell Scholars Awards **60%**

Scialog Collaborative Awards
(excludes \$1.4 million in partner awards) **16%**

Cottrell Career Advancement,
FRED, and Collaborative Awards **17%**

Discretionary Grants & Special Initiatives **7%**



Net Assets at Beginning of Year \$146.5 million

Net Assets at End of Year \$151.9 million

RCSA Board of Directors and Officers

RCSA provides catalytic funding for research and sponsors conferences to support:

- Early career faculty
- Innovative ideas for basic research
- Integration of research and science teaching
- Interdisciplinary research
- Building the academic leadership of the future

Elizabeth McCormack

Chair of the Board
Associate Provost,
Bryn Mawr College

Robert Shelton

President & CEO

Brent L. Iverson

Secretary
Dean of the School of Undergraduate Studies,
University of Texas at Austin

Jonathan Hook

Treasurer
Chief Investment Officer,
Harry and Jeanette Weinberg Foundation

Daniel Gasch

Chief Financial Officer

Lars Bildsten

Director, Kavli Institute
for Theoretical Physics

G. Scott Clemons

Managing Director, Brown
Brothers Harriman & Co.

Peter K. Dorhout

Vice President of Research,
Kansas State University

Eugene Flood, Jr.

Managing Partner,
ACappella Partners

Gayle P.W. Jackson

President & CEO,
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David L. Wenner

Retired, McKinsey
& Company

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Executive Vice President,
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Robert B. Hallock

Robert B. Holland, Jr.

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