The Kern Lipid Conferences: 40 Years

By Stuart F. Robinson, M.D.

The Kern Lipid Conference has been a forum for the discussion of issues concerning human lipid metabolism for forty years. Beginning in 1977, the conference has attracted both physicians and researchers, including established investigators and clinicians as well as PhD post-doctorates and clinical fellows-in-training. Both academic and industry attendees have been well represented.

In August 1977, the first Kern Lipid Conference was held under the inspiration and direction of Fred Kern, Jr. and Rolla B. Hill, Jr. Many investigators in the 1970s were involved in the study of the formation and metabolism of bile acids. New information on liver physiology and metabolism, particularly in the areas of canalicular excretion and membrane uptake came from many laboratories. Fred Kern, Jr., also was active in the broad field of bile salt metabolism both as a clinical gastroenterologist and hepatologist and as head of an active research laboratory. It was in this context that Kern conceived of the idea of have a meeting to bring together established researchers, junior faculty, and scientists in training, both physicians and PhDs. The meeting would be limited to 120 attendees by application and invitation only, and the junior members and trainees would be subsidized. There would be ample time for interaction and exchange of ideas both between the older and younger scientists and between physicians with clinical concerns and researchers at the bench.

This meeting would be different from other conferences in several other ways. Fred Kern, Jr., as Chief of Gastroenterology at the University of Colorado Medical School, was aware of the extraordinary educational facility owned by the university in the town of Aspen: the Given Institute of Pathobiology. The Given Institute was ideal for intimate, focused meetings, and, indeed, over five years had hosted many conferences from a variety of medical disciplines.

The structure of the first meeting was designed to maximize the dialogue among the participants. There would be two or three lectures in the morning, with ample discussion time blocked-in. These presentations, which combine both an overview of the topic and current research (often unpublished), would form the core of the conference. The afternoons would feature individual seminars derivative of the morning lectures and headed by the faculty. Pursuant to their interests, the participants could choose which seminars to sign-up for. Poster sessions were also held in the afternoon. The meeting would be supported by a program guide containing a syllabus comprising one- or two-page summaries with references from the lecturers. To accomplish this agenda Fred Kern, Jr. called in a distinguished faculty: Henry Danielsson, John Dietschy, Alan M. Fogelman, Scott M. Grundy, Robert Hamilton, Jr., Maurice M. Rapport, Paul Roheim, Donald M. Small, Daniel Steinberg, Thomas E. Thompson, and Donald B. Zilversmit. Because of its unusual format the meeting was hardly called a conference, but, rather, the "Symposium on Hepatic and Biliary Lipids." The Institute referred to it as a seminar/laboratory workshop.

An integral part of its initial success was that Kern's wife, Bernie Kern, was the Coordinator for the meeting. Bernie was an Aspen enthusiast, and she scheduled that first meeting and meetings for the next sixteen years, during which she was Coordinator, to occur at the end of the Aspen Music Festival, so that participants could enjoy the best of summer

music in the mountains. In the Lipid Symposium program, that first day, July 31, 1977, was scheduled at 4:00-6:00 p.m., "Concert, Aspen Amphitheatre, Aspen Festival Orchestra," where, a few blocks from the Given Institute, conference participants would hear Beethoven's Piano Concerto No. 4.

There were four essential aspects that launched that successful first conference and carried the meetings through many subsequent years:

- 1. A Felicitous Location. Aspen in the summertime is a beautiful, charming town, worthy of a vacation destination in its own right. It has a variety of lodging accommodations, modest or deluxe, appropriate to both young single visitors and to families with children. There is much there to do, see, and enjoy. The restaurants are plentiful and varied, and even walking through the town itself is a pleasant activity.
- 2. A Supportive Venue. The Given Institute of Pathobiology, housed in a magnificent modernist building designed by the architect Harry Weese, was ideal for hosting small, interactive conferences. The amphitheater consisted of a multi-level octagonal room with fifty double desks (seating 100) arranged in a circular manner on the different levels. Thus one could see the speaker, the screen, and the rest of the attendees during the sessions. Each desk had a microphone, allowing for easy, free conversations face-to-face among the participants and speaker. The intimate lectures were structured to take advantage of this seminar-like arrangement, with generous time following the speaker's formal presentation for questions and discussions. Overflow beyond the 100 positions were accommodated by chairs arranged around the perimeter of the room at the top level. Moreover, the building had several smaller classrooms that could and were used to accommodate groups of ten to twenty people for seminars or smaller presentations. There were also a kitchenette and spacious outdoor grounds suitable for meals, conversations, or relaxation. The building itself was located in a beautiful setting in a quiet residential district overlooking Hallum Lake and the valley and mountain to the north of town, yet within three blocks of Main Street. The Given Institute, associated with the University of Colorado, was largely a gift by Elizabeth Paepcke, who brought in Weese, donated the land, and was intimately involved in its development and its planned educational purpose. The linkage to the University was a great asset in scheduling university-sponsored conferences at the Institute, but ultimately led to the Institute's destruction.
- 3. A Dedicated Faculty. Fred Kern Jr. was Chief of Gastroenterology at the University of Colorado and a well-established researcher in the field of bile metabolism. He was also involved in the national organizations and became at one point head of the American Gastroenterological Association (AGA). He personally knew most of the top researchers in the field and could call on them to help create this fledging conference. Indeed, the faculty at the first conferences consisted of a Who's Who in lipid metabolism at the time. Furthermore, several early participants continued on through the years in leadership positions, as they became inspired by the potential of the Aspen Lipid Conference. These and other dedicated later participants have carried the conference to the present.
- 4. A Relevant Research Topic. Bile acids and bile metabolism were exciting areas of research in 1977. There had been a several ad hoc "Bile Salt Conferences" earlier in the decade throughout the country where researchers and clinicians would meet and exchange ideas, and Fred Kern Jr. thought that having a dedicated conference on bile salts and the broader area of lipid metabolism would be popular. The enthusiasm for bile salts soon led to the

national study on the efficacy of bile salts in the dissolution of gallstones. Lipoproteins also were a developing area of research, which included the discovery and investigation of the apolipoproteins associated with the various lipid molecule fractions and the disposition of triglyceride and cholesterol in the blood.

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Over the years 1977 to 2017, there have been thirty-four meetings. Because of certain scheduling imperatives, the 1979 meeting was held at the NIH headquarters in Bethesda, Maryland. Scott M. Grundy and Fred Kern, Jr., designed the program, titled "Workshop on Regulation of Hepatic Cholesterol and Bile Acid Metabolism," and had the sponsorship of the National Institute of Arthritis, Metabolism, & Digestive Diseases. The faculty for that meeting included: Rosalind A. Coleman, Alan D. Cooper, Henry Danielsson, John M. Dietschy, William C. Duane, Claes-Henrick Florén, John A. Glomset, Scott M. Grundy, William G. M. Hardison, Richard J. Havel, Murray Heimberg, Alan F. Hofmann, Erwin H. Mosbach, Robert K. Ockner, Raymond C. Pittman, Steven H. Quarfordt, Richard N. Redinger, Sander J. Robins, Charles C. Schwartz, Sarah Shefer, Donald M. Small, Steven Turley, Karl H. Weisgraber, and Donald B. Zilversmit. For the 1985 meeting and for the next twenty-five years, the conference returned to Aspen.

Beginning in 1987, the Aspen Lipid Conference was officially incorporated, and officers and a Board of Directors were elected. Membership on the board, which carried a five-year, non-limited term, generally incurred the obligation to organize and chair a year's conference. The meetings were thereafter scheduled yearly. The conference programs through the years have reflected the changing interests of the world of lipid research. The board members and conference programs are listed here separately. The 1977 and 1979 meetings included summaries by the lecturers of their own presentations, and these texts were included in the printed program. For several years the conference proceedings were summarized in the *Journal of Lipid Research* in special articles:

1979 JLR 21(4): 496-500 (1980), by Scott M. Grundy & Fred Kern Jr.

1987 JLR 29(6): 825-832 (1988), by Roger A Davis

1988 JLR 30(10): 1653-1659 (1989), by Peter A. Edwards & Scott M. Grundy

1989 JLR 31(7): 1327-1333 (1990), by Scott M. Grundy & Godfrey Getz

1991 JLR 33(6): 937-942 (1992), by Daniel Steinberg

1992 JLR 34(4): 680-687 (1993), by Donald M. Small

1993 *JLR* 35(6):1122-1128 (1994), by L. Rudel, R. Newton, R. Hamilton Jr., R. Deckelbaum, & H. Hobbs

1994 *JLR* 36(7):1629-1638 (1995), by R. Ockner, M. Schotz, R. Rachubinski, & R. Gregg

Besides Fred and Bernie Kern, many scholars were to devote much of their time to ensuring the success of the lipid conference over the years. These participants include Scott M. Grundy, Donald M. Small, Roger A. Davis, Franz Simon, John Dietschy, Roger S. Newton, Peter Edwards, Robert K. Ockner, Alan Tall, Lawrence L. Rudel, Robert H. Eckel, and Moshe Levi, among others.

The mechanics of putting on a meeting have been borne by the Conference Coordinators and other support staff through the years. Bernie C. Kern was the first Coordinator (1977-1993), followed by Sharon F. Taylor (1994), Mary Sheron (1995-1999), Monica Gaya (2000), Carrie Stantz (2001-2003), Angel Garcia (2004), Julie Castleberry Morris (2005-2011), and Holly Smith Heilman (2012-2017). Over most of the conference years, up to the present, Dalan Jensen has provided audio-visual technical support. And also for many years Susan Hayes has been the fund raising administrator and event planner.

Despite the success of the conference and its establishment as a yearly event, several challenges have confronted the conference and have tested its longevity:

1. The first of these was the eclipse of bile metabolism as a research topic that would itself sustain a conference. The national study for gallstone dissolution had somewhat mixed results, but any proposed therapeutic application had been overtaken by improvements in surgical technique and non-surgical endoscopic interventions. Also advancements in the 1980s and 1990s in the techniques of molecular biology and the proliferation of so-called "grind & find" discoveries had opened up vistas in lipid metabolism far beyond bile salt physiology. Hence, the topics of the conferences have mostly moved from gastroenterology to the areas of endocrinology, metabolism, and cardiovascular disease. This change was eventually reflected in the changing title of the conference:

Bile Acid Synthesis Conference (1985) Aspen Bile Acid/Cholesterol Conference (1987-1993) Aspen Bile Acid/Cholesterol/Lipoprotein Conference (1994-1995) Aspen Lipid Conference (1996)

In 1997, the founder, Fred Kern Jr., died, and the name of the conference was changed to honor him:

Kern Aspen Lipid Conference (1997-2010)

2. A far more serious challenge to the conference came in 2010, when it was announced that the Given Institute would be closed, the property sold, and the conference building demolished. The University of Colorado determined that the Aspen property was too valuable to keep as a satellite educational center and sold it for a sum of money. Thus the supportive venue which had hosted the lipid conference for over thirty years was closing and a new home for the conference had to be found.

A conference grows into its venue and habits of being that define the conference itself become intimately connected with the facilities. A search of remaining facilities in Aspen revealed no suitable alternative venues. They were too large, too small, too unreliable, and too expensive. At length the Board decided to relocate the conference to Vail, Colorado, a ski resort like Aspen in the Colorado Rocky Mountains, but dissimilar in many other ways. Vail is smaller, newer, more homogeneous, and centered around discreet large resorts. Though closer to Denver, Vail's airport is more remote than Aspen's. The area is more crowded, and the opportunities for monastic reflection in a beautiful setting are more limited.

Thus the conference was relocated in 2011, and intimately tied to a resort facility – first at the Vail Cascade Resort property for three years and then most recently at the Vail Marriott Mountain Resort. The change also meant that the expenses to the conference and to the participants were increased considerably. Thus most attendees are obliged to find lodging at the resort, and the conference uses the hotel's meeting rooms exclusively. These

rooms are the standard rectangular conference rooms that one sees at large medical meetings with the lecturer removed up front from the hazy audience. Participants communicate with the speaker at the end of the lecture by walking to microphones located in the aisles. Obviously, numerous medical conferences are regularly being held in this format; there is nothing unusual about it, but neither is there anything special about it. Gone is the rounded seminar-like intimacy and spontaneity of the Given Institute. Once again, the conference title changed: from the Kern Aspen Lipid Conference (1997-2010) to the Kern Lipid Conference (2011-present).

3. A third challenge has come gradually over the years, and that is one of limitation of sponsorship. In the early years of the conference there were many pharmaceuticals and advocacy organizations, and quite a few of them were willing to contribute to the lipid conference, especially when the topic touched their areas of interest. But over the last thirty years by merger or acquisition, the number of companies has decreased substantially, so that when before there might be several contributions from several companies, now there is only one large company. And companies have become more cautious about their financial donations.

To overcome these challenges, the Kern Lipid Conference has made several changes. First, conference topics are chosen that have engendered substantial current enthusiasm and, perhaps, controversy in the world of lipid research. Since the topics are determined two years before the conference, this takes a measure of predicting that the subject matter will be just as timely two years later. The purpose is to make the conference relevant to more people, but the caution is that other conferences may do the same with meetings on the same topics, the same year. Second, the conference topics are directly acknowledging the contributions and role for the pharmaceutical industry in research. There is an "Industry Round Table" meeting now during the conference, with young investigators encouraged to attend, in which careers in the pharmaceutical industry are discussed in an open forum. Industry speakers are invited as part of the faculty to discuss their research pertaining to the topic. This "perspective from industry" is an explicit appeal for more involvement of the pharmaceuticals as sponsors and participants. Third, the conference has most recently contracted its duration from four days (five days in the early years) to three days. This has come at the expense of "free" afternoons or evenings, where the participants may have had private meetings or otherwise enjoyed the mountain location. This tighter schedule is more attractive to sponsors and reduces overall expenses.

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Throughout these changes, the conference has maintained its commitment to the involvement and education of young investigators. From its earliest days, the lipid conference has encouraged young investigators by waiving conference fees, sometimes subsidizing travel, and providing a forum for the presentation of their research in abstract form. This support has continued in recent years through grants from the Esperance Family Foundation which sponsors the attendance of young investigators through the Early Career Investigator (ECI) award program.

Several other awards have been established to recognize rising investigators for the quality of their accomplishments. The Franz Simon Poster Award is given to the Early Career Investigator with the best poster presentation at the meeting. The David L. Williams Lectureship and Award goes to an outstanding young faculty researcher. The Roger A. Davis

Lectureship and Award is for a rising young scholar in transition between the post-doctoral years and the beginning years of becoming an established investigator. Finally, there is the Fred Kern, Jr., Lectureship which goes to a senior investigator whose many studies have led to wide-spread recognition within the field.

With 2017, its 40th year, the Kern Lipid Conference returns, in part, to acknowledge its early years with its focus on lipid and bile metabolism, yet within the context of the dynamic new research involving the intestinal microbiome. The conference is titled "The Gut Microbiome, Bile Acids, and Regulatory Networks in Health and Disease: Emerging Therapeutic Approaches." Though the founders and early stalwarts such as Fred Kern, Jr., Roger A. Davis, and Franz Simon have passed, Scott M. Grundy and Donald M. Small remain active in the organization, and there are thirty to thirty-five regular attendees that have continued to participate mostly year after year. About half of the attendees, mostly young investigators, are new to the conference each year. The important dynamic of the conference remains, as it has from the beginning, the interface between these young scholars and the returning, established investigators, as a contribution to the lipid research of the future.

Kern Lipid Conference Forty Years, 1977-2017

Programs 1977-2017

1977 (Aug 1-5)	Hepatic and Biliary Lipids (Fred Kern, Jr., MD; & Rolla B. Hill, Jr.)
1979 (Oct 19-21)	Workshop on Regulation of Hepatic Cholesterol and Bile Acid Metabolism (Fred Kern, Jr., MD: & Scott M. Grundy, MD, PhD)
1985 (Aug 27-30)	The Regulation of Bile Acid Synthesis (Roger A. Davis, PhD; Scott M. Grundy, MD, PhD; & Fred Kern, Jr., MD)
1987 (Aug 21-24)	Hepatic Lipoprotein and Cholesterol Metabolism (Roger A. Davis, PhD)
1988 (Aug 18-21)	Hepatic Cholesterol and Lipoprotein (Peter Edwards, PhD; & Scott M. Grundy, MD, PhD)
1989 (Aug 19-22)	Hepatic Cholesterol and Lipoprotein (Scott M. Grundy, MD, PhD; & Godfrey Getz, PhD)
1990 (Aug 18-21)	Hepatic Cholesterol and Postprandial Lipoproteins (Godfrey Getz, PhD; & Daniel Steinberg, MD, PhD)
1991 (Aug 17-20)	Lipid Accumulation in Hepatic and Extrahepatic Tissues (Daniel Steinberg, MD, PhD; & Donald M. Small, MD)
1992 (Aug 15-18)	Regulation of Hepatic Cholesterol Transport and Metabolism (Donald M. Small, MD; & Fred Kern, Jr., MD)
1993 (Aug 21-24)	Genetics and Diet Responsiveness in Cholesterol Metabolism (Lawrence L. Rudel, PhD; & Roger S. Newton, PhD)
1994 (Aug 20-23)	Fatty Acid Metabolism in Liver and Adipose Tissue (Richard Gregg, MD; & Robert K. Ockner, MD)
1995 (Aug 19-22)	Quantitation of the Major Lipoprotein Pathways (John M. Dietschy, MD; & Jeffrey T. Billheimer, PhD)
1996 (Aug 17-20)	Lipids, Lipoproteins and Obesity (Helen Hobbs, MD; & Michael Schotz, PhD)

Lipids, Insulin Resistance, and Obesity (Henry N. Ginsberg, MD; & Jeffrey S. Flier, MD)
Lipid Metabolism in Health and Disease: Cholesterol Transport, Atherosclerosis, and Alzheimer's Disease (Scott M. Grundy, MD, PhD; & Robert Mahley, MD, PhD)
Lipids and Modulators of Gene Expression: Lipid Metabolism and Atherosclerosis (Roger A. Davis, PhD; & David Russell, PhD)
New Insights into Atherosclerosis: Pathogenesis, Diagnosis, and Treatment (Alan Tall, MD; Helen Hobbs, MD; & Michael Gimbrone, MD)
Cholesterol Metabolism in Health and Disease: ABC Transporters, Lipid Trafficking, and Atherosclerosis (Francis R. Simon, MD; Donald M. Small, MD; & Irwin Arias, MD)
Fatty Acid Transport and Metabolism: Impact on Insulin Action/Secretion and Body Weight Regulation (Robert H. Eckel, MD)
Molecular Regulation of Lipid Metabolism (Lawrence L. Rudel, PhD; Joachim Herz, MD; & Robert Farese, Jr., MD)
Atherosclerosis – An Inflammatory and a Metabolic Disease (Linda K Curtiss, PhD; & Stephen G. Young, MD)
HDL Metabolism and Nuclear Receptors: A New Frontier for the Treatment of Atherosclerosis (Ira Tabas, MD, PhD; & Roger S. Newton, PhD)
Developments in the Pathogenesis of Obesity and the Metabolic Syndrome (Jay Horton, MD: & Gerald Shulman, MD, PhD)
Diabetes, Obesity, and Atherosclerosis (Alan Tall, MD; & Ron Evans, MD, PhD)
Frontiers in Regulation of Lipid Metabolism (Jean E. Vance, PhD; & Harry "Chip" R. Davis, PhD)
Role of Nuclear Receptors and Coregulators in Insulin Resistance, Energy and Lipid Metabolism, Inflammation, and Aging (Moshe Levi, MD; Steven Kliewer, PhD; & David Mangelsdorf, PhD)
Lipids, Inflammation, and Stress Reactions in Atherosclerosis: Mechanisms, Imaging, and Therapy (Mary Sorci-Thomas, PhD; Ira Tabas, MD, PhD; & Jean Schaffer, MD)

2011 (Aug 6-9)	Emerging Discoveries of Lipid Effects on Organ Physiology and Pathobiology (Ira Goldberg, MD; & Karen Reue, PhD)
2012 (Jul 12-15)	Systems Biology, Lipidomics, and Cardiometabolic Diseases Jake Lusis PhD; Robert S. Newton, PhD; & Margrit Schwarz, PhD)
2013 (Jul 29-Aug 1)	Molecular Mechanisms and Pathophysiology of Lipid Storage (Dawn L Brasaemle, PhD: & Russell A. DeBose-Boyd, PhD)
2014 (Aug 4-7)	Evolving Concepts of HDL Function in Cardiometabolic Diseases and Beyond (John Parks, PhD; Sudha Biddinger, MD, PhD; & Richard Gregg, MD)
2015 (Aug 3-5)	Emerging Therapies for Cardiovascular Metabolic Disease: A Dialogue Between Academia and Industry (Ira Goldberg, MD; & Robert H. Eckel, MD)
2016 (Aug 8-10)	Targets/Therapies for Diabetes, Atherosclerosis, and NASH: A Dialogue Between Academia and Industry on Innovation (Luciano Adorini, MD; Philipp Scherer, PhD; & Clay Semenkovich, MD)
2017 (Aug 7-9)	The Gut Microbiome, Bile Acids, and Regulatory Networks in Health and Disease: Emerging Therapeutic Approaches (Jed Friedman, PhD; Margrit Schwarz, PhD; & Michael Trauner, MD)

Kern Lipid Conference Forty Years, 1977-2017

Board of Directors 1987-2016

Abumrad, Nada Adorini, Luciano Attie, Alan Bass, Joseph Biddinger, Sudha Blanar, Michael Brasaemle, Dawn Brown, J. Mark Curtiss, Linda Davis, Harry "Chip" Davis, Roger A. DeBose-Boyd, R. Dietschy, John Eckel, Robert H. Edwards, Peter Farese, Robert Jr. Fogelman, Alan Friedman, Jed Getz, Godfrey Ginsberg, Henry Goldberg, Ira Gregg, Richard Grundy, Scott M. Herz, Joachim Hobbs, Helen Horton, Jay Kaech, Susan Kern, Bernie C. Kern, Fred Jr. Kern, Philip Krisans, Skaidrite Law, Ronald E. Levi, Moshe Lusis, Aldons Marsh, Julian McManaman, James	2 4 2 6 1 6 1 11 12 21 10 11 20 17 3 5 5 5 11 10 6 31 10 9 5 1 6 10 6 10 6 10 6 10 6 10 6 10 6 10	(2016-2017) (2014-2017) (2003-2004) (2012-2013) (2012-2017) (2008) (2011-2016) (2017) (1997-2007) (2004-2015) (1987-2007) (2008-2017) (1998-2017) (1998-2017) (1987-2003) (2007-2009) (1987-1991) (2013-2017) (1995-2005) (2008-2017) (2008-2017) (2008-2017) (2008-2017) (2008-2017) (1987-1991) (1987-2006) (2017) (1988-1993) (1987-1996) (2012-2013) (1997-2006) (2010-2015) (2009-2014) (1987-1993) (2017)	Robinson, Stuart F. Roheim, Paul Rudel, Lawrence L. Schaffer, Jean Scherer, Philip Schotz, Michael C. Schwarz, Margrit Semenkovich, Clay Simon, Francis Small, Donald M. Sorci-Thomas, Mary Steinberg, Daniel Tabas, Ira Tall, Alan Trauner, Michael Vance, Jean Young, Stephen	4 6 19 3 4 12 9 6 17 31 12 7 6 13 4 5 6	(2014-2017) (1987-1992) (1992-2003, 2009-2015) (2007-2009) (2014-2017) (1992-2003) (2009-2017) (2010-2016) (1992-2008) (1987-2017) (2006-2017) (1987-1993) (2005-2010) (1994-2006) (2014-2017) (2004-2008) (2003-2008)
Levi, Moshe	13	(2005-2017)			
Lusis, Aldons Marsh, Julian	7	(1987-1993)			
McManaman, James Newton, Roger S.	1 29	(2017) (1989-2017)			
Ockner, Robert K.	14	(1991-2004)			
Parks, John S.	8	(2010-2017)			
Raben, Daniel	1	(2012)			
Reue, Karen	6	(2006-2011)			

Kern Lipid Conference Forty Years, 1977-2017

Officers 1997-2017

PRESIDENT:

1997-1998 Roger A. Davis & Scott M. Grundy (co-presidents)

1999-2002 Roger A. Davis 2003-2012 Robert H. Eckel

2013-2017 Moshe Levi

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1997-2005 Francis R. Simon

2006-2012 Moshe Levi

2013-2017 Robert H. Eckel

VICE-PRESIDENT:

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2006-2012 Harry "Chip" R. Davis

2013-2015 Harry "Chip" R. Davis & Roger S. Newton (co-vice-presidents)

2016-2017 Roger S. Newton

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2002-2017 Scott M. Grundy