



The 67th Annual Meeting of the American Scientific Affiliation

# Science, Faith, and the Media: Communicating Beyond Books



*"Therefore each of you must put off falsehood and speak truthfully to your neighbor,  
for we are all members of one body." —Ephesians 4:25, NIV*

July 20–July 23, 2012

Point Loma Nazarene University  
3900 Lomaland Drive  
San Diego, CA 92106



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\*Student or early career scientist presenting a paper through donated scholarships.

# General Information

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## ASA Book Table

Book tables featuring books of interest to attendees will be in the Point Loma Nazarene University bookstore located in Nicholson Commons, Monday to Friday, 9 AM–4 PM. They will also be available in the lobby of Crill Performance Hall during the following hours:

Saturday: 9:45 AM–4:45 PM  
Sunday: 1:15 PM–4:45 PM

## Bobby B's Coffee Shop Hours

Friday: 7:00 AM–2:00 PM; 8:00 PM–11:00 PM  
Saturday: 9:00 AM–2:00 PM  
Sunday: 9:00 AM–2:00 PM; 8:00 PM–11:00 PM  
Monday: 7:00 AM–2:00 PM

## PLNU Contact Numbers

Conference Services: 619-718-0695  
Public Safety (emergency only): 619-849-2525

## PLNU Quiet Hours

Every day: 10:00 PM–6:00 AM

## Plenary Sessions

All plenary sessions will be held in the Crill Performance Hall in the Cooper Music Center.

Friday: 7:30 PM Rebecca Ver Straten-McSparran, "Embodied Visions"  
Saturday: 8:45 AM John E. (Jack) Johnson, "Maturation of dsDNA Bacteriophage: Insights into Elegantly Programmed Nanomachines"  
1:15 PM Ralph Winter, "Christianity, Science, Politics, Blockbusters, and Independent Films: What Hollywood Portrays to the Public"  
Sunday: 10:30 AM Dean Nelson, "Science, Religion and the News Media"  
Monday: 8:45 AM Christopher Perez, "Why Public Relations Matters: The Battle for Public Opinion"

## Special Events

Friday: 8:30 AM Workshop: Christianity and the Scientific Revolution –Cunningham A  
1:00 PM Workshop: Coming Out Christian Online –Cunningham A  
9:00 PM Fellowship Mixer –Patio outside Crill Performance Hall Lobby  
Saturday: 6:00 PM Panel: "So You Have an Idea for a Movie: Process, Opportunities, Pitfalls, and Profound Stories" –Crill Performance Hall  
7:30 PM *From the Dust*, a feature-length documentary film followed by a panel discussion –Crill Performance Hall  
9:00 PM Ice Cream Social –Nicholson Commons  
9:00 PM CSCA Meeting –Thomas Room, Nicholson Commons  
9:30 PM InterVarsity Reception –Cunningham A  
Sunday: 9:00 AM Worship Service –Crill Performance Hall  
5:30 PM Women in Science Gathering –Cunningham A  
6:45 PM ASA Business Meeting –Crill Performance Hall  
7:30 PM Communications Meeting –Crill Performance Hall  
9:00 PM Students and Early Career Scientists

## Many thanks to ...

Program Chair **Jim Buchholz** and Local Arrangements Chair **Michael McConnell**.

We are especially thankful for the **donors** who contributed to the Students and Early Career Scientists' Scholarship Fund.

## The ASA Spirit

The American Scientific Affiliation encourages thoughtful and provocative scientific presentations and discussions. Presenters and discussants are expected to maintain a humble and loving attitude toward individuals who have a different opinion.

# 2012 ASA Annual Meeting Schedule

Thursday, 19 July 2012—Tuesday, 24 July 2012	
2:00 PM–5:00 PM; 6:30 PM–10:00 PM	<b>Lodging check in</b> at Wiley or Flex Garage 43F. If you are arriving later, call 619-718-0695 before midnight. If PLNU staff are unavailable at the check-in location, call 619-718-0695 to make arrangements.
8:00 AM–10:00 AM	<b>Lodging check out</b> no later than 10:00 AM each day. Luggage may be brought to a designated area TBA.

Thursday, 19 July 2012	
3:00 PM–9:00 PM	ASA meeting registration, Crill Performance Hall Lobby in the Cooper Music Center

- Abstracts for each session are listed on the pages noted in parentheses.

Friday, 20 July 2012	
7:00 AM–8:00 AM	Breakfast –All meals are in Nicholson Commons.
8:15 AM–9:00 PM	ASA meeting registration, Crill Performance Hall Lobby in the Cooper Music Center
8:15 AM–5:00 PM	Balboa Park Museums and Gardens field trip –depart from Brown Chapel loading area
8:15 AM–5:00 PM	San Diego Zoo field trip –depart from Brown Chapel loading area
8:30 AM–12:00 PM	Workshop 1: Christianity and the Scientific Revolution – <b>Ted Davis</b> , Cunningham A
10:30 AM–5:00 PM	Torrey Pines State Natural Reserve field trip –depart from Brown Chapel loading area
12:00 PM–1:00 PM	Lunch, Nicholson Commons
12:45 PM–5:00 PM	<i>USS Midway</i> and Seaport Village field trip –depart from Brown Chapel loading area
1:00 PM–4:30 PM	Workshop 2: Coming Out Christian Online – <b>Pamela Gay</b> , Cunningham A
1:00 PM–5:00 PM	Cabrillo National Park field trip –depart from Brown Chapel loading area
4:30 PM–6:00 PM	Dinner, Nicholson Commons. <b>Please note:</b> There is another large group coming to the dining hall at 5:00 PM.
7:00 PM	Welcome and Introductions, Crill Performance Hall in the Cooper Music Center <ul style="list-style-type: none"> <li>• <b>Randy Isaac</b>, ASA Executive Director</li> <li>• <b>Darrel Falk</b>, Point Loma</li> <li>• <b>Michael McConnell</b>, Local Arrangements Chair</li> <li>• <b>Jim Buchholz</b>, Program Chair</li> </ul>
7:30 PM	<b>Plenary Session I</b> , Crill Performance Hall Moderator: <b>Ralph Winter</b> <b>Rebecca Ver Straten-McSparran</b> , “Embodied Visions” (6)
9:00 PM	Fellowship Mixer, Patio outside Crill Performance Hall Lobby

- Abstracts for each session are listed on the pages noted in parentheses.

Saturday, 21 July 2012	
7:00 AM	Breakfast, Nicholson Commons
8:15 AM	Devotions: <b>Jim Peterson</b> ; Pianist: <b>Hannah Quinn</b> –Crill Performance Hall
8:45 AM	<b>Plenary Session II</b> , Crill Performance Hall Moderator: <b>Darrel Falk</b> <b>John E. (Jack) Johnson</b> , “Maturation of dsDNA Bacteriophage: Insights into Elegantly Programmed Nanomachines” (6)

Saturday, 21 July 2012				
9:45 AM	Refreshment Break, Patio outside Crill Performance Hall Lobby			
<b>Parallel Session I</b>	<b>I-A. Information, Genetics and Origins of Life</b> –Crill Performance Hall(8–9) Moderator: <b>Stephen Freeland</b>	<b>I-B. Teaching Science and Faith in the Curriculum</b> –Colt Hall (9) Moderator: <b>Steve Contakes</b>	<b>I-C. Science and Faith: History, Philosophy, and Theology</b> –Cunningham A (9–10) Moderator: <b>Leslie Wickman</b>	<b>I-D. Behavioral Sciences and Humanities</b> –Cunningham B (10–11) Moderator: <b>Linn Carothers</b>
10:15 AM	<b>Stephen Freeland</b> “The Origins of Genetic Information”	<b>Raymond Lewis</b> “A Model of Science Higher Education as Christian Service in China”	<b>Leslie Wickman</b> “Exploring the Wonders of Creation through the Lens of Science”	<b>Janet Warren</b> “Science, Psi, Spirits, and Spirituality”
10:45 AM	<b>Walter Bradley</b> “What Do the Informational Requirements of the Origin of Life Imply?”	<b>Glenn Marsch</b> “Communicating Truths about Faith, Science, and Origins through a General Education Requirement”	<b>Jimmy Davis</b> “Does Modern Science Communicate Purpose?”	<b>Max Bonilla</b> “The Integration of Faith and Reason: A New Anthropology for Science, the Humanities, and Higher Education”
11:15 AM	<b>Loren Haarsma</b> “Increasing Information and Self-Organizing Complexity: Some Examples”	<b>John R. Staver</b> “The Indiana General Assembly and Creation Science: 2012 and Beyond”	<b>Edward Davis</b> “Altruism and the Administration of the Universe: Kirtley Fletcher Mather on Science and Values”	<b>Linn Carothers</b> “Living above the Pain: Keys to Raising a Resilient Jabez”
12:00 PM	Lunch, Nicholson Commons			
1:15 PM	<b>Plenary Session III, Crill Performance Hall</b> Moderator: <b>Jim Buchholz</b> <b>Ralph Winter</b> , “Christianity, Science, Politics, Blockbusters, and Independent Films: What Hollywood Portrays to the Public” (6)			
2:15 PM	Beverage Break, Patio outside Crill Performance Hall Lobby			
<b>Parallel Session II</b>	<b>II-A. Information, Genetics and Origins of Life (cont'd)</b> –Crill Performance Hall (11–12) Moderator: <b>Stephen Freeland</b>	<b>II-B. Communicating Earth Science to the Public</b> –Colt Hall (12–13) Moderator: <b>Keith Miller</b>	<b>II-C. Christians and Science in Film</b> –Cunningham A (13–14) Moderator: <b>Rebecca Ver Straten-McSparran</b>	<b>II-D. Science, Faith, Engineering, and Appropriate Technologies</b> –Cunningham B (14–15) Moderators: <b>Walter Bradley</b> and <b>Anthony Donaldson</b>
2:45 PM	<b>Casey Luskin</b> “A Taxonomy of Information and the Design Inference”	<b>Darrel Falk</b> “BioLogos Workshops for Science Teachers in Christian Schools”	<b>Paula Gossard</b> “If They Do It, It's Propaganda, but If We Do It, It's Education”	<b>Barbara Ressler</b> “Appropriate Medical Technology: Biomedical Engineering Projects in Macha, Zambia”
3:15 PM	<b>Randy Isaac</b> “What Is Information and Where Does It Come From?”	<b>Davis Young</b> “Exchanging a Lie for the Truth: On Responding to Scientific Misinformation”	<b>David Vosburg</b> “ <i>From the Dust</i> and <i>Test of Faith</i> : Catalyzing Deeper Conversations on Science and Faith through Film”	<b>Barbara Ressler</b> “Low-Cost Technologies for the Disabled: Facilitating Access and Use of Water and Sanitation Facilities in Mali, West Africa”
3:45 PM	<b>Thomas Walters</b> “Domains of Inquiry and Evolution”	<b>Joshua Rosenau</b> “The Bedrock of Science Communication: The Nature of Science”	<b>Hank Voss</b> “An Inclusive Science and Faith Message for the Media”	<b>Walter Bradley</b> “Increasing Income of Poor Coconut Farmers by Converting Their Agricultural Waste into Composite Materials”
4:15 PM	<b>Ann Gauger</b> “The Origin of Enzymes: All in the Family?”	<b>Keith Miller</b> “The Media and the Public Understanding of Paleontology”	<b>Peter Hess</b> “Could an Extraterrestrial Be a Christian? Theology, Film, and the Evolution of Spiritual Consciousness”	<b>Dominic Halsmer</b> “Introducing the Possibility of Corruption to Facilitate Reverse Engineering of Natural Systems”
5:00 PM	Dinner, Nicholson Commons			
6:00 PM	<b>Panel: “So You Have an Idea for a Movie: Process, Opportunities, Pitfalls, and Profound Stories,”</b> Crill Performance Hall Moderator: <b>Rebecca Ver Straten-McSparran</b> Panelists: <b>Dean Batali, Charles B. Slocum, Christina Lee Storm</b>			
7:30 PM	<b><i>From the Dust</i></b> , a feature-length documentary film followed by a panel discussion, Crill Performance Hall Moderator: <b>David Vosburg</b> , Panelists: <b>Dean Smith, Kathryn Applegate, April Maskiewicz</b>			



Saturday, 21 July 2012		
9:00 PM	Ice Cream Social –Nicholson Commons	CSCA Meeting, <b>Jim Peterson</b> , presiding –Thomas Room, Nicholson Commons
9:30 PM	InterVarsity Reception, <b>Dwight Schwartz</b> , presiding –Cunningham A	

- Abstracts for each session are listed on the pages noted in parentheses.

Sunday, 22 July 2012			
7:00 AM	Breakfast, Nicholson Commons		
9:00 AM	<b>Worship Service</b> , Crill Performance Hall Worship leader: <b>Mark Pitts</b> ; Song leader and special music: <b>Craig Johnson</b> ; Pianist: <b>Brenda Martin</b> Minister: <b>Rev. Mark Trotter</b> , "Seeing The Truth," John 9:1–12, 18–25		
10:00 AM	Beverage Break, Patio outside Crill Performance Hall Lobby		
10:30 AM	<b>Plenary Session IV</b> , Crill Performance Hall Moderator: <b>Kathryn McConnell</b> (7) <b>Dean Nelson</b> , "Science, Religion and the News Media"		
12:00 PM	Lunch, Nicholson Commons		
<b>Parallel Session III</b>	<b>III-A. Information, Genetics and Origins of Life (cont'd)</b> –Crill Performance Hall (15–16) Moderator: <b>Melissa Antonio</b>	<b>III-B. Christian Views on Science and Faith</b> –Colt Hall (16–17) Moderator: <b>Michael Everest</b>	<b>III-C. Science and Faith: History, Philosophy, and Theology (cont'd)</b> –Cunningham A (17) Moderator: <b>Hal Poe</b>
1:15 PM	<b>Melissa Antonio</b> "Genetics and Human Origins"	<b>David Bundrick</b> "Science Professors' Science-Faith Integrative Paradigms: How Well Do They Integrate?"	<b>Steven Ball</b> "God's Two Books: Both Divine and 'Natural' Authors"
1:45 PM	<b>Mark Shelhamer</b> "The Nature and Purpose of Randomness"	<b>Mike Tenneson</b> "Faith and Science Integrative Paradigms of Assemblies of God Pastors, Educators, and Students"	<b>Hal Poe</b> "The English Bible and the Days of Creation: When Tradition Conflicts with Text"
2:15 PM	Beverage Break, Patio outside Crill Performance Hall Lobby		
2:15 PM	<b>Poster Session</b> , The Cooper Music Center, Room 116 (22–24) ♦ <b>Katherine Addicott</b> , "Evolution and the Evangelical Mind: A Case Study," presented by <b>James Hofmann</b> ♦ <b>J. Scott Buchanan</b> , "How Beneficial Are Mutations?" ♦ <b>Jennifer Hall</b> , "Science and Faith in Film" ♦ <b>Rebeca Maynard</b> , "The Dual-Activity Insecticidal Protein, Cry2Aa, Does not Enhance the Mosquitocidal Activity of <i>Bacillus thuringiensis</i> subsp. <i>israelensis</i> " ♦ <b>Bradley McCoy</b> and <b>Tim Heumier</b> , "Outlining a Physics-Faith Integration Curriculum" ♦ <b>Arnold Sikkema</b> , "Reformed Academic: A Denominational Blogging Experience" ♦ <b>Sara Tolsma</b> , "Scientists as Members of the Body of Christ: Expanding the Scope of Adult Discipleship" ♦ <b>Edith Waskel</b> , "Ryanodine Receptor Expression in Fetal Pulmonary Arterial Myocytes"		
<b>Parallel Session IV</b>	<b>IV-A. Information, Genetics and Origins of Life (cont'd)</b> –Crill Performance Hall (17–18) Moderator: <b>Melissa Antonio</b>	<b>IV-B. Resources for Dialogue and Engagement in Science and Faith</b> –Colt Hall (18) Moderator: <b>Michael Everest</b>	<b>IV-C. Science and Faith: History, Philosophy, and Theology (cont'd)</b> –Cunningham A (18–19) Moderator: <b>Hal Poe</b>
3:15 PM	<b>Chris Osborne</b> "Implications of High Mutation Rates and Other Recent Genomic Advances upon the Question of Human Origins"	<b>Jennifer Wiseman</b> "The AAAS Dialogue on Science, Ethics, and Religion"	<b>Richard Carlson</b> "The Voice from the Whirlwind and Natural Evil"
3:45 PM	<b>Deborah L. Osaë-Oppong</b> "The Contribution of Bioinformatics to Evolutionary Thought"	<b>Deborah Haarsma</b> "The Ministry Theorem: Resources for Pastors and Churches"	<b>Paul Seely</b> "Why the Framework Hypothesis Does Not Work and What Does"
4:15 PM	<b>Paul Nelson</b> "What Is the Size and Topology of the Genomic Universe?"		<b>Denis Lamoureux</b> "Adam, Original Sin, and Human Evolution"
5:00 PM	Dinner, Nicholson Commons		



Sunday, 22 July 2012	
5:30 PM	Women in Science Gathering –Cunningham A
6:45 PM	<b>ASA Business Meeting</b> –Crill Performance Hall
7:30 PM	Communications Meeting, <b>Emily Ruppel</b> , presiding –Crill Performance Hall
9:00 PM	Students and Early Career Scientists

- Abstracts for each session are listed on the pages noted in parentheses.

Monday, 23 July 2012				
7:00 AM	Breakfast, Nicholson Commons			
8:15 AM	Devotions: <b>Rev. Nancy Moore</b> ; Pianist: <b>Hannah Quinn</b> –Crill Performance Hall			
8:45 AM	<b>Plenary Session V</b> , Crill Performance Hall Moderator: <b>Mary Ann Pearson</b> (7) <b>Christopher Perez</b> , “Why Public Relations Matters: The Battle for Public Opinion”			
9:45 AM	Beverage Break, Patio outside Crill Performance Hall Lobby			
	<b>Parallel Session V</b>	<b>V-A. Teaching Science and Faith in the Curriculum</b> (cont'd) –Crill Performance Hall (19–20) Moderator: <b>Steve Contakes</b>	<b>V-B. Personal Branding and Social Media</b> –Colt Hall (20) Moderator: <b>Mary Ann Pearson</b>	<b>V-C. Why Public Relations Matters</b> –Cunningham A (21) Moderator: <b>Sandra Romo</b>
10:15 AM	<b>Stephen Contakes</b> “Exploring the New Atheist Movement with Wilhelm Ostwald, Early Physical Chemistry's ‘New Atheist’”	<b>Stephen Mapes and Michael Marcacci</b> “Science, Faith, and Facebook: How Online Communications Can Improve the Dialogue”	<b>David Fisher</b> “Pulling Weeds before Planting Seeds”	
10:45 AM	<b>Michael Everest</b> “Augustine, Radiometric Dating, and First-Year Chemistry: A Guided-Inquiry Exercise”	<b>Lara Touryan-Whelan</b> “Out of Step and Anti-Science? Integrating Science and Faith for Christian Youth through Modern Media and the Web”	<b>Caroline Crocker</b> “Bunk Detecting Principles to Help the Public Assess ‘Scientific’ Claims”	
11:15 AM	<b>Blake Horridge</b> “Beyond the Lecture: Problem-Based Learning in Science and Religion Courses”	<b>Mary Ann Pearson</b> “Personal Branding and Social Media”	<b>Sandra Romo</b> “Delivering the Message—Public Relations Basics”	
12:00 PM	Lunch, Nicholson Commons			

# Plenary Abstracts

## PLENARY SESSIONS

Friday, 20 July 2012

7:30 PM

### Embodied Visions

Rebecca Ver Straten-McSparran

- Is God's footprint visible in the hallowed halls of Hollywood, the avenues of the stars or the sacred space of the theater?
- Are people of faith making a difference on the inside of Hollywood: back lots, studios, movie sets, writers' rooms, director's chairs or film content?
- How should people of faith on the outside of Hollywood engage with the world of film?
- What does it mean to think theologically about film, to go deeper than counting bad words or ratings?
- Where do Christians enter in?
- Can the much-maligned alliance of science and faith offer a fresh vision, vibrant and visceral so that glimpses of the Holy may be seen?

These questions will be explored to awaken, encourage, and forge new possibilities for the engagement of the science and faith community with the world through film and media.



**Rebecca Ver Straten-McSparran** is the director and a professor at the LA Film Studies Center, a program of the Council for Christian Colleges and Universities. She speaks at conferences and universities, leads spiritual retreats, and gave a Princeton Lecture in January, to be published this summer.

Last fall her article, *Andrei Tarkovsky: Holy Cinema* was published in the CIVA journal, *SEEN*. Rebecca wrote a chapter in the book, *Reframing Theology and Film*, edited by Robert K. Johnson and worked with him on the revision of his book, *Reel Spirituality*. Currently she is working on a PhD in philosophical theology and film at Kings College London.

She is on the Reel Spirituality Committee at Fuller Seminary and on the boards of City of the Angels Film Festival (past director). Rebecca created the Miracle Mile Art Walk, sponsored by LA County Museum of Art and Mid City WEST Community Council, and until

recently was elected head of the arts council in that area of Los Angeles.

She was a pastor for 14 years, developed arts ministries and urban ministries while a pastor, and planted a church for artists. Rebecca was president of the interfaith council for the Wilshire area of Los Angeles for four years. She received her Master of Divinity from Fuller Theological Seminary and BA in philosophy with highest honors from Bethel University.

Saturday, 21 July 2012

8:45 AM

### Maturation of dsDNA Bacteriophage: Insights into Elegantly Programmed Nanomachines

John E. Johnson

Bacteriophages are viruses that infect bacteria. They constitute the largest biomass on earth with estimates of  $10^{31}$  viruses in the environment (mostly in the oceans). The accessibility of bacteriophages to study by structural, biophysical and genetic methods has enhanced our understanding of novel processes in biological dynamics. These include identifying mechanisms that create energy landscapes for exothermic virus maturation as well as discovering a means of directing the effects of thermal fluctuations for particle development through a Brownian ratchet. The structurally encoded program that directs bacteriophage maturation will be described. This talk is "self contained" and requires no previous experience with viruses to understand it.



**John E. (Jack) Johnson** obtained a BA in chemistry from Carthage College, Kenosha, Wisconsin, in 1967 and his PhD in physical chemistry at Iowa State University in 1972.

Following post doctoral studies of virus structure and function, he was on the faculty at Purdue University from 1978 to 1995 studying the structure of viruses with crystallography.

In 1995 Johnson moved to the Department of Molecular Biology at the Scripps Research Institute in La Jolla, California. There his research includes virus particle dynamics studied by mass spectrometry, cryoEM, computational methods and spectroscopy as well as crystallographic studies of viruses infecting mammals, insects, yeast and bacteria.

Johnson has over 300 publications that cover the structure (at near atomic resolution) and function of 17 different viruses, as well as cryoEM and solution x-ray scattering studies of particle dynamics. He currently holds the Elden R. Strahm Chair in Structural Virology at the Scripps Research Institute.

Saturday, 21 July 2012

1:15 PM

### Christianity, Science, Politics, Blockbusters, and Independent Films: What Hollywood Portrays to the Public

Ralph Winter

How do we as people of faith journey through our various cultures and markets today, align our jobs and our faith? For me as filmmaker, whether it's a tentpole (*X-Men*, *Fantastic Four*, *Star Trek*, etc.), politically-based (*Reagan*), science-based (*Cool It*), faith-based (*Left Behind*, *Purpose Driven Life*), independent (*The Least of These*), or television (Dean Koontz's *Frankenstein*), there are always stories of profound faith and challenge.

As a career producer of films and television in all of these categories, I will talk not only about my experiences as a Christian making films in Hollywood, but also about what I see as the direction the media industry is heading toward in faith, science, and politics, and what influence, if any, Christians and scientists could have. Are the stories made in Hollywood films and media positive, negative, correct, incorrect? What about those made by Christians? What should those who feel change is needed do? Hopefully, this audience of scientists (who happen to be Christians) will be inspired and/or directed toward strategies that could foster engagement and a more meaningful media landscape.



**Ralph Winter** is a Hollywood film producer who has helped to produce blockbuster movies such as the *X-Men*, *Fantastic Four* and *Star Trek* series as well as *I, Robot* and the first remake of *Planet of the Apes*. His films have grossed collectively over \$2 billion (USD).

Winter is also a partner in ThomasWinterCooke, which produces television commercials and represents a number of commercial directors. He is a member of the Directors Guild of America and the Academy of Motion Picture Arts and Sciences.

A native of Glendale, California, Winter attended the University of California, Berkeley, where he studied history. His first experience in production was producing training videos for Broadway Department Stores. In 1978, Winter started working in the film business for Paramount Pictures television, where he worked on *Happy Days*, *Laverne & Shirley*, and *Mork and Mindy*. Following his experiences in television, he started working alongside Harve Bennett on the *Star Trek* films. He was an associate producer on *Star Trek III*, executive producer on *Star Trek IV*, and producer on both *Star Trek V* and *VI*.

Winter has been active in producing Christian movies, such as *Thr3e*, based on Ted Dekker's book, and *Hangman's Curse* and *The Visitation*, both of which were novel-to-movie creations written by Christian author Frank Peretti. Winter's faith influenced him to cooperate on a movie based on the *Left Behind* series of books. Recently, it was announced that he is producing a film version of C. S. Lewis's *The Screwtape Letters*.

**Sunday, 23 July 2012 10:30 AM**

**Science, Religion and the News Media**

**Dean Nelson**

News organizations know how to cover science, and they know how to cover religion, especially if there are new developments or controversies. But how do news organizations handle science and religion in the same story? How can those in the science community help journalists get past the "either/or" mentality, or the traditional conflict model of covering a story?

A veteran journalist who wrote for the *New York Times* for fifteen years and wrote a recent biography on John Polkinghorne, will offer insight and advice.



**Dean Nelson** is the founder and director of the journalism program at PLNU. He writes occasionally for the *New York Times*, the *Boston Globe*, *Christianity Today*, *Sojourners*, and several other national publications. He has

won several awards from the Society of Professional Journalists for his reporting, and has written or cowritten eleven books, mostly on spirituality themes. Nelson is a frequent speaker at writing workshops and conducts retreats that focus on spiritual depth.

In addition to directing the PLNU journalism program, Nelson also hosts the annual Writer's Symposium by the Sea, where prominent writers come to discuss the craft of writing. Nelson has interviewed Amy Tan, Anne Lamott, Gay Talese, Anchee Min, Ray Bradbury, George Plimpton, Otis Chandler, Kathleen Norris, Donald Miller, Bill Moyers, Jim Wallis, Chitra Divakaruni, Joseph Wambaugh, James Fallows, Barbara Brown Taylor, Eugene Peterson, Philip Yancey and dozens of others. Many of those interviews are viewable on UCSD-TV's website.

Nelson came to San Diego from Minneapolis, where he was working as a business reporter. He has a PhD in journalism from Ohio University in Athens, Ohio, a master's degree in journalism from the University of Missouri at Columbia, and a bachelor's degree in literature from MidAmerica Nazarene University in Kansas City.

**Monday, 23 July 2012 8:45 AM**

**Why Public Relations Matters: The Battle for Public Opinion**

**Christopher Perez**

Since the writers of the Rosetta Stone used it to promote the pharaoh and his accomplishments, humankind has long recognized the importance of persuasion. Historical record itself often represents the consensus of public opinion about any given topic. When examining the public perception surrounding faith and science, we see an interesting paradox. Namely, we see that scientists that embrace their faith have a public relations problem.

Surveys consistently show Americans are comfortable with both institutions of science and of religion. For example, a 2006 survey conducted by Virginia Commonwealth University found that 87 percent of the population thinks that scientific development has made for a better society. Among those who describe themselves as being very religious, the same number, 87 percent, share that opinion.

But despite these high "approval ratings," science and religion have traditionally, and incorrectly, been viewed as enemies. It is a point of view proliferated by a relatively small percentage of zealous proponents, on *both* sides, of a Conflict Thesis. The silent majority, therefore, has surrendered *perceived* public opinion to the minority opinion.

In this plenary session, professional communicator and educator Christopher Perez will present the methods by which media and public perception have been and continue to be manipulated. The session will explore why this battle for public opinion matters, and most importantly, what can be done to encourage a more fair and positive perspective on the integration of the worlds of faith and science.



Communications professional and educator **Christopher Perez**, APR has counseled and assisted over 80 diverse clients throughout his 25-year career. He owns and operates his own PR consultancy, and has held senior positions at Euro RSCG, Fleishman-Hilliard,

and Golin-Harris, some of the world's largest public relations firms. He has led strategic planning for PR, marketing and reputation campaigns for some of the world's largest brands, including Johnson & Johnson, Toyota, Pioneer Electronics, Goodwill, Sprint, Anheuser-Busch, and the American Cancer Society. He is currently contracted with Idea Hall, a leading interactive marketing and design firm in Costa Mesa, California.

Chris is also an adjunct communications professor, currently with Chapman University in Orange, California and formerly with California Baptist University in Riverside, California. He has received numerous awards and commendations for his work, and has earned the professional designation of Accreditation in Public Relations (APR) by the Public Relations Society of America. He has Bachelor's Degree in Journalism/Public Relations from the University of Southern California.

# Symposia and Session Abstracts

## I-A. INFORMATION, GENETICS, AND ORIGINS OF LIFE

This symposium seeks to feature contrasting views of the implication of the generation of information in the scientific study of the origin of life. ASA is not endorsing any individual perspective presented in this symposium but wishes to foster constructive dialog among advocates of differing positions.

Saturday, 21 July 2012 10:15 AM

### The Origins of Genetic Information Stephen Freeland

Information is a word with many different meanings. Within the physical sciences, ordered patterns are often interpreted as having a lower information-content than streams of unpredictable, random noise. At other frontiers of research, a near-opposite definition is found. Wherever researchers focus on “meaning,” information is what distinguishes this semantic content from random noise. For example, high information-content is precisely what distinguishes a computer program or book from a random stream of letters and punctuation.

Within biology, the concept of genetic information has not been widely allied with either of these two meanings. Some have argued that this is a telling omission. Clearly the biological world displays nonrandomness, and if physical sciences cannot measure this concept of information (whereas we already know it to be possible through intelligent design), then perhaps the intuitively high information-content of the living world is a clue to its origins through intelligent design.

Here I argue that such an explanation is not helpful or necessary. From an evolutionary standpoint, the intuitively high information content of biological systems (and their genetic material) is a reflection of the even higher semantic information-content inherent to the universe at large. Biological evolution does not create new semantic information — it copies information from the

environment into genetic material. In fact, Darwinian evolution is exactly this natural process by which DNA becomes shaped by an environment to reflect some of its key features. Something similar happens when gravity causes raindrops to form a puddle, and the shape of the ground beneath becomes reflected in the underside of the water.

Saturday, 21 July 2012 10:45 AM

### What Do the Informational Requirements of the Origin of Life Imply? Walter Bradley

Steven Meyer in his book *Signature in the Cell* (Harper Collins Publishers, 2009) has argued that the informational requirements for the origin of life count as significant evidence for the requirement of some form of intelligence in creation. Dennis Venema and Randy Isaac have argued in different ways in articles in *Perspective in Science and Christian Faith (PSCF)* that the inference of intelligence from informational requirements for the origin of life is not warranted after all.

This presentation will examine the conflicting claims made by Meyer and Bradley (“Information, Entropy, and the Origin of Life,” in *Debating Design*, ed. William A. Dembski and Michael Ruse [Cambridge University Press, 2004]) and Venema and Isaac regarding whether information can be used to infer intelligence in the origin of life. The minimum functional requirements for a simple living system will be identified along with the biopolymers that provide these functional requirements. The information requirements in these function polymers will be estimated. The possibilities of generating these levels of complexity (or information) in the simplest living systems via random processes combined with some form of selection will be explored.

Saturday, 21 July 2012 11:15 AM

### Increasing Information and Self-Organizing Complexity: Some Examples Loren Haarsma

Both in the natural world and in man-made systems, there are many different types of information. Some examples include the following:

- information in the “finely-tuned” rules and initial conditions of a system,
- combinatoric information describing all possible combinations of components,
- contingent history information describing the particular historical paths taken by a system,
- information needed to describe an environment,
- information needed to describe a complex object (e.g., a self-replicator) in an environment,
- information to describe just the “interesting” features of an environment for the complex object,
- information to describe the “genome” of a self-replicator, and
- information to describe the interdependent complexity of an object’s functional subunits.

Recognizing different *types* of information will help us analyze arguments about information and origins. Under the right conditions, natural processes such as physical laws and random events can dramatically increase certain types of information and complexity. Under the right conditions, natural processes can transform some types of information into other types, permitting self-assembly of complex things.

I will describe several (really cool!) examples, both from the natural world and from computer simulations, in which “natural” processes lead to increasing information and self-organization of interdependent complexity. Some examples of increasing information and complexity



are easy to describe and to simulate; others are more challenging. The self-organization of self-replicators is a particularly challenging step to describe or to simulate. However, I will contend that arguments based on information pose no barrier to self-assembly of complex self-replicators, either in the origin of life or in computer simulations.

**I-B. TEACHING SCIENCE AND FAITH IN THE CURRICULUM**

Saturday, 21 July 2012 10:15 AM

**A Model of Science Higher Education as Christian Service in China**

Raymond J. Lewis

The Yanbian University of Science and Technology (YUST) is the first Chinese-foreign joint university in China, with instruction beginning in Fall 1992. In its twenty years, it has provided a successful model for Christian service through higher education in science and other subjects.

This university was built by donations from Christians, and most of the faculty members are Christians, primarily from outside China. Currently, about 2,000 students are enrolled, with the majority from the Korean-Chinese population that lives in and near the Yanbian Autonomous Region in northeast China.

Eight academic departments offer fourteen different majors, including scientific, technical, and language fields. All students are required to learn Chinese, Korean, and English.

I served as a visiting faculty member at YUST during the Fall 2011 semester. Through my participation in teaching, departmental planning, various campus activities, speaking at a workshop to improve instruction for faculty, and leading a group of faculty in considering the integration of Christian faith and science, I was able to learn some of the strengths and weaknesses of YUST, and to contribute toward the work of this university.

I will describe this model, including its strengths and weaknesses, and describe ways Christians can be involved in the work of YUST and

other similar enterprises in which higher education in science can provide an opportunity for Christian service and witness.

Saturday, 21 July 2012 10:45 AM

**Communicating Truths about Faith, Science, and Origins through a General Education Requirement**

Glenn A. Marsch

Hired by Grove City College in 2004, I assisted in the development of a course called Studies in Science, Faith, and Technology (SSFT 212), and I now teach four sections per year. Since Fall 2006, this course, or one similar to it, has been required of all students at Grove City College. While faith and science courses are not uncommon at Christian colleges, it is rare that one is a requirement for graduation.

We decided that the course would be divided into four parts: (1) a three-week theology of science module, (2) a three-week history of science module, (3) a five-week origins science module, and (4) a three-week capstone on late-breaking contemporary issues in science that provide challenges to faith.

Most sections of SSFT 212 are team-taught, with a humanities faculty member teaching the first two modules, and a science or engineering faculty member teaching the second two modules. Both instructors are present for each class, to model godly debate to our students.

In this way, Grove City College has now respectfully communicated often-controversial truths about science to over 3,500 students since 2006. We are careful to protect the consciences of our students while equally careful to present truths about cosmology, geology, and biological origins as the scientific community presently understands these things.

Saturday, 21 July 2012 10:45 AM

**The Indiana General Assembly and Creation Science: 2012 and Beyond**

John R. Staver

My purpose in this talk is to summarize and discuss the submission,

movement through the Indiana General Assembly, eventual resolution, and future of a bill to approve the teaching of creation science in Indiana schools. I will discuss the various approaches taken by proponents of the bill as well as the strategies of its opponents.

As an opponent of the bill, I presented testimony against the bill and was interviewed a number of times by local print and electronic media. The most important factor in the eventual death of the bill was the legislators' concerns about possible lawsuits, even though the leadership of the legislature did not object to the content of the bill. Proponents of the bill plan to resubmit it in the next session of the legislature.

**I-C. SCIENCE AND FAITH: HISTORY, PHILOSOPHY, AND THEOLOGY**

Saturday, 21 July 2012 10:15 AM

**Exploring the Wonders of Creation through the Lens of Science**

Leslie A. Wickman

This presentation traces the historical development of the scientific method within the Judeo-Christian tradition, as well as its roots in Greek natural philosophy. Differences between deductive and inductive reasoning are highlighted. The applicability of the scientific method to the pursuit of truth in the realms of both science and theology is discussed. The contemporary dialogue between science and religion is characterized, with references to the anthropic principle, quantum physics, and the multiverse hypothesis. In closing, the audience is left with a list of suggestions for getting comfortable with the tensions and unanswered questions within the "Science and Faith" dialogue.

Saturday, 21 July 2012 10:45 AM

**Does Modern Science Communicate Purpose?**

Jimmy H. Davis

The concept of purpose is one of those areas where Christian faith and modern science seem to have no common ground. On the one hand, biblical writers and orthodox theologians through the ages affirm the

doctrine of the divine plan in which God has planned what is to occur and that history is carrying out his intention. On the other hand, “purpose or direction” are words that seem only to appear in modern science when we are being told that “purpose or direction” do not exist in modern science, in neither the natural nor the biological sciences. Is there any way to reconcile the two books of God (as Francis Bacon called them: the book of God’s word and the book of God’s works) in regard to purpose?

This address will use the philosopher William Hasker’s faith-discipline integration model to question whether modern science allows room for purpose. Hasker employs four major dimensions of integration:

1. *Worldview Foundations* (Christian worldview convictions that address the scientific question);
2. *Disciplinary Foundations* (methodological, epistemological, and ontological foundational assumptions of the scientific field);
3. *Disciplinary Practice* (issues that arise in the day-to-day practice of the discipline that are of special interest to Christians); and
4. *Worldview Contributions* (contributions the discipline makes to the Christian vision of reality).

The author will argue that this analysis will reveal that purpose is indeed communicated by modern science.

**Saturday, 21 July 2012** **11:15 AM**

**Altruism and the Administration of the Universe: Kirtley Fletcher Mather on Science and Values**

Edward Davis

Few American scientists have devoted as much attention to religion and science as Harvard geologist Kirtley Fletcher Mather (1888–1978). Responding to antievolutionism during the 1920s, he taught Sunday school classes, assisted in defending John Scopes, and wrote *Science in Search of God* (1928). Over the next forty years, Mather explored the place of humanity in the universe and the presence of values in light of what he often called “the administration of the universe,” a term and concept he borrowed from

his former teacher, geologist Thomas Chrowder Chamberlin.

Human values, including cooperation and altruism, had emerged in such a context: “the administrative directive toward orderly organization of increasingly complex systems transcends the urge for survival.” Mather was also active in the early years of the Institute on Religion in an Age of Science, an organization created by his good friends Ralph Wendell Burhoe and Harlow Shapley.

**I-D. BEHAVIORAL SCIENCES AND HUMANITIES**

**Saturday, 21 July 2012** **10:15 AM**

**Science, Psi, Spirits, and Spirituality**  
Janet Warren

In the television and film industry, themes which involve magic, spirits, wizards, mediums, and the paranormal are perennially popular. Although easy to dismiss as pure fiction, there is growing and convincing scientific evidence for psychic phenomena such as clairvoyance, telepathy, psychokinesis and precognition. What should the scientist committed to Christianity make of this? Parapsychology plus the shift in worldview from Newtonian to quantum, from modern to postmodern, from locality to nonlocality requires responsible theological reflection.

This paper first reviews and evaluates some of the psi research, then considers some explanations and theories to account for psychic phenomena. Potential areas of integration of parapsychology and theology as well as the challenges faced by Christian theology as a result of parapsychology research are also addressed. Finally future research endeavors and questions for Christian faith and spirituality are discussed.

**Saturday, 21 July 2012** **10:45 AM**

**The Integration of Faith and Reason: A New Anthropology for Science, the Humanities, and Higher Education**

Max Bonilla

Wishing to create a true integration between faith and reason, and

concerned about the detrimental effects of secular humanism within the sciences and professional programs, the Spanish university Francisco de Vitoria (UFV) in Madrid initiated a systematic program that questioned secular prejudices and presuppositions within all fields of knowledge. This led initially to intellectual mutiny among traditionally trained scientists.

After almost ten years of dialogue, however, a large number of the faculty have come to see not only the importance of a Christian anthropology in the way we do science—that is, the recognition that the proper disposition of humans is humility before the Mystery that revealed his love in the Incarnation of Jesus Christ, but it also showed the moral emptiness that an anthropology without God necessarily brings. For it to succeed, this project required an academically mature and compelling approach that would gain the respect of those who seek to be intellectually honest. It also required leadership and perseverance.

Now, UFV seeks to expand its efforts in order to improve them by reaching out to institutions and individuals in the United States and Europe that might be similarly interested in the integration of faith and reason. This presentation will explore the intellectual basis for this endeavor and some of its practical applications, and will conclude with an outline of future plans for the creation of an international working group that will first meet in Madrid for the purpose of exploring new and better expressions of this initiative.

**Saturday, 21 July 2012** **11:15 AM**

**Living above the Pain: Keys to Raising a Resilient Jabez**

Linn Carothers

*“Jabez was more honorable than his brothers, ... his mother named him Jabez saying, “... I bore him with pain.”*  
Job 24:12, NASB95

The pain of family dysfunction is part of everyday life with nearly half of all marriages ending in divorce today (CDC, March 22 2012). As parents and parental surrogates, what are the key factors in communicating faith, hope, and love to the next generation?

This study uses the longitudinal perspective of a Danish cohort (N=857) followed over a 23-year period to examine the association of the social and familial environments with adolescent and young adult criminal behavior. Based on both mother and teacher ratings, the study examines variables measuring the family's stability and structure, parental characteristics, household characteristics, and the child's social and academic competencies.

Stepwise discriminant analyses indicated that five variables describing the family atmosphere during childhood – instability of adult constellations, parent crime, poor economic conditions, and the work organization and athletic skills of the child – have significant associations with the development of criminal behavior.

Log-linear analyses revealed that while family instability at any age was significantly associated with crime, if it occurred and continued in early adolescence, it had its most damaging influence. Important contributors to the negative effect of an unstable home included the father's criminal record, the mother's contentment, the mother's education, and the mother's efficiency.

The child's academic, physical, and social competencies were also shown to contribute, along with family stability, to subsequent criminal behavior. Academic competencies revealed a significant additive effect with family instability in contributing to later criminal activities. The child's athletic and work-organization skills were shown to have independent and significant associations with criminal behavior, each suggesting an important interaction with an unstable family ecology.

Specifically, greater athletic skill and the ability to work without structure both helped to "buffer" the potential damaging effects of family instability. In once-broken homes, boys with high work-organization skills tended to engage in crime less than those in any other type of family. These skills made independent and significant contributions over and above more general academic abilities.

For parents and parental surrogates, the key components of resilience involve teaching self-monitoring skills, valuing work, and engagement during latency with positive role models.

The results of this study contribute important clues to preventing criminal behavior among those with unstable family environments and provide additional longitudinal perspectives on the linkage between the instability of home and subsequent crime.

**II-A. INFORMATION, GENETICS, AND ORIGINS OF LIFE (cont'd)**

Saturday, 21 July 2012 2:45 PM

**A Taxonomy of Information and the Design Inference**

Stephen Meyer, William Dembski, and Casey Luskin

Within the technical literature of the information sciences, the concept of information has been defined in various ways. One finds discussions of Shannon information, information carrying capacity, functional information, complex and specified information, Kolmogorov information, syntactic information, and semantic information, among many other concepts.

This paper will present a taxonomy of different types of information, and will define and distinguish different types of information from one another. It will also ask what type or types of information need be present in a system in order to indicate the prior activity of a designing intelligence. In so doing, it will also examine the claim, made recently in *Perspectives on Science and Christian Faith*, that the presence of only semantic information, rather than functional information, is necessary to justify an inference to design.

Saturday, 21 July 2012 3:15 PM

**What Is Information and Where Does It Come From?**

Randy Isaacs

"Information exists where something could be different," John Wilkins remarked in 1641. For information theorists, information is physical, a specific configuration where another

could have been selected. For users of the internet, information is the set of concepts conveyed by those physical configurations.

Some cosmologists state that information entered this universe through quantum fluctuations that collapsed into "real" particles. Subsequently, information has been conserved, but is transformed from one mode to another.

In the world of information technology, humans have designed complex information systems that minimize unintended influence from the natural world and maximize the meaning conveyed by physical bits. This information is generated and interpreted by intelligent agents.

Biological systems have a complex structure of information encoded in DNA and RNA biomolecules. These systems have fascinating analogies to human-designed systems. Their ability to reproduce with variation generates new modifications of information.

Nonbiological systems also exhibit the ability to generate new information in the sense of configurational adaptations, though vastly simpler than what biological systems produce. From crystal growth to self-assembly to complex networks of organic compounds, information can be seen to be transformed in many different ways.

The mystery of life's origin centers on whether the genetic code could have arisen from a nonbiological system through natural processes or whether some intelligent designer is the most likely agent. Though the mystery is far from being solved, growing evidence indicates that the inference to the best explanation is not an indeterminate intelligent agent but a natural process designed by our Creator God.

Saturday, 21 July 2012 3:45 PM

**Domains of Inquiry and Evolution**

Thomas L. Walters

This paper analyzes some aspects of the theory of evolution in terms of the methods of the various domains of inquiry. The manipulative domains of inquiry include

- *Technology*, which seeks to manipulate the natural, that which has mass;



## II-B. COMMUNICATING EARTH SCIENCE TO THE PUBLIC

- *Religion*, which seeks to manipulate the nonnatural (or supernatural), that which does not have mass; and
- *Politics*, which seeks to manipulate what happens.

The understanding domains of inquiry include

- *Science*, which seeks to understand the natural;
- *Metaphysics*, which seeks to understand the nonnatural/supernatural, that which does not have mass; and,
- *History*, which seeks to know and understand what happened.

As considered in a previous presentation, "All Data Are Equal, but Some Are More Equal than Others," by the author at the 2011 ASA Annual Meeting, there are significant differences in the way data is generated and accepted within the various domains.

This paper analyzes some aspects of the theory of evolution in terms of the domains of inquiry and proposes that it is rooted in both science and history. We also argue that the theory of evolution has become politicized, and that it is in the interests of the scholarly community to remove the discussion, as much as possible, out of the political domain and into the science and history domains.

Saturday, 21 July 2012 4:15 PM

### The Origin of Enzymes: All in the Family?

Ann Gauger

Enzymes can be grouped into families, according to similarity of sequence and structure. This similarity has been taken to mean that these families arose by a process of gene duplication followed by divergent evolution. Yet the diversity of enzyme chemistries within extant families and superfamilies can be quite large. For this model to be correct as an account of enzyme origins, enzymes must be able to acquire genuinely new reaction chemistries relatively easily. Indeed, the constraints of neo-Darwinism require that this acquisition must occur within a very few mutational steps.

Reported experiments on enzyme conversion paint a different picture, however—one in which conversions

are typically very weak and need many more specific base changes than can plausibly be achieved in a natural setting. Our own research indicates that there may be no accessible evolutionary path between structurally similar enzymes with distinct chemistries. Thus, converting enzymes to genuinely new chemistries may be beyond the reach of neo-Darwinian mechanisms.

## II-B. COMMUNICATING EARTH SCIENCE TO THE PUBLIC

Saturday, 21 July 2012 2:45 PM

### BioLogos Workshops for Science Teachers in Christian Schools

Darrel Falk

The BioLogos Foundation exists to show that mainstream science and the Christian faith (including our own evangelical faith) exist in harmony. Over each of the last three summers, the Foundation together with Point Loma Nazarene University has sponsored workshops for science teachers in Christian schools. Teachers come to the college campus for one week over each of two successive summers and many also participate in an online component during the academic year. Teachers in the program have a variety of perspectives on the age of the earth and the mechanisms by which God created life's diversity.

The program is a professional development opportunity where teachers study a particular topic (developmental biology or organismal diversity) in considerable detail. Since all work is done within the context of mainstream biology, and not all teachers subscribe to this view, the program fosters a spirit of Christian unity through worship and biblical study despite the diversity of perspectives. The four goals of the program will be described with an emphasis on how Christians can comfortably discuss views about which they disagree in a respectful and loving community.

Saturday, 21 July 2012 3:15 PM

### Exchanging a Lie for the Truth: On Responding to Scientific Misinformation

Davis A. Young

At the beginning of the nineteenth century, scientific information was transmitted via a few broadly scientific journals, hand-written letters, books, classroom instruction, public lectures, and word of mouth. Since then, we have added radio, telephones, motion pictures, television, audio- and videotapes, compact discs, digital versatile discs, cell phones, email, chat rooms, websites, social media, a vast array of specialized scientific journals, e-books, and skywriting! The potential for the transmission of scientific information is unprecedented and seemingly unlimited. Given that evil is the perversion of the good, the potential for the transmission of distorted or false information is likewise unprecedented and unlimited.

Examples of the latter kind of transmission illustrate poor understanding of scientific theories, belief in scientific conspiracies and hoaxes, confusion about the limits of science, suspicion of the scientific community, and rejection of well-established data and theories that challenge strongly held beliefs.

The fact that we will never eradicate pseudoscience any more than we will eradicate poverty is no excuse for indifference but a call to concerted action. Distortions of science must be met with responses to authors; television, radio, and video personalities and producers; websites; and politicians. A major initiative for ASA must be the promotion of scientific knowledge among pastors and other Christian leaders. Theological seminaries should expect greater scientific understanding by entering students. Professors of apologetics and systematic theology, in particular, must be knowledgeable about the basic science that relates to biblical data and themes. ASA and its members are well positioned to encourage such an initiative.

Saturday, 21 July 2012

3:45 PM

### The Bedrock of Science Communication: The Nature of Science

Josh Rosenau

Discussing science as a process rather than simply presenting it as a collection of facts helps avoid common pitfalls in science education and science communication. Integrating key ideas about the nature of science into science communication and science education makes it easier for students and audiences to relate to new scientific ideas and to avoid seeing these ideas through the lens of social controversy. Providing the context of how scientists test their ideas provides the narrative drive that turns dry statistics into a thrilling story on film or in the classroom. By helping audiences see how scientific ideas are tested and become accepted by the scientific community, science communicators can guide audiences past social controversies surrounding scientifically uncontroversial topics such as evolution and climate change.

Saturday, 21 July 2012

4:15 PM

### The Media and the Public Understanding of Paleontology

Keith B. Miller

All living things on Earth are understood to be connected by an unbroken series of ancestor/descendent relationships to a common origin, such that they can be pictured as a branching tree or bush. This simple but powerful model makes predictions about the patterns of organic change that should characterize the history of life. A vast body of paleontological evidence supports this view of life. The power of this evidence is in the historical, geographic, and anatomical patterns that are present.

However, the public face of the science is almost always in the particulars. The emphasis on particulars—on specific fossil discoveries, or specimens—can hide from public view the very historical patterns that make those particulars important in the first place. For example, the casual use of the term “missing link” emphasizes particulars, not patterns. It implies that the validity

of an evolutionary interpretation hinges on the discovery of a particular unique specimen. “Missing links” are perceived as critical breaks in the continuity of life, and their absence as evidence against evolution. The media, and scientists themselves, are often responsible for helping to perpetuate the false views that surround the popular reference to “missing links.”

Emphasis on placing new fossil specimens into existing higher taxa may also distract from the actual patterns in the fossil record. The popular focus on placing a fossil specimen in one higher taxonomic category or another can reinforce the impression of discontinuity. By focusing on assigning specimens to “bird” or “dinosaur,” “mammal” or “reptile,” etc., the actual intergradations of life’s diversity is lost.

## II-C. CHRISTIANS IN SCIENCE AND FILM

Saturday, 21 July 2012

2:45 PM

### If They Do It, It’s Propaganda, but If We Do It, It’s Education

Paula Gossard

This session presents a college-level lesson designed to reveal the “if they do it, that’s propaganda, whereas if we do it, then that’s information and education” misconception that exists in the minds of many Christian students today. *Inherit the Wind* and *Expelled – No Intelligence Allowed* are examined as examples of propagandist films that end up casting Christians in a bad light: in the first case, directly as objects of ridicule; in the second, indirectly as perpetrators of untruths and palpable propaganda. Students are asked to consider the question, “Is there a better way to influence public perception of Christians and if so, what is it?” This lesson was originally taught in a senior-level humanities course entitled Film and Culture and is easily adapted for secondary students.

Saturday, 21 July 2012

3:15 PM

### From the Dust and Test of Faith: Catalyzing Deeper Conversations on Science and Faith through Film

David A. Vosburg

How can science and faith documentary films be used to inform and to inspire healthy dialogue on college campuses (secular or Christian), in our churches, and to the general public? How can we bring conversations beyond polarized shouting matches and seek truth and harmony together? This presentation will describe how high-quality films such as *From the Dust* and *Test of Faith* have been and can be used to foster understanding, truth-seeking, and compatibility between science and Christian faith. These are important goals for Christians and for Christian witness to nonbelievers.

Saturday, 21 July 2012

3:45 PM

### An Inclusive Science and Faith Message for the Media

Hank D. Voss

For widespread media impact, a clear, comprehensive, and inclusive Baseline Creation (BC) model and message needs to be established and supported by Christians (Eph. 4:25) that is true to scripture (OE, YE, TE viewpoints) and science (13.7B yr). As an inclusive example, the “Baseline Conjunction” model for understanding the Star of Bethlehem is widely shown in many esteemed planetariums at Christmas. Although recognized as a very improbable coincidence, it uses mainstream science and “literal” Bible facts to expose astronomical falsehoods and effectively educate and excite the public with a mutual explanation and appreciation of science and the Bible.

Teaching Astronomy 101 and Issues in Science and Religion (IAS231) over the past eight years to many hundreds of evangelical students has helped pioneer new ways of effectively communicating with the public. No parent complaints and highest student evaluation scores are received in faith and science topics. In brief, a “literal” reading of Gen. 1:1–2 is suggested by using it to describe the Big Creation Bang event (sudden *ex nihilo* inflation, Heb. 11:3) followed by the unfolding of

## II-D. SCIENCE, FAITH, ENGINEERING, AND APPROPRIATE TECHNOLOGIES

the universe, and recent observations (NASA Hubble, Kepler, others) of many extrasolar planetary systems “without form, and void.” Certain exoplanets in the habitable zone are now consistent with watery super-earths with thick-dark atmospheres.

The viewpoint location for the creation “days” is referenced to the earth’s watery surface (Gen.1:2, phenomenological geo-viewpoint). Earth creative Day 1 is linked to the huge and rapid darkness to light transition generated by the mainstream science finding of a highly improbable but perfect collision (<24hrs) of a Mars-like planet that produced the moon’s stabilizing presence, the earth’s internal plate structure, common isotopes, and the blow off of ~99% of our opaque/poisonous early atmosphere (first light).

Days 1–6 are associated with God’s creative fiat (<24hrs) but may include time between the days (parenthesis) for damping dynamic responses (geology). Strong YE readings do not include time before Day 1 or pauses between days. The anthropic principle (improbable mega-gaps) is applied not only to astronomy but may also be linked to each of the fiat events in Days 1–6. Strong TE readings do not include biological mega-gaps or Day associations. Various other evangelical interpretations are included and compared for students. A cohesive BC model motivates students and the public to unity, to worship, to discover, and to leadership in STEM Space and Geoscience vocations.

Saturday, 21 July 2012 4:15 PM

### Could an Extraterrestrial Be a Christian? Theology, Film, and the Evolution of Spiritual Consciousness

Peter M. J. Hess

This presentation explores two theological dimensions of the ongoing conversation about extraterrestrial life. In the spirit of moving beyond books, it contrasts the theology of extraterrestrial life with portrayals of the subject through the art form of late modernity: film.

Numerous questions are raised by the evolution of rational life on chemically

suitable planets within the habitable zone of suitable stars. If a religious response to the universe arises with consciousness, is belief in God a product of evolution? Since God became incarnate as Jesus at a particular time in terrestrial evolutionary history, could the “Christ principle” become incarnate elsewhere in the universe as well, perhaps multiple times? If “the Christ” became incarnate a million years ago on Planet X, would the members of an expedition from that planet recognize Jesus of Nazareth as God incarnate? Is God necessarily triune, or is that an artifact of our own religious experience in a mono-solar cosmology? How might God be conceived of in a binary star system?

Hollywood’s portrayal of extra-terrestrial life is too often blunt and two-dimensional. Aliens are portrayed either as malign or monstrous (*Alien*, *Independence Day*, *Galaxy Quest*) or as benign or angelic (*E.T.*, *Starman*, *The Day the Earth Stood Still*). It is more likely that extraterrestrial life that has evolved (like *Homo sapiens*) within an ecological web of predator-prey relationships will reflect an evolutionary morality, moral ambiguity within a widening circle of ethical inclusion. Theologically such a species would likely be like us — “*simulius et peccator*” — at the same time, justified and sinners.

## II-D. SCIENCE, FAITH, ENGINEERING, AND APPROPRIATE TECHNOLOGIES

Saturday, 21 July 2012 2:45 PM

### Appropriate Medical Technology: Biomedical Engineering Projects in Macha, Zambia

Barbara Ressler

Medical equipment is generally designed for use in Western hospitals and homes, but once it is placed in the environs of rural hospitals in developing countries, the equipment may too quickly reach the end of its useful life. Macha Hospital in southern Zambia has experienced difficulties with its oxygen-concentrating machines used for delivering life-saving oxygen therapy to critically ill patients, particularly to infants and children with severe respiratory infections.

A team of biomedical engineering students from Messiah College traveled to Zambia to diagnose the problems with the concentrators. These students are currently redesigning the concentrators for improved function and prolonged use in a rural and isolated environment.

In this presentation, I will describe how the project was initiated at Macha Hospital, how we established our client relationship that is so important for a successful student design project, and how cultural and environmental differences have influenced the redesign of a relatively simple piece of medical equipment in unexpected ways.

Saturday, 21 July 2012 3:15 PM

### Low-Cost Technologies for the Disabled: Facilitating Access and Use of Water and Sanitation Facilities in Mali, West Africa

Ray Norman, Barbara Ressler, and Nate Kamban

Faculty and multidisciplinary undergraduate research teams from Messiah College conducted a three-year study to assess means of facilitating access and use of water and sanitation facilities for disabled persons in Mali, West Africa. World Vision’s Water, Sanitation, and Hygiene (WASH) project has sought to enhance hygiene and health among poor communities through the installation of village boreholes and hand-pumps, as well as by encouraging the use of low-cost latrines. Until recently, little attention has been given to assure that these activities are inclusive of the disabled — some of the poorest and most marginalized members of target communities.

This study utilized an extensive, random-sample household survey and participatory appraisal methods to assess needs and to prioritize research objectives. A range of simple, low-cost, assistive technologies were developed, tested, and refined over a period of two years. A parallel outcome was the development and use of the participatory process by which technology gaps were identified and prototypes developed and improved upon. Moreover, this study played an unexpected advocacy role (among both target communities and among development workers) for the disabled — specifically,



the need for enhanced inclusivity in community-based initiatives.

Utilizing video and slides, this presentation will (a) highlight the process employed and developed in this study, (b) provide a brief review of several of the developed technologies, and (c) detail other impacts of the study which reflect core Christian values imbedded in the study's (and World Vision's) objectives – notably the value of each human life, and the restoration of hope and dignity to those marginalized by society.

Saturday, 21 July 2012 3:45 PM

**Increasing Income of Poor Coconut Farmers by Converting Their Agricultural Waste into Composite Materials**

Walter Bradley

Eleven million coconut farmers grow 50 billion coconuts per year, which at \$0.10/coconut, provide about \$500/year in income. The primary commercial constituent of the coconut is the white meat from which coconut oil can be extracted. Many of the coconut shells and husks are burned for fuel or disposed of as agricultural waste. Research has been done to explore the possibility of utilizing coconut shell and coconut fiber as functional fillers in polymeric composite materials. The unique combination of physical properties of the coir fiber derived from the coconut husk and the coconut shell processed into a fine powder have made them extremely interesting candidates to be functional fillers.

The coir fiber can be blended with a synthetic binder fiber, carded, and needle punched to make a felt that can then be compression molded into automotive trunk trim parts. Exciting details of the commercialization of polymeric composite materials that utilize constituents of coconuts will be presented. The means by which the local community can be blessed will also be presented. Production facilities in Indonesia and Dominican Republic will be presented as this is now a full-scale commercial venture.

Saturday, 21 July 2012 4:15 PM

**Introducing the Possibility of Corruption to Facilitate Reverse Engineering of Natural Systems**

Dominic M. Halsmer, Kenneth Weed, and Taylor Tryon

In conducting reverse engineering studies on man-made systems, it is often necessary to consider the possibility that the specimen under investigation has experienced wear, damage, or corruption due to misuse, fatigue, exposure to corrosive elements, etc. A clear example of this is seen in the case of the severely corrupted Antikythera Mechanism, which took most of the twentieth century to successfully reverse engineer. The disintegrated gear train from this undersea artifact was eventually reconstructed through the painstaking process of teasing apart the original design from the effects of corruption. However, this was not accomplished by analyzing the recovered specimen in isolation from other pertinent information. Reverse engineering necessarily makes use of available information regarding all six of the relationships between the four entities that comprise the "big picture" of design and reverse engineering (designer, artifact, user, and investigator). This "relational" theory of design has proved helpful in capturing and elucidating key design affordances provided to the end user.

Is it possible that this same kind of relational approach may be helpful when conducting reverse engineering studies of natural systems? A Christian worldview posits a similar big picture of Creator, cosmos, human as user, and human as seeker of truth. Consideration of the relationships between these entities may assist in addressing questions of meaning and purpose. When seen from this perspective, recent biological discoveries, such as those made in the field of epigenetics, appear to confirm the importance of moral and lifestyle choices and their influence on human flourishing. Of course, these considerations may cross the boundaries of common definitions of science, but such is the nature of the reverse engineering enterprise. Although experimentation and data-collection must necessarily come under the scrutiny of methodological

naturalism, data-interpretation and theory-building need not be so constrained, unless suffering under the imposition of a materialist worldview. A relational theory of design and reverse engineering with the possibility of corruption provide a rich setting in which to collect and conjoin the consilience of pertinent data from various fields of study that bear on the questions of human origin, purpose, and destiny.

**III-A. INFORMATION, GENETICS, AND ORIGINS OF LIFE (cont'd)**

Sunday, 22 July 2012 1:15 PM

**Genetics and Human Origins**

Melissa Antonio

*"... For in him all things were created: things in heaven and on earth, visible and invisible, whether thrones or powers or rulers or authorities; all things have been created through him and for him. He is before all things, and in him all things hold together."* (Colossians 1:16-17)

*"Genetic changes underlie the evolution of organisms; mutations are the ultimate source of the genetic variation that makes possible the evolutionary process."* (Francisco Ayala & G.L. Stebbins, "Is a New Evolutionary Synthesis Necessary?," Science 213 [1981]: 967-71)

Where did humans come from? Have we evolved from a common ancestor shared with the great apes? Or did God create us uniquely from all other living things on Earth? This is the question of an on-going debate: the origin of modern humans.

Part of the debate revolves around the geographical origin of humans: one theory that *Homo sapiens* migrated across the world from a single point in Africa; another theory states that multiple populations of *Homo sapiens* independently evolved from *Homo erectus* in regions beyond Africa.

At this point, the debate continues further between creationists and evolutionists with the question of how we evolved from *Homo erectus*, where some evolutionists would answer that genetic variability caused by mutations is the ultimate source of evolution. On the contrary, some would argue against the possibility of mutation as a mechanism for evolution since

### III-B. CHRISTIAN VIEWS ON SCIENCE AND FAITH

mutations are almost always harmful and rarely beneficial. In addition, geneticist R. H. Byles presents nine limiting conditions to be present for mutation fixation and after evaluating each condition, it is concluded that meeting any one of the conditions in nature is extremely rare and thus mutation cannot be the sole mechanism for macroevolution.

This talk will briefly present the two sides of the story with the use of an example of a significant chromosome mutation suggested to be evidence that we have evolved from a common ancestor – the fusion of chromosome 2. In addition, the purpose of this talk is to provide a brief overview of the topics that will present the various viewpoints in this parallel session of “Information, Genetics, and the Origins of Life.”

Sunday, 22 July 2012 1:45 PM

#### The Nature and Purpose of Randomness Mark Shelhamer

Randomness surrounds us but is often misunderstood, even feared. Evolution via natural selection is based on random mutations. How can humans be the result of God’s plan if we are a product of chance? A broader perspective can help address these issues.

The study of random noise has a rich history. Tracking down noise in telecommunication led to radio astronomy and discovery of the cosmic background radiation.

Behavior is often considered random when we do not (or cannot) have sufficient information to treat it as deterministic. Sometimes a behavior that appears random – and is, for all practical purposes, unpredictable – is, in fact, deterministic; this is the essence of chaos. But there are other behaviors that truly are random, such as radioactive decay. To the extent that atomic particles impact DNA and produce mutations that drive natural selection, such randomness has more than passing interest.

Uncertainty can also be a measure of information, related to statistical physics and the degrees of freedom of molecules in a specific volume; this is

relevant to an understanding of information content in the early universe, its increase over time, and its relation to the creation of life.

Genetic algorithms and Monte Carlo simulation both deliberately introduce random mutations to explore system properties. Thus randomness can be used to serve a distinct end. Therefore I propose that we as Christians have nothing to fear from randomness. The beauty of random behavior, like the beauty of other mathematical and physical laws, may truly reflect God’s handiwork.

### III-B. CHRISTIAN VIEWS ON SCIENCE AND FAITH

Sunday, 22 July 2012 1:15 PM

#### Science Professors’ Science-Faith Integrative Paradigms: How Well Do They Integrate? David Bundrick and Mike Tenneson

Several science and theology integrative approaches have been described (Barbour, Peacocke, Polkinghorne, Rohr, Wright, Bube, Carlson, etc.).

We find most useful a fivefold schema: conflict – science over theology; conflict – theology over science; compartmentalism; complementarism; and concordism. Previously, no psychometric instrument existed for identifying people’s integrative approaches. One of us (Bundrick) developed a Science-Faith Paradigm Scale (SFPS), which is demonstrated to be valid and reliable. Principal Components Analysis confirms the existence of the above-mentioned five science-faith paradigms for the sample of 312 science professors from various higher education institution types, science disciplines, and religious affiliations in the United States. The original SFPS had 50 items. The current revised version, also shown to be valid and reliable, consists of 25 items.

Faculty respondents utilized a variety of integrative paradigms. Based on their responses to survey items, we determined that 35% used complementarism, 11% aligned with conflict-science over theology, 10% used concordism, followed by compartmentalism (7%) and

conflict – theology over science (3%). We expected higher percentages of compartmentalism (a.k.a. “non-overlapping magisteria” as espoused by Stephen Jay Gould) and conflict – science over theology. It appears that science faculty may be less dualistic in their thinking about science and theology interfaces than anticipated.

The SFPS is a useful tool for faculty and researchers interested in understanding and communicating the various ways in which people relate science and faith. The fivefold schema of integrative paradigms described above could provide unambiguous language when discussing faith and science with the media and public.

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#### Faith and Science Integrative Paradigms of Assemblies of God Pastors, Educators, and Students Mike Tenneson and David Bundrick

The authors report on a survey, Science-Faith Paradigm Scale (SFPS), that measures attitudes and beliefs about the integration of faith and science. This is the first time Assemblies of God (AG) constituents have been examined using this instrument. Respondents (n=117) were AG pastors, educators, and students who attended a faith and science conference sponsored by the AG in June 2011.

The survey’s validity (content and construct) and reliability are high, and the survey discriminates between five integrative approaches: conflict-science over theology, conflict-theology over science, compartmentalism, complementarism, and concordism. Survey respondents were deemed to embrace a paradigm if they agreed or strongly agreed with 80% of the survey statements allied with that position.

Complementarism was the majority paradigm (67%), followed by concordism (32%) and conflict-theology over science (17%). Compartmentalism (a.k.a. non-overlapping magisteria) and conflict-science over theology had no adherents in this sample. This finding is not unexpected given the homogenous religious views of the respondents. Some respondents conflated the concordist and complementarist paradigms,

making integrative decisions based on both approaches.

This survey would be valuable to individuals interested in furthering metacognition of integrative paradigms by people examining faith and science interactions. This paper supplements "Science Professors' Science-Faith Integrative Paradigms: How Well Do They Integrate?," another paper by the authors.

### III-C. SCIENCE AND FAITH: HISTORY, PHILOSOPHY, AND THEOLOGY (cont'd)

Sunday, 22 July 2012

1:15 PM

#### God's Two Books: Both Divine and "Natural" Authors Steven Ball

Two books were written to reveal God to humankind: the Bible and the physical world around us. The former claims divine inspiration (2 Tim. 3:16, 2 Pet. 1:20). The Bible speaks of creation as a messenger from God (Ps. 19:1), boldly proclaiming that the physical world has a divine origin. What compels us to accept a divine authorship? Do we eliminate non-divine authors?

Divine inspiration is an issue with many different approaches, but no theologian argues that one can establish divine authorship by denying human authorship. Rather, human authors are accepted as an instrument, guided by God to give us the Scriptures. In fact, the consistency of messages by numerous authors over many centuries is used to support the claim of divine inspiration.

However, authorship of the other book, that of nature, is viewed very differently. Ironically, in contrast to the dual authorship of the Bible, some view the evidence for divine activity in creating the physical world as the absence of any viable "natural" authors. The "natural" authors, in this case, represent the natural laws governing our universe whose signatures appear when these laws explain how the cosmos has changed over time. In other words, unwittingly, some see the divine origin of the physical world as demonstrated

by the inability of science to provide viable explanations of origins.

Sadly, many in the Christian community are unaware of the explanatory power of scientific models such as the big bang theory, the solar model, and the collision-ejection theory of the moon's formation. Rather, these models represent threats to the claim of creation, indicating a fear that if science can explain the origin of the moon, the sun, the solar system, and properties of the cosmos, then a divine agent is unnecessary. However, this kind of approach to establishing divine activity is at odds with how divine authorship is established for the scriptures, where both divine and "natural" authorship is accepted. The Christian community needs to be consistent and accept both divine and "natural" authors for both books.

Sunday, 22 July 2012

1:45 PM

#### The English Bible and the Days of Creation: When Tradition Conflicts with Text

Harry Lee Poe

In the conversations between science and religion, the time span of creation in Genesis forms one of the most important points of conflict. The debate has tended to rage over how the Hebrew word *yom* should be understood in English. This presentation focuses instead on the grammatical constructions of the first chapter of Genesis to argue that the text says nothing about six consecutive days. The ordinal numerals (second, third, fourth, etc.) are unaccompanied by the Hebrew definite article *he*, and the verb construction indicates ongoing or continuous action.

The idea of action taking place over six consecutive days (the first day, the second day, the third day, etc.) was introduced to our understanding beginning with Wycliffe's translation in the late 1300s and has continued by tradition to the present day, with the exception of the American Standard Version, the New American Standard Version, and the Jewish version known as the Tanakh.

### IV-A. INFORMATION, GENETICS, AND ORIGINS OF LIFE (cont'd)

Sunday, 22 July 2012

3:15 PM

#### Implications of High Mutation Rates and Other Recent Genomic Advances upon the Question of Human Origins

Chris Osborne

Computerized population genetics simulations, utilizing "Mendel's Accountant," provide excellent graphical insight into how mutation, natural selection, and general population variables interact to affect human fitness over time. In this presentation, Mendel's Accountant will be introduced and some of its implications concerning human origins will be illustrated and discussed. This program allows one to control essentially every known significant variable affecting a genome's fitness:

- mutations (rates and fitness intensity curve distribution of harmful, neutral/near neutral, and beneficial mutations),
- type and intensity of natural selection, and
- general population parameters (e.g., birth/death rates, population size, subpopulations, migration, generations).

When all of the parameter values inputted are within a magnitude of what are supported by the literature, simulated human populations not only fail to improve in fitness, but they also become extinct well before reaching the 50,000<sup>th</sup> generation (about one million years).

Once more, biblical-based simulations result in a model which is a close fit with what we now know about the human genome! Recent molecular genetic findings concur with these Mendel's Accountant simulations.

Sunday, 22 July 2012

3:45 PM

#### The Contribution of Bioinformatics to Evolutionary Thought

Deborah L. Osaë-Oppong

The history of evolutionary thought relating to common ancestry between chimpanzees and humans is primitive. It dates back to 1698 when the English



## IV-B. RESOURCES FOR DIALOGUE AND ENGAGEMENT IN SCIENCE AND FAITH

anatomist Edward Tyson acquired the remains of a chimpanzee and published his thoughts on the anatomical similarity between the chimpanzee and a human.

Recently, the field of bioinformatics has begun to contribute to the search for answers. All life forms share the same fundamental biochemical organization: nucleic acids, which encode genetic information, are transcribed and translated into protein, mediated by enzymes and ribosomes. In addition, the genetic code is nearly identical for all life forms currently known to exist. It is such similarities that have prompted bioinformaticians to meticulously compare sequences, pseudogenes, and repeated sequences in the genomes of humans and chimpanzees.

In order to examine the evidence for common ancestry, it is essential to acquire a general knowledge of comparative genomics. I would like to demonstrate the abilities of various programs and databases, including Entrez, BLAST, and UCSC Genome Browser, to provide information about common ancestry.

Sunday, 22 July 2012 4:15 PM

### What Is the Size and Topology of the Genomic Universe?

Paul A. Nelson

Prior to the genomics (i.e., DNA sequencing) revolution of the mid-1990s, nearly all evolutionary biologists accepted that the information present in all life on Earth descended from a historical singularity, an organism designated as the Last Universal Common Ancestor (LUCA).

Within the past 15 years, however, a growing number of biologists have argued that the unexpected genetic diversity of life revealed by DNA sequencing, and widespread phylogenetic anomalies among microbial groups, have brought about "the death of Darwin's Tree of Life" (TOL).

This talk will summarize the major discoveries motivating these challenges to the TOL, will look at the rapidly growing size of the genomic universe, and will address alternative topologies (i.e., whether the evidence is better described as a network, "forest," or

other possible geometries). Theories about the origin of life, bearing on the LUCA singularity, will also be addressed.

## IV-B. RESOURCES FOR DIALOGUE AND ENGAGEMENT IN SCIENCE AND FAITH

Sunday, 22 July 2012 3:15 PM

### The AAAS Dialogue on Science, Ethics, and Religion

Jennifer Wiseman

The American Association for the Advancement of Science (AAAS) is the nation's largest scientific society. AAAS publishes the journal *Science* and also fosters a range of public science engagement programs, including the Dialogue on Science, Ethics, and Religion (DoSER). While the DoSER program has been active for over 16 years, the last two years have brought a new emphasis on helping foster communication and understanding between scientific and religious communities across a larger swath of mainstream America.

As the newest Director of DoSER, I will discuss several new DoSER initiatives that will be of particular interest to ASA members. These initiatives include supporting seminaries wishing to integrate more science into the education of future clergy, and supporting scientists who wish to be better equipped to communicate science to a largely religious public.

Perhaps of most interest to ASA members is our recent major grant to study perceptions of science amongst evangelical Christians, and likewise the perceptions scientists have of evangelicals. With ASA as one of our primary partners, we are constructing a major poll of evangelicals and scientists. The results will guide us as we create material and gatherings designed to substantially improve the relationship between evangelicals, science, and scientists.

Sunday, 22 July 2012 3:45 PM

### The Ministry Theorem: Resources for Pastors and Churches

Deborah Haarsma

One of the best ways to reach the typical evangelical Christian is through their pastor. Yet most pastors and ministry leaders feel ill-equipped to discuss science and faith issues with their congregation. In order to encourage ministry leaders to engage science in positive ways, we have created the Ministry Theorem (<http://ministrytheorem.calvinseminary.edu>). We commissioned essays in which scientists from several disciplines write to their pastors (also available in the book *Delight in Creation: Scientists Share Their Work with the Church*) and comment on Bible passages often invoked in science-faith debates.

The Ministry Theorem website also includes a database of over 400 recommended books, blogs, curricula, sample sermons, and other resources that are annotated, searchable, and tagged by science topic and ministry type. (The Ministry Theorem is led by the Center for Excellence in Preaching at Calvin Seminary and the Science Division of Calvin College with a grant from the Templeton Foundation.)

## IV-C. SCIENCE AND FAITH: HISTORY, PHILOSOPHY, AND THEOLOGY (cont'd)

Sunday, 22 July 2012 3:15 PM

### The Voice from the Whirlwind and Natural Evil

Richard F. Carlson and Jason N. Hine

The problem of evil remains a theological puzzle. We limit our focus to the domain of natural evil, the kind experienced by Job. We posit that the responses Job receives in Job 38-41, while not answering Job directly, provide Job and us with useful insight into the questions surrounding natural evil.

Job suffered grievously and undeservedly. It is natural to ask, "Why do we suffer?" especially when suffering is not being inflicted by another person but instead has natural causes. Job rejected the analyses offered by his "friends," who were convinced Job's troubles were the



result of his sin. Job rejected that conclusion, and turned to (screamed at) God, asking for justice.

Job's demands evoked a surprising response from God in the form of two speeches from the whirlwind. These speeches do not directly answer Job's demands; God offered Job no principles or explanation. Rather, God pointed out some examples from the world of creation—features of creation from the physical world, short descriptions of some birds and animals, and longer descriptions of two fearsome creatures, the Behemoth and the Leviathan. From these examples, God expected Job to understand his strategy in creating and sustaining the world.

We believe that by deriving and elucidating God's creation strategy as indicated in the whirlwind speeches, we can, in turn, gain a better understanding of natural evil.

**Sunday, 22 July 2012** **3:45 PM**

### Why the Framework Hypothesis Does Not Work and What Does

Paul H. Seely

Some Christians have argued that the days of Genesis 1 are not historically successive. Rather, they have been arranged by the author in a literary pattern. It is an attractive hypothesis because it eliminates chronological conflicts with science, for example, having land animals created after birds, and most notably having the sun created after the appearance of vegetation. In spite of these advantages, a close look at the biblical text in the light of its biblical and ancient context indicates that the order of the creation events was determined by nonliterary factors.

This paper will cover:

- What exactly is the Framework Hypothesis?
- To what extent does Scripture support the Framework Hypothesis?
- Two reasons daylight had to be created on the first day, and why the sun had to wait until later.
- The reason the creation of the firmament and the splitting of the primeval sea had to occur on the second day.

- The reason the creation of dry land had to occur on the third day.
- Why the sun, moon, and stars were created on the fourth day, and are parallel to the second day.
- Three reasons the creation of fish on the fifth day is not parallel to the waters of the second day.
- If Genesis 1 is saying the universe was created in six twenty-four-hour days, why are Christians not bound to accept that as a divine revelation of science?
- Why the revelation in Genesis 1 is still true.

**Sunday, 22 July 2012** **4:15 PM**

### Adam, Original Sin, and Human Evolution

Denis Lamoureux

An introduction to an evolutionary creationist view of human origins that asserts the Father, Son, and Holy Spirit created men and women through an ordained, sustained, and design-reflecting evolutionary process. This lecture examines biblical creation accounts dealing with human origins and theological challenges regarding the manifestation of the image of God, human sin, and physical death. In particular, it deals with the traditional doctrine of original sin.

The uniting thesis argues that science and religion are intimately related so much so that they are easily conflated. This is the problem with human origins throughout church history up until today. I will argue that the historicity of Adam is the retrojective conclusion of an ancient Near Eastern understanding of human origins (*de novo* creation). Ergo, Adam never existed.

Steeped in this ancient view of origins, the towering figure of St. Augustine conflated the existence of Adam to his doctrine of original sin (which refers to the very first sin even committed by the very first human Adam and to the belief that sin is transmitted through Adam to all humans). But again without a historical Adam, the traditional notion of original sin has no foundation in reality. Regrettably, the western Christian tradition throughout history has conflated an incidental ancient science to the vital and inerrant belief of human sinfulness.

### V-A. TEACHING SCIENCE AND FAITH IN THE CURRICULUM

**Monday, 23 July 2012** **10:15 AM**

### Exploring the New Atheist Movement with Wilhelm Ostwald, Early Physical Chemistry's "New Atheist"

Stephen M. Contakes

Episodes from chemistry's history and philosophical issues associated with its practice and epistemological status parallel many of the issues and historical episodes discussed in science and religion textbooks. These parallels may be used to integrate science and religion topics into undergraduate chemistry courses and even systematically explore contemporary faith-science topics throughout the curriculum. In this presentation, I will demonstrate an example of such integration by comparing and contrasting the New Atheist Movement with the philosophical and social endeavors of Wilhelm Ostwald (1853–1932), one of the founders of modern physical chemistry.

Like the New Atheists, Ostwald was dazzled by the success of a branch of science, thermodynamics, in accounting for a wide range of phenomena and attempted to develop it into a comprehensive worldview. Ostwald also shared New Atheist assumptions about secular progress and their antagonism toward religion, as illustrated by his cofounding and later leadership of the German monist league.

Through the league, Ostwald called on Germans to abandon traditional Christianity, adopt social and educational reforms based on the idea of scientific progress, and adhere to a moral system based on the laws of thermodynamics. Unlike the New Atheists, Ostwald's advocacy of a "scientific" substitute religion was explicit and self-conscious, involving sermons, catechisms, and feasts. Although Ostwald never abandoned his scientific worldview, his enthusiasm for the monist movement was dampened by internal struggles within the monist league and WWI, which called into question science's ability to truly advance and stabilize society.

Monday, 23 July 2012

10:45 AM

### Augustine, Radiometric Dating, and First-Year Chemistry: A Guided-Inquiry Exercise

Michael A. Everest

Christian colleges are obligated to expose their students to difficult issues pertaining to the interaction of science and faith. General chemistry is a good place to expose first-year students to some of these issues.

I have developed a guided-inquiry exercise that introduces students to passages in Augustine's "On the Literal Interpretation of Genesis" which encourage the Christian to be humble in discussing the natural world with non-Christian experts. Particular attention is given to Augustine's reason: that Christians might maintain credibility when discussing "the resurrection of the dead, the hope of eternal life, and the kingdom of heaven."

Following this lesson in humility, students are led through some radiometric dating data taken from "Radiometric Dating: A Christian Perspective" by Roger Wiens, an article on the ASA website. These data show the earth to be billions, not thousands, of years old. Students are then encouraged to consider how to discuss the age of the earth with non-Christians.

Monday, 23 July 2012

11:15 AM

### Beyond the Lecture: Problem-Based Learning in Science and Religion Courses

Blake Horridge

Science and Religion courses in higher education can vary widely in their content but most are still taught as either a lecture or seminar. Using current research in pedagogies, particularly those dealing with the natural sciences, this paper seeks to suggest a relatively new teaching method that might prove more suited for science and religion courses: problem-based learning.

In addition to an overview of the pedagogy's strengths and weaknesses, an emphasis will be placed on potential classroom applications for the method within the context of a science and religion introductory course.

### V-B. PERSONAL BRANDING AND SOCIAL MEDIA

Monday, 23 July 2012

10:15 AM

### Science, Faith, and Facebook: How Online Communications Can Improve the Dialogue

Stephen Mapes and Michael Marcacci

The growth of social media outlets and online blogs in the past decade has fundamentally changed how society, especially the younger generation, discusses the "big questions" of our age: including questions about origins and science and faith. While the opportunities for engagement are plentiful, starting and running a dialogue through online tools can be a daunting task for anyone, regardless of their technical savvy.

In this short presentation, we will cover some of the basic free tools available to scientists, pastors, and leaders for fostering online discussions, including how best to use them to reach an audience. We'll also look at some of the potential problems and challenges that arise when using these tools, as well as how best to make sure conversations stay focused, civil, and beneficial for everyone involved.

Monday, 23 July 2012

10:45 AM

### Out of Step and Anti-Science? Integrating Science and Faith for Christian Youth through Modern Media and the Web

Lara Touryan-Whelan, Kenell Touryan, and Cheryl Touryan

Public media and educational materials too often present science and faith issues from an agenda-laden platform, fostering adversarial positions, which result in disunity among Christians. In this paper we will present our recent efforts to integrate and teach both science and the Christian faith in a way that fosters a sense of wonder rather than dwelling on apologetics. Our efforts have been focused particularly on presenting these concepts to young people through the emerging forms of digital media that are increasingly predominant in their experience. To this end, we will briefly discuss the revolution that is taking place in the

publishing world, the integration of books and the internet in education, the potential and power of social media to reach a large audience, and the author's efforts to establish a personal brand.

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### Personal Branding and Social Media

Mary Ann Pearson

The public knows the brands they like. Pepsi-Cola, Coca-Cola, Levi's, computers like MACS and PC's or Apple and Dell are all identifiable brands. What about the idea of a personal brand? What do others think of when they consider who you are? "Your brand is what people say about you," said Jeff Bezos, Founder of Amazon.

Personal branding is a public relations process that helps individuals to identify strengths and weaknesses. The personal brand is presented to the various audiences that the individual may deal with on a regular basis. Understanding the various audiences, including the Millennial Generation, is important in public relations and is important for all those interested in successfully delivering a message, including scientists who seek to convey scientific claims to a society that has been bombarded with messages about evolution being the only reasonable true explanation for our existence.

"Improving your brand is an investment in building your personal profile, reputation and the results you will achieve," claims Rachel Quilty, an expert on personal branding (<http://rachelquilty.com/>). Part of understanding the communication process today involves understanding how to present a personal brand to the public through social media networking websites such as Facebook, Twitter, and LinkedIn.

Information about the personal branding process and creating a presence on social media sites will be provided. Reaching the masses for Christ requires an understanding of today's communication methods.

## V-C. WHY PUBLIC RELATIONS MATTERS

Monday, 23 July 2012

10:15 AM

### Pulling Weeds before Planting Seeds

David Fisher

"And thus continues the age-old battle between science and religion," a recent *ABC Evening News* report concluded. The template is so ingrained in much of the media, that a wide range of scientific reportage reinforces that interpretation.

The Apostle Paul said that part of his job description was to "demolish arguments and every pretension that sets itself against the knowledge of God ..." (2 Cor. 10:5, NIV). With this in mind, I write and produce the *Truth in the Test Tube* broadcast/webcast to "pull weeds before planting seeds." Additionally, in June we added an audio version to the "Jesus Daily" segment of Facebook. By pointing out that the popular "warfare model" is a pseudo-scientific oversimplification, it has opened minds to consider the valid evidences for theism.

The program series has attracted a large response when broadcast and webcast to Marxist countries. For example, 1.4 million episodes of the Mandarin version were downloaded in one recent year. One Russian listener said the head-on collision between what he had been taught and what we were telling him, was "like an explosion in my mind."

By sharing some of the experiences that I have had during 32 years of this outreach, I hope to encourage ASAers to do something comparable in the US. From their feedback, I also hope to gain additional insights into how to make my overseas outreach more effective.

Monday, 23 July 2012

10:45 AM

### Bunk Detecting Principles to Help the Public Assess "Scientific" Claims

Caroline Crocker

The public is constantly bombarded with allegedly scientific claims. They are told that a particular supplement

has been clinically proven to reduce cellular aging rate, that physicians endorse use of all kinds of drugs, and that scientists have proven we don't have free will. The thoughts and actions of the public are molded by politically, religiously, and financially motivated, or just inaccurate, "science."

We who are scientists have a grave responsibility to educate others on what science can, and does, say. But since experts are not always readily available (or right), we also need to empower the public to assess scientific claims for themselves.

In this presentation, a set of "bunk-detecting" principles will be introduced. These are rules of thumb that will help nonexperts to evaluate claims made in the name of science.

- Most people have had some science education; therefore they are encouraged to think about what is being said. Is it consistent with what they know and can the claims be tested scientifically?
- They are advised to notice if the authors declare something controversial to be a fact or assert that they have accomplished something beyond what is possible to do.
- They are warned to beware of grandiose claims.
- They are instructed to be careful when too much is made of the scientific qualifications of those involved, or when those who do not agree with the "expert" views are disparaged.
- Does infringement upon one of these rules automatically mean a claim is scientific bunk? No.

Will the bunk-detecting principles totally prevent abuse of science? No, but with input from and refinement by ASA scientists, they might help.

Monday, 23 July 2012

11:15 AM

### Delivering the Message—Public Relations Basics

Sandra Romo

Consumers are bombarded by messages every day. From public service announcements to advertisements, they are inundated with various messages. How does your message set

you apart from the rest? What can you say about a scientific claim that resonates with everyone? Use basic public relations tactics to deliver the message.

The practice of public relations emphasizes strategic communications between a company, nonprofit, or individual and the various publics. Understanding how to connect with publics is critical to the successful delivery of messages about products, services, and brand. How the public perceives the message is part of public relations.

Effective utilization of a public relations approach to connect with consumers about research and other important information can be achieved by using public relations methodologies. Developing an effective message that effectively communicates scientific claims from a faith-based perspective can be done through the use of public relations research, methods, and strategies. Learn how public relations can enhance your message and help it to stand out as you reach various audiences.



# Poster Abstracts

## POSTER SESSION

Sunday, 22 July 2012

2:15 PM

### Evolution and the Evangelical Mind: A Case Study

Katherine Addicott

My thesis topic as an undergraduate in the University Honors Program at California State University, Fullerton, is a study of a specific group of people who have differing views about evolution. I looked at individual factors among evangelical Christians with relevant scientific backgrounds that caused them to accept or reject evolution at a macro level.

The controls for the subject were that every person I studied was both an evangelical Christian and a scientist with a PhD relevant to evolution. These degrees include biology, chemistry, biochemistry, paleontology, and geology. These controls helped me focus on reasons why evangelicals with the same scientific knowledge about evolution tend to accept or reject it. Six evangelical scientists were studied: three evolutionary creationists (Francis Collins, Denis Lamoureux, and Keith Miller) and three young earth creationists (Todd Wood, Marcus Ross, and Kurt Wise).

In order to complete the study, I read their publications and completed personal interviews with five of the six individuals. I found that there is no specific reason among all six individuals, for accepting or rejecting evolution. Instead, there are certain patterns that these individuals share. For example, the evolutionary creationists went through more spiritual changes in college and their early adulthood than did the young earth creationists. The young earth creationists all permanently rejected evolution in their childhood. And, interestingly, all six of the subjects believe that the acceptance or rejection of evolution is not crucial for salvation. This study is important

for evangelical Christians who remain unsure of their scientific beliefs and need guidance pursuing a career in science.

### How Beneficial Are Mutations?

J. Scott Buchanan

In discussions of design and evolution, there is sometimes confusion over the effectiveness of genetic mutations. Are essentially all mutations deleterious? Have any been shown to increase genetic information? Here we survey some recent results which bear on these questions:

- Mutated strains of bacteria can show improved fitness both in a novel, stressful situation and in their original "wild" environment. Thus, these mutations are unequivocally beneficial.

- While some studies have shown only about one in a million fixed mutations to be beneficial, the Lenski long-term *E. coli* study demonstrates that this can be sufficient to drive forward the fitness of a population. Also, other studies show that over 10% of all mutations can be beneficial under appropriate conditions.

- Gene duplication provides a mechanism for increasing genetic information. Two objections are that gene duplications are unlikely to be fixed because they are not beneficial, and that formation of an identical copy of a gene creates no new information. Examples are given of gene duplications in mosquitoes and yeast which were immediately beneficial. Moreover, some of the duplicated genes were modified (not identical) copies, which immediately introduced genetic novelty.

These results support a providential model of the development of new species in accordance with the regularities of chemistry, with no necessity of special intervention.

### Science and Faith in Film

Jennifer Hall

In today's society, the media has become very influential in shaping our views of the world. Knowing this, the media via many outlets such as music, TV, and film seek to manipulate the truth or fiction in such a way that benefits them so they can merely make an extra dollar.

This is especially true in the film industry. We see so many films today being produced that cover such topics as science and faith that continuously play in favor of one or the other and rarely both. But the question becomes, are these interpretations of science and faith correct?

It is understood that most people in today's society search for something to believe in, whether it is God or evolution. People need to know that there is more to life than what is, where we came from, if we are the only ones out there, etc. Media strives, through film, to play upon those ideas in any way possible in order to successfully appeal to one audience or the other.

### The Dual-Activity Insecticidal Protein, Cry2Aa, Does Not Enhance the Mosquitocidal Activity of *Bacillus thuringiensis* subsp. *israelensis*

Rebeca Maynard, working with  
Dennis K. Bideshi, Hyun-Woo Park,  
Bruce A. Prins

Cry2Aa, one of the major insecticidal proteins produced by *Bacillus thuringiensis* subsp. *kurstaki* HD1, is known to be active against both lepidopteran and dipteran larvae. In order to determine whether Cry2Aa could enhance or synergize the mosquitocidal activity of *B. thuringiensis* subsp. *israelensis*, we constructed a plasmid vector that harbored the cry2Aa operon and transformed crystalliferous and acrySTALLIFEROUS strains of this bacterium.

The wild-type *B. thuringiensis* subsp. *israelensis*, a recombinant *B. thuringiensis* subsp. *israelensis* producing Cry2A along with its native major mosquitoicidal proteins, and a recombinant *B. thuringiensis* subsp. *israelensis* producing Cry2Aa alone were tested against three major mosquito species – *Aedes aegypti*, *Anopheles gambiae*, and *Culex quinquefasciatus*.

Our results demonstrated that Cry2Aa does not synergize or enhance the mosquitoicidal activity of *B. thuringiensis* subsp. *israelensis* against these important vectors of disease.

### **Outlining a Physics-Faith Integration Curriculum**

**Bradley McCoy, Tim Heumier, and Chris Bassey**

Calls have been increasing for Christian universities to integrate faith into their curricula. To integrate faith, it is necessary to show how the study of a discipline is relevant to Christians and how Christian faith may reflect on the practice of the discipline. Physics is one of the more difficult disciplines in which to integrate faith.

We present four faith integration themes that have been adopted for development throughout the undergraduate physics curriculum at Azusa Pacific University, along with examples of course-specific topics and pedagogy recommendations.

### **Reformed Academic: A Denominational Blogging Experience**

**A. E. Sikkema, T. Jelsma, F. G. Oosterhoff, J. M. van der Meer**

Since April 2009, we have been running a blog which aims at an audience within a small conservative Reformed federation of churches in Canada. We had observed that membership, publications, and leadership within the denomination had slowly but markedly increased in their promotion of young earth creationism as a marker of Reformed Christian orthodoxy.

Before starting our blog, we attempted to demonstrate three things: the recent origins of “scientific creationism,” its

substantial scientific and theological problems, and our moderate denominational heritage of carefully nuanced views on related matters. But faced with censorship in the church papers, we proceeded to publish electronically.

We developed a collaborative approach, with full vetting of our own writings and responses as well as active comment moderation. We have been received with confidential words of encouragement and moderate appreciation, but also with concern and opposition. Still our goal remains to (re)create space for our views within the denominational conversation, but perhaps more importantly, among the students in our fellowship.

Our presentation seeks to engender a conversation about the perils and pitfalls of denominational blogging, with a view to developing best practices amid such challenges and opportunities.

### **Scientists as Members of the Body of Christ: Expanding the Scope of Adult Discipleship**

**Sara Sybesma Tolsma**

As the impacts of science proliferate, Christians are increasingly perceived as “anti-science.” Christians who reject evolutionary theory, climate change science, and genetic technologies among other issues too often come to these positions because of a lack of understanding or misunderstanding of the science that underlies the issues. Misunderstandings lead to a generalized mistrust of science and scientists.

Scientists, particularly scientists who are Christians, bear a portion of the responsibility for this lack of trust. As members of the body of Christ, scientists should actively work to make scientific understanding accessible to their fellow Christians. In doing so, they can repair some of the damage done when non-Christians communicate about science with Christians, which too often lacks sensitivity in tone, language, and understanding of the perspectives of people of faith.

An average Christian church member, pastor, or Sunday school teacher lacks the time to learn about complex scientific issues on their own. If they have the time, most lack the scientific, philo-

sophical or theological foundation necessary to tackle most of the resources that are available. Too many available resources are written to those who already have a scientific, philosophical and/or theological background.

The project, Genetic Technologies: Christians Learning and Dialoging Together, presented in this poster, models a way scientists can provide churches with something different. Genetic Technologies provides clear, understandable educational materials for adult discipleship groups around the issues of genetic technologies. It seeks first to provide a solid foundation of science which can then lead to meaningful dialogue around each topic.

Although this model focuses on genetic technologies, it could be applied to other scientific topics that cause controversy, mistrust, or conflict in the church. Written by a scientist, a foundational scientific knowledge base is a primary focus of each chapter or section. A DVD with presentations on each topic in which the science necessary to understand the genetic technologies is explained plus an introductory presentation on basic genetics and DNA circumvents the need for a leader with an extraordinary scientific background.

In addition to the science, theological and ethical arguments surrounding each issue are presented and discussion encouraged. Discipleship group participants will be required to do little outside of meeting time so the format is accessible to the busiest church member.

Ephesians 4:25 urges us to speak truthfully to our neighbors. Providing adult discipleship resources that help churches grapple with scientific issues that have deep theological implications is a way scientists can use their gifts to serve the body of Christ.

### **Ryanodine Receptor Expression in Fetal Pulmonary Arterial Myocytes**

**Edith Waskel, Monica Rubalcava, Britney Lombard, Lawrence D. Longo, and Sean M. Wilson**

Pulmonary hypertension in the newborn can have prenatal origins,

## POSTER SESSION

and exposure to chronic hypoxia while in the womb is a risk factor in the development of this disease. Chronic hypoxia is often due to high altitude living or to smoking. Research aimed toward understanding and treating pulmonary hypertension in the newborn includes discovering the cell signaling pathways that regulate the development of this disease. Specifically, the study of ryanodine receptors in fetal pulmonary arterial myocytes has illuminated a calcium pathway that is important to vessel dilation at birth and to vessel contraction once the vessels mature.

Based on our functional data, we hypothesize that receptor expression is reduced by chronic hypoxia in the

fetus, which compromises lung function at birth, and that receptor expression rebounds in the newborn, which further promotes development of pulmonary hypertension.

This pilot study concentrates on developing a technique to quantify the expression of ryanodine receptors in cells so that we can answer the hypothesis. This study was achieved by performing two techniques. We performed live multicolor imaging of living pulmonary arterial myocytes and localized cellular organelles. We also performed immunohistochemistry to show colocalization of actin and ryanodine. In the future, we will perform immunohistochemistry studies to compare the relative propor-

tion of ryanodine receptor within fetal, newborn, and adult smooth muscle cells and to determine the impact of chronic hypoxia on their expression. HHMI52006309, NIH P20MD001632 (BL), NSF MRI 0923559 (SMW), NIH P01HD031226, R01HD003807 (LDL), R03HD069746.

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# ***ASA Business Meeting Agenda***

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*Sunday, 22 July 2012, 6:45 PM, Crill Performance Hall*

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| 1. Call to order and opening prayer             | Robert Kaita |
| 2. Introduction of staff                        | Randy Isaac  |
| 3. Next year's meeting                          | Robert Kaita |
| 4. Introduction of newly elected Fellows        | Randy Isaac  |
| 5. Recognition of fifty years of ASA Membership | Randy Isaac  |
| 6. Remembrances                                 | Randy Isaac  |
| 7. Secretary/Treasurer Report                   | Keith Miller |
| 8. State of the ASA                             | Randy Isaac  |
| 9. Offering for the ASA                         | Robert Kaita |
| 10. President's comments                        | Robert Kaita |
| 11. Closing Prayer                              | Robert Kaita |

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