

ALASKA, AUGUST 24 – SEPTEMBER 7, 2014



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Absorb Alaska's unabashed outdoorsy spirit on a sweeping journey along the road less traveled. Sail into a state of Native cultures, Gold Rush history, and rich, diverse habitats.

Bathed by the midnight sun, surrounded by purple mountain majesty, contemplate gender and the brain. Capture the latest in particle physics at CERN. Study storm formation and extreme weather. Explore research in space and life on Mars. On the way, glimpse bears on the beach and whales in the waves. Share glacier-watching and hot cocoa with a friend. Exercise your interest in science on an unforgettable visit to the peoples and landscapes of Alaska.



Cruise prices vary from \$2,499 for an Interior State-room to \$7,799 for a Neptune Suite, per person (pp) based on double occupancy. For those attending our Program, there is a \$1,575 fee. Add'l. pp fees: gov't. taxes and fees (\$399) and gratuities (\$11.50 per day). The Program, cruise pricing, and options are subject to change. For more information email us at [Concierge@InsightCruises.com](mailto:Concierge@InsightCruises.com).



### Brain Science

Speaker: Larry Cahill, Ph.D.

#### Brains "R" Us

How do we work? What makes us tick? For much (but not all) of human history people looked to the gooey, grey organ between your ears for answers. Learn how our perception of the brain has evolved and how some of our most "modern" ideas about the brain aren't very modern at all.

#### Sex on the Brain

Overwhelmingly, brain science has ignored gender differences with findings in males assumed to apply equally to females. But it turns out that "sex matters" down to the level of single neurons, even to parts of neurons. Find out why there are entrenched biases against sex difference research in brain science, and why they are, finally, crumbling.

#### Emotional Memory

What makes the brain a brain (and not a spleen or a pancreas or a lung) is memory, and emotion is arguably the primary sculptor

of memory. Studies of emotional memory consequently lie at the heart of brain science. Explore the most dominant theories of emotional memory, and discover how sex matters (yet again) to these theories.

#### When Brains Fail

The brain is the single most complicated system in the known universe. When human brains fail, they can fail spectacularly, sometimes failing in fascinating ways that challenge some of our most elementary assumptions about who we are. What have we learned about the human brain from studying brain disease? Find out with Dr. Cahill.



### Planets

Speaker: David Stevenson, Ph.D.

#### Planetary Diversity

The Kepler spacecraft has found hundreds of planets and thousands of additional candidates. Exploration of our solar system leads to a view of planets that emphasizes diversity rather than similarity. With so many planets out there, yes, some must be like Earth, but are the most exciting prospects for planets and life forms very different from our home? Absorb the possibilities.

#### Origin of Earth & Moon

Four and a half billion years ago our own solar system developed from a disk of gas and dust. Get our current understanding of this process and how Earth emerged with the Moon, an atmosphere, oceans, a magnetic field, and conditions for life. Explore how the nature of Earth is inextricably linked to the existence of our satellite companion.



## Ice Worlds

There is more ice and liquid than rock in our solar system, including some exotic stuff: hot, dense soups of protons and oxygen ions deep under planetary surfaces; rivers and lakes of liquid hydrocarbons, and ice geysers. Find out the details as we explore the structure and dynamics of the large satellites and Pluto.

## Jupiter!

Our solar system's largest planet, Jupiter, likely influenced Earth's formation and so is a key to understanding Earth. Delve into Jupiter's internal properties and interior structure, and family of satellites. Get an insider's scoop on the billion dollar Juno mission arriving at Jupiter in July 2016 and learn about Dr. Stevenson's Juno role studying Jupiter's gravity and magnetic fields.



## Weather

Speaker: Robert G. Fovell, Ph.D.

### How and Why Clouds Form

Clouds are key in the planetary energy balance and water cycle. Historically, they have signaled atmospheric processes to observers. Learn about clouds' characteristics, formation, and function, with details on precipitation, ice, and lightning. We'll look at clouds from all sides, identifying the many ways clouds are essential to Earth and the atmosphere.

### How and Why the Winds Blow

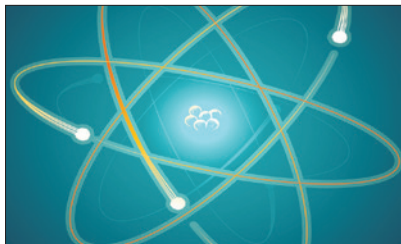
Delve into the role, causes and features of this invisible phenomenon. We'll look at the basics of atmospheric circulation and the complex interactions within the atmosphere that create wind. Learn about local winds (sea breezes), large-scale ones (fronts and cyclones) and legendary severe winds associated with mountains. Hone your knowledge of wind and its impacts.

### Severe Storms

Storms impact our wellbeing, homes, cities, and economies. Learn about the causes, formation, and lifecycle of severe storms. Look at supercell thunderstorms and tornadoes, and the role of moisture and vertical wind shear in storms. From squall-lines, bow echoes, and flash flooding to hurricanes, get the latest need-to-know information on these forces of nature.

### Understanding Extreme Weather

Synthesizing our knowledge from the three previous sessions, we'll apply these concepts to examples of extreme weather events from the recent past: 2013's devastating Colorado floods. The 2013 Oklahoma tornadoes. 2012's Hurricane Sandy. 1993's epic East Coast Snowstorm. 1991's "Perfect Storm."



## Particle Physics

Speaker: James Gillies, Ph.D.

### Hunting the Higgs Boson

Particle physics is the study of the smallest indivisible pieces of matter and the forces that act between them. Learn about the particle accelerators, detectors and computing that make this research possible at the Large Hadron Collider, and how hundreds of physicists teamed to hunt the long-sought Higgs boson.

### Life after Higgs: What's Next?

Physicists at the Large Hadron Collider announced in 2012 they'd found a Higgs boson. But not *the* Higgs boson. What's the difference? Learn what the particular properties of the recently discovered particle could tell us about the nature of the universe, and why physicists don't know yet which Higgs boson they've found.

### 60 Years of Science for Peace

Sixty years ago, the idea of CERN, the European particle physics laboratory, was born. Hear the interwoven scientific and political stories of CERN's development and how particle physics has evolved from a regional to a global field, with the Large Hadron Collider as its frontier research tool.

### Celebrating 25 years of the World Wide Web

"Vague, but exciting," were the words scrawled on Tim Berners-Lee's 1989 proposal for what became the World Wide Web. Hear the story of the Web's birth based on archival material and interviews with the major players, and learn how developments in physics and computing paralleled the development of the Web itself.



## Astrobiology

Speaker: Peter Smith, Ph.D.

### NASA's OSIRIS-Rex Mission

Learn about NASA's planned OSIRIS-REx mission to rendezvous with an asteroid and chip away samples to return home. Its target, the carbon-rich asteroid Bennu, should offer a peak at the types of organic materials and primitive minerals that existed on Earth when life was first forming.

### The Earliest Life on Earth

Delve into the field of astrobiology, which investigates the origin of life on Earth and elsewhere. We'll probe the big questions: Was Earth seeded with life from space? Why is the backbone structure of DNA rarely found in nature? And what did the first microbes eat?

### Life on Mars: What Do We Know?

Since the Viking missions of 1976, scientists have searched Mars for signs of life. From evidence of past water to questions of volcanism and methane gas, learn about the many signals that could tell us whether the Red Planet does, or ever did, host life.

### Could Life Exist on Europa, Enceladus or Titan?

Some of the most intriguing potential sites for life in our solar system exist not on planets, but on moons with buried liquid oceans and lakes of methane and ethane full of organic materials. Learn why scientists are so interested in Saturn's moons Enceladus and Titan and Jupiter's moon Europa.

## SCIENTIFIC AMERICAN Travel HIGHLIGHTS TOUR OF THE MUSEUM OF FLIGHT & BOEING



### Pre-Cruise Full-Day Tour, August 23rd.

If you love vapor trails in the wild blue yonder and the thrill of takeoff, indulge in a day at the Future of Flight Aviation Center & Boeing Tour in Everett, Washington and the Museum of Flight at legendary Boeing Field, Seattle.

Take a 90-minute tour of Boeing's plant, getting a bird's-eye view of the new 787 Dreamliner being assembled. Get the big picture of aviation in the the Museum of Flight, from biplanes to jets. Please join us!