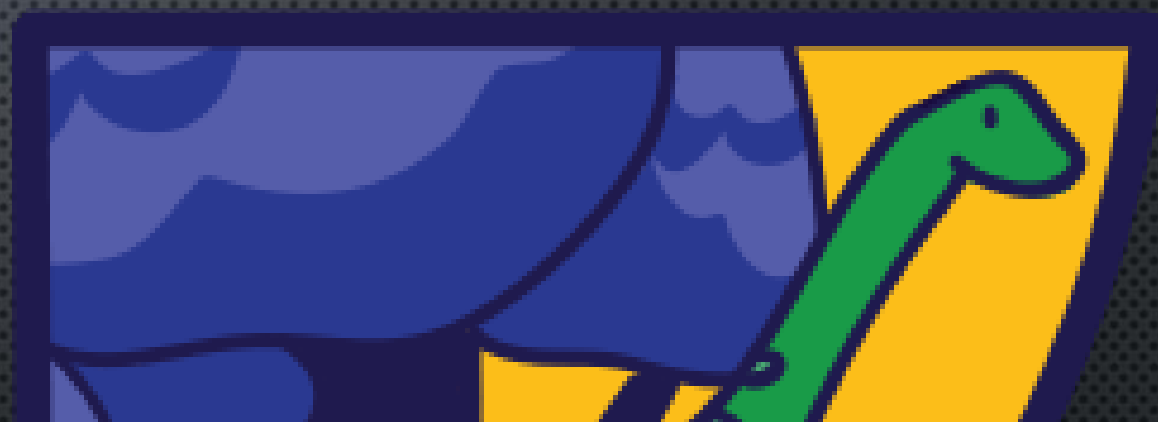




SCIENCE CIRCLE


$$E=mc^2$$



2019

A RETROSPECTIVE



Presentations	27
Panels	9
Excursions	9
Published on YouTube	41
Hypothesis articles	14
Concerts	3
Darwin Day events	1
Science Fair Stalls	12
VWBPE Ambassadors	5

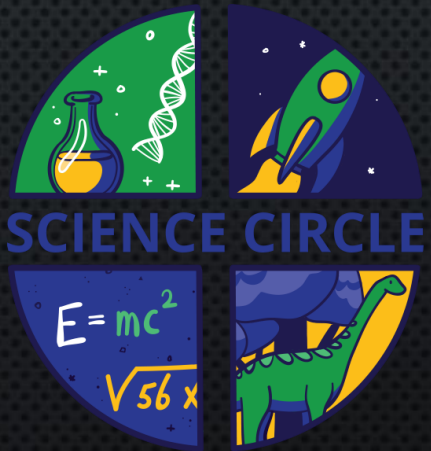
Special thanks to [Jes Stannard](#), [Earl Kiech](#) and [Matthew Burr](#) for their continuous presence and support with activities.

Hereby we also need to mention [Agustin Martin](#), the producer of our film recordings and [Mike Shaw](#) for offering Zoom on a weekly base.

Without the five of you, the [continuity and quality](#) could not be guaranteed.



	Alex Hastings	Earl Kiech	Giuseppe Longo	Greg Perrier	Hajime Nishimura	James Woods	Keith Eric Grant
Presentation			2				1
Panel	1						2
Science Fair		X		X		X	
Excursion				1	3		
VWBPE							
Concert		3					
Darwin Day							

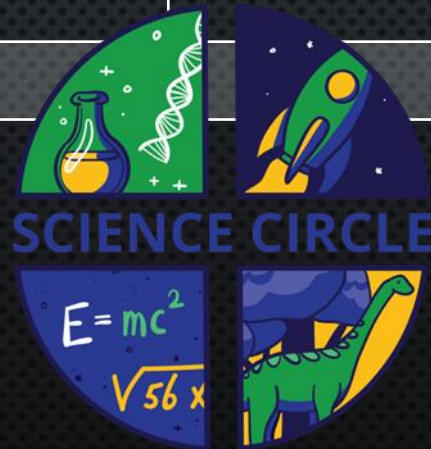


Activity of SC Professors



Activity of SC Professors

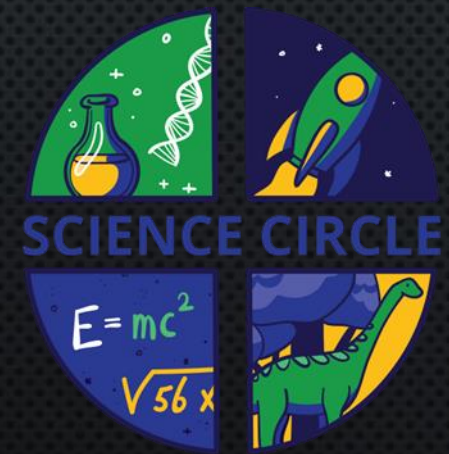
	Linda Morris Kelley	Lynne Berrett	Marie Vans	Matthew Burr	Mike Shaw	Nikolai Mnev	Phil Youngblood
Presentation	1			1	2		2
Panel	1			9	3	1	4
Science Fair	X			X	X		X
Excursion	1	1	1				
VWBPE				X	X		X
Concert							
Darwin Day							





	Rob Knop	Robert Brown	Robert Hendrix	Stephen Gasior	Steven Van Hook	William Schmachtenberg	William Wall
Presentation	2	2	4	2	2	1	1
Panel	1		1	2			4
Science Fair	X	X		X	X	X	
Excursion						1	
VWBPE				X			
Concert							
Darwin Day				X			

Activity of SC Professors



Right Before Darwin

Georges Cuvier (1769 - 1832)

- Cuvier's Principle of Correlation of Parts
 - The characters of an animal are interrelated
 - The important essentials of some traits can tell you more about the rest of the animal's characters: teeth!
 - Distinguished homology (identity of parts by descent) versus analogy by what's now called convergent evolution (similarity of parts for functionality: wings!)



Cuvier categorized into four embranchments and argued against steady increase in complexity
vertebrates-mollusks-articulates-radiates



“What is Entropy?”

Rob Knop

“Optics for Photographers”

Robert Lawson Brown

“Ultra Deep Science Drill Ship”

Hajime Nishimura

Panel
Climate Change

Matthew Burr
Keith Eric Grant, Phil Youngblood & William Wall

JANUARY

In 1906, Dr. Alois Alzheimer noticed changes in the brain tissue of a woman who had died of an unusual mental illness:

symptoms included:
memory loss,
language problems
unpredictable behaviour.

PLAQUES & TANGLES on autopsy with microscopic exam:
abnormal clumps (beta-amyloid plaques)
tangled bundles of fibers (NFT):
(neurofibrillary, or tau-tangles)

Another feature = **LOSS OF SYNAPTIC CONNECTIONS**
between nerve cells (neurons) in the brain
with eventual cell death (& atrophy = loss of brain volume)

NATIONAL INSTITUTE ON AGING

ALZHEIMER'S DISEASE FACT SHEET

<https://www.nia.nih.gov/health/alzheimers-disease-fact-sheet>



“Alien Exosociology”

Steven Van Hook

“Non-Alcoholic Fatty Liver Disease”

Robert Hendrix

“Darwin day: Heroes of Evolution”

Stephen Gasior

“Pigments, Colors & Dyes, Oh My!”

Mike Shaw

Panel
Cyber Security

Matthew Burr
Myron Curtis, Phil Youngblood & Sam Galus

FEBRUARY



“Color for Photographers”

Robert Lawson Brown

“Archival & Digital Legacy”

Budd Turner

“Lab Experiments in SL”

Kurt Winkelmann

“Human Papilloma Virus”

Robert Hendrix

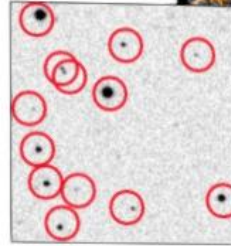
Panel
Animal Behavior

Matthew Burr
Linda Morris Kelley

MARCH

For each source and at each wavelength
we measure luminosity, shape, position,
etc.... →

$p = \{\text{isophotal, petrosian, aperture magnitudes, concentration indexes, shape parameters,}\}$



$$p^1 = \{RA^1, \delta^1, t, \{\lambda_1, \Delta\lambda_1, f_1^{1,1}, \Delta f_1^{1,1}, \dots, f_1^{1,m}, \Delta f_1^{1,m}\}, \dots, \{\lambda_n, \Delta\lambda_n, f_n^{1,1}, \Delta f_n^{1,1}, \dots, f_n^{1,m}, \Delta f_n^{1,m}\}\}$$

$$p^2 = \{RA^2, \delta^2, t, \{\lambda_1, \Delta\lambda_1, f_1^{2,1}, \Delta f_1^{2,1}, \dots, f_1^{2,m}, \Delta f_1^{2,m}\}, \dots, \{\lambda_n, \Delta\lambda_n, f_n^{2,1}, \Delta f_n^{2,1}, \dots, f_n^{2,m}, \Delta f_n^{2,m}\}\}$$

.....

$$p^N = \{RA^N, \delta^N, t, \{\lambda_1, \Delta\lambda_1, f_1^{N,1}, \Delta f_1^{N,1}, \dots, f_1^{N,m}, \Delta f_1^{N,m}\}, \dots\}$$

$$D = 3 + m \times n$$

patterns, trends, etc. need to be discovered among N data points in a High dimensionality space....

$$N > 10^9, D \gg 100$$

VWBPE
“Innovators in Global Science Education”

Mike Shaw, Phil Youngblood, Stephen Gasior,
Rob Knop & Matthew Burr

“Science of Science: Big Data”

Giuseppe Longo

“Top-Ten SC Podcasts”

Steven Van Hook

“Luna: The Earth’s Moon”

William Wall

Panel
Science Fiction

Matthew Burr
Myron Curtis, Robert Hendrix & William Wall

APRIL



“Precambrian-Cambrian boundary
Explosion II”

Shuhai Xiao

“First Image of a Supermassive Black Hole”

Rob Knop

“Birthday Concert Jes”

Earl Kiech

Panel
“What is the most Significant Unanswered
Question in your field?”

Matthew Burr
Alex Hastings, Mike Shaw & Stephen Gasior

MAY



The New Interactive
Brain

Lynne Berrett

Mars & Opportunity
Rover

Hajime Nishimura

Geology Museum

William Schmachtenberg

Chemistry Lab

Kurt Winkelmann

Coast & Waters of
Sub-Arctic

Linda Morris Kelley

Science Fair

Fumon, Phil Youngblood, Stephen Gasior,
James Woods, Robert Lawson Brown,
Linda Morris Kelley, Steven Van Hook,
William Schmachtenberg, Greg Perrier,
Deepthinker Oh, Mike Shaw, Rob Knop,
Earl Kiech & Matthew Burr

JUNE EXCURSIONS



1st SC Benefit Concert

Earl Kiech

“Late Ordovician Extinction”

William Schmachtenberg

“Explore Science in Second Life!”

Phil Youngblood

“The Face of Dementia”

Robert Hendrix

Panel
Unanswered Questions II

Matthew Burr
Nikolai Mnev, Rob Knop & William Wall

SEPTEMBER

Astronomer Carl Sagan (1934 – 1996)



- **Dr. Sagan** revised the Drake Equation and raised the estimate to a million alien worlds in the Milky Way Galaxy. Since the cosmos holds hundreds of millions of galaxies, by that analysis the total number of alien societies could be astronomical, one estimate putting the number at roughly 10 trillion.

(New York Times)



START



“Our place in the Universe”

Phil Youngblood

“Whales, Dolphins, Porpoises & Us”

Linda Morris Kelley

“Evolutionary Theory before Darwin”

Stephen Gasior

“This isn’t Your Grandparents’ Climate”

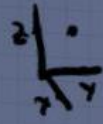
Keith Eric Grant



Panel
Science Books for a Popular Audience

Matthew Burr
Mike Shaw, Stephen Gasior, Phil Youngblood
& Keith Eric Grant

OCTOBER

In 1877 Georg Cantor crushed Aristotle
argument: 1-1 correspondance
between interval



and , ,
etc "space".

he wrote to Dedekind

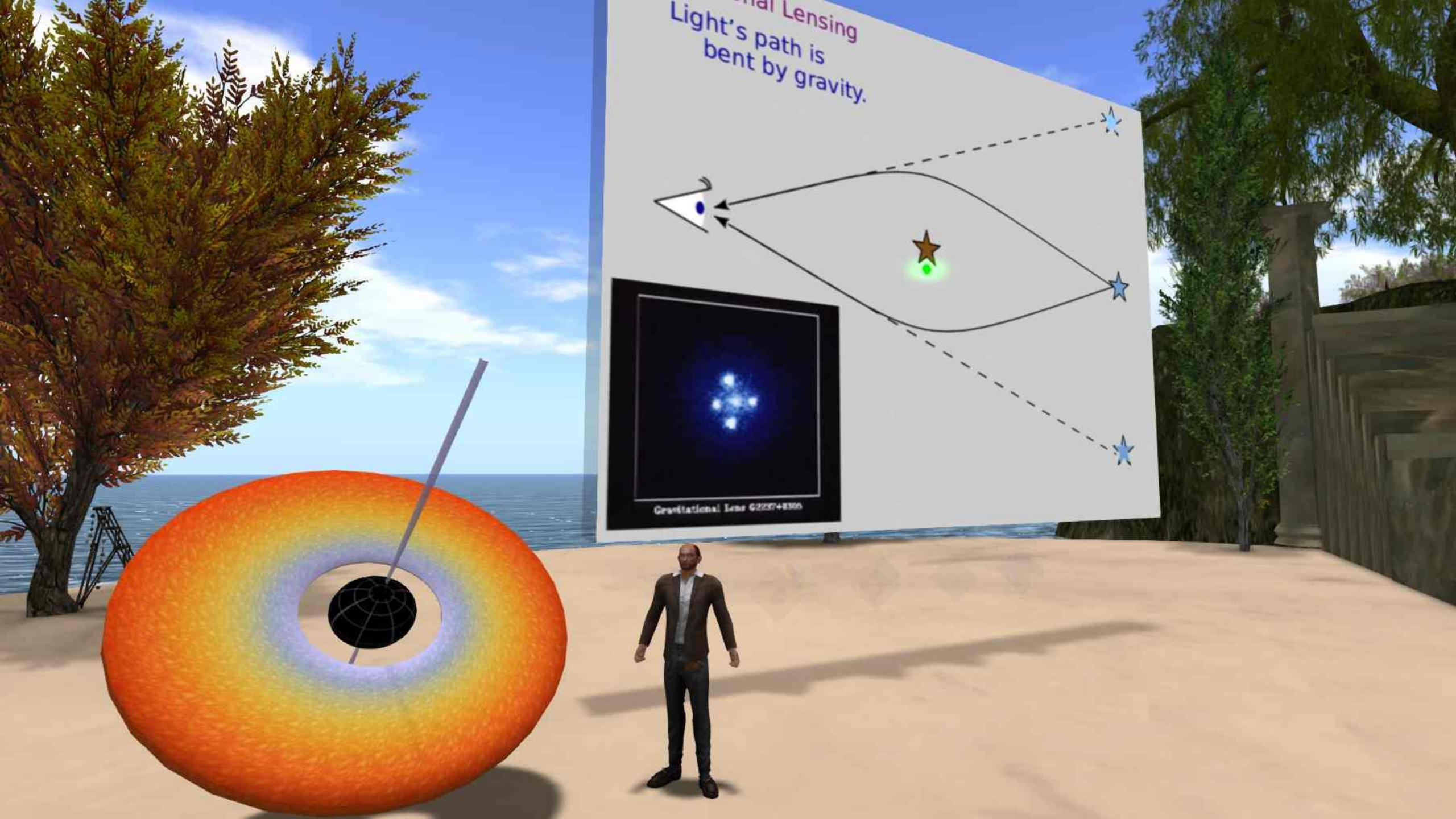
"I see it but i don't believe it"

Physical "space" lost dimension

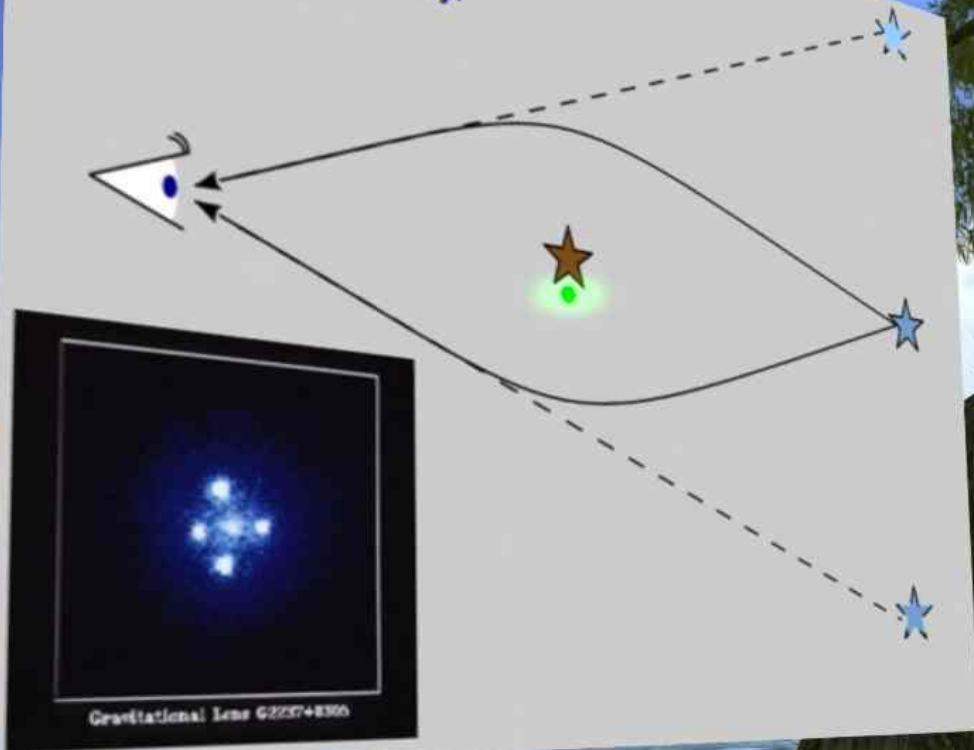


"History of Antibiotic"	Robert Hendrix
"How Data Science is shaping the Future"	Giuseppe Longo
"Green & Purple: Bioprocesses that use Light"	Mike Shaw
"Movies about Science"	Matthew Burr

NOVEMBER



Gravitational Lensing
Light's path is bent by gravity.



Gravitational Lens G22374830

2nd SC Benefit Concert

Earl Kiech

Climate Change Portal

Hajime Nishimura

NOVA, Northern Virginia
Community College

Greg Perrier

The Charles Dickens
Project

Marie Vans

Panel
Audience Questions

Matthew Burr
William Wall, Mike Shaw &
Phil Youngblood

DECEMBER EXCURSIONS



Click this banner to receive details on how to donate!

SC Benefit Concert

Top 5 Audience between September & December

Audience	Presentation/Panel	Speaker
34	Evolutionary Theory Before Darwin	Stephen Gasior
30	This isn't Your Grandparents' Climate	Keith Eric Grant
28	Panel Science Books for a Popular Audience	Matthew Burr Mike Shaw, Stephen Gasior, Phil Youngblood & Keith Eric Grant
27	Panel Unanswered Questions II	Matthew Burr Nikolai Mnev, Rob Knop & William Wall
27	History of Antibiotic	Robert Hendrix
26	Dementia	Robert Hendrix



Top 10 YouTubes 2019 Events

Title	Speaker	Views
Precambrian Cambrian Explosion	Shuhai Xiao	77
Panel Unanswered Questions I	Matthew Burr Alex Hastings, Mike Shaw & Stephen Gasior	72
Panel Climate Change	Matthew Burr Keith Eric Grant, Phil Youngblood & William Wall	65
Panel Unanswered Questions II	Matthew Burr Nikolai Mnev, Rob Knop & William Wall	61
Pigments & Colors & Dyes, Oh My!	Mike Shaw	53
Evolutionary Theory Before Darwin	Stephen Gasior	51
VWBPE Innovators in Global Science Education	Matthew Burr Mike Shaw, Phil Youngblood, Stephen Gasior & Rob Knop	44
Science of Science: Big Data	Giuseppe Longo	39
Panel Science Books for a Popular Audience	Matthew Burr Mike Shaw, Stephen Gasior, Phil Youngblood & Keith Eric Grant	35
Panel Animal Behavior	Matthew Burr Linda Morris Kelley	34



Red Oak

Red Cedar

White Oak

Right click and select touch
for Activity Handout

STATION 11
FOREST
ECOLOGY
West Side

Top 5 YouTube's All Time

Speaker	Title	Views
Rob Knop	Stephen Hawking's Last Paper	399
Mary Anne Clark	Mitochondrial Eve	330
Matthew Burr Phil Youngblood & William Wall	Panel The Fermi Paradox	328
Rob Knop	Two Colliding Neutron Stars	319
Rob Knop	Sterile Neutrinos	282

A large, dark, irregularly shaped stone monument with a circular hole in the center. An owl is perched on the top edge. The stone is set against a backdrop of tall, thin trees and a twilight sky with soft, out-of-focus lights.

PETER LUNDQUIST
FATHER OF THE YEAR

1952 - 2015

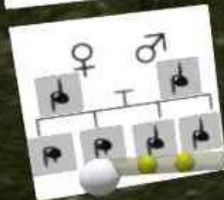
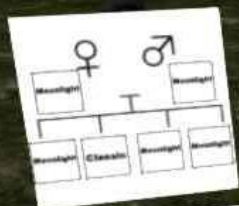
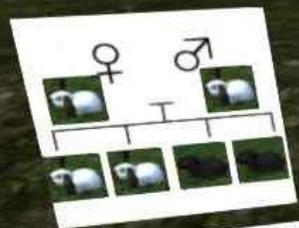
A tall, dark, irregularly shaped stone monument. A small plant with purple flowers is growing from the top right. The stone is set against a backdrop of tall, thin trees and a twilight sky with soft, out-of-focus lights.

PAUL DOHERTY
FATHER OF THE YEAR

1948 - 2017

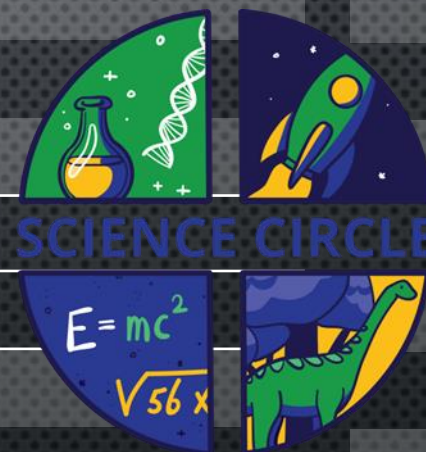
Author	Title	Downloads
Mary Anne Clark	Mitochondrial Eve	109
Transcript Discussion	Are we able to return to Green Living	97
Steven Van Hook	Global Learning	93
Deepthinker Oh	The Black Swan	91
Phil Youngblood	An Hour of Code	86

Top 5 PDF Downloads Website



THE
OF
SOME
CASE

Readers	Hypothesis by Deepthinker Oh	Most Valued
120	A New Beginning	
60	The Fascination of Science	
49	Philosophy and Science	
58	Islands in Our Mind	
27	No More Punched Cards	
37	When the Earth Was Flat	
43	The Cracks in Time	1 st
171	Staring into the Abyss	2 nd
35	Music to Soothe the Savage Scientist	
44	Return to the Abyss	
39	Things That Go Bump in the Night	
56	Super Girl and the Invisible Books	2 nd
-	Black Swans: Swimming Again	1 st
-	The Trees Are Alive With the Sound of Numbers	



explO ratorium



2019 LIVE STREAM
**Live Coverage of
the Eclipse**
July 2, 2019, 1:00 p.m. PDT

explO ratorium

explO ratorium

Financial Support

Agustin Martin

David Rayers

Dox Doxiadis

Edgar Altamirano

Mike Shaw

Robert Brown

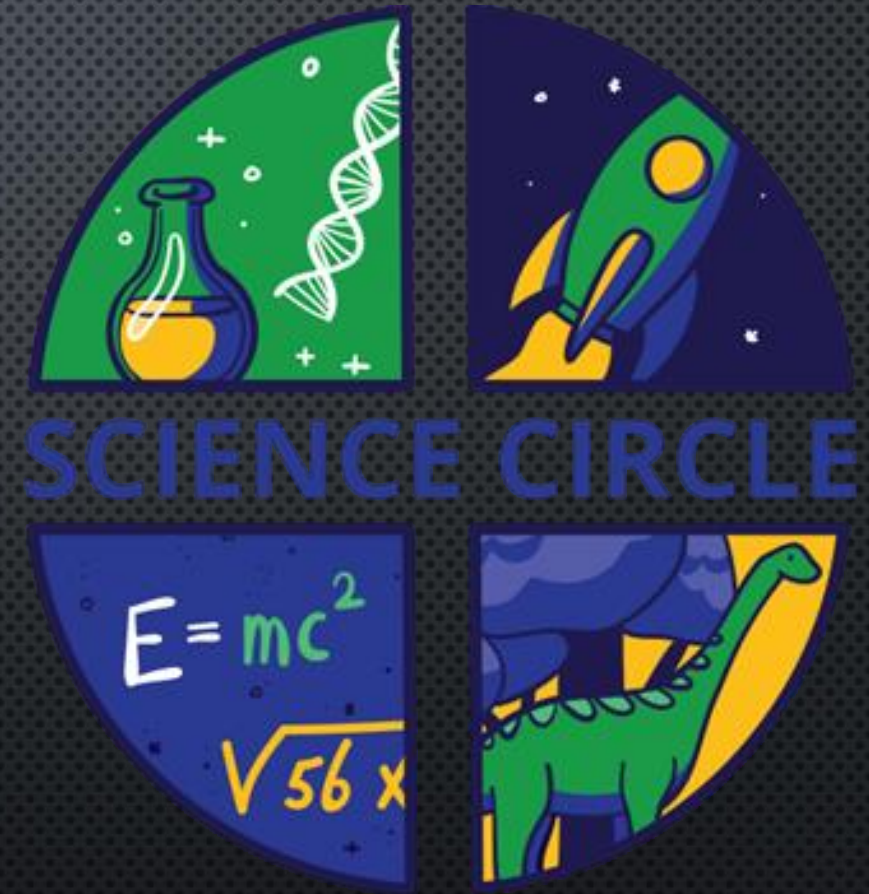
Robert Hendrix

Sarah Doxiadis

Stephen Gasior

Steven Van Hook

William Schmachtenberg







The Science Circle is pleased to announce that board member **Dr. Mike J. Shaw**, with the Chemistry Department at Southern Illinois University Edwardsville and his collaborator Dr. George Richter Addo at the Department of Chemistry and Biochemistry at the University of Oklahoma, **recently received a grant from the U.S. National Science Foundation** to study the chemical reactivity and redox behavior of heme-nitrogen dioxide derivatives (CHE-1900181).



NSF evaluates proposals based on two criteria: Intellectual merit and broader impacts.

The broader impacts of this work includes finding avenues to communicate the results, and science in general to the public at large. Recent research indicates that individuals who are differently abled make up a large minority of **Second Life users**. Second Life represents an avenue for science outreach to a hard-to-reach underrepresented group. **The Science Circle** is pleased to work with Drs. Shaw and Richter-Addo to facilitate in-world presentations and demonstrations of aspects of the proposed research. **The grant will help to support ongoing activities in the Science Circle sim over the next three years.**



What is your dearest memory with us in 2019? And Comments

Our first SC concert in May :)

Congratulations for first NSF fund!

Climate Change subjects

Being with you.

Interviewing Ari for the article about his music

I really enjoy all of the talks!

Our Community & Commitment

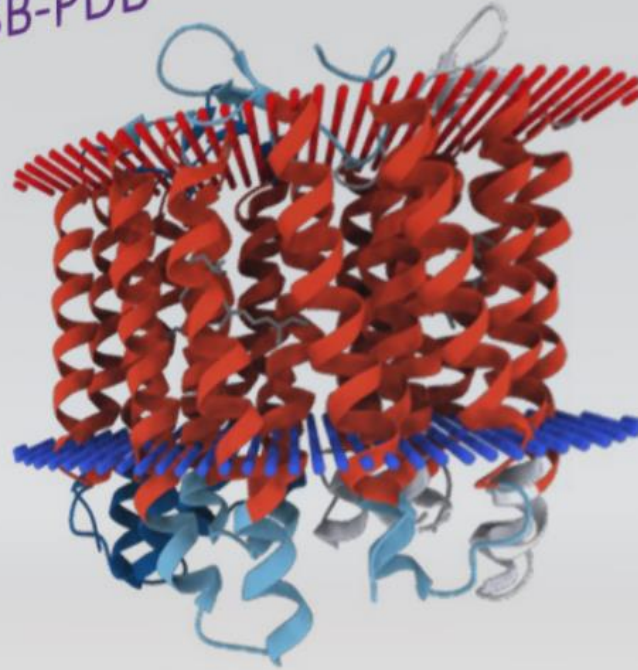
I hope your continuous support in the new year!

Chan! It was a fun year.

All working together to make SC a success!

Structure 1FBB from RCSB-PDB

- Research Collaboratory for Structural Bioinformatics Protein DataBase
- 1FBB is a Rhodopsin structure from *Halobacterium salinarum*
- See structure model here at Science Circle
 - Clusters together as trimers across cell membrane



<https://www.rcsb.org/structure/1fbb>

9

Most appreciated presentations, via a short survey

Title	Speaker	Ranked
What is Entropy?	Rob Knop	1 st
Explore Science in Second Life	Phil Youngblood	1 st
History of Antibiotic	Robert Hendrix	1 st
First Image of a Supermassive Black Hole	Rob Knop	2 nd
Our Place in the Universe	Phil Youngblood	2 nd
Whales, Dolphins, Porpoises & Us	Linda Morris Kelley	2 nd
This Isn't your Grandparents' Climate	Keith Eric Grant	2 nd



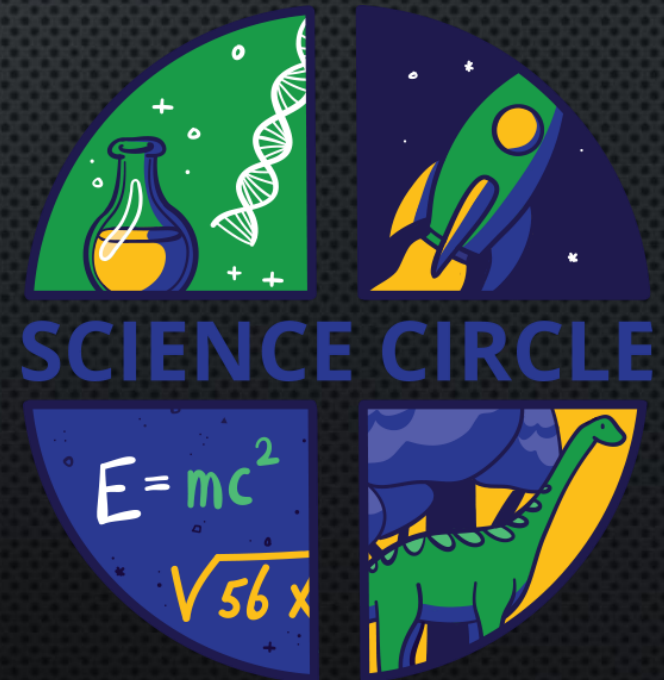
Favorite Panel topics of our members, via a short survey

Climate Change

Matthew Burr

Keith Eric Grant, Phil Youngblood & William Wall

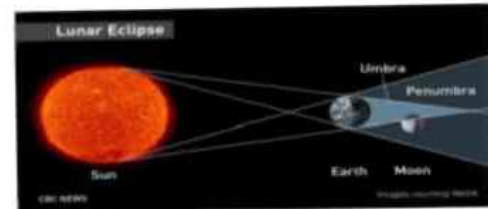
Saturday, January 26th



Motivations:

Why is the Moon Interesting?

- 1) Seasons, tides, eclipses (solar and lunar), occultations, navigation.
- 2) A base for exploration, for scientific experiments, for settlements.
- 3) To understand the formation and structure of the Earth better.
Understand the past and future of the Earth.
- 4) Inspiration: scientific, explorational, romantic, literary, artistic, religious.



<https://aputniknews.com/science/2018/12/11/070300348-russia-moon-base-lunar-exploration/>



The excursions that have left the deepest impression

Excursion	Guide	Ranked
Coast & Waters of Sub-Arctic	Linda Morris Kelley	1 st
The New Interactive Brain	Lynne Berrett	2 nd
Climate Change Portal	Hajime Nishimura	3 rd



New Developments

Open board meetings

Last Monday of the month at 7 AM PST

Hosts / Hostesses

At all SC activities

Benefit Concerts by Earl Kiech

Quarterly on the 1st Sunday

Hypothesis by Deepthinker Oh

The 1st and 15th of each month

Science Fair

Last Saturday of June

Language Ambassadors

French, Spanish, Finnish, Japanese & Swiss-German

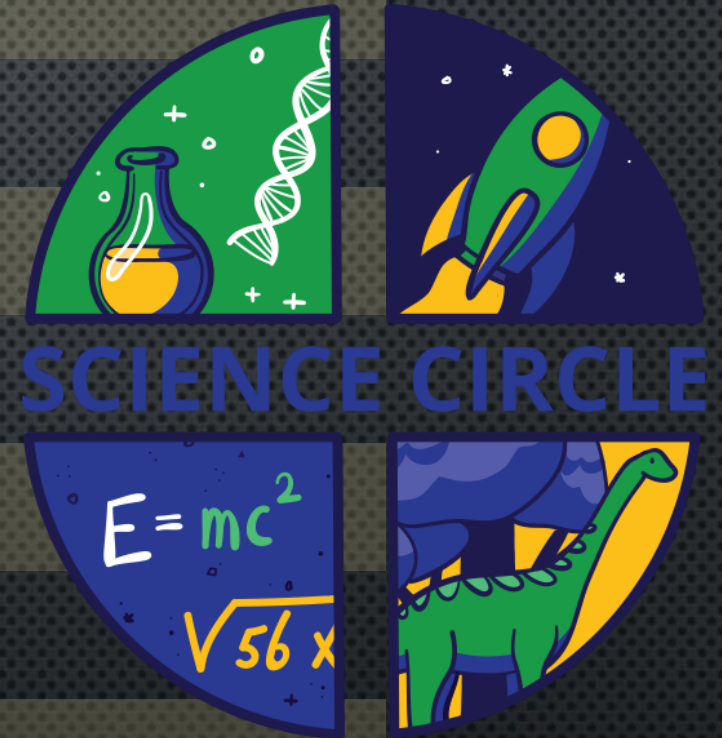
Spanish FB page by Edgar Altamirano

Documentaries

2nd Tuesday every month

“Explore Science in Second Life!” by Phil Youngblood

Classes



Be Grateful for Natural Global Warming

- The Stefan-Boltzmann law states that a black-body emits energy proportional to the fourth power of its temperature.
- The effective radiating temperature of the Earth to balance the absorbed energy from the sun is -18°C . The actual pre-industrial annual and global mean temperature of the Earth's surface is $+15^{\circ}\text{C}$. That's a 33°C difference.
- The difference is due to the natural balances of carbon dioxide and methane in the atmosphere; CO_2 emitted by volcanoes and removed by weathering of rocks and carbonate sea-shells deposited on the ocean floors
- There's no physical reason to infer that the warming doesn't continue to increase with increasing CO_2 concentration.

005

My memories in SC:

My stage of familiarization with the activities of the SCF and perceive in which or which activities I could participate in the SCF next year 2020.

I have learned from the interaction with Phillip Youngblood, with his example and availability I understood what the SCF represents in the dissemination and teaching / learning of Science.

I am very grateful to Phillip, Chantal, Jes Stannard and the other SCF researchers for the support received, I think I could gradually participate in most of the SCF activities.

By Edgar Altamirano
SC Spanish Facebook publisher
Language Ambassador



Achievements on VW education are

Reconstruction of Motoko's Left eyes Art and Right eyes Art idea (Nov 2018)

<http://jogrid.net/abyss/pdf/Art/SC20181103ArtHistory3.pdf>

New exhibits at ISM: Space Shuttle Ride, Newton's Cannon, Stars and Galaxy Clusters and Hayabusa2, and under construction of Space Odyssey ride (Solar system tour)

Support Delia's Coastal Habitats exhibits at Farwell

TP Tour system in a region using LSL-Markdown language at ISM, Abyss and TSC

Improvement of inter-regions TelePortal at TSC

Open of the Climate Change Portal for ESD (Education for Sustainable Development) at Griffony

<http://jogrid.net/abyss/pdf/SC-trip20191207ClimateChangePortal.pdf>

Published "How to build Virtual Museums" (sorry in Japanese language only)

<https://docs.google.com/document/d/1zB8XLKPKy2kreJvayxwBDPB2lQBUPE2ls6hue1mjx9o/edit?usp=sharing>

Remote classrooms with RL science museum in Japan, Sci-Pia

<http://jogrid.net/abyss/Sci-Pia.htm>

Collaboration with Japanese "Science On a Sphere" community (provide mp4 data of NOAA)

<https://www.youtube.com/playlist?list=PLbzA3qdA8L1XQ5VwGWAJcUx31i3vCjmDo>

Hajime Nishimura