

Arrowhead and Microbial Genomics

September 15, 2024

Lake Arrowhead Microbial Genomes Meeting
#LAMG2024

Jonathan A. Eisen
University of California, Davis

@phylogenomics.bsky.social

What is LAMG About?

<http://lamg.info>

MEETING SUMMARY

This conference is part of a yearly meeting initiated in 1991 to bring together genome sequencers, bioinformatics specialists, biologists, and geneticists, to forge interactions that would result in meaningful functional genomics. The goal of the meeting is to translate the influx of new genome sequencing information into useful biological studies.

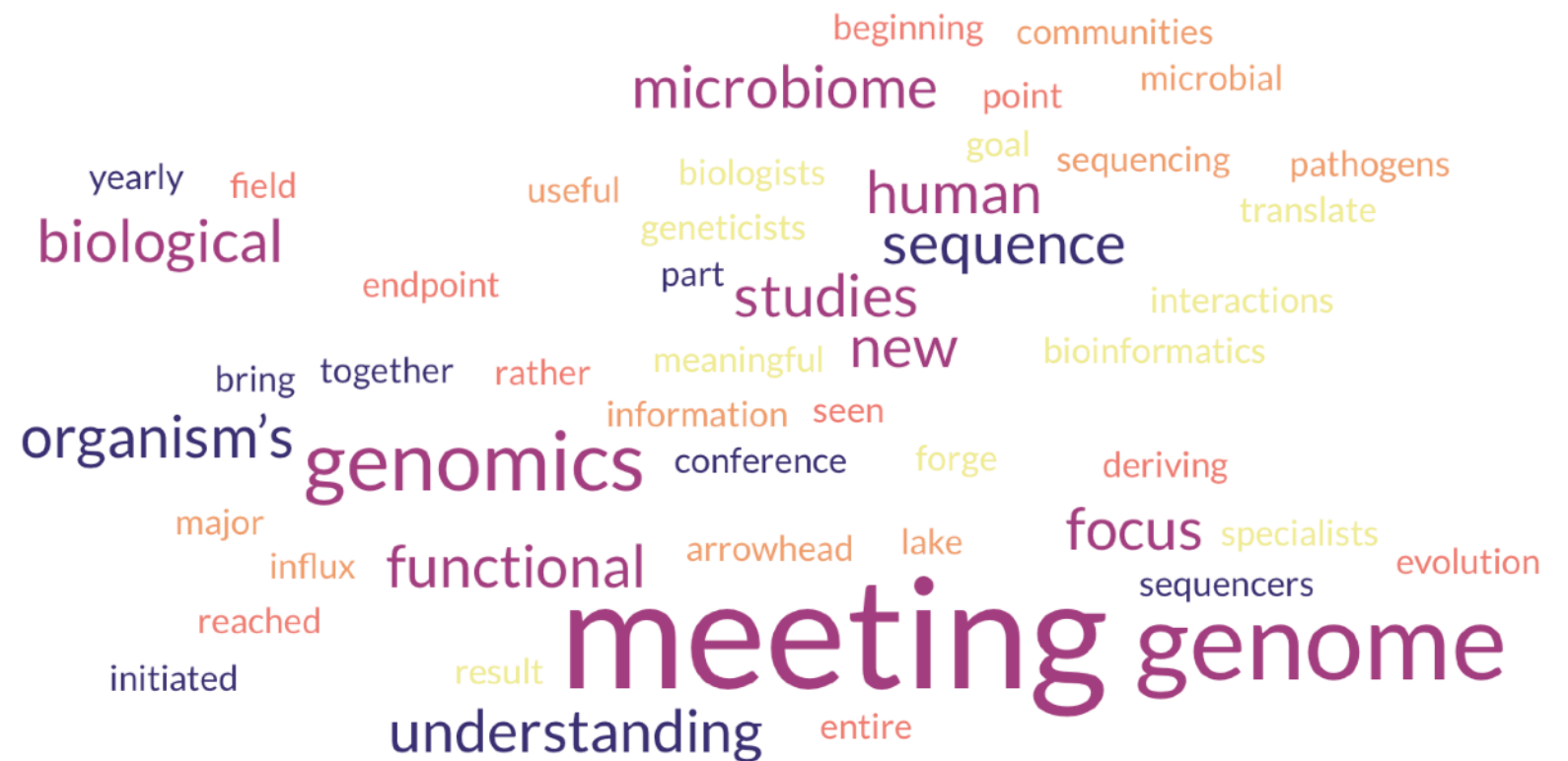
The Lake Arrowhead 2024 meeting will have a major focus on microbial communities, the human microbiome, pathogens, and genome evolution. The field of genomics has reached the point where deriving the sequence of an organism's entire genome is now seen as a beginning rather than an endpoint. The sequence itself is a powerful tool to guide further studies to achieve an understanding of the organism's biology. This understanding requires either a detailed genetic analysis, or more rapid methods for developing functional genomics.

Therefore, this year's meeting will cover microorganisms for which extensive analyses exist, and those for which new biological and technical strategies are being developed. The focus on biodiversity, the human microbiome, pathogenic organisms, and bioenergetics adds special significance to this meeting. This meeting is designed to have a mix of invited presentations and poster sessions, and it will have approximately 150 participants.



[f](#) [🐦](#) [📷](#)

September 15-19, 2024
Lake Arrowhead, CA

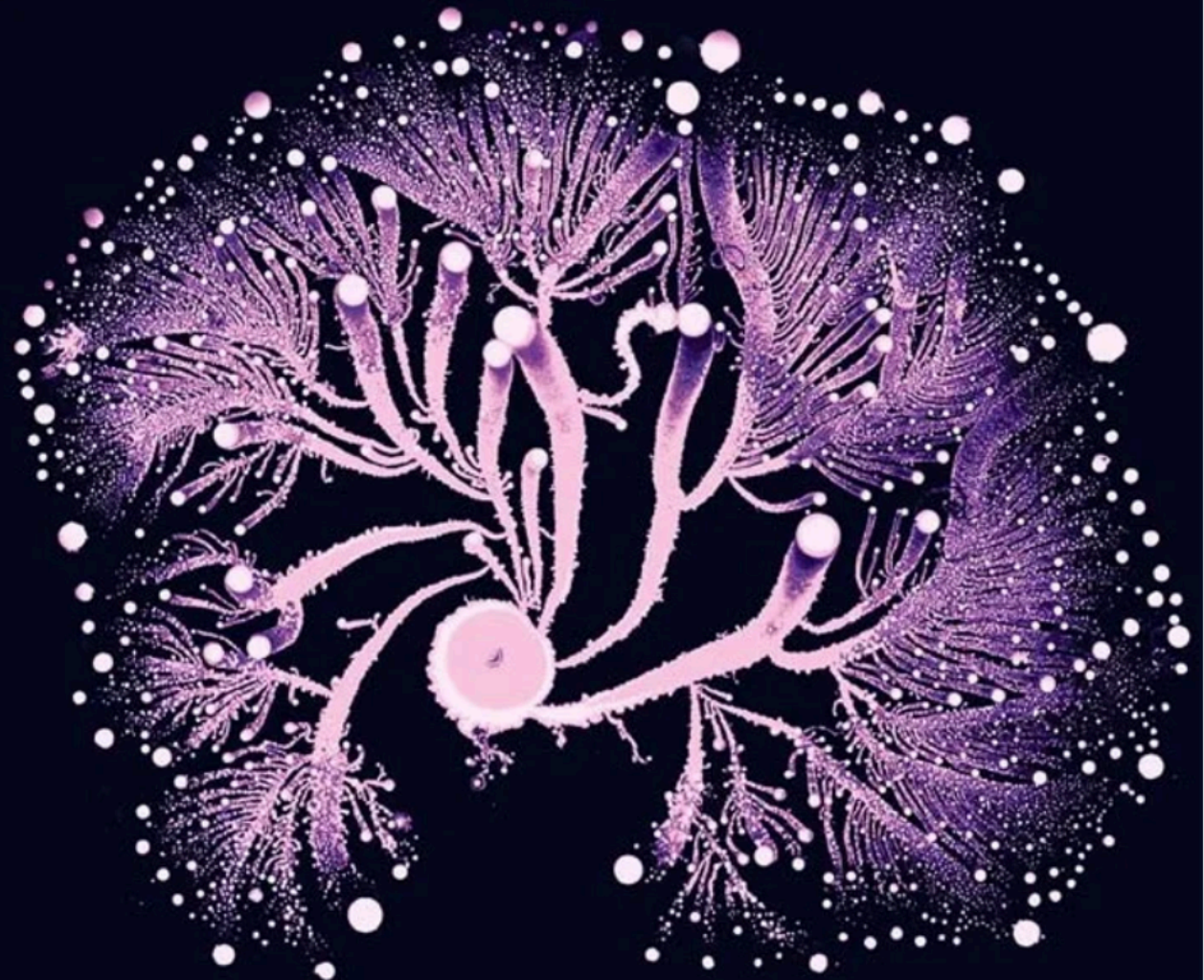


LAMG History



September 15-19, 2024
Lake Arrowhead, CA

MEETING HISTORY



LAMG History

This conference is part of a yearly meeting initiated in 1991 to bring together genome sequencers, bioinformatics specialists, biologists, and geneticists, to forge interactions that would result in meaningful functional genomics. The goal of the meeting is to translate the influx of new genome sequencing information into useful biological studies.

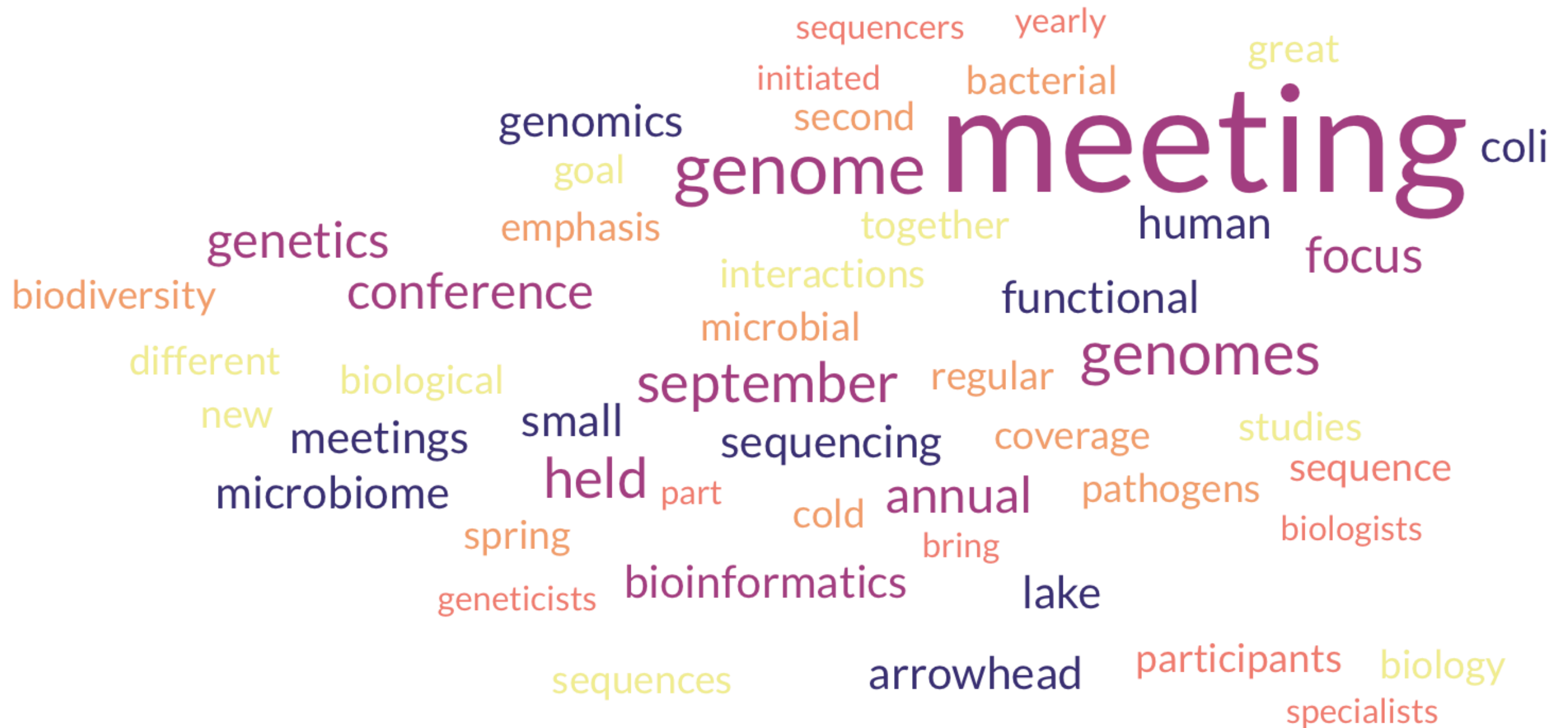
There is great excitement in molecular biology over the prospect of comparing the sequences and contents of an emerging set of genomes, and of learning how these sequences operate to control specific genomes on a global basis. Using both genetics and functional genomics will be the focus of many different laboratories. A key element of this meeting will be the integration of different aspects of microbiology, sequencing technology, analysis techniques, bioinformatics, and genetic studies. The goal of this conference is to provide a regular forum for these interactions to occur. While there have been a number of genome conferences, what distinguishes the LAMG is its emphasis on bringing together biology and genetics with sequencing and bioinformatics. Also, this conference is the longest continuing meeting, now established as a major regular annual meeting during the last 26 years. The 22nd meeting will take place at Lake Arrowhead, California, September 16–20, 2018. In addition to its coverage of small genomes, the meeting will also highlight genomes of pathogens, metagenomics and microbial biodiversity, the human microbiome, and bioenergetics.

The concept of an annual meeting on the *E. coli* genome was formulated at the Banbury Center in 1991. The first and second meetings were held at the University of Wisconsin on September 10–14, 1992 and September 9–13, 1993. The attendees at the second meeting recommended a third annual meeting, which was held on November 4–8, 1994 in Woods Hole, MA, to be followed in August 1995 with the Cold Spring Harbor-sponsored meeting on bacterial and phage genetics with emphasis on *E. coli*. This meeting coincided with the 50th anniversary of the Advanced Bacterial Genetics Course at Cold Spring Harbor. All three meetings were a great success, catalyzing an integrated approach to analyzing this genome.

The fourth Genome meeting was held on September 8–12, 1996, at Lake Arrowhead, CA, and continued the extension of the meeting content with participation of investigators who were working on or had completed the sequence of other small genomes. The fifth meeting was held in Snowbird, Utah, from October 12–15, 1997, which celebrated the completion of the *E. coli* sequence, and included reports of numerous complete microorganism genomes. The meeting also extended its coverage to functional genomics, as well as trying to define the proteome. The sixth meeting was held September 20–24, 1998 at Lake Arrowhead, as was re-named the "Small Genome Conference" to acknowledge the broadened focus of the meeting. The participants enthusiastically supported the organization of an annual meeting.

The meetings since have shifted focus to microbial communities, the human microbiome, pathogens, and genome evolution. This year's meeting will cover micro-organisms for which extensive analyses exist, and those for which new biological and technical strategies are being developed. The focus on biodiversity, the human microbiome, pathogenic organisms, and bioenergetics adds special significance to this meeting. This meeting is designed to have a mix of oral presentations and poster sessions, and it will have approximately 150 participants.

What is LAMG About?



LAMG History

THE TREE OF LIFE

Blog of Jonathan A. Eisen, Professor at U.C. Davis.

Sunday, September 11, 2022

Lake Arrowhead Microbial Genomics Meeting History

Making a page here with information on the history of the Lake Arrowhead Microbial Genomes meeting. Please post in comments any additional links to other information.

- 1998
 - [1998_arrowhead](#) booklet
 - [1998_LakeArrowhead](#) notes
 - [1998_Arrowhead](#) booklet version 2

LAMG History

Sunday, September 11, 2022

Lake Arrowhead Microbial Genomics Meeting History

Making a page here with information on the history of the Lake Arrowhead Microbial Genomes meeting. Please post in comments any additional links to other information.

- 1998
 - [1998_arrowhead](#) booklet
 - [1998_LakeArrowhead](#) notes
 - [1998_Arrowhead](#) booklet version 2
- 2000
 - [2000_arrowhead](#) booklet
 - Jonathan Eisen talk from 2000 [Jonathan Eisen talk on "Phylogenomics of DNA repair" at Lake Arrowhead Small Genomes Meeting 2000](#)
- 2002
 - Jonathan Eisen talk from 2002 [Jonathan Eisen talk on "Phylogenomics of Microbes" at Lake Arrowhead Small Genomes Meeting 2002](#)
- 2004
 - [lakearrowhead2004](#) booklet
 - Jonathan Eisen talk from 2004 [Jonathan Eisen talk on "Phylogenomics of Microbes" at Lake Arrowhead Small Genomes Meeting 2004](#)
- 2006
 - [2006_arrowhead](#) booklet
 - [Genomics Education highlighted at 14th Annual International Meeting on Microbial Genomics](#)
 - Jonathan Eisen talk from 2006 [Jonathan Eisen talk on "Endosymbiont Genomics" at Lake Arrowhead Small Genomes Meeting 2006](#)
- 2008
 - [2008_arrowhead](#)
 - [It's Miller Time - Lake Arrowhead Microbial Genomes Conference -- about to begin](#)
 - Morgan Langille [Review of Arrowhead Conference](#)
 - September 16, 2008: [Lake arrowhead notes - UPDATED](#)
 - Jonathan Eisen talk from 2008 [Jonathan Eisen talk on "Genomic Encyclopedia" at Lake Arrowhead Small Genomes Meeting 2008](#)
- 2010
 - [The Story behind the Meeting: Lake Arrowhead Microbial Genomes 2010](#)
 - Jonathan Eisen talk from 2010 [Jonathan Eisen talk on "The Importance of History" at Lake Arrowhead Small Genomes Meeting 2010](#)
- 2012
 - [2012-arrowhead-booklet](#)
 - [Srijak Bhatnagar: Lessons from 2012: Lake Arrowhead Microbial Genomes](#)
 - [Storify for Lake Arrowhead Microbial Genomes #LAMG12 Meeting](#)
 - [Lake Arrowhead Microbial Genomes Meeting 2012 Speaker Gender Ratio #LAMG12](#)
 - [Lake Arrowhead Microbial Genomes 2012 #Genomes #Microbes #Mountains #Lake #Fun #Wine #MustGo](#)
 - Jonathan Eisen talk from 2012 [Jonathan Eisen @phylogenomics talk for #LAMG12](#)
 - [Recorded talks from Lake Arrowhead \(#LAMG12\); James Meadow, Jason Stajich, Susana Remold](#)
 - [Lake Arrowhead Microbial Genomics Meeting 2012: Microbiology of the Built Environment Session](#)
 - Wakelet: <https://wke.it/w/s/3XFHf>
 - microBEnet wakelet: <https://wke.it/w/s/0Pvtc>
- 2014
 - [Save the dates / preliminary program for Lake Arrowhead Microbial Genomes Meeting](#)
 - [Everything You Wanted to Know about the Lake Arrowhead Microbial Genomes meeting #LAMG14](#)
 - [slideshare id=39085737&doc=u00svzw6sd6cmzosdqpp-signature-630f2659b9ee1c26c2aa680828306e8586a48ecd7c2440ecf20af82024ab7966-poli-140915022043-phpapp01]
 - [Storify Days 1-3](#)
 - <https://youtu.be/TMm1Peu745l>
 - [2014 meeting wrap up on microBEnet](#)
 - Jonathan Eisen talk from 2014. <http://www.slideshare.net/phylogenomics/jonathan-eisen-history-of-lake-arrowhead-microbial-genomes>
 - [Lake Arrowhead Microbial Genomics 2014 \(#LAMG14\) F1000 Site w/ Posters and Talks](#)
 - [Report and Storify from Lake Arrowhead: Day 3](#)
 - [Report and Storify from Lake Arrowhead: Day 2](#)
 - [Report and Storify from Lake Arrowhead Microbial Genomics: Day 1](#)
 - Wakelet Day 1-3: <https://wke.it/w/s/EiuMu>
 - Wakelet Day 3-4: <https://wke.it/w/s/oo5xE>
 - Wakelet Day 4: <https://wke.it/w/s/GyX32->
 - Wakelet Day 5: <https://wke.it/w/s/85aHm>

LAMG History


Sunday, September 1, 2013

Lake Arrowhead Microbial Genomics Meeting History

Making a page here with information on the history of the Lake Arrowhead Microbial Genomes meeting. Please post in comments any additional links to other information.

- 1998
 - [1998_arrowhead](#) booklet
 - [1998_LakeArrowhead](#) notes
 - [1998_Arrowhead](#) booklet version 2
- 2000
 - [2000_arrowhead](#) booklet
 - Jonathan Eisen talk from 2000 [Jonathan Eisen talk on "Phylogenomics of DNA repair" at Lake Arrowhead Small Genomes Meeting 2000](#)
- 2002
 - Jonathan Eisen talk from 2002 [Jonathan Eisen talk on "Phylogenomics of Microbes" at Lake Arrowhead Small Genomes Meeting 2002](#)
- 2004
 - [lakearrowhead2004](#) booklet
 - Jonathan Eisen talk from 2004 [Jonathan Eisen talk on "Phylogenomics of Microbes" at Lake Arrowhead Small Genomes Meeting 2004](#)
- 2006
 - [2006_arrowhead](#) booklet
 - Genomics Education highlighted at 14th Annual International Meeting on Microbial Genomics
 - Jonathan Eisen talk from 2006 [Jonathan Eisen talk on "Endosymbiont Genomics" at Lake Arrowhead Small Genomes Meeting 2006](#)
- 2008
 - [2008_arrowhead](#) booklet
 - It's Miller Time at Lake Arrowhead Microbial Genomes Conference -- about to be a party!
 - [John Langille Review of Arrowhead Conference](#)
 - [September 16, 2008: Lake arrowhead notes - UPDATED](#)
 - Jonathan Eisen talk from 2008 [Jonathan Eisen talk on "Genomic Encyclopedia" at Lake Arrowhead Small Genomes Meeting 2008](#)
- 2010
 - [The Story behind the Meeting: Lake Arrowhead Microbial Genomes 2010](#)
 - Jonathan Eisen talk from 2010 [Jonathan Eisen talk on "Importance of History" at Lake Arrowhead Small Genomes Meeting 2010](#)
- 2012
 - [2012-arrowhead-booklet](#)
 - [Srijak Bhatnagar: Lessons from Lake Arrowhead Microbial Genomes](#)
 - [Storify for Lake Arrowhead Microbial Genomes #LAMG12 Meeting](#)
 - [Lake Arrowhead Microbial Genomes Meeting 2012 Speaker Gender Ratio #LAMG12](#)
 - [Lake Arrowhead Microbial Genomes 2012 #Genomes #Microbes #MountainLake #Fun #Wine #MustGo](#)
 - Jonathan Eisen talk from 2012 [Jonathan Eisen @phylogenomics talk for #LAMG12](#)
 - [Recorded talks from Lake Arrowhead \(#LAMG12\); James Meadow, Jason Stajich, Susana Remold](#)
 - [Lake Arrowhead Microbial Genomics Meeting 2012: Microbiology of the Built Environment Session](#)
 - Wakelet: <https://wke.it/w/s/3XFHf>
 - microBEnet wakelet: <https://wke.it/w/s/0Pvtc>
- 2014
 - [Save the dates / preliminary program for Lake Arrowhead Microbial Genomes Meeting](#)
 - [Everything You Wanted to Know about the Lake Arrowhead Microbial Genomes meeting #LAMG14](#)
 - [slide: 39085737&doc=u00svzw6sd6cmzosdqpq-signature-630f2659f6c2aa680828306e8586a48ecd7c2440ecf20af82024ab7966-poli-14091408-phapp01]
 - [Storify Days 1-3](#)
 - <https://youtu.be/TMm1r>
 - [2014 meeting wrap up on microBEnet](#)
 - Jonathan Eisen talk from 2014. <http://www.slideshare.net/phylogenomics/jonathan-eisen-history-of-lake-arrowhead-microbial-genomes>
 - [Lake Arrowhead Microbial Genomics 2014 \(#LAMG14\) F1000 Site w/ Posters and Talks](#)
 - [Report and Storify from Lake Arrowhead: Day 3](#)
 - [Report and Storify from Lake Arrowhead: Day 2](#)
 - [Report and Storify from Lake Arrowhead Microbial Genomics: Day 1](#)
 - Wakelet Day 1-3: <https://wke.it/w/s/EiuMu>
 - Wakelet Day 3-4: <https://wke.it/w/s/oo5xE>
 - Wakelet Day 4: <https://wke.it/w/s/GyX32->
 - Wakelet Day 5: <https://wke.it/w/s/85aHm>

The REAL History of LAMG



The Importance of History (and other obsessions)

Jonathan A. Eisen
UC Davis

Talk for Lake Arrowhead Microbial
Genomes 2010 (#LAMG10)

Blast Peptide LAKEARROWHEAD

BLAST *Basic Local Alignment Search Tool*

[Home](#) [Recent Results](#) [Saved Strategies](#)

[Help](#) [NCBI/ BLAST/ blastp suite](#)

[blastn](#) **[blastp](#)** [blastx](#) [tblastn](#) [tblastx](#)

BLASTP programs search protein databases using a protein query. [more...](#)

Enter Query Sequence

Enter accession number, gi, or FASTA sequence ⓘ [Clear](#)

LakeArrowhead

Query subrange ⓘ

From

To

Or, upload file

no file selected ⓘ

Job Title

Enter a descriptive title for your BLAST search ⓘ

☐ **Align two or more sequences** ⓘ

Choose Search Set

Database

Non-redundant protein sequences (nr) ⓘ

Organism

Optional ☐ **Exclude** ⓘ

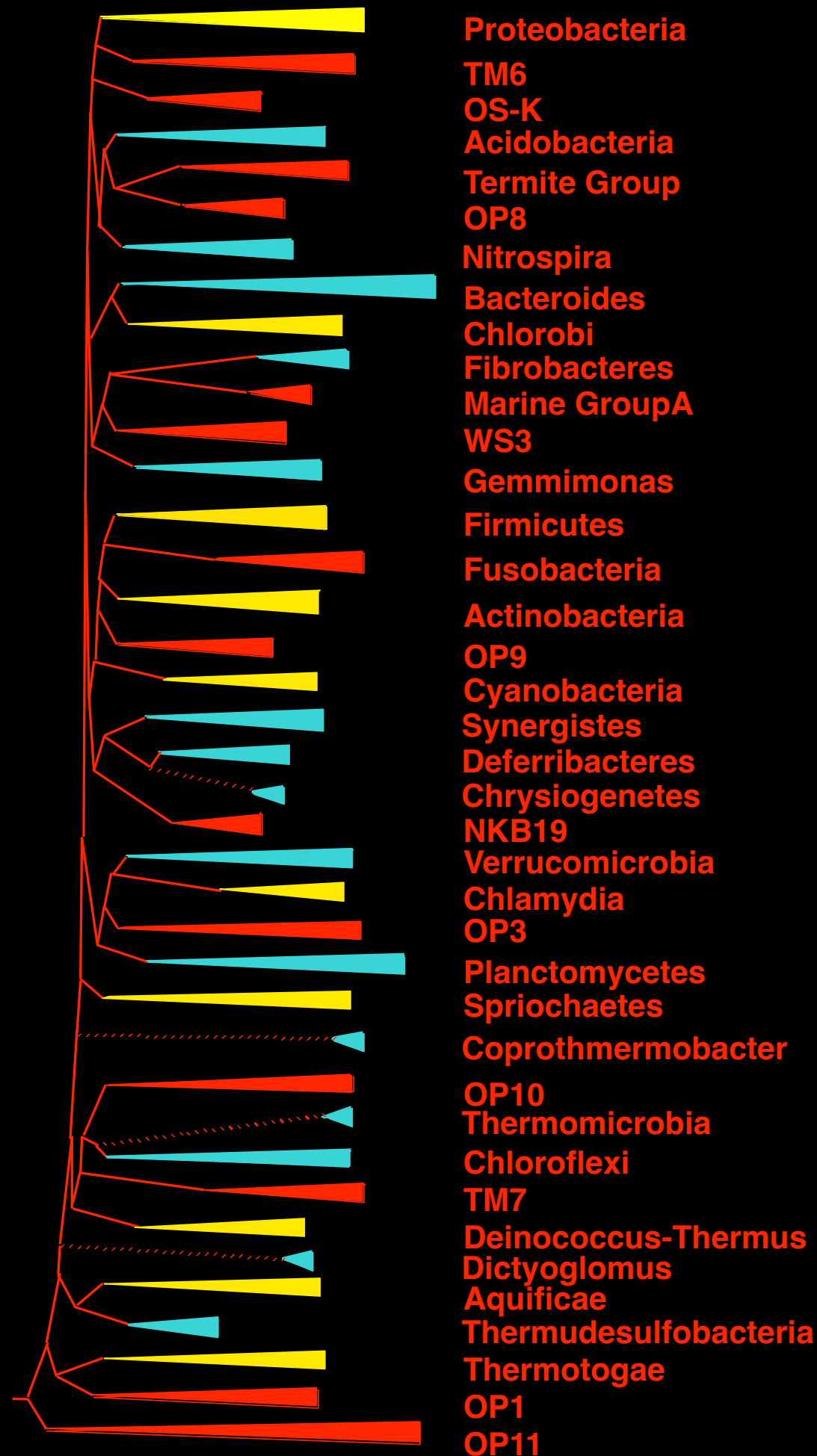
SPONTANEOUS MUTATORS IN BACTERIA: Insights into Einstein's Theory of Relativity

Jeffrey H. Miller

Department of Microbiology and Molecular Genetics, Life Sciences Building, University of California at Los Angeles, 405 Hilgard Avenue, Los Angeles, California 90049;
e-mail: jhmill@ewald.mbi.ucla.edu

KEY WORDS: microorganisms, repair systems, mutation, cancer, carcinogenesis

- NSF-funded Tree of Life Project
- A genome from each of eight phyla



- At least 40 phyla of bacteria
- Genome sequences are mostly from three phyla
- Some other phyla are only sparsely sampled
- **Solution I:**
sequence more phyla

Phylogenomic Approaches to the Study of Microbial Diversity

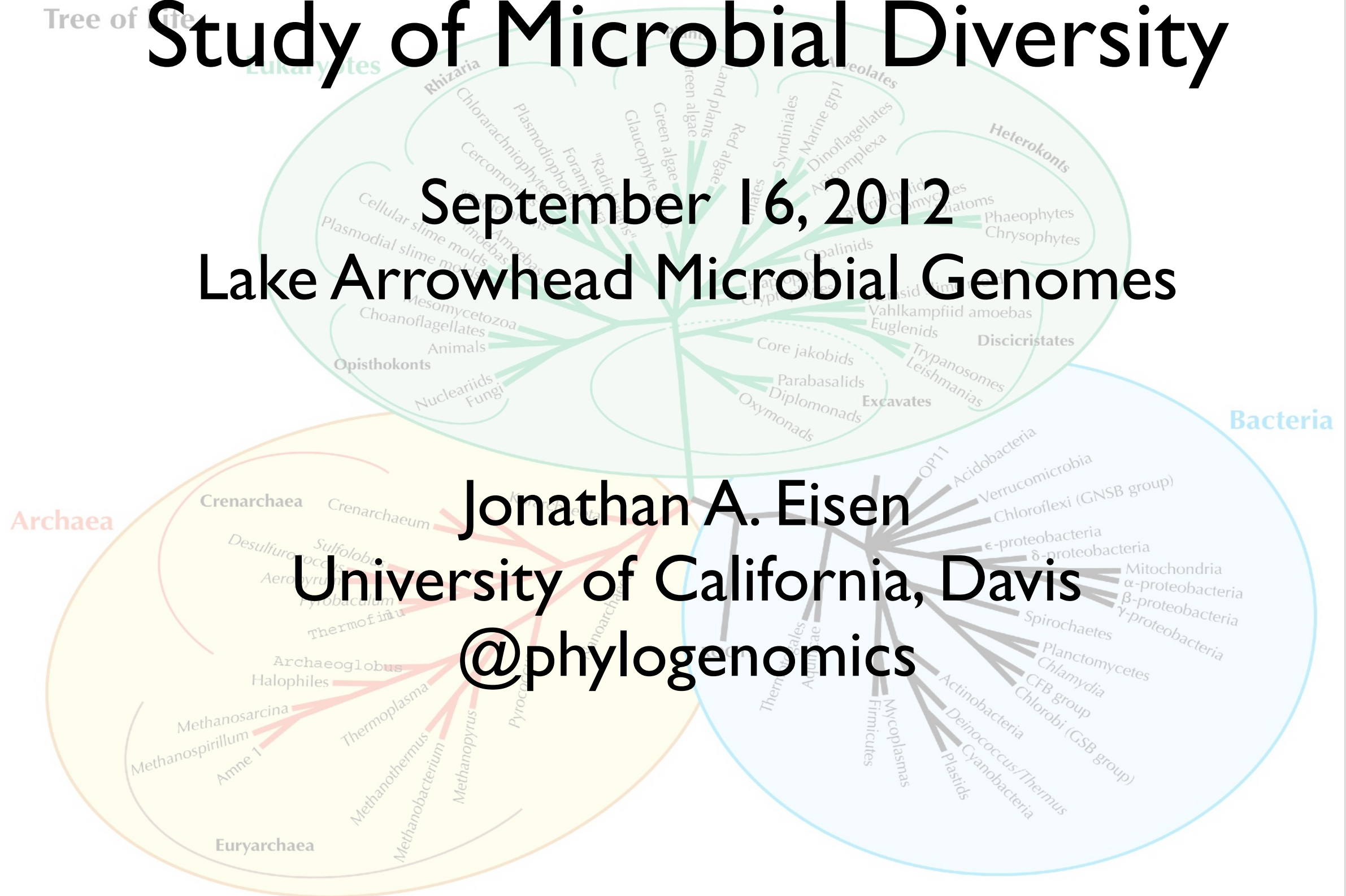
September 16, 2012

Lake Arrowhead Microbial Genomes

Jonathan A. Eisen

University of California, Davis

@phylogenomics





- And we will bring out the unused cheese from yesterday
- A paper came out next year
- **It takes 1000 nanobiologists to make one microbiologist**

Quotes



- And we will bring out the unused cheese from yesterday
- A paper came out next year
- It takes 1000 nanobiologists to make one microbiologist
- **In an engineering sense, the vagina is a simple plug flow reactor**



Phylogenomic Approaches to Studying Microbial Diversity

Example 1:

**Phylotyping
and
Phylogenetic Diversity**

Something about the Lake Arrowhead Microbial Genomes Meeting

September 14, 2014
Lake Arrowhead Microbial Genomes
#LAMG14

Jonathan A. Eisen
University of California, Davis
@phylogenomics

Microbiomes and Religion

Panchin *et al. Biology Direct* 2014, **9**:14
<http://www.biologydirect.com/content/9/1/14>



HYPOTHESIS

Open Access

Midichlorians - the biomeme hypothesis: is there a microbial component to religious rituals?

Alexander Y Panchin^{1*}, Alexander I Tuzhikov^{1,2} and Yuri V Panchin^{1,3}

Al Gore Invented the Microbiome

WebMD

Search



Symptoms



Doctors



Health Care Reform

HEALTH A-Z

DRUGS & SUPPLEMENTS

LIVING HEALTHY

FAMILY & PREGNANCY

WebMD Home > Weight Loss & Diet Plans

WebMD video

Channel: Diet & Nutrition

Now Playing: Al Gore on the Microbiome and Why He Became a Vegan



00:54/03:26



about this video



send to a friend



share



rate this video



something special

Diet & Nutrition

My Playlist: (empty)

Arrowhead and Microbial Genomes: Update on the Tree of Life

September 18, 2016

Lake Arrowhead Microbial Genomes
#LAMG16

Jonathan A. Eisen
University of California, Davis
@phylogenomics

Possible Source of Confusion

Jeffrey van Leeuwenhoek Miller

From Wikipedia, the free encyclopedia

This is a [Dutch name](#); the [family name](#) is Van Leeuwenhoek, not Leeuwenhoek.

Antonie Philips van Leeuwenhoek^[note 1] (/ˈlɛvənhoʊk/, Dutch: [anˈtoːni van ˈleːuə(n)ˌɦuk] listen); October 24, 1632 – August 26, 1723) was a [Dutch](#) tradesman and [scientist](#). He is commonly known as "[the Father of Microbiology](#)", and considered to be the first [microbiologist](#). He is best known for his work on the improvement of the [microscope](#) and for his contributions towards the establishment of microbiology.

Raised in [Delft](#), Netherlands, Van Leeuwenhoek worked as a [draper](#) in his youth, and founded his own shop in 1654. He made a name for himself in municipal politics, and eventually developed an interest in lensmaking. Using his handcrafted microscopes, he was the first to observe and describe [microorganisms](#), which he originally referred to as [animalcules](#) (from Latin *animalculum* = "tiny animal"). Most of the "animalcules" are now referred to as [unicellular organisms](#), though he observed multicellular organisms in pond water. He was also the first to document microscopic observations of [muscle](#) fibers, [bacteria](#), [spermatozoa](#), and [blood](#) flow in [capillaries](#). Van Leeuwenhoek did not author any books; his discoveries came to light through correspondence with the [Royal Society](#), which published his letters.

Contents [\[hide\]](#)

- Early life and career
- Microscopic study
 - Recognition by the Royal Society
 - Scientific fame
- Techniques and discoveries
- Death and legacy
- See also

Antonie van Leeuwenhoek



Portrait of Antonie van Leeuwenhoek (1632–1723) by Jan Verkolje

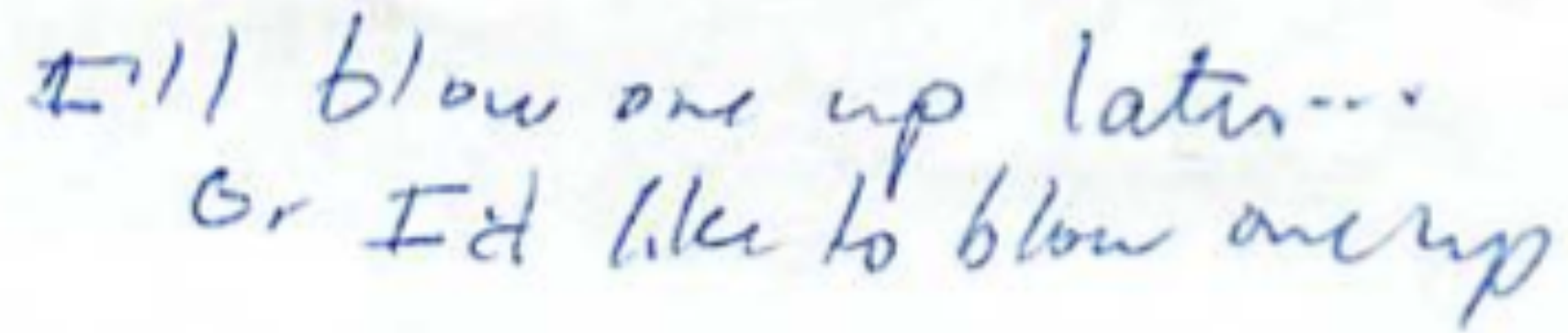
Born	October 24, 1632 Delft, Dutch Republic
Died	August 26, 1723 (aged 90) Delft, Dutch Republic
Residence	Netherlands
Nationality	Dutch

#LAMG16 @phylogenomics

Quotes

- We are the environment. We live the phenotype.
- We have been using this word for many years without actually realizing it was correct
- A little bit about time, but I am going to spend a lot less time on time than on space
- **I am going to wrap up as I hear the crickets chirping**

1998 - Doodles Reveal All



I'll blow one up later...
Or I'd like to blow one up

Possible Talks for 2018?

Microbiome Will GIVE The Talks

SportsGeezer



*Health, fitness and lifestyle tips
for people over 40 who still like to play hard*

[Home](#)

[Attitude](#)

[Sex](#)

[Pain](#)

[Fitness](#)

[Eating Well](#)

[Books](#)

[Women's Health](#)

[Home](#) » [Attitude](#) »

My Microbiome Made Me Do It

🕒 AUGUST 19, 2014 7:41 AM 💬 0 COMMENTS

Go

• [Best Protein Supplements](#)

The Real History of LAMG2018

September 16, 2018

Lake Arrowhead Microbial Genomes
#LAMG2018

Jonathan A. Eisen
University of California, Davis
@phylogenomics

Origin of the Meeting

- **Who knows how we came up with the name for the meeting?**
- **It all relates to the acronym LAMG**

Started with a Motorcycle Group

LICHFIELD ADVANCED MOTORCYCLE GROUP



THE ADVENTURE STARTS NOW

THE JOURNEY OF A LIFETIME IS WAITING FOR YOU, ARE YOU READY?

#LAMG2018 @phylogenomics

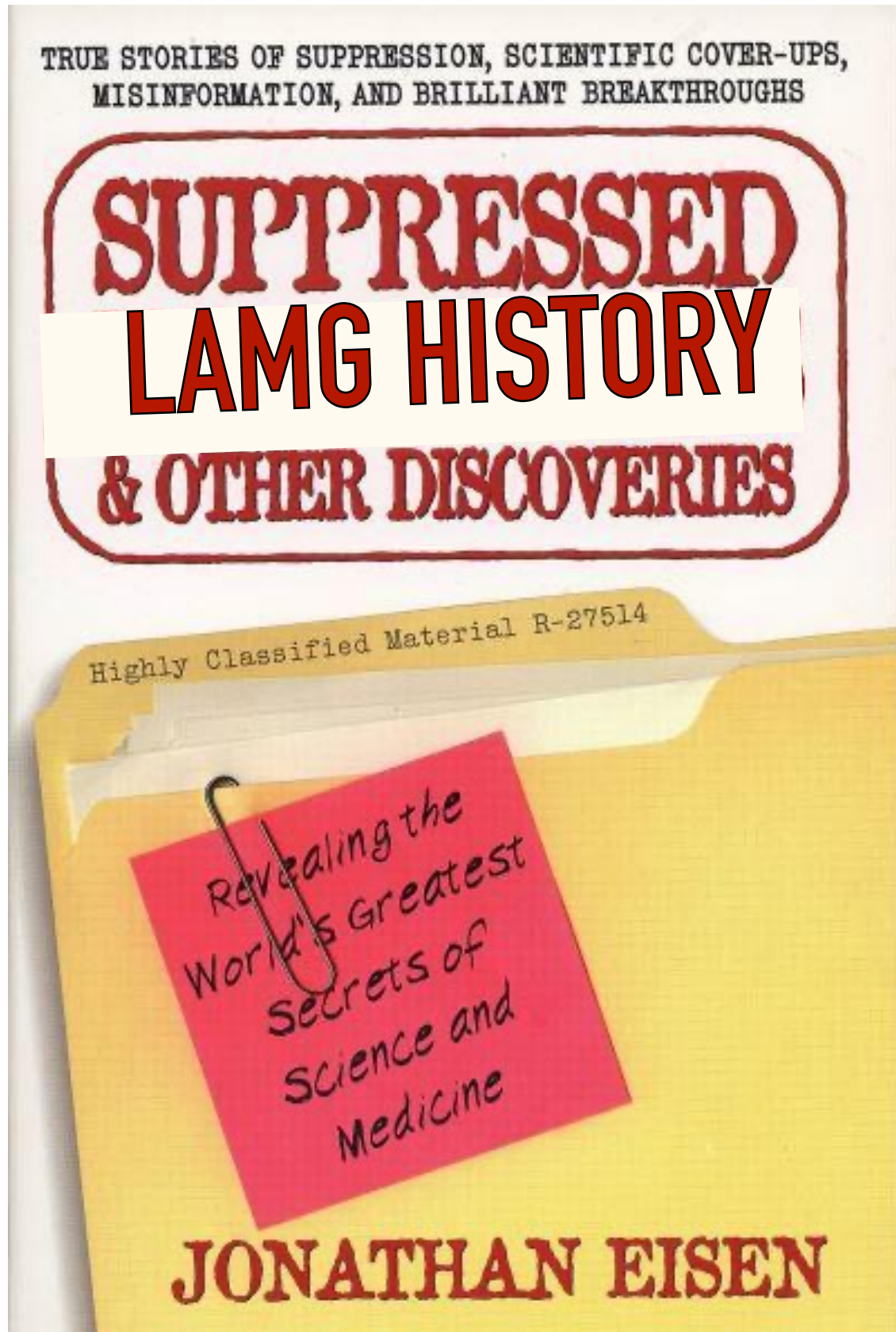
LAMG

Arrowhead and Microbial Genomics Update on the Tree of Life

September 11, 2022
Lake Arrowhead Microbial Genomes
#LAMG2022

Jonathan A. Eisen
University of California, Davis

Question for Today



**What Really
Happened to
LAMG2020?**

Why was it cancelled?

**Was it really
cancelled?**

**If not, what happened
there?**

What Do They Have in Common?



Dr. Jeffrey H. Miller

University of California, Los Angeles, CA

Phone: (310) 825-8460

Fax: (310) 206-3088

jhmiller@microbio.ucla.edu



Dr. Ashlee Earl

The Broad Institute of MIT and Harvard, Cambridge, MA



Dr. Elinne Becket

California State University, San Marcos, CA



Dr. Gautam Dantas

Washington University in St. Louis, MO



Dr. Jonathan Eisen

University of California, Davis, CA



Dr. Elisabeth Raleigh

New England BioLabs, Ipswich, MA



Dr. Tanja Woyke

DOE Joint Genome Institute, Walnut Creek, CA



Dr. Rachel Dutton

University of California, San Diego, CA

What Do They Have in Common?



Dr. Jeffrey H. Miller

University of California, Los Angeles, CA

Phone: (310) 825-8460

Fax: (310) 206-3088

jhmiller@microbio.ucla.edu



Dr. Ashlee Earl

The Broad Institute of MIT and Harvard, Cambridge, MA



Dr. Elinne Becket

California State University, San Marcos, CA



Dr. Gautam Dantas

Washington University in St. Louis, MO



Dr. Jonathan Eisen

University of California, Davis, CA



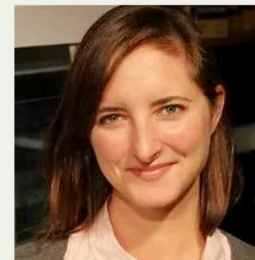
Dr. Elisabeth Raleigh

New England BioLabs, Ipswich, MA



Dr. Tanja Woyke

DOE Joint Genome Institute, Walnut Creek, CA



Dr. Rachel Dutton

University of California, San Diego, CA

The All Hate Eukaryotes

LAMG 2020

- **And they planned to meet at Lake Arrowhead**
- **And they wanted the meeting to be much bigger**
- **So they called it the “Big, Large, Enormous” meeting**

LAMG 2020

- **Also known as the meeting of the**
- **Lake Arrowhead Big Large Enormous Anti Karyote Society**

LAMG 2020

- Also known as the meeting of the
- Lake Arrowhead Big Large Enormous Anti Karyote Society

Anti-Eukaryocentrism Spreading



Arrowhead and Microbial Genomics

September 15, 2024

Lake Arrowhead Microbial Genomes Meeting
#LAMG2024

Jonathan A. Eisen
University of California, Davis
[@phylogenomics](https://twitter.com/phylogenomics)

Hottest Topics in Biology?

Year	Hot Topic
1996	Genomes
1998	Genomes
2000	Genomes
2002	Genomes
2004	Genomes
2006	Microbiomes
2008	Microbiomes
2010	Microbiomes
2012	Microbiomes
2014	Microbiomes
2016	Microbiomes
2018	Microbiomes
2020	Microbiomes
2022	COVID
2024	AI

Is LAMG Missing Out on AI?

Artificial Thoughts on the Lake Arrowhead Microbial Genomes Meeting

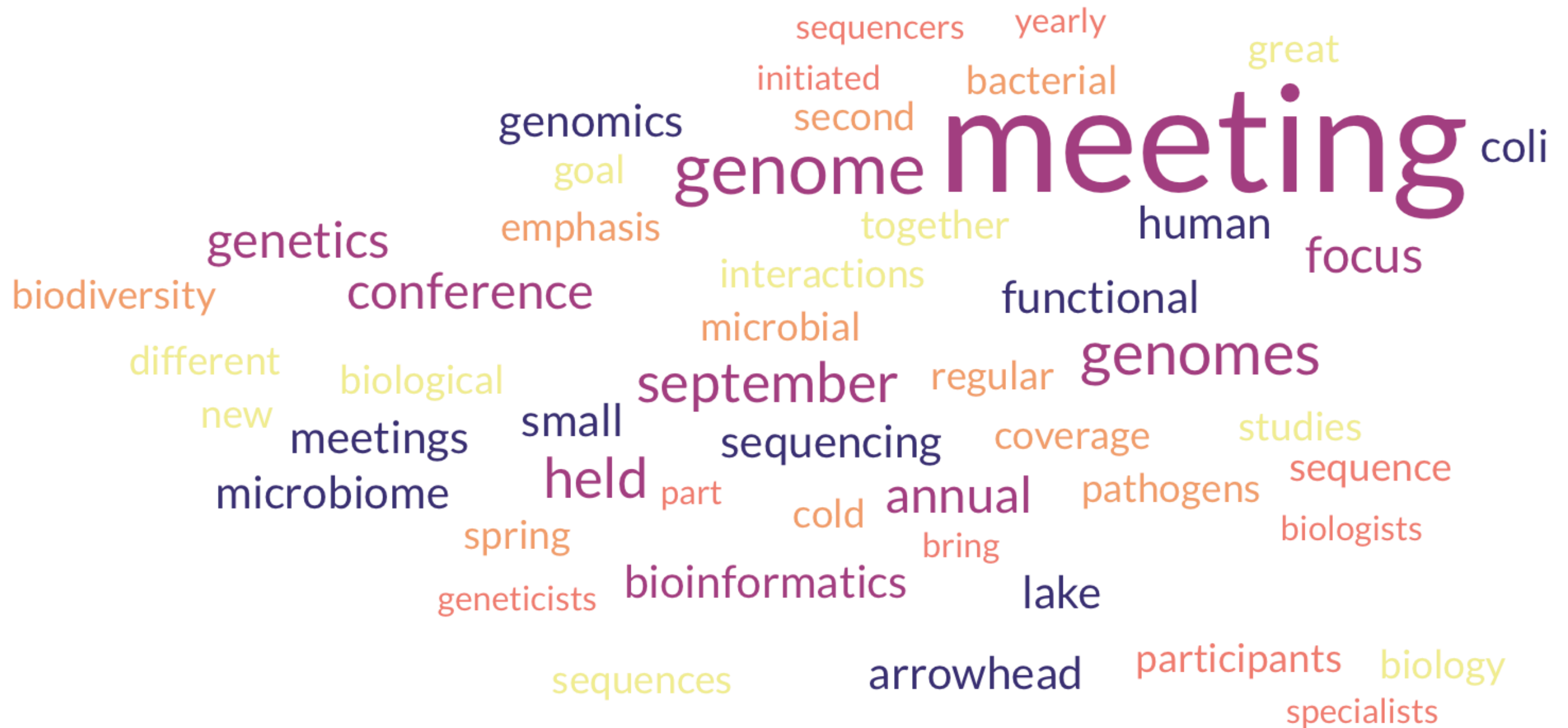
September 15, 2024

Lake Arrowhead Microbial Genomes Meeting
#LAMG2024

Jonathan A. Eisen
University of California, Davis

@phylogenomics.bsky.social

What is LAMG About?



Jonathan's 1st Use of Generative AI ...

Gemini ▾

✦ Try Gemini Advanced



Hello, Jonathan

How can I help you today?

Suggest beaches to visit in a city, including details



Evaluate and rank common camera categories



Improve the readability of the following code



Help me get organized with a list of 10 tips



draw a picture about arrowhead, genomics, bioinformatics, pathogens, microbial, bacteria, lake

Gemini Limitations

Gemini ▾

✦ Try Gemini Advanced



Hello, Jonathan

How can I help you today?

Suggest beaches to visit in a city, including details



Evaluate and rank common camera categories



Improve the readability of the following code



Help me get organized with a list of 10 tips



✦ Generating images of people is only available in early access with Gemini Advanced. Get early access to new Gemini features when you subscribe to Advanced [here](#).

Generative AI Based Visual Abstract for LAMG24



Generative AI Based Visual Abstract for LAMG24



Generative AI Based Visual Abstract for LAMG24



Generative AI Based Visual Abstract for LAMG24



Note - These Were NOT My 1st Images About the Meeting

Earlier LAMG Image 1



Earlier LAMG Image 2



Earlier LAMG Image 3



Earlier LAMG Image 4



Earlier LAMG Image 4



Earlier LAMG Image5



Earlier LAMG Image 6



Earlier LAMG Image 7



Earlier LAMG Image 8



Earlier LAMG Image 9



Earlier LAMG Image 10



Earlier LAMG Image 11



Earlier LAMG Image 12



AI and LAMG II: More Precise Summary of Meeting



September 15-19, 2024
Lake Arrowhead, CA



LAMG 2024 Program

In the interest of minimizing waste, the program will be in digital format only for 2024 and future meetings

2024 Scientific Program

More Precise Rendering of LAMG24 from Talk Titles



September 15-19, 2024
Lake Arrowhead, CA

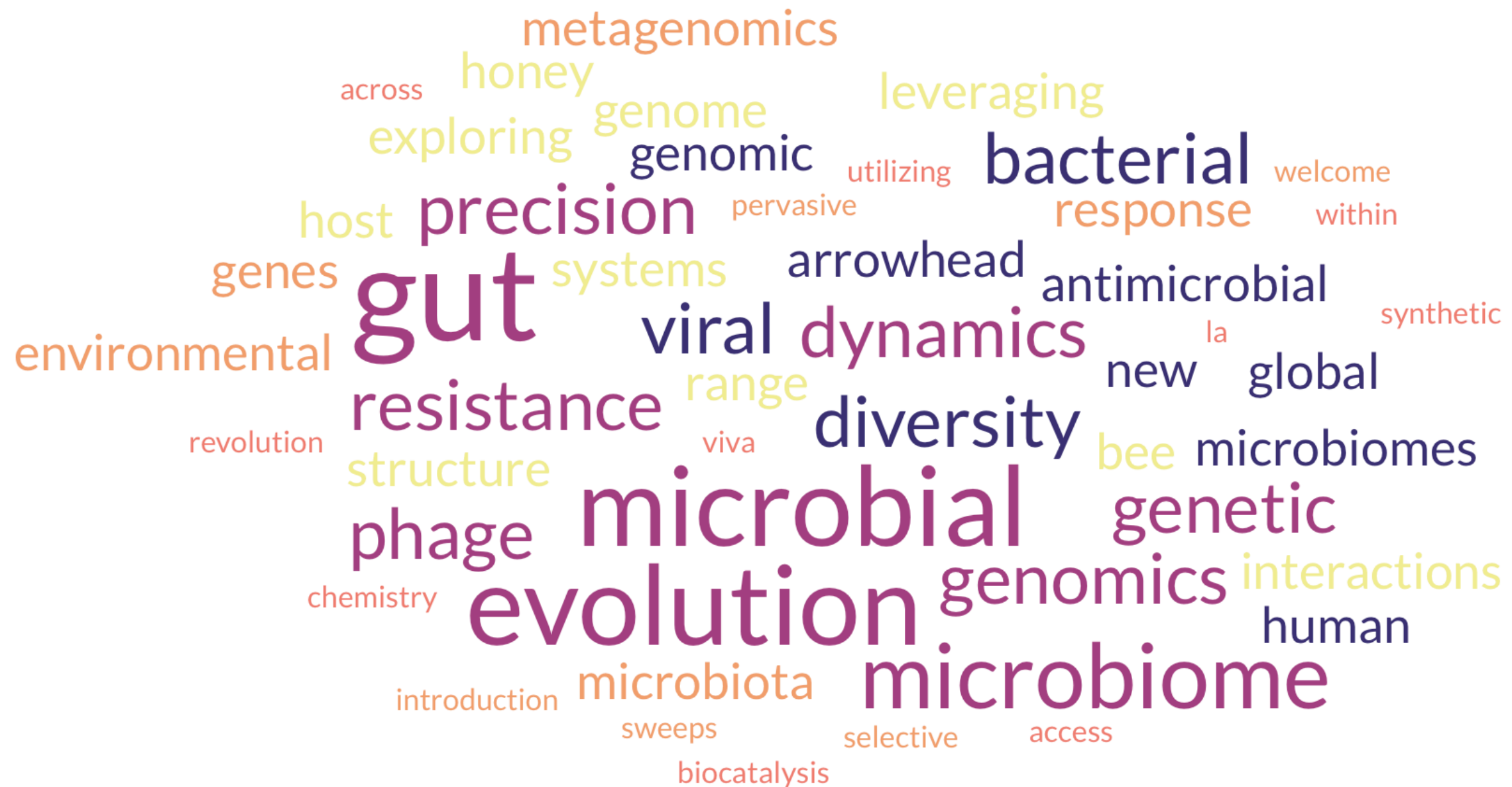


LAMG 2024 Program

In the interest of minimizing waste, the program will be in digital format only for 2024 and future meetings

2024 Scientific Program

Talk Titles Word Cloud



Jonathan's 1st Use of Generative AI ...

Gemini ▾

✦ Try Gemini Advanced



Hello, Jonathan

How can I help you today?

Suggest beaches to visit in a city, including details



Evaluate and rank common camera categories



Improve the readability of the following code

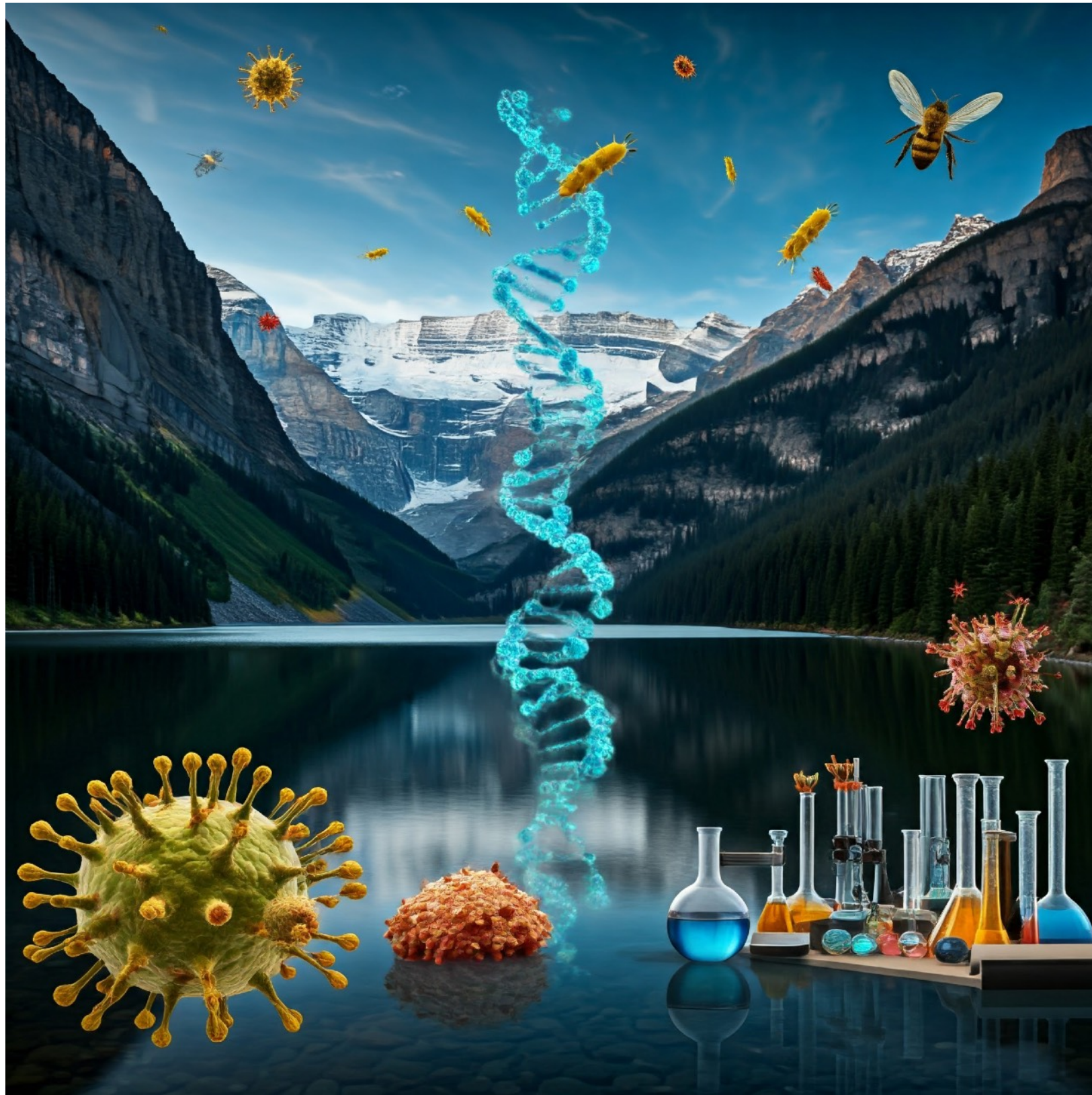


Help me get organized with a list of 10 tips



Draw a picture of a conference center on a mountain lake. Add to the picture images of genes, DNA, and chemistry. Add honey bees flying over the lake. Add many giant bacteria and viruses on the surface of the lake.

LAMG24 Based on Talk Titles 1



LAMG24 Based on Talk Titles 2



More Detail Needed

Gemini ▾

✦ Try Gemini Advanced



Hello, Jonathan

How can I help you today?

Suggest beaches to visit in a city, including details



Evaluate and rank common camera categories



Improve the readability of the following code



Help me get organized with a list of 10 tips



Draw a picture of a conference center on a mountain lake. Add to the picture images of genes, DNA, and chemistry. Add seagrass in the lake. Add honey bees flying over the lake. Add many giant bacteria and viruses on the surface of the lake.

LAMG24 Based on Talk Titles 3



LAMG24 Based on Talk Titles 4



LAMG24 Based on Talk Titles 5



Even More Detail Needed

Gemini ▾

✦ Try Gemini Advanced



Hello, Jonathan

How can I help you today?

Suggest beaches to visit in a city, including details



Evaluate and rank common camera categories



Improve the readability of the following code



Help me get organized with a list of 10 tips



Draw a picture of a conference center on a mountain lake. Add to the picture images of genes, DNA, and chemistry. Add seagrass in the lake. Add honey bees flying over the lake. Add many giant bacteria and viruses on the surface of the lake. Add thor's hammer on the shore. Add a bubbling pond of wastewater nearby.

LAMG24 Based on Talk Titles 6



LAMG24 Based on Talk Titles 7



LAMG24 Based on Talk Titles 8



LAMG24 Based on Talk Titles 9



LAMG24 Based on Talk Titles 10



AI and LAMG II: Individual Talks



September 15-19, 2024
Lake Arrowhead, CA



LAMG 2024 Program

In the interest of minimizing waste, the program will be in digital format only for 2024 and future meetings

2024 Scientific Program

But ...

- **The key to AI to me is the reversibility**
- **Sure, we can make images**
- **But can people look at images and know what they are about**

Level 1: Less Abstract

Which Talk is This?



In shadows they thrive, antiheroes unite,
forming bonds unseen, a struggle for life.

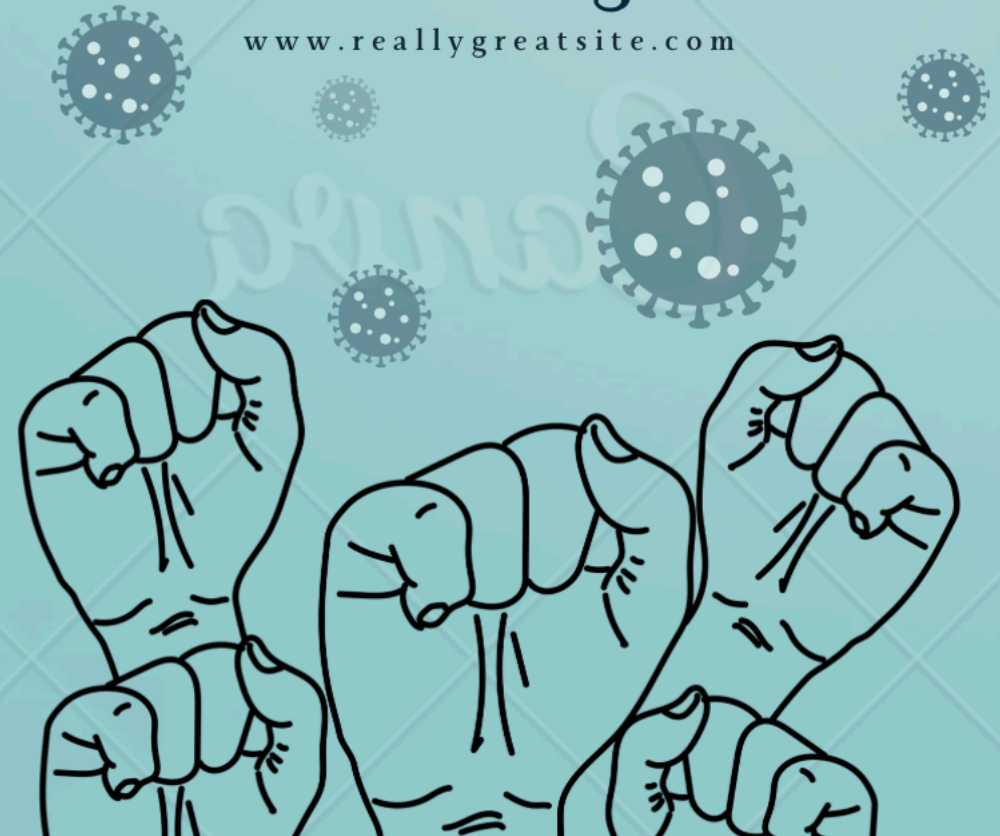
Which Talk is This?



In shadows they thrive, antiheroes unite,
forming bonds unseen, a struggle for life.

Let's Fight The Virus Together

www.reallygreatsite.com



Which Talk is This?

Paul Orwin: Rooting for the antihero: Toxin-Antitoxin systems in *Variovorax* genome evolution and biofilm formation

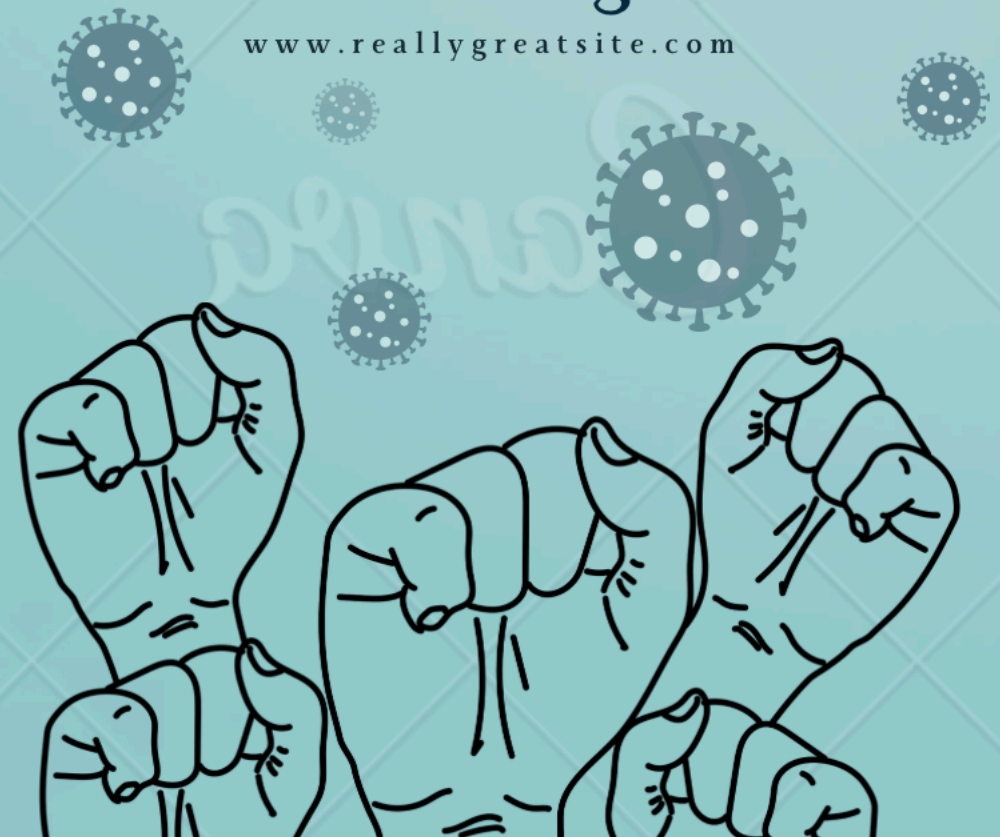


In shadows they thrive, antiheroes unite,
forming bonds unseen, a struggle for life.

Let's Fight

The Virus Together

www.reallygreatsite.com



Which Talk is This?



Seagrasses support diverse microbial communities in unique ways.

DR. EMILY TAYLOR, MARINE BIOLOGIST

Which Talk is This?



Seagrasses support diverse microbial communities in unique ways.

DR. EMILY TAYLOR, MARINE BIOLOGIST



Seagrass Bistro Delight


DISCOVER FLAVORS FROM OUR BEAUTIFUL SEAS TODAY!

		
SEAWEED	SANDWICH TRIO	OCEAN SALAD
Only \$12.99 today!	Just for \$15.49!	Priced at \$10.99!

Call us now for reservations!

Which Talk is This?

Maggie Sogin: Exploring the interactions between seagrasses and their microbiomes



Seagrasses support diverse microbial communities in unique ways.

DR. EMILY TAYLOR, MARINE BIOLOGIST



Seagrass Bistro Delight

DISCOVER FLAVORS FROM OUR BEAUTIFUL SEAS TODAY!

		
SEAWEED	SANDWICH TRIO	OCEAN SALAD
Only \$12.99 today!	Just for \$15.49!	Priced at \$10.99!

Call us now for reservations!

Level 2: Abstract

Which Talk is This?



Which Talk is This?

Caitlin Pepperell: Low and slow: experimental evolution of difficult bacteria



Which Talk is This?

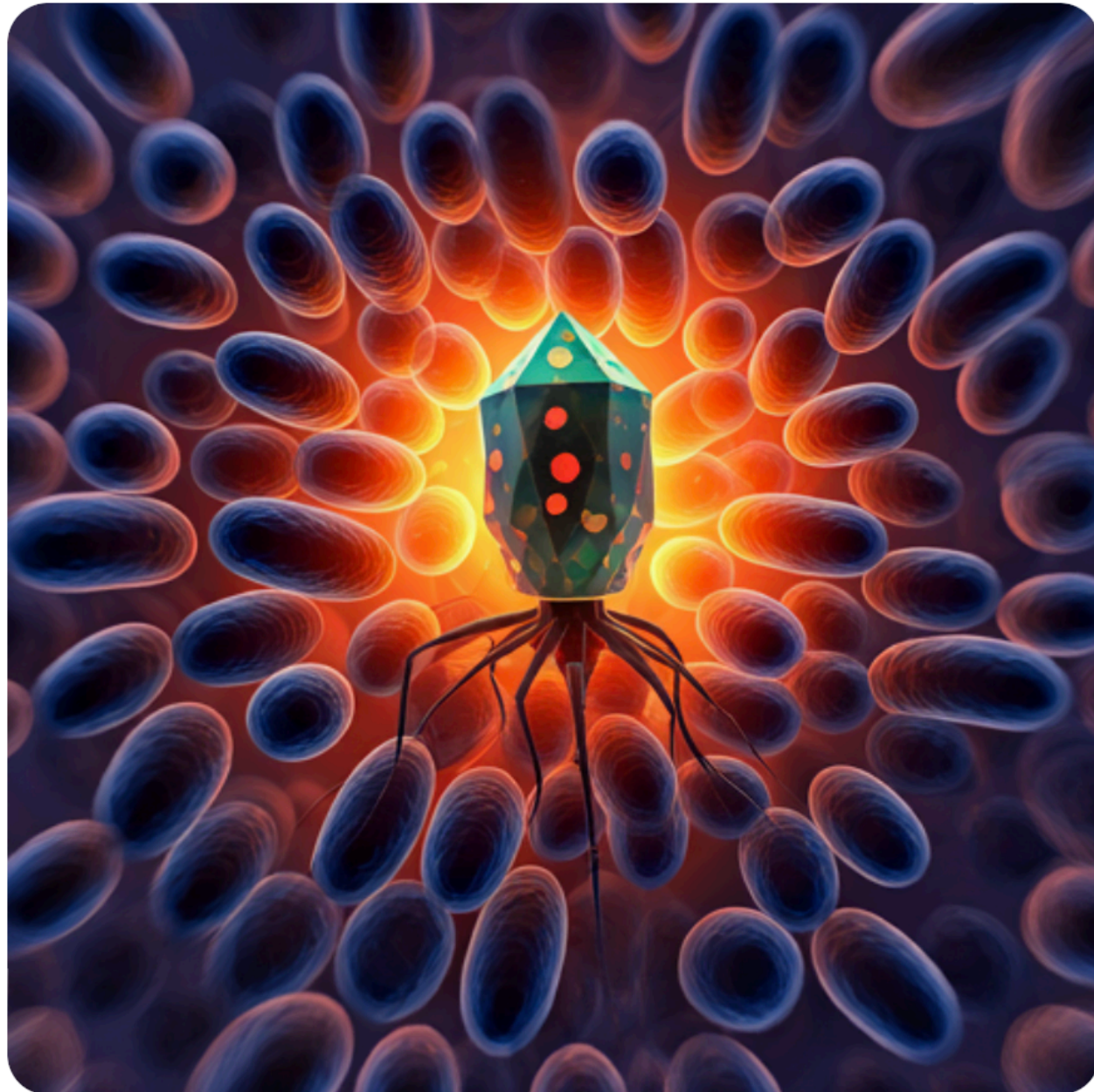


Which Talk is This?

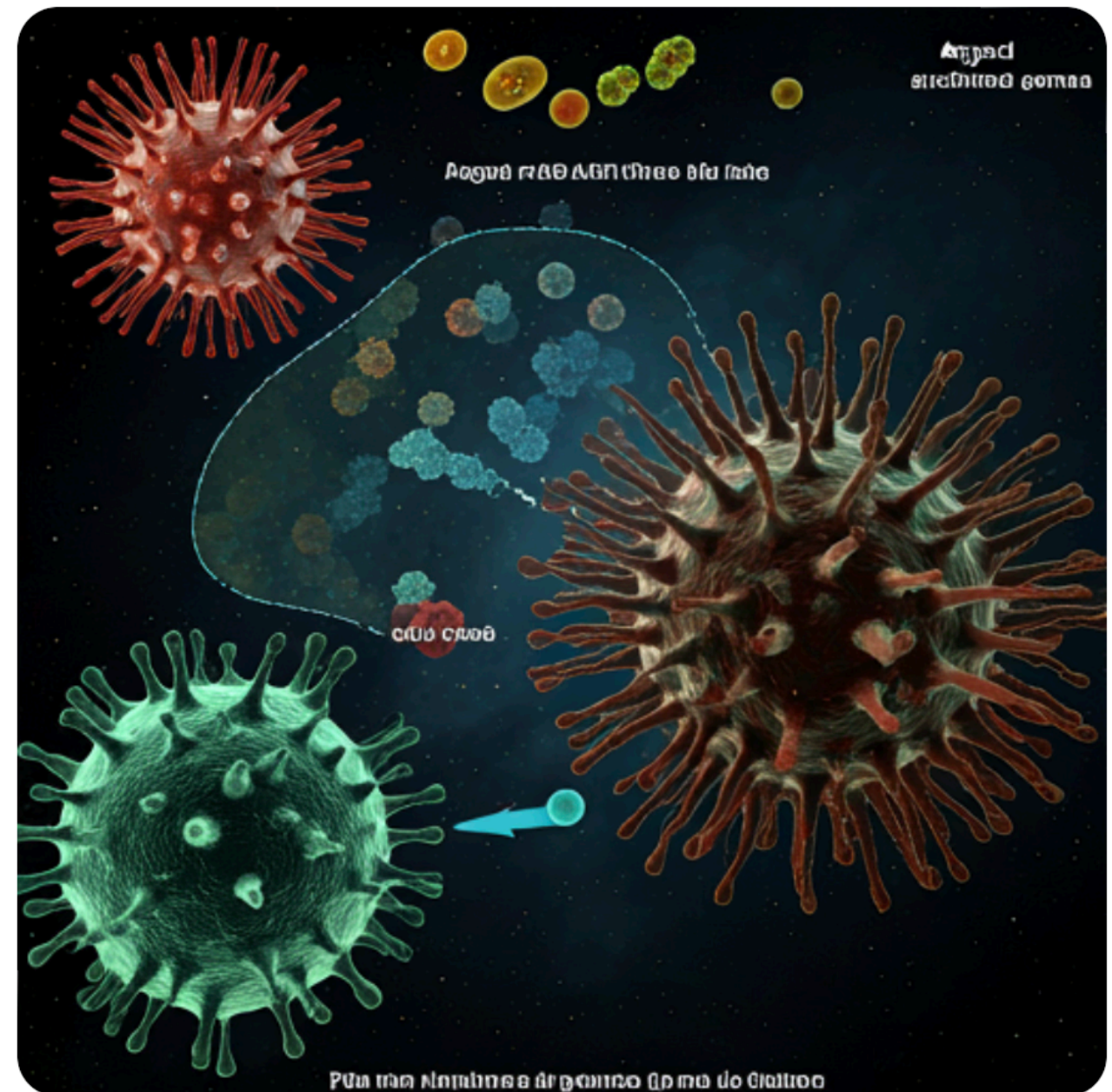
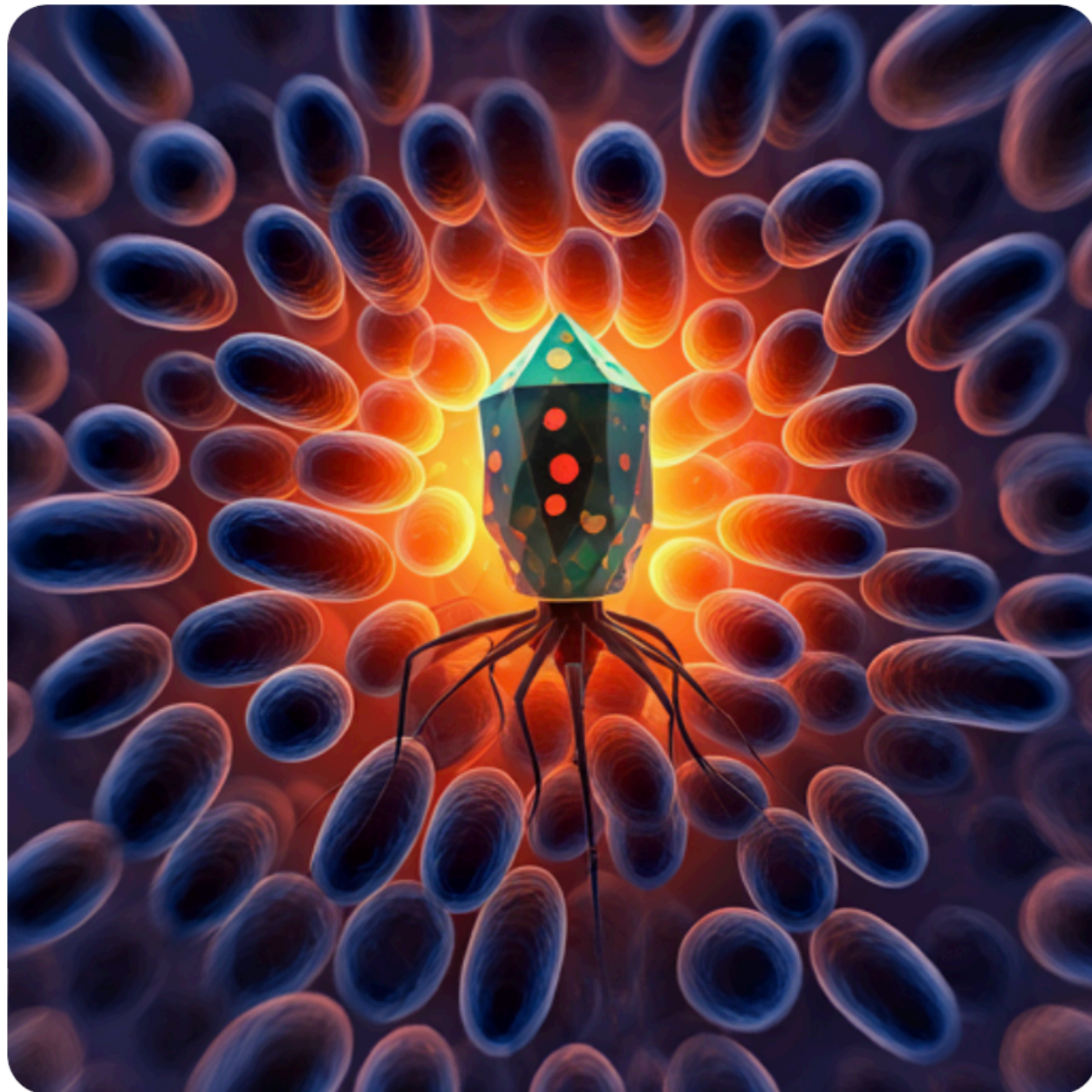
Sydney I. Glassman: Unraveling the traits that enable microbes to thrive post- fire



Which Talk is This?

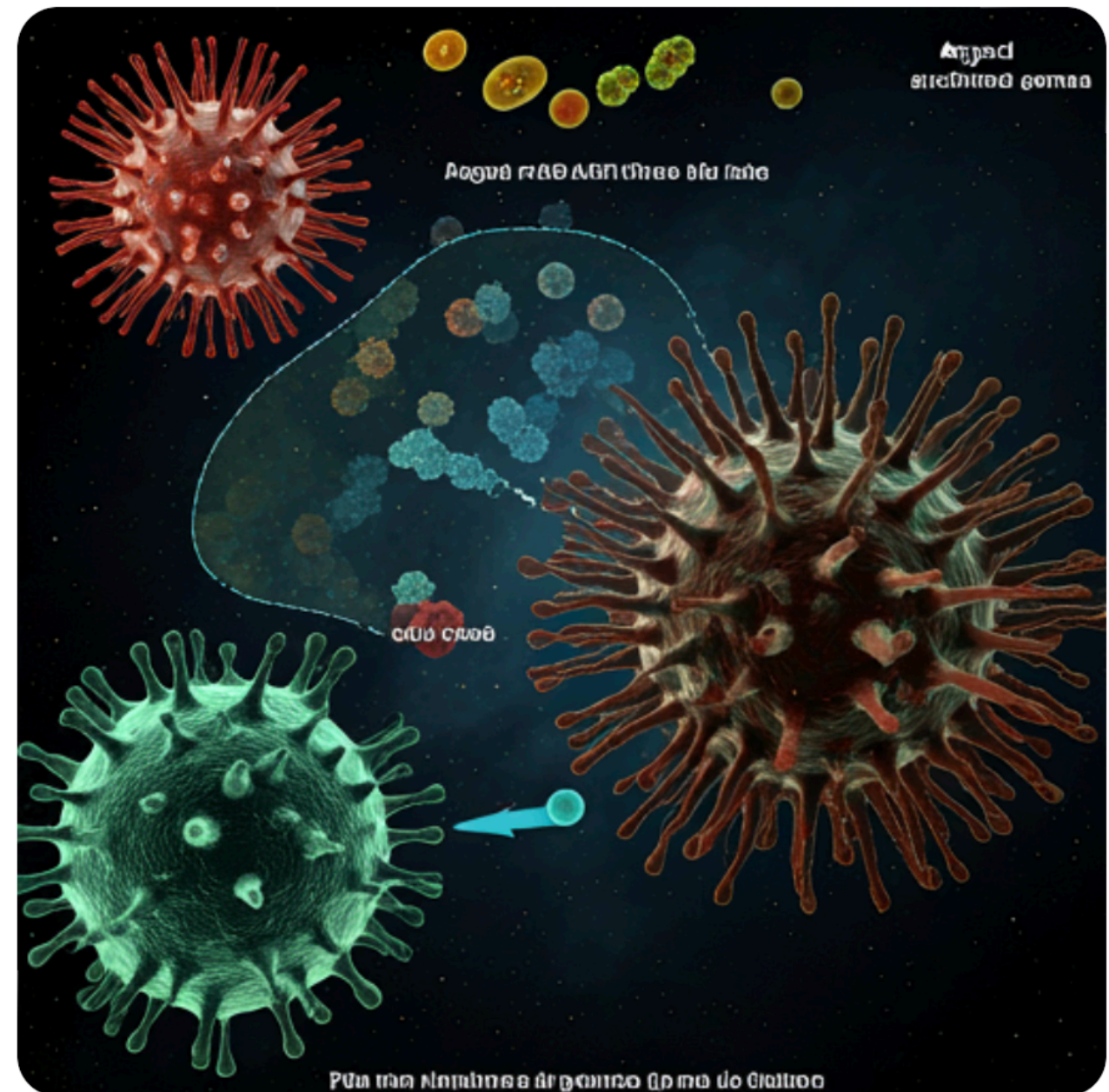
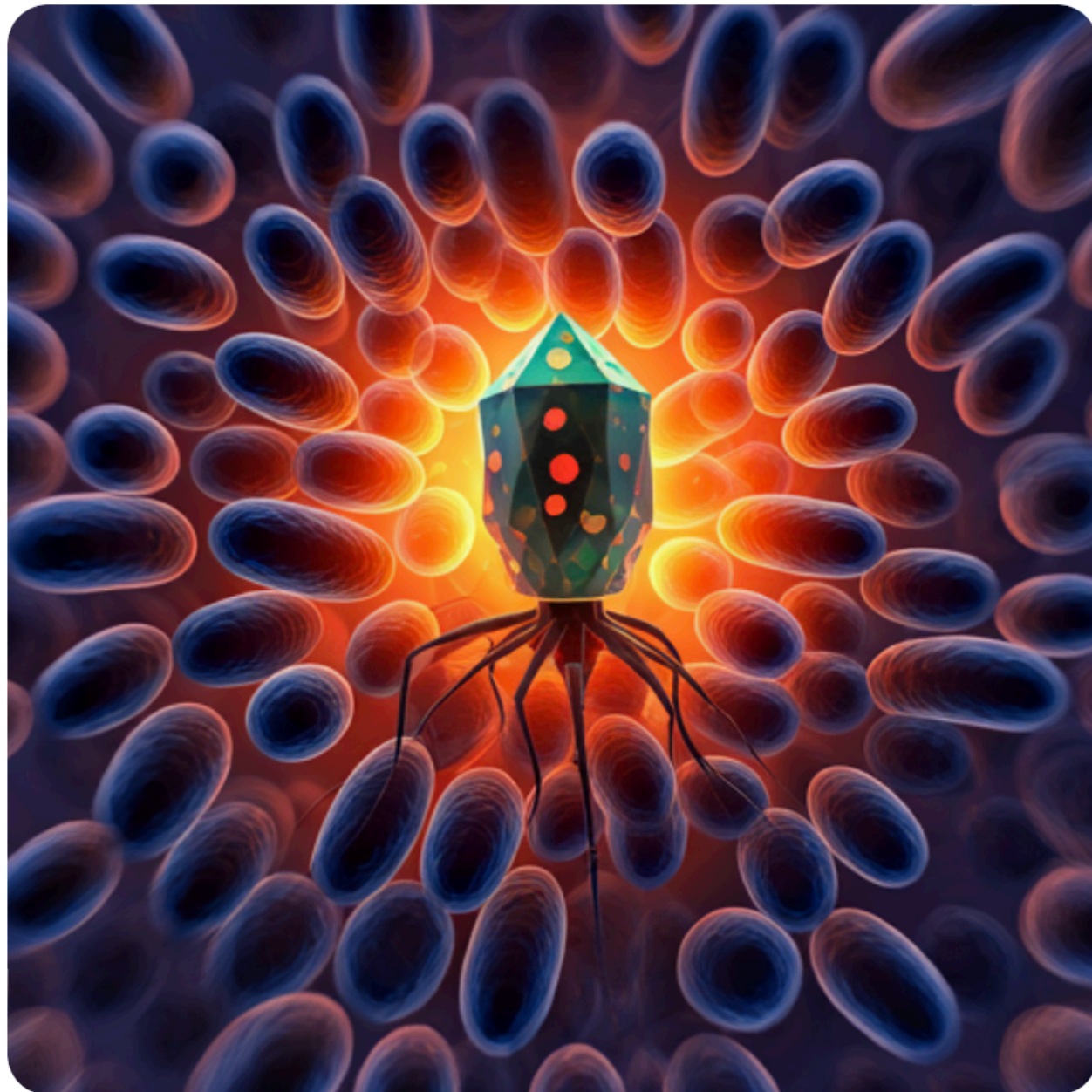


Which Talk is This?



Which Talk is This?

Pedro Leão: Virus influence on Asgard Archaea genome evolution



Which Talk is This?



Which Talk is This?

Lilian Caesar: Her royal phages: dynamics of the honey bee queen microbiome and its mobilome under stress



Which Talk is This?



Which Talk is This?

Anne Farrell: Hot genes, cool histories: bacterial adaptation to temperature



Which Talk is This?



Which Talk is This?

Luis Zaman: The Unreasonable Effectiveness of Evolution



AI and LAMG IV: Reverse Engineering Quotes



September 15-19, 2024
Lake Arrowhead, CA



LAMG 2024 Program

In the interest of minimizing waste, the program will be in digital format only for 2024 and future meetings

2024 Scientific Program

Level 3: Propose a LAMG Quote That Generated Image

Level 3: Propose a LAMG Quote That Generated Image

- **Less Abstract First**

LAMG Quote 1

Amazing Adventure

Snorkeling in the microbiome was an incredible experience! I learned so much about the tiny ecosystems and their significance to our world. Highly recommend it!

JOHN SMITH DOE



**MICRO LIFE
ADVENTURES INC.**

Exploring the Microbiome Depths

Join us for an unforgettable
underwater experience!



LAMG Quote 1

What we want to do is go snorkeling in the microbiome

Amazing Adventure

Snorkeling in the microbiome was an incredible experience! I learned so much about the tiny ecosystems and their significance to our world. Highly recommend it!

JOHN SMITH DOE



MICRO LIFE
ADVENTURES INC.

Exploring the Microbiome Depths

Join us for an unforgettable
underwater experience!



LAMG Quote 2

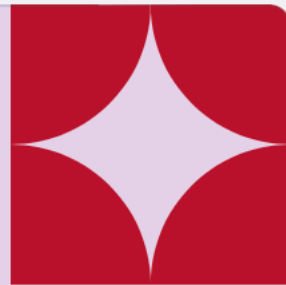
JOIN US FOR AN UNFORGETTABLE EVENING!

Aristocrats Unleashed Event

An evening exploring aristocratic
attitudes and influences.

OCTOBER 15TH, 6 PM
DOWNTOWN GRAND BALLROOM VENUE

Call us at 555-0123



“

Arrogance often
masks insecurity,
showing that even
the privileged seek
validation from
others.

OSCAR WILDE



LAMG Quote 2

That's because she has the arrogance of the aristocrats

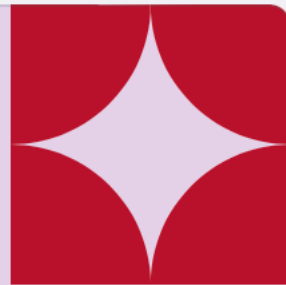
JOIN US FOR AN UNFORGETTABLE EVENING!

Aristocrats Unleashed Event

An evening exploring aristocratic
attitudes and influences.

OCTOBER 15TH, 6 PM
DOWNTOWN GRAND BALLROOM VENUE

Call us at 555-0123



“

Arrogance often
masks insecurity,
showing that even
the privileged seek
validation from
others.

OSCAR WILDE



LAMG Quote 3

THE TRUTH ABOUT ANTHRAX SIZES

Understanding
Anthrax
Misconceptions
and Realities



TRUTH SEEKERS
UNITED NETWORK

Exposing the Anthrax Truth

Lies about anthrax size revealed in
this post.



LAMG Quote 3

He lied about the size of anthrax

THE TRUTH ABOUT ANTHRAX SIZES

Understanding
Anthrax
Misconceptions
and Realities



TRUTH SEEKERS
UNITED NETWORK

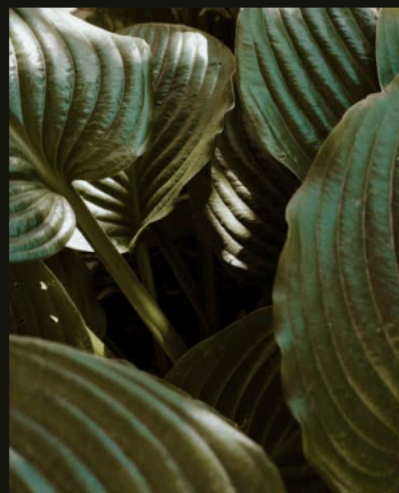
Exposing the Anthrax Truth

Lies about anthrax size revealed in
this post.



LAMG Quote 4

A WAGER BETWEEN LIFE AND DEATH



If it flourishes, you thrive; if
not, your soul is mine forever
—no exceptions!

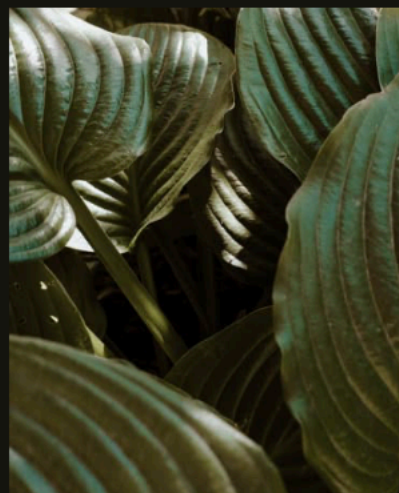


Grow or Lose

LAMG Quote 4

**If it grows you win, if it doesn't you have to
give me your soul for all eternity**

A WAGER BETWEEN
LIFE AND DEATH



If it flourishes, you thrive; if
not, your soul is mine forever
—no exceptions!



Grow or Lose

LAMG Quote 5

Soul Harvest

If It Grows, You Win



NURTURE LIFE, REAP
REWARDS.



In shadows it thrives, life dances, yet peril
arrives.

LAMG Quote 5

**The human mind can conceive of things with
no basis in physical reality**

Soul Harvest

If It Grows, You Win



NURTURE LIFE, REAP
REWARDS.



In shadows it thrives, life dances, yet peril
arrives.

LAMG Quote 6

EPIGENETICS AND ALIENS



Unraveling Genetic Mysteries



Unlocking Epigenetics

Discover how epigenetics influences our understanding of ancient aliens in science.

Alien Science Co.

April 2 | 2 pm to 4 pm

123 Anywhere St.

Join us today!

LAMG Quote 6

Epigenetics is the ancient aliens of science

EPIGENETICS AND ALIENS



Unraveling Genetic Mysteries



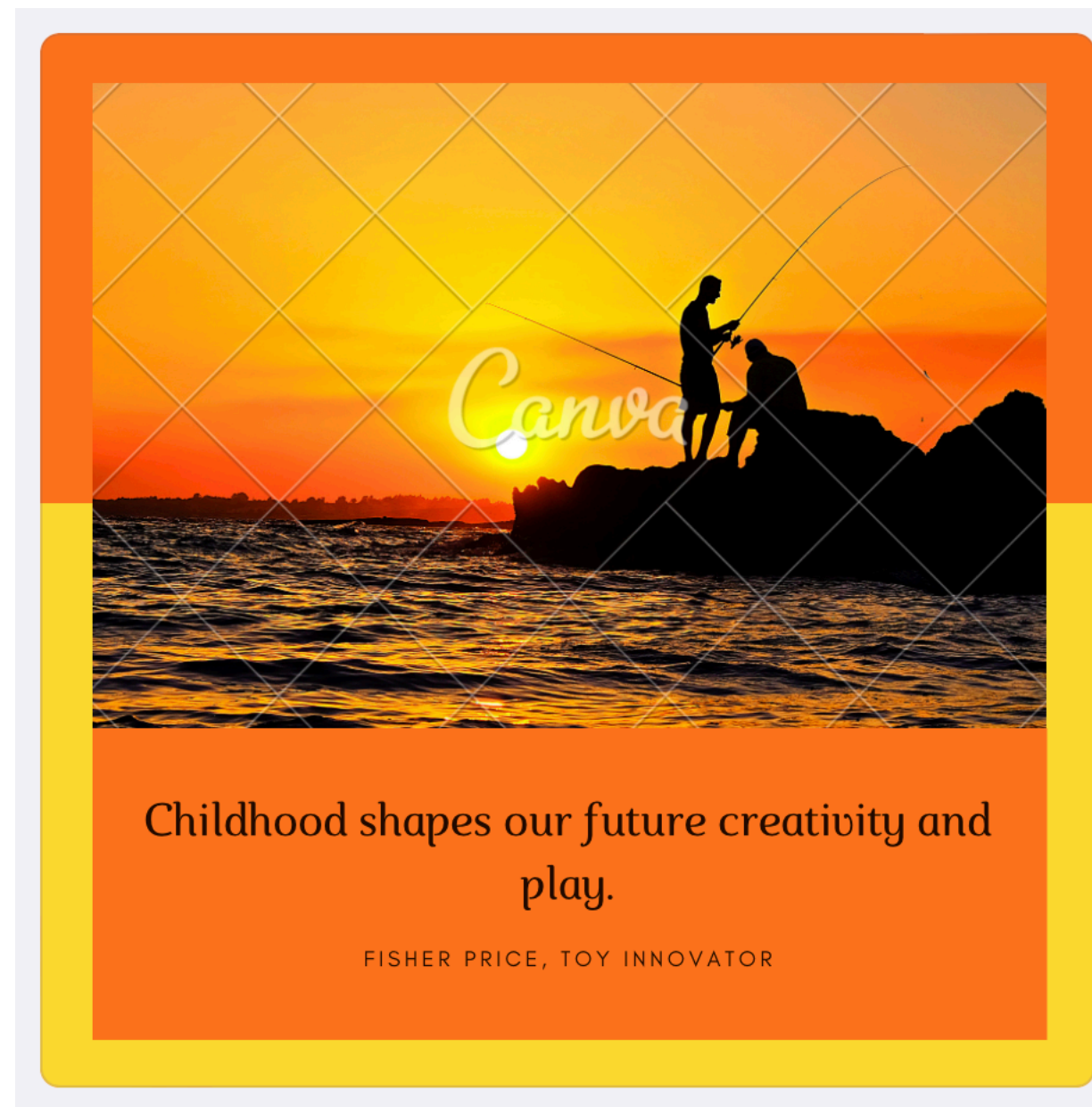
Unlocking Epigenetics

Alien Science Co.

Discover how epigenetics influences our understanding of ancient aliens in science.

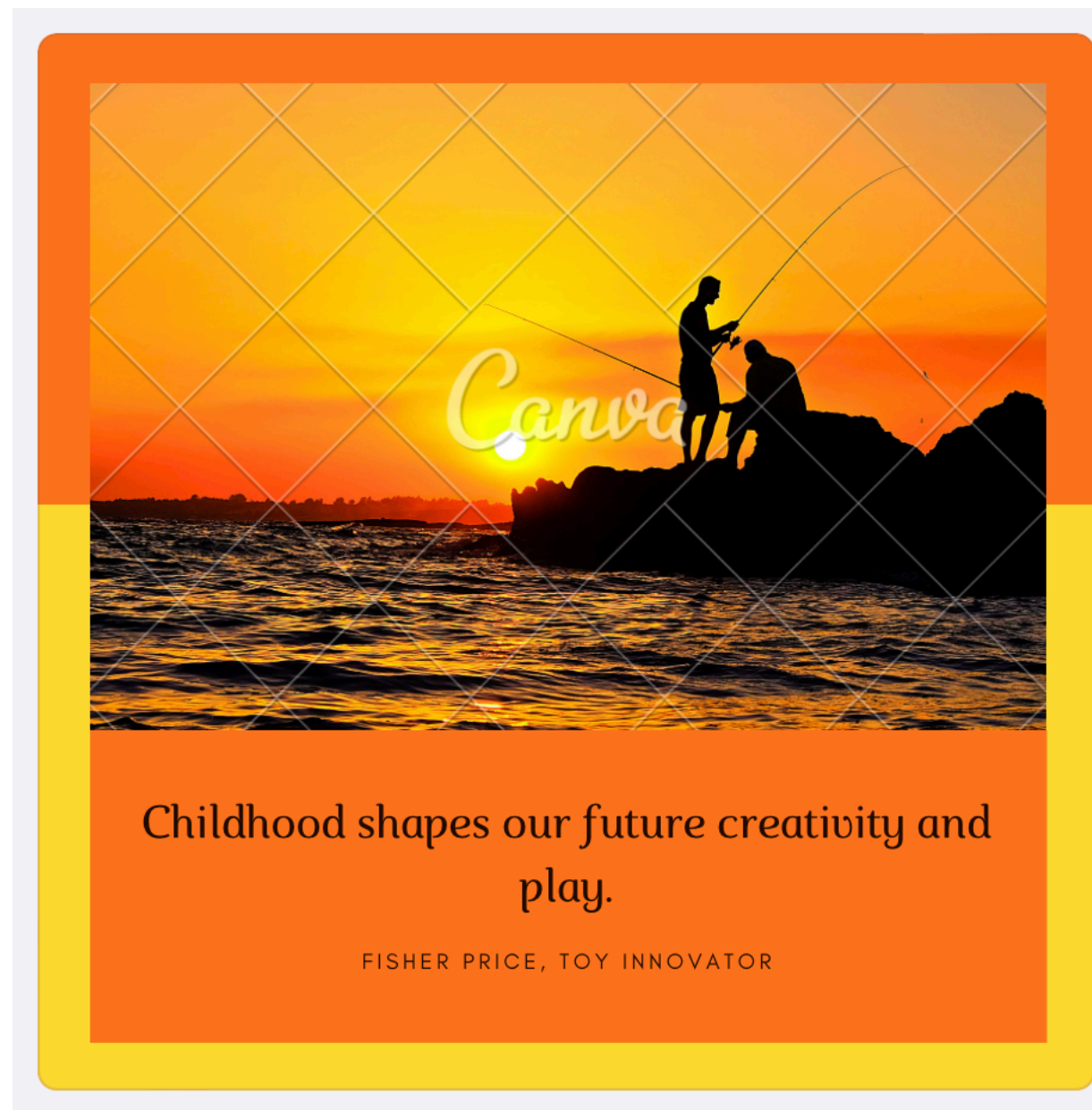
April 2 | 2 pm to 4 pm
123 Anywhere St.
Join us today!

LAMG Quote 7



LAMG Quote 7

I have been influenced by Fisher Price throughout my life



Level 3: Propose a LAMG Quote That Generated Image

- **More Abstract**

LAMG Quote 8



LAMG Quote 8

It looks like someone with a bad cold sneezed against the wall



LAMG Quote 9



LAMG Quote 9

Space-time continuum of genes and genomes



LAMG Quote 10

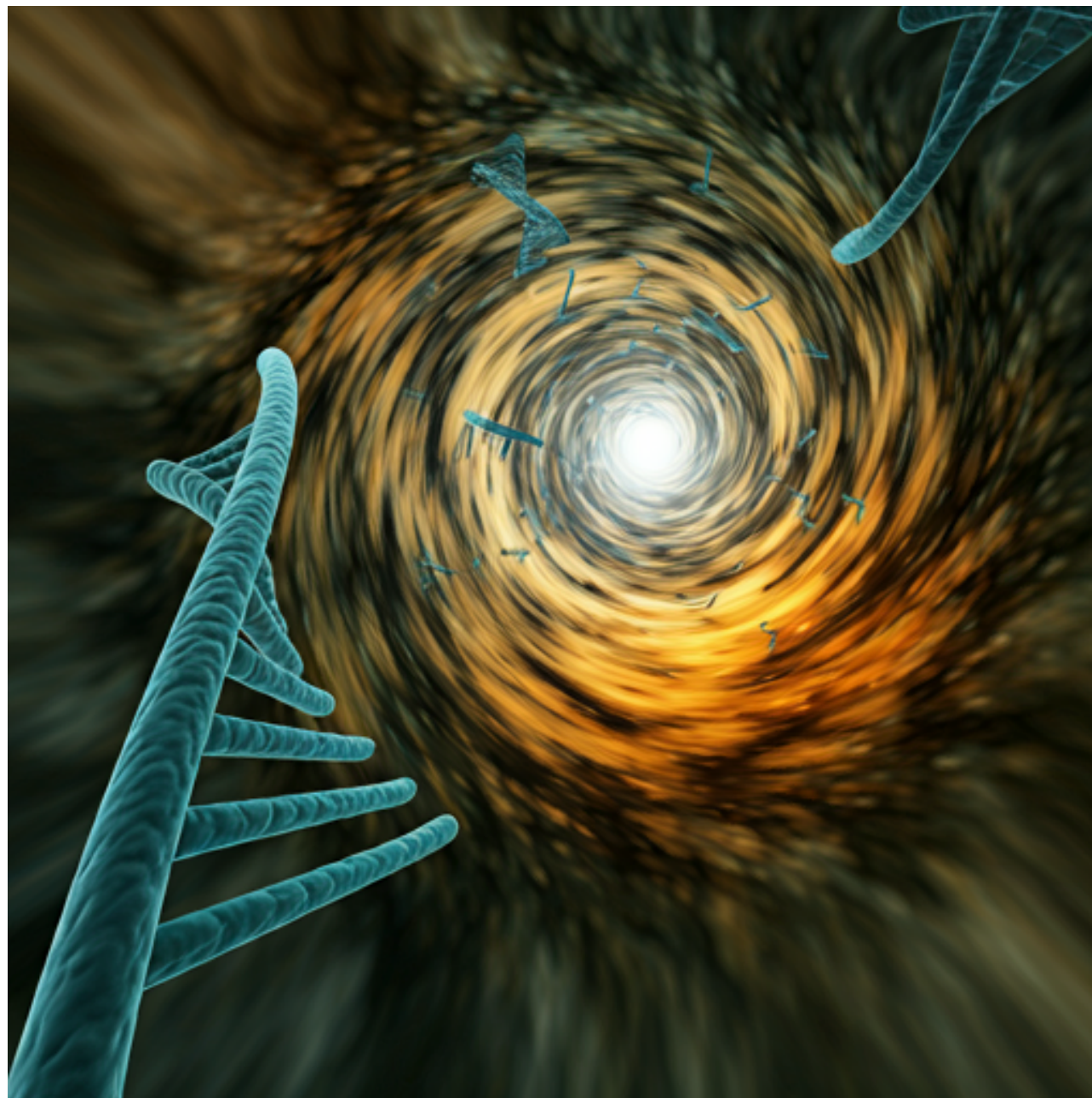


LAMG Quote 10

Thoughts can go faster than the speed of light

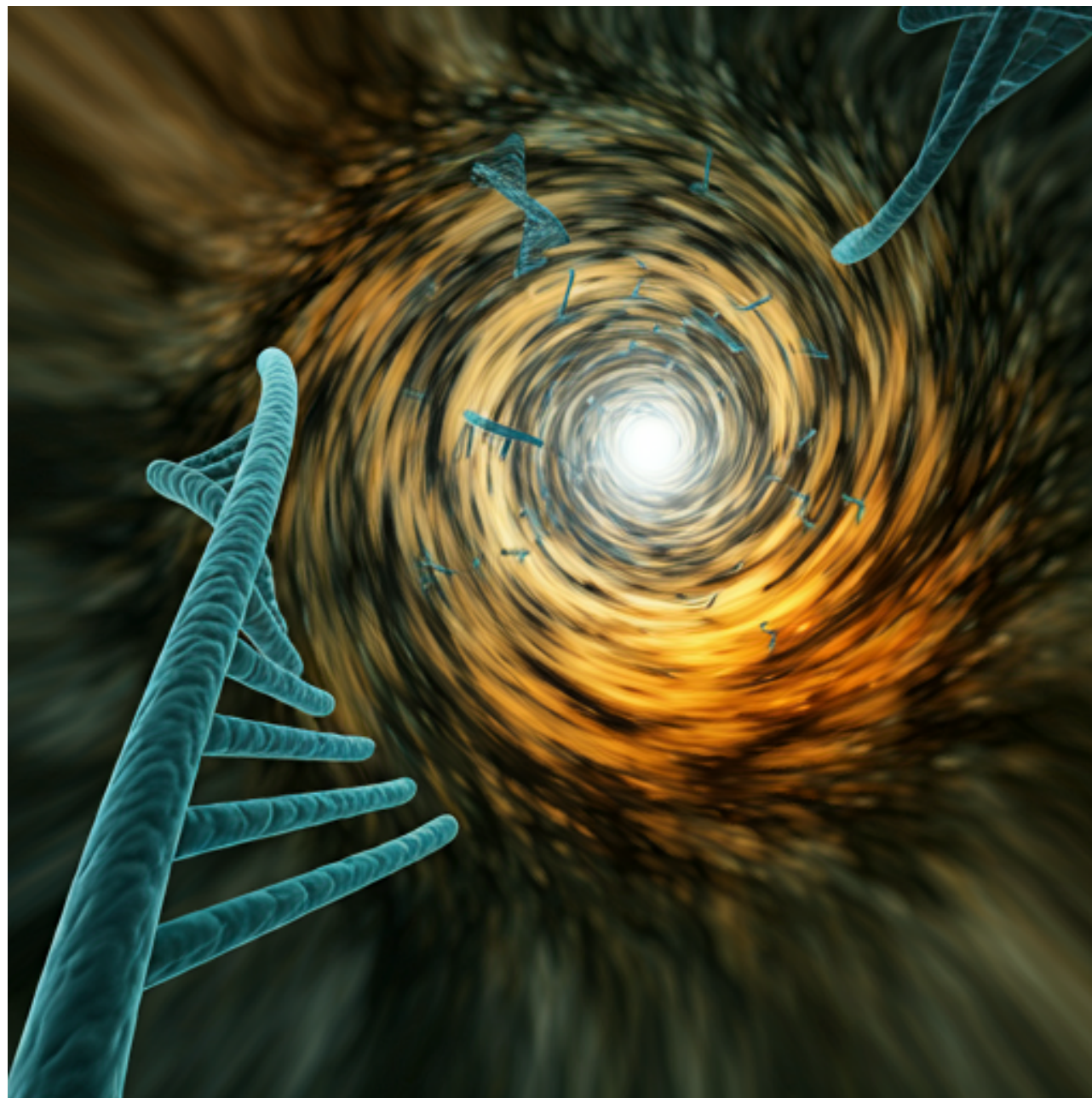


LAMG Quote 11



LAMG Quote 11

Gene sequences are the wormhole that allows one to tunnel into the past



LAMG Quote 12



LAMG Quote 12

And we will bring out the unused cheese from yesterday



LAMG Quote 13

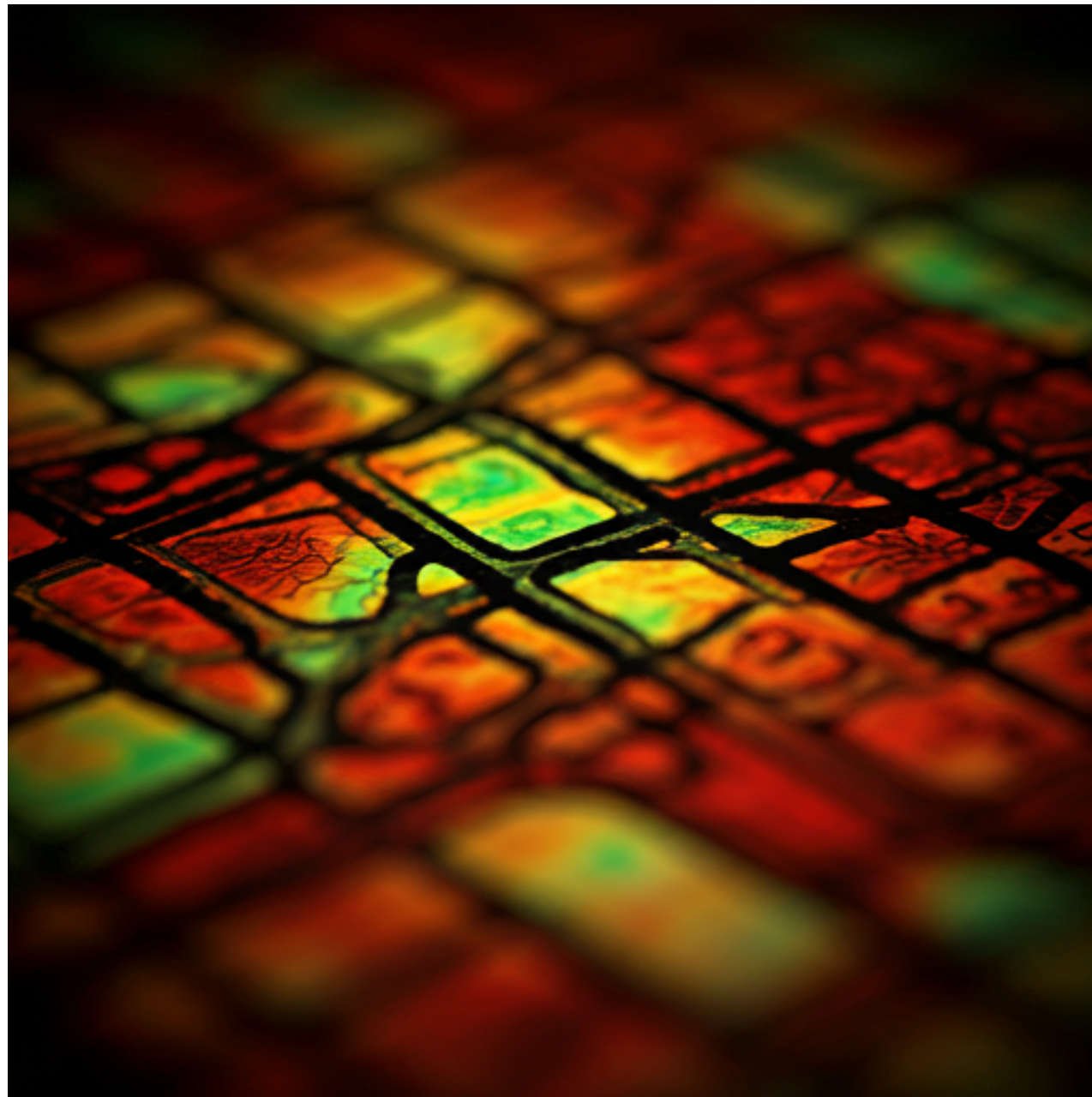


LAMG Quote 13

A little bit about time, but I am going to spend a lot less time on time than on space

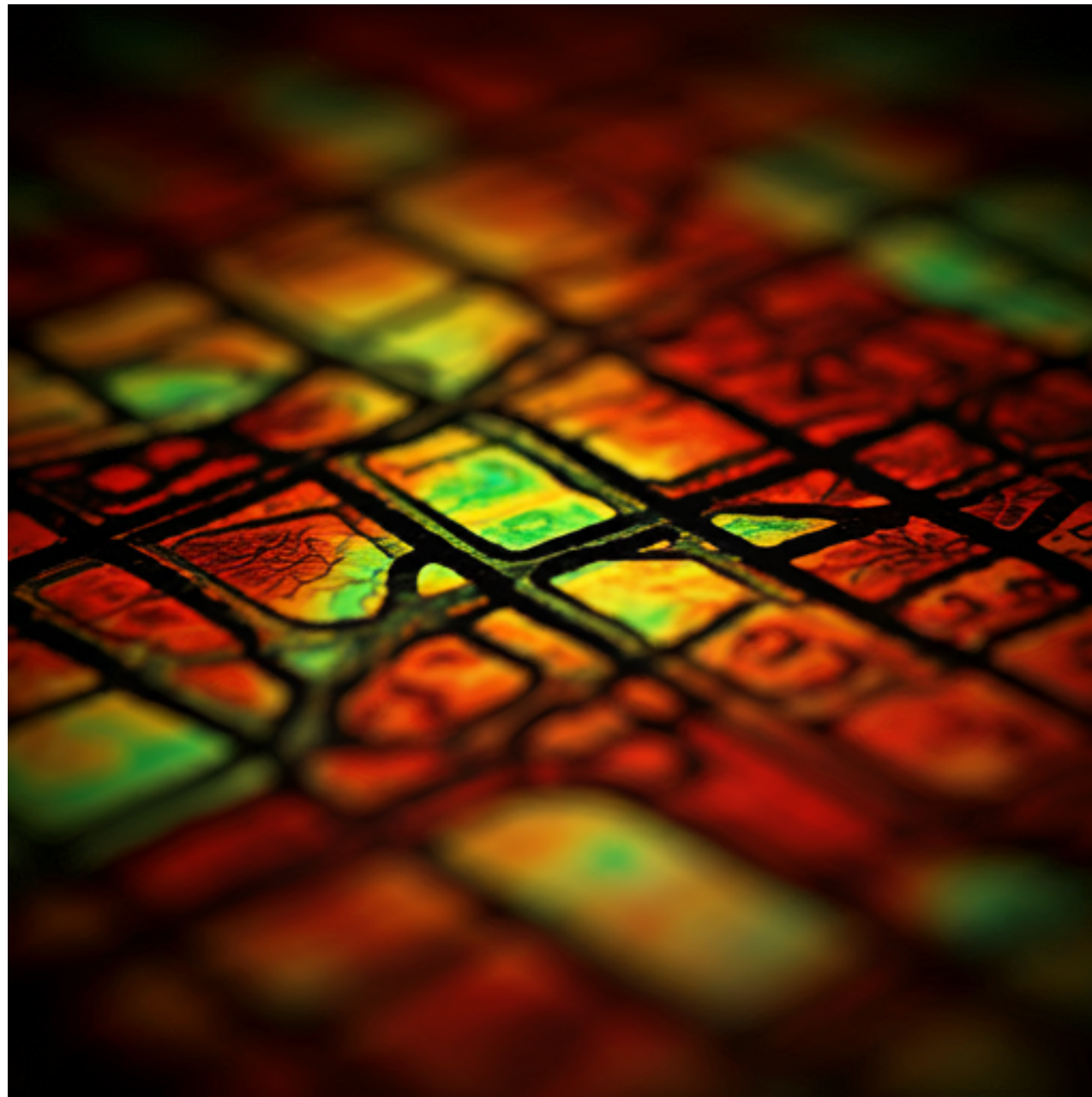


LAMG Quote 14



LAMG Quote 14

**I am going to show you this dense and
incomprehensible heat map**



LAMG Quote 15



LAMG Quote 12

Antibiotics do not kill things, they corrupt them



The Real LAMG24



The Real LAMG24



Make Your Own

Make Your Own

- **Post to Social Media**

Make Your Own

- **Post to Social Media**
- **Anywhere except possibly to the place owned by the racist, sexist, sociopathic billionaire**