



# 2021 INTERNATIONAL BRAIN BEE WORLD CHAMPIONSHIP



[THEBRAINBEE.ORG](https://www.thebrainbee.org)

THE NEUROSCIENCE COMPETITION FOR TEENS

NOVEMBER 5TH - 8TH, 2021

# The International Brain Bee

## neuroscience competition

Welcome from the 2021 IBB Planning Committee Chair

Dear Brain Bee National Champions,

On behalf of the 2021 IBB World Championship Planning Committee and the IBB Board of Directors, it is my honor to welcome you to the 2021 IBB World Championship! The IBB is the premiere international academic neuroscience competition. Each and every one of you has achieved something exceptional, and so it is my privilege to address you as a Brain Bee National Champion. Congratulations!

The members of the 2021 IBB World Championship Planning Committee and the IBB Staff have spent countless hours putting together both a competition and social agenda that (we hope) is worthy of the work, dedication, and passion that brought you here today. This year's social program features keynote presentations from two world leaders in neuroscience and Alzheimer's research; A panel of accomplished leaders in neuroscience policy, education, and research each sharing their personal story of how they use and promote neuroscience in their jobs, and willing to answer your questions about starting your own journey into neuroscience; An interactive, online research activity put together by the Allen Institute designed specifically for the Brain Bee to demonstrate the cutting edge of neuroscience research; A small group competition that allows you and your fellow National Champions to work together on promoting neuroscience to the public; and the opportunity to attend Neuroscience 2021, the Society for

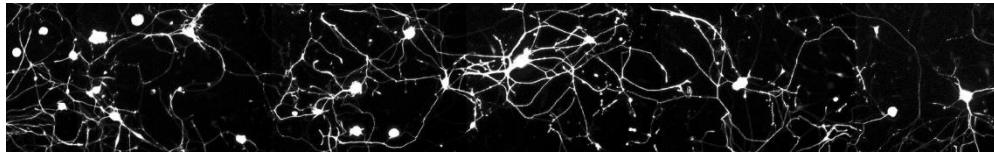
Neuroscience's virtual meeting. Finally, there is the competition itself - a challenging (yet rewarding) opportunity for you to demonstrate through written questions, patient diagnosis, neuroanatomy and neural histological identification and a live judging session your knowledge and passion for neuroscience. It promises to be exciting.

It goes without saying there were many challenges to organizing this year's event. Due to the COVID19 pandemic, we were not able to host a 2020 IBB World Championship. As a result, this year we will recognize two World Champions - one each from the 2020 and 2021 cohort of National Champions. The entire event is completely virtual, reaching 43 National Champions from 31 countries. Despite the time zones and distances that separate us, we come together as a group to celebrate you — the next generation of neuroscientists. And as a group working together, from the numerous National Coordinators and volunteers that have dedicated time to supervise their countries' champions during the exam, to the guest speakers and academic volunteers working from all hours of the day to host events and judge the different sections of the competition, we can have a successful, fun, and memorable event.

Best wishes and best of luck in this year's competition!

Garth A. Fowler, PhD  
Chair, 2021 IBB World Championship Planning Committee  
Chair, IBB Academic and Competition Advisory Committee  
Member, IBB Board of Directors





## - Program Schedule 05 November -

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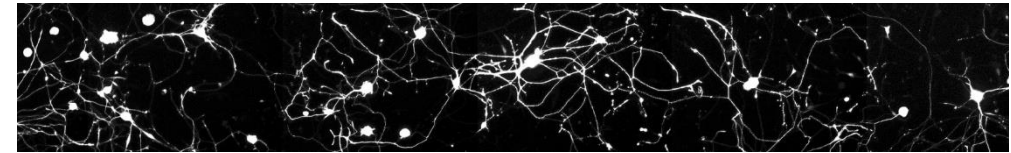
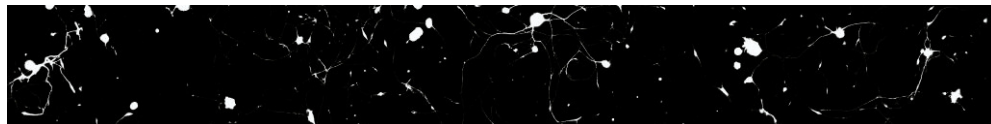
*CDT (Chicago time)*

8:00 AM - 9:30 AM    *Opening Ceremony*  
*Live Streaming Link:*  
<https://go.thebrainbee.org/opening-ceremony>

9:30 AM - 10:00 AM    *Opening Social*

10:00 AM - 11:30 AM    *Cultural Video Exchange*

3:00 PM - 5:00 PM    *Career Panel*  
*Live Streaming Link:*  
<https://go.thebrainbee.org/career-orientation>



## - Program Schedule 06 November -

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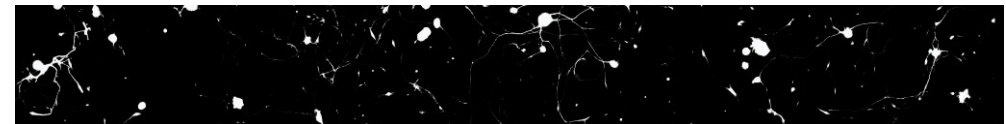
*CDT (Chicago time)*

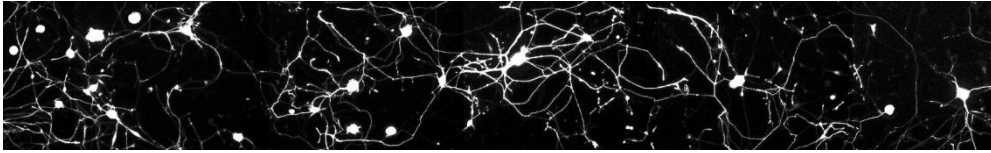
7:30 AM - 9:30 AM    *Team Competition*

9:30 AM - 10:30 AM    *Keynote: History of Neuroscience*  
*Larry Swanson, PhD, University of Southern California*  
*Live Streaming Link:*  
<https://go.thebrainbee.org/keynote-1>

1:30 PM - 2:30 PM    *Keynote: Alzheimer's Research*  
*Lea Grinberg, MD, PhD, University of California - San Francisco*  
*Live Streaming Link:*  
<https://go.thebrainbee.org/keynote-2>

6:00 PM - 7:00 PM    *Interactive Neuroscience Demonstration*





## - Program Schedule 07 November -

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*CST (Chicago time )*

8:00 AM - 10:00 AM *Live Judging Session*

*Live Streaming Link:*

<https://go.thebrainbee.org/live-judging>

## - Program Schedule 08 November -

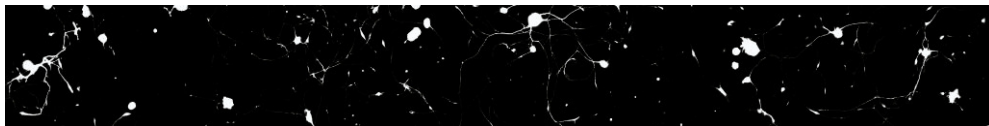
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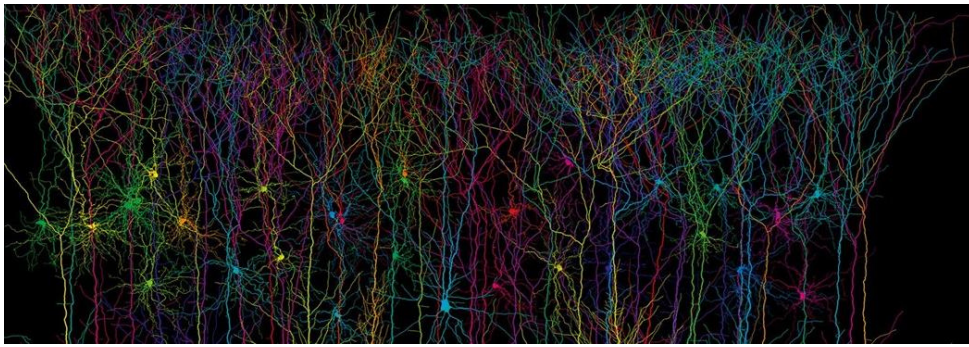
*CST (Chicago time )*

7:30 AM - 8:30 AM *Awards Ceremony*

*Live Streaming Link:*

<https://go.thebrainbee.org/award-ceremony>





The 2021 International Brain Bee  
- Planning Committee -

Garth A. Fowler, PhD, Chair of the Organizing Committee

Barbara D. Best, Dana Foundation

Kaitlyn Casimo, PhD, Allen Institute

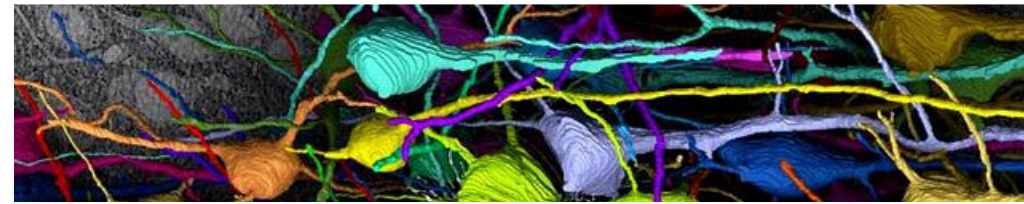
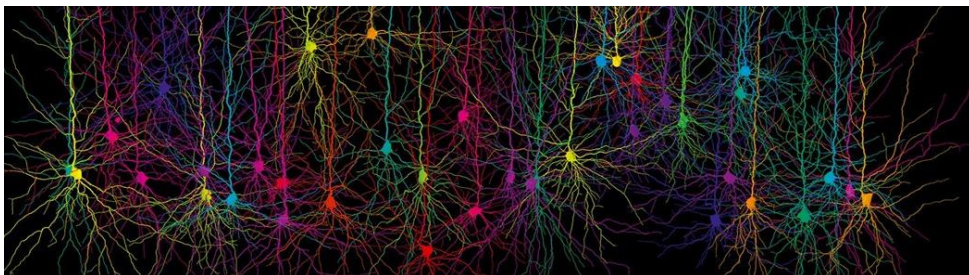
Claire Sexton, DPhil, Alzheimer's Association

Astrid Eberhart, IBB Executive Director

Ionut Dumitru, PhD, IBB Academic Director

Marlene Assfalg, 2021 IBB Coordinator

Florian Kohrt, IBB IT Consultant



The 2021 International Brain Bee  
- Planning Committee -

Written Test Workgroup:

Moataz Assem, PhD, UK - Coordinator

Michael Matisse, PhD, USA

Andrii Cherninskyi, PhD, Ukraine

Jenifer Einstein, USA

Nail Mirsaitov, Russia

Neuroanatomy and Neurohistology Workgroup:

Charles Watson, PhD, Australia - Coordinator

Alfred Sholl Franco PhD, Brazil

Jafri Abdullah, PhD, Malaysia

Juan Montiel, PhD, Chile

Andre Toulouse PhD, Ireland

Cristian Gurzu, Romania

Friedrich Schwarz, Germany

Aliny Carvalho, Brazil

Patient Diagnosis Workgroup:

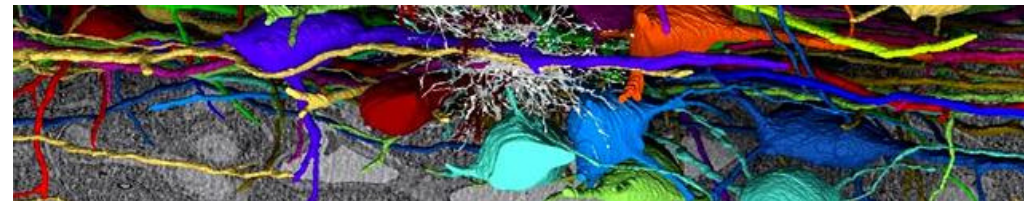
Tiziana Cesetti, PhD, Germany - Coordinator

Michael Lee, PhD, Hong-Kong

Natalie Contourier, Germany

Sarah Hörner, Germany

Teresa Spanò, Germany



# Letter from the IBB Founder

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Dear Leaders of Tomorrow,

The singularity at the center of a black hole is an awesome mystery, but nothing can compare with the singular beauty of the human brain and mind, with all its sensations, emotions, thoughts, and visions. The world needs you to reveal the mysteries of the brain and shape the future of mankind for the better. As our future generation, much is expected of you. Just as your hard work brought you here to the Brain Bee, it can also lead you out into the world to help others, especially those with brain disorders. The World Health Organization estimates that neurological disorders affect up to one billion people around the world.

Congratulations on your success, and for representing your family, community, and country at the 2021 World Brain Bee Championship. You have a lot to be proud of and look forward to in the decades to come. The promise of neuroscience is real, and the future of neuroscience will be revolutionary. You are at the threshold of the future of neuroscience and will witness discoveries in basic, translational, and clinical brain sciences that will improve human health, education, and society. We will learn about advanced brain mapping techniques, cognitive enhancement, personalized brain medicine, the brain in space, and robotic brains. Some of you may work on brain chips that prevent epileptic seizures, retinal implants, or cures for brain cancer and Alzheimer's disease. The impact of neuroscience research extends far beyond the clinic. It includes our homes, the classroom, the courtroom, and even the grocery store. Neuroscience is not only for scientists and people with brain disorders but for everybody: parents, teachers, lawmakers, businessmen, carpenters, farmers, astronauts, and you and me. Neuroeducation has contributed greatly to our understanding of dyslexia, and attention deficit hyperactivity disorder. Companies all over the world are using neuroeconomics to improve their business practices and marketing strategies. Brain-computer interfaces successfully allow control of prosthetic limbs and the perception of visual images in the blind.

Wearable neurotechnology and nervous system replacement parts are bringing us closer to a singularity with artificial intelligence.

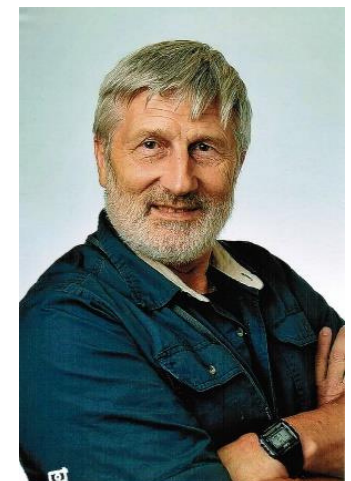
Stronger families and increased understanding of executive functioning and reward processing in the brain can lead to reductions in drug addiction, obesity and unwanted pregnancies. Worldwide cooperation using social neuroscience can reduce pain and suffering in the world. We are only beginning to understand the mysteries of consciousness and free will; and the fields of neuroethics and neurolaw are engaging the misuse of neuroscience knowledge.

The realization of these visions of the future will require interdisciplinary approaches. Teams of mathematicians, engineers, computer scientists, biologists, and chemists must work together. Projects, such as the Brain/MINDS project in Japan, the Human Brain Project of the European Union, and the BRAIN Initiative in the United States, must work together. And young men and women from different countries must work together in harmony and peace just as is the case in the Brain Bee.

In closing, I wish you love and happiness in your life. The human brain holds the key to your future. Despite all our advances, will neuroscience make us a happier and more loving society? Remember neuroplasticity. Not only can your brain create behavior, but behavior can create your brain, for better or worse. The choice is up to you

Live long and prosper,

Dr. Norbert Myslinski  
IBB Founder



## - Message from the 2019 IBB Champion -

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Dear 2021 International Brain Bee Participants,

Congratulations on having come this far on your neuroscience journey. You have shown your passion, dedication, and talent in neuroscience by representing your community in this global event. I believe no matter what happens, your community will celebrate your achievements when you return with glory.

The upcoming IBB 2021 Championship will be one of the peaks of your neuroscience journey, not even because of its prestige, but the experience that will benefit you for the rest of your life. As someone whose life has been tangibly and intangibly changed by IBB 2019 for the past two years, I am confident to say so. You won't have many chances like this to gather with the most brilliant peers with the same passion. I promise you that the people you meet here are bright, passionate, and kind and that you all will click instantly and are likely to be friends forever. The nervousness lasts a few days, the medal changes hand after a year, but the memories of debating a neuroscience topic and hanging out all night before farewell will be savored for years.

During this unforgettable event, I hope you enjoy yourself, make friends and keep exploring neuroscience. Meeting both peers and experts in the field of neuroscience, you will definitely gain a deeper understanding of what neuroscience is, why you want to pursue it, and how you could make a difference in the field.

I wish you all the best,  
Gwen Weng Yidou  
2019 International Brain Bee  
Champion



2019 World Champion Yidou (Gwen) Weng of China with Dr. Yoo-hun Suh, Co-Chair of the 2019 IBB Organizing Committee.

## - Past IBB Champions -

- 1999: David Alpay: Earl Haig High School, Toronto, CANADA
- 2000: Otilia Husu: Mountain Ridge High School, UNITED STATES
- 2001: Arjun Bharioke: Churchill High, New Jersey, UNITED STATES
- 2002: Marvin Chum: Earl Haig High School, Toronto, CANADA
- 2003: Saroj Kunnakkat: Lynbrook H.S., New York, UNITED STATES
- 2004: Bhaktapriya Nagalla: Farmington High School, UNITED STATES
- 2005: John Liu: Michigan High School, Berea, Ohio, UNITED STATES
- 2006: Jong Park, UT High School, Toronto, Ontario, CANADA
- 2007: Melody Hu, Wayzata H.S., Minneapolis, UNITED STATES
- 2008: Elena Perry, Richard Montgomery H.S., UNITED STATES
- 2009: Julia Chartove, Richard Montgomery H.S., MD UNITED STATES
- 2010: Ritika Chohani, Prabhavati Padamshi Soni I.C., Mumbai, INDIA
- 2011: Thanh-Liem Huynh-Tran, Cate School, CA, UNITED STATES
- 2012: Teresa Tang, Brisbane State H.S., Queensland, AUSTRALIA
- 2013: Jackson Huang, Academy for Science and Tech, AUSTRALIA
- 2014: Gayathri Muthukumar, National Public School, Bangalore, INDIA
- 2015: Jade Pham, James Ruse Agricultural H.S., AUSTRALIA
- 2016: Ana Ghenciulescu, "Mihai Viteazul" College, ROMANIA
- 2017: Sojas Wagle, Har-Ber High School, Arkansas, UNITED STATES
- 2018: Piotr Oleksy, Liceum Ogólnokształcące High School, POLAND
- 2019: Yidou Weng, Jiangxi Normal University in China, CHINA





## - Judging Panel -

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### **Dr. Carol Ann Mason, PhD**

Professor in the Departments of Pathology and Cell Biology,  
Neuroscience and Ophthalmology  
Chair of Interschool Planning  
Mortimer B. Zuckerman Mind Brain Behavior Institute  
Columbia University

Carol Mason is Professor of Pathology & Cell Biology, Neuroscience and Ophthalmology at the College of Physicians & Surgeons, and a member of the Mortimer B. Zuckerman Mind Brain Behavior Institute (ZMBBI), at Columbia University. She investigates the development of the pathway from eye to brain. At Columbia, Carol has been a co-director of the neurobiology PhD program and is currently the director of a NIH/NEI funded Vision Sciences Training Program and the Chair of Interschool Planning at ZMBBI.

Carol is a member of the National Academies of Medicine and Science, and is currently a Simons Foundation Senior Fellow. She was President of the Society for Neuroscience 2013-2014, and was an inaugural board member of the IBB. Her abiding passion is to guide the training of the next generation of neuroscientists.



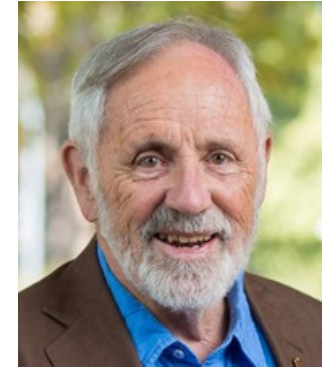
## - Judging Panel -

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### **Dr. Charles Watson, PhD**

Distinguished Professor of Health Sciences  
Curtin University, Perth, Australia

Charles Watson holds doctorates in medicine and science and has a specialist qualification in public health medicine. He has published over 100 research articles and 30 books. One of his books, a rat brain atlas published with George Paxinos, has been cited over 100,000 times. Charles's recent interest in gene expression in the developing brain is a product of his fortunate collaboration with the brilliant Spanish researcher, Luis Puelles.



Charles has a reputation for being an enthusiastic teacher of neuroanatomy at undergraduate and postgraduate levels. He has been involved in the Brain Bee competition in Australia for over 10 years and has recently joined the IBB exam team. He is currently contributing to the development a new IBB internet platform, which will offer neuroscience learning materials to Brain Bee competitors all over the world.

Alongside his interest in neuroscience, Charles is deeply involved in climate change advocacy and gun control. He is married to Anwen Williams and lives in Perth, Western Australia. He has two daughters, four grandchildren, and two border collie dogs.







## - Judging Panel -

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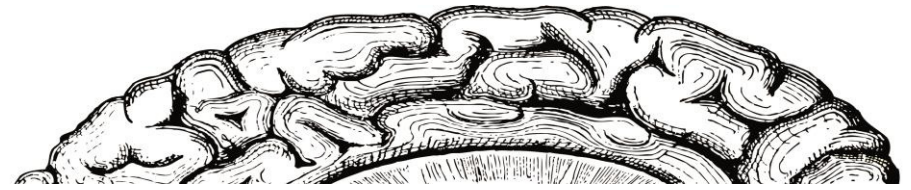
### **Prof. Paul Bolam FMedSci**

Emeritus Professor Senior Scientist  
Oxford University

Paul Bolam is emeritus Professor of Anatomical Neuropharmacology and emeritus Senior Scientist at the MRC Brain Networks Dynamics Unit at the University of Oxford. Paul's research has focused on understanding the neuronal networks that constitute the basal ganglia by anatomical and combined quantitative anatomical and physiological approaches in health and in disease models, and he has published over two hundred articles on the subject.

Paul graduated in Pharmacology at Chelsea College (University of London) in 1975. He then took up a graduate studentship at King's College Hospital Medical School (University of London) and was awarded his Ph.D. in 1979. The same year, he joined the Department of Pharmacology at the University of Oxford, and remained in post until 1983 when he was awarded an MRC Senior Research Fellowship.

Paul was co-Editor in Chief of the European Journal of Neuroscience from 2015 to 2020. He was also an Advisory Editor of Trends in Neuroscience, and a member of the editorial boards of several other journals. Paul was also a member and/ or chair of numerous scientific organizations



## - Judging Panel -

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### **Prof. Dr. Imre Vida**

Professor of Neuroanatomy  
Charité Universitätsmedizin Berlin

Professor Imre Vida obtained his MD and PhD degrees from the University of Pécs in Hungary in 1992 and 1996, respectively. Afterward, Professor Vida became a postdoctoral fellow at the Institute of Anatomy at Albert Ludwig University in Freiburg under the guidance of Professor Dr. M. Frotscher.



In 2006, Professor Vida was appointed assistant professor at the Albert Ludwig University until 2007 when he became Senior Lecturer in Neuroscience at the Institute of Biomedical and Life Sciences at the University of Glasgow in the United Kingdom. In 2011, Dr. Vida accepted the position as Professor of Neuroanatomy at the Charité Universitätsmedizin NeuroCure Cluster. Since 2013, Professor Vida is the Head of the Institute for Integrative Neuroanatomy at the Charité and, since 2016, the Acting Head of the Institute for Vegetative Anatomy. Professor Vida's work focuses on studying the morphological and physiological properties of GABAergic inhibitory interneurons and their functional role in the cortical circuits.





## - Keynote Lecture -

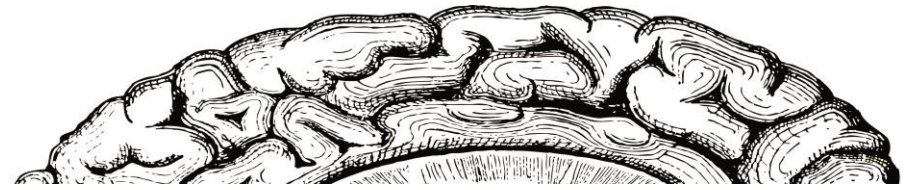
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### **Dr. Larry W. Swanson, PhD**

University (Distinguished) Professor  
and Appleman Professor of Biological  
Sciences University of Southern California,  
Los Angeles, CA



Larry did his graduate and postdoctoral research at Washington University in St. Louis, where he studied with W. Maxwell Cowan and Rita Levi-Montalcini. Since then he has headed systems neuroscience labs at Washington University, the Salk Institute, and the University of Southern California. His research has focused on discovering the organization of structure-function subsystems controlling motivated and emotional behaviors, and this approach has led to his current interest in assembling and describing the wiring diagram of the mammalian nervous system. His best-known books include *Brain Architecture: Understanding the Basic Plan*, and *Neuroanatomical Terminology: A Lexicon of Classical Origins and Historical Foundations*. In addition, he and his wife Neely have translated three important books written by the founder of modern neuroscience, the great Spanish scientist and Nobel Prize winner Santiago Ramón y Cajal. Larry is a member of the United States National Academy of Sciences, and has served as President of the Society for Neuroscience and of the Cajal Club, and as Secretary General of the International Brain Research Organization (IBRO).



### History of Neuroscience

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Digging into the history of neuroscience can be fun and inspirational—it is full of interesting characters and influential theories. But this history can and should also give you perspective and the habit of critical thinking—our knowledge is always incomplete and no scientific theory lasts forever. If you haven't gotten into this topic before, it might surprise you to learn that medical descriptions and treatment of brain injuries can be traced back almost 5,000 years in surviving Egyptian papyri, and that the modern Western view of the brain as the organ of thinking and feeling goes back to the great Greek physician Hippocrates. After going over this history, we will review major theories about how the brain works, from the European Renaissance down to the present day. Then we will have plenty of time for discussion. So please, before and during the lecture, come up with a question that really interests you; no question is too simple or embarrassing. There is nothing simple about neuroscience—or as interesting to us as conscious, feeling human beings.



## - Keynote Lecture -

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### **Dr. Lea Tenenholz Grinberg, MD, PhD**

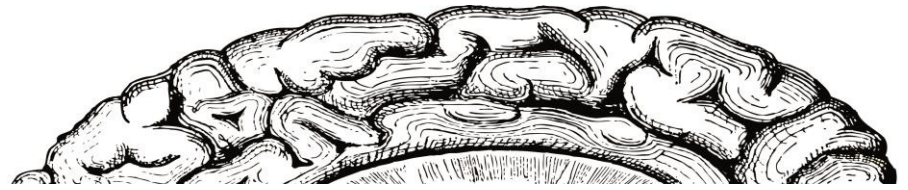
John Douglas French Alzheimer's Foundation  
Endowed Professor in Residence - Departments  
of Neurology and Pathology -UCSF, Global  
Brain Health Institute and University of Sao  
Paulo



Dr. Lea Tenenholz Grinberg is a neuropathologist specializing in brain aging and associated disorders, most notably, Alzheimer's and neurological basis of sleep disturbances in neurodegenerative diseases. Currently, she is a Full Professor and a John Douglas French Alzheimer's Foundation Endowed Professor at the UCSF Memory and Aging Center, part of the Executive Board of the Global Brain Health Institute, and member of the Medical Scientific Advisory Group for the Alzheimer Association. She is also a Professor of Pathology at the University of Sao Paulo.

In 2003, Dr. Grinberg was among the founders of a brain bank in São Paulo, focusing on brain aging. This brain bank which she had since developed into an extremely prolific and highly-regarded institution, helped Dr. Grinberg prove that, contrary to what has been accepted previously, the brainstem and not the cortex, harbors the first detectable neurodegeneration in Alzheimer's disease. In 2009, she was the recipient of the UNESCO-L'Oréal Award "For Women in Science" and in 2010 she received the John Douglas French Alzheimer Foundation "Distinguished Research Scholar Award". Currently, Dr. Grinberg is the Co-Leader of the UCSF/Neurodegenerative Disease Brain Bank, where she conducts neuropathological diagnoses of neurodegenerative diseases.

She also directs the Human Biology Validation Core for the NIH/U54 Tau Centers Without Walls, is a principal investigator from the Tau Consortium and co-lead the Neuropathology Core for the LEADS project.



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### Alzheimer's Research

“What is going on in the brain when older people start to lose memory and other brain functions.”

During the aging process, the brain of many people starts to fail, either because of vascular and degenerative injuries, in combination with failures of the brain physiological system. In this talk, I will show the most common causes of age-associated brain disease, how scientists discover what is wrong, and opportunities for improving brain health in the older age



## - Academic Volunteers -

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### **Dr. Garth A. Fowler, PhD**

Chair, 2021 IBB World Championship  
Planning Committee



Garth A. Fowler is a nationally recognized and active leader in STEM education and training. In his 15-year career he has given over 100 keynotes, presentations, and workshops on STEM education and training, science policy, and development of the STEM workforce, and has been an educational policy and research consultant for programs at New York University, The Scripps Research Institute, and the Karolinska Institute. He has served as a panelist for committees of the US National Academy of Sciences, co-organized summits for the Burroughs Wellcome Fund, and was chair of the AAAS Science and Technology Policy Fellowships program's Selection Committee.

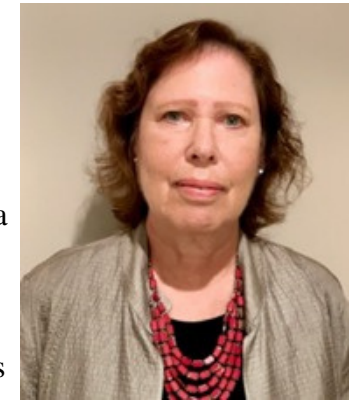
Dr. Fowler studied psychology as an undergraduate at The College of Wooster, where was a Howard Hughes Medical Institute Undergraduate Research Award recipient. He received his PhD in behavioral neuroscience from the University of Washington, where he was supported by a National Institutes of Health training grant in vision research. He completed his scientific training as a Research Fellow at The Salk Institute for Biological Studies. He was a science program manager at AAAS and Science magazine, was a faculty member and assistant chair in the department of Neurobiology at Northwestern University and was an Associate Executive Director for Education at the American Psychological Association. He is a current member of the International Brain Bee Board of Directors and is the chair of the IBB's Academic and Competition Advisory Committee (ACAC).

## - Academic Volunteers -

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### **Dr. Barbara D. Best**

Executive Director  
Dana Alliance for Brain Initiatives  
Dana Foundation



Barbara Best is Executive Director of the Dana Alliance for Brain Initiatives (DABI), a global organization of neuroscientists and clinicians with a proven history of and commitment to advancing public awareness about the progress and promise of brain research. The Dana Alliance is supported entirely by the Dana Foundation, a private philanthropic organization dedicated to advancing understanding about the brain in health and disease through research grants and public outreach. Following a key role in the official launches of DABI and its sister organization, the European Dana Alliance for the Brain (EDAB), she has overseen the Alliances growth and global expansion to more than 650 members worldwide.

Barbara manages all facets of DABI and EDAB and finds innovative ways to engage and involve members in both Dana Alliance and Foundation efforts. She was involved with the formation of the Brain Awareness Week campaign, managed the New York City Regional Brain Bee Competition for several years, and supervised many of the Dana Alliance's public outreach and educational programs. Ongoing efforts include forming strategic partnerships with like-minded organizations, supporting the goals of the Foundation.

Prior to joining the Dana Foundation, Barbara worked at Mobil Corporation managing weekly New York Times Op-Ed advertising; Mobil's sponsorships of PBS programs including Masterpiece Theatre, Mystery! and handling advertising, promotion, and events for Mobil's support of the International Association of Athletic Federations (IAAF) and the USA Track and Field (USATF) circuits. Barbara began her career in account management at Doyle Dane Bernbach Advertising.

## - Academic Volunteers -

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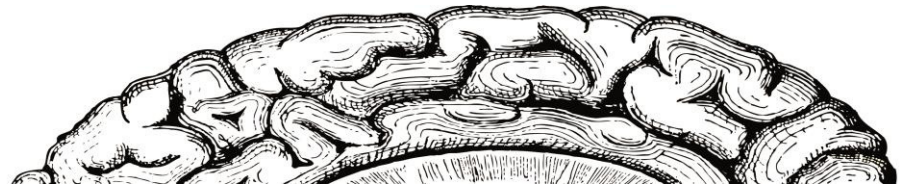
### **Dr. Julianne McCall, PhD**

Co-Director of Precision Medicine  
California Governor's Office of Planning  
& Research



As Co-Director of the California Initiative to Advance Precision Medicine, Dr. McCall oversees cross-sector health policy projects, research grantmaking, and state government interagency efforts, which include serving on the Governor's COVID-19 Testing Task Force and co-authoring the first-ever CA Surgeon General's Report on Adverse Childhood Experiences. Previously, Dr. McCall worked on public health and research policy in the California Senate Office of Research and as a Science and Technology Policy Fellow of the California Council on Science and Technology. Prior to her career in policy, she spent sixteen years in neuroscience research labs, including at the Salk Institute, Stanford University, the Cleveland Clinic, and the National Center for Microscopy Imaging Research. She conducted medical research as a Fulbright Fellow in Sweden and as a neuroscientist at the Neuroregeneration Laboratory of Heidelberg University in Germany.

In the community, Dr. McCall is a faculty member at UC Davis, co-teaches the UC Riverside Science to Policy Graduate Certificate Course, serves on the Editorial Board of the California Journal of Politics and Policy, volunteers for the International Brain Bee, serves on the board of New Leaders Council- Sacramento, and is the co-founder of TEDxFulbright, the German National Brain Bee, the Sacramento Brain Bee, the San Diego Brain Bee, the Central Ohio Brain Bee, and a chapter of the Sustained Dialogue Campus Network for racial justice. She earned a PhD in Neuroscience from Heidelberg University, Master's degree in Biomedical Sciences from the University of California- San Diego, and Bachelor's degree in Neuroscience from Denison University.



## - Academic Volunteers -

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### **Dr. Claire Sexton, DPhil**

Director, Scientific Programs & Outreach  
Alzheimer's Association



Dr. Sexton is director of Scientific Programs & Outreach at the Alzheimer's Association. In this role, she leads research programs and initiatives to accelerate the Association's scientific agenda. Her work spans the Alzheimer's Association International Conference® (AAIC®), the AAIC Satellite Symposia and the Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment (ISTAART). As an expert in the field, Dr. Sexton also delivers presentations to audiences around the country on the Association's role in scientific advancements and the overall state of Alzheimer's and dementia research.

Dr. Sexton received her doctoral degree in psychiatry from the University of Oxford, and she holds a bachelor's degree in neuroscience from the University of Manchester. Prior to joining the Association, Dr. Sexton served as an Atlantic Fellow for Equity in Brain Health at the Global Brain Health Institute, where her research focused on modifiable factors associated with risk for Alzheimer's and other dementias.



## - Academic Volunteers -

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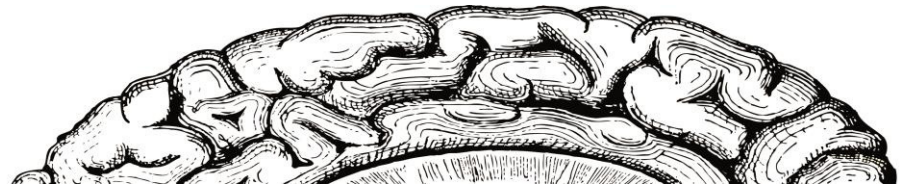
### **Dr. Michael Burman, PhD**

Professor of Psychology School of Social and Behavioral Sciences University of New England



Mike Burman is a passionate scientist and educator. Dedicated to discovering what makes people “tick”, his current research is focused on the neurobiological mechanisms by which early life trauma leads to later life consequences, such as anxiety, depression, chronic pain and addiction. The Burman Collaborative’s work has shed light on key sex differences in the processing of painful early life trauma and contributed to our understanding of the role the amygdala plays in pain, stress, and fear.

Mike’s main goal today is sharing a passion for science, and scientific thinking, with others. Instilled with the belief that the scientific method is our best tool for discovering truth, he has spent over 20 years in the college classroom teaching courses in psychology, behavioral neuroscience and animal behavior. He is also a consummate educator of the public, appearing on television, radio and in live events at libraries, schools and museums. A regional Brain Bee host, as well as a member of the Dana Alliance for Brain Initiatives and The Society for Neuroscience’s Public Education and Communication Committee, Mike has spread a passion for neuroscience throughout Maine and the United States. When not in the lab or classroom, you can find him with his wife and two daughters. He loves the mountains where you can find him tearing through the woods at top speed on bikes or skis, depending on the season.



## - Academic Volunteers -

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### **Dr. Kaitlyn Casimo, PhD**

Training & Outreach Specialist  
Allen Institute



Kaitlyn Casimo develops training programs and materials for scientists to learn how to use the open data resources and tools produced by the Allen Institute for Brain Science ([brain-map.org](http://brain-map.org)) and Allen Institute for Cell Science ([allencell.org](http://allencell.org)). She also created the education outreach program, reaching high school and college educators with free lesson plans, webinars, and more resources using the Institute’s open data and tools, available at [alleninstitute.org/learn](http://alleninstitute.org/learn). She received her BA from Pomona College and PhD from the University of Washington, both in neuroscience. She also volunteers at Pacific Science Center, where she has presented an annual Halloween-themed science talk since 2015.





## - Academic Volunteers -

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### **Dr Hannah Critchlow, PhD**

Science Outreach Fellow, Magdalene College, Cambridge University

Hannah is an internationally-acclaimed neuroscientist with a background in neuropsychiatry. Best known for demystifying the human brain on radio, TV, print and festival platforms. She's Co-Presented BBC's Tomorrow's World Live and was Science Presenter for BBC2 Family Brain Games and Channel 4's The Secret Lives of series. She's authored two books: Consciousness: A Ladybird Expert Guide (Penguin, 2018) and The Science of Fate (Hodder, 2019), which made The Sunday Times Bestseller list. Her work in science communication saw her listed as one of Cambridge University's most 'inspirational and successful women in science' and named as a Top 100 UK scientist by the Science Council. In 2019 she was elected member of the European Dana Alliance of the Brain and named by Nature as one of Cambridge University's 'Rising Stars in Life Sciences'. Hannah's choice of career stemmed from working as a Nursing Assistant at St Andrews Psychiatric Hospital.



## - Academic Volunteers -

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### **Dr. Ahmet Hoke MD, PhD**

Professor, Neurology and Neuroscience  
Director, Neuromuscular Division  
Director, Merkin Peripheral Neuropathy and Nerve Regeneration Center  
Department of Neurology Johns Hopkins School of Medicine



Dr. Ahmet Hoke is Professor of Neurology and Neuroscience, Director of the Daniel B. Drachman Division of Neuromuscular Diseases and Director of the Merkin Center for Peripheral Neuropathy and Nerve Regeneration at Johns Hopkins University School of Medicine. Dr. Hoke graduated from Hacettepe University School of Medicine in Turkey and then obtained his PhD in Neuroscience from Case Western Reserve University before completing his neurology residency training at Johns Hopkins Hospital and neuromuscular fellowship at University of Calgary.

He's been on faculty at Johns Hopkins School of Medicine since 1999 and combines a clinical practice seeing patients with translational basic research on mechanisms of peripheral neuropathies and nerve regeneration. He is the recipient of several awards including Derek Denny Brown Young Neurological Scholar Award (2005) and Wolfe Neuropathy Research prize (2018) given by the American Neurological Association, Myung Memorial Lecture Award (2017) by the Korean Neurological Association and Nejat Eczacibasi Medical Scientist Award (2019) by the Eczacibasi Foundation, Turkey. He is on the Board of Directors of Peripheral Nerve Society and Vice-President of the Toxic Neuropathy Consortium. He serves on several editorial boards and is the Editor-in-Chief of Experimental Neurology and Associate Editor for Annals of Clinical and Translational Neurology.



## STUDENT PARTICIPANTS



*Congratulations to all 2020  
National Champions*

ARGENTINA  
Jerónimo Rodríguez  
Cuello

AUSTRALIA  
Peter Susanto

BRAZIL  
João De Carlo

CHINA  
Ruoqi Yuan

EGYPT  
Ziad Hamad

FRANCE  
Matsuko Sano

GERMANY  
Krupa Poria

INDIA  
Praveena Sunsree

IRAN  
Ehsan Rezaei  
Moghaddam

ISRAEL  
Muhammadi Wattad

MALAYSIA  
Yu Cheng Lim



NEPAL  
Awahan Sapkota

NEW ZEALAND Kai  
Guo

RUSSIA  
Azamat Sibgatullin

SINT MAARTEN  
Aryan Notani

UNITED KINGDOM  
Timothy Lee

UKRAINE  
Ostap Shyika

UNITED STATES  
Rahil Patel





## ARGENTINA 2020

Jerónimo Rodríguez Cuello

Jerónimo Rodríguez Cuello is a 19-year-old student attending Universidad Favaloro in Ciudad de Autonoma de Buenos Aires. He has been passionate about behavior since High School and is now studying psychology with a neuroscience perspective. His main interests are emotions and language. Apart from college, he really enjoys reading about psychology, neuroscience and philosophy of mind, as well as physics, sociology and biology. In his free time, he also plays basketball at Club Comunicaciones and is learning to program in Python. He is absolutely excited about International Brain Bee experience because of the high-level competition and the learning environment.



## BRAZIL 2020

João De Carlo

At the age of 7 João Vignola De Carlo enrolled in Santa Maria School, where he would spend the rest of his school years. There he made the greater number of his friends, some of whom have been accompanying him for more than 10 years now, and also met the Teachers and Counselors that would inspire him for the rest of his life. In his path, he developed a special interest for the Natural Sciences, even though he would never dismiss a good History class.

Multiple were the ideas João had for his future throughout the years: Astronaut, Commercial Pilot and even Aerospace Engineer. However, it was not until 2020 that he was introduced by his High School Counselor to the Neurosciences studies through the enrollment in the IBB preparation. Ever since, João has been nourishing strong aspirations for Med School, in his desire for studying and comprehending not only the human brain, but the whole integration of human systems, in order to help other people.

Now, at the age of 18, João is preparing to enter the university world which raises the question: what is going to happen next? Well, we look forward to seeing that.



## AUSTRALIA 2020

Peter Susanto

Peter Susanto, 15 years old, is a Year 12 student at Haileybury Rendall School in Darwin, Northern Territory, Australia. He has broad interests in various subjects and works hard to achieve his goals. Peter loves challenges; thus, when he was introduced to the Brain Bee, Peter was intrigued by the mysteries and complexities of the brain. Peter realised that by understanding how the brain works, he can contribute to the process of unravelling humanity's enigmas. His desire is to make a difference in this world by pursuing his aspiration in medicine. Peter sees his participation in the International Brain Bee as a stepping stone to achieve his dream of being a doctor and an opportunity to interact with other participants from around the world.



## CHINA 2020

Ruoqi Yuan

Ruoqi Yuan won the Brain Bee 2020 champion of China in her 11th grade at Shenzhen Middle School. She is currently a first-year undergraduate doing Biochemistry in the University of Oxford. Neuroscience was a stranger to her until last year, the Brain Bee competition introduced her to this insightful field of study. Since then, in addition to her usual fondness for sports, music, games and anime, she would also have fun browsing through brain slices when she was in high spirits.



## EGYPT 2020

### Ziad Hamad

Ziad Ayman Hamad is a freshman at Faculty of Medicine - Helwan University, a STEM Ismailia Graduate, and a Biology enthusiast. His passion to biology led him to neuroscience which at first was an intriguing subject to him, and after going deep in this subject it started revealing its secrets to him which was amazing. He's always excited to learn more about the human's brain secrets. In his free time, he enjoys reading, video editing, and spending time with his family. At last, he's completely honored to represent Egypt in 2020 International Brain Bee Competition.



## GERMANY 2020

### Krupa Poria

Krupa Poria is a Year 12 student at Lise-Meitner Gymnasium Unterhaching in Munich, Germany. Her interest in science was fostered by her dad who introduced her to science magazines at a young age. Since then her love for physics, chemistry and biology has only grown. Krupa became interested in the brain after reading an article about how strokes can cause different aphasias. This led to her participating in the 2020 German Brain Bee. She was also given the opportunity to attend the NeuroCamp summer school, where she learnt more about how induced pluripotent stem cells are being used in on-going studies about the blood-brain-barrier. Krupa plans to study medicine in the future, not only because she is fascinated by the brain and the human body, but also because she wants to give back to the community and be part of something that can positively impact the lives of others. In her spare time Krupa enjoys reading, drawing, dancing and taking long walks with her family. Krupa is excited to participate in the IBB and meet like-minded competitors from around the globe.



## FRANCE 2020

### Matsuko Sano

Matsuko is a sixth form student at InterHigh School. She is hoping to pursue further study in a STEM field, and eventually find an academic niche she could dedicate herself to. In her quest to find a specialty, she has had the chance to meet some truly inspiring scientists who have shared the wonders of their research with her. Her neuroscience "awakening" occurred as a result of meeting Benjamin Prud'homme, a biologist she greatly admires who specialized in evolutionary developmental biology (Evo-Devo). He explained that in his field, and in the broader study of biology, neuroscience was becoming more and more relevant in our understanding of evolution — particularly in the diversification of behavioral characteristics across species. As Matsuko had always been interested in evolution and the mechanisms that have led to the diversity between species as well as within one, neuroscience naturally piqued her interest. The France Brain Bee was a great opportunity to familiarize herself with this exciting field, and she is honored to now participate in the International Brain Bee alongside students from all around the world



## INDIA 2020

### Praveena Sunsree

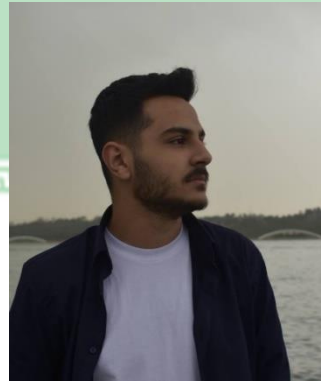
S.G. PRAVEENA SUNSREE has completed her 12th grade from Senior Secondary School, Chennai. She has a great passion towards science particularly biology and the field of medicine. She wishes to learn and discover mysteries of the human body which according to her is a never-ending puzzle. She aspires to become a doctor in the future as she feels it would give her an opportunity to serve a greater part of the society. She developed an interest towards neuroscience especially cognitive intelligence while preparing for the brain bee competitions. She feels one can understand oneself better by knowing about the working of the super organ 'brain'. She is also a public speaker and has participated and won several prizes in oratorical and debate competitions conducted across the region. Her other interests include reading books particularly Tamil literatures and doing yoga which she feels is essential to get a balance between body and mind. She loves to explore the world by learning new skills and gaining new knowledge. She is excited to be part of IBB and wishes to gain new experience from it.



## IRAN 2020

### Ehsan Rezaei Moghaddam

Ehsan Rezaei Moghaddam is in the twelfth grade in Darolfonoon school. A poster in his school made him familiar with the Brain Bee competition and then he became familiar with Neuroscience. With great effort, he became the champion of Brain Bee in his country. Besides, he loves business. He also enjoys rock music. He loves Persian food as much as he loves Italian. His dream is to become the Brain Bee's world champion.



## MALAYSIA 2020

### Yu Cheng Lim

Yu Cheng is a 17-year-old Form 5 student from Malaysia. He is a self-proclaimed autodidact and an environmentalist. Being concerned about the criminal justice system and ethics, he has been led to explore the link between consciousness and moral culpability, hence foraying into neuroscience. His interests however mainly lie in physics and mathematics. He would hope to witness intergalactic travel in his lifetime. Also, he aspires to share his study notes and his journey as an autodidact: all the wrong turns he has taken and all the right choices he has made. When not studying, Yu Cheng enjoys photographing flora and fauna for iNaturalist. Besides, he would think of new ways to reduce his family's carbon footprint and to implement a sustainable diet, touting the power of egg tofu. He is eagerly waiting to conquer Mount Tahan (Gunung Tahan) at the Pahang National Park (Taman Negara) in Malaysia. He spends his personal time philosophizing about life: he believes that life is a journey of solving problems and living honestly. All in all, his motto is, live with love, burn with passion, hug trees.



## ISRAEL 2020

### Muhammad Wattad

Muhammad Wattad, born in Jatt village, is a highly educated person and an avid reader, hard-working as well as committed, always willing to invest every effort to reach extraordinary results. It is not surprising, therefore, that he has distinguished himself as the top scorer of his grade at Al-Qasemi High School, a prestigious school to which students with stellar achievements and extraordinary personalities are admitted after passing an entrance exam. Muhammad is an enthusiastic volunteer. He volunteered in different hospitals, youth movements, and social activities. He is so thankful that he accidentally got to know about the Brain Bee. Neuroscience turned to be vehemently interesting for Muhammad seeing that a lot of work is yet to be done. He is considering admitting medical school and willing to become a great neurosurgeon, hoping to remarkably contribute to the field.



## NEPAL 2020

### Awahan Sapkota

Awahan Sapkota is a high school student from St. Xavier's Maitighar Campus, Nepal. He has a deep interest in biology and neuroscience. He was motivated to explore these fields when he saw the pain inside people due to diseases. As a result, he wants to engage himself in research to contribute to the efficient diagnosis and treatment of diseases. Furthermore, he wants to understand disease progression as well as biomarkers and drug targets for neurological diseases, such as Alzheimer's, utilizing bioinformatics and AI. Participating in the "Advanced Neuroscience Medical Internships," he was able to extend his interest in neuroscience, whereby he got the opportunity to link neuroscience with medicine, law, ethics, and psychology. Besides these, he is involved in the STEM Ambassador Program where he is working to generate interest in STEM in middle school students in remote areas of Nepal. In his free time, he is busy hiking the beautiful green hills of Nepal.



## NEW ZEALAND 2020

Kai Guo

Kai lives in New Zealand. He picked up many small hobbies such as origami, cardistry but mostly he's been playing the flute and tennis for around 5 years. Currently he has an intense interest in music, mainly kpop, especially due to the dances that hooked him into them. His current goals are to get through this final year of high school and be able to get into Med school to pursue his dream of working in the medical world.



## SINT MAARTEN 2020

Aryan Notani

Aryan Notani is a 12th grade Student at Learning Unlimited Preparatory School in Sint Maarten. His favorite subjects in school are biology, health sciences, public health, graphic design, and robotics. He has always been interested in science, particularly the human body, and aspires to be a physiotherapist when he grows up. He is also interested in neuroscience and during his preparation for the National Brain Bee, he was fascinated to learn so many things about the brain. Outside of academics, his hobbies are playing tennis, hanging out with friends, boxing, reading books, listening to music, and swimming at the beach. His main motivation for winning this competition is to show that with the right amount of dedication and passion, anything is achievable.



## RUSSIA 2020

Azamat Sibgatullin

Azamat Sibgatullin studies in high school at IT Lyceum of KFU. He is fond of chemistry and biology. He wants to become a doctor and open his own clinic. He studied neural interfaces and carried out a project on processing information from the brain. Therefore, he started studying neuroscience and decided to connect his life with this area. He learned about the IBB and decided to participate as it is a great experience and an amazing opportunity to meet new acquaintances.



## UNITED KINGDOM 2020

Timothy Lee

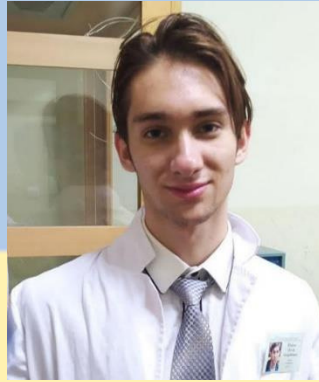
Timothy Lee is a 17-year-old student at South Wilts Grammar School in the UK. He is applying to study medicine at university and is interested in a variety of subjects. His favorite subject is biology and wishes to learn more about the biological mechanisms within the body. Neuroscience was a gateway for Timothy to start learning about the mysteries of humans, and he is looking forward to researching and developing new ideas and theories, which he will use when helping his future patients. Timothy not only enjoys learning, but teaching, as spreading opportunities is a large part of his ethos. He created a Brain Bee club at his school, to teach other students the content and ultimately provide them an opportunity to try something new. One student went on to represent his school in the National Competition, and is now teaching other students too, helping to continue Timothy's legacy. Outside of academia, Timothy enjoys playing badminton, cycling and playing the piano, helping him to maintain an active and diverse lifestyle.



## UKRAINE 2020

### Ostap Shyika

Ostap Shyika is a 18-year-old Ukrainian student of the Ivano-Frankivsk National Medical University. In his free time, he enjoys reading scientific literature, playing piano and swimming. Since childhood, he has had a passion for medicine, so he diligently studied biology, chemistry, physics at school. He participated in the Olympiads in those subjects as well as in the Junior Academy of Sciences of Ukraine competition of scientific projects. Ostap thinks that better understanding of processes in the brain will lead to better understanding of different pathologies and ways of their treatment. That's why research in neuroscience and applying new knowledge in clinical practice is the best way to minimize the unnecessary suffering in the world.



## UNITED STATES OF AMERICA 2020

### Rahil Patel

Rahil Patel is an eleventh-grade student at Upper Merion Area High School. He is especially interested in the fields of biology and neuroscience. His passion for neuroscience was sparked by learning about the various disorders of the nervous system and challenges they can present. He further explored his interest by competing in the Brain Bee and attending the Advanced Medical Neuroscience Internship at Georgetown University, where he loved seeing the practical and ethical dimensions of the field. He is fascinated by the complex aspects of the nervous system like consciousness and the questions they create. Rahil hopes to study the field of neuroscience more in the future and apply his knowledge. In his free time, Rahil likes to run as part of his school track team as well as watch sports. He also enjoys helping his community through various projects such as organizing a food drive for the local community food bank. Rahil is honored and excited to represent the United States in this competition.





## STUDENT PARTICIPANTS



*Congratulations to all 2021  
National Champions*

BRAZIL  
Kaléo Ferreira

CANADA  
Antoni Klonowski

CHILE  
Catalina Jara

CHINA  
Zitong Cheng

CROATIA  
Paula Šego

EGYPT  
Bishoy Kamel

FRANCE  
Alexis Vitalis

GERMANY  
Jona David Schulz-  
Oster

GRENADA  
Jaden Stanislaus

HONG KONG  
Long Hei Anson So

IRAN  
Hasti Fakhri

JAPAN  
Nayuta Mizuguchi

LITHUANIA  
Edgaras Zaboras

MACAU  
Sap Tou Lao

MALAYSIA  
Ahmed  
Adam Bin Razman

NEPAL  
Ankita Subedi

NETHERLANDS  
Katinka Ruhof

POLAND  
Patrik Wekwejt

ROMANIA  
Diana Marinescu

RUSSIA  
Kharun Aslan

SAINT KITTS AND  
NEVIS  
Melissa Mills

SOUTH KOREA  
Yoona Kim

UNITED KINGDOM  
Rhian Lindsay  
Dowding

UKRAINE  
Viktoriia Vydzhak

UNITED STATES OF  
AMERICA  
Yashwanth  
Gokarakonda



## BRAZIL 2021

### Kaléo Ferreira

Kaléo Gabaldi Ferreira is a 12th year student at Colégio Ilimit Educacional. Since he was younger, the student had a great fascination for mathematics and biology. However, in the last few years, Kaléo was able to discover Neurosciences through the Brazilian Brain Bee and became passionate by this subject. In his view, everything related to the nature and human behavior (including human history) can be explained from a neuropsychological analysis. In his free time, Kaléo enjoys listening to music, playing games and watching series. In the future, Kaléo intends to research and teach about the correlation between the human mind and the science of the brain, as well as promote the Neurosciences. He feels extremely happy to be able to participate in an event that contains participants from all over the world, as well as hopes to learn a lot from the entire International Brain Bee.



## CHILE 2021

### Catalina Jara

Catalina Jara is a 10th-year student at Altazor School in Santiago, Chile. Her entire life, she has been interested in learning more than taught so from a young age she has participated in PENTA UC. This is a program where students can have different courses every semester in one of the most prestigious universities in Chile. This has really impacted her school life since she has been able to move from different areas, including philosophy, chemistry, languages, art, medicine, and biology where she finally found her interests in the last two. From there she hasn't stopped. Catalina has taken many extracurricular courses, programs, and competitions, including areas like neurosurgery, math, English, and engineering. She likes to spend her free time with her two dogs "Cacho" and "Lady", talking with her friends and reading. Another crucial part of Catalina's life is her sister, Victoria, who is currently a medical student. Her sister's help, advice, and support throughout this process have been priceless to Catalina. She hopes to follow her big sister's steps and become a doctor and her neuroscience knowledge has only brought her closer to her goal.



## CANADA 2021

### Antoni Klonowski

Antoni Klonowski is a fifteen-year-old, tenth-grade student at Vincent Massey High School in Brandon, Manitoba, where he is most interested in studying chemistry and biology. Learning about the nervous system allows him to dive deep into the world of medicine, and these experiences will certainly aid him as he aspires to become a neurosurgeon in the future –after he graduates from high school. He desires to aid people with different neurological problems by using all that he learns to leave a positive impact on the world. Antoni enjoys productively spending his spare time reading and educating himself on various new topics (primarily within mathematics, science, and history), practicing classical guitar, running, playing badminton and table tennis, and listening to classical music.



## CHINA 2021

### Zitong Cheng

Zitong (Summer) Cheng is currently studying at Shanghai Pinghe School. Having interest in Psychology since high school, she was eager to know about biological bases of human mind, emotions and behavior. BrainBee introduced her to a new world of understanding psychology from a scientific perspective and lay a strong foundation for her future study. In her spare time, she devoted herself into volunteering work where she gets to spend time with lots of kids in need of help. Some of them also suffer from mental problems like ADHD. Their experiences and stories deeply touched her, which made her focused more on developmental psychology and related topics in neuroscience during her study. This firming her belief that she can use her professional knowledge to help others. With the theories she has learnt, she believes she will find a new, innovative and more well-founded approach to treat people's mental health issues like depression, anxiety and schizophrenia.



## CROATIA 2021

Paula Šego

Paula Šego is a 18-year-old Croatian student attending the XV. Gymnasium. She has always been interested in science, but she chose to study neuroscience after she watched the movie 'Transcendence' for the first time. That's when she realized that research on the brain might lead to amazing new discoveries and inventions. She is planning to study cognitive science and AI. Although her main interest is studying the brain, she is also interested in philosophy, physics, mathematics and coding. She would like to create a video game in which she could express her creativity and ideas. Eventually, she hopes to make an interface through which humans could interact with AI-s that are based on brain research. Outside of academics, Paula enjoys gymnastics, art, traveling and writing.



## FRANCE 2021

Alexis Vitalis

Alexis is 18, and he is currently going through his first year of medical school in Clermont-Ferrand, a city located in the middle of France. To him, this course choice shows his passion and interest for sciences, and more specifically sciences guided towards the human body! Aside from that, he definitely enjoys things from the everyday-life, such as hanging out with friends, going to the movie theater, going shopping, and tons of other things. He doesn't particularly practice any sport, though he dances on a daily-basis. He also loves creating artistic content, such as short video clips or photos showcasing different kinds of makeup for example! Parts of those things may explain why some of his friends call him extravagant! He is very extroverted and isn't afraid to speak his mind or stand for what he thinks is right! In conclusion, Alexis legitimately cannot wait to share some amazing moments with all the other participants! Even though it's a competition, the participants are also here to have fun and learn more about each other, and that's what he is the most excited about!



## EGYPT 2021

Bishoy Kamel

Bishoy Kamel is a senior student attending Pioneers Olympic School in Alexandria, Egypt. He always ranks top of his class. He has always been passionate about neuroscience since he was 10. He takes the brain as the most complex thing, not in the body but the whole universe. He aspires to be a neurosurgeon or a neuro researcher. He also wants to find effective treatments for neurodegenerative diseases. Besides reading about neuroscience, he loves reading about physics and cosmology. In his leisure time, he enjoys reading, writing short stories and listening to classical music. He has won in reading competitions such as the Arab Reading Challenge; moreover, he has a short story published in a book. He is both honoured and proud to represent Egypt at the International Brain Bee 2021 and looking forward to meeting all his fellow students from all over the world.



## GERMANY 2021

Jona David Schulz-Oster

Jona David Schulz-Oster has recently graduated from Gymnasium Blankenese high school in Hamburg, Germany. He is keen to learn about the world from different perspectives. This has led to a wide variety of interests from science to music composition, cinematography to maths and geography, and politics to history. His participation in the National Brain Bee has strongly intensified his interest in human cognition. Before applying for medicine next year, Jona David is studying a semester of philosophy to grant him another exciting perspective on human cognition and plans on doing an EU-volunteer service. He aspires to help the people around him as a neurologist both in research and with patients. In his leisure time, Jona David likes to play in his football team with his friends, playing the piano and sharing memes. He feels honored and excited about representing his country and meeting many students at the International Brain Bee 2021.





## GRENADA 2021

Jaden Stanislaus

Jaden Stanislaus is 16 years of age and he attends Hillsborough Secondary School in the beautiful and tranquil Tri-island state of Carriacou. He enjoys playing a leadership role in his community, by being an assistant tennis coach to help propel many young talents to greatness and by umpiring matches for the local tennis tournaments. Although he does not know what exactly he wants to be in the future, one of his goals in life is to own multiple investments such as properties and a tennis court facility, since there is not a single tennis court on the island. Growing up he was always intrigued to learn about the brain since he was always told he had a big head which made him believe he had a big brain. Brain Bee has not only taught him about the brain, but also about the rest of the body and how the organs, glands and muscles all come together with the brain to make sense of everything around us and to ensure that we have a proper functioning body. In his spare time, he enjoys playing tennis, watching movies and watching football, and connecting with his family from all over the world.



## IRAN 2021

Hasti Fakhri

Hasti Fakhri is an 11th grade student at Farzanegan 1. She has been fascinated by biology since she was in elementary school and from that time, she thought that the brain was the most mysterious part of biology. She was introduced to the brain bee when she saw its poster on her school announcement board. During participating in the brain bee competition, her interest in neuroscience has become even more than it was. She also loves math, and she enjoys the new viewpoint that math offers to the world of experimental science. Hasti loves ballad and folk music. She practices archery and practice playing guitar in her free time.



## HONG KONG 2021

Long Hei Anson So

Anson is a 17-year-old student at St. Paul's Co-educational College in Hong Kong. He is particularly interested in the gap between theoretical neuroscience and practical applications. He has worked in labs on clinical genomics, microbiology and interventional neuroscience, which has made him appreciate the many perspectives in science. As a firm believer in collaboration, he has organized a multinational student medical society with 8 schools and 12 governmental educational departments worldwide. He is looking forward to learning from his talented peers at the International Brain Bee.



## JAPAN 2021

Nayuta Mizuguchi

Nayuta Mizuguchi is a 17-year-old high school student at Eiko Gakuen High School in Japan. Initially, his interest in neuroscience stemmed from the desire to learn AI technology, which is related to his strong passion for building a neurotechnological startup in the future. As he learned more about the world of neuroscience, he was overwhelmed by both that magnificent complexity of the nervous system and its wide relationships with a variety of fields such as politics or economics. He is a member of debating club and tennis club at school, and he has recently won the third prize in the national essay contest in his country. In addition to science, he is an enthusiastic pianist and has a special passion for composing his own music and sharing it with his friends. In his spare time, he loves reading Japanese classic books and taking a comfortable time with his lovely dog in the sofa.



## LITHUANIA 2021

Edgaras Zaboras

Edgaras Zaboras is a 19-year-old currently studying medicine at Vilnius University in Lithuania. His aspiration for science began when he started looking into the reasons behind schizophrenia, a common disorder that affects so many people. The biological machinery that he began to investigate captivated him and ultimately neuroscience became the subject he desires to pursue as a researcher in the future. In his free time, Edgaras likes to go on a long run as he is training for a half-marathon. Additionally, he enjoys traveling and experiencing new cultures because geography is also one of his hobbies. He is very fond of languages, at the moment he is learning French, Italian and Russian. Edgaras is honoured that he is representing Lithuania at this competition and hopes that this gained valuable experience will help him on his path to making progress in science one day.



## MALAYSIA 2021

Ahmed Adam Bin Razman

Ahmed likes to be called Adam. He is 17 years old and studying at Al-Irsyad Islamic School in Malaysia. He has a lot of hobbies, including but not limited to: reading, drawing portraits of people and playing the violin. Since he was a kid, his sister (who was studying biology at the time in university) would use him as an audience to talk about what she recently learned; it was her study method to consolidate information better. He never retained much information, but some concepts did stick; to this day, he still remembers her lesson on mitosis, and how confused he felt! That early exposure inspired him because he realized how beautifully intricate the universe works beyond what we can perceive. This is why he aspires to be a scientist.



## MACAO 2021

Sap Tou Lao

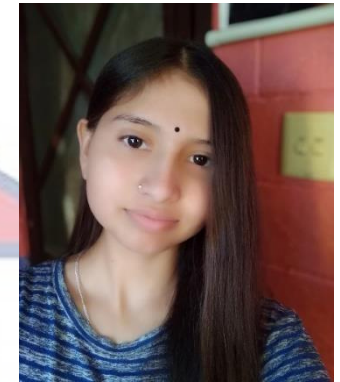
Sap Tou Lao is a 17-year-old student at Pui Ching Middle School Macau. Sap Tou Lao has always been intrigued in the field of Biology and Chemistry and has been dedicated to helping others through harnessing science knowledge he learnt at school. At the age of 15, he has started doing cancer-related research at the University of Macau as a researcher. In these 3 years of working in the lab, he has come up with three different research topics regarding effective ways to deliver drugs into cancer cells. In the future, he plans to study medicine to further pursue his dream of comforting the needy. Besides devoting his time to doing research and studying neuroscience, he also likes spending time fencing. Having a brother being the Brain Bee representative of Macau in 2016, Sap Tou Lao often shared his neuroscience knowledge with him. Sap Tou Lao is looking forward to participating in IBB and hopes to exchange groundbreaking insights with students around the world.



## NEPAL 2021

Ankita Subedi

Ankita Subedi is an eleventh-grade student at Gandaki Bording School of Pokhara. She has always been curious about the functions of our body system; mainly the brain and its wonders. The complexity and beauty of the brain was the most fascinating and inspiring thing that attracted her towards neurology and its further study. She is really grateful to represent her country by getting this wonderful opportunity and is also excited to learn more about the brain with different people across the world through this competition. She loves reading novels, playing football and watching psychological movies in her free time.



## NETHERLANDS 2021

### Katinka Ruhof

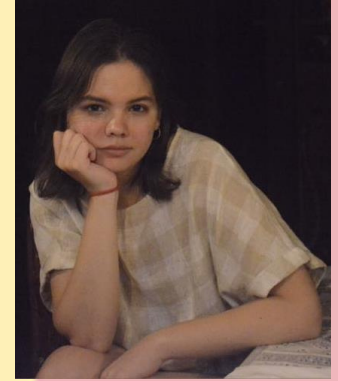
Katinka is an 18 years old student of Psychobiology at the University of Amsterdam. Her favorite subject was always biology. She always had a special interest in neurology. That only increased even more after her favorite aunt died of an aggressive brain tumor. Motivated and inspired by her, Katinka won the Dutch Brain Olympiade in January 2021. She started volunteering at the Amsterdam UMC University Hospital two years ago. She spends a few hours there every week, working side by side with doctors and nurses. Her dream is becoming a neurosurgeon or a neurologist, anything as long as it starts with "neuro".



## ROMANIA 2021

### Diana Marinescu

Diana Alesandra Marinescu is a senior student at Saint Sava National College in Bucharest. She is especially interested in neuroscience, art, and people. Her favorite topic in neuroscience is neurophysiology, the painting that intrigues her most is "The Persistence of Memory" by Salvador Dalí and treasures open-minded people which seem curious when she starts a conversation about one of the topics above. Participating in the International Brain Bee competition, Diana realized that she would like to pursue a medical career and further engage in research to advance dementia treatment. She believes that the only way to alleviate pain is curing and this motivates her to attend medical school and become a physician.



## POLAND 2021

### Patryk Wekwejt

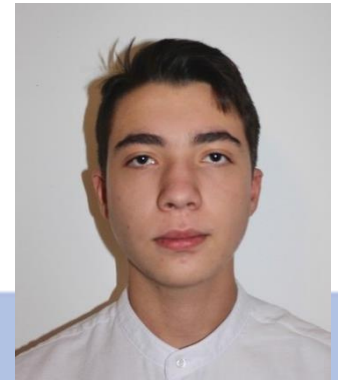
Patryk Wekwejt is a 17-year-old high school student attending Joseph Bem High School in Ostroleka. He has been interested in neuroscience, neurodegenerative diseases in particular, for several years. His curiosity in this area was ignited by the piles of books on neurology and neuroscience lying by the bed and his time spent at the neurology ward. Besides winning the 2021 Polish Brain Bee, Patryk is a Polish National Biology Olympiad Finalist and British Biology Olympiad Gold Medalist. The popularization of science is an indispensable feature of his persona; he is a TEDx organizer and founder of the Biology Society and IYNA chapter in Ostroleka. He is working on a research project on the role of alpha-MSH in Alzheimer's Disease, which got accreditation to the final of the nationwide Explore competition and was presented at the London International Youth Science Forum 2021. Besides studying amygdala visualized by MRI scans, Patryk admires interacting with one's limbic system through saxophone tunes. In his free time, he also takes good care of his motor cortex by practicing karate.



## RUSSIA 2021

### Kharun Aslan

Kharun Aslan recently graduated from Lyceum-Boarding school No.2 in Kazan, Tatarstan. He placed 3rd in the Russian National Biology Olympiad and since then became passionate about neuroscience and behavioral science. Not only does Kharun like theoretical aspects of neuroanatomy and clinical neurology, but he considers practical approach as the necessity in neurobiology. This dual vision of neuroscience study led him to the desire of becoming a neurosurgeon in the future. He firmly believes that the medical side of neurobiology is one of the most important, however, as with all aspects of natural science, there should be endless researches of the new approaches and methods of the treatment of neurological disorders. Thus, Kharun feels it is crucial to have basic laboratory and experimental skills.



## SAINT KITTS AND NEVIS 2021

Melissa Mills

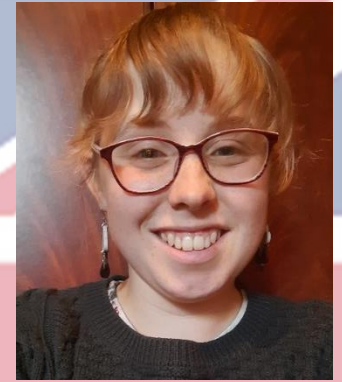
17 year old, Melissa Anastasia Mills is a 2nd year Natural Science student at the Clarence Fitzroy Bryant College in St. Kitts. Throughout her academic life, she has always held a stellar record and maintained a position on honor roll every term. She currently studies 5 subjects at A levels where Biology is her most favored. During high school, Melissa had always gravitated towards Biology, however, it was only in her fourth year of high school when she discovered the world of Psychology and Neuroscience. Her interest for this field deepened, resulting in her expanding her knowledge in this area. She began studying subjects like Chemistry and Human and Social Biology. This further inspired Melissa to pursue a career in Medicine. Her fascination with Neuroscience led to her Biology teacher introducing her to the prospect of the 1st National Brain Bee in her island. Additionally, Melissa has received scholastic awards and recognition during her high school graduation for her excellent performance in the area of science. Melissa is not only passionate about the sciences but also about the creative arts. She has had a profound love for the arts since childhood. Outside of school she spends her time dancing, drawing, painting or even listening to some of her favorite music artists. Melissa likes to think that the arts can play hand in hand with sciences.



## UNITED KINGDOM 2021

Rhian Lindsay Dowding

Rhian Dowding is a Scottish 2nd year medical student at Queen's University Belfast in Northern Ireland. Rhian's interest in neuroscience started when she was attending lectures and doing work experience placements in preparation to apply to study medicine. Her biology teacher encouraged her to take part in the Brain Bee, and things took off from there. Working as a carer got Rhian interested in neurodegenerative disorders, as well as giving her an honest appreciation for the humble wet wipe. Her interests include gardening, cooking, and pretty much anything that gets her away from her computer screen. Rhian's hopes for the future to center around good folk, good food, and a steady supply of tea. She's looking forward to meeting other students from around the world, and she's proud to be representing the UK this year with Timothy Lee.



## SOUTH KOREA 2021

Yoona Kim

Yoona Kim is an 11th-grade student at Gyeonggi Science High School for the Gifted. Being passionate on biology, she hopes to become a neuroscientist. Her final dream is to discover novel therapies for neurodegenerative diseases. Currently, she has deep interest in genetics and synthetic biology and at school, she has conducted a research about creating a new antimicrobial peptide. In her free time, Yoona enjoys reading novels, especially mystery novels that focus on complicated minds of people. Participating in International Brain Bee as a representative of South Korea, Yoona is both honored and enthusiastic to have a chance to communicate with fellow students who are also interested in neuroscience.



## UKRAINE 2021

Viktoriia Vydzhak

Viktoriia is an 11th grade student at School №125 in Kyiv. During the middle school years, she participated in olympiads on different subjects, being quite successful in many of them. Kyiv City Biology Olympiad in 2019 had a great impact on Viktoriia and served as a starting point for her path of exploration of biology. Since then, biology has become the leading area of her interests, being the science Viktoriia wants to be involved in later in her life. The Brain Bee Competition motivated her to study neuroscience. It is a great pleasure for her to learn about the brain – such an elaborate, delicate and complex structure that it is hard to believe it could ever exist. In her free time, Viktoriia enjoys playing with her rats and reading.



## UNITED STATES OF AMERICA 2021

Yashwanth Gokarakonda

Yashwanth Gokarakonda is a 12th grade student at Little Rock Central High School in the United States. His interests include neuroscience, philosophy, psychology, and economics. In addition to competing in the Brain Bee, Yash enjoys leading the LRCH Ethics Bowl Team and participating in Science Quiz Bowl. He is passionate about neuroscience because of its wide-reaching potential in today's society and the countless applications that are yet to be explored.



Outside of school, he actively volunteers at a hospital laboratory, participates in neurological research, and helps his community as an Eagle Scout. In his free time, he enjoys playing tennis and raising awareness for strokes through his nonprofit, Students Against Stroke. In the future, Yash hopes to obtain a neuroscience degree and enter the medical field. He has thoroughly enjoyed participating in the Brain Bee over the past three years and looks forward to using the knowledge he obtained to help individuals suffering from neurological problems.



# 2021 IBB WORLD CHAMPIONSHIP PRIZES & AWARDS

## IBB Prizes

The 2021 IBB World Championship will include the Champions of any national competitions that were eligible for the 2020 World Championship since it was canceled last year due to the COVID19 pandemic. 2020 and 2021 National Champions will compete together but there will be two sets of winners. Following the first four competition components (written test, neurohistology, neuroanatomy, and patient diagnosis), six finalists from each year will advance to the Live Judging Session. The total scores from all five competition components will determine the winners.

All competitors will receive a Certificate of Participation. The six finalists will receive a medal. The top three winners will receive a monetary award of US \$3,000 (first prize), US \$2,000 (second prize), and US \$1,000 (third prize). The 2020 and 2021 World Champions will also receive a plaque.



## IBB Neuroanatomy/Histology Award

The IBB Neuroanatomy/Histology Award\* will recognize the top student in the neuroanatomy/ neurohistology component of the IBB World Championship. The award recognizes the importance of neuroanatomy/histology to understanding the brain. It consists of a US \$100 prize and a book featuring the work of Nobel Laureate Santiago Ramon Y Cajal and his contributions to neuroscience through his artistic brain imagery. The 2021 winner will receive a copy of Beautiful Brain: The Drawings of Santiago Ramon y Cajal by Larry W. Swanson et. al. Dr. Swanson will give a plenary lecture on the History of Neuroscience at the 2021 IBB World Championship.

\*The award was established with a donation from Linda J. Richards, Chair of the Department of Neuroscience and Edison Professor of Neuroscience at Washington University School of Medicine in St. Louis. Dr. Richards serves on the IBB's Board of Directors and is a longstanding supporter of the Brain Bee initiative and the Founder of the Australian Brain Bee Challenge.

## Leadership Initiatives Prizes

Through a partnership with the International Brain Bee, Leadership Initiatives is awarding first and second place of both the 2020 and 2021 International Brain Bee Championships full scholarships to attend their Virtual Advanced Medical Neuroscience Internship. They will also be awarding one-on-one mentorship calls with two neuroscience experts (Dr. James Giordano and Dr. Rachel Wurzman) to the third-place winners of both years.

[Visit https://licchange.org/summer/ibbpартnership/ to learn more.](https://licchange.org/summer/ibbpартnership/)

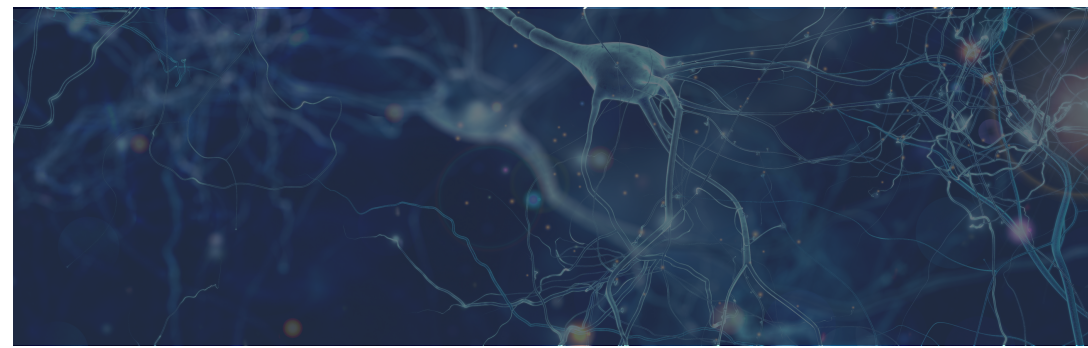
# ABOUT THE INTERNATIONAL BRAIN BEE

The IBB's primary goal is to motivate students to learn about the brain and to inspire them to pursue careers in neuroscience. It was founded in the US in 1998 and has grown to over 175 local Brain Bee competitions in almost 50 countries around the world. The culmination of this program is the World Championship held every year in conjunction with major scientific conferences. The IBB was incorporated in 2018 as a non-profit educational organization with the support of five international neuroscience and educational organizations. The organizations also form the IBB's governing body with a sixth that joined in 2021.

## IBB GOVERNING PARTNERS



## PROGRAM PARTNERS



## THANK YOU!

The 2021 IBB Planning Committee is truly grateful to all who have contributed to this year's World Championship. We also thank our local and national coordinators around the world for their commitment to the Brain Bee initiative. Without them, the IBB would not exist.

We also thank our Governing Partners and program partners for their support and collaboration.



*Become a partner or sponsor of the IBB.*

We welcome financial and in-kind contributions. To become a World Championship sponsor or to discuss partnership opportunities with the IBB, please contact Astrid Eberhart, IBB Executive Director, at [astrid.eberhart@thebrainbee.org](mailto:astrid.eberhart@thebrainbee.org).