

LINDAU NOBEL LAUREATE MEETINGS

## Programme

70<sup>th</sup> Lindau Nobel Laureate Meeting 27 June - 2 July 2021

#### Sessions

Scientific sessions, social functions, partner events, networking breaks

#### Speakers

Nobel Laureates, young scientists, invited experts, moderators

#### Access

Clear guidance to all viewing and participation options

#### Background

Everything else there is to know for a successful meeting

# Welcome

Two months ago, everything was well on course to celebrate our 70<sup>th</sup> anniversary with you, in Lindau. But with the safety and health of all our participants being of paramount importance, we were left with only one choice: go online. And yet: this interdisciplinary anniversary meeting will feature the most rich and versatile programme ever. It will provide plenty of opportunity to educate, inspire, connect – and to celebrate! Join us.

## 4 PARTICIPATING LAUREATES

### PARTICIPATING LAUREATES 5



## 6 PROGRAMME OVERVIEW

## PROGRAMME OVERVIEW 7

<u>Time (Zones)</u>	<u>Sunday, 27 June</u>	<u>Monday, 28 June</u>	<u>Tuesday, 29 June</u>	<u>Wednesday, 30 June</u>	<u>Thursday, 1 July</u>	Friday, 2 July	
$D7 \frac{B13/T14/C15}{D10^{30}/N01/S22^*}$							
D10 <sup>30</sup> / N01 / S22*				Panel Discussion	Panel Discussion		
		Partner Events	Partner Events	Energy and Climate	Open Science		
		BASF SE, Germany     vfa, Verband forschender Pharma-	Austrian Federal Ministry of Education, Science and Research	Chu, Haug, Laughlin, Mengis, Michel,	Blackburn, Datseris, Jex, Schekman		
)8 B14/T15/C16 D11 <sup>30</sup> /N02/S23 <sup>-1</sup>		Unternehmen	Mars, Incorporated	Schmidt	<ul> <li>young scientists</li> </ul>		
D11 <sup>30</sup> / N02 / S23 <sup>-1</sup>			Rolex SA				
		Break	Break	<u>Break</u>		Welcome from Mainau Island	
B15 / T16 / C17		Workout	Networking	Workout	Networking		
$\frac{D12^{30} / N03 / S24^{-1}}{D12^{30} / N03 / S24^{-1}}$						-	
		Lecture	Conversation	Lecture	Next Gen Science	Panel Discussion	
		Queloz	Fischer	Honjo	presentations by young scientists	Why Trust Science?	
.0 B16/T17/C18 D13 <sup>30</sup> /N04/S01						Abderrahman, Heldin, Rheinberger, Schmidt	
D13 <sup>30</sup> /N04/S01		Agora Talk	<u>Agora Talk</u>	<u>Conversation</u>			
		Ciechanover, Feringa     Hoffmann	Huber, Michel, Wüthrich     Evans, Lindahl	Satyarthi			
DAT / TAO / CAO		• von Klitzing	• zur Hausen, Marshall				
1 B17/T18/C19 D14 <sup>30</sup> /N05/S02		Brach	Conial Drogramma	Brech		<u>Closing</u>	
		<u>Break</u> Networking	Social Programme Concert: Max Raabe	<u>Break</u> Networking	<u>Social Programme</u> Concert: Kerber Brothers		
			Concert: Max Reade	Networking	Bavarian Breakfast		
B18/T19/C20					Bavarian Breaktast		
2 D15 <sup>30</sup> / N06 / S03		Panel Discussion	Open Exchange	Lecture			
		Gene Editing	Evans, Haroche, Huber, Kajita, Levitt,	Henderson	Yonath		
		Buyx, Charpentier, Jansing, Nüsslein-Volhard	Marshall, Michel, Novoselov, Rubbia, Wüthrich, zur Hausen				
<b>D</b> B19/T20/C21			wutinch, zur Hausen	Next Gen Science	<u>Conversation</u>		
L3 D16 <sup>30</sup> / N07 / S04				presentations by young scientists	Kissinger		
DDD / TD5 / CDD	Opening Ceremony	<u>Project:</u> Lindau Guidelines	Project: Mentoring Hub		Project: Lindau Online Sciathon		
L4 B20 / T21 / C22 D17 <sup>30</sup> / N08 / S05			Agora Talb		 Agora Talk		
<b>-------------</b>		Agre, Amano	Agora Talk • Haroche, Phillips	Open Exchange	Haldane, Kosterlitz		
		• Lehn	Nüsslein-Volhard	Gilbert, Henderson, Hershko, Josephson,	• Kajita, McDonald		
B21 / T22 / C23		• Frank, Hell	Rubbia	Moser, Mourou, Yonath	Moser, Rosbash		
L5 D18 <sup>30</sup> / N09 / S06	Panel Discussion	Open Exchange	Lecture		Panel Discussion		
	Corona and Emerging Pandemics	Agre, Alter, Barré-Sinoussi, Charpentier,	Leggett		Artificial Intelligence: Promises and		
	Alter, Barré-Sinoussi, Neher, Huisman	Feringa, Frank, Genzel, Hell, Lehn, Queloz			Threats		
L6 B22/T23/C24 D19 <sup>30</sup> /N10/S07			Lecture	Lecture	Cerf, Eckhoff, ElHarouni, Karatza, Levitt,		
LO D19 <sup>30</sup> / N10 / S07			Whittingham	Allison	Schölkopf		
	Break: Networking	Break	Break: Workout	Break: Networking	<u>Break:</u> Workout		
B23 / T24 / C01+1	Dicux. Networking	Networking	<u>Drak.</u> Workout	DEak. Networking	Dicak. Workout		
L7 D20 <sup>30</sup> / N11 / S08	Lecture		Lecture	Agora Talk			
	Charpentier		Semenza	Chalfie, Schekman	Smith		
	F			Hall, Mourou, Strickland     Hartwell		Time	. 7
L8 $\frac{B24/T01^{+1}/C02^{+1}}{D21^{30}/N12/509}$	Lecture	Lecture	Lecture		Lecture		Zones
LÖ D21 <sup>30</sup> /N12/S09	Genzel	Barish	Kaelin	Panel Discussion	Südhof		eference times on the left side tated as Central European
			-	Dark and Black	-		mer Time (CEST).
posel (Topel (Tope	Lecture	Lecture	Next Gen Science	Genzel, Gross, Perlmutter, Plura, Weiss	Agora Talk • Chu, Moerner		tional times zones are
L9 B01 <sup>+1</sup> /T02 <sup>+1</sup> /C03 <sup>+1</sup> D22 <sup>30</sup> /N13/S10	Alter	Thorne	presentations by young scientists		• Chu, Moerner     • Grubbs, Schrock		ided as smaller print.
U22 / N13 / S10	Social Programme	Agora Talk			Perlmutter, Riess		eijing (CST)
	Concert: Karl Frierson	<ul> <li><u>Agora Talk</u></li> <li>• Kobilka, Lefkowitz</li> </ul>		Heidelberg Lecture	Open Exchange		
B02+1 / T03+1 / C04+1		• Warshel			Chu, Grubbs, Haldane, Kosterlitz, Riess,		okyo (JST)
20 B02 <sup>+1</sup> /T03 <sup>+1</sup> /C04 <sup>+1</sup> D23 <sup>30</sup> /N14/S11		—	-	Dean	Schrock, Rosbash, Smith		anberra (AEST)
. ,		Open Exchange	Open Exchange	Open Exchange			Delhi (IST)
		Barish, Kobilka, Lefkowitz, Thorne, Warshel	Blackburn, Kaelin, Leggett, Marcus, Murad,	Allison, Chalfie, Gross, Hall, Hartwell,		N = 1	lew York (EDT/DST)
B03 <sup>+1</sup> /T04 <sup>+1</sup> /C05 <sup>+1</sup> D00 <sup>30</sup> /N15/S12			Phillips, Semenza, Ting, Whittingham	Laughlin, Perlmutter, Schekman, Strickland,		S = S	an Francisco (PDT/DST)
D00 <sup>30</sup> / N15 / S12				Weiss	Social Programme	-1 = d	ay before
					Concert: Hazmat Modine		ay after
					Sunset Party		ayaitei





#### How can I participate in the 70<sup>th</sup> Lindau Nobel Laureate Meeting (#LINO70)?

Full participation in the meeting on our conference platform Hopin is only possible for accepted young scientists and Nobel Laureates.

Supporters, guests, alumni and friends of the meetings may follow parts of the programme in our livestream at www.lindau-nobel.org. Note that you need to register in advance for the livestream.

A registration form will be available on our website shortly before the meeting.

#### Why are not all parts of the programme available in the livestream?

Some sessions are exclusively for young scientists, such as the open exchanges. In other cases, there can be limitations in distribution rights for some of the content.

#### Will the programme be available for on-demand viewing afterwards?

Yes. Usually, one or two days after the live programme, all sessions that are part of the livestream are also available at mediatheque.lindau-nobel.org.

#### I am a participant, but I have not received my access credentials.

Please write to your known contact, or to support@lindau-nobel.org.

#### I have technical problems accessing the meeting.

Please write to support@lindau-nobel.org, text to "Tech Support" in Hopin, or visit the "Tech Support" expo booth.

#### I am a speaker, panelist or NGS presenter at the meeting – can I show slides?

Yes, via screenshare, like in any other video call application.

#### Are there Q&As? Can I ask questions?

Yes, most of the sessions feature Q&A parts. You can ask your questions either in the Hopin Q&A tool, or you can request to join the stage, sharing your audio and video, and ask the question directly.

#### What networking options are there?

Hopin has a built-in networking function that works like speed dating. You can also contact all your peers on Hopin via the messaging system. Additionally, we offer networking on wonder.me – check out the information provided on Hopin how to access it.

#### Is there a meeting hashtag?

Sure: #LINO70. We will feature the meeting on Twitter, Facebook, LinkedIn and Instagram.

#### Can I sign the Lindau Guidelines?

You are most welcome to do so at www.lindauguidelines.org.

#### Why could the meeting not take place in Lindau?

First, we were convinced that the risks for everyone's health and well-being are still too high, unfortunately. Second, it is simply currently not legally allowed to hold such meetings with this number of participants.

#### To what timezone do the times stated in the programme refer?

All times refer to CEST, Central European Summer Time, or Lindau time. CEST in two hours ahead of UTC (+2).

## 12 MEETING PROGRAMME SUNDAY JUNE 27

Social Function	Opening of the 70th Lindau Nobel Laureate Meeting			
13:30	<b>Welcome</b> Countess Bettina Bernadotte, President of the Council			
	Welcome Address Frank-Walter Steinmeier, Federal President of Germany			
	Greetings from Stockholm			
	<b>Welcome Speech</b> Anja Karliczek, German Federal Minister of Education and Research			
	Welcome Address Bernd Sibler, Minister of Science and the Arts, Bavaria			
	The Lindau Virtual Symphonic Orchestra			
	Discussion: Made in Germany: Perspectives for International Young Scientists with Reinhard Genzel, Anja Karliczek, and Bernd Sibler			
	Congratulatory Message Heinz Faßmann, Minister of Education, Science and Research, Austria			
	<b>Programme Highlights</b> with the meeting's scientific chairpersons Wolfgang Lubitz and Rainer Blatt			
	The Lindau Virtual Band			
	Moderator: Jeanne Rubner			
	Bayerischer Rundfunk, Germany			

Panel Discussion	Corona and Emerging Pandemics
15:00	Harvey J. Alter National Institute of Health, USA
	Françoise Barré-Sinoussi Institut Pasteur, France
	Jana Huisman ETH Zurich, Switzerland
	Richard Neher University of Basel, Switzerland
	Moderator: Stefan Kaufmann
	Max Planck Institute for Infection Biology, Germany
Break	Networking Break
16:30	with Brian Malow and guests
Lecture	Opening Lecture
17:00	Emmanuelle Charpentier
_	Max Planck Unit for the Science of Pathogens, Germany
Lecture	A 40-Year Journey
17:45	Reinhard Genzel
	Max Planck Institute for Extraterrestrial Physics, Germany
Lecture	Hepatitis C: The End of the Beginning
18:30	and Possibly the Beginning of the End
	Harvey J. Alter
	National Institute of Health, USA

SUNDAY JUNE 27 15

Live Concert & Icebreaker Party KARL FRIERSON Live from the Zeughaus in Lindau Icebreaker Party on wonder.me Sunday June 27, 19.15 CEST

## **16** MEETING PROGRAMME MONDAY JUNE 28

Partner Event	vfa, Verband forschender Pharma-Unternehmen	Agora Talk	Next Generation Medicine
07:15	New Vaccines Against New (and Old) Threats?	10:00	Aaron Ciechanover
01.15	Françoise Barré-Sinoussi	10.00	Technion - Israel Institute of Technology, Israel
	Institut Pasteur, France		Ben L. Feringa
	Jyaysi Desai		University of Groningen, The Netherlands
	Erasmus Medical Center, The Netherlands		Moderator: Klas Kärre
	Stefan Kaufmann Max Planck Institute for Infection Biology, Germany		Karolinska Institute, Sweden
	Han Steutel	Agora Talk	Practical Impact of the SI System
	vfa, Germany	10:00	Klaus von Klitzing
	Moderator: Kai Kupferschmidt	10.00	Max Planck Institute for Solid State Research, Germany
	Science Journalist, Germany		Moderator: Heiner Linke
			Lund University, Sweden
Partner Event	BASF SE, Germany Sustainability Drives BASE BASE Drives Sustainability		
07:15	Sustainability Drives BASF. BASF Drives Sustainability.	Agora Talk	Innate Immunity
	Melanie Maas-Brunner Member of the Board, BASF SE, Germany	10:00	Jules A. Hoffmann
	Yaqian Liu		Université de Strasbourg, France
	BASF Advanced Chemicals, China		Moderator: Stefan Kaufmann
	Priya Anand		Max Planck Institute for Infection Biology, Germany
	BASF SE, Germany	Durali	Natural in a Decal
	Stefan Haefner	Break	Networking Break
	BASF SE, Germany	11:00	with Brian Malow and guests
	Kerstin Schierle-Arndt		Networking on wonder.me
	BASF SE, Germany	<b>Panel Discussion</b>	Gene Editing
	Norman Funk	12:00	Alena Buyx
	BASF Services Europe	12:00	German Ethics Council / Technical University Munich, Germany
	Moderator: Jens Aßmann		Emmanuelle Charpentier
	BASF SE, Germany		Max Planck Unit for the Science of Pathogens, Germany
Break	Workout		Julia Jansing
	»Antara - Feel your Spine «		Maastricht University, The Netherlands
08:30	, I		Christiane Nüsslein-Volhard
Lecture	The Exoplanet Revolution		Max Planck Institute for Developmental Biology, Germany
09:15	Didier Queloz		Moderator: Adam Smith
07:10	ETH Zürich, Switzerland		Nobel Prize Outreach, Sweden

## **18** MEETING PROGRAMME MONDAY JUNE 28

Project	Lindau Guidelines		
13:30	Learn more about the Lindau Guidelines, initiated 2018 by Elizabeth Blackburn, and endorsed by more than 30 Nobel Laureates.		
	See www.lindauguidelines.org for details.		
Agora Talk	Light, Clean Water and Diseases		
14:00	Peter Agre Johns Hopkins Malaria Research Institute, USA		
	Hiroshi Amano Nagoya University, Japan		
	Moderator: Heiner Linke Lund University, Sweden		
Agora Talk	Pushing the Limits of Microscopy		
14:00	Joachim Frank Columbia University, USA		
	Stefan W. Hell Max Planck Institute for Biophysical Chemistry, Germany		
	Moderator: Adam Smith Nobel Prize Outreach, Sweden		
Agora Talk			
<b>Agora Talk</b> 14:00	Nobel Prize Outreach, Sweden		
	Nobel Prize Outreach, Sweden Supramolecular Chemistry Jean-Marie Lehn		

Open Exchange Open Exchange with Peter Agre				
15:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Harvey J. Alter			
15:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Françoise Barré-Sinoussi			
15:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Emmanuelle Charpentier			
15:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Ben Feringa			
15:00	The Joy of Discovery			
	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Joachim Frank			
15:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Reinhard Genzel			
15:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Stefan W. Hell			
15:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Jean-Marie Lehn			
15:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Didier Queloz			
15:00	Only open for Nobel Laureates and young scientists on Hopin.			
<mark>Break</mark>	Networking Break			
16:30	with Brian Malow and guests			
	Networking on wonder.me			

## 20 MEETING PROGRAMME MONDAY JUNE 28

## MONDAY JUNE 28 MEETING PROGRAMME 21

Lastura	How to Detect Crowitational Works	Onen Evehange	On an Euchan as with Parme C. Parish
Lecture	How to Detect Gravitational Waves	Open Exchange	Open Exchange with Barry C. Barish
17:45	Barry C. Barish	20:15	The Role of Curiousity, in Science and Life
	Caltech - California Institute of Technology, USA		Only open for Nobel Laureates and young scientists on Hopin.
Lecture	Storms in Spacetime from Colliding Black Holes	Open Exchange	Open Exchange with Brian K. Kobilka
18:30	Kip S. Thorne	20:15	Only open for Nobel Laureates and young scientists on Hopin.
	Caltech - California Institute of Technology, USA		
A		<b>Open Exchange</b>	Open Exchange with Robert J. Lefkowitz
Agora Talk	New Models to Understand Molecular Dynamics	20:15	A Tale of Two Callings
19:15	Arieh Warshel University of Southern California, USA		Only open for Nobel Laureates and young scientists on Hopin.
	Moderator: Wolfgang Lubitz	<b>Open Exchange</b>	Open Exchange with Kip S. Thorne
	Max Planck Institute for Chemical Energy Conversion, Germany	20:15	Only open forNobel Laureates and young scientists on Hopin.
Agora Talk	Review and Outlook: The Nobel Prize in Chemistry 2012	Open Exchange	Open Exchange with Arieh Warshel
19:15	Brian K. Kobilka	20:15	Multi Scale Simulations of the Action of Complex Biological Systems
	Stanford University, USA		Only open for Nobel Laureates and young scientists on Hopin.
	Robert J. Lefkowitz Duke University, USA		
	Moderator: Klas Kärre		
	Karolinska Institute, Sweden		

## 22 MEETING PROGRAMME TUESDAY JUNE 29

Partner Event	Austrian Federal Ministry of Education, Science and Research	Conversation	Questions to Edmond H. Fischer
07:15	From Science to Practice: Was the Pandemic an Accelerator? Johanna Gassler Institute of Molecular Biotechnology (IMBA), Austria Harald zur Hausen German Cancer Research Center, Germany	09:15	Edmond H. Fischer University of Washington, USA Moderator: Stefano Sandrone Imperial College, UK
	Moderator: Eva Schernhammer	Agora Talk	Preserving and Controlling Genetic Information
	Medical University of Vienna, Austria	10:00	Martin J. Evans United Kingdom
<b>Partner Event</b> 07:15	Mars, Incorporated How Can Genomics Help Achieve Global Food Security?		Tomas Lindahl Francis Crick Institute, UK
	Abigail Stevenson Mars Advanced Research Institute (MARI), USA		Moderator: Kai Kupferschmidt Science Journalist, Germany
	Ada E. Yonath Weizmann Institute of Science, Israel	Agora Talk	Structural Biology and its Key Role in the Life Sciences
	María Clara Miserendino Universidad Nacional de Córdoba, Argentina	10:00	Robert Huber Max Planck Institute of Biochemistry, Germany
	Moderator: Adam Smith Nobel Prize Outreach, Sweden		Hartmut Michel Max Planck Institute of Biophysics, Germany
Partner Event	Rolex SA Excellence in Science for Society		Kurt Wüthrich The Scripps Research Institute (TSRI), USA
07:15	Felix Brooks-church Social entrepreneur and inventor, USA and Tanzania		Moderator: Wolfgang Lubitz Max Planck Institute for Chemical Energy Conversion, Germany
	Konstantin S. Novoselov University of Manchester, United Kingdom	Agora Talk	Infectious Agents and Cancer
	National University of Singapore, Singapore	10:00	Harald zur Hausen German Cancer Research Center, Germany
	Fatima Enam Stanford University, USA		Barry J. Marshall The University of Western Australia, Australia
	Moderator: Faith McLellan World Health Organization WHO, Switzerland		Moderator: Klas Kärre
<mark>Break</mark>	Networking Break		Karolinska Institute, Sweden
08:30	with Brian Malow and guests		
	Networking on wonder.me		

# Inspiration Concert MAX RAABE & PALASTORCHESTER

From Berlin, Germany Tuesday, June 29, 11.00 CEST

**BEUNPLUGGED** 

PALAST

## **26** MEETING PROGRAMME TUESDAY JUNE 29

TUESDAY JUNE 29 MEETING PROGRAMME 27
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<b>Open Exchange</b> 12:00	<b>Open Exchange with Martin J. Evans</b> Only open for Nobel Laureates and young scientists on Hopin.			
<b>Open Exchange</b> 12:00	<b>Open Exchange with Serge Haroche</b> History of the Science of Light			
	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Harald zur Hausen			
12:00	The New Infectious Agents in Colon, Breast and Prostate Cancer			
	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Robert Huber			
12:00	Academic Research and Spin-Off, My Experience			
	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Takaaki Kajita			
12:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Michael Levitt			
12:00	How to Deal with Future Crises			
	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Barry J. Marshall			
12:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Hartmut Michel			
12:00	Only open for Nobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Konstantin S. Novoselov			
12:00	Only open forNobel Laureates and young scientists on Hopin.			
Open Exchange	Open Exchange with Carlo Rubbia			
12:00	Only open for Nobel Laureates and young scientists on Hopin.			

Open Exchange Open Exchange with Kurt Wüthrich			
12:00	Only open for Nobel Laureates and young scientists on Hopin.		
Project	Mentoring Hub		
13:30	Learn more about the winning project of the 2020 Lindau Online Sciathon, developing an open-source mentoring platform solution, available first for Lindau Alumni.		
Agora Talk	Animal Beauty		
14:00	Christiane Nüsslein-Volhard Max Planck Institute for Developmental Biology, Germany		
	Moderator: Adam Smith Nobel Prize Outreach, Sweden		
Agora Talk	Quantum Science		
14:00	Serge Haroche Collège de France, France		
	William D. Phillips National Institute of Standards and Technology (NIST), USA		
	Moderator: Rainer Blatt University of Innsbruck, Austria		
Agora Talk	Particles Generated on Earth and in the Cosmos		
14:00	Carlo Rubbia CERN European Organization for Nuclear Research, Switzerland		
	Moderator: Olaf Reimer University of Innsbruck, Austria		
Lecture	Why Can't Time Run Backwards?		
15:00	Anthony J. Leggett University of Illinois at Urbana-Champaign, USA		
Lecture	Storage Is Ready to Address Climate Change		
15:45	M. Stanley Whittingham Binghamton University (SUNY), USA		

<b>Break</b>	Workout »Bodyweight Workout - Breath the Strength«	Next Gen Science	Research by Young Scientists
15:30	Hypoxia-Inducible Factors in Physiology and Medicine	18:30	Data-Driven Experiment Planning in Chemistry Matteo Aldeghi
17:00	Gregg L. Semenza Johns Hopkins School of Medicine, USA		Vector Institute & University of Toronto, Canada Self-Supervised Learning Resolves Subcellular Protein Localization and More
<b>Lecture</b> 17:45	The von Hippel-Lindau Hereditary Cancer Syndrome: From Bedside to Bench to Bedside		Hirofumi Kobayashi Chan Zuckerberg Biohub, USA
	William G. Kaelin, Jr. Harvard Cancer Center, USA		Confocal Fluorescence-Lifetime Single-Molecule Localization Microscopy Jan Christoph Thiele Georg-August University Göttingen, Germany
			How T Cells Avoid Traffic Jams Jérémy Postat McGill University, Canada
			Upscaling Solar-Driven Artificial Photosynthesis for Converting CO2 Into Fuels: From Laboratory Research to Real-World Implementation in the \$20m Carbon Xprize Finals
			Xiangkun (Elvis) Cao Massachusetts Institute of Technology (MIT), USA
			Spying on Viruses: Translation and Replication Dynamics of +Rna Viruses
			Sanne Boersma Hubrecht Institute - KNAW, The Netherlands
			Synaptic Diversity Can Broaden the Range of Sound We Can Hear Özge Demet Özcete Harvard Medical School, USA

## **30** MEETING PROGRAMME TUESDAY JUNE 29

## WEDNESDAY JUNE 30 MEETING PROGRAMME 31

<b>Open Exchange</b>	<b>Open Exchange with Elizabeth H. Blackburn</b>
20:15	Only open for Nobel Laureates and young scientists on Hopin.
<b>Open Exchange</b> 20:15	<b>Open Exchange with William G. Kaelin, Jr.</b> Preclinical Validation of Cancer Drug Targets: The Importance of Experimental Design and Logic Only open for Nobel Laureates and young scientists on Hopin.
<b>Open Exchange</b>	<b>Open Exchange with Anthony J. Leggett</b>
20:15	Only open for Nobel Laureates and young scientists on Hopin.
<b>Open Exchange</b>	<b>Open Exchange with Rudolph A. Marcus</b>
20:15	Only open for Nobel Laureates and young scientists on Hopin.
<b>Open Exchange</b> 20:15	<b>Open Exchange with Ferid Murad</b> Discovery of the Nitric Oxide and Cyclic GMP Signaling Pathway and Application to Drug Development Only open for Nobel Laureates and young scientists on Hopin.
<b>Open Exchange</b> 20:15	<b>Open Exchange with William D. Phillips</b> Quantum Information; The New Quantum Metric System; Laser Cooling; Cold Quantum Gases Only open for Nobel Laureates and young scientists on Hopin.
<b>Open Exchange</b>	<b>Open Exchange with Gregg L. Semenza</b>
20:15	Only open for Nobel Laureates and young scientists on Hopin.
<b>Open Exchange</b> 20:15	<b>Open Exchange with Samuel C. C. Ting</b> <b>Unexpected Results From the Cosmos</b> Only open for Nobel Laureates and young scientists on Hopin.
<b>Open Exchange</b>	<b>Open Exchange with M. Stanley Whittingham</b>
20:15	Only open for Nobel Laureates and young scientists on Hopin.

Panel Discussion	Energy and Climate
07:00	Steven Chu Stanford University, USA
	Gerald Haug Leopoldina - National Academy of Sciences, Germany
	Robert B. Laughlin Stanford University, USA
	Nadine Mengis Geomar, Helmholtz Centre for Ocean Research, Germany
	Hartmut Michel Max Planck Institute of Biophysics, Germany
	Brian P. Schmidt The Australian National University, Australia
	Moderator: Jim Skea
	Imperial College, UK
<mark>Break</mark>	Workout »Qui Gong - Contact the Elements «
08:30	
Lecture	Serendipities of Acquired Immunity
09:15	Tasuku Honjo Kyoto University Graduate School of Medicine, Japan
Conversation	Corona: The Impact on Children in Developing Countries
10:00	Kailash Satyarthi
	Kailash Satyarthi Children's Foundation, India
	Moderator: Countess Bettina Bernadotte
	Council for the Lindau Nobel Laureate Meetings, Germany
Break	Networking Break
11:00	with Brian Malow and guests
	Networking on wonder.me

<b>Lecture</b> 12:00	60 Years of Structural Biology: From Myoglobin and X-Ray Crystallography to the Recent Impact of Electron Cryomicroscopy
	Richard Henderson MRC Laboratory of Molecular Biology, UK
Next Gen Science	Research by Young Scientists
12:45	Controlling Chemistry With Mirrors: How Strong Interaction Between Light and Matter Can Modify Chemistry and Physics
	Christian Schäfer
	Max Planck Institute for the Structure and Dynamics of Matter, Germany
	Photoelectrochemical Hydrogen Production in Microgravity Environments
	Katharina Brinkert
	University of Warwick, United Kingdom
	Early Development of the Gut Bacteriome and Virome and Their Interactions
	Sanzhima Garmaeva University Medical Center Groningen, University of Groningen, The Netherlands
	Estimating the Effective Reproductive Number of Sars-Cov-2 From Clinical Case Reports and Viral Concentrations in Wastewater
	Jana Huisman
	ETH Zurich, Switzerland
	Proteome-Scale Discovery of Protein Interactions With Structural
	Resolution Using Sequence Coevolution
	Hadeer Elhabashy Max Planck Institute for Developmental Biology, Germany
	Towards a Quantum Network: Entangled Crystals in the Barcelona Area
	Samuele Grandi ICFO - The Institute of Photonic Sciences, Spain

Open Exchange	Open Exchange with Walter Gilbert	
14:15	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with Richard Henderson	
14:15	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with Avram Hershko	
14:15	Lessons From the Discovery of the Ubiquitin System: How to Approach a Problem in Science	
	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with Brian D. Josephson	
14:15	Beyond the 'Theory of Everything' Paradigm: Synergetic Patterns and the Order of the Natural World	
	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with Edvard I. Moser	
14:15	Neural Network Mechanisms for Space	
	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with Gérard A. Mourou	
14:15	Extreme Light and Scientific and Social Applications	
	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with Ada E. Yonath	
14:15	Only open for Nobel Laureates and young scientists on Hopin.	
Lecture	Immune Checkpoint Blockade in Cancer Therapy:	
15:45	New Insights Into Therapeutic Mechanisms	
	James P. Allison	
	The University of Texas, USA	
<mark>Break</mark>	Networking Break	
16:30	with Brian Malow and guests	
	Networking on wonder.me	

## **34** MEETING PROGRAMME WEDNESDAY JUNE 30

Agora Talk	Cell Biology	<b>Panel Discussion</b>	Dark & Black
17:00	Martin Chalfie Columbia University, USA	18:00	Reinhard Genzel Max Planck Institute for Extraterrestrial Physics, Germany
	Randy W. Schekman University of California, Berkeley, USA		David J. Gross University of California, Santa Barbara, USA
	Moderator: Stefan Kaufmann Max Planck Institute for Infection Biology, Germany		Saul Perlmutter University of California, Berkeley, USA
Agora Talk	Application of Laser Technology: From Health to Metrology		Saskia Plura Johannes Gutenberg-University Mainz, Germany
17:00	John L. Hall University of Colorado, USA		Rainer Weiss LIGO MIT, USA
	Gérard A. Mourou Université Paris-Saclay, France		Moderator: Sibylle Anderl Frankfurter Allgemeine Zeitung & ARD-alpha, Germany
	Donna Strickland University of Waterloo, Canada	Heidelberg Lecture	A Golden Decade of Advances in Computing
	Moderator: Rainer Blatt University of Innsbruck, Austria	19:30	<b>Driven by Deep Learning</b> Jeffrey Dean
Agora Talk	Science Education	Open Exchange	Google Inc., USA Open Exchange with James P. Allison
17:00	Leland H. Hartwell Arizona State University, USA	20:15	Only open for Nobel Laureates and young scientists on Hopin.
	Moderator: Karan Khemka	Open Exchange	Open Exchange with Martin Chalfie
		20:15	Only open for Nobel Laureates and young scientists on Hopin.
		Open Exchange	Open Exchange with David J. Gross
		20:15	Only open for Nobel Laureates and young scientists on Hopin.
		Open Exchange	Open Exchange with John L. Hall
		20:15	Only open for Nobel Laureates and young scientists on Hopin.

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Open Exchange	Open Exchange with Leland H. Hartwell
20:15	Only open for Nobel Laureates and young scientists on Hopin.
Open Exchange	Open Exchange with Robert B. Laughlin
20:15	Only open for Nobel Laureates and young scientists on Hopin.

## **36** MEETING PROGRAMME THURSDAY JULY 1

Open Exchange	Open Exchange with Saul Perlmutter	Next Gen Science
20:15	Novel Approaches to Scientific Style Critical Thinking Education and Science Research Topics	09:15
	Only open for Nobel Laureates and young scientists on Hopin.	
<b>Open Exchange</b> 20:15	<b>Open Exchange with Randy W. Schekman</b> ASAP (Aligning Science Across Parkinson's), an Initiative to Advance Basic Research and Value of Collaboration	
	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with Donna Strickland	
20:15	Only open for Nobel Laureates and young scientists on Hopin.	
<b>Open Exchange</b> 20:15	<b>Open Exchange with Rainer Weiss</b> Gravitational Wayes	
20:15	Only open for Nobel Laureates and young scientists on Hopin.	
Panel Discussion	Open Science	
07:00	Elizabeth H. Blackburn University of California, San Francisco, USA	
	George Datseris Max Planck Institute for Meteorology, Germany	
	Michal Jex Czech Technical University, Czech Republic	
	Randy W. Schekman University of California, Berkeley, USA	
	Moderator: Stephanie Dawson ScienceOpen, Germany	
Break	Networking Break	
08:30	with Brian Malow and guests	
	Networking on wonder.me	

ct Gen Science	Research by Young Scientists
5	Learning From the Past to Inform a Better Future for Our Oceans Nicole Foster Flinders University, Australia
	Light-Controlled Polymer Formation and Recycling Christoph Jurissek Humboldt-Universität zu Berlin, Germany
	Dynamics and Plasticity of the Human Brain Network During Cognition Karolina Finc Nicolaus Copernicus University in Toruń, Poland
	Quantum Computational Advantage with Photons Yuhao Deng University of Science and Technology of China, China
	Engineering Uterine Environment for Peri-Implantation Mouse Embryogenesis Vladyslav Bondarenko European Molecular Biology Laboratory, Germany
	Design of Next-Generation Semiconductor Materials Maria Gélvez Rueda Delft University of Technology, The Netherlands
	Multifunctional Fe3O4-MOF Core-Shell Nanoparticles for Cancer Therapy Romy Ettlinger <i>University of Augsburg, Germany</i>

# Bavarian Breakfast THE KERBER BROTHERS Live from the Engel in Lindau Thursday July 1, 11.00 CEST

Introduction by Bernd Sibler, Minister of Science and the Arts, Bavaria

## **40** MEETING PROGRAMME THURSDAY JULY 1

Lecture	Next Generation Antibiotics	Agora Talk	Neutrino Oscillations and Observatories
12:00	Ada E. Yonath Weizmann Institute of Science, Israel	14:00	Takaaki Kajita University of Tokyo, Japan
Conversation	Science, Politics and the New World Order		Arthur B. McDonald Queen's University, Canada
12:45	Henry Kissinger		Moderator: Adam Smith
	Moderator: Adam Smith		Noderator: Adam Smith Nobel Prize Outreach, Sweden
	Nobel Prize Outreach, Sweden		Nober 1 nze Outreach, sweach
		<b>Panel Discussion</b>	Artificial Intelligence: Promises and Threats
Project	Lindau Online Sciathon 2021	15:00	Vinton G. Cerf
13:30	After the highly successful first edition in 2020, the next Lindau Online		Google, Inc., USA
	Sciathon will take place in September 2021 – learn more about the		Marco Eckhoff
	details in this session.		Georg-August-Universität Göttingen, Germany
Agora Talk	Time and Localization		Dina ElHarouni German Cancer Research Center, Germany
14:00	Edvard I. Moser		Michael Levitt
	Norwegian University of Science and Technology, Norway		Stanford University, USA
	Michael M. Rosbash		Eleni Karatza
	HHMI/Brandeis University, USA		University of North Carolina, USA
	Moderator: Anna Sjöström Douagi		Bernhard Schölkopf
	Nobel Prize Center, Sweden		Max Planck Institute for Intelligent Systems, Germany
			Moderator: Tarek Besold
Agora Talk	Topology of New Materials		DEKRA, Germany
14:00	F. Duncan M. Haldane		
	Princeton University, USA	Break	Workout »Body & Mind «
	J. Michael Kosterlitz Brown University, USA	16:30	
	Moderator: Heiner Linke Lund University, Sweden		

## 42 MEETING PROGRAMME THURSDAY JULY 1

Lecture	Scientific Achievements Are Nobody's Intellectual Property	
17:00	George P. Smith	
	University of Missouri, USA	
Lecture	Neuroscience Research in the 21 <sup>st</sup> Century	
17:45	Thomas C. Südhof	
Agora Talk	Expansion of the Universe	
18:30	Saul Perlmutter	
	University of California, Berkeley, USA	
	Adam G. Riess	
	Johns Hopkins University, USA	
	Moderator: Rainer Blatt	
	University of Innsbruck, Austria	
Agora Talk	New Chemical Reactions, Catalysis, Green Chemistry	
18:30	Robert H. Grubbs	
	California Institute of Technology, USA	
	Richard R. Schrock	
	MIT Massachusetts Institute of Technology, USA	
	Moderator: Wolfgang Lubitz	
	Max Planck Institute for Chemical Energy Conversion, Germany	
Agora Talk	New Methods for Biological Imaging	
18:30	Steven Chu	
	Stanford University, USA	
	William E. Moerner	
	Stanford University, USA	
	Moderator: Susanne Schultz-Hector	

Open Exchange	Open Exchange with Steven Chu	
19:30	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with Robert H. Grubbs	
19:30	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with F. Duncan M. Haldane	
19:30	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with J. Michael Kosterlitz	
19:30	Only open for Nobel Laureates and young scientists on Hopin.	
Open Exchange	Open Exchange with Adam G. Riess	
<b>Open Exchange</b> 19:30	<b>Open Exchange with Adam G. Riess</b> Only open for Nobel Laureates and young scientists on Hopin.	
19:30	Only open for Nobel Laureates and young scientists on Hopin.	
19:30 Open Exchange	Only open for Nobel Laureates and young scientists on Hopin. Open Exchange with Richard R. Schrock	
19:30 Open Exchange 19:30	Only open for Nobel Laureates and young scientists on Hopin. Open Exchange with Richard R. Schrock Only open for Nobel Laureates and young scientists on Hopin.	
19:30 Open Exchange 19:30 Open Exchange	Only open for Nobel Laureates and young scientists on Hopin.         Open Exchange with Richard R. Schrock         Only open for Nobel Laureates and young scientists on Hopin.         Open Exchange with Michael M. Rosbash	

Concert & Sunset Party HAZMAT MODINE from New York City Sunset Party on wonder.me Thursday July 1, 21.00 CEST

### 46 MEETING PROGRAMME FRIDAY JULY 2

Social Function	Welcome from Mainau Island
08:30	Welcome in Baden-Württemberg Minister-President Winfried Kretschmann, Baden-Württemberg
	Welcome from Mainau Island Countess Bettina Bernadotte, President of the Council
Panel Discussion	Why Trust Science?
09:00	Balkees Abderrahman The University of Texas MD Anderson Cancer Center, USA
	Carl-Henrik Heldin Nobel Foundation / Uppsala University, Sweden
	Brian P. Schmidt The Australian National University, Australia
	Hans-Jörg Rheinberger Max Planck Institute for the History of Sciences, Germany
	Moderator: Adam Smith Nobel Prize Outreach, Sweden
Social Function	Closing Ceremony
10:45	Induction of Dr. Volkmar Denner, Chairman of the Board of Management - Robert Bosch GmbH, into the Honorary Senate of the Foundation Lindau Nobel Laureate Meetings Farewell

#### **Programme Session Types**

#### Lectures

Lectures are given by Laureates only. They may choose a topic of their liking – be it their Nobel Prize research, be it something else. A 15 minutes Q&A session follows immediately afterwards.

#### Agora Talks

Flexible and interactive. One laureate presenting or several Laureates interacting in presentation/discussion of a topic; in both cases, a qualified moderator leads Q&A from the audience, discussion or even an interview. Up to three parallel events.

#### **Conversations**

These sessions usually feature special topics, often in an interview/conversation style.

#### Panel Discussions

Several panellists jointly discuss one topic. Up to half of the time is dedicated to Q&A with the audience.

#### **Open Exchanges**

Most Laureates offer discussion sessions, usually in addition to lectures and agora talks. These research-oriented discussions are strictly limited to laureates and young scientists, and switching between sessions should be avoided.

#### Next Gen Science Sessions

Oral presentations by young scientists. Each presentation is 10 minutes, followed by a short Q&A.

#### Workouts

Need a break? Join our workouts.

#### Partner Events

Partners of the Lindau Meetings are invited to organise side events outside the core programme. As for the content of the presentations, several types are possible, e.g. panel discussion, world café, normal dinner, pitch presentations, etc. Note that partner events may not be available in the livestream.

## 48 ABOUT THE MEETINGS

#### The Meetings

The Lindau Nobel Laureate Meetings – established in 1951: 70 years ago – provide a globally recognised forum for exchange between Nobel Laureates and young scientists. They inspire scientific generations and build sustainable networks of young scientists around the world.

The original idea of the meetings goes back to the two Lindau physicians Dr. Franz Karl Hein and Professor Dr. Gustav Wilhelm Parade as well as Count Lennart Bernadotte af Wisborg, a member of the Swedish royal family who quickly became the spiritus rector of the Lindau Meetings. It was them who recognised very early the significance of the meetings for the reconciliation of the people of post-war Europe and thus systematically developed them to an international forum for the exchange of knowledge between nations, cultures and disciplines.

#### **The Organisers**

The Council for the Lindau Nobel Laureate Meetings and the Foundation Lindau Nobel Laureate Meetings organise the annual one-week events. The executive secretariat is responsible for planning and realisation. Countess Bettina Bernadotte af Wisborg is president of the Council, which sets the course for the Lindau Meetings' concept and programme. Internationally accredited scientists from the fields of medicine, physics, chemistry and the economic sciences are members of the Council. The work of the Council benefits from the commitment of the secretaries of the assemblies responsible for awarding the Nobel Prizes, which are represented in the Council.

The Foundation was established in the year 2000 by the Council and the Bernadotte family on the initiative of 50 Nobel Laureates. Following Prof. Wolfgang Schürer, since 2016 Prof. Dr. Jürgen Kluge serves as the chairman of the board of the Foundation. Joint initiatives regarding the advancement of the Lindau Meetings and the establishment of an international network of academic partners are key priorities in addition to ensuring sustainable funding.

The Lindau Meetings enjoy widespread support. More than 350 Nobel Laureates are members of the Founders' Assembly of the Foundation and demonstrate – through their membership and their engagement with the Lindau Spirit – their support for the mission of the Lindau Nobel Laureate Meetings. Personalities from the worlds of science, politics and industry have been inaugurated into the Foundation's Honorary Senate in recognition

of the special commitment they have shown towards scientific excellence and the promotion of young scientists.

#### Funding of the Lindau Nobel Laureate Meetings

The Lindau Nobel Laureate Meetings are made possible thanks to the support received from supranational, national and state bodies, companies, associations and private patrons. International companies, selected foundations, associations and private patrons assure the financial basis for the Lindau Meetings by making donations to the assets of the Foundation Lindau Nobel Laureate Meetings. Interest earned on the endowment, plus additional annual contributions by benefactors cover the budget of the Lindau Meetings. Donations in kind also play an important role in raising the professional level of the meetings. Not least, the success of the Lindau Meetings can also be attributed to the commitment shown by the Nobel Laureates, members of the Council and the board of the Foundation during the preparation, realisation and evaluation of the meetings. A full list of supporters is enclosed in this programme.

#### **The Academic Partners Network**

The Lindau Nobel Laureate Meetings interact closely with a global network of academic partners to identify highly-talented young scientists and to nominate them for participation. Partners include national academies of science, ministries, research institutions, top-ranking universities, foundations and international scientific organisations. Without this support, the Lindau Nobel Laureate Meetings would not be able to identify and invite the most gifted scientific talents worldwide.

The world's best young scientists of tomorrow submit applications to attend the Lindau Nobel Laureate Meetings. An international, multi-stage selection process guarantees that the scientific elite of the future is able to gather with the Nobel Laureates in Lindau. Every year, several thousand young scientists apply worldwide.

## THERE'S AN APP FOR THAT.

Check out the Hopin meeting app for mobile participation.

## TWITTERATI

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## **ABSTRACTS**

Session abstracts are available at

mediatheque.lindau-nobel.org/ abstracts/meeting-2021

> & Lindou n

mediatheque.lindau-nobel.org/ program/meeting-2021

## ALUMNI NETWORK

Meet your peers at alumni.lindau-nobel.org

## REWATCH

Most of the sessions will be available afterwards in our mediatheque:

mediatheque.lindau-nobel.org/ program/meeting-2021

## IN-DEPTH COVERAGE

Check our blog for addional in-depth coverage: blog.lindau-nobel.org

### **52** ENDOWMENT CONTRIBUTORS

### ENDOWMENT CONTRIBUTORS 53

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- 05 Publish Data to Repositories
- 06 Work Transparently & Truthfully
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- 08 Support All Talent
- 09 Communicate to Society
- 10 Engage in Education

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## **56** MEETING SUPPORTERS

The Lindau Nobel Laureate Meetings would like to thank all supporters of the 70<sup>th</sup> Lindau Nobel Laureate Meeting.

#### SIGNIFICANT MEETING BENEFACOTR

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## **Chamber Music**

# VIENNA PHILHARMONIC Throughout the Programme

www.undau.nobel.org

Greetings by Heinz Faßmann Minister of Education, Science and Research, Austria

> Introduction by Daniel Froschauer Chairman of the Vienna Philharmonic, Austria

60 NOTES

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## 62 GOOD TO KNOW

## GOOD TO KNOW 63

#### Scientific Chairpersons of the 70th Lindau Nobel Laureate Meeting

Lars Bergström

Professor

Theoretical Physics, Stockholm University, Sweden

Rainer Blatt

Professor

Institute for Experimental Physics, University of Innsbruck, Austria Institute for Quantum Optics and Quantum Information Innsbruck, Austria

#### Klas Kärre

Professor

Department of Microbiology, Tumor and Cell Biology, Karolinska Institutet, Sweden Member, Nobel Assembly for Physiology or Medicine at Karolinska Institutet, Sweden

*Stefan H. E. Kaufmann* Director Emeritus

Max Planck Institute for Infection Biology, Germany

Heiner Linke Director NanoLund – Center for Nanoscience at Lund University, Sweden Member, Nobel Committe for Chemistry, Sweden

Wolfgang Lubitz Director Emeritus Max Planck Institute for Chemical Energy Conversion, Germany

#### **Future Meetings**

71<sup>st</sup> *Lindau Nobel Laureate Meeting (Chemistry)* 26 June to 1 July 2022

7<sup>th</sup> Lindau Meeting on Economic Sciences 23 August to 27 August 2022

72<sup>nd</sup> Lindau Nobel Laureate Meeting (Physiology/ Medicine) 25 June to 30 June 2023

73<sup>rd</sup> Lindau Nobel Laureate Meeting (Physics) 30 June to 5 July 2024

74<sup>th</sup> Lindau Nobel Laureate Meeting (Chemistry) 29 June to 4 July 2025

8<sup>th</sup> Lindau Meeting on Economic Sciences26 August to 30 August 2025

75<sup>th</sup> Lindau Nobel Laureate Meeting (Interdisciplinary) 28 June to 3 July 2026

Council for the Lindau Nobel Laureate Meetings

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> Alfred-Nobel-Platz 1 88131 Lindau Germany

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