

Discover the way a
Greek Scientific Paradigm
may evolve for the post-COVID era

March 14, 2021 11:00 am EET



Symposium Report

On March 14, 2021, the Greek Scientists Society organised their first Virtual Symposium on “*Discover the way a Greek Scientific Paradigm may evolve for the post-COVID era*”, paying tribute to the Celebration for 200 years since the War of Independence and the outbreak of the Greek Revolution of 1821 and appreciating over 2500 years of the impact of Greece on human ideals.

Nowadays, as we leave behind this pandemic, we face the digital acceleration and the swift transformation to what is called the “new normal” towards the new economy, we wish to move forward by taking advantage of the heritage of the Ancient Greek thinking on how it can assist us to confront the complex issues of the post-COVID 19 era.

Greece, Cyprus, and Greek Scientists could excel in these global discussions with the aim of

- Evolving a distinct **Greek Scientific Paradigm**
- Developing a dynamic **Ecosystem** where Greek (and not only) Scientists will conduct research, innovate, and grow their ventures, so that in 10 years, Greece along with Cyprus will be one of the best, if not the best, emerging ecosystem for start-ups
- Greek Scientists assisting the Greek and Cypriot society to enter the New Era, through **Citizen Science** by explaining to the public the benefits and risks of the advancements in scientific research, so to improve our scientific communities’ capacity, as well as to increase the people’s understanding of science

In the Symposium we were delighted and very honoured to have an outstanding line-up of Speakers in four thematic areas – panels. area

Summary

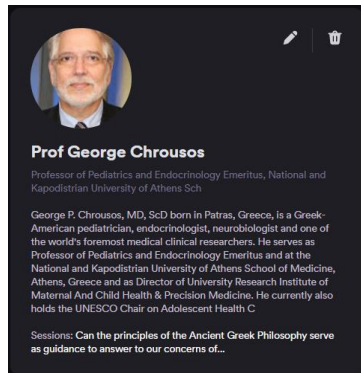
A lot of interesting ideas came out of our Symposium that must be further nurtured and advanced to the next level, to take shape and be developed into programs with solid results for the whole ecosystem and especially for the scientific community.

This is the first of future Symposia on this issue “Greek Scientific Paradigm”, the next one in 6 months.

The Program

The Symposium opened with Professor Chrousos speech, Chair of the Symposium, on "Ancient Greek Medical Philosophy Principles in the COVID-19 era"

Speaker



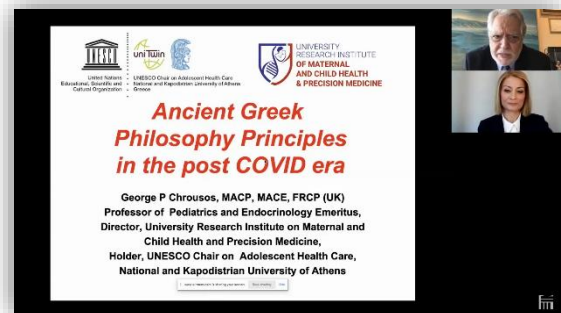
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Key Outcomes & Statement

Professor George Chrousos presented the Fundamental Greek Medical Concepts





- Working with Reason (Socrates)
- Complexity (Pythagoras) – Harmony Equilibrium Balance
- Hippocrates Principles (Medicine branches – Physics, Surgery and Dietetics)
- Evidence-based medicine (Lifestyle medicine, Medical (Bio), Ethics (Oath))
- Aristotle established the constituents of man: physis – genetics (Plato), ethos- epigenetics (Aristotle), logos
- Hellenistic Medicine and Byzantine Medicine are the constituents of the Modern one



Professor Chrousos is a strong proponent of Epicurean "Scientific Humanism" principles – human dignity, human equality, ethical behaviour, and living in sync with nature. Core ancient virtues (Plutarch) – courage, phronesis, self-discipline, and justice. Added ancient virtues not mentioned by Plutarch- humanism, and transcendence. What we now discuss has already been debated in Ancient Greece (Hippocrates, Aristotle, Epicurus, and others).

Panel 1. Can the principles of Ancient Greek Philosophy serve as guidance to answering our concerns of the post-COVID era?

Speakers

 <p>Prof Voula Tsouna Professor of Philosophy Department Chair, University of California, Santa Barbara</p> <p>Voula Tsouna is a Philosopher, Professor at the University of California, Santa Barbara. Her work is in the area of ancient Greek philosophy, specialising in Socrates, Plato, the Socratic schools, and Hellenistic Philosophy. Her analysis focuses on the topics of rationalism, attitudes towards superstition and the fear of death.</p> <p>Sessions: Can the principles of the Ancient Greek Philosophy serve as guidance to answer to our concerns of...</p>	 <p>Prof Stathis Psillos Philosopher of science, University of Athens</p> <p>Professor of Philosophy of Science and Metaphysics in the Dept of Philosophy & History of Science at the University of Athens, Greece. He was a British Academy Postdoctoral Fellow at the Philosophy Department of the London School of Economics. In 2008 he was elected member of l'Académie Internationale de Philosophie des Sciences (AIPS).</p> <p>Sessions: Can the principles of the Ancient Greek Philosophy serve as guidance to answer to our concerns of...</p>	 <p>Prof. Theofanis Tasis Professor of Contemporary Practical Philosophy, University of St. Gallen</p> <p>Theofanis Tasis is teaching Contemporary Practical Philosophy at the Alpen – Adria Universität. He is a visiting Professor at the University of St. Gallen and the University of Athens. His areas of specialization include: Political and Moral Philosophy, New Media Philosophy, Phenomenology, Existentialism, Critical Theory and Neopragmatism.</p> <p>Sessions: Can the principles of the Ancient Greek Philosophy serve as guidance to answer to our concerns of...</p>	 <p>Prof Christos Yapijakis Associate Professor of Genetics, NKUA, National & Kapodistrian University of Athens</p> <p>Christos Yapijakis is Associate Professor of Genetics at the School of Medicine of the University of Athens at "Hagia Sophia" Children's Hospital, Advisor Board Member of the Research Laboratory of Applied Philosophy of the University of Athens, and Founding Member of the Epicurean 'Garden of Athens'. He has made contributions in Philosophy of science, bioethics, and medical history (ancient DNA research on the cause of the Plague of Classical Athens).</p> <p>Sessions: Can the principles of the Ancient Greek Philosophy serve as guidance to answer to our concerns of...</p>
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Watch the video

Moderator: Professor Alexis Papazoglou

Narrator: (Professor Psillos voice) Dr Dimitris Karponis

Key Outcomes & Statements



Professor Voula Tsouna

- Contemporary challenges interconnected to and value-dependant on people suffering from confusion, anxiety, and doubt
- Greek Philosophy may have substantial, multifaceted contribution in intellectual, psychological, moral, and civil aspects of scientific practice
- Paramount importance of science - Stoics (**logos**), Epicureans (**physiologia**). Proper scientific practice must be governed by **Ethical values** otherwise **Science can do harm** rather than good

- Taking **advice only from the experts** (originated by Plato) but **experts also need to listen to the concerns and questions of the people** – *Citizen Science*
- The virtues of Ancient Greeks, which served as a **moral canon** on top of conceptual tools, may help us trace the links between virtues and scientific practice, e.g., **fairness, honesty, perseverance, empathy, generosity, awareness of one's capacities and limits**
- **Individualism and concern for others**
- **Cosmopolitanism** and globalisation – Stoics (we are in the middle of **successive concentric circles** - treating our circle with **regard** and **affection** to develop **attitude of concern for the outer circle**). This metaphor is to **serve as the foundation of our Scientific Paradigm**

Professor Stathis Psillos

Dr Karponis, Professor Psillos's voice, proved that **impairment cannot prevent the Philosophical voice** or success of anyone.

Professor Psillos referred to three levels of Philosophical engagement with the pandemic:

1. Method
2. What kind of decisions and actions should be made or taken under uncertainty?
3. Science Policy

He then noted that similar issues were debated in Ancient Greece among Physicians and Philosophers. In particular, he presented the two competing schools in the post-Hippocratic medicine:

- the **empirics** and the
- **dogmatists**.

The empirics argued that medicine should be based on **experience only**.

The dogmatists supported that medicine should offer certain knowledge of the **causes** of the various diseases, and based in the **Stoic theory of signs**, defended a special kind of inference, called **indicative inference** as offering certain knowledge of the cause based on the effect.

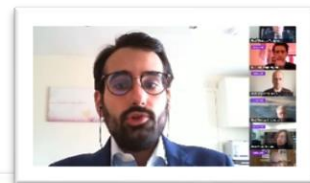
Empirics replied that the only sources of information about a disease were **autopsy & history**. New diseases were treated based on the method of **the transition to the similar**.

Based on the attempt of the Sceptic Philosophers to curtail the rashness of reason, empirics denied indicative inference, which they called **analogism** and favoured **recollective or commemorative**, which they called **epilogism**.

Galen synthesised these two schools into a **novel philosophical view**, which suggested the importance of theories but called **for rigorous empirical testing**.

Professor Psillos then claimed that **revisiting this debate** holds the key to developing a **post-Covid19 paradigm**. The issue of **causation** is, in fact, the issue of the status of the transition to the similar; the issue of **uncertainty**, is the issue of the **status of indicative inference**; and the issue of **science policy is in fact the issue of Galenian synthesis**.

According to Professor Psillos, the lasting message of the pandemic in the light of the ancient Greek debate is that we should **go back to the drawing board** and think what it takes to **make science better**. We should turn to **Philosophy to raise the right questions**. The improvement of science requires every now and then a detour via Philosophy.



Professor Christos Yapijakis

Professor Christos Yapijakis used an **evidence-based approach** to suggest that the best philosophical guidance is **Scientific Humanism** based on the philosophy of empiricist, naturalist, and humanist **Epicurus**, a combination of **Science and Bioethics** for **social utility** and **individual happiness**.

The revival of Epicurean Philosophy in 1650 by Gassendi led to **Empiricism, Enlightenment, Science and Modernity** that verified and reintroduced most teachings of Epicurus.

Scientific Humanism includes

- Naturalism
- Philanthropy (value of every human being)
- Biological ethics (bioethics)
- Freedom of choice
- Justice as Social Contract
- Quality of Life and
- Right to pursue Happiness

According to Epicurus, **happiness is the absence of mental and physical pain**, which is equivalent to the **definition of Health** according to World Health Organization.



Professor Theofanis Tasis

Self-care “Επιμέλεια Εαυτού” – Philosophy as a **practise**, an act of living and not a purely intellectual activity

Exercises to take care of yourself – physical, spiritual and intellectual

People that have managed **to self-care** were also able to **thrive in public life**, which was a crucial **booster of Democracy** in Ancient Greece

Self-care helped to cope with pandemic, comforted us in a way but also trained us on **how to be democratic citizens**

In the post-Covid era, the **digitalization of institutions** and activities is rapidly growing and the **tendency to assign algorithms** to most of our activities is increasing

Self-care, in this context, could also include **our digital self**

The second aspect is the importance of **Transhumanism**. In order to cope with any future pandemic, we should **enhance ourselves** (the covid vaccine is a **form of enhancement**)

Galen-enhancement





The second notion is **“phronesis”** – intellectual ability but also use of **intuition** and **imagination** in order to define the **“metron”** (the right amount in action)

Phronesis, a condition of **self-limitation**, important to human enhancement but also in our quest for **strong Artificial Intelligence**



Panel 2. How the governments should anticipate the new reality, spark a wave of innovation for the scientific community and the industry, and prepare the citizens to become digital-enabled within this transition period?

Speakers

 <p>Ms Anna Diamantopoulou President of DIKTIO, former EU Commissioner, DIKTIO – Network for Reform in Greece and Europe</p> <p>Anna Diamantopoulou is the founder and President of DIKTIO. Ms Diamantopoulou's active presence in the Greek and European public spheres spans more than two decades. A Civil Engineer by training with graduate studies in Regional Development, has served as a member of the Greek Parliament for 11 years and held ministerial appointments in the Greek Government in the Ministry of Education, Lifelong Learning and Religious Affairs (2009-2012), and of Development, Competitiveness and Shipping.</p> <p>Sessions: How the Governments should anticipate the new reality, spark a wave of innovation for the ...</p>	 <p>Minister Kyriakos Pierrakakis Minister of State and Digital Governance, Hellenic Republic</p> <p>Kyriakos Pierrakakis is the Minister of State and Digital Governance in the Cabinet of Kyriakos Mitsotakis. He is a Greek computer and political scientist and politician. In 2007 he earned a Master in Public Policy from John F. Kennedy School of Government, Harvard University and in 2009 he earned a Master of Science in Technology and Policy from MIT. He served as Director of Research at Dianosis, an independent non-profit think tank.</p> <p>Sessions: How the Governments should anticipate the new reality, spark a wave of innovation for the ...</p>	 <p>Deputy Minister Christos Dimas Deputy Minister for Development and Investments, Hellenic Republic</p> <p>Dr Christos Dimas is the Deputy Minister for Development and Investments in charge of Research and Technology. He is a lawyer and Member of the Hellenic Parliament. Before entering politics, he worked in the private sector as a business consultant for The Boston Consulting Group (BCG). He graduated from the Law School of the National and Kapodistrian University of Athens and Queen Mary University in London. He completed his Master Degree in Comparative Politics at the London School of Economics.</p> <p>Sessions: How the Governments should anticipate the new reality, spark a wave of innovation for the ...</p>	 <p>Dep Min Kyriacos Kokkinos Deputy Minister of Research, Innovation and Digital, Republic of Cyprus</p> <p>Kyriacos Kokkinos is the Deputy Minister to the President for Research, Innovation and Digital Policy, since March 1st 2020. He previously served as Chief Scientist for Research & Innovation (R&I), Chairman of the Board of the Research & Innovation Foundation, Member of the National Board of R&I. He is a distinguished professional with 30yrs of experience in Executive Management, Technology and Business Consulting in global corporations e.g. IBM Europe (Executive Director & Partner) and PwC.</p> <p>Sessions: How the Governments should anticipate the new reality, spark a wave of innovation for the ...</p>
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Watch the video



Moderator: Mr Athanasios Ellis

Key Outcomes & Statements

Ms Anna Diamantopoulou

- **Coordinating** scientific communities of **Greek diaspora** with those within Greece has been a **challenge** for all governments. And continues to be so.
- We should examine the **establishment of a new Amphictyony**, comprised of scientific communities. Namely, to create **thematic communities of scientists** and get them connected with each other, on the basis of common objectives.

- Our century is indeed a century of great changes, which are **significantly accelerated** by the COVID-19 pandemic.
- In the post-covid19 OECD member-countries have prioritized policies in three sectors: **climate change, digital transformation** and **new welfare state models**, especially as regards **education, healthcare** and **labour markets**.
- In the post pandemic world, our primary goals are two and must be pursued at the same time: **recovery** and **resilience**. This means that each government must develop a **solid foresight mechanism** so as to prepare its **structures** and **infrastructures** for **potential future shocks**.
- Governments have to design and implement both a **short** and **long term planning**. Fundamentally, they have to formulate a **political grand narrative** so as for **citizens, scientists** and **firms** (of all genders and ages), to be able to see themselves **somehow linked to forthcoming changes**. Citizens got to know what they can win and what they might lose out of it all.
- Organizing **clusters** comprised of both scientists and firms should be a priority. We should design a proper **institutional framework** and the necessary **financial** support. This framework should focus on
 - a. setting universities and researchers **free of bureaucracy**,
 - b. facilitating **international synergies** and
 - c. providing **incentives** to firms so as to be willing to cooperate with scientists.
- We need to set quantitative and qualitative goals in all economic sectors; **with political agenda and scientific foundations**.

Minister Kyriakos Pierrakakis

Greece's own agenda focus on **digitalisation of services** in the public sphere and achieving **business continuity** is the main priority.

Main questions

- How does the State reach Citizens?
 - Creation of government portal **gov.gr**
 - **Interoperability Centre** – increase in calls from 8.8 ml calls in 2018 to 94ml in 2020
- **Leverage the capabilities** of Greek Scientists and Researchers all over the world.
- Policy on 5G aims to **generate a new ecosystem** around **5G technologies** to leverage available resources in Greece and all over the world
 - Business friendly auction
 - Economic activity can be generated with the classic approach of subsidies
 - The Greek approach was to endow the 25% of the auction funds to a 5G VC fund “**Phaestos**”
 - A small portion of the spectrum will be offered **to Research Centres, Universities and Start-ups** for free
- What is next: to leverage the significant resources from the Recovery and Resilience Facility (20% on digital projects and implement the Digital Bible Strategy)
- Reskilling programs
 - Design **simple** services & processes and make them **100% accessible to citizens**, for example the vaccination process.
 - **National Digital Academy** – courses for everyone



- Targeted programs of reskilling from both the public and the private sector for citizens who enter or re-enter the labour market **with different skills** and careers along with the Technological disruption. Targeted programs will enable people to reach their goals and generic programs for all citizens will boost reskilling.
- **5G policies as we enter the new world.** There is a narrative about capacity building based on other successful examples, from
 - Silicon Valley – communities, financial instruments
 - Estonia – identity ecosystem policy
 - UK – government digital portal
 - Israel – Innovation ecosystem, leverage army service to develop specific digital skill
 but we also have Greek Innovation, e.g., in 5G policies (EY forecast - potential gains from 5G policies by 2030 - 12.4 bl gross value added and 69K jobs).
- **Reforms are like transplants: there is a need for donor / receiver compatibility**

Dep. Minister Kyriacos Kokkinos

What would be the next norm for economic competitiveness and social prosperity for our citizens?

- Greece and Cyprus need to build a **new economic model** which relies on a **knowledge-based society**
- Greece and Cyprus have the **intellectual capital** - the Scientists, the Research and Innovation ecosystems
- 3 pillars for the Cypriot Government:
 - Local ecosystem
 - **Diaspora** that is not been leveraged and needs a strategy, not just with a vision without a **clear set of goals, accountability and ownership**
 - we are small countries and so we need to build a pillar with **cross-fertilisation and collaboration with neighbouring countries** - Israel, the Middle East and North Africa

So far, a **bottom-up approach** has been implemented, where Universities have strong links with various Scientists across the globe but there is an **absence of top-down support**. And although we are strong in **Research excellence**, we are weak in adding value to the real economy i.e., **commercialisation** of the results, something that our **Diaspora can support**.

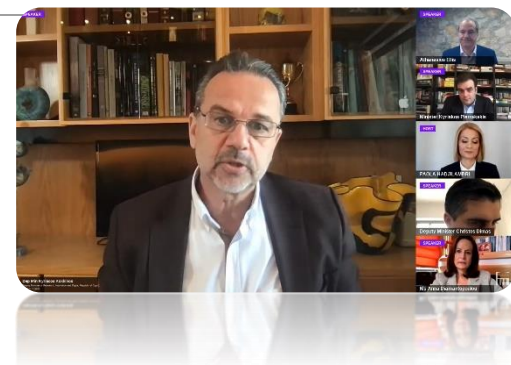
Reskilling

Not only digital reskilling but we need to touch **competencies** and **soft skills**, like **agility, entrepreneurship, critical thinking, adaptation to future jobs**.

Learn from our Diaspora, where the **collaborative spirit of education** has been embedded into their pedagogical and economic fabric, an on-going challenge beyond 2030.

Cyprus as a regional Science and Technology Hub. How are Cypriot Scientists involved?

- Work together with the Greek ecosystem, establish our **geographies as a strong, robust ecosystem** that will attract companies. How?
 - The **institutional environment** must be **business-friendly** and should have an **explicit regulatory framework** and **fiscal policy**. **Immigration policy** for foreign Scientists must be competitive and attractive



- Human Capital - **upskilling and re-skilling** but also **modernise** the **Curriculum** according to the market needs, i.e., for example promotion of Data Sciences. Attraction and retainment or mobilization of human capital.
- Infrastructure
- Business and market **sophistication**. The **banking system** must be improved, and fast **setups, collaboration** and **business practises** and **constructs** are required

Dep. Minister Christos Dimas

Regarding Research and Innovation, the Greek Government has set 3 basic goals

1. Link more effectively **Research** with **Innovation** and **Entrepreneurship**

- Compared to other EU countries in Research and Education, Greece is performing rather well but when it comes to Innovation and Entrepreneurship we are lagging.

2. Increase **R&D spending** in Greece

- The private sector since 2017 spends more and the Government now assists with **super-deductions tax rates** in companies that invest in R&D, inviting big companies, e.g., Pfizer, Microsoft, VW, etc
- This is a strategic priority to **keep** Scientists in Greece and **re-attract** those who left by giving them good job opportunities.

3. Link the **fragmented ecosystem** in Greece

- Implementation of **best practices** from countries like **Israel**, e.g., the **National Start-up Registry**
- Creation of “**Elevate Greece**” that networks start-ups, spin-offs, incubators, accelerators, and VCs
- **Innovation district** in Attica, a Public-Private Partnership, is a natural match-making ground of R&D departments of companies, start-uppers, innovators creating synergies and producing innovative products and services

Reskilling

- **Adaptability**. We cannot run things the same way as before. For example, in the 20th century we had the same companies in the top-20 but in Digital Revolution almost all were founded after 1990. We all need to adapt even at the family level.
- Upskilling and re-skilling is needed for all **ages** according to **needs** of the **modern society**.





Sectors that GR emphasize on Innovation and Research

- Our goal is to play a leading role in SE Europe taking advantage of its human capital and **attract talent** from the neighbouring countries
- **Sectors** - Climate crisis (EU funds for **Environment** and **Energy**), **Life Sciences**, **Agriculture** (models Israel, the Netherlands), **Shipping** and **Tourism**, as well as **Logistics** and **Culture**.



Panel 3. How do the scientists in the emerging technologies - in the most interdisciplinary mode - have to adjust to the new advancements within an ethical framework? What issues have to be considered in this respect?

Speakers

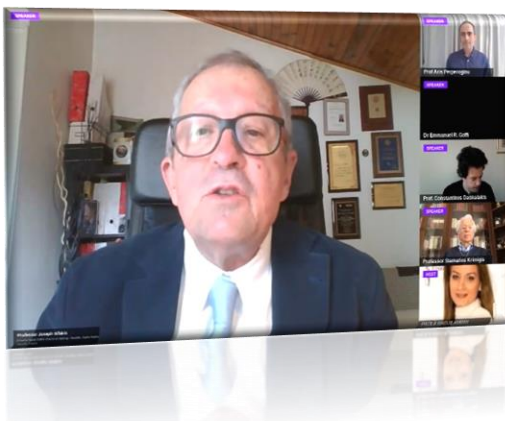
 <p>Professor Joseph Sifakis Emeritus Senior CNRS Director at Verimag, Grenoble, Centre National de la Recherche Scientifique</p> <p>Professor Joseph Sifakis is a Greek-French computer scientist, laureate of the 2007 Turing Award. He has been a full professor at Ecole Polytechnique Fédérale de Lausanne and the founder of the Verimag laboratory. He is a member of the French Academy of Sciences, the French National Academy of Engineering, Academia Europea, the American Academy of Arts and Sciences, the National Academy of Engineering and the Chinese Academy of Sciences. He works on the design of autonomous systems.</p> <p>Sessions: How do the scientists in the emerging technologies - in the most interdisciplinary mode - have to ad</p>	 <p>Professor Stamatios Krimigis Advisor to Minister of Digital Governance, Greece, Ministry of Digital Governance</p> <p>Professor Stamatios Krimigis is a Greek-American scientist in space exploration. He has contributed to many of the United States' unmanned space exploration programs of the Solar System and beyond. He is Head Emeritus of the Space Department Applied Physics Laboratory at Johns Hopkins University Laurel, Maryland, United States and he is a member of Academy of Athens, Greece.</p> <p>Sessions: How do the scientists in the emerging technologies - in the most interdisciplinary mode - have to ad</p>	 <p>Prof. Constantinos Daskalakis Professor of Electrical Engineering & Computer Sc., MIT</p> <p>Constantinos Daskalakis is a Greek theoretical computer scientist, Prof. at MIT's Electrical Engineering and Computer Science dept and a member of the MIT Computer Science and Artificial Intelligence Lab. He was awarded the Rolf Nevanlinna Prize and the Grace Murray Hopper Award. He has resolved long-standing open problems computational complexity of the Nash equilibrium. He works on the theory of computation with game theory, economics, probability theory, statistics and machine learning.</p> <p>Sessions: How do the scientists in the emerging technologies - in the most interdisciplinary mode - have to ad</p>	 <p>Dr Emmanuel R. Goffi Philosopher Director of Observatory on Ethics & AI, Institut Sapiens</p> <p>Emmanuel R. Goffi is a philosopher of artificial intelligence. He is the Director of the Observatory on Ethics & Artificial Intelligence with the Institut Sapiens in Paris and is Professor of AI Ethics with avaricity, School for Technology, Business & Society in Paris-Cachan. He is also a research faculty with the Big Data Lab at the Goethe Universität in Frankfurt, Germany, and a research fellow with the Centre for Defence and Security Studies at the University of Manitoba, in Winnipeg, Canada.</p> <p>Sessions: How do the scientists in the emerging technologies - in the most interdisciplinary mode - have to ad</p>
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Watch the video



Moderator: Professor Aris Perperoglou

Key Outcomes & Statements



Professor Josef Sifakis

- We are living a revolution that impacts our lives and opportunities, while risks emerge by the **extensive use of AI in critical autonomous systems**, raising important **ethical issues**.
- Technical civilization has been propelled by Scientific knowledge that allows **predictability** and **explicability** and therefore we trust human artefacts.
- AI techniques have generated a **new kind of knowledge** that allows arbitrary **prediction**. However, given that they rely on a **new**

computational paradigm that outperforms conventional computing in problem-solving, they sometimes cause problems.

- Modern societies **manage risks by applying standards** to Agencies that guarantee **artefacts security**. However, there are no **standards for AI techniques** and large computerised systems, and this results in a **dilemma**: either we require **conclusive trustworthy evidence**, or we **limit the technological progress**.
- In the US **self-certification** for critical automotive and medical systems is now allowed. Two approaches for **risks** from Innovation technologies are possible **but which one is the ideal remains unknown**
 - **precautionary principle** (avoid the use of the technology)
 - to find **the equilibrium between risk and benefit** by applying economic techniques
- Regarding ethical issues, **ethics is about making decisions between different choices**; for ICT driven technologies **people are not aware if there are choices** while **public authorities are very permissive**. Therefore, the **public must be aware of choices** and **when informed to judge rightfully**.

In ICT, there are two conflicting positions

- Some support that AI is a **fatal** drawback to Humanity and
- others push for the **acceptance** and **use** of these Technologies

We should develop **condition to calm, inform and reason debate**.

- Three important ethical issues.

1. **Freedom of expression vs Safety & Security**. How to preserve **fundamental freedoms** while protecting against **harmful behaviour, abuse of ICT, avoid big-brother society, the social credit system**

2. **Freedom of choice vs Performance**. In some case AI allows performance but the question is if it is based on **an unbiased or neutral manner**. The performance benefit should be commensurable with the risk implied by the **lack of human control**

3. Find the **right balance between human and computer**, the right **amount of division of work**. Technical progress implies some **loss of skills**, the **danger** is losing our capability to **develop knowledge and judge responsibly**. The risk is not that computers become more intelligent than humans but rather that **people incline to intellectual laziness and comfort** and let computers decide on behalf of them and make decisions they do not understand, which is obviously a bad scenario for humanity.

Problems arise from tracking and other systems due to Covid? Are we losing freedom in exchange for protection or do systems give us rewards of what they promised?

Chinese use an app that reports everyday personal data, so there is a question of **violation of privacy**.

But also, there are **reputation systems** that evaluate your behaviour in general.

How do systems make decisions based on the scientific (model) approach?

Self-certification on Biosciences and development of new drugs or the case software can be a medical device but what are the dangers for the public?

- For critical processes or artefacts, we apply **standards** by Independent Authorities, FAA or FDA.

- **FDA** allows **self-certification**, the manufacturer will guarantee that the product is not dangerous, compared to the standard practise for critical systems **while in Europe we apply the precautionary principle**.

In the new era is there a need for a Greek Paradigm?

- A **Greek paradigm** would be **how we connect Scientists in Diaspora with those in Greece**, we should work towards creating some **synergies**. But there are obstacles and one way to overcome them is to **open Greek Universities and Research Organisations to the Diaspora as Israel does**.

Professor Stamatios Krimigis

The pandemic had a limited impact in Research and Space exploration. We have learned to combine **remote and in situ activities** continuing the programs and deliver on schedule without significant disruptions.

This **model** can be continued in principle, but the downside is that it **inhibits the transfer of knowledge to the younger generations of Scientists and Engineers** so that they can take over in the future. As we are **social animals**, the use of platforms like zoom is not as effective as direct communication, so we need to further **investigate which model will work better**, i.e., the remote or the one of physical contact.

In **space exploration**, there have been **no ethical issues** as all are in favour of exploration of new things. Nevertheless, an ethical issue may arise in 10-20 years if we discover **biological activity on planet Mars** and we need to decide whether this will be shared with the people or not, due to religious dogmas.



This **model** can be continued in principle, but the downside is that it **inhibits the transfer of knowledge to the younger generations of Scientists and Engineers** so that they can take over in the future. As we are **social animals**, the use of platforms like zoom is not as effective as direct communication, so we need to further **investigate which model will work better**, i.e., the remote or the one of physical contact.

How do you see private companies going to space explorations and what kind of risks are there for people?

There is some activity; for example, Elon Musk wants to colonise Mars or an Organisation that advertised before some years, a program "who would be willing to go to Mars" but the assumption was that they cannot guarantee to bring humans back to Earth. The **ethical issue** is whether **Governments should allow an entrepreneur to risk human lives** even though there are people willing to take the risk.

In the new era is there a need for a Greek Paradigm?

3% of the most-cited Scientists worldwide are Greek or Greek-origin while we are only the 0.2% in the world population. We are **overrepresented in Scholarships, discoveries, and publications** but **85% of these Scientists are abroad and many of the remaining 15% came back to Greece** after having spent many years abroad. We have a huge problem with our educational system and the Greek paradigm is that we **thrive outside of Greece** when **participating in systems that are superior** to those in Greece. However, I remain pessimistic that we will develop a Greek paradigm.

Professor Konstantinos Daskalakis

How AI fails and why it matters. Science seems that it has delivered a solution to the pandemic. However, in **AI there are traditional issues of robustness and trust**. In the past decade, we had developments in image recognition and voice recognition and translation while computers were able to **beat** human players in difficult games.

Progress in ML has been progressing by **testing algorithms on benchmark tasks** and though **computers beat humans** in these tasks when we **shift to different benchmarks the presumed accuracy drops significantly**. Yet, AI systems can be **tricked**, and this raises **fail and safety issues** especially when **life-critical safe applications** are involved. It has also been documented that **algorithms are biased, incorporated biases** that are incorporated in data and replicated. An example that raised ethical considerations was published in **ProPublica**, an algorithm used by law-enforcement to decide where to pre-detain a suspect for a crime, was very biased to certain sub-populations.

However, the fact that AI beats humans in Go and Poker games is not sufficient to further involve AI in everyday life, e.g., to compete with human drivers. AI still has issues of **robustness to resolve**.

AI research has focused on predictions, but predictions are not science. Science is **understanding causal mechanisms driving the phenomena** that we are studying and **developing the ability to make counter-factual predictions**, what-if types.

We have to think about the **competition** and cooperation between humans and machines (all agents), the risks that machines are going to come **against humans are not real** but the future will be a **complementarity** between humans and machines. We need to pay attention to several **biases, privacy, ethical and societal impacts** of technologies.

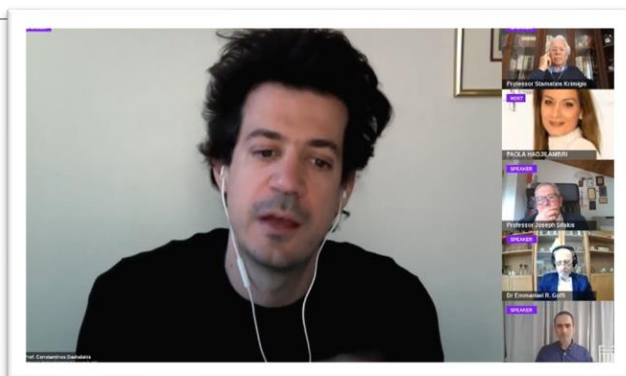
It is important that **we all have access to the technical advances, data**, and the **computational power** necessary to make progress on AI front and **participate in the on-going revolution** and the applications in the market, society, public sector.

AI biases GCCE exams in the UK. Discrimination of students. How do we treat algorithms?

AI bias is either **in the data** (society prevents certain observations to be realised) or **in data collection**. In Life-Sciences we are careful with experiments; we **randomise clinical trials**, and we are careful in collecting representative data. But in general, it is all about **benchmarks**, we **collect data from whatever source** that is **very problematic** in a way to make **predictions** but **not causal discoveries**. Therefore, we need to engage expert Scientists that can recognize and avoid these biases.

AI failures and mistakes. Can we allow a software to make a diagnosis (Watson on oncology) effects on public trust?

These algorithms are **statistical, trained** on some **data set** and can be **certified** that their accuracy is **good to a certain population**. The question is whether you **trust** this data in conditions we will encounter in the future. When we test a drug, we randomise control trials and pay attention in **collecting a representative sample** for the target population of interest. The combination of a **complex algorithm - hard to understand from a mathematical standpoint - in a representative data set may always result in failures**.



In the new era is there a need for a Greek Paradigm?

The Greek paradigm with respect to the growing role of research should focus on a **more holistic perspective**. Regarding the **educational system** in Greece, we have excellent Scientists abroad and Greece should **exploit human capital to influence education**.

Dr Emmanuel Goffi

The development of artificial intelligence along with the health crisis are showing that to some extent we have lost sight of the **social character of human beings stressed by ancient philosophers** such as **Aristotle**.

It seems that we have been sliding, somehow without realizing it, towards more and more **individualism** and the quest for **personal well-being**. As **Protagoras** put it, individuals, in our modern societies, have become "**the measure of all things**". Undoubtedly, the media and new technologies of information and communication, as well as AI, have played a huge role **accelerating that trend**. We are now in a **solipsistic society** where there is no longer any "truth", or reality outside of individual perceptions and superficial opinions. Our "**natural intelligence**", if it ever existed, has been **diminished** to the point where **AI is slowly taking over it** and where, even if we deny it, we have lost control over our fates.


If we want to **regain control**, we now need to **move back to philosophy in its wider sense**. We need to bring current **ethical considerations on AI back to philosophy in its strictest sense**. To that end, **ancient Greece's philosophy**, could help us to **revive rational debate** on the nature of things as taught by the **Presocratic**; to ask questions on ourselves and our knowledge as done by **Socrates** through **maieutic**, instead of looking for silver-bullet solutions to existential issues; and to remind ourselves the **importance of ethics** as a mediator aiming at **eudemonia** in the polis as explained by **Aristotle**.

More importantly, we need to open the **debate to new philosophical perspectives** coming from non-Western cultures. In other words, if we do not want to keep **losing our ability** to think by ourselves and slowly sliding into **intellectual laziness**, we need to **revitalize philosophical debates** and reflections through **classic philosophy and open up to cultural particularisms**.



Panel 4. How the discoveries will disrupt the industry and especially, the biopharma revolution? what is the role of the industry in preserving society's wellbeing?


Speakers



Prof Spyros Artavanis-Tsakonas
 Professor Em. of Cell Biology, Harvard Medical School

Dr. Spyros Artavanis-Tsakonas is Professor Em. in the Department of Cell Biology at Harvard and Professeur honoraire au Collège de France. From 2012 to March 2017 he was the Chief Scientific Officer for Biogen. He joined the Department of Cell Biology at the Harvard Medical School in 1998 and was the founding Director of the Developmental and Regenerative Biology Program at Harvard. From 1999-2007 he was also the Isselbacher-Schwartz Professor, Massachusetts General Hospital Cancer Center.


Sessions: How the discoveries will disrupt the industry and especially, the biopharma revolution? what ...



Dr George D. Yancopoulos
 President and Chief Scientific Officer, Regeneron

George D. Yancopoulos, MD, PhD, has built and managed Regeneron alongside Dr. Scheller since 1989. Dr. Yancopoulos is currently President and Chief Scientific Officer and has served on the board since 2001. Dr. Yancopoulos, along with key members of his team, is the principal inventor of Regeneron's seven FDA-approved drugs and foundational technologies, including the TRAP technology, VelocGene® and VelocImmune®. He has been named an Ernst & Young Entrepreneur of the Year.


Sessions: How the discoveries will disrupt the industry and especially, the biopharma revolution? what ...



Prof Eliot Sorel
 Clinical Professor of Global Health, Health Policy, George Washington University

Prof Eliot Sorel, M.D. is an innovative global health leader, practicing physician, and Clinical Professor of Global Health, Health Policy & Management, and of Psychiatry and Behavioral Sciences at George Washington University in Washington, DC. Dr Sorel has served as a subject matter expert on the World Health Organization (WHO), World Bank Group (WBG), and the Organization for Economic Cooperation & Development (OECD) projects.

Sessions: How the discoveries will disrupt the industry and especially, the biopharma revolution? what ...



Mr Theodoros Tryfon
 CO-CEO ELPEN Group & President of PEF, ELPEN Pharmaceutical

Mr Tryfon is CO-CEO of ELPEN Group and President of the Panhellenic Union of Pharmaceutical Industries (PEF) since 2014, an association which represents 45 local companies with 28 production sites throughout Greece. Since April 2019 he is a Member of the Board of Hellenic Federation of Enterprises (SEV). In 2019 he became a member of the Board of Directors of Medicines for Europe, the European Association, which represents the European generic industry as a whole.

Sessions: How the discoveries will disrupt the industry and especially, the biopharma revolution? what ...

Watch the video



Moderator: Dr Panteli Theocharous

Roundtable Discussion – Main Outcomes

Professor Spyros Artavanis-Tsakonas

One of the most important lessons is that **good research is no longer a luxury but an absolute must** if we have to apply this knowledge to **the benefit of society and medicine**. The **“miracle”** of COVID-19 vaccines has relied on previous **basic research for almost 3 decades**, which further explains why we need to support high-quality research. New drug development must rely on Biology breakthroughs and human inventiveness.

Support Research!



Are we doing a good job when we articulate benefits and risks?

We are **not doing a good job**, but we are **getting informed** amid an unprecedented crisis, by hundreds of "experts", often contributing to **misinformation** rather than knowledge. There is **good and bad Biology** the same way there is good and bad Science, which is why we need to invest in **quality Science**. The **authorities** have **short memory** and **patience**, they need to comprehend that **scientific discoveries need time**, and that short patience is a recipe for a disaster, not a success.

Greeks Scientists in the biopharma industry

The biggest problem for the **Greek scientific ecosystem** is that it **disables young people** to take a job in Greece, a country with practically **no scientific opportunities**. One of the biggest obstacles is lifting associated **bureaucracy associated with operational features of Universities**, and Pharma companies resulting in loss of talents. There are indeed units in Greece with **true scientific excellence**, but they are not supported properly.

Future state

The most important thing for the future is **long-term investing in education and science education**. We can do it in Greece and outside of Greece. The Greek presence in the biopharma industry and Academia is enormous, no matter if it is genetic or spiritual. It seems that we are going in the right direction.

Support Innovation, creativity, curiosity-driven science

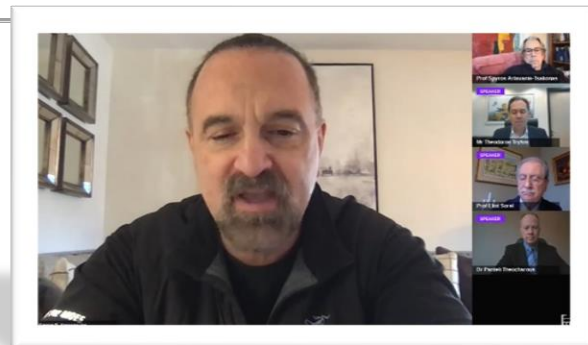
Dr George Yancopoulos

Hope that as a society we have learned very important lessons during this pandemic. We are **dependent on Science and Innovation for our very survival**.

We need to continue to better communicate and explain that **the survival of humanity in the future depends on our ability to innovate and to practice the science** that will provide solutions for all problems, including diseases and the **burden of society to climate change**. The other lesson which many people fail to understand, is that to come up with a vaccine or antibiotic **is not pivoting on a dime and innovating out of no-where overnight**; this is a **failure of Science and Scientists to communicate their work** and we have to make a better job, educating the society.

The development of vaccine and antibody cures is **dependent on decades of investment in basic science**. It started in **Academia, and technology innovation continues in Biopharma companies, and now we are in a position to now use it to take advantage** of it. We could not possibly dream that such applications would respond so efficiently during a pandemic.

It is so important for our survival as a species, that Society appreciates the **value of science and innovation** but also to understand that the people involved have done **decades worth of work**.



We need to make a better job as **Policymakers / Governments seem to not understand this**, so that **Academia, Investments, and Incentives** that are currently under attack, will be recognised and explain that all progress depends on **investing in basic sciences** sector and the private sector.

Are we doing a good job when we articulate benefits and risks?

Policymakers, not being Scientists themselves, have not communicated the process well, or the fact that **innovation, especially in the biopharma space, often takes decades**. They cannot understand that **mRNA technology may have had no value 10 years ago** when it was first used but it is **now state of the art**. And often as they only understand what they see in front of them, they fail to comprehend that applying today's solutions for tomorrow's problems, **requires a whole new vision**.

In Regeneron, we are currently developing an Ebola treatment. The Governments come to the company and seem very interested in stockpiling Covid-19 vaccines for the future needs. They do not understand that even **if only 10% of the money was invested** in what can really change the future, we would not need stockpiles in the first place. Therefore, Scientists need to make a better job to communicate this.

We need to **develop curiosity** at an early age, to **nurture exceptional kids**; we must find **"Albert Einsteins"** at a young age whenever they might be and **not "kill" their abilities and talents** as they are part of the solution. **We must recognise young talent and nurture**.

Greeks Scientists in the biopharma industry

I find it remarkable and astounding that the **leadership of so many biopharma companies** in the States and the world is **Greek from the Diaspora - Pfizer, Biogen, Regeneron, Astra Zeneca** etc. What we need to discuss and try to understand, is the **Greek mind** or the **Greek spirit** or the **process of Diaspora and the impact it had on those Greeks**.

It cannot be a **coincidence**. Greek Scientists that are educated in Greece and go to America to work in companies like Regeneron is nothing else than a **brain drain**. We need to find ways to get these people back or not to leave Greece.

What about the future? what do we need to do differently to continue to challenge the boundaries and raise the hurdles?

We need **leadership for communicating better** what the **real issues** are.

JFK was a proponent of Science and Technology, that could change the future and we must **invest more and more inspiring the best and the brightest**; we must have a **supportive educational system**. **Leadership** as imperative, to communicate and inspire not only those in younger ages but to continue to support and invest throughout their entire continuum.

Besides being Scientists, it is our responsibility to be **Educators, Communicators** and **Translators** and assist Policymakers.

Future state

What is the next big thing, is it AI or is it something else?

I look at Apple at their 25th anniversary; at that time, they had not even thought of an iPad or an iPhone. It is something that nobody **has yet imagined**. This is how we were raised in the '60s, a decade of **hope and impossible imaginations**.

Most solutions come from **unanticipated beginnings**.

One other important thing is **belief**, communicate it to children and the next generation that can do anything. Give children **role models** to identify with.

My parents taught me about the other great Greeks - not only ancient but modern like **Roy Vangelos** - "**you can become like him**"

Professor Eliot Sorel

Science is essential to health and wellbeing and for sustainable economic development and well-being. We need to develop better communication and to develop a language that communicates clearly to the Policymakers and to the public the value of science for the above.



In order to sustain innovative science, we need to allocate and invest early in education to stimulate curiosity, entrepreneurship and innovation. These three have to be an integral part of our education system starting very early, even from kindergarten.

Thirdly, the issue that was well demonstrated and catalysed by this pandemic is the extraordinary leap - Hepatitis B vaccine took 16 years, for the measles took 10 years, for a covid-19 less than a year, but this did not happen in less than a year; it took many years of investigation of trying and trying again of innovating and we are grateful to Dr Katalin Karikó that developed the mRNA methodology. It requires sustainable involvement and investment, the collaboration between the public and private sector, enhancing our communication about the need to continue a robust investment in Science, and the collaboration between the public, private and the Philanthropic sectors.

Are we doing a good job the way we articulate benefits and risks?

We are not doing a good job, this is a major challenge to Science, we need to better translate and communicate to decision-makers on a very fast track and on a par to scientific discovery.

Greeks Scientists in the biopharma industry

Innovation has been the hallmark of Greece and democracy has been invented in Greece. The plethora of Greek Innovators in Diaspora reflects the rich tradition that is millennia old.

But on what soil did these Inventors develop?

Not in Greece in modern history but in the USA and the UK.

It is a systemic problem in the host country and an idea is to develop a set of partnerships between the leaders of the Greek communities in the Diaspora and in Policymaking; it needs to go hand in glove: Innovation and Science and Policymaking decisions need to be a collaborative project between the diaspora and Greece, a project that addresses both at the same time in an integrated fashion.

What about the future? what do we need to do differently to continue to challenge the boundaries and raise the hurdles?

What kind of education do we want to have on the 21st century? The Cartesian model is outdated. We need an open education system that is systemic, systematic and integrative.

Great breakthroughs start with basic science but get applied in the clinic, stimulates further investment.

Young people need to understand the **systemic nature of reality**, we need the **basic tools for reductionistic basic science research**, we need also to teach them the **holistic integrative models of communication and integration**.

The **complementarity** between basic reductionistic and systemic holistic integrative needs to be the **hallmark of the 21st-century science and education**. We need to think about **investing in human capital development** not just for the sake of investing.

The best trajectory of investing in human capital development is the **educational system** and creating **equal opportunities** for all, but to **recognise the young emerging best and brightest** and further support, prepare and **nurture** them. A nuanced educational system with an integrative, systemic, and high specificity to nurture the extra-ordinary talent must be a high priority for any Government.

Future state

We need to think about what other **partnerships** we want to engage in addition to European and North American space, **India** has the largest capacity to produce vaccines (60% of the world's capacity). Is there a **lesson to be learned**?

Partnerships with others from around the globe may **stimulate young people to further innovate and collaborate** with other young people.

Mr Theodoros Tryfon

While Politicians and resources are focused on the **short-term, Research and Innovation** are more linked to **medium to long-term** evolution. This explains the **gap between publications and patents and commercialisation**.

For the first time, we have a discussion at the European level for the next day.

There is a **political will to privatise research, innovation and production in Europe** but in Greece there seem to be **no funds channelled in this direction**.

This is an opportunity for Greece that comes out of the recession after 10 years with the **problems of bureaucracy and in the Universities**, to change its **mentality** and come out with short-term solutions.

In Greece, we have a **high level of Scientists** as well as in **Diaspora** although we do not have the **necessary strategy to bond them**. **Digitalisation enables collaboration** and innovation and if Greece continues to **improve its infrastructures**, we could create an **enhanced ecosystem in digital health, life sciences and technologies**. Last but not least, we must **bridge the gap between Academia and Industry**.

How to continue to nurture young Scientists and thrive. Are we moving in the right direction?

We try to move in the right direction in Greece

- **big investments are attracted**
- **funds are channelled** to Greece



- **collaboration with Universities** is improving
- the **Government** is trying to **develop and link the entire ecosystem**
- **renowned Institutes** - BRFAA, Democritus, FORTH, Fleming and Universities in Thessaloniki and Athens - continue to **thrive**

We need to **reinvent the model** from easy stock market money to the **needs of the new generation** who is motivated just like the first and second-generation Greeks abroad.

We need a few years to channel these funds and incentives and we need to find **synergies** with our **Diaspora**, with companies in Europe and elsewhere, **co-development of products** (biological, biosimilars), **synergies** with companies from abroad.

Future state

It is a long-term process however we need to set some **short-term goals for Greece and Cyprus and our ecosystems**. We should **multiply the research grants** to convince them that they have a budget to **work in Greece**. Organising our ecosystem, and the political environment is more positive nowadays, **avoid bureaucracy, support meritocracy**, etc. We should focus on **personalised medicine, bioinformatics** and take advantage of the European and local funds - **tax incentives**.

The crisis upgraded the profile of Scientists and we **need commitment** and the **Key Opinion Leaders - Politicians, University Professors or Businesspeople and Institutions** - to give directions.

The **3 of the largest Greek Foundations - Onassis, Niarchos and Latsis** - have an interest in Science and Research and their Institutions in Greece are **giving jobs and grants** to young scientists.

Vulnerabilities of pharmaceutical supply chains and the resilience of European healthcare systems were clearly visible during the Covid-19 crisis, and caused many problems in Member States, such as medicines shortages and supply disruptions. The industry at large adapted by ramping up production, establishing contingency plans and heavily investing in R&D to discover vaccines in a much shorter period of time than usual. It is in fact the first time that the industry, governments, and European institutions are discussing what actions need to be taken for the next day forward.

In order for Greece and the EU to have a **strong manufacturing base that fortifies its resilience against future health shocks, production and R&D capacities** need to be supported and encouraged.

One of the advantages that Greece has, is the **high level of scientists**. This, coupled with a very significant footprint of Greek scientists **abroad** creates a **substantial base for Research and Innovation**. One big challenge is how to **bond** these two groups.

Looking forward to the next decade it is vital to **recognize** and **prioritize** the significant added value that innovation and R&D can bring forth both at the national and European level. **Incentives both in the form of investments** as well as **smart policy reforms** will allow for the pharmaceutical industry to direct their research and efforts to not only novel forms but also in new technologies (i.e., Biologics, Biosimilars).

A few words about Greek Scientists Society



Greek Scientists Society is a Global Network of Greek & Cypriot Scientists

We believe that Science and Technology are the fundamental drivers that bring Humanity social and economic improvement leading to knowledge-based communities and networks that prosper in the international landscape.

We are happy to have over 4900 members in 4 months in our LinkedIn group.

We build the Greek Scientists Society (GSS) in a way to connect all Greeks – in Greece, Cyprus, and abroad – promoting our e-ecosystem and support a thriving start-up Community.

We wish to

- § Promote discovery through scientific research
- § Train scientists for the future
- § Build international networks for the participation of Greece and Cyprus in global science
- § Promote Scientists' entrepreneurship

Our Mission is

- to Build Knowledge and Capacities, through scientific research and the training of young investigators in other disciplines and concepts like Entrepreneurship, IP Law, AI, etc
- to build a Global Network of Greeks through innovative programs of collaboration between Greek and Greek-descent scientists and entrepreneurs
- to build Value, by developing technologies and products that serve the needs of society
- to cultivate and promote the Hellenic ecosystem to in the international environment.



We wish to bridge and become the catalyst, joining forces between our Diaspora – Greece and Cyprus soft powers - and leverage the best qualities of each part to

- ↳ Transfer knowledge
- ↳ Facilitate Scientific Ventures
- ↳ Develop Scientific Collaborations and Synergies

On May 1st, we expect to go live with our [platform](#) (soft launch on April 1st).

Special Thanks to our Sponsors

Finally, we would like to thank our Sponsors for supporting this first Greek Scientists Society Symposium.

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