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PRINCE EL HASSAN BIN TALAL PARTICIPATES IN AN INTERNATIONAL CONFERENCE TITLED: CLIMATE ACTION IN THE EASTERN MEDITERRANEAN AND MIDDLE EAST: REGIONAL COOPERATION EMPOWERED BY SCIENCE AND INNOVATION*

HRH Prince Hassan delivered a keynote address at the international conference titled "Climate Action in the Eastern Mediterranean and Middle East: Regional Cooperation Empowered by Science and Innovation," hosted in Cyprus on April 8 and 9, 2026.

The two-day summit has brought together global leaders, policymakers, scientists, and experts to address climate challenges within a complex regional and international landscape.

In his remarks, Prince Hassan underscored that the climate crisis has transcended environmental boundaries to become a matter of "human security".

He noted that regional challenges ranging from water scarcity and rising temperatures to the degradation of food and health systems are being exacerbated by ongoing conflicts, thereby threatening economic and social stability.

The prince highlighted that the Eastern Mediterranean and Middle East, historically a shared civilisational space known as Mare Nostrum, is now grappling with an unprecedented accumulation of climate and humanitarian pressures.

He maintained that addressing these challenges in isolation is no longer viable, calling for "integrated thinking based on collective responsibility".

He warned that the repercussions of armed conflict extend beyond immediate humanitarian suffering to incur a significant global climate cost.

Prince Hassan added that instability in the Eastern Mediterranean has become an "established regional status quo".

* https://jordantimes.com/news/local/prince-hassan-participates-in-international-conference-on-climate-action

Citing World Bank estimates, he noted that the outlook for 2025 remains clouded by high levels of uncertainty due to conflict and extreme weather events.

Referencing UNICEF data, the prince said that some 95 million people, including 45 million children, face life-threatening risks amidst a widening development financing gap.

Moreover, he drew attention to the disparity between the Sustainable Development Goals (SDGs) financing gap exceeding $4.2 trillion annually and the continuous rise in global military spending.

He urged a recalibration of priorities towards fostering life and stability rather than perpetuating the logic of conflict.

Concluding his address, Prince Hassan posed a fundamental question regarding the nature of security, stressing that "true security" is measured not by a state's capacity for war, but by its ability to safeguard life and uphold human dignity.

He emphasised the necessity of decisive, collective action to transform the crisis into an opportunity for building resilient economies and sustainable societies.

The summit aims to shift from planning to implementation by activating a science-based regional action plan and fostering diplomacy between the EU and its southern neighbours, ultimately shaping recommendations for the 2026 EU-Southern Neighbourhood Summit.

Photos from the international conference on "Climate Action in the Eastern Mediterranean and Middle East: Regional Cooperation Empowered by Science and Innovation."

BETWEEN CRISES AND FRAGILITY: HOW IS RESILIENCE BUILT IN THE REGION?[⊗]

ADNAN BADRAN FIAS, FAAS
President, Islamic World Academy of Sciences
and President, Arab Academy of Sciences

Our region now lives under an unprecedented overlap of political, economic, and social crises, in which internal challenges, such as weak institutions and imbalanced development models, intersect with external pressures stemming from regional conflicts and foreign interventions. This places the region in a continuous test of its capacity to endure and adapt.

In this context, the concept of resilience emerges as a strategic framework that goes beyond crisis management to building the capacity for adaptation and transformation, ensuring sustainable stability and development.

This leads us to the following:

First Axis: Analysis of Current Crises and Fragility

The region today is witnessing multidimensional crises - security, economic, social, and political - which are interconnected and mutually reinforcing.

On the security level, fragility is evident in the persistence of direct and indirect conflicts, and the resulting depletion of resources and weakening of state institutions. The escalation of regional tensions, including conflicts of an international nature, disrupts regional security systems and hinders development pathways.

Economically, countries in the region face acute challenges, including volatility in global markets, declining investments, weak growth, rising unemployment rates, and disruptions in supply chains, all of which deepen the fragility of national economies.

On the social and political levels, poverty and marginalization are intensifying, trust in institutions is declining, and the rule of law is weakening-factors that negatively affect social cohesion and internal stability.

Second Axis: Regional Resilience and Mechanisms for Its Enhancement

Resilience is defined as the ability of states and societies to withstand crises, adapt to their consequences, and transition from a state of vulnerability to one of initiative.

Resilience can only be achieved through a comprehensive approach based on four main dimensions:

1. **Political and Institutional Dimension**
   This involves strengthening good governance, reinforcing the rule of law, and building institutions capable of making

[⊗] *Paper presented at a Scientific Symposium organized by the Arab Thought Forum on 2 April 2026 in Amman, Jordan.*

decisions efficiently and transparently. A strong state, supported by its institutions, is the foundation of any resilience system.

2. **Security Dimension** This includes developing defense capabilities and strengthening regional security coordination to confront both traditional and non-traditional threats, including proxy conflicts and cross-border challenges.
3. **Economic Dimension** This focuses on diversifying sources of income, enhancing investment, protecting supply chains, and transitioning toward a knowledge- and innovation-based economy, reducing dependence on volatile external factors.
4. **Social Dimension** This emphasizes investing in people through education and healthcare, strengthening the role of civil society, and empowering youth and women to ensure social cohesion and the ability to withstand shocks.

Third Axis: The Jordanian Experience and the Role of Regional States

Jordan presents a balanced model in dealing with regional crises. Despite limited resources, it has succeeded in maintaining internal stability through moderate policies, cohesive institutions, and active diplomatic engagement.

Jordan has relied on a combination of:

- Strengthening institutional stability,
- Developing vital sectors, and
- Engaging in regional and international cooperation third.

It has also played an important role in managing the repercussions of crises, particularly in the areas of refugees and security, reflecting the importance of strategic vision in building resilience.

At the regional level, building resilience cannot be an isolated national project. Rather, it requires genuine regional integration, especially in the areas of energy, water, food, and trade, to enhance the collective capacity to confront crises.

Fourth Axis: Recommendations and Future Outlook

The transition from fragility to resilience requires adopting a set of strategic policies and measures, most notably:

1. Strengthening governance and institutions based on efficiency and transparency.
2. Developing flexible economic models based on innovation and diversification.
3. Investing in human capital as the cornerstone of development.
4. Enhancing regional integration to address shared challenges.
5. Building resilient infrastructure capable of operating during times of crisis.
6. Adopting proactive policies based on risk management rather than delayed responses.

Conclusion

The region today stands at a pivotal moment: either the cycle of crises continues and fragility deepens, or these challenges are transformed into an opportunity to rebuild systems that are more capable of resilience and adaptation.

Building resilience is not a temporary option, but a long-term strategic project that requires political will, investment in knowledge, regional and international cooperation, and a firm belief that true stability can only be built on the foundations of justice, efficiency, and sustainability. In this context, the future of the region depends on its ability to move from managing crises to creating stability, and from fragility to resilience.

Some photos of the event.

ELIAS BAYDOUN FIAS … AS I HAVE KNOWN HIM

ADNAN BADRAN FIAS, FAAS
President, Islamic World Academy of Sciences
and President, Arab Academy of Sciences

Prof. Elias Baydoun is a distinguished scientist whose career has been defined by sustained contributions to plant biology, higher education, and scientific advancement in the Arab region and beyond. His work reflects a rare combination of rigorous fundamental research and practical application, particularly in areas critical to food security and environmental sustainability.

He is currently Professor of Biology at the American University of Beirut (AUB) and Adjunct Professor at the University of Petra in Jordan. He is also Secretary General of the Arab Academy of Sciences (AAS). He has been a Fellow of the Islamic World Academy of Sciences (IAS) since 2017 and is currently Treasurer of the IAS Council. He is also a Fellow of several learned societies, including the Institute of Biology, London, and the World Academy of Sciences (TWAS).

Dr. Baydoun received his Bachelor's degree in Biology from the University of Jordan. He was the first in his class. He then received a scholarship for a Master's degree in Biology from the American University of Beirut (AUB). He received another scholarship from Yarmouk University for a PhD in Plant Physiology and Biochemistry at the University of Cambridge, Cambridge, United Kingdom, under the supervision of the late Professor Donald Northcote, FRS.
Then he returned to Jordan to Yarmouk University, where he joined the academic staff. In addition to his academic title, he served as an assistant to the President of Yarmouk University. Dr. Baydoun excelled in both his academic work in teaching and research and in his administrative work assisting the president.

Prof. Baydoun has created a series of annual conferences on Higher Education in the Arab Region under different contemporary themes. Each theme is composed of around 20 chapters and is published annually by Springer Nature, where he was an Editor of each book. So far, 11 volumes over 11 years have been published electronically and in paper form.

He participated actively in the architecture of the biology curriculum for the secondary cycle in Jordan and in Oman, including community colleges. He co-authored the textbooks of Biology for secondary schools under the Ministry of Education in Oman

Professor Baydoun's research has focused extensively on plant physiology, biochemistry, and development. He has made notable contributions to understanding seed biology, including the biochemical and hormonal mechanisms that regulate germination and early plant growth. His investigations into plant metabolism and signaling pathways have helped clarify how plants adapt to environmental stresses such as drought, salinity, and oxidative conditions - issues of growing importance in the context of climate change.

A significant aspect of his scientific output lies in plant stress physiology. Through experimental and analytical work, he has contributed to identifying mechanisms that enable plants to tolerate adverse conditions,

offering pathways for improving crop resilience in arid and semi-arid regions. His research in plant tissue culture and micropropagation has also supported the conservation of plant biodiversity and the development of efficient propagation systems for economically and ecologically valuable species. His work has been widely cited. He has around **4534 Citations, h-index: 38, i10-index: 100.**

He has published over 100 articles in international refereed journals and over 120 abstracts and papers in the proceedings of international conferences, as well as authoring several biology textbooks for secondary schools and community colleges. He is the first inventor of a patent on the treatment of protozoal diseases (US Patent 9,173,888). He translated into Arabic a university textbook in biochemistry and was the General Coordinator of the four volumes of the Arabic Encyclopaedia on Knowledge for Sustainable Development published by UNESCO. He served as a consultant for several local, regional, and international organizations, including UNESCO and UNEP.

His awards include: Federation of Arab Scientific Research Councils Award, Abdul Hamid Shoman Prize for Young Arab Scientists for Biology, AUB Research Award in Natural Sciences (twice), Distinguished Scholar Award of the Arab Fund for Economic and Social Development, Developing World Study Award of the Royal Society UK, and TWAS-ARO Regional Prize for Public Understanding and Popularization of Science.

Beyond research, Prof. Baydoun has played a leading role in academia. He has contributed to the development of university programs, the supervision of graduate students, and the promotion of scientific research culture within higher education institutions.

Prof. Baydoun has a son named Hasan and a daughter named Serine, both are medical doctors who graduated from the American University of Beirut (AUB) and received their sub-specializations from the United States.

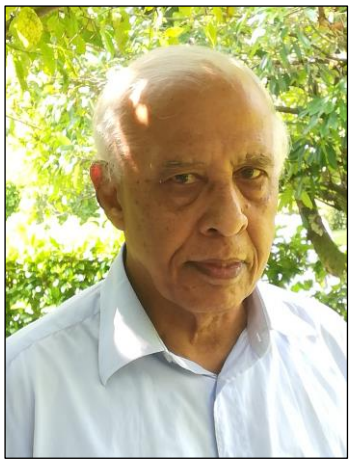
Prof. Adnan Badran with Prof. Elias Baydoun at the IAS Headquarters in Amman, Jordan.

Prof. Elias Baydoun at the 23rd IAS Conference in Rabat, Morocco, 2022.

Prof. Adnan Badran and Prof. Elias Baydoun at the 2024 conference of the Arab Academy of Sciences on "Higher Education in the Arab World: Digital Transformation" in Beirut, Lebanon.

BOSE-EINSTEIN CONDENSATE

MUHAMMAD ASGHAR FIAS



Abstract: This text presents the formulas of Bose-Einstein and Fermi-Dirac statistics, their individual properties, information on the critical temperature T_c needed for beginning condensate formation, image of experimental condensate, and a list of some boronic atoms that form BEC which is a phase transition phenomenon.

1. Bose-Einstein and Fermi-Dirac statistics.
These statistics represent the behavior of two types of particles called bosons and fermions in thermodynamical equilibrium.

The expected average number of particles in an energy state *i* for Bose–Einstein statistics is:

$$n_i = g_i / e^{(\varepsilon_t - \mu) / kB\,T} - 1 \quad (1),$$

with $\varepsilon_t > \mu$ and n_i is the occupation number (number of particles) in state i, g_i is the degeneracy of the energy level i, ε_i is the energy of the i-th state, μ is the chemical potential, k_B is the Boltzmann constant, and T is the absolute temperature.

Bose-Einstein statistics applies only to particles that do not follow the Pauli exclusion principle restrictions. Particles that follow Bose-Einstein statistics are called bosons which have integral values of spin including zero. In contrast, particles that follow Fermi- Dirac statistics:

$$n_i = g_i / e^{(\varepsilon_t - \mu) / kB\,T} + 1 \quad (2),$$

are called fermions and have half-integer spins. No more than two fermions such as electrons can occupy the same quantum state and two electrons in the same state must have opposite spins. However, there is no restriction on the number of bosons in a quantum state.

Figure 1 presents the variation of $n_i = \langle n \rangle$ for Bose-Einstein, and Fermi-Dirac statistics along with Maxwell -Boltzmann formula as a function of $((\varepsilon_t - \mu) / kB\,T)$. When $((\varepsilon_t - \mu) / kB\,T) = 0$, the exponential factor is = 1 for both statistics. In this situation, the value of n_i diverges towards ∞ for the Bose-Einstein case, but $n_i = ½$ for the Fermi- Dirac case as required by the Pauli principle **[1].**

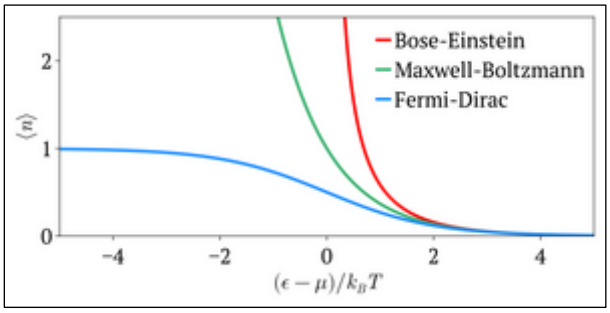


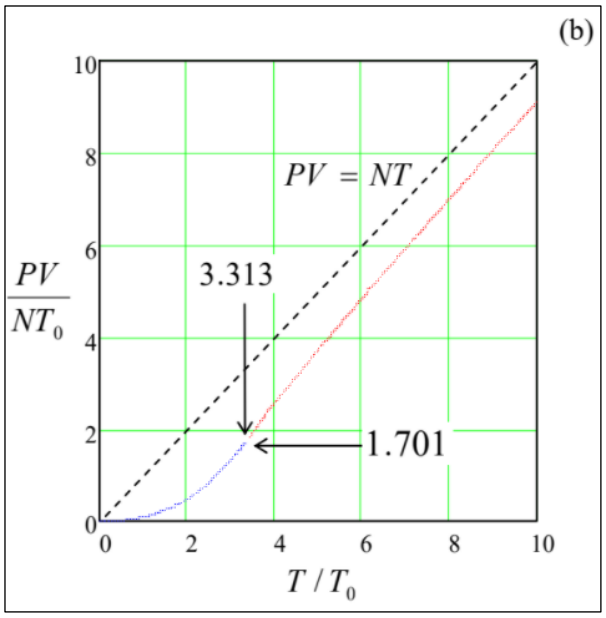
Figure 1. Variation of <n> for Bose-Einstein, Fermi-Dirac statistics and Maxwell-Boltzmann formula as a function of $((\varepsilon_t - \mu) / kB\,T)$.

1a. There is a relationship between the critical temperature $T=T_c$ where the Bose-Einstein condensate formation begins and theT_0 temperature:

$$T_c / T_0 = 3.313 \quad (3),$$

Figure 2. The point $T_c / T_0 = 3.313$, where the Bose-Einstein condensation formation begins.

as indicated in Figure 2, The red curve is for the factor PV /N T_0, and the dashed curve is for the ideal gas with PV = NT.



1b. Figure 3 represents the relation:

$$N_0 / N = [1 - (T / T_c)^{3/2}] \text{ for } T \leq T_c \quad (4),$$

where N_0 is the number of particles in the ground state, and N is the number of particles still as gas. For $T / T_c = 0$, $N_0 = N$ implying that all the gas atoms are in the ground state, and for $T / T_c = 1$, $N_0 = 0$, all the atoms N are gas **[1].**

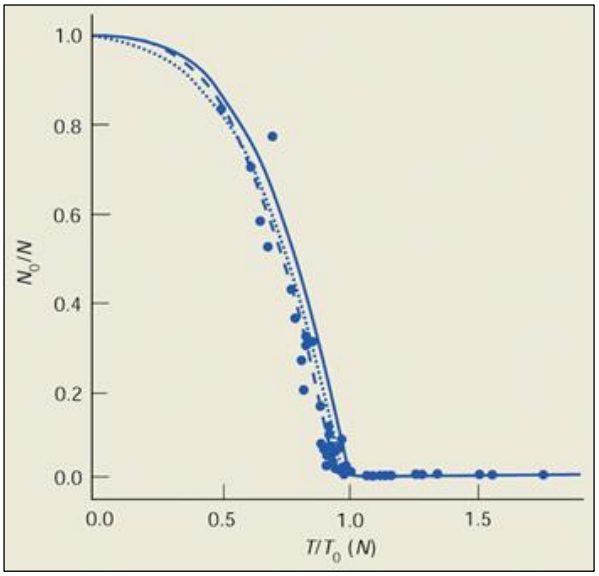


Figure 3. The curve representing the relation (4), [1].

2. Formation of the Bose-Einstein condensate.

Bose-Einstein condensate is a state of matter that is formed, when a gas of bosons at very low densities is cooled below the critical temperature T_c which is close to absolute zero = - 273.15 K, and represents the beginning of formation of Bose-Einstein condensate.

3. Wave function of Bose-Einstein condensate.

In the Bose-Einstein condensate, individual bosonic atoms lose individual identity, and its wave function ψ (BEC), corresponds to the ground state of a macroscopic quantum object.

4. Examples of Bose-Einstein condensate [1].

- Helium-4 - a boson, forms a superfluid through BEC at temperatures below 2.17 K (-270.98°C), unlike the fermion Helium-3 that becomes superfluid (or rather superconductor) at 0.0025 K through Cooper pairing of two Helium-3 atoms coupled via their mutual weak attractive Vander Waals force.

- Sodium boson atoms form a BEC at temperatures below 200 nK (-27314°C).

- Rubidium boson atoms form a BEC at a temperature below 150 nK (273.14°C).

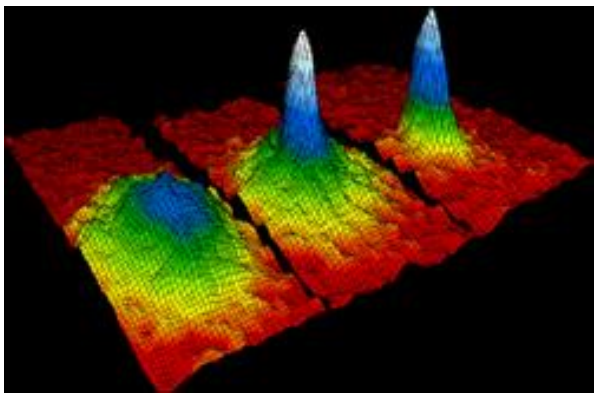


Figure 4. Presents three views of velocity distribution data for a gas of rubidium bosonic atoms. Left: just before the appearance of a Bose–Einstein condensate. Center: just after the appearance of the condensate. Right: a sharper profile of condensate after further evaporation and cooling that puts more atoms in the ground state [1].

5. Conclusion.

Bose-Einstein condensate represents a phase transition phenomenon from a random gas to a quantum mechanically correlated system of atoms in the ground state with $\varepsilon = p^2/2m = 0$.

References.

1. Courtesy Wikipedia, Google.

HEISENBERG UNCERTAINTY AND PAULI EXCLUSION PRINCIPLES

MUHAMMAD ASGHAR[1] FIAS

Abstract: This note presents and points out some of the far-reaching consequences of these fundamental Principles of Quantum Mechanics.

1. Heisenberg Uncertainty Principle.

Phase space is represented by pairs of conjugate variables of linear momentum p and position coordinate x, and of energy E and time t.

The Plack constant h, which is *the basic phase-space element in quantum mechanics,* has the value:

$$\mathbf{h = 4.1357 \times 10^{-15}\ eV\ s} \qquad (1)$$

Heisenberg's Uncertainty Principle states that we cannot know both the positional precision and the speed of a particle such as a photon or electron with perfect accuracy. This fact is expressed by the relation:

$$\mathbf{\Delta x\ \Delta p \geq h/4\pi,} \qquad (2)$$

Δx = uncertainty in the position,
Δp = uncertainty in the linear momentum,
h = Planck constant,
π =pi;
and equivalently by:

$$\mathbf{\Delta E\ \Delta t \geq h/4\pi,} \qquad (3)$$

Δ E = uncertainty in energy,
Δt = uncertainty in time,
h = Planck constant,
π =pi.

The uncertainties of variables in relations (2) and (3) are not the measurement uncertainties, but natural dispersions in the conjugate variables x and p, and conjugate variables E and t such that their product must always have the same value as indicated by the relations (2) and (3). If for example, one maximizes the value of Δx or Δ E, then, the value of Δp or Δt must be minimized to ensure that the product keeps the same value.

This quantum mechanical uncertainty principle applies to an object (particle) moving such that its De Broglie wavelength λ is bigger than the size of the object.

The De Broglie wavelength λ is defined as:

$$\mathbf{\lambda = h/\ m\ v,} \qquad (4)$$

where mv is the linear momentum of the particle of mass m and its speed v.
Examples:

- If a neutron of mass m = 1.67×10^{-27} kg and size = 1.6836×10^{-15} m, moves with a velocity = 6 m/s, its De Broglie $\mathbf{\lambda = 0.0661\times 10^{-9}\ m,}$ which is much larger than its size, and the uncertainty principle is valid for neutron as it remains a quantum entity.
- A football of 0.40kg travelling at 40 m/s has De Broglie $\mathbf{\lambda = 3.3\times 10^{-30}\ m,}$ which is much shorter than the size of football, and the principle of uncertainty is not valid for the football as it does not have the quantum characteristics.

2. Pauli exclusion Principle.

This Principle states that only one fermion can occupy a quantum state. If there are two fermions such as electrons in the same quantum state, they cannot have the same spin value such as s= +1/2 or s =-1/2, because in this case these two electrons are identical and forbidden by this Principle, but when they have opposite spins: one electron with spin s = +1/2 and the other with spin = -1/2, and the total spin S = +1/2 – ½ = 0, then, these two electrons represent two different types of fermions not forbidden by this Principle. Moreover, the two-electron system in S = 0 state can be considered a boson for which the Pauli Exclusion Principle has no relevance.

Together with Coulomb law and Schrödinger equation, it is this principle for fermions which is responsible for the structure of atoms, chemical properties, the physics of condensed matter and biology. Without this Principle there would not have been any Earth nor life nor stars and nor even the concept of universe **(1).**

References.

(1) Courtesy Google, Wikipedia.

[1] *12 rue des abeilles, 38240, Meylan, France*

DECODING CANDLE AND FIRE: AT THE INTERSECTION OF SCIENCE, PHILOSOPHY, AND SPIRITUALITY

SEYED KAZEM ALAVIPANAH
Professor, University of Tehran

Introduction:
In an era of unprecedented need for a return to wisdom, tranquility, peace, and human dignity, contemplating the phenomena around us can serve as a portal to spiritual awakening. Inspired by the dichotomy of "destructive fire" and "life-giving fire," this text is a scientific-philosophical endeavor to achieve a deeper understanding of the phenomenon of "fire and heat" and the symbol of the "candle." Adopting a phenomenological perspective, this essay demonstrates how the intuition and imagination of our ancestors, in dialogue with the concepts of physics and thermodynamics, guide us toward a more profound comprehension of cosmic consciousness, peace, love, and the history of science.

1. The Dual Nature of Fire
Contemplating the nature of the universe sometimes begins amidst terrifying experiences, such as massive explosions that reduce existence to nothingness in a fraction of a second. When life-giving warmth shifts toward the coldness of death, the inquiring mind is compelled into a philosophical reflection on "heat." Heat-generating fire, this fundamental element, has perpetually possessed a dual nature in human thought and culture. On one hand, it manifests as destructive and negative fires, like greed, deceit, hypocrisy, and the animosity that fuels wars. On the other hand, it stands as the symbol of positive and constructive fires, like love, truth, affection, and peace. The mission of the wise human amidst these two types of fire is to transcend the fire of hatred and war, and to attain the warmth of love and peace.

2. The Phenomenology of Heat: Bridging Ancient Wisdom and Modern Science
In antiquity, although humanity lacked modern technology and empirical science, it achieved a deep understanding of fundamental elements through "intuition and imagination", an understanding whose traces remain visible today even in disciplines such as modern physics and thermodynamics. Works such as *Demystifying Fire and Phenomenology of Heat* and *Heat Propulsion of the Universe* have demonstrated how thermal energy serves as the driving force of the cosmos (Alavipanah, 2022).

Is there a correlation between ancient imagination regarding fire and modern physics? The answer is affirmative. Physical fire (such as the light and heat of the sun or plasma) and inner fire (love and emotions) converge at a philosophical juncture; both are the propellants of motion, evolution, and creativity in the universe. Past thinkers regarded fire not merely as a chemical reaction, but as a mystical force with numerous spiritual manifestations.

3. The Candle: Embodiment of the Four Elements
Among all the manifestations of fire, the "candle" and its burning hold an unparalleled status. A candle is not merely a source of physical light; rather, in the eyes of the wise, it is a condensed symbol of life and the manifestation of cosmic perfection. When a candle burns, all four fundamental elements of life (water, wind, earth, and fire) symbolically interact with one another:

- **Earth:** The solid body of the candle, rooted in matter, symbolizes the element of earth.
- **Water:** The flowing tears from the melting candle represent the element of water.
- **Wind (Air):** The smoke rising from the flame toward the sky symbolizes wind.
- **Fire:** Ultimately, its luminous flame is the very manifestation of the element of fire.

Accordingly, lighting a candle signifies the simultaneous invocation of all the elements and forces of life. This is precisely why the candle, much like a flower, is present in both joyous celebrations and somber mourning. The ancients believed that the light of a candle possessed healing energy, filling the environment with positive and pleasant vibrations. In truth, they viewed a lit candle as a silent prayer and a medium for connecting with cosmic consciousness.

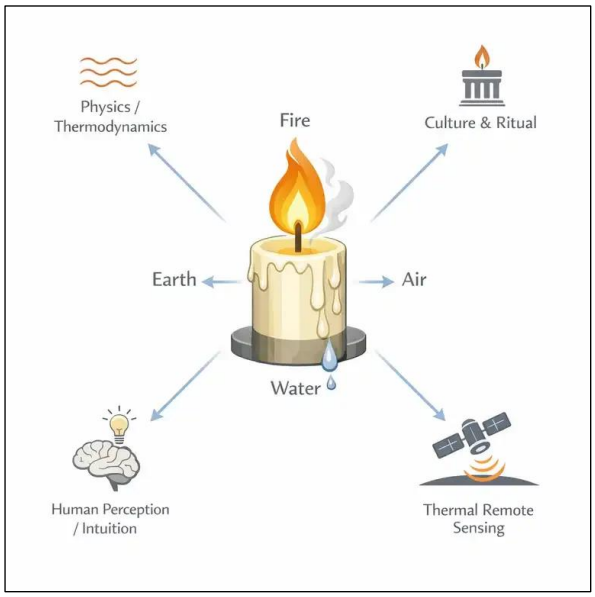


Figure 1. A conceptual model of a burning candle as a symbolic convergence of the four classical elements. The solid body represents Earth, the melting wax symbolizes Water, the rising smoke signifies Air (Wind), and the flame embodies Fire.
(*Source: Generated by ChatGPT*).

From a mystical and parapsychological viewpoint, human connection with the universe requires a symbolic language. Gazing at the gentle, upward-reaching flame of a candle enhances concentration, guiding brainwaves into a state that deepens one's connection to the "divine consciousness" and the "God within." In this state of harmony with the universe, pure prayers and intentions are believed to ascend to higher realms and answered. The philosophy behind lighting candles at the altars of temples, mosques, and churches throughout history is rooted in the belief that candlelight illuminates the path of communication with the transcendent.

4. The Relationship Between Light, Heat, and Fire

Both ancient traditions and modern science recognize a deep connection between heat, light, and fire. Numerous poems from past eras illustrate these connections. For instance, the intertwining of fire and love is vividly evident in these immortal verses by Rumi:

'Tis the fire of love that fell into the reed,
'Tis the fervor of love that fell into the wine.
This sound of the reed is fire, not wind;
Whosoever lacks this fire, let them be naught! (Rumi)

Figure 2. A comparative diagram illustrates the metaphorical and scientific relationships between light, heat, and fire. The model contrasts the intuitive, holistic perspective of ancient wisdom with the empirical framework of modern physics. (*Source: Generated by ChatGPT*).

Some ancients believed that fire was a living element capable of reproduction; they perceived this life-giving spirit flowing not only in living beings but also in inanimate objects like wood and stone. The question now arises: Can the fire they conceptualized be considered, in a sense, akin to "thermal energy" and the concept of "entropy" in modern physics?

Conclusion

Modern humanity, exhausted by the clamor and destructive fire of wars, is in dire need of returning to the healing and restorative light within. The candle, this humble entity embodying the synthesis of earth, water, wind, and fire, serves as a profound reminder that by igniting the flames of love and consciousness within ourselves, we can access an inexhaustible wellspring of positive energy and inner peace, ultimately fostering harmony in the external world.

The ultimate message of this phenomenology is unequivocal: in the face of the fire of animosity, which reduces existence to nothingness, one must kindle a candle crafted of peace and truth so that the world may once again experience the genuine warmth of life. To realize a truly peaceful world, we must shatter conventional boundaries, forge a new paradigm, and heed the enduring wisdom of Hafez:
"Should sorrow raise an army to shed the blood of lovers,
The Cupbearer and I shall unite to overthrow its foundation."

IAS RECEIVES A DELEGATION FROM THE KADYROV CHECHEN STATE UNIVERSITY

A delegation from the **Kadyrov Chechen State University**, Grozny, visited the Islamic World Academy of Sciences (IAS) in Amman on 9 April 2026. A meeting that underscored growing academic collaboration and shared scientific priorities. The delegation included Dr. **Nasrudi Yarychev**, Vice-Rector for Academic Affairs, Dr. **Arsby Shono**, Dean of the International Education Faculty, Dr. **Taya Tsebieva**, Head of International Office, and Ms. **Maryam Astalova**, Deputy Head of International Office.

The delegation was received by H.E. Prof. **Adnan Badran**, President of IAS, alongside Ms. **Najwa Daghestani**, Programs Manager, IAS and Ms. **Taghreed Saqer**, Executive Secretary, IAS. The meeting was further enriched by the presence of H.E. **Sameeh Bino**, former Minister of State for Prime Ministry Affairs, and Dr. **Sameer Bakeer**, former Jordaninan Senate Member.

During the session, Prof. Badran delivered an overview of the Academy's mission, highlighting its role in advancing science, technology, and innovation across the Islamic world. He emphasized IAS's commitment to fostering scientific cooperation, supporting capacity-building initiatives, and addressing regional and global challenges through knowledge exchange and interdisciplinary collaboration.

The visiting delegation presented the academic and research programs of the Chechen State University, outlining its growing international engagement and focus on developing modern, globally connected educational frameworks. They highlighted key areas of strength, including international education, research partnerships, and student mobility, reflecting the university's ambition to expand its global academic footprint.

Discussions between both sides focused on exploring avenues for cooperation and expressed a strong interest in establishing structured partnerships that would promote knowledge sharing and contribute to sustainable development within their respective regions.

The meeting concluded with exchanging shields and gifts from both sides and a tour of the IAS headquarters and its facilities.

Left to right**: Ms. Taghreed Saqer, Dr. Taya Tsebieva, Dr. Arsby Shono, Ms. Maryam Astalavova, H.E. Sameeh Bino, Dr. Nasrudi Yarichev, H.E. Prof. Adnan Badran, Dr. Sameer Bakeer, and Ms. Najwa Daghestani.**

Prof. Badran, presenting the IAS Shield to the delegation of the Kadyrov Chechen State University.

Prof. Badran receiving a shield and a gift from Dr. Nasrudi Yarychev.

Some Group Photos.

A VISIT TO THE ROYAL BOTANIC GARDEN

A joint visit by the Islamic World Academy of Sciences (IAS) and a delegation from Kadyrov Chechen State University to the Royal Botanic Garden, on 12 April 2026, highlighted the growing importance of environmental sustainability, biodiversity conservation, and cross-institutional scientific collaboration. Eng. Muhammad Shahbaz, Director General of the Royal Botanic Garden Jordan, received the group.

During the tour, participants were introduced to the Garden's pioneering efforts in conserving Jordan's native flora, restoring ecosystems, and promoting environmental education. The Royal Botanic Garden serves as a leading regional model in sustainable land management, scientific research, and public awareness, integrating traditional knowledge with modern conservation science.

The delegation explored various sections of the Garden, gaining insights into seed preservation, plant propagation, and habitat restoration techniques. Discussions focused on the role of botanical research in addressing pressing global challenges such as climate change, desertification, and food security, areas of shared concern for both IAS and Chechen State University.

Prof. Badran emphasized the critical link between environmental sustainability and scientific advancement, noting that institutions like the Royal Botanic Garden play a vital role in bridging research with practical applications. The visit concluded with a constructive dialogue on future cooperation, including joint research projects, academic exchanges, and collaborative environmental programs.

Prof. Adnan Badran in front of the ancient Olea Europea Tree, over 1,500 years old.

The black iris is endemic and emblematic to Jordan. The flower is of a very dark purple, almost black.

ROYAL BOTANIC GARDEN*

The Royal Botanic Garden is one of Jordan's most significant environmental and scientific landmarks, combining biodiversity conservation, research, and sustainable development within a unique natural setting. Located about 25 kilometers north of Amman, the garden lies in the scenic hills of Tal Al-Rumman, overlooking the King Talal Dam and surrounded by rich Mediterranean landscapes.

Established in 2005 through the initiative of Princess Basma bint Ali, the garden was founded with a clear mission: to protect Jordan's native plant life and preserve its ecological heritage for future generations. It has since developed into a leading national institution dedicated to environmental conservation, scientific research, and education. The site spans a vast area of forested land with diverse elevations and habitats, allowing it to host a wide range of plant species, many of which are rare or endangered.

The garden plays a crucial role in documenting and conserving Jordan's flora. Thousands of plant species have been identified and recorded, supported by facilities such as a seed bank and herbarium that safeguard genetic diversity and provide valuable resources for researchers. These efforts contribute not only to national conservation but also to global environmental initiatives, positioning Jordan as an important contributor to biodiversity preservation.

The Royal Botanic Garden also serves as a center for scientific research and innovation. It promotes sustainable agricultural practices, water conservation techniques, and climate resilience, particularly important in a country like Jordan, which faces significant environmental challenges such as water scarcity. The garden also collaborates with international organizations and research institutions, reinforcing its role as a regional hub for ecological knowledge.

Equally important is its educational and community role. The garden offers training programs, workshops, and awareness initiatives aimed at fostering a deeper understanding of environmental sustainability. It actively engages local communities, creating employment opportunities and supporting eco-friendly economic activities, especially for women and youth.

In addition, the Royal Botanic Garden has become a growing destination for eco-tourism, attracting visitors interested in nature, science, and sustainable living. Its landscapes provide a peaceful retreat while also serving as a living laboratory that demonstrates how environmental preservation and development can coexist.

In essence, the Royal Botanic Garden in Jordan represents a successful model of integrating science, conservation, and community development. It stands as a testament to the country's commitment to protecting its natural heritage while contributing to global efforts in sustainability and environmental stewardship.

The garden hosts many facilities including: Rehabilitation and representation of habitats in the botanical garden, Jordanian National Herbarium, Nurseries and Seeds Bank

Some of the gardens that are included in the Royal Botanic Garden are:

* https://royalbotanicgarden.org/en

Orchid garden: This garden is dedicated to showcasing Jordan's diverse and vibrant orchids, particularly in the spring season.

Bee Garden: At the heart of this garden are structures resembling wild beehives. The Bee Garden is designed as a space filled with trees, shrubs, and wild and cultivated plants carefully selected to attract bees.

Quintet Garden: Plants with two embryonic leaves, known as dicots, often have flowers with petals arranged in groups of five. This pattern is frequently observed in plant families such as Ranunculaceae, Geraniaceae, Rosaceae, and Malvaceae. These recurring floral structures have intrigued botanists and horticulturists for centuries, sparking curiosity about the synchronicities present in the natural world. The famous mathematician Fibonacci even incorporated observations of flower parts into his theory of cosmic numerical harmony.

Fragrance Garden: Visitors to this garden can discover a collection of aromatic trees, shrubs, and plants known for their refreshing and pleasant scents.

Endangered Plants Garden: Designed based on Jordan's current Red List, this garden features plant species classified as: Regionally Extinct, Critically Endangered, and Endangered. These species are highlighted to raise awareness of conservation efforts and the importance of protecting Jordan's threatened plant biodiversity.

Heritage Park: In this garden, visitors can explore Jordan's traditional plants, known for their use in cooking and traditional medicine.

A Seminar on the Repercussions of Closure Policies at Al-Aqsa Mosque held at the IAS Headquarters

The Arab Thought Forum (ATF), in cooperation with the Islamic World Academy of Sciences (IAS) and the Middle East Studies Center (MESC), organized an international scholarly symposium on 21 April 2026 entitled "Al-Aqsa Mosque and the Holy Sites: Closure Policies and Their Repercussions."

During the symposium, political, religious, and academic figures discussed the reality of Al-Aqsa Mosque under closure policies and their repercussions on the Palestinian presence, in addition to the international legal dimensions and Arab and Islamic reactions. Participants from Egypt, Palestine, Turkey, and Saudi Arabia were present, in person and online on Zoom.

Participants emphasized the importance of developing an Arab and Islamic strategy and activating international legal avenues to halt the violations, affirming the historical role of the Hashemite custodianship in protecting Islamic and Christian holy sites in Jerusalem.

The seminar concluded with a call for continued research and engagement on the issue, emphasizing that developments in Jerusalem remain central to broader regional stability and peace efforts.

Left to right: **Prof. Jawad Al Hamad, Founder of the Middle East Studies Center (MESC), Jordan, Prof. Elsadig Elfaqih, Secretary General of the Arab Thought Forum (ATF), and Prof. Ibrahim Badran, Vice President of the Arabic Language Academy in Jordan.**

Mr. Abdullah Kanaan, Secretary General of the Royal Committee for Jerusalem Affairs, Jordan, and Prof. Adnan Badran.

Prof. Adnan Badran, President of IAS.

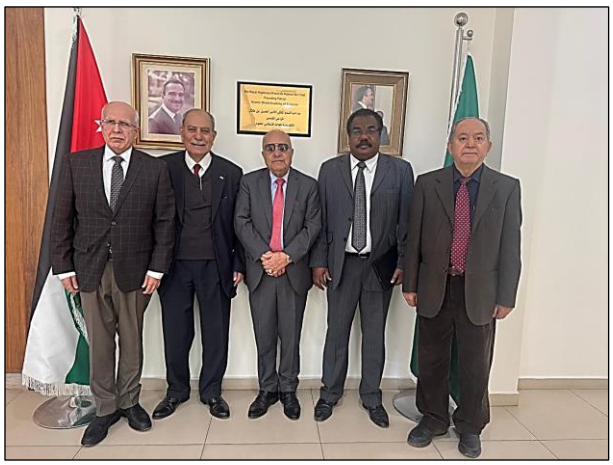
Some of the attendees of the symposium.

VISITORS OF THE ISLAMIC WORLD ACADEMY OF SCIENCES

A delegation from the **Jordan Society for Scientific Research, Entrepreneurship, and Creativity (JSSR)** visited the IAS and discussed ways to strengthen the ties in research and development, especially scientific research priorities in the fields of water, energy, and food security.

Left to right: **Prof. Samih Abubaker, Vice President, JSSR, Prof. Rida Shibli, President, JSSR, Prof. Adnan Badran, President, Board of Trustees, JSSR & President, IAS, and Mr. Nabeel Mismar, Member, JSSR.**

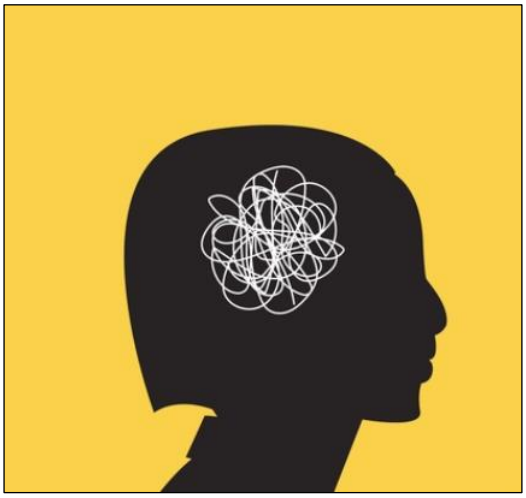
The Jordan Society for Scientific Research, Entrepreneurship, and Creativity (JSSR) was established in 1999 as a non-profit organization dedicated to advancing scientific research and promoting a culture of innovation in Jordan. The society serves as a crucial link between academic institutions, researchers, business leaders, and policymakers, striving to turn research outcomes into tangible economic development. With a volunteer-based structure, JSSREC works to raise public awareness of the importance of scientific research, supports research activities across various sectors, and hosts regular conferences and training workshops, including initiatives focused on entrepreneurship and environmental sustainability. Additionally, the society actively participates in international and local projects aimed at technology transfer and the creation of new products, such as those within the ENI CBC MED Program.



Left to right: **Prof. Shaher Momani, Professor of Mathematics, University of Jordan, Mr. Abdullah Kanaan, Secretary General of the Royal Committee for Jerusalem Affairs, Prof. Adnan Badran, President, IAS, Prof. ElSadig ElFaqih, Secretary General of the Arab Thought Forum (ATF), and Prof. Ibrahim Badran, Vice President of the Arabic Language Academy in Jordan**

PICKS OF THE CHIEF EDITOR

AI'S 'DELUSIONAL SPIRALS' (AND WHAT TO DO ABOUT THEM)*



In a world where chatbots can stand in for friends and counselors, the mental health risks are a growing concern.

Perhaps to the surprise of their creators, large language models have become confidants and therapists. AI researchers at Stanford studied verbatim transcripts of 19 real conversations between humans and chatbots to understand how these relationships arise, evolve, and, too often, devolve into troubling outcomes the researchers describe as "delusional spirals."These conversations can spin out of control as AI amplifies the user's distorted beliefs and motivations, leading some people to take real-world, dangerous actions.

"People are really believing the AI," said Jared Moore, a PhD candidate in computer science at Stanford University and first author of the paper, which will be presented at the ACM FAccT Conference. "As you read through the transcripts, you see some users think that they've found a uniquely *conscious* chatbot."

Programmed to Please

Part of the problem, the researchers say, is that AI models are trained from the outset to "align" with human interests. AI has been programmed to please and to validate. When combined with AI's well-known tendency to hallucinate, it adds up to a potentially toxic formula.

"AI can be sycophantic," Moore says. "And that's a problem for some users." Researchers say delusional spirals result from a pattern in which humans present an unusual, grandiose, paranoid, or wholly imaginary idea and the model responds with affirmation, encouragement, or, in some cases, aid in constructing the person's delusional world, all while offering intimate reassurances that can sound all too human.

Things then escalate as the model offers an endless stream of attention, empathy, and reassurance without the all-important pushback a human confidant or therapist would typically provide.

These stakes are not abstract. In the team's dataset, Moore and colleagues witnessed how delusional spirals led to ruined relationships and careers – or worse. In one case, a participant died by suicide when the conversation grew "dark and harmful," Moore explained. "Chatbots are trained to be overly enthusiastic, often reframing the user's delusional thoughts in a positive light, dismissing counterevidence and projecting compassion and warmth," Moore said. "This can be destabilizing to a user who is primed for delusion."

Warning Signs of Delusional Spirals

Moore says delusional spirals derive from a few specific hallmarks: an AI that encourages grandeur and uses affectionate interpersonal language, and a human's misperception of AI sentience. Meanwhile, chatbots are ill-equipped to respond to suicidal and violent thoughts.

It is less a matter of "the evil AI," Moore said, than a miscalibrated social calculus built into the models. Systems tend to extend conversations to defer to their interlocutors, thereby making them better assistants. At the same time, they don't have ways to tap the brakes on a spiraling conversation or to route

* *Source: https://hai.stanford.edu/news/ais-delusional-spirals-and-what-to-do-about-them*

an unstable person toward help. "There is a mismatch between how people actually use these systems and what many chatbot developers intended them - *trained* them - to be," Moore says.

What Can Be Done

In light of these clear and concerning risks, Moore and colleagues conclude their paper with remedial recommendations. AI developers could include metrics in their testing of a model's tendency to facilitate delusional spirals and, potentially, add detection filters to the models themselves that raise red flags on potentially harmful uses of AI. The researchers acknowledge that privacy concerns could stand in the way of that strategy. "I think AI developers have a vested interest in addressing this concern about the use of their models in ways they likely never even intended or imagined," Moore noted.

On a policy front, the researchers say that lawmakers should reframe alignment as a public-health issue requiring new standards for flagging sensitive conversations, greater transparency into AI "safety" tuning, and clear rules for crisis escalation when a user demonstrates tendencies toward self-harm or violence.

"When we put chatbots that are meant to be helpful assistants out into the world and have real people use them in all sorts of ways, consequences emerge," said Nick Haber, an assistant professor at Stanford Graduate School of Education and a senior author of the study. "Delusional spirals are one particularly acute consequence. By understanding it, we might be able to prevent real harm in the future."

RESEARCHERS DISCOVER BOOSTING A SINGLE PROTEIN HELPS THE BRAIN FIGHT ALZHEIMER'S[**]

What if the brain already has the tools to fight Alzheimer's, but just needs a boost to use them?

Scientists at Baylor College of Medicine have uncovered a way to switch on a natural cleanup system in the brain that removes harmful amyloid plaques and helps preserve memory in mice. Their findings, published in Nature Neuroscience, highlight the untapped potential of astrocytes, star-shaped support cells that are far more common than neurons yet often overlooked in Alzheimer's research.

These cells play a central role in keeping the brain stable, supporting communication between neurons, and helping store memories. But as the brain ages, astrocytes begin to change in ways scientists do not fully understand, especially in diseases like Alzheimer's.

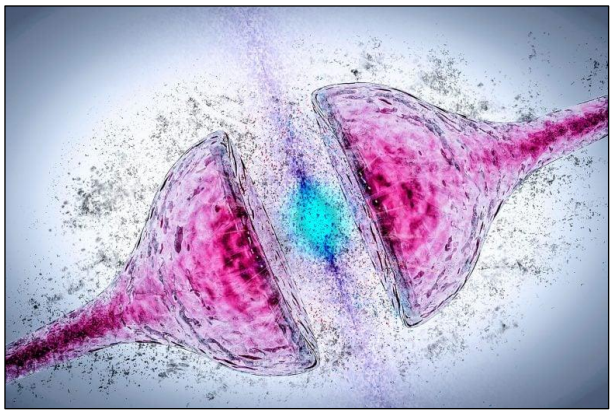
"Astrocytes perform diverse tasks that are essential for normal brain function, including facilitating brain communications and memory storage. As the brain ages, astrocytes show profound functional alterations; however, the role these alterations play in aging and neurodegeneration is not yet understood," said first author Dr. Dong-Joo Choi.

A Different Strategy for Alzheimer's

Alzheimer's disease remains one of the most pressing health challenges worldwide, affecting tens of millions of people. It gradually damages memory and thinking, in part due to the buildup of sticky protein clumps known as amyloid plaques. Most current treatments aim to prevent these plaques from forming or to shield neurons from damage, but success has been limited.

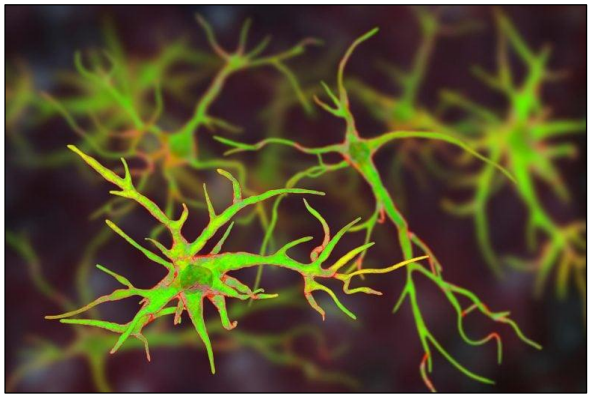
The Baylor team took a different approach by focusing on a protein called Sox9, a key regulator of gene activity in aging astrocytes. When they increased Sox9 levels in mice that had already developed memory problems and plaque buildup, the results were striking. Astrocytes became more active and began clearing the plaques.

[**] *Source: https://scitechdaily.com/researchers-discover-boosting-a-single-protein-helps-the-brain-fight-alzheimers/*



Scientists have discovered a way to activate a built-in brain cleanup system that may help counter Alzheimer's disease. By targeting astrocytes, a widely abundant but often overlooked cell type, the approach enhances the removal of harmful protein buildup and preserves cognitive function in mice. Credit: Shutterstock

"We found that increasing Sox9 expression triggered astrocytes to ingest more amyloid plaques, clearing them from the brain like a vacuum cleaner," said senior author Dr. Benjamin Deneen.



Astrocytes are abundant glial cells that support and regulate brain function by maintaining chemical balance, aiding communication between neurons, and controlling blood flow. They also play active roles in immune defense and can influence the progression of neurological diseases. Credit: Shutterstock

This effect relies on a receptor called MEGF10, which Sox9 helps control. The receptor allows astrocytes to engulf and break down amyloid deposits through a process known as phagocytosis. By strengthening this pathway, the researchers reduced plaque levels and maintained cognitive function over six months.

A More Realistic Disease Model

Rather than intervening before the disease takes hold, the researchers designed their experiments to better reflect real-world conditions by working with mice that had already developed memory problems and amyloid plaque buildup.

"An important point of our experimental design is that we worked with mouse models of Alzheimer's disease that had already developed cognitive impairment, such as memory deficits, and had amyloid plaques in the brain," Choi said. "We believe these models are more relevant to what we see in many patients with Alzheimer's disease symptoms than other models in which these types of experiments are conducted before the plaques form".

When Sox9 was reduced, the disease worsened. Plaques accumulated faster, astrocytes lost complexity, and memory declined more quickly. This contrast underscores how important these cells may be in controlling the course of the disease.

The findings reflect a broader shift in Alzheimer's research. Scientists are beginning to look beyond neurons and focus on the entire brain environment, including support and immune cells. Astrocytes, once thought to play a passive role, are now emerging as active defenders that can influence disease progression.

Although the work was done in mice and more studies are needed to confirm whether the same mechanism applies to humans, the results point to a promising new strategy. Instead of only trying to block damage, future treatments could enhance the brain's own ability to clean and protect itself.

If that approach proves effective in people, it could change how Alzheimer's is treated by turning the brain's support cells into a powerful line of defense.

ABU AL-NASR AL-FARABI*
(870-950 AD)

Abu Nasr Mohammad Ibn al-Farakh al-Farabi was born in the small village of Wasij, near Farab in Turkistan in 259 AH (870 AD). His parents were originally of Persian descent, but his ancestors had migrated to Turkistan. Known as al-Phararabius in Europe, Farabi was the son of a general. He completed his earlier education at Farab and Bukhara and, later on, he went to Baghdad for higher studies, where he studied and worked for a long time viz., from 901 AD to 942 AD. During this period he acquired mastery over several languages as well as various branches of knowledge and technology. He lived through the reign of six Abbasid Caliphs. As a philosopher and scientist, he acquired great proficiency in the various branches of learning and is reported to have been an expert in different languages.

Farabi travelled to many distant lands and studied for some time in Damascus and Egypt, but repeatedly came back to Baghdad, until he visited Saif al-Daula's court in Halab (Aleppo). He became one of the constant companions of the King, and it was there at Halab that his fame spread far and wide. During his early years he was a *Qadi* (Judge), but later on he took up teaching as his profession. During the course of his career, he suffered great hardships and at one time was the caretaker of a garden. He died a bachelor in Damascus in 339 AH/950 AD at the age of eighty.

Farabi contributed considerably to science, philosophy, logic, sociology, medicine, mathematics and music. His major contributions seem to be in philosophy, logic and sociology and, of course, he stands out as an Encyclopaedist. As a philosopher, he may be classed as a Neo-Platonist who tried to synthesise Platonism and Aristotelism with theology. He wrote such rich commentaries on Aristotle's physics, meteorology, logic, etc., in addition to a large number of books on several other subjects embodying his original contribution. He thus came to be known as the 'Second Teacher' *(al-Mou'allim al-Thani)* Aristotle being the First. One of the important contributions of Farabi was to make the study of logic easier by dividing it into two categories viz., *Takhayyul* (idea) and *Thubut* (proof).

In sociology, he wrote several books out of which *Ara Ahl al-Madina al-Fadila* became famous. His books on psychology and metaphysics were largely based on his own work. He also wrote a book on music, captioned *Kitab al-Musiqa*. He was a great expert in the art and science of

* *Source: Personalities Noble, 2nd Edition, 2000, Edited by Hakim Mohammed Said, published by IAS with permission of Hamdard Foundation Pakistan. Photos: Wikipedia.*

music and invented several musical instruments, besides contributing to the knowledge of musical notes. It has been reported that he could play his instrument so well as to make people laugh or weep at will. In physics, he demonstrated the existence of void.

Although many of his books have been lost, 117 are known, out of which 43 are on logic, 11 on metaphysics, 7 on ethics, 7 on political science, 17 on music, medicine and sociology, while 11 are commentaries. Some of his more famous books include the book *Fusus al-Hikam,* which remained a text book of philosophy - for several centuries at various centres of learning and is still taught at some of the institutions in the East. The book *Kitab Ihsa al-'Ulum* discusses classification and fundamental principles of science in a unique and useful manner. The book *Ara Ahl al-Madina al-Fadila* 'The Model City' is a significant early contribution to sociology and political science.

Postage stamp of the USSR, issued on the 1100th anniversary of the birth of Al-Farabi (1975).

Farabi exercised great influence on science and knowledge for several centuries. Unfortunately, the book *Theology of Aristotle* as was available to him at that time was regarded by him as genuine, although later it turned out to be the work of some Neo-platonic writer. Despite this, he was regarded the Second Teacher in philosophy for centuries and his work, aimed at synthesis of philosophy and sufism, paved the way for Ibn Sina's work.

Portrait of Al-Farabi – Alpharabius.

Al-Farabi on the currency of the Republic of Kazakhstan.

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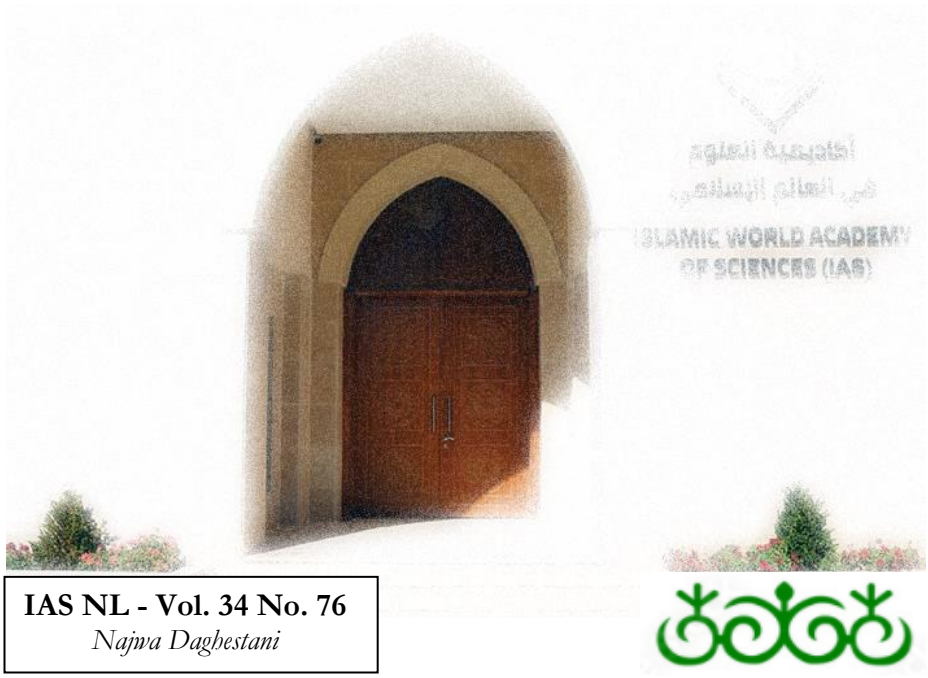

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