

SAYS

newsletter



The Official Newsletter of the Sudanese Academy of Young Scientists

Issue 4, February 2008

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SAYS newsletter is an electronic publication, designed to encourage publications of young scientists, including reviews, reports, brief communications, and abstracts in pure and applied sciences, and the humanities. Manuscripts and advertising inquiries should be sent to the editor-in-chief at: saysnewsletter@gmail.com

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Editorial

This is the 4th issue of SAYS newsletter, in this issue I would like to announce that some changes have been made in the editorial board of SAYS newsletter, Husam Abugabr has been named the next editor-in-chief of SAYS newsletter. Abugabr is a biotechnologist, graduated at the Faculty of Sciences, University of Khartoum, with a strong base of zoology, and he has adequate experience in proteomics, chemotaxonomy, microbial investigation strengthened with fine knowledge of analytical chemistry and molecular techniques. In addition, he is an active member in SAYS executive committee. I am confident that Abugabr with his crew will bring up to date and very modern ideas to improve the Newsletter.

Also join me in welcoming Suad Sulieman as the senior advisory editor; Sulieman is a prominent scientist and professor of parasitology and tropical medicine at Nile College, Khartoum. She is also a member of the Sudanese Environmental Conservation Society, and the Sudanese National Academy of Sciences.

I would like to call everyone's attention to a young scientist's conference, which will be held in April, Alexandria, under the umbrella of the Academy of Sciences for the Developing World (TWAS), entitled "Funding Research in the Developing World". The conference will be a great opportunity for young scientists from developing countries to exchange ideas and knowledge, in addition to meeting famous scientists who would share their experience and insights into the fields of research and development. This is a call for young scientists to apply for this conference.

I shall end by mentioning that SAYS website has been launched last month, so all SAYS activities and news will be published online, and by reminding you that the door is open for all young scientists to contribute to SAYS newsletter. We welcome your comments and suggestions.

Hisham Yousif Hassan
Editor-in-chief



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News

TWAS/BioVisionAlexandria.Nxt

Location: Bibliotheca Alexandrina, Alexandria, Egypt

Date: 11 - 16 April 2008

Organised by: CSSP/TWAS

For the first time in the history of BioVisionAlexandria, the Center for Special Studies and Programs (CSSP) is organizing, in collaboration with The Academy of Sciences for the Developing World (TWAS), the interactive event "TWAS/BioVisionAlexandria.Nxt". The event is schedule to run concurrently with the BioVisionAlexandria 2008 conference in April 2008 under the title "Funding Research in the Developing World". The event will be held 11-12 April 2008 and applicants will be entitled to participate in the BioVisionAlexandria 2008 Conference as well.

The CSSP intends to invite 100 young scientists from developing countries to share their ideas and experience, in addition to meeting mentors and eminent scientists who would enlighten their knowledge into the fields of research and development. Each young researcher will have the opportunity to demonstrate his/her project/research in the poster session and share his/her ideas. The event will also include various discussions focusing on difficulties encountered in their respective countries. These discussions aim at finding ways and means of overcoming some of these difficulties.

TWAS/BioVisionAlexandria.NXT is currently accepting applications from young scientists who meet the following criteria. The applicant must:

- be under 35 years of age on 1 January 2008 (limited number of researchers between 35 -40 might be accepted depending on the poster strength and innovation).
- be a native of a developing country.
- be either a post-graduate diploma, or a masters, or Ph. D. student, or a recent postdoctoral fellow (maximum 2 years) working in the field of life sciences.
- have available scientific achievements/research material that would be presented at the poster session.

TWAS/BioVision.NXT will contribute generously to the travel ticket (air ticket), upon arrival to Alexandria, Egypt. However, we encourage applicants to pursue funds from alternative sources.

<http://www.bibalex.org/bva08/NextRegistration/RegistrationForm.aspx?m=7>



Challenges Facing Wildlife conservation in Sudan: Why Community Conservation should come to the fore

Among the most of valuable lands in Sudan are wilderness areas, wetlands, undeveloped coastal lands, and old-growth forests. These lands are valuable not just for their timber, their fish, and their mineral resources; but also in ways not easily measured by our economic system. Critical habitats for wildlife are irreplaceable reservoirs of biodiversity and places to renew the human spirit through contact with nature. The value of these wild lands as uniquely productive ecosystems can be easily lost when the human presence becomes too dominating.



African Buffalo (*Syncerus caffer*) in Dinder Biosphere Reserve (©Photo: Mohanad Ali)

A continuing civil war has had a major detrimental effect on Sudan's wildlife, as well as on its ability to feed its population. Although some game reserve and sanctuaries have been established, wildlife protection is minimal. Excessive hunting and poaching have caused a major decline in several species. The losses of wildlife and

forest cover present a pessimistic perspective for the future of conservation in the country.

With an expanding human population and corresponding decline in wildlife habitat, the conservation and management of faunal diversity has become an increasing challenge. The biggest challenge of wildlife biologist is to manage wildlife in the face of growing human populations, expanding settlement, and increased conversion of game reserve land to agriculture.

There are many threats to the Sudan's wildlife. A prevailing threat is the requirement to satisfy the growing needs of rural communities, communities that are themselves growing rapidly and impoverished. The management of this growth represents one of the most important challenges Sudan faces. The striving for food security is coming at a high risk on the natural resources.

With reducing budgets for conservation combined with increasing populations demanding more land for cultivation, it is no wonder that severe losses have occurred. This may, perhaps, explain why community conservation has come to the fore in efforts to stem the loss of biodiversity.

The requirement to balance the achievement of food security and the



conservation of wildlife and functioning ecosystems entail that community conservation seeks to play a significant role, both in terms of actively contributing to rural livelihood needs as well as to conservation objectives. Such involvement needs to include land use and national economic planning, so as to balance the agro-ecological potential with conservation, biodiversity and livelihood objectives, and the need to regulate the level of extraction of natural resources. Wildlife cannot simply continue to be conserved for its own sake. The biggest challenge lies in finding ways to accommodate both providing economic and non economic values to the nation as well as communities who live with wildlife.

Community conservation as a practice embodying protected area outreach, collaborative management and community based conservation, is a relatively “new” phenomenon in East Africa. New in the sense that it is only now being embodied by conservation authorities, NGOs and others as the long term method to involve local people in taking more responsibility of their natural resources on a sustainable basis. However, community conservation is old in terms of societies in East Africa historically living, to a greater or lesser degree, in harmony with their natural resources, when population pressures were low.

In Dinder Biosphere Reserve, the fast growing farmlands adjacent to the Reserve, is putting pressure on an already stressed ecosystem. Farmers are moving into rangelands in search of land to grow crops. While many pastoral people would like to continue to herd cattle, they are restricted from important grazing areas. As pastoralists



turn to farming, new sedentary populations near wildlife areas remove land from wildlife use.

There are indications that the effort made by the park authorities to work with communities and to provide support to their development projects has had a positive impact on community attitudes towards the park and conservation.

Growing population in Dinder Biosphere Reserve
(©photo: Mohanad Ali)

From the protected area outreach focus, arrangements for collaborative management and community based conservation have evolved in recognition that community conservation is more than outreach; but has to relate to livelihoods and sustainable use.



The shift from hostility to friendliness and partnership has created opportunities for other community conservation arrangements with the people, thereby increasing potential benefit flows and contributions to rural livelihoods.

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From Numbers to Probabilities (Part 3)

From Galileo to the French connection

An historical review cited in

Peter L. Bernstein's "AGAINST THE GODS the remarkable story of risk"

Previously: In part 2, we reviewed the contribution of Paccioli, and his famous puzzle *balla*, then we mentioned the renaissance gambler, a sixteenth-century physician named Girolamo Cardano

The last Italian of any importance to wrestle with the matter of probability was Galileo, who was born in 1564, the same year as William Shakespeare. By that time Cardano was already an old man. Like so many of his contemporaries, Galileo liked to experiment and kept an eye on everything that went on around him. He even used his own pulse rate as an aid in measuring time.

One day in 1583, while attending a service in the cathedral in Pisa, Galileo noticed a lamp swaying from the ceiling above him. As the breezes blew through the drafty cathedral, the lamp would swing irregularly, alternating between wide arcs and narrow ones. As he watched, he noted that each swing took precisely the same amount of time, no matter how wide or narrow the arc. The result of this casual observation was the introduction of the pendulum into the manufacture of clocks. Within thirty years, the average timing error was cut from fifteen minutes a day to less than ten seconds. Thus was time married to technology, and that has how Galileo liked to spend his time.

Nearly forty years later, while Galileo was employed as the First and Extraordinary Mathematician of the University of Pisa and Mathematician of His Serenest Highness, Cosimo II, the Grand Duke of Tuscany, he wrote a short essay on gambling titled *Sopra le Scoperte dei Dadi* (On Playing Dice). The use of Italian instead of Latin suggests that Galileo had no great relish for a topic that he considered unworthy of serious consideration. He appears to have been performing a disagreeable chore in order to improve the gambling scores of his employer, the Grand Duke.

Like Cardano, Galileo dealt with trials of throwing one or more dice, drawing general conclusions about the frequency of various combinations and types of outcome. Along the way, he suggested that the methodology was something that any mathematician could emulate. Apparently the aleatory concept of probability was so well established by 1623 that Galileo felt there was little more to be discovered.

Neither Cardano nor Galileo realized that they were on the verge of articulating



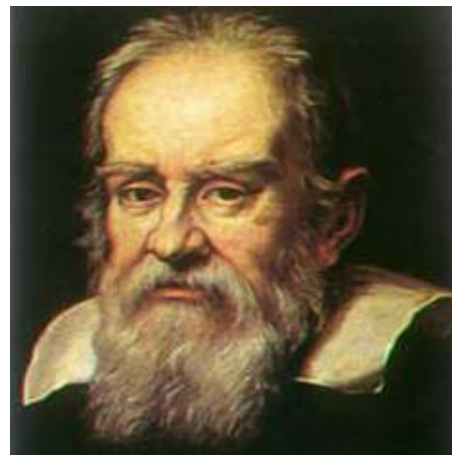
the most powerful tool of risk management ever to be invented i.e. ‘The law of Probability’. Yet, a great deal remained to be discovered. Ideas about probability and risk were emerging at a rapid pace as interest in the subject spread through France and on to Switzerland, Germany and England. France was the scene of a veritable explosion of mathematical innovation during the next centuries that went beyond Cardano's empirical dice-tossing experiments.

Tentative efforts to devise measurement techniques that could be used to determine what degree of order might be hidden in the uncertain future were components of the first step. In 1619, a Puritan minister named Thomas Gataker published an influential work, *Of the Nature and Use of Lots*, in which he argued that natural law, not divine law, determined the outcome of games of chance.

By the end of the seventeenth century, the major problems of probability analysis had been resolved, it was how human beings recognize and respond to the probabilities they confront. This, ultimately, is what risk management and decision making are all about and where the balance between measurement and gut becomes the focal point of the risk story.

A Dutchman named Huygens published a widely read textbook about

probability in 1657, which was read and noted by Newton in 1664, two years after the death of Galileo. Another man named Leibniz was thinking about the possibility of applying probability to legal problems and in 1662 the members of a Paris monastery named Port-Royal produced a pioneering work in philosophy and probability Galileo to which they published the results of his effort to generalize demographic data from a statistical sample of mortality records kept by local churches. By the late 1660s, Dutch towns that had traditionally financed themselves by selling annuities were able to put these policies on a sound actuarial footing. By 1700, the English government was financing its budget deficits through the sale of life annuities.



Galileo Galilei

Twelve years after the death of Galileo in 1642, three Frenchmen took a great leap forward into probability analysis, their story fashioned the systematic and theoretical foundations for measuring probability. The



first, Blaise Pascal, was a brilliant young dissolute who subsequently became a religious zealot and ended up rejecting the use of reason. The second, Pierre de Fermat, was a successful lawyer for whom mathematics was a sideline.

The third member was a nobleman, the Chevalier de Méré, who combined his taste for mathematics with an irresistible urge to play games of chance.

Neither the young dissolute nor the lawyer had any need to experiment in order to confirm their hypotheses. Unlike Cardano, they worked inductively in creating, for the first time a theory of probability, which provided a measure of probability in terms of hard numbers, a climactic break from making decisions on the basis of degrees of belief.

To be continued

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The World Academy of Young Scientists (WAYS)

WAYS mission is to provide an arena to interact and exchange information in order to extend scientific knowledge and improve collaboration between different generations of scientists worldwide. WAYS is to facilitate communication between scientists and society so as to create a platform to make the voice of young scientists heard about present problems and concerns through regular input into science policy and decision-making.

The vision of WAYS members is to assure the vitality of science and technology by developing a scientifically literate and educated world community of young scientists; to realize the potential of young people as the next generation of scientists and policy-makers; to make science more attractive, comprehensible and accessible to everyone; and to generate a research environment that allows for creativity, open communication, and free flows of ideas and talents.

The core values of WAYS are community, open communication, cooperation, trust, opportunity, recognition, teamwork, creativity, innovation, empowerment, leadership, diversity and equality.

The main goals of WAYS targets is to empowering young scientists worldwide; fostering trans-disciplinary and international

cooperation; exposing young scientists to the expectations and issues of societies; disseminating scientific knowledge in societies and enhancing the participation of young scientists to decision-making processes.

To achieve these goals, WAYS acts as a global umbrella to connect people, to help grass-roots initiatives to attain a global reach and to adapt know how and projects from region to region according to local needs.

WAYS Website offers an account that allows the member to find and contact other researchers in the directory, create web log entries and comment on other scientists' entries.

Identifying other WAYS members of interest is obtained by three methods:

- (a) The first one is the easiest by searching the user profiles for a certain keyword, (b) The second way is browsing the user list by clicking on "Find other WAYSers", (c) And the third is entering the "User Locations" link under the user menu which takes client to a real-time Google map pinpointing the location of all users, along with a link to their profile.



Green is Beautiful (Sunut Forest)

It is a few years after 2008 (in 2010), and Man has continued to live unwisely – to consume the earth's resources greedily, to over use the land and to pollute the rivers, sea and the air. The cities were overcrowded, and heavily polluted. For the expansion of new urban developmental projects, most of the woods and forests had been cut down.

Scientists were already very worried about the lack of oxygen in the atmosphere as a result of the decrease in plant life. How much longer, they asked, will the earth be habitable? Should we start to think to send spacecrafts further and further in search of other planets which might support life??

Is this the beginning of the end of human life on earth?

Forests offer diverse habitats for plants, animals and micro-organisms, holding a large percentage of the terrestrial species. Forest biological diversity provides a wide array of goods and services, from timber and non-timber forest resources to playing an important role in purifying, recycling and storing water, and mitigating climate change. At the same time, it provides livelihoods and jobs for many people. Forest biological diversity plays a particularly important economic, social and cultural role

in the lives of many indigenous and local communities.

Therefore, the conservation and sustainable use of forests is a global obligation not just a local need ...

Here in our Green Sudan, in Khartoum State, we have our only urban green Acacia forest or Sunut forest which lies on a unique site on the eastern side of White Nile before the confluence of White and Blue Niles, on an area of about 437 feddan. It is one of three bird sanctuaries in Sudan and a wetland protected reserve. It was gazetted as a forest reserve according to the central forests law of 1932 under registration number 563. Being a protected area, the sanctuary is owned by the Government of the Republic of Sudan. For management purposes, the jurisdiction of its management is not clear; but both of the Federal Ministry of Tourism and Ministry of Agriculture, Forestry Management, are involved.

The Sunut Forest provides an important habitat for migrant and resident birdlife, and this is one the reasons for which the sanctuary was established. The birdlife in Sunut sanctuary comprises 125 species of which 51 are migrants. It is an important stopover site and wintering ground along the Africa - Eurasian flyway. Also, the forest is



a site of preservation of biodiversity, and one of the few recreation sites for residents of Khartoum, overlooking the outstanding views of the convolution of the Blue and White Niles.

The forest also provides a good site for environmental and conservation education.

Sunut Forest is a grace of which Khartoum residents should conserve and keep against any threats of changing the use of the forest or changing its nature because of developmental projects interference with nature.

The Sunut Forest provides ecosystems balance (buffer) by containing the excess water in its low land during the flood and backflow of White Nile.

Imagine that this forest is changed to other use, where will the excess water go? Will it flood in other banks of White Nile? Destroy the villages and small towns on both sides of the White Nile?? Also, Khartoum residents will be deprived of the only filter of oxygen (lung of air)? Then they will spend their lives in trying to cure the diseases which resulted from pollution ...

Many and many benefits of Sunut Forest being found in this area and location. Can we forbid our eyes from enjoying natural green landscape, our children to find a cheap

and permissible natural, green expansion to help their skills to grow and feel the nature? Will there be any alternative with this available characteristics?!!

All of these may be noticed or felt clearly by the thousands of people who cross the New Omdurman Bridge in the early morning and back in the afternoon. I think they feel comfortable as their eyes meet the green colour lying by the water of White Nile ...

If all these beautiful sceneries are not important, what will happen to the bird life, can we permit to loose it? Some will miss an important source of genetic biodiversity and a source of ecotourism, which can help (support) Sudan national economy.

Not only the birdlife will be affected negatively; but also small mammals, reptiles, fishes, amphibians, insects and other invertebrates ...

Can we decide the lifestyle of all these creatures?? I think we are not given this right yet!!!

Mariam Mohammed
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**Critiques of Billie R. DeWalt's Article:
Using Indigenous Knowledge to Improve Agricultural
and Natural Resource Management**

I will introduce this article by discussing the characteristics of scientific knowledge and indigenous knowledge systems in regulating natural resources management, then I will bring about the necessity of having a sort of knowledge that can overcome the shortcomings of both systems according to the ideas presented by Billie R. DeWalt in his article "Using Indigenous Knowledge to Improve Agricultural and Natural Resource Management". These ideas indicate that in order to have an efficient system of regulating natural resources management we should have a holistic approach that involves improving of the existing indigenous knowledge of local communities at different contexts, and then apply the knowledge in management of the resources. Scientific techniques need to be injected to the indigenous knowledge to the level that help to achieve the economical sufficiency; but does not harm the ecological systems of those contexts. Moreover, DeWalt (1994) described the role of social scientists in facilitating or mediating the transfer of the suggested knowledge system to the local communities and concluded that "social scientists and people with local knowledge can better work together to improve

agricultural and natural resource management".

Moreover, I discussed and elaborated on the mechanisms and circumstances that would help the transformation to take place, which the writer did not discuss deeply.

The best way to describe the scientific knowledge is to know that the scientists first break the problem into smaller fractions to deal with every fraction separately. As they build the solutions separately to use them in a certain context, then reuse the solutions again in another context. (Kloppenburg, 1991, in DeWalt, 1994).

However, Feyerabend, (1975 in DeWalt, 1994) and also Lyotard, (1985 in DeWalt, 1994) have concluded that "science is just one way among many ways of knowing about the world". Indigenous knowledge, sometimes termed local knowledge is evolving as one of the relevant solutions tools to achieve sustainable development (DeWalt, 1994). (Sustainable development according to Brundtland's assertion means the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Lafferty, 1999). In contrast with scientific knowledge, indigenous knowledge has the



description of being well producing inside the community or the contexts where it comes from and hardly replicable in outside contexts (Kloppenborg, 1991 in DeWalt, 1994). To broaden these characteristics, we can say that the local people of a certain area are well aware of the interconnectedness of the plants, animals, soils and their ecosystems and the ability of the knowledge that they practise to interrelate the different components of the ecosystem have been accumulated through centuries. However, this rich and diverse knowledge is highly valued in the communities where it is practiced; but would have less value outside the community (Mutable immobile). Whereas scientific knowledge is prescribed as immutable mobile knowledge systems because, means to study a phenomenon can be replicated in similar settings (Latour, 1986: 7-14 in DeWalt, 1994).

The characteristic of indigenous knowledge systems can be described as means to study a phenomenon such as slash and burn management of tropical forests, is a holistic approach based on observation accumulated over years. The characteristics of utilising the resource are dependent on local resources. However, the management is practised over a massive land which is labour demanding. And there is a possibility that the resource which is indigenously managed can be exposed to environmental

risks. Systems where resources are managed with local knowledge are described as systems of diverse adaptive strategies. For example, the different types of managements within slash and burn, such as growing gardens for subsistence, and managed fallows are good illustrations for this argument (DeWalt, 1994).

But the output of such systems is usually made for subsistence goals with low productivity compared to the labour input. The system is socially accepted since it has been going on for centuries. Slash and burn conserve the ecosystem through the action of succession of different species of plants. Slash and burn that is practised in tropical forests suffices the need of the local people who are usually living in less populated than others in densely populated areas, for example, big cities (DeWalt, 1994).

On the other hand, the characteristic of the traditional scientific system suggested by DeWalt are as follows, the means to study the phenomenon, for example the examination of an infection of a crop on a farm land, are specialised, partial and based on experimentation. However, usually the treatment of the problem in this case would be applying of a pesticide which will cost high compared to the costs taken by the farmer. As a rational choice, the farmer would intensify the use of his land in order



to have less labour and high market cost (DeWalt, 1994).

By addressing the different characteristics of traditional scientific and indigenous knowledge systems, we notice or come to know the limitations of both knowledge systems. Thus, in order to improve agriculture and natural resource management, according to DeWalt, a sort of

“in between knowledge” that can overcome the short- comings of both systems is needed, then apply that knowledge to the different social settings.

To be continued

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ADVERTISEMENT

كلية النيل Nile College



MISSION STATEMENT

The mission of Nile College is dedication to community development through sound policies, provision of high quality education and service resources as well as upholding multicultural values and heritage. This mission centres on quality management of services in education, health care, research and socio-cultural development.

PROGRAM OBJECTIVES

The design of the program of studies and the learning experiences shall help students to:

1. Develop a high standard of moral and professional ethics.
2. Acquire learning skills in the direction of self-reliance, confidence and techno-competence so as to pursue continuing and postgraduate studies.
3. Be capable of integrating knowledge of normal structure and function at molecular, cellular, organ and whole body levels.
4. Apply basic medical information and knowledge of the mechanisms of disease in solving health problems at the level of the community, the family and the individual.
5. Develop a comprehensive approach to patient care so as to include psychosocial aspects of health and disease.
6. Acquire essential skills in dealing with outpatients, in-patients and medical emergencies.
7. Accumulate knowledge, skills and attitudes needed for communication, rapport and fostering a climate of confidence and cooperation with patients as well as other members of the health team.





THE EDUCATIONAL ENVIRONMENT

Nile College has secured a five storey building with spacious grounds. The premises are well finished, air-conditioned and pleasant work in. The educational facilities have been prepared with care and professionalism.

The Curricula of the various programs have adopted innovative designs and teaching/ learning methods.

Great care has gone into the selection of the teaching and supporting staff who will undertake continuing professional development programs so as to serve the mission and objectives of this and innovative College for medical Sciences.

PROGRAMS OF STUDY AND TUITION FEES

Bachelor of Medicine and Surgery (MB BS)	16,000 SDG
Bachelor of Nursing Sciences (B Sc Nursing)	4,000 SDG
Bachelor of Medical Technology (B Sc MLT)	8,000 SDG
Diploma in Medical Information System	3,000 SDG

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About SAYS

The Sudanese Academy of Young Scientists (**SAYS**) is a non-governmental organization. It has been officially registered at the Ministry of Humanitarian Affairs under the umbrella of the Sudanese National Academy of Sciences (SNAS).

On the 15th of January 2007, the inaugural meeting of the Sudanese Academy of Young Scientists (**SAYS**) was held in the Institute of Endemic Diseases, University of Khartoum, and the proposal for establishing the Academy was discussed and approved.

The objectives of SAYS are:

- Promote research and uphold the cause of science in its basic and applied forms.
- Help in the dissemination of science and research results through publishing and assisting in publishing periodicals, and through organization of scientific meetings.
- Raise community awareness about the importance of science and technology in sustainable social, economic and environmental development.
- Collaborate with similar regional and global organizations.
- Raise funds and accept endowments for the purpose of fulfilling its objectives.
- Help in capacity building of scientific institutions in the country.
- Award grants, scholarships, prizes and medals in the field of research for young scientists.

Membership Criteria:

There are three types of membership; Full Membership, Partial Membership and Honorary Membership.

Full Membership: The member should be below 40 yrs and has at least a master degree in basic or applied sciences.

Partial Membership: The member should be at least a B. Sc holder in basic or applied sciences and not more than 30 yrs old.

Honorary Membership: The member should have a university degree in basic or applied sciences and over 40 yrs.



INSTRUCTIONS TO AUTHORS

Articles should be sent to the Editor-in-chief at saysnewsletter@gmail.com

1. Articles should be original and **NOT** submitted for publication elsewhere.
2. One complete electronic or hard copy of each article, including illustrations, should be provided on A4 paper, typed in 1.5 spacing, with 2.5 cm margins.
3. Tables should be used to present large amounts of numerical data and when they simplify the text: they should not duplicate the text. Each table should be typed on a separate sheet in double spacing, without ledger lines, together with its identifying Roman numeral and a short title.
4. The quality of illustrations in the Journal is dependent on the quality of the photographs, images and figures provided. Every effort should be made to ensure that these are the best available.
5. Articles submitted for publication will be evaluated by the Editorial Board.
6. Rejected manuscripts and illustrations will not be returned unless a specific request to do so is made at the time of submission.

SAYS newsletter

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Sudanese Academy of Young Scientists