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TAWASUL علمي
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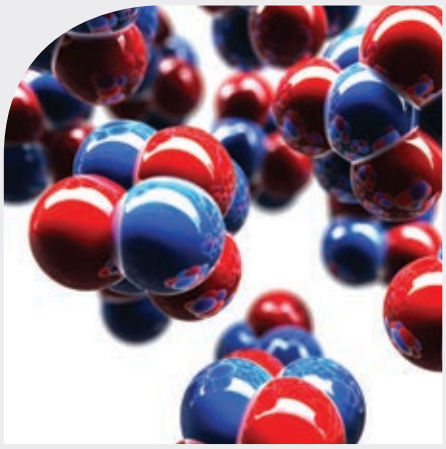
Can We Make Meat Safer?

Gelatin from Fish Skin

7 Postgraduate Programs Endorsed

Research Findings : Reality and Expectations



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The Challenges of Translating Research

The development and dissemination of knowledge in the Arab world has captured the attention of many researchers, teachers and practitioners. However, few research findings have been put into application for the benefit of individuals and communities. Falling short of utilizing research results is attributable to several reasons related to researchers, practitioners, and funding and investment sources.

The challenges facing investment in research results in different fields of life lie in the nature of conducted studies, insufficient time and effort dedicated to research, and scarce sources of funding. Very frequently, academics tend to produce theoretical studies, influenced by their academic qualifications. And with the lack of incentives for researchers, apart from the academic promotion and job stability, research will be focused on achieving such goals, without regard to any practical ends. It will thus lack applicable plans with detailed and procedural steps and empirical evidence from the field. Researchers are likely to follow a safe route for publication by investigating so-called heated topics of the hour, not to mention that creative and innovative ideas might be turned down by highhanded editorial boards of scientific journals. On the other hand, research carried out by applied researchers is considered a private property of the relevant institution, being one of its trade secrets. In addition, there is no efficient program of incentives adopted by institutions, say universities, which would reward researchers for their time and effort. Most researchers would welcome a widespread TV interview to exhibit their expertise and ideas rather than assigning some time for publishing such ideas in low-profile journals. Furthermore, industrious researchers are burdened with administrative responsibilities given priority over the time spent on research and teaching.

If the aforementioned difficulties are overcome, research will be enriched in all areas of knowledge, which would contribute to the application of research outcomes. Yet, this is not enough. An integrated framework is acutely needed to utilize research in economic establishments. This framework includes several elements: the source, the receiver being the practitioner who has direct contact with individuals and groups, and the contacting link being the procedural group offered by the institution to ensure that knowledge, skills , abilities and resources necessary for the application are all in place. There should also be a feedback mechanism to assess both the performance of the personnel involved in the application and the program itself. All of this, of course, is subject to the influence of internal and external environments of the concerned institution which must be observed and taken into account.

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Muscat: History and Civilization Symposium held by two SQU centers Scholars highlight the history of Muscat 20

The Humanities Research Center and Omani Studies Center at SQU are jointly organizing a symposium, on October 27-28, 2013, aimed at addressing the deeply rooted history and civilization of the historic city of Muscat. The symposium sheds light on the historical, social and commercial aspects of the relationships that Muscat had with countries around the world. Twenty papers will be presented by local and international researchers covering such fields as history, geography, literature and tourism. There will be 11 presenters from Oman and 9 from India, Italy, France, Egypt, Algeria, Morocco, the UAE and Qatar. They will highlight the significant role of Muscat's geographical position in shaping its historical relations with others and promoting its cultural, political and economic development. The recent contributions made by Muscat in various fields will also be reviewed. The event will have four themes:

Geographical and historical aspects

It will focus on Muscat's geographical and natural importance, its effect on human settlement, its role in ancient history, relations with neighboring civilizations, and Muscat in modern and contemporary history.

Economic and social aspects

This theme addresses Muscat's economic ties with its neighbors in ancient ages, economic activities in modern times, aspects of social life, and the impact of settlement on its social life.

Architectural aspects

It explores the settlements and immigrations from pre-historical ages to the end of Islamic middle ages, archeological building and Omani ports, and classical crafts in Oman.

Cultural aspects

This theme reviews the various aspects Muscat's cultural life from ancient to modern times, and the city in the writings of Arab and foreign travelers, foreign archives and documents, and the writings of historians, scholars, geographers, and academic institutions.

Childbirth Education and Pregnancy Anxiety

An SQU research team is investigating the effectiveness of childbirth educational intervention in reducing anxiety and unfavorable pregnancy outcomes. The procedure includes a randomized clinical trial design among the population of Omani low risk nulliparous pregnant women visiting SQU Hospital (SQUH) and Armed Forces Hospital (AFH). Antenatal Clinics and Labour rooms of SQUH & AFH will be the setting of the study after the approval of Research Committee and Hospital authority. All low risk nulliparous pregnant women who are willing to participate and at their third trimester (28 - 36 Weeks) will be randomly assigned to control and intervention groups till a sample size of 100 will be reached, with 50 participants in each group. Initially all participants' demographic data will be collected then their pre and post intervention anxiety levels will be measured using standardized anxiety scale State Trait Anxiety Inventory (STAI). The intervention group will be exposed to two sessions of video-assisted childbirth education classes and each participant will be provided with Childbirth education booklet. Pregnancy outcomes of the two groups will be measured using standardized Pregnancy Outcome Check List.

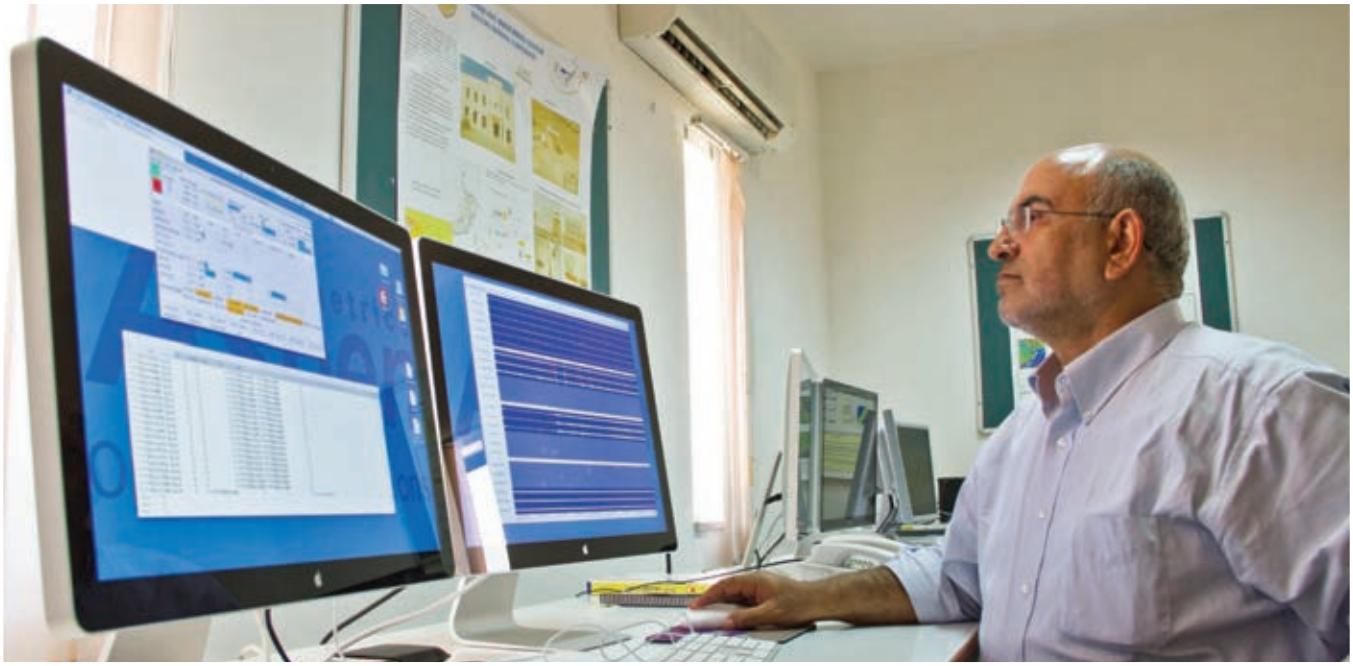
Utilisation of Prosopis Juliflora for Feeding Omani Livestock

A researcher at SQU is investigating the distribution of the Prosopis juliflora tree and its potential use for livestock feeding. The study will aim at processing the Prosopis pods and leaves and incorporating them in livestock rations. Prosopis juliflora was introduced to Oman in the 1970s to combat desertification and for urban beautification. Soon it became a pest and spread over large areas of the country and today is Oman's worst invasive species. It had the ability to become established at the expense of local species in both irrigated and range lands. There were serious attempts to eradicate the trees, especially on the Salalah plain, but like elsewhere in the world this was largely unsuccessful.

In his remarks on the project, Dr. Osman Mahjoub, of the College of Agricultural and Marine Sciences, said chemical composition of the tree pods would be evaluated by determining proximate composition as well as carbohydrates, minerals, vitamins and other components in the seeds, pods and leaves. Prosopis pods will be subjected to various processes including soaking in water to remove bitter taste, crushing and grinding. They will be collected during the fruiting season and used as a plant protein and energy source. Chemical analyses and various in vitro and in vivo investigations will be made to determine their nutritive value before incorporation into rations of native goats at various levels. Feed intake will be measured and effects of feeding of these rations on growth, carcass composition and meat quality will be evaluated. In vitro studies will include determination of anti-nutritional effects of elements such as tannin. In vivo studies will include determination of digestibility of feeds and feeding trials will be conducted to evaluate feed intake, body weight growth, and carcass composition and quality.

The project is expected to help find alternative protein and energy sources to be used as animal feeds to reduce production cost and increase local farmer's revenue. Various tasks will be carried out by the staff of the Department of Animal & Veterinary Sciences, and Agricultural Experiment Station, SQU.

The main outcomes measured will be pre and post intervention anxiety levels and pregnancy outcomes. The results will provide investigators to develop strategies to implement the interventions in present setting and also it explores the feasibility of implementation to all Health Facilities of Oman. Using SPSS statistical package version 16, both descriptive and inferential statistics appropriate to level and type of data will be used to find answers to the research objectives. The findings of the study would identify the effectiveness of an educational intervention to decrease anxiety level and enhance pregnancy outcomes, which will help in informing larger scale studies that examine the efficacy of educational intervention in decreasing the anxiety levels as well as improving pregnancy outcomes. The results would help to incorporate routine prenatal screening of anxiety and take early measures to alleviate or to reduce anxiety so as to have better pregnancy outcomes. Implementing childbirth education as a part of routine prenatal care especially to first time pregnant women promote application of evidence based practice in midwifery practice of SQUH and AFH.



Issa AL - Hussein The EMC director:

Oman is positioned near the convergence of active seismic belts

Some people still draw seismic information from unscientific sources

The Center is one of the best in the region in terms of equipment

The Earthquake Monitory Center (EMC) at SQU plays a vital role in providing important information to mitigate the seismic hazards by early warning. Since its inception in 2001, the Center has been proven to be a research resource for the society through conducting studies on earthquakes and assessing their hazards so as to take preventive measures.

By operating its 20 seismic stations throughout the Sultanate, the Center monitors the seismic waves that travel through the Earth's layers in order to detect felt and unfelt quakes. To shed more light on the Center's activities, we had this interview with its director, Professor Issa Al Hasan, who talked about the tasks of monitoring climate change and seismic hazards and raising relevant awareness in the community.

What are the Center's duties and goals?

One of the key priorities of every country is to ensure the safety of its citizens, infrastructures and all components of cultural heritage against the consequences of possible disasters such as earthquakes. Quakes can have huge impact as they only take seconds and can destroy decades-long buildings and projects. Scientific sources can show us examples of devastating tremors such as the one that destroyed Qalhat in East Oman in the late 15th century and another one that struck Musandam in 977 BC. A seismic monitoring network in Oman therefore has been triggered by the need to address such natural phenomena which occur around the active tectonic regions along Makran, the Gulf of Aden, and the collision of the Zagros Mountains. The Center also keeps pace with the plans, projects and rapid development that have been going on in Oman since the 1970s. Apart from its seismic monitoring duties, the Center conducts relevant research, holds seminars and conferences, collaborates with Arab and world academic centers, delivers consultancies, and carries out programs for raising seismic awareness among individuals so as to reduce risks.

How can the Center achieve its goals?

There are several ways with which the Center can realize its objectives. These are:

1. Implement a national monitoring program that involves the installation of permanent seismic stations in selected localities according to geological and tectonic considerations; these stations can detect a quake of a magnitude of at least 1 on the Richter scale and tremors that happen around the Sultanate with a magnitude of at least 4
2. Follow up the operation of the earthquake network, and carry out the required development and updating
3. Conduct data analysis and evaluation for all recorded earthquakes and calculate their parameters
4. Produce advanced research on the seismicity and seismotectonics of the Sultanate and the surrounding regions
5. Exchange data and knowledge with Arab and international seismological institutes
6. Utilize seismological data in determining all regions of earthquake activity in and around the Sultanate and define their characteristics quantitatively
7. Hold symposiums and conferences on seismology and seismic hazards
8. Hold seminars and workshops to raise public awareness about tremors and conduct studies on the geodynamics and seismicity of the southern part of the Arabian plate
9. Publish and exchange seismological data and research findings with other national and Arab institutions
10. Take part in specialized academic conferences and present the Center's research findings
11. Provide planners and structural engineers with seismological results and participate with them in developing necessary measures to reduce earthquake hazards in the Sultanate
12. Contribute to setting building codes including precautious measures to reduce seismic effects on installations and select constructing materials and earthquake resistant design
13. Publish periodicals that include earthquake data and their parameters and provide them for relevant Omani organizations
14. Deliver consultancies and advice on seismology to all organizations and institutions.

Are there any plans to enhance the Center's activities?

Sure! We have been making efforts in this respect such as the establishment of a monitoring network and more stations to support those in the north where seismic activity is detected and reduce the gap between the north and south stations. Now we have 12 mobile stations and strong motion instruments. We also exchange seismic data with other neighboring centers, encourage joint research with other international institutions such as LLNL Lab, MIT, Kendili in Turkey and other universities, exchange visits and expertise and qualify the Center's employees academically by attending training courses and regional and international scientific events.

What roles does the Center assume in earthquake monitoring locally and regionally?

The Center delivers several services in terms of consultancies and raising awareness. Every year, there are many seminars for school and university students about the risks of tremors and how to take precautious measures against them. Our experts pay visits to various public organizations to provide information about the Center's services and seismic hazards.

In addition to that, the Center provides several publications for schools and organizations. An important publication is the annual bulletin on earthquake monitoring which offers information about the seismic monitoring in and around Oman. Regularly, awareness bulletins such as booklets and pamphlets are released to raise awareness and the media helps in this regard. The Center also exchanges publications and data with other world seismic centers. It offers advice to public and private sectors when it comes to building projects so that seismic parameters are taken into account when designing those projects. This reduces future seismic risks. Furthermore, the Center contributes to education curriculum design with reference to seismology (social science book, Grade 10).

Are there any other services delivered by the Center?

Of course, the Center holds seminars and conferences on earthquakes and how to deal with them and reduce their risks. It also participates in the implementation of research projects with companies

such as Petroleum Development Oman, Oman LNG Company, Duqm Port, Duqm economic zone authority and government agencies. In late 2012, the Center started to submit proposals for microseismic location and hazard assessment and how to prevent them in all the provinces and regions of the Sultanate and disseminating strong motion network for monitoring the safety of vital installations and buildings. Once the funds are in place, this milestone project will kick off. Its significance lies in introducing new legislations for land-use management, construction and quality control. The project will also provide the local population with better insights into how to assess the risks of earthquakes in the region and to give priority to taking measures to mitigate those risks.

How many monitoring stations does the Center have?

The seismic monitoring network includes 20 remote seismic monitoring stations and an SQU-based database center. They are networked via satellites through Omantel and connected with the center.

What is the ranking of the Center in terms of seismic monitoring capabilities, technologies, and expertise?

There is no such ranking, but we can confirm that it is one of the best centers in the region in terms of equipment, technologies and personnel.

Does the Sultanate fall within the seismic zone?

Due to its geotectonic position on the edges of the Arabian plate demarked with major rift zones from the south, east and north-east, Oman might be prone to earthquakes which are contingent on the pressures on the borders and inside the plate. The location of the Sultanate on the relatively stable Arabian tectonic plate borders, near the convergence of a number of active seismic belts capable of producing large earthquakes which could trigger a tsunami, makes it vulnerable to seismic hazards. We should not overlook the recent and historical evidence about Oman's exposure to some earthquakes during different times. One event is the quake that occurred in the late 19th century near Nizwa which was felt in Muscat and destroyed 9 villages near Nizwa, according to historical sources.

Are the technical specifications of buildings in Oman efficient enough to deal with earthquakes?

Previously, there was no earthquake-resistant building code.

Does the Center intend to submit a proposal to competent authorities to modify the specifications in case they are not efficient to deal with quakes?

Yes, hard work is underway to produce shortly a guide for earthquake-resistant structures in the Sultanate.

What is the magnitude of an earthquake on the Richter scale which can pose a real threat to homes and infrastructure in the Sultanate?

That depends on several factors including geological and engineering ones. In most regions of the world earthquakes with a magnitude of 4 and above are considered when setting the standards of earthquake-resistant construction. Earthquakes with a magnitude of less than 4 and shallow depth can affect the structures near the epicenter.

Is there a relation between climate change, specifically storms, and earthquakes?

No, there is no such scientifically proven relevance.

Based on your experience with past quakes, do you think the society is aware of such phenomenon?

The awareness of the phenomenon of earthquakes among Omanis has improved a lot especially among school students. A scientific overview of earthquakes has been introduced to the lower grades and science students at the university. Still, a large proportion of the society draws seismic information from rumors and unscientific sources.

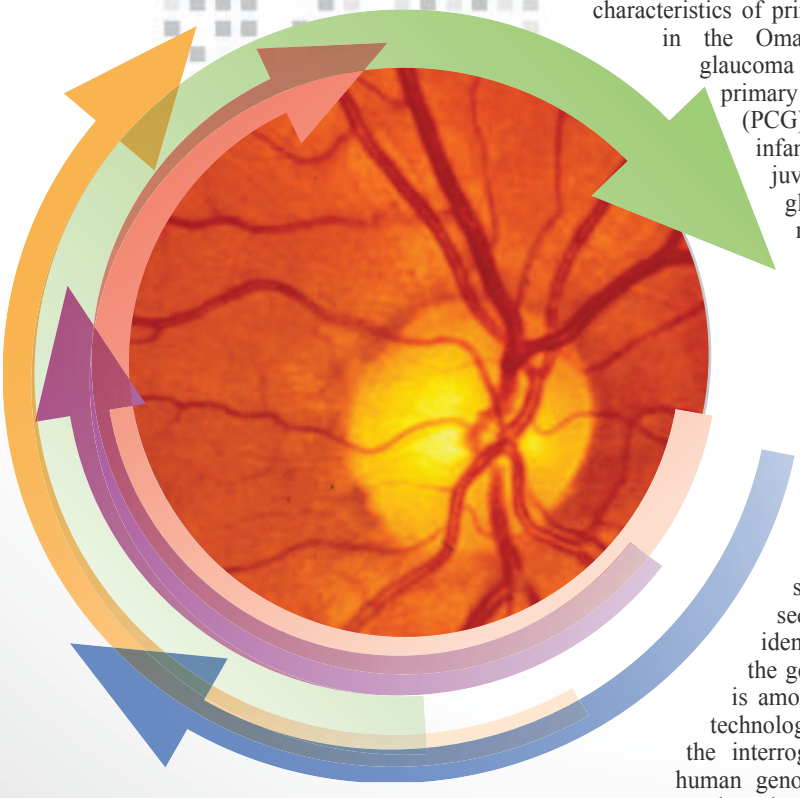
Dr. Nadia Al Kharousi

A study determines the cause of glaucoma in Omanis

Some genes and variants are responsible for the disease

A new study has been conducted to determine the molecular cause of three primary glaucoma subtypes. Glaucoma, a progressive optic neurodegenerative disease, is the second cause of irreversible blindness. In most cases it results in chronic deterioration of the optic nerve (ON). The cause of degeneration is not well understood but it is usually associated with increased intraocular pressure (IOP). ON damage can occur over years and a patient may not notice visual loss until more than 40% of the peripheral sight is impaired causing tunnel vision.

Dr. Nadia Al Kharousi, of the College of Medicine and Health Sciences, SQU, investigated the genetic and clinical characteristics of primary glaucoma cases in the Omani population. The glaucoma groups included primary congenital glaucoma (PCG), observed from infancy to 5 years of age, juvenile open angle glaucoma (JOAG) manifesting from 5-35 years old patients and adult onset primary open angle glaucoma (AO-POAG) that was observed passed the ages of 35 years.



She said that eight families had been recruited for the purpose of the study. Exome capture sequencing was used to identify changes within the genes. This technology is amongst the cutting edge technologies and allows for the interrogation of the whole human genome areas, codes for proteins, thereby allowing for the deep analysis of any mutations in the 20,000 genes that constitute the human genome (Next generation sequencing, Illumina platform). These variations were analyzed and relevant variants were selected for validation on all corresponding family members using the standard sequencing approach (Sanger platform).

The researcher added that, from the eight families, 26 members had exome sequencing performed. This generated an average of 10.612 Gb of sequencing data covering the entire exome 107 times per member. A total of 5,659 variants in 3,979 genes were identified. Initial results identified some of the genes and variants that might be responsible for the Omani glaucoma pathophysiology. She hoped that, upon the completion of the work, a large spectrum of the involved Omani glaucomatous genes could be found.

Dr. Nadia Al Kharousi stressed the importance of identifying the involved genes, given that glaucoma is an asymptomatic disorder resulting in irreversible blindness with affected individuals not recognizing sight impairment until more than 40% of peripheral vision is lost. In order to preserve and maintain sight for glaucoma affected individuals, she advised that treatment need to be initiated during the earlier stages of ON damage and at-risk individuals must be recognized. Ultimately, the aim of identifying additionally implicated gene ranges, pathways and interactions is hoped to be achieved, she pointed out.

In her concluding remarks, the researcher underlined that such investigations in conjunction with functional related studies would enhance the genetic knowledge of this disease in Oman, which would assist in composing more suited diagnostic protocol, providing therapeutic strategies and enhancing treatment procedures, thereby allowing for a better prognostic outcome of the disease including a significant impact on gene therapy prospects.

A Study on E-learning in Higher Education

Dr. Kamla Al-Busaidi

Instructor's acceptance of e-learning is impacted by their perception and ease of use of such tool.

The researcher recommends that instructors develop their know-how to achieve positive learning outcomes.

The use of information communication technology (ICT) to build human resources is a vital prerequisite for the development of knowledge-based economy especially for developing countries. ICT and the internet have become major enablers of growth in business. The geographical outreach of the internet and the wide global adoption of Web 2.0 technologies provide educational institutions with unprecedented opportunities to enhance their offerings. These technologies have transformed students› perception of information and what they think about Web content and how to use it. Schools and universities are forced to investigate new means to revamp the educational process utilizing these technologies. Learning Management Systems (LMS's) do not only provide academic institutions with effective and efficient means to build human resources but also enable them to efficiently and effectively codify and share their academic knowledge.

E-learning

E-learning is the use of a web-based communication, collaboration, learning, knowledge transfer and training to add values to the learners and the organizations. LMS's are used by some academic and technical training institutions to support distance learning (full e-learning), while used by others to supplement their traditional way of teaching (blended learning). For distance learning, e-learning can be used to build a virtual classroom where all coursework is done purely fully online. There are several LMS applications in the market including the Blackboard, eCollege and Learn.com. Moodle, a free open-source software package, is sometimes preferred over Blackboard. These systems include several tools that can be utilized for blended learning or pure e-learning. For example, Moodle system offers instructors several tools that allow them to develop some course activities such as assignments, surveys, choices, forum, chats, resources (files, websites), quizzes, survey, journals, glossaries, workshops.

Several individual and organizational benefits can be gained from utilizing LMS's. Learners can access course materials online at any time, which gives them flexibility in terms of place, time and own pace. Other benefits are cost-effectiveness, consistency, timely content, flexible accessibility and customer value. In addition, LMS's allow students to interact with others, control their own learning and develop both deep thinking skills and a sense of community with other learners. LMS's enable educational institutions to manage their educational resources, support their distance education, and supplement their traditional way of teaching. However, the deployment of LMS's may cost a lot, require new skills on content producers and demand more responsibility and self-discipline from the learners. Thus, students might be intimidated to use LMS's. Likewise, organizations can alleviate these risks associated with LMS's deployment by using them initially as a supplementary tool to traditional classroom teaching creating a blended learning environment.

Examining instructors› and students› acceptance of LMS deployment is essential for its success and continuous use. However, users' acceptance of e-learning is also considered a major obstacle in adopting e-learning in the Middle Eastern organizations. Based on some recent research, some instructors are discouraged from utilizing this technology in their courses because of low students' acceptance. Measuring users' acceptance and satisfaction is a basic marketing element to manage e-learning initiative. The adoption of LMS's is initiated by instructors› acceptance and use, and in the long run LMS's survive by learners› constant use. In this regard, Dr Kamla Al-Busaidi, of the Department of Information Systems, SQU, has conducted a research study to develop a comprehensive framework that looks at the critical factors to the success of LMS's from instructors› and learners› perspectives, and to empirically test it in higher education institutions in Oman. The factors are related to the major LMS entities: the learner, instructor, course, classmates, organization, and LMS's. The study also examined how instructors› and learners› experience of LMS in blended learning is

related to their intention to achieve full e-learning.

Findings

Based on 82 instructors, the study has found that instructors' use of LMS's in a blended learning environment is impacted by several factors: their perception of LMS's as to usefulness and ease of use, training and management support, computer anxiety, technology experience and service quality. Instructors' perceived usefulness of LMS's is impacted by system quality, its perceived ease of use, and incentives policy. The researcher has suggested that organizations provide training to improve users' technology experience and lessen their computer anxiety.

Based on 512 learners in Oman, the results have significantly indicated that the critical factors in the learners' actual use of LMS's in blended learning are their satisfaction, perceived usefulness, instructors' attitude, perceived ease of use, system quality, and technology experience. The results have also found that the learners' perceived ease of use, system quality, course quality, instructors' style, course flexibility, training, service quality and information quality are critical factors for the learners' perceived usefulness of LMS's in blended learning.

Recommendations

Dr Al Busaidi has underlined that instructors play a major role in learners' adoption of LMS's. They should know how to position their courses online and design their courses and online learning content and activities in a way that is useful to learners and improves the learning outcomes. Also, instructors should illustrate a good attitude toward the technology and make sure they have the know-how in an LMS before adopting it in their courses. Moreover, instructors need to ensure that learners are well trained and have good perception about the ease and usefulness of LMS. Likewise, LMS developers should constantly improve the quality of LMS's and ensure its richness, capability, flexibility, reliability, speed, and interactivity for learners in different regions and cultures.

Finally, LMS's include several tools that provide academic and training institutions an efficient and effective means to support distance education and supplement their traditional teaching. LMS's enable these institutions to capture their educational materials and preserve them for future reuse. The findings of this research assist instructors and academic and training institutions in Oman and other Middle East countries to easily adopt the e-learning technology, and transform their educational system and exploit the benefits of e-learning technology. This could help academic institutions in Oman to successfully adopt this e-learning technology not only as a supplementary tool to the traditional way of teaching, but also to support distance education. Consequently, this e-learning transformation will increase the government's and organizations' capacity in building human resources and contribute to the development of knowledge-based economy.

Challenges facing investment in research findings

Researchers call for workable legislations

Research is the best path for the advancement of nations, as it is instrumental in generating and developing knowledge to produce goods and services that can achieve prosperity, welfare and sustainable development. Given the great development witnessed by the world in all fields of knowledge, thanks to the investment in scientific research findings, the issue of research proves to be a stumbling block to growth and development in the Arab world. The system of research can only advance when freedom, support, funding, research facilities and human resources are put in place so as to ensure scientific achievements that would contribute to the social progress at all levels. If these elements are not provided, we will succumb and destine ourselves voluntarily to staying with the scientifically and technologically underdeveloped countries leaving the theatre for others to invest in research and produce knowledge. On this issue, we had the following interview with some academics and researchers at SQU who reflected on the major challenges facing the utilization of research findings and available opportunities in this regard.

Dr. Ahmed Dhaif, a researcher at the Earthquake Monitoring Center, has stressed that research is the locomotive of industrial, social and economic development and the yardstick against which to measure the progress of nations. "The disparity between the developed and developing countries is so evident, which is due to the investment in scientific research and the application of its results in all aspects of development." He remarks that the total expenditures of any country on research and development and the percentage of GDP (Gross Domestic Product) spent on research and development are considered two main indicators for comparison between the countries as to their research and development potentials. If we examine figures, he says, we find these two indicators for different countries score high in the industrialized countries that produce and use technology and low in the non-industrialized countries that consume it. The developed nations have long realized the importance of research and its results for manufacturing technology, which has had a significant impact on achieving the development of societies.

Facts and figures

Dr. Dhaif pointed out that the amount of money spent on scientific research and centers is never associated with how big a country is in terms of land or population. Israel alone spends $6.1 billion while the Arab countries spend a combined $1.7 billion. This difference made Israel to earn $8 billion from sophisticated industrial sales during the period 2003-2005 only. In addition, North America spends $281 billion on research and Japan $98.1 billion. These figures indicate where the leadership and development capabilities lie, which explains the phenomenon of Arab brain drain. About 54% of the Arab students studying abroad do not return to their home countries and 31 % of competent Arab professionals work in the West. Arab countries urge bright young students to study abroad and when those young people see those stimulating scientific environments in the West, they choose to stay there, and thus the Arab countries lose tens of billions of dollars every year.

He added that "97% of funding on research in the Arab world comes from the public sector, while in Canada the public funding is 40%, in America 30%, and in japan less than 20%. In this context, the private sector in Oman contributes relatively larger funds than in most Arab countries."

Challenges

As to the major challenges facing investment in research results, Dr. Dhaif referred to the legislations that impede research and the lack of a clear vision of its importance for the prosperity of society. He also said that the overlap between administrative systems and research centers prevents scholars to spend more time on research without regard to those systems, in addition to the absence of mechanisms to implement policies of research and lack of interest in industrial entities by linking industry to scientific research to market and finance research and encourage researchers and adopt their ideas. "There is also lack of financial support necessary to produce quality research so as to lower the volume of expenditure on research compared to GDP, and no attention is paid to teaching mathematics and physics so as to prepare competent researchers, and there is no way to have mutual cooperation between researchers and international research centers in specific areas such as space and nuclear energy."

He underlined that the lack of support for researchers who tend to focus on leading a decent life could be one reason why the investment in research results seems impossible. Researchers must have interest in science only. The failure to disseminate a culture of research and knowledge may be attributed to illiteracy, incompetent educational system, poor economic conditions, low standard of living, absence of teamwork, focus of researchers on doing research for promotion purposes rather than on knowledge itself, and absence of the media that can commercialize the results of scientific research and contribute to the dissemination and transfer of these results to those who can apply and benefit from them.

Strategic choice

Looking for a more prosperous future, Dr. Dhaif goes on, the Arab world should adopt scientific research as a strategic option to take advantage of its human resources and natural wealth and turn them into manufactured products of double value that can contribute efficiently to national economies. That can only be possible with a national plan aimed at technology innovation and production not transfer and carried out by all sectors, planning for a quality educational system that would promote research, and providing the infrastructure necessary to guide cultural values towards research and development, rather than receiving and dictating.

Dr. Al Ismaili :

Lack of support for researchers is another problem

Challenges in the Sultanate

Dr. Saeed Al Ismaili, Assistant Dean of the College of Agricultural and Marine Sciences for Undergraduate Studies, sees that the progress of nations cannot be measured by how much they spend on research only, but more important is how much research is put to application and invested in the various development sectors. No doubt, he says, there are many challenges facing the investment in the results of scientific research in the Sultanate, including the lack of mechanisms or clear legislations which would deal with the implementation of the recommendations and outputs of scientific research and means of executing them. Very few research works address the community service and development and offer solutions to existing problems, whereas the majority of research is of purely theoretical or scientific nature. Other

challenges have to do with lack of contribution of the private sector in investing in the research outputs, the lack of cooperation, coordination and information exchange between the public organizations and research and academic institutions, the insufficient human resources and the inability of many public institutions to manage the implementation of many research outputs, particularly applied research, in addition to the acquisition of information by state institutions which would impede the use of many of the research outputs and in particular the results of scientific research that present facts and figures.

Proposals

Dr. Al Ismaili suggests for delivering investments in research findings the establishment of a professional or government agency which would be concerned with monitoring the implementation of findings and submitting recommendations of scientific research to decision-makers in the competent authorities, linking research polities with research strategies for the overall development, and creating an effective partnership with the private sector to provide partial or full funding so as to promote some research studies, such as those of an innovative nature or economic benefit for the society. He also wants to see the private sector taking charge of investing in the development of some important research results, more attention to applied research that could contribute to the development plans and solve some problems, while not neglecting research of purely scientific nature, such as that aimed at achieving progress in a particular field of knowledge; the establishment of a database and education workshops for all segments of society to disseminate the results of the most important scientific research in a plain language, which may enrich the thinking and culture of individuals and young generations in the fields of scientific research, and providing incentives and rewards for researchers or research projects which are of vital benefits for the community.

Prof. Riad Bayoumi

Research topics should be carefully selected

Professor Riad Bayoumi, at the Department of Biochemistry, College of Medicine and Health Sciences, states that in order to overcome the challenges facing the use of the results of scientific research for national development, academics and researchers should be aware that research subjects should be carefully selected so that they address the actual needs of the community, seek to solve practical problems, find solutions to the everyday issues and set new foundations in the field of technology. In order to translate research findings into useful products close cooperation must exist between industrial enterprises and the academia that provide innovative scientific solutions. It is essential that priority should be given to funding applied research. Incentives should also be provided for researchers to collaborate with industrial enterprises, he concludes.

Dr. Mumtaz Khan:

The private sector contribution should be bigger

Lifeline

Basic scientific and applied research is the lifeblood of any sector of the economy to achieve sustainable growth and development in any country. Progress and development we see today is only the fruit of investment in research results, which should be targeted by joint investments. This is the view made by Dr. Mumtaz Khan, at the College of Agricultural and Marine Sciences. He says that "if we look at the world around us, we find a small number of countries making huge investments in research results, whereas most countries invest in marginal areas. Nowadays, the world is witnessing an increase in populations, a shift in the patterns of the population, globalization, shrinking natural resources, climate change , automation, manufacturing, environmental pollution and life changes, all of which would make new challenges for development and food security. As a result, an acute need will emerge to invest in the results of research, which does not appear to be the case in the short run."

According Khan, research is supported by public funds and resources, but in most cases investment in research results, especially in industry by companies, is designed to achieve commercial gains rather than creating a good

atmosphere for utilizing the innovative research results; therefore, more focus should be made on scientific research, which is not the case now in the world and in the developing world in particular. It could be argued that there are now systems seeking to make way for academics to do research supported by private industry and marketing innovative research to attract industry. But there should be public policies that would impose on companies and industrial enterprises to cut part of their profits for investing in scientific research and thus increasing the utilization of research findings and creating a supportive environment for innovative research.

Dr. Al Khasawneh:

There is a gap between theory and application of research results

Educational value

In her opinion, Dr. Isra Al-Khasawneh, Assistant Dean of the College of Nursing for Postgraduate Studies and Research, believes that research requires professional and comprehensive knowledge in the practical field concerned, which is approached by researchers from an academic perspective, which creates a gap between the theoretical research problem and practical application of the research results. In addition, the culture of scientific research itself needs to be supported and created in the community from early stages. Thinking, questioning and learning the proper ways to ask questions and give answers are acquired by individuals together with other values while interacting with their community.

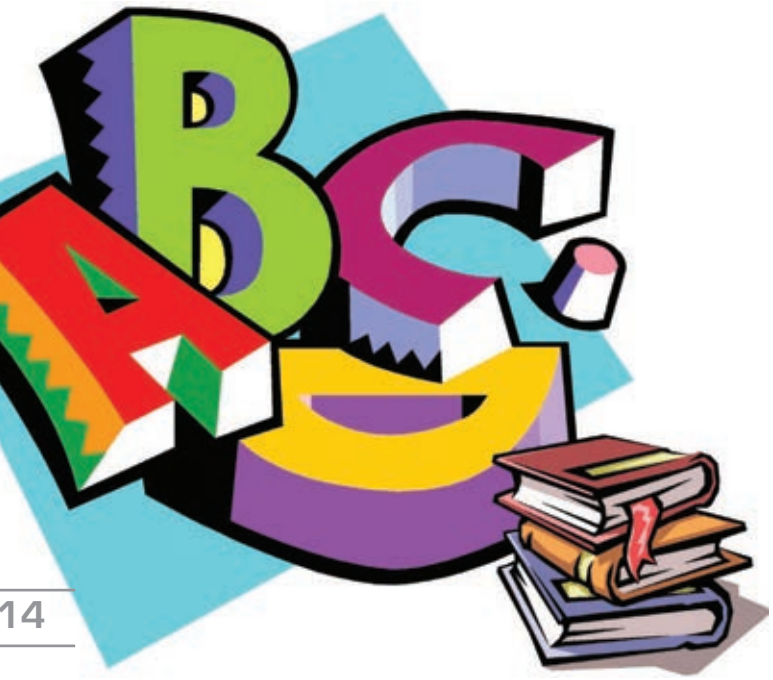
To overcome the challenges facing research, she emphasizes on the importance of investment in research results through training, development and cooperation among stakeholders, and the existence of policies for the dissemination of these results, in addition to a link between researchers and users of research results. She also calls for developing policies to solve existing problems by using scientific research to build a social culture of research at all levels and introducing a system which would provide an environment conducive to collaboration between scientists and the community.

"Research is the main gate to enter the world of change. Generating new knowledge is not that easy, but with hard work and practice, everything is possible; and as knowledge is accumulated, we can provide productive economic investments which would contribute to the social progress. So we, as academics and educators should strengthen a culture of research by developing our teaching methods so as to encourage students to reflect, question, and find out the right approach to questioning and to finding solutions to such questions", Al-Khasawneh concluded.

Investigating English Language Teaching in Oman

A research team is launching an overall study aimed at examining the construction and dynamics of English teaching systems and communities at both secondary school and university levels. The work will include a comparison of both systems in order to identify their similarities and differences. The principal investigator Dr. Fawzia Al Seyabi, of the Language Center, SQU, stated that the identification of differences would provide a platform for the creation of guidelines to mitigate these differences and provide a smooth entry to the university for the Omani high school students and their further adjustment to the university life.

Three themes will be the focus of the study: certain facts about the English language teaching systems in terms of teaching hours, the kind of curriculums, teacher efficacy, classroom size, IT tools, etc. Other issues are teacher and student beliefs about English language and pedagogy in both contexts. Samples will be collected from three regions in the Sultanate: Muscat, Al Batinah south, and Al Dakhiliyah. The study will also focus on the teaching communities of three universities: SQU, Sohar University and Nizwa University. The researchers will conduct a design-based research which would include qualitative and quantitative research tools. Class observations, curriculum analyses, questionnaires, and teacher and student interviews are among the procedures to be followed by the team.



Blended Learning: New Research

A study is underway in SQU's College of Education aimed to design three educational programs based on blended learning of the Introduction to Educational Technology course. Each program is distinct in the blending proportion of the traditional and e-learning in order to determine the best rate of blending of both formats for the course. In his project, Dr. Ali Sharaf Al Mousawi will measure the effectiveness of the three blended learning programs compared to the traditional and e-learning on College of Education students› achievement and their attitudes towards blended learning.

Lichen Diversity and Distribution in Oman

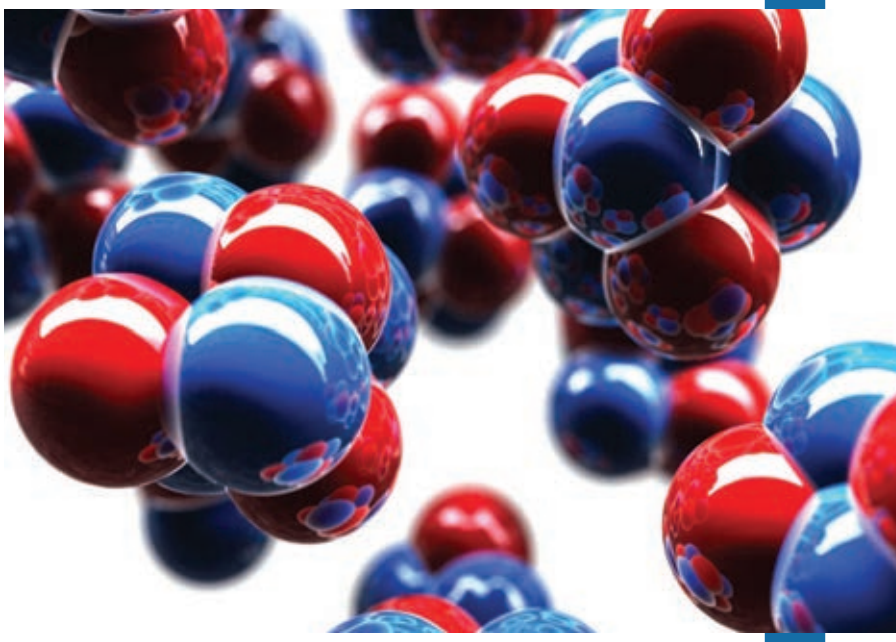
An academic is embarking on a study at SQU to examine the lichen diversity of northern Oman, especially of the Hajar mountains, which are likely to support the highest lichen diversity. Reflecting on his work, Dr. Gray Bown, of the College of Agricultural and Marine Sciences, says many lichens are highly sensitive bio-indicators of specific environmental conditions, including climatic variables, atmospheric pollution and substrate properties.

"By looking into the distribution patterns of species, it should be possible to identify key factors determining their occurrence, and certain lichen species could also be of benefit in monitoring pollution levels at some sites," the researcher suggests.

The protection of biodiversity has been assigned a high priority in the Sultanate of Oman, but biodiversity can only be effectively conserved if it has been sufficiently documented. Lichens are a widespread, but very much neglected group of organisms that occur in the Sultanate from sea-level to the highest mountains.

Understanding the Genetics of Familial Bronchiectasis

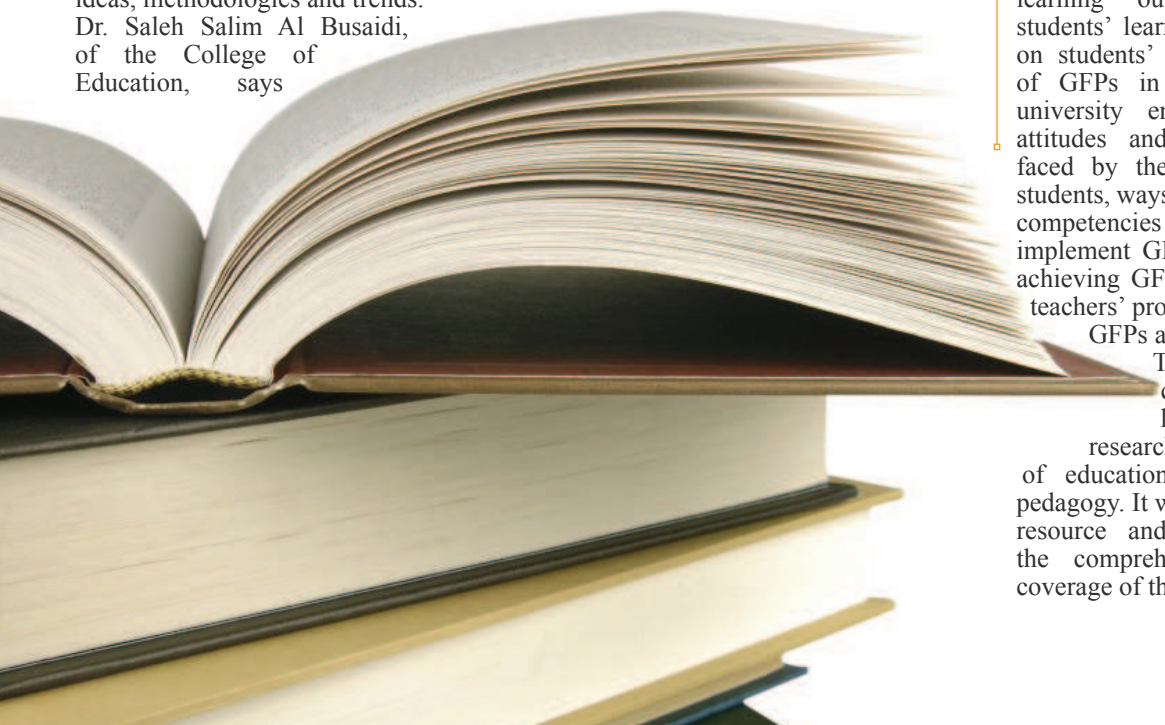
Bronchiectasis is a disease process characterized by abnormally dilated bronchi with thickened bronchial walls leading to chronic cough, sputum production, and recurrent infections. Non-Cystic Fibrosis bronchiectasis (NCFB) is a rare health issue in developed countries. However, the disease remains an important cause of morbidity in developing countries as well as indigenous populations worldwide. In a preliminary retrospective study carried out at SQU Hospital, Dr Hussein Al Kindi has found that the average yearly incidence rate was 8.7 per million of a population under the age of 15 years old. Furthermore, the etiology of the disease was not identified in 54%. The researcher also noted that there is family history in 16% of the patients of the study. Since Oman reported to have a high consanguinity rate approaching 36% in the general population, the present study will help in advancing our knowledge and diagnosing these patients early by identifying the culprit gene mutation. The objective of this study is to identify and validate possible genes associated with NCFB in Omani families using for the first time the new technology, exome sequencing.



A New Book on Higher Education Foundation Programs

An SQU academic is compiling a co-edited academic book that would provide an account of the current General Foundation Programs (GFPs) in Oman. The work will include descriptive, analytical and empirical research papers covering a wide range of experiences, ideas, methodologies and trends.

Dr. Saleh Salim Al Busaidi, of the College of Education, says the inquiries into the experiences and practices will include a number of issues, namely GFPs' standards, management and administration, evolution and development, curriculum design, alignment of learning outcomes in English, and Math, IT and Study skills.



Other topics cover the role of key study skills in three GFPs' areas of learning, teaching materials, resources, methods, approaches and techniques, students' learning and challenges in adapting to new standards.

The book will also include works on learning outcomes, assessment of students' learning, the impact of GFPs on students' further learning, the role of GFPs in students' adjustment to university environment, stakeholders' attitudes and perceptions, challenges faced by the providers, teachers and students, ways to assist students in GFPs, competencies necessary to successfully implement GFPs, use of technology in achieving GFPs standards, adequacy of teachers' professional development and GFPs accreditation.

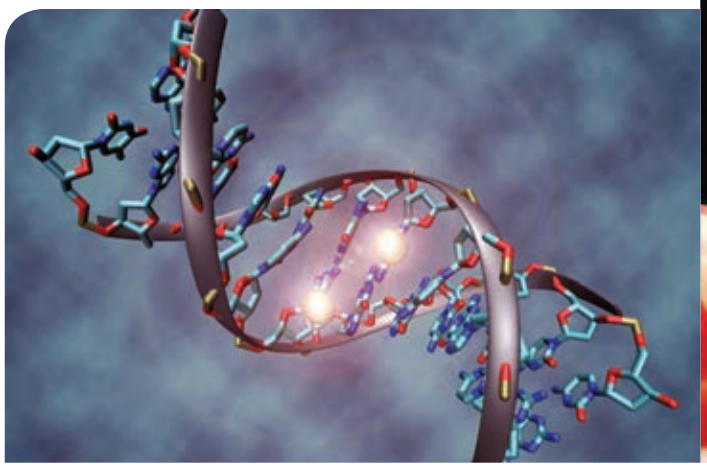
The publication will contribute to disseminating knowledge through applied research findings in the field of education and language learning pedagogy. It will also serve as a valuable resource and a reference guide for the comprehensive presentation and coverage of the GFPs in the Sultanate.

Can We Make Meat Safer ?

Consumption of Red Meat and Human Cancers

Isam Tawfik Kadim

Department of Animal and Veterinary Sciences



There is a scientific debate regarding the positive and negative effects and risks consumption red meat. Is there scientific evidence about red meat and its relation to heart disease and cancer? Will its consumption the cause of premature death? Liquefaction raised and the consumer does not know what the truth is. Whenever emerged study raises doubts about the risks of consumption red meat or no close relationship between red meat consumption and heart disease of cancer. There is a theory supports the relationship between red meat intake and the incidence of certain diseases. On the other hand there, scientific theories suggested the benefit of red meat for human health. Consumption high quantity of red meat may cause certain diseases in human. However, there is no theory supporting scientific evidence to adopt recommendations for people in the health nutrition affair.

Why red meat is always blamed for causing cancer in humans? The answer may lie in one of the following reasons (1) the medical media is searching for the causes of cancer morbidity of things close to the human, which deals with on a daily basis and continuously. If it is proven that eating red meat cause in the incidence of various cancers, it will be advised to avoid it fully to protect against infection. However, inheritance, environmental pollution and food contaminants are factors approved scientifically cause cancer in human. (2) Vegetarians discovered that eating too much saturated animal fats and cholesterol increase the incidence of certain diseases while plant reduce them such as cancer (3) reducing intake of saturated animal fats with a lower body weight is general recommendation for better health. Red meat is regarded as a source of high fat, whether the statement is true or not. In general, eating red meat can cause cancer due to high saturated fatty acids and cholesterol, however, dairy products and chicken contained saturated fat and cholesterol as well. Some of the red meat contained low amount of saturated fat and cholesterol, such camels, goats, deer and ostriches.

In USA, the Internal Medicine Journal studied the potential risks from eating red meat via the link between the deaths and consumption red meat. The study, included more than half a million people from middle-aged and adults. The results showed that eating meat red or processed meats such as sausages, patties and others meat products on a daily basis (more than 130 grams), may increase moderately risk of death due to cancer or other diseases, compared to eating less of red meat or processed. The study also show that consume fish and chicken reduce marginally the mortality. American Journal of Epidemiology published a study conducted on 30 thousand women who have reached menopause, for a period of 15 years and concluded that there is no relationship between eating red meat and cancer in women. The relationship between red meat and human death may be due to high content of saturated fat and cooking such as barbecue, which raise the carcinogens agents. These studies indicated that eating processed meat on a daily basis with high saturated fat and cholesterol are the main cause of diseases on human, therefore, consume a healthy meat contained low fat and cooked in a proper way will significantly reduce diseases . Does not mean the results of these studies need to refrain from eating red meat.

Relationship of red meat and cancer risk

Some studies indicated that eating meat and dairy products increases production of the hormone (Growth Factor 1: IGF1) insulin-like, which helps the growth of the cells. A survey on nine thousand men showed that a higher proportion of IGF1 hormone in the blood is related to 40% of prostate cancer than those who have less of the hormone. The IGF1 plays a key role in the process of growth and development for children and

adolescents and the hormone to organize the process of growth and cell death for adults, and increases the risk of prostate cancer. Many other factors such type of foods and lifestyle and their relationship to cancer can contribute to prostate cancer more than the red meat alone.

Some studies revealed that eating red meat may lead to double the risk of developing breast cancer among women. The study included 90,000 patients from Braigham Hospital and Harvard Medical School in Boston in the United States over 14 years old. The study showed that cooked red meat and products contain chemicals developed during cooking, caused breast cancer. They mentioned that presence of certain hormones in high fat meat may also contribute to develop breast cancer.

Colorectal cancer is one of the most widespread cancer representing 7.3% and 8.5% of all cancers in men and women, respectively. Colorectal cancer can be avoided by change lifestyle such as obesity and eating high quantity of red meat. However, number of studies found no link between colorectal cancer k and eating red meat. Most of the studies indicated that the excessive consumption of meat or processed meat or salted may increase the risk of cancer of the colon and rectum. Although the exact mechanism of this relationship is still is not clear, and the most likely hypothesis is a carcinogenic substance produced meat during cooking.

Effect of cooking meat at high temperatures

Cooking red meat at high temperatures can produce carcinogenic chemicals. Red meat is composed mostly of muscle cells and some connective tissue. Cooking meat changes protein structures within muscle cells and become more rigid by losing water. Cooking meat at 60 to 65oC will decrease water contain and the muscle becomes less tenderness. With increasing temperatures, the protein will react with creatine in the muscle tissue to form so-called heterocyclic amines. The heterocyclic amines produce in small quantities, and have cancer-causing properties. The International Agency for Cancer Research has classified many of them as cause of cancer. The high temperature is the main factor in the formation of carcinogens during grilling, frying and roasting of meat and meat products. These amines are concentrated in a few millimeters on the surface of meat close to the heat source. Other cancer-causing chemicals (multi-aromatic hydrocarbons) in the smoke by burning of coal, emitted from the fat and grease droplets falling caused by storm burning coal are also contribute to carcinogenic chemicals. The duration of cooked meat is also another factor in the formation of amines. Some studies showed that fried meat for ten minutes at 232 ° C contains twice the amount of amines compared with meat fried for four minutes only.

Marinated meat

The marinated red meat with various spices and sauces is a way to reduce the proportion of amines because marinating keeps the meat moist and tender under low temperatures and may enhance the meat with antioxidants that deviate effect of amines. Laboratory investigation showed that chicken marinated with spices and sauces showed no signs of these amines. Another study found that while turmeric and garlic reduced the presence of amines in steaks grilled, but the barbecue sauce increased it. An Italian study suggested that using olive oil can reduce the risk of colon cancer caused by eating fried meat by reducing the cancer-causing amines.

Some studies indicated that women who eaten hamburgers and grilled steaks and other well done meat, they are four times more vulnerable to breast cancer of women who consume moderate grilled meat. The study concluded that the risk of colon cancer almost doubles with excessive consumption of well-done red meat. The U.S. National Institute of Cancer reported that a well done roasted meat linked to an increase of 20% glandular tumors of colon and rectal area, which are tumors that usually precede colon cancer.

Tips and Advice

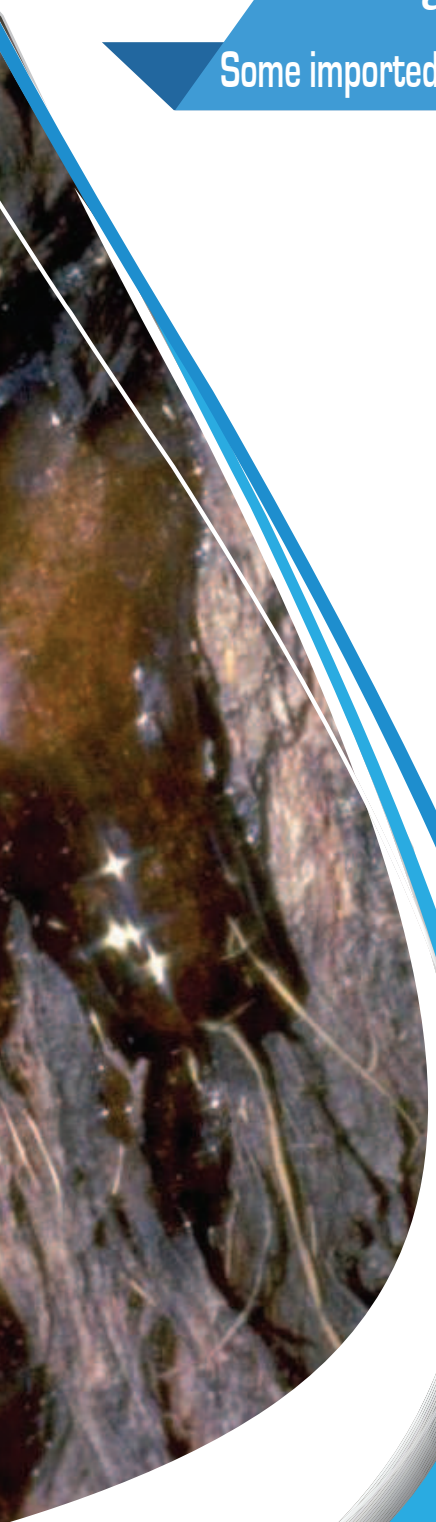
Cooking meat causes changes in the composition of natural molecule protein and interactions between sugars and amino acids. Cooking meat loses its nutritional value and loss of 30 to 50% of the vitamins and destroys enzymes responsible for the biological value of the food. Well done steak loses up to 97% of water-soluble vitamins and accompanied formation chemicals cause diseases. Cooking meat at low temperatures for short periods reduce cancer-causing amines. Some tips and guidelines for a barbecue that would make grilled meat safer for consumption:

- Grill or cook small pieces of meat because they cooked faster at low temperature.
- Use lean meat (fat-free), which lowers the flames of fire that contains cancer-causing factors.
- Precook the meat by the microwave for 2 minutes, which it has been recommended by the National Cancer Institute. The precooked meat reduces the contents of the carcinogenic amines by about 20%.
- Continue turn over the meat during cooking to reduce the area facing the fire to absorb or lose heat which leads to cook the meat without forming carcinogenic amines.

Investigating Citrus Gummosis in Oman

A new study shows citrus plants are affected by 16 new deadly fungi

Some imported and local citrus seedlings may be a source of gummosis



Dr. Abdullah Al Saadi

Citrus species are among the most widely cultivated crops in different parts of the world. Acid lime is among the four most important fruit crops in Oman. Other important kinds include sweet lime, orange, mandarin and grapefruit. Acid lime is grown in most parts of Oman with production being concentrated in the Batinah region. Sweet lime is also grown in different parts of Oman, with the Samael area being of great importance in sweet lime production.

Despite heavy reliance on citrus in Oman, especially acid lime, citrus species suffer from a number of diseases which include the witches› broom disease of lime, citrus Tristeza virus and citrus gummosis. Citrus gummosis is known to be the most serious fungal disease of citrus and usually causes 10 to 30% losses in citrus around the world. The most susceptible species of citrus to gummosis include lemons, acid limes, sweet orange and grapefruit. Little is known about distribution of this disease in Oman as well as the casual agents of the disease.

Disease Factors

Previous studies have provided evidence for transmission of fungi causing citrus gummosis via several means, including propagative material of citrus. In Oman, farmers obtain citrus seedlings from governmental or private retail and wholesale nurseries. It is not clear whether these plantations could potentially distribute gummosis-affected citrus seedlings to farmers in Oman.

Citrus gummosis in Oman has been the focus of an overall research work by a team of academics from the College of Agricultural and Marine Sciences, SQU. The main goals were to characterize the disease and determine incidence, distribution and citrus species affected by citrus gummosis in Oman. Other objectives included verifying the potential of imported citrus seedlings as a source of citrus gummosis, defining pathogens associated with citrus gummosis and examining their pathogenicity on citrus seedlings. The principal investigator, Dr. Abdullah Al Saadi, stated that the work would ultimately raise awareness in these areas and help draw up strategies for dealing with this disease in Oman and in other countries with similar climatic conditions.

The research team has launched surveys in different parts of Oman. Reflecting on the results of the surveys, Dr. Al Saadi said they showed that citrus gummosis occurred in 15% of acid lime farms and in 35% of sweet lime farms. Other citrus species which were affected by gummosis

included mandarin, grapefruits, orange, Tahiti lime and lemon. The disease was observed in Samael, Suwaiq, Sohar, Barka, Bahla, Shinas, Dibba, Madha and other Wilayats.

Typical Symptoms

As to the symptoms of the disease in the field, he mentioned that they were in the form of gum which exudates from the lower 0.5-1.0 m of the trunk and sometimes from branches. Colour of the gum is usually light to dark brown. In some cases, the affected trees also showed rotting of the bark at the crown area. The affected acid lime and sweet lime trees were found to have weak growth characterized by drying of some branches. He added that isolations from bark, root and soil samples obtained from diseased acid lime and sweet lime trees and seedlings showed association of 24 fungal species with citrus gummosis, with Lasiodiplodia spp. and Fusarium spp. being the most common. Phytophthora sp. was only isolated from grapefruit showing gummosis symptoms and was found to have a restricted distribution.

Various Effects

Dr. Al Saadi elaborated that inoculation of acid lime seedlings with 8 fungal species had produced variable effects on the lime seedlings within four months of inoculation. Phytophthora was found to be the most aggressive, where it resulted in production of gum, dieback symptoms and mortality in 60, 20 and 40% of the inoculated seedlings, respectively. Lasiodiplodia theobromae and Pythium vexans induced low to moderate levels of gum, dieback and mortality in the inoculated seedlings. Fusarium solani was less aggressive. None of the other fungal species or the control produced symptoms on the inoculated acid lime seedlings. Phytophthora sp., L. theobromae, Pythium vexans and F. solani were re-isolated from the symptomatic lime seedlings.

The researcher went on to say, "inoculating sweet lime seedlings with 9 fungal species showed that L. theobromae is the most aggressive. It induced gummosis, dieback and mortality in 10, 25 and 25% of the inoculated seedlings, respectively. F. solani and Neoscytalidium dimidiatum induced dieback and mortality in 15 and 13% of the inoculated seedlings, respectively. Neither the control nor the other fungal species induced symptoms on any of the inoculated seedlings up to 4 months of inoculation."

Possible Sources

As to the citrus seedlings marketed by private nurseries, the researcher said the survey had shown that some seedlings imported from Lebanon, Egypt and Syria or originating from Oman could be potential sources of citrus gummosis into farms in Oman. Typical symptoms of gummosis were observed in seedlings of acid lime, sweet lime, orange and mandarin. Isolations from diseased seedlings yielded 17 fungal species. Most of the isolated fungi were similar to those which were recovered from acid lime and sweet lime trees in the field. Dr. Al Saadi underlined that the findings provided evidence that citrus seedlings originating from Oman or imported from different countries could act as a source of gummosis disease or the fungi that cause it.

Novel Fungi

The study shows that several fungal pathogens can induce citrus gummosis in Oman, with Phytophthora being the most aggressive but with limited distribution. It is the first of its kind to report acid lime as a host for Pythium vexans and sweet lime as a host for N. dimidiatum. It is also the first to report the occurrence of 16 new fungal species in Oman. The researcher concluded his remarks by calling for further studies to evaluate pathogenicity of the new fungi on citrus species.

Probe into Early Jurassic Rocks for Reservoir Quality Prediction

An SQU team is embarking on a research project aimed at testing whether changes in the relative sea level are most likely accompanied by predictable changes in the primary mineralogical composition and texture as well as the subsequent diagenetic modifications in clastic sequences. Being the first ever conducted in Oman, the study will assemble large multidisciplinary approaches to develop an understanding of the external and internal architecture elements and geometry as well as the prediction of reservoir quality in the early Jurassic mixed clastic-carbonate depositional environments in Oman. A comprehensive assessment of the mineralogical composition and textures of these depositional environments is tentatively integrated with depositional facies in a sequence stratigraphic framework.

The principal investigator Dr. Mohammad Al Ghali says his team will attempt to achieve an improved understanding of a conceptual model predicting primary composition and, when combined with modelling of the thermal history and the fluid-induced changes in mineralogy and porosity-permeability, an integrated tool for the evaluation of reservoir quality in early Jurassic mixed clastic-carbonate depositional environments in Oman. He added that such modeling would ultimately help in drawing a more efficient drilling, production and recovery strategies. To test our hypothesis in this research project, the researchers seek to study the outcropped early Jurassic fluvial to shallow marine mixed clastic-carbonate sequences in specific areas that may act as an analogue for similar subsurface sequences.

Metacognitive Judgments in K-6 Graders

An SQU research team is conducting a study to examine metacognitive judgments: judgments of learning (JOL) and second-order judgments (SOJ). Metacognition concerns one›s own thinking process such as study skills, memory capabilities, and the ability to monitor learning. More specifically, the research work focuses on students' (grades K-6) metacognitive judgments, when students start to perform such judgments of their learning and how these judgments affect learning. Do the students stay overconfident? If they don't, when do they start looking for more evidence to overcome their overconfidence? Dr. Ibrahim Sultan Al Harithi, the team head at the College of Education, says no research has been located that explored these particular questions, adding that it has been found that JOL and SOJ are related to college students' performance. The investigation includes a sample of students who will be engaged in experimental tasks in the psychology lab at SQU.

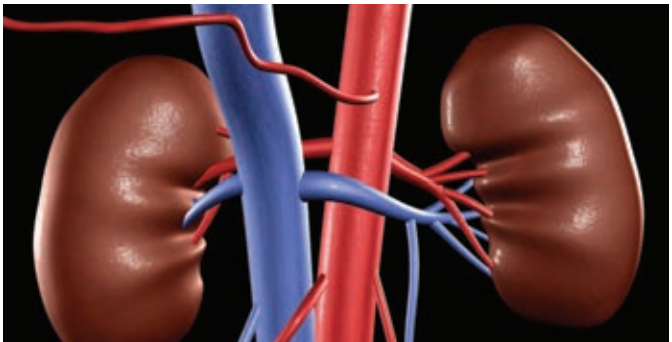
Fitness of Female Athletes Examined

A new study is underway to evaluate the physiological, psychological and fitness status of members of female Omani national teams. The project, conducted by Dr. Hala Ali Mursi at the College of Education, will apply a set of tools including the use of designed tests and measurements. The research will be based on a sample of female athletes in some selected sports namely: track and field, volleyball, basketball, handball, bowling and tennis. A descriptive method will be utilized and the test protocol of power, speed, flexibility, endurance and agility will be analyzed by the statistical package software SPSS. Dr. Hala underlines that her study is the first of its kind to be made on female Omani national teams' athletes, hoping that it will lay a foundation for further research in the future.

Addressing Chronic Kidney Disease

A new study is under way to evaluate the use of specific markers as indicators of disease activity and the stage of chronic kidney disease (CKD) in patients with impaired renal function or kidney transplants, thereby reducing the need to perform invasive and costly renal biopsies. The prevalence of CKD in Oman is comparable to worldwide figures of 10-16% and is on the rise.

The head of the team research says: There has been a steady increase in the number of individuals with end stage renal disease requiring long-term renal replacement therapy such as haemodialysis, CAPD and renal transplant. And along with this is an associated increase in the occurrence of renal neoplasms. The main diagnostic modalities of CKD include measuring serum creatinine levels and estimated glomerular filtration rates. A renal biopsy to look for aetiology and assess the extent of scarring is also employed in many cases, which is an invasive, costly procedure with risk of bleeding and rarely death. Cytokines such as TNF-a, IL-2, IL-6, IL-8 and IL-10 are mediators of inflammation that play an important role in many biological and pathological processes including CKD.



Microscope

Research Platform for Life

Dr Mansour bin Saif Al Manthari

Peoples and nations take pride in their research achievements represented in their scientific discoveries and in innovations which make their life easier. This status is not attained by chance or through luck, but comes as a logical result of continuous and incessant effort in developing a research culture. Since 1970, the Sultanate of Oman has made considerable progress in developing research infrastructures as well as in the Omanization of research activities through SQU and the Research Council. Recent years have witnessed a continuous increase in budgets allocated to research and in the availability of laboratories. Yet an important issue is whether financial support itself is sufficient to create a research environment in the Sultanate

Clearly, the basic requirement for creating a research environment is a researcher who can use his/her scientific skills as a platform for discovery and for raising hypotheses which are tested for the sake of arriving at solutions and proofs. He should not accept without scrutiny what is merely available and familiar.

It is difficult to acquire research skills at an advanced educational stage by writing MA theses or phd dissertations; rather it is best acquired at a much earlier stage, which is why schools and parents should play a major role in shaping a research mentality. Thus, emphasizing infrastructures alone in creating a research culture may not yield the desired results if it is not accompanied by a serious process of fostering this same culture in the minds of pupils in the early school years.

Consequently, I believe that Omanis should become aware of the significance of research values and voluntarily participate in research whenever possible. Schools are the cornerstone of innovation ,so teaching should depend more on comprehension and innovation and less on memorization and mechanical feedback. This is not attained by teaching research as a subject in the curriculum , but by making research a style of teaching, learning, and practice. Simultaneously, evaluation which is only based on memorization and feedback information should gradually diminish and be replaced by an evaluation based on understanding and innovation. This requires a major effort but it is achievable if we succeed in changing the evaluation paradigm.

Research, it must be emphasized, is a life- style which is not created in the final years of university studies, but must, like a seed, be planted at a much earlier stage. I call upon those in charge of research in councils and universities, in cooperation with the Ministry of Education, to direct their attention to young people in their formative years and to inculcate in them the mentality of the discoverer and researcher. Infrastructures and budgets can be allocated to form and encourage conducive research environments in schools. Research development is a difficult task, but it can be achieved through the combined efforts of all sectors of society as they work to make it a life -style and a national obligation for the sake of preserving the achievements of our blessed Renaissance.

Gelatin from Fish Skin
New Technology Introduced

1- Fracture of Hard Gelatin Gel in the Texture Profile Analyzer (TPA)
2- Compression of Plastic Gelatin Gel in in the Texture Profile Analyzer (TPA)
3- Different Types of Fish Skin Gelatin
4- Emperor Fish

A research team, headed by Professor Mohammad Shafiur Rahman, of the Department of Food Science and Nutrition, SQU, has conducted a research project aimed at producing gelatin from fish skin. Gelatin is a biopolymer protein derived from denatured collagen composed of long chains of amino acids connected by peptide bonds. It has very broad applications in the food, pharmaceutical and photographic industries. In recent years, fish skin gelatin has gained importance as the demand for non-bovine and non-porcine gelatin increases. This is mainly motivated by health, religious and social factors. Gelatin can be produced from fish skin, thus contributing to solve the problem of waste disposal from fish processing by developing a value added product. It is estimated that fish processing waste after filleting accounts for approximately 75% of total fish weight and 30% of the waste is in the form of bones and skins containing gelatin.

So far, fish gelatin has known limited applications because the gels formed tend to be less stable and to have worse rheological properties than gelatins from land mammals. Factors affecting gelatin properties and production processes are species, breed, age, manner of feeding the animal and storage conditions of fish. This limitation has been attributed mainly to the low number of proline rich regions of the collagen or gelatin molecule.

Major Challenges

The major challenges in utilizing fish gelatins are the dark color, strong fishy odor, and poor gel and/or film properties, lower glass transition temperature, different characteristics of amide bonds, and inadequate molecular structure for network formulation. Recently, scientists are attempting to develop fish skin gelatin as comparable properties as mammalian sources by applying different pretreatments, and extraction processes.

The research team has carried out a series of studies to develop and characterize the fish skin gelatin. The local fish industry could use the developed technology to produce fish skin gelatin from their waste and commercialize the ingredient in the local and international markets.

Gelatin from fish skin was extracted using acetic acid solution as a function of temperature (4, 20, 50 and 80oC) and concentration. Twelve types of extracted fish skin gelatins were compared with commercial bovine and porcine gelatins. The proximate composition, color and amino

acid profiles were measured. Thermal characteristics, mechanical characteristics of gels, and molecular structure were measured by Differential Scanning Calorimetry, modulated DSC, instrumental Texture Profile Analysis (TPA) and Fourier Transform Infrared analysis, respectively.

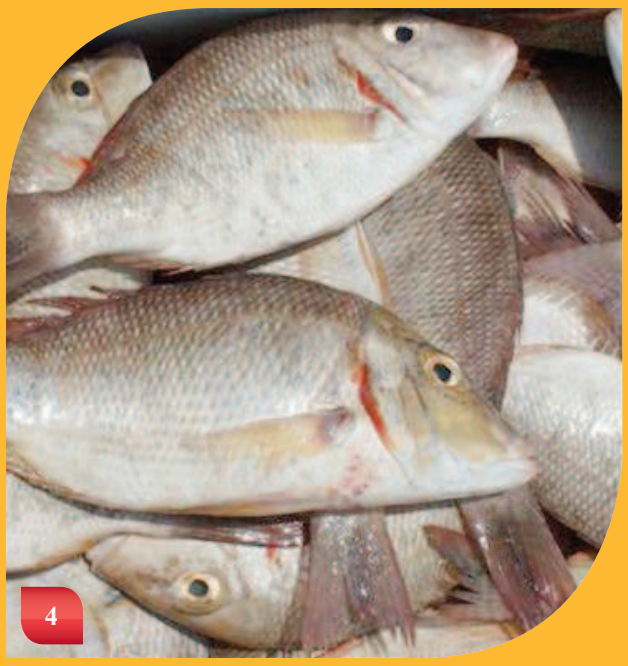
Findings

It was found that extraction temperature and concentration of acid solution affected color of fish skin gelatin. Shaari skin gelatin contained significantly higher content of the amino acids alanine, glycine and threonine, whereas it contained significantly lower amount of hydroxyproline, isoleucine and proline as compared to bovine and porcine gelatins. TPA attributes of 10% concentration of gelatin extracted from grouper fish skin gel showed significant differences from those obtained from 20% and 30% gels. Mechanical characteristics of 10% gels of gelatin from fish skin, determined from one cycle compression, were significantly lower than other sources of gelatin gels. In the case of TPA, hardness of bovine gelatin gel was highest at 41 Newton for 10% gel, followed by porcine (30 Newton) then gelatin gels from fish skin (5 Newton).

State Diagram

A state diagram of gelatin was developed, which would help in better utilization of gelatin for diversified purposes. The state diagram mapped phase boundary by determining the glass transition line, freezing curve, melting curve, un-freezable water content and maximal-freeze-concentration condition. The main advantages of drawing a map are to help in understanding the complex changes that occur when the water content and temperature of gelatin are changed.

Fish skin gelatin with comparable characteristics of mammalian sources gelatin can be produced using appropriate extraction temperature concentration of acid. Enzymes and other treatments could be used to produce fish skin gelatins with varied structural characteristics. Structural characteristics of fish skin gelatin at macro, micro and nano level could be further analyzed using polyacrylamide gel electrophoresis, Atomic Force Microscopy, and Nuclear Magnetic Resonance. Different treatments could also be applied in order to make variations in nano-structure with desired properties.



Hemodynamic Profile in Acute Stroke

A new study is under way at SQU to examine the hemodynamic and cardiovascular autonomic changes among patients with acute stroke using thoracic electrical bioimpedance technology and analyze their relation to stroke type, location and outcome.

Acute stroke is a common and serious life threatening disorder. Up to 80% of patients with acute stroke are known to have hypertension at presentation. High blood pressures (BP) are known to be detrimental in acute stroke. This hypertension may improve spontaneously in a significant number of patients in a few days, while in others aggressive treatment is required. Possible causes of hypertension observed in acute stroke patients are many and poorly understood. Stroke itself may result in damage to important vasomotor control centers resulting in autonomic imbalance.

The researcher Dr. Arunodaya Gujjar, of the College of Medicine, remarks that while some studies have explored the interaction between hypertension observed in the context of acute stroke and outcome, very few studies have examined the influence of other hemodynamic changes on stroke outcome. Knowledge pertaining to hypertension in acute stroke is important to determine when and how to control elevated BP safely, so as to improve outcome, he underlines, adding that present guidelines addressing management of hypertension in acute stroke are largely empirical.

Dr. Gujjar is using the Transthoracic Electrical Bioimpedence method of non-invasively measuring cardiac output, which he defines as fairly comparable in accuracy to other conventional methods of measuring cardiac output. His sample will consist of patients of 18-80 years age presenting with acute stroke syndrome within 96 hours of onset. Those with pulmonary edema, systemic edema and significant hypotension, as well as those in pre-terminal states will be excluded. Baseline neurologic status, blood pressure, NIH Stroke Score and modified Rankin Score will be noted. Nature of stroke will be determined based on clinical picture and brain imaging and stroke sub-type. The study involves placement of four pairs of electrodes on the neck and thorax for inducing an electrical field across the chest and recording serial changes in electrical impedance over time. Stroke volume and cardiac output will be calculated using the modified Kubicek formula. Profiles of hemodynamic and autonomic changes will be compared with type and severity of stroke, outcome and location of infarction.

The academic will try to address the following questions: Are stroke subtypes related to specific patterns of hemodynamic changes? Do hemodynamic changes influence stroke outcome in terms of morbidity and mortality? Do autonomic changes influence stroke outcome? And finally, are the changes in hemodynamics / autonomic functions influenced by stroke location and severity?

Coping with the current market needs

7 Postgraduate Programs Endorsed

For over two decades, the postgraduate programs at SQU have been playing an important role in generating research and building academic capacity in the university and the Sultanate as a whole. Postgraduate programs and excellence in research are inextricably related. The PhD degree is the minimum requirement for joining the academic teaching and research staff at SQU. In 2012, two doctoral programs were approved: one in Arabic Language and the other in Information Studies.

Arabic Language & Literature

The PhD program offered by the Department Arabic Language & Literature is one of the recent achievements made by the College of Arts and Social Sciences. It seeks to produce doctorate holders academically qualified and competent in this field to take up positions in universities, research and educational centers, and ministries so as to conduct research in such fields as manuscript editing and cultural revival. Being a distinct academic program, it attempts to provide the students with the research skills and methods of reasoning so that they can promote the linguistic and literary environment in the country. The four-year program covers a wide range of areas in language and literature fulfilling the needs of students with different academic backgrounds. It is open for full-time students only with Arabic being the language of instructing. The student is required to write a thesis and may take courses if deemed necessary.

Information Studies

The launch of a new PhD program in Information Studies has come as a response to the acute need for qualified specialists who can develop e-government and e-services in the Sultanate and the region. It also meets the growing demands of those who hold Master's in Library and Information Studies, Computer Science, Information Systems, Management and other related disciplines and are keen to obtain higher-level academic education and skills. The program aims to prepare researchers in the area of Information Studies capable of delivering solutions, strategies, decisions, procedure and function analysis, and designing information systems and databases. This could make it possible to maintain collaboration between various organizations and those concerned with national enterprises such as the e-government, e-services, and the effective use of electronic systems and IT applications.

5 Master's Programs

Last year, five Master's programs were inaugurated: International Relations and Security Studies, Sport Sciences, Medical Physics, Chemical and Processing Engineering, and Earth Science, the latter not available this year.

Sport Sciences

In light of the vision and mission articulated by the Department of Physical Education at the College of Education, a Master's program in Sport Sciences was introduced with a view to preparing qualified graduates who would make a significant contribution in different educational sectors in the Sultanate. The program is designed to help students acquire knowledge, generate in-depth critical analyses of the relevant problems, and provide important opportunities for galvanizing their skills in this regard. Arabic is the medium of instructing in the program which is open for both full-time and part-time students. Two options are available: physical & health preparation and sport administration & supervision.

Chemical and Processing Engineering

The government has paid considerable attention to oil refining and gas industries, which underlines the need for chemical engineers and other cadre with the right qualifications and know-how to engage in the operation, maintenance, and management of these industries. In this context, the College of Engineering has initiated a Master's program in Chemical and Processing Engineering in order to supply the local market with qualified chemical engineers and open up opportunities to all students to pursue higher studies in this area. The program aims to provide graduates with research expertise and skills necessary to deal with the local and regional chemical environments and petrochemical, oil and gas industry through engaging with efficient chemical engineers. It also seeks to produce graduates who can deliver expert consultancies and overcome future challenges.

International Relations and Security Studies

The College of Economics and Political Science has launched a Master's program in International Relations and Security Studies to cater for the needs of students and practitioners in the related sectors. It is a rigorous program that provides a platform for disseminating knowledge and training employees in the areas of foreign relations, security, and defense. This program is of high importance given the political, economic, cultural, and security changes the world has seen in the last two decades. It has as its main objective to produce high-caliber graduates with communicative, negotiating and persuasive skills. It is a part-time three-year course that awards a Master's degree with the option of specializing in security studies or international relations.

Petroleum Geoscience

Apart from the major position the Sultanate assumes in the field of oil and gas industry in the Middle East, the country enjoys a world-class geology, unrivalled in the region. Accordingly, the Department of Earth Science has introduced a two-year flexible Master's program in petroleum geoscience. The program covers a wide range of topics such as the petroleum system of the Middle East, reservoir sedimentology & basin analysis, seismic interpretation applications, geological data treatment, stratigraphic reservoir and reservoir structural analysis using outcrop data, as well as the applications of the most sophisticated computer software in oil industry.

Medical Physics

A Master's program in Medical Physics is expected to produce 3-5 efficient medical physicists a year. The idea of establishing a department of medical physics has emerged in light of the needs underlined by the International Atomic Energy Agency (IAEA) team who visited the country in March 2010. There is a lack of specialists who could meet the demands of the health sector. The visiting experts recommended that the country recruit qualified specialists with a master's degree in diagnostic medical physics. In collaboration with the IAEA, the government is offering scholarships to employees with a bachelor's degree to study for a master's in this field.

This venture is the outcome of a joint effort between the medical physics unit in the department of radiology, College of Medicine, the department of physics, SQU, and the medical physics department in the Ministry of Health. It is based on the guidelines of The American Association of Physicists in Medicine (AAPM) and observes the recommendations of the Commission on Accreditation of Medical Physics Educational Programs (CAMPEP).

Research Centers and Generating Knowledge

Dr. Khalid Al-Zarouq

Science has always played an important part in the development of mankind as it ushered in modern life. Definitely, I am not going to be the first not the last to write about the importance of knowledge and research being one way of introducing change and reform for a better future.

Many countries have devoted great attention to education and, particularly, scientific research which have made a significant contribution to the development of their economies. Scientists and the dissemination of knowledge have also been valued, which in turn promoted other fields. On the other hand, there are countries which have not made steady progress. Thus, the gap between them has become wider.

In many countries, the interest in research has been translated into detailed plans and strategies. This has become evident in the large increase in the number of universities, research centers and academic institutions. This investment approach, so to speak, and hard work have had a positive impact and noticeable and effective results in the countries which have harnessed their human and material potentials in order to promote the so-called scientific economy. The challenges facing research efforts in some countries are attributable to factors and hurdles which can only be overcome with enough determination, devotion and will to act.

I strongly believe that the lack of a coherent research policy with well-thought-out priorities and goals as well as problems in funding, disseminating a research culture in the early stages of education, and administrative and bureaucratic structures are all the main reasons why we are falling short of reaching the pinnacle of scientific research. However, we must not give in nor succumb to these obstacles which may impede us from attaining scientific progress. More efforts should be made to find solutions and generate innovative ideas that could enhance scientific efforts and, particularly, research.

Certainly, there is a growing interest from the public and private sectors to increase the number of universities and academic institutions, but no attention has been paid to promoting research centers or scientific efforts. Arab universities in general do not offer doctoral programs in most important disciplines and therefore we have relied heavily on foreign countries that have done well in scientific fields and research.

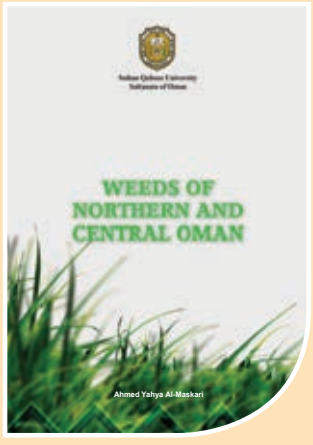
I hope that all educational institutions will harness their capabilities and focus more on scientific research and not confine their efforts to teaching. The development of nations is based on knowledge, planning and strict policies, rather than on ill-conceived or off-hand attempts.

Book at a Glance

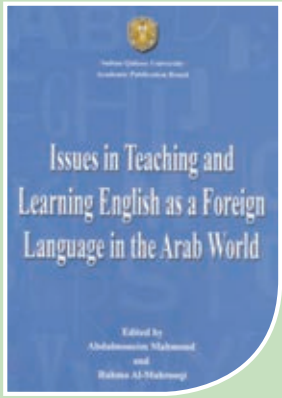
This section introduces the readers with the latest books published by SQU›s Academic Publication Board. It offers a quick summary and reference guide to the topics of the books

Weeds of Northern and Central Oman

This book by Drs. Ahmed Al-Maskari and Mansoor Hameed, is a timely addition to the body of information necessary to understanding weed distribution, and weed identification and control under the arid climate of Oman, and will enable farmers to prepare appropriate strategies to manage and control them. Indigenous knowledge helped identify certain wild plant species, including weeds, as having valuable ecological, economic or medicinal value. This publication is a first comprehensive attempt at bringing together a wide range of information from indigenous knowledge, ethno-botanical, ecological, and economic sources on the weeds of Oman in one volume. It is arranged in alphabetical order by family name, followed by a comprehensive bibliography, and finally by a glossary of botanical and medicinal names. A valuable component of this publication is the colored plant images and hand illustrations of several plant parts, especially inflorescences, flowers, fruits and seeds. The authors managed to compile comprehensive information of great value to students of botany, ethnobotany, allelopathy, and pharmacognosy. Some of the plants featured in this volume, although referred to as weeds, have great potential as medicinal, dye, perfume, cosmetic, and fodder sources. Finally, the information will help agronomists and weed scientists develop new, environmentally-friendly, and effective weed management practices, especially under the traditional and organic cropping systems of Oman.

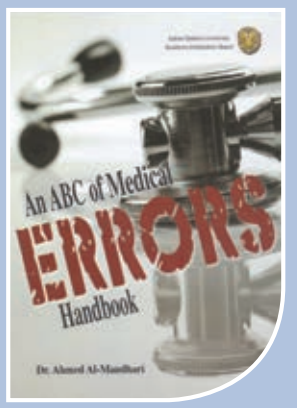


Literature Teaching in the EFL Context



This is a unique book that focuses on how literature can be used in the EFL (English as a Foreign Language) classroom to enhance not only language acquisition but to help students grow and mature morally, socially, and intellectually. It contains twenty different chapters, which are either research based or experience based. Written by Drs. Rahma Al Mahrouqi and Adrian Roscoe, the book is a real reference for all language teachers and everyone interested in language learning and teaching. It provides excellent and creative ideas on how to use literature of all types in the language classroom. Recently the use of literature in the EFL classroom has raised a lot of questions as to the benefits that could be gained. One view suggests that English literature is totally alien to Arab learners and that literary genres use a complicated language, which would make it difficult for learners to acquire the English language. Conversely, advocates of introducing literature in teaching see that it is merely a matter of selecting the kind of literature you want to teach that is important. One can choose what is appropriate to students' culture. Literature broadens the mind and sharpens the intellect, as learners find themselves involved in questioning diverse ideas using different analytic approaches. In this way, students will enrich their linguistic repertoire and get the feel of the language; hence, the significance of this resource book.

An ABC of Medical Errors Handbook



The safety of health care services is one of the essential dimensions of quality. Recently though it has come under scrutiny by health care planners and decisions makers, consumers, and accrediting bodies. This is due to several reasons, such as documented poor levels of quality, and unsafe practices in many health care systems in the world. This has prompted the World Health Organization to introduce instruments for coordinating and disseminating improvements in patient safety worldwide. Now, this important book comes to highlight errors committed by medical practitioners worldwide. Compiled by Dr. Ahmed Bin Mansour Al Munthiri, it provides the best, most current thinking about medical errors and calls for improving the knowledge of all parties involved in health care delivery. A good foundation for this knowledge is defining the meaning of medical error, identifying its various types, causes and contributing factors, and how to propose corrective and preventive action.