Regional Health Genomics and Biotechnology Newsletter

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Genetic disorders' remain viable threat in the Arab world

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Genetic disorders in the Arab world are a legitimate threat, said a doctor who specialises in genomic research.
It is a problem in the region due to the high prevalence of the disorders compared with the rest of the world.

Dr Mahmoud Taleb, president of the Centre for Arab Genomic Studies (CAGS), was speaking at the third Dubai International Conference for Medical Sciences.

"The conference has two aims: First, to present the most recent developments in nephrology, emerging infections, non-invasive surgery and gastrointestinal disorders," said Professor Dr Yousef Abdul Razzaq, chairman of the conference's scientific committee.

"Second, to provide a forum for scientists here to present their research to an international audience."

Dr Taleb said: "Francis Collins, director of the National Human Genome Research Institute, has said that almost every human disease has a genetic basis, from a migraine to cardiovascular disease and breast cancer."

Since CAGS was established in June 2003, 215 genetic disorders have been identified in the UAE and 894 in the Arab world.

"Of these 215 disorders, 178 came from local and international literature and 37 genetic disorders from hospital records not previously reported," Dr Taleb said.

Before the centre was established, international reports had only indicated the presence of 16 types of genetic diseases in the UAE.

The centre is based in the Genetics Department of Al Wasl Hospital.

Dr Taleb said they were now concentrating on extending their data compilation into other Arab countries using the UAE's experience as a model...

Importance of research stressed

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Arab populations suffer from no less than 900 genetic disorders with 35 per cent of those disorders having no known molecular causes, revealed Hamad Abdul Rahman Al Midfa, Minister of Health, while stressing the importance of research.
Al Midfa made these remarks last night at the third awards presentation ceremony of the Shaikh Hamdan bin Rashid Al Maktoum Award for Medical Sciences held at the Convention Centre of the Dubai World Centre. The ceremony was attended by Shaikh Hamdan bin Rashid Al Maktoum, Deputy Ruler of Dubai and UAE Minister of Finance and Industry, and other Shaikhs and dignitaries. The recent developments and breakthroughs in medical field triggered researchers and scientists to face and explain challenges posed by these emerging phenomena. “Two years ago, Shaikh Hamdan, through his kind initiative, called upon researchers to intensify their research and studies in genetic fields. As a result, the Centre for Arab Genomic Studies affiliated to the Award was established. The key stage of the Centre’s plan was to create database on hereditary diseases and cases in the UAE,” said Al Midfa.

It has been found out that there are more than 200 genetic disorders and congenital anomalies in the UAE. Some of these disorders are found among Arab expatriate communities and were not identified in their respective countries. Moreover, congenital anomalies and deformities are responsible for 40.3 per cent of the child mortality rate in the UAE which has dropped to 6.56 / 1000 in year 2000, said Al Midfa...

Department of Medicine in Forefront of Research in Pakistan

http://www.aku.edu/university/publications/Newsletter6.2/dmfrp.htm

The Fourth Annual Research Retreat of AKU's Department of Medicine (DOM) was held in May 2005 in Karachi, where a series of research papers unveiled the ongoing investigational activities of the department. ***Full Story***

Figure 1. Dr Wasim Jafri, Chair of Department of Medicine, addressing the gathering at the Research Retreat.

Iran Second Cloned Sheep

http://www.royaninstitute.org

The sheep was delivered at Royan Institute, ACECR.

Figure 2. DONOR SHEEP

After several months of unsuccessful cloning attempts also involving cows and mice, in both campuses of Royan Institute (Esfahan and Tehran), and the sad death of the first cloned sheep, the second cloned sheep in the middle east was born on Saturday 30 of September 2006, 00:30 am. It was borne in Esfahan Campus, by cesarean section done by specialists.

Figure 3. The First Cloned Lamb

Unlike the first one, which died just five minutes after delivery, this one is safe and sound and now is under veterinary care. The donor of both cloned sheep was the same.

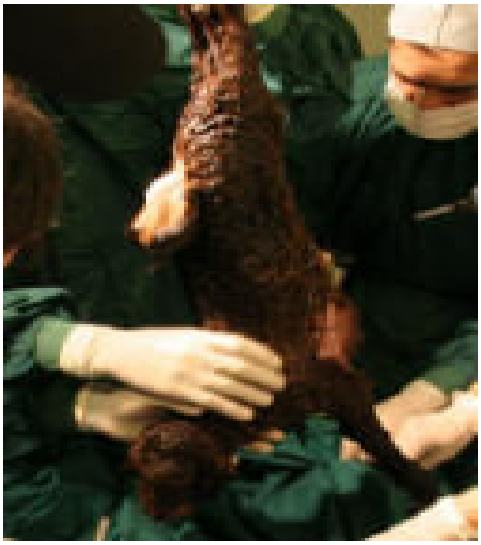

Figure 4. After Delivery

Science in the Muslim world

http://www.nature.com/news/2006/061030/full/444019a.html

Nature
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The war in Iraq, the price of oil, the deadlock over Iran's nuclear ambitions, the terrorism of al-Qaeda and the tensions surrounding immigrant communities in Europe ensure that Islam is rarely far from the headlines. But you would have to be an avid student of Muslim affairs to come across any discussion of science and technology not linked to the development of nuclear weapons.

In this week's issue, *Nature* offers an unprecedented look at the prospects for science and technology in the Muslim world (see 'Islam and Science: The Islamic world'). We have never before collected together such a range of voices and analysis in one issue.

Figure 5. N. ELAWADY

In ignoring Muslim science, the West follows the lead of the Muslim world itself. Low investment and a low profile combine to keep the scientific community small, marginalized and unproductive. This is not simply a matter of underdevelopment; the oil-rich Gulf states invest pitifully in R&D (see 'Islam and Science: Oil rich, science poor'). In our Commentary section, on Islam and Science: Steps towards reform and Islam and science: Where are the new patrons of science?, Nader Fergany, the lead author of the Arab Human Development Reports, and Herwig Schopper, president of the council for the Middle East laboratory SESAME, offer their own critical analyses of what needs to change to allow science to take off in Muslim countries.

The poor scientific track record of Islamic countries might suggest that there is something about Islam inherently inimical to research. Muslims bristle at this idea, pointing to the major achievements of Muslim scholars under the Islamic caliphate (see timeline, ISLAMIC ERA SCIENCE). But what of the present? Our News Feature on Islam and Science: An Islamist revolution looks at the attitudes to science in the various Islamist organizations growing in power in key states ranging from the Occupied Palestinian Territory to Malaysia. The secular regimes and one-party states that have ruled many Muslim countries are being replaced, or directly challenged, by voices calling for a more directly political Islam.

The conditions in which knowledge flowered a millennium ago are hardly those that today's Islamists say they favour. Back then, support for scientific enquiry was matched by an openness to other cultures and sources of knowledge. But when Islamists come to power the picture is more nuanced than it may first appear. Restrictions on freedom of speech and a high level of investment in military technology are distressing to outsiders, but greater attention to higher education is a trend that could offer hope. Mostafa Moin, an Iranian reformer and scientist, lays out his hopes and fears for the future on Islam and Science: Q&A The reformer.

Greater attention to the challenges of the present is sorely needed. Too few Muslim governments collect data on the status of science and innovation (as our analysis on Islam and Science: The data gap shows), and so the problems facing scientists are not even on their agenda. Muslim nations wanting to invest in science as a broad cultural activity need to extract the right lessons from their glorious past and their politically charged present.

Standardization of an ELISA Format for the Detection of *Trichomonas vaginalis* Exo-Antigens in Vaginal Discharge

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http://members.tripod.com/~ejimmunology/previous/jun99/jun99-1.htm

Trichomonas vaginalis exo-antigens was prepared by affinity purification from pooled supernatants of 15 isolated culture stocks with maximum growth in late logarithmic phase. The exoantigen was used for immunization of rabbits to obtain hyperimmune serum (HIS EXO). The serum was used in an enzyme-linked immunosorbent assay for the detection of *Trichomonas vaginalis* exo-antigens (ELISA EXO) in vaginal washout specimens. Checkerboard titration of different dilutions of pooled *T. vaginalis* positive and pooled negative vaginal washout specimens against different dilutions of anti-exoantigen/hyperimmune rabbit revealed that a vaginal washout dilution of 1/32 and an immune serum dilution of 1/200 were optimal for the running ELISA EXO. Amounts as little as 500 pg and 62 pg of somatic- and exo-antigens, respectively, diluted in pooled negative vaginal washout specimen were detected in the assay. This level of sensitivity corresponds approximately to 100-200 trophozoites/0.1 ml of undiluted specimen. None of the vaginal washout specimens obtained from patients complaining of vaginal discharge due to other causes as *Chlamydia*, *Candida*, non specific infections or malignancy reacted positively in ELISA EXO.

Training Tips :

Gene isolation and Cloning

GENE RECOGNITION BASED ON SIMILARITY TO GENES IN OTHER ORGANISMS

http://www.modares.ac.ir/elearning/mnaderi/Genetic%20Engineering%20course%20II/Pages/Lecture3.htm

Given a cloned gene of interest from one organism, a different organism can be screened for a similar sequence as follows:

1. Perform a chromosomal Southern digest and probe with your labelled gene. If one or a small number of fragments shows hybridization, you have reason to be optimistic. If more--something's fishy. If none, try decreasing the stringency of the hybridization conditions or try another approach.
2. Use your probe to screen a library for the hybridizing fragment. Isolate and amplify a clone carrying the hybridizing region.
3. Verify the correctness of the clone by making a selectable mutation in that clone, replacing the chromosomal version with this mutated one, and checking the phenotype.

Structural similarity of gene products from different organisms can also be employed: antibody to a given protein can be used to screen for the presence of a clone synthesizing that protein or an antigenically related one. In this example, of course, the clones need to be screened in a strain incapable of making the antigen by itself, since such a background signal will probably ruin the screen.

The scheme based on nucleic acid hybridization is extremely powerful as it is becoming evident that there is significant conservation of coding sequences (and therefore detectable hybridization) for particular products among widely diverse organisms. This approach is based on the reasonable presumption that similarity at the level of DNA sequence will reflect a similarity of function between the encoded products. Potential problems include: (i). DNA similarity is too low to allow good hybridization or (ii) the two encoded proteins so detected might share a section of similarity (for example, reflecting a ATP-binding domain), but be otherwise completely different.

Historical Perspective:

Genomics as It Enters Its Second Decade

http://www.modares.ac.ir/elearning/mnaderi/Genetic%20Engineering%20course%20II/Pages/Lecture5.htm

Genomics is now 10 years old! This anniversary prompts an evaluation of the history and current objectives of the journal with an eye toward future developments. Genomics was founded by Victor McKusick and Frank Ruddle, who had the foresight to recognize that understanding the organization of the mammalian genome, as exemplified by the genomes of man and mouse, would be an important scientific endeavor for many years to come. The planning for the journal began in 1986 during the exciting discussions and debates that culminated in what is now known as the Human Genome Project; the first issue was published in September 1987.

The name Genomics, which was suggested by Tom Roderick of the Jackson Laboratory, has become synonymous with the study of the organization of all genomes, as well as the use of high-throughput technologies. Through the years, the journal has played an important role in publishing the descriptions of, as well as the results derived from the new technologies for small- and large-scale mapping, sequencing, gene isolation, and characterization. Since mapping and sequencing have become simpler and several databases are available to provide such information, it is time for the journal to redirect its focus. Genomics now encourages comprehensive, full-length papers that provide substantial new and original information about functional studies of genes and genomes (functional genomics), discovery of important new genes, the largescale organization of mouse and human genomes, methods for gene and genome analysis including robotic and high-through-put strategies, disease gene identification, and transgenic and gene modification mouse models.

Genomics has undergone personnel changes. Frank Ruddle has assumed a new position as Chairman of the Advisory Board, and Nancy Jenkins has joined as an Editor-in-Chief. In addition, Neal Copeland will be responsible for periodic special features in the journal. As part of the 10th anniversary celebration, Genomics will publish a series of review articles about topics of interest to its readers, the first of which, by Victor McKusick, appears in this issue. Also in this issue is simplified Information for Authors. These new instructions are also available from the Genomics web site at http://www.academicpress.com/genomics. Included in these instructions is a streamlined format for gene mapping reports. As the field of genomics advances, the criteria for papers considered suitable for Genomics will also change. All papers will receive editorial review and those deemed unsuitable for the journal will be returned without formal review. We are applying the highest standards of merit for determining which papers are suitable for Genomics, and we are striving to reduce the time needed for review and publication. We look forward to the future and believe that with new policies and personnel, Genomics will move into its second decade with renewed vigor, excitement, and optimism.

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