O friend, for the morrow let us not worry
This moment we have now, let us not hurry
When our time comes, we shall not tarry
With seven thousand-year-olds, our burden carry.

Meaning:
O hark, let us not think of the morrow
Cherish this moment, far from sorrow
Life is a temporal gift that we borrow
Whether dead for ages, or leave tomorrow.

Omar Khayyam (1048- 1123 CE)

Research Projects in Royan Institute

Projects on Process:
1- Reconstruction of Maxillofacial Defects with Stem Cell Enriched Scafold
2- In Vitro Maturation of Immature Oocytes for Prevention of OHSS in Patients with Repeated OHSS

Finished Projects:
Study of Relationship between Protamine Deficiency & Pronucleous Morphology
Induction of Cycle Synchronization of Sheep Somatic Cells in Vitro Effect of Dehydroepiandrosterone (DHEA) on Neuronal Defferentation of Embryonic Carcinoma Cell Line P19

An Amazing Trip
I have had the lucky opportunity to pay three visits to Iran in the recent past, twice at the Royan Institute in Tehran and once at Yazd University in central Iran. It has been a very beautiful surprise to discover a country where the charm of several ancient civilizations blend nicely with a fast moving modern world.

Like many other colleagues from Europe and USA, I felt initially uneasy being influenced by western newspapers which often describe the country as dangerous and unfriendly to Westerners. A very short time was sufficient to feel comfortable everywhere also when I moved unaccompanied by my friendly guests.

The Congress at the Royan Institute were well organized and most lectures were of high scientific standard, appropriate time was available for discussion both during the official session and outside of them providing the opportunity to establish fruitful contacts, some of them still lasting several years later.

I was very much impressed by the great progress I have seen everywhere, not only in the scientific environment but also in protecting the artistic heritage of the country and in several other fields (except may be air pollution in Tehran).

This is not surprising having in mind the history of Iran and in view of the huge contribution of the Islamic civilization to mankind, which is often forgotten.

Paper was brought to Europe by Muslims who had encountered it in central Asia.

As remarked by Alfred von Kremer in his “Kulturgeschichte des Orients” “From a cultural and historical point of view the reduction in the cost of writing material, which went hand in hand with the production of paper, was of great importance. Books on parchment or papyrus were so expensive that they were available to few. By the production of a cheap writing material, and its supply to markets both east and west, the Islamic civilization made learning accessible to all. It ceased to be the privilege of only one class, initiating that blossoming of mental activity that burst the chains of fanaticism, superstition and despotism. So started a new era of civilization. The one we live in now.”
Over the past few years, there has been a growing interest in discovering the molecular mechanisms controlling embryonic stem cells’ (ESCs) proliferation and differentiation. Proteome analysis has proven to be an effective approach to comprehensively unravel the regulatory network of differentiation. We applied a two-dimensional electrophoresis based proteomic approach followed by mass spectrometry to analyze the proteome of two mouse ESC lines, Royan B1 and D3, at 0, 6, and 16 days after differentiation initiation. Out of 97 ESC-associated proteins commonly expressed in two ESC lines, 72 proteins were identified using MALDI TOF-TOF mass spectrometry analysis. The expression pattern of four down-regulated proteins including Hspd1, Hspa8, beta-Actin, and Tpt1 were further confirmed by Western blot and immunofluorescence analyses in Royan B1 and D3 as well as two other mouse ESC lines, Royan C1 and Royan C4. Differential mRNA expression analysis of 20 genes using quantitative real-time reverse transcription PCR revealed a low correlation between mRNA and protein levels during differentiation. We also observed that the mRNA level of Tpt1 increased significantly in differentiating cells, whereas its protein level decreased. Several novel ESC-associated proteins have been presented in this study which warrants further investigation with respect to the etiology of sternness.

**OBJECTIVE:** To determine whether laser-assisted hatching can improve clinical outcome of assisted reproductive techniques in patients with advanced female age, with recurrent implantation failure, or who are using frozen-thawed embryos.

**DESIGN:** A prospective randomized study.

**SETTING:** The infertility and IVF unit at a research facility in Iran.

**PATIENT(S):** Four hundred ten patients with advanced female age (>=37 y), 796 patients with recurrent implantation failure (for >=2 cycles), and 180 patients with frozen-thawed embryos.

**INTERVENTION(S):** Patients were divided equally into test and control groups. On the day of embryo transfer, the zona pellucida of the selected embryos in the test group were opened about 40 mum by using an infrared optical laser system, whereas in the control group they were all intact.

**MAIN OUTCOME MEASURE(S):** Clinical pregnancy rates and implantation rates.

**RESULT(S):** In the patients with advanced female age or recurrent implantation failure, the clinical pregnancy and implantation rates were similar for the test and control groups. However, in the patients with frozen-thawed embryos, the rates were statistically significantly higher in the test group as compared with those of the control group (31.2% and 12.8% vs. 11.1% and 4.2%, respectively).

**CONCLUSION(S):** The laser-assisted hatching improved the pregnancy and implantation rates in patients with frozen-thawed embryos but had no effect in patients with advanced female age or recurrent implantation failure.

**OBJECTIVE:** To investigate the structure of epithelial cells from the human oviduct and uterus subcultured on extracellular matrix gel.

**STUDY DESIGN:** Human oviducts and endometrial tissues were obtained from patients undergoing total hysterectomy; the epithelial cells, having been isolated by enzyme digestion, were cultured on polystyrene plastic surfaces. The epithelial nature of the cells was confirmed by immunocytochemistry, and their morphology was examined by microscopy. Cells of an epithelial nature were then trypsinized and cultured on an ECM gel-coated filter insert for 5 days. The cells, in parallel with the tissues, were subsequently prepared for transmission electron microscopy.

**RESULTS:** Plastic-cultured cells had no sign of differentiation and appeared as elongated spindle cells in sections. These cells looked columnar and highly polarized after being cultured on ECM gel surfaces. They were similar to epithelial cells from the corresponding tissue fragment. Cultured on ECM gel, the ciliated epithelial cells of human oviducts appeared ultrastructurally similar to glandular cells from the human uterus. Cilia did not form under culture conditions.

**CONCLUSIONS:** It seems that human uterine and oviduct epithelial cells can acquire polarized morphology and differentiated states on ECM gel after having lost it on plastic surfaces and that ECM gel by itself is not enough to induce cilia formation in culture.
### Education in Royan Institute

**Educated Persons in Royan Institute**

**Department of Gyn. & Obs. From 1997 till End of 2007**

<table>
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<th>6–8 Months</th>
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**Department of Embryology- From 1997 till End of 2007**

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### First Step Taken To Create Cystic Fibrosis Model Using Pigs

*ScienceDaily* (Mar. 10, 2008) — Cystic fibrosis is the most common genetic disease in Caucasians. The median lifespan for those with the disease is 36 years, and lung disease is the major cause of mortality. For years, scientists have studied cystic fibrosis using mice in which the cystic fibrosis gene was altered. However, mice do not develop lung disease like humans with cystic fibrosis. Now, researchers at the University of Missouri and the University of Iowa have taken the first step in developing a porcine cystic fibrosis model that may more faithfully mimic the disease in humans.

“When you make the same genetic mutations in mice that people have, mice don’t get the lung disease that’s associated with cystic fibrosis, so no model currently exists to research lung disease caused by cystic fibrosis,” said Randy Prather, distinguished professor of reproductive biotechnology in the MU College of Agriculture, Food and Natural Resources.

“Compared to mice, pigs may be a good model for human genetic diseases because their anatomy, biochemistry, physiology, size and genetics are more similar to those of humans.

More: [http://www.sciencedaily.com/releases/2008/03/080306202726.htm](http://www.sciencedaily.com/releases/2008/03/080306202726.htm)

### Invited Speakers in 9th Royan International Research Congress

27-29 Aug 2008 - Tehran - IRAN

Safa Al-Hasani (Germany)
Ashok Agarwal (USA)
Yakoub Khalaf (UK)
Helen Mardon (UK)
Benkhalifa Moncef (France)
Mohammad E Hammadeh (Germany)
Piero Anversa (USA)
Fabio Firmbach Pasquallocatto (Brazil)
Stephen Hillier (UK)
Thomas Ebner (Austria)
Lei Xiao (China)
Anastasia Ussia (Italy)

Wei Cui (UK)
Petra Thorn (Germany)
Hossein Hosseinkhani (USA)
Ali Honaramooz (Canada)
Shinichi Nishikawa (Japan)
Katarina Le Blanc (Sweden)
Ali Khademhosseini (USA)
Toru Nakano (Japan)
Gerald de Haan (Netherlands)
Konrad Hochedlinger (USA)
Oliver Brüstle (Germany)
Lois Salamonsen (Australia)
Bjorn J. Oback (New Zealand)
Roya Rozati (India)

### History of Iran

**Ecbatana (Old Persian)**

Hagmatana, written Agbatana in Aeschylus, Agamatanu by Nabonidos, and Agamatanu at Behistun (literally: the place of gathering) is supposed to be the capital of Astyages (Istuegū), which was taken by the Persian emperor Cyrus the Great in the sixth year of Nabonidos (549 BC).

Golden Rhyton from Ecbatana, Tehran National Museum

The Greeks supposed it to be the capital of Media, and ascribed its foundation to Deioces (the Daiukku of the cuneiform inscriptions), who is said to have surrounded his palace in it with seven concentric walls of different colours.

So far no evidence of Median existence in Hagmatana hill has been attested. Only evidence observed in the area belong to the Parthian era afterwards. There is no mention of Hagmatana/Ecbatana in Assyrian sources at all. Some scholars have suggested the Sagbita/ Sagbat frequently mentioned in Assyrian texts in fact has been an earlier form of the Ecbatana/Hagmatana mentioned in later Greek and Achaemenid sources, as Indo-Iranian /s/ turned into /h/ in many Iranian languages. Sagbita mentioned by Assyrian sources was located in proximity of cities of Kishesim (Kar-Nergal) and Harhar (Kar-Sharrukin) [2][3].
Golden Rhyton from Iran’s Achaemenid period, excavated at Ecbatana. Kept at National Museum of Iran. Under the Persian kings, Ecbatana, situated at the foot of Mount Elvend, became a summer residence. Later, it became the capital of the Parthian kings.

Sir Henry Rawlinson attempted to prove that there was a second and older Ecbatana in Media Atropatene on the site of the modern Takht-i-Suleiman, but the cuneiform texts imply that there was only one city of the name, and Takht-i Suleiman is the Gazaca of classical geography. Ecbatana was the main mint of the Parthians, it produced drachm, tetradrachm, and assorted bronze denominations. It is also mentioned in the Bible. Ecbatana/Hamadan (Iran) is not to be confused with Ecbatana/Hamath (Syria) where Cambyses II is supposed to have died according to Herodotus.

Ecbatana By: Jona Lendering

In old Persian Hâgmatâna, ‘meeting place’:
capital of the ancient Median empire, Hamadân in modern Iran. According to the Histories of the Greek researcher Herodotus of Halicarnassus, Ecbatana was founded by Deioces, the legendary first king of the Medes.

He writes: Deioces bade them build for him a palace worthy of the royal dignity and strengthen him with a guard of spearmen. And the Medes did so: for they built him a large and strong palace in that part of the land which he told them [...]. He built large and strong walls, those which are now called Ecbatana, standing in circles one within the other. And this wall is so contrived that one circle is higher than the next by the height of the battlements alone. And to some extent, I suppose, the nature of the ground, seeing that it is on a hill, assists towards this end; but much more was it produced by art, since the circles are in all seven in number. And within the last circle are the royal palace and the treasure-houses. The largest of these walls is in size about equal to the circuit of the wall round Athens; and of the first circle the battlements are white, of the second black, of the third crimson, of the fourth blue, of the fifth red: thus are the battlements of all the circles colored with various tints, and the two last have their battlements one of them overlaid with silver and the other with gold. These walls then Deioces built for himself and round his own palace, and the people he commanded to dwell round about the wall.

[Herodotus, Histories 1.98-99]

This is clearly a fantastic description, but it may contain an element of truth: the seven walls may in fact be a ziggurat, a kind of multi-storied temple tower that was common in the ancient Near East. This explanation, however, is far from certain. Only archaeology will be able to offer a reliable description of ancient Ecbatana, but since the site is currently overbuilt by modern Hamadân, it is not likely that this will happen in the foreseeable future.

The Greek historian Polybius of Megalopolis offers probably the best available description of the city (World history 10.27.5-13). He writes that the city was richer and more beautiful than all other cities in the world; although it had no town wall, the citadel had impressive fortifications. This confirms Herodotus’ words that the Medes were ‘to dwell round about the wall’, but Polybius offers more plausible dimensions: the circumference of the citadel was 1,300 meters. He also states that the builders used cedar and cypress wood, which was covered with silver and gold. The roof tiles, columns and ceilings were also plated with silver and gold. This sounds like a credible description of an oriental palace, like Persepolis.


8th International Symposium on Preimplantation Genetic Diagnosis
Sponsor: Preimplantation Genetic Diagnosis International Society (PGDIS)
April 23-6, 2008 , Barcelona, SPAIN

14th International Conference on Prenatal Diagnosis
Sponsor: International Society for Prenatal Diagnosis
June 1-4, 2008 - Vancouver, CANADA

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