

# FRONTIER



ISSUE 5 YEAR 2010



KOÇ UNIVERSITY'S RESEARCH MAGAZINE

R&D at Koç University:  
**New Horizons**



As our readers know, the main purpose of Frontier magazine is to help inform the general public about research activities and facilities at Koç University and to promote collaborative research. Since 2006, the magazine has ably served that purpose. In the spring of 2010, the magazine's new editorial board was assembled and asked to begin working on the next issue. With the Vice President for Research and Development (VPRD) Office's encouragement, we examined all aspects of the magazine, including content, format, and style, with an eye towards improving the publication.

While our main goal remains the same, we wanted the magazine to be more appealing and accessible. To that end, the magazine has several new features. We reorganized the magazine into sections that focus on different aspects of the KU research enterprise:

**News** gives a brief overview of important research activities and events, for example, the establishment of new research centers, recently published books, conferences, and the election of KU faculty to scientific boards.

**Perspectives** discusses the broad vision of particularly creative and successful individuals. This edition's section is devoted to our new President, Umran İnan.

**Profile** introduces readers to interesting faculty, student, and alumni members of the KU research community. Here, we profile two faculty members; economist Erhan Artuç and engineer Demircan Canadınç, both of whom received Turkish Academy of Science's Young Scientist Awards this year, and scholar-musician Evren Kutlay Baydar. The Director of Economic Research Forum, Sumru Altuğ, is also

giving information about the forum and their future plans.

**Spotlight** highlights new and innovative research and development projects. In this edition, Seda Ertaç writes about her experimental research that tries to uncover whether women are innately less competitive than men. The Chemical and Biological Engineering Department's Halil Kavaklı talks about the meaning of time for a cell and his research on the biological clock and Barış Coşkunüzler discusses his work on geometric topology and the idealism of mathematicians. Director Scott Redford brings you up-to-date on developments at the Research Center for Anatolian Civilizations. We also highlight the research center activities of the Center for Gender Studies and Surface Science & Technology Center.

**Outreach** details KU activities to promote relations with public and private institutions and organizations. Here we draw attention to our summer research programs for high school and undergraduate students and present three exemplar projects conducted during the summer of 2009 by the Engineering, Sciences, and Social Sciences and Humanities colleges. The VPRD Office which was founded to significantly increase externally sponsored research is also introduced in this section.

Together with our publisher, we have given the magazine a more streamlined look that we think is more visually attractive. We hope that you find the redesigned magazine interesting and enjoyable reading.

Editorial Board  
Frontier Magazine

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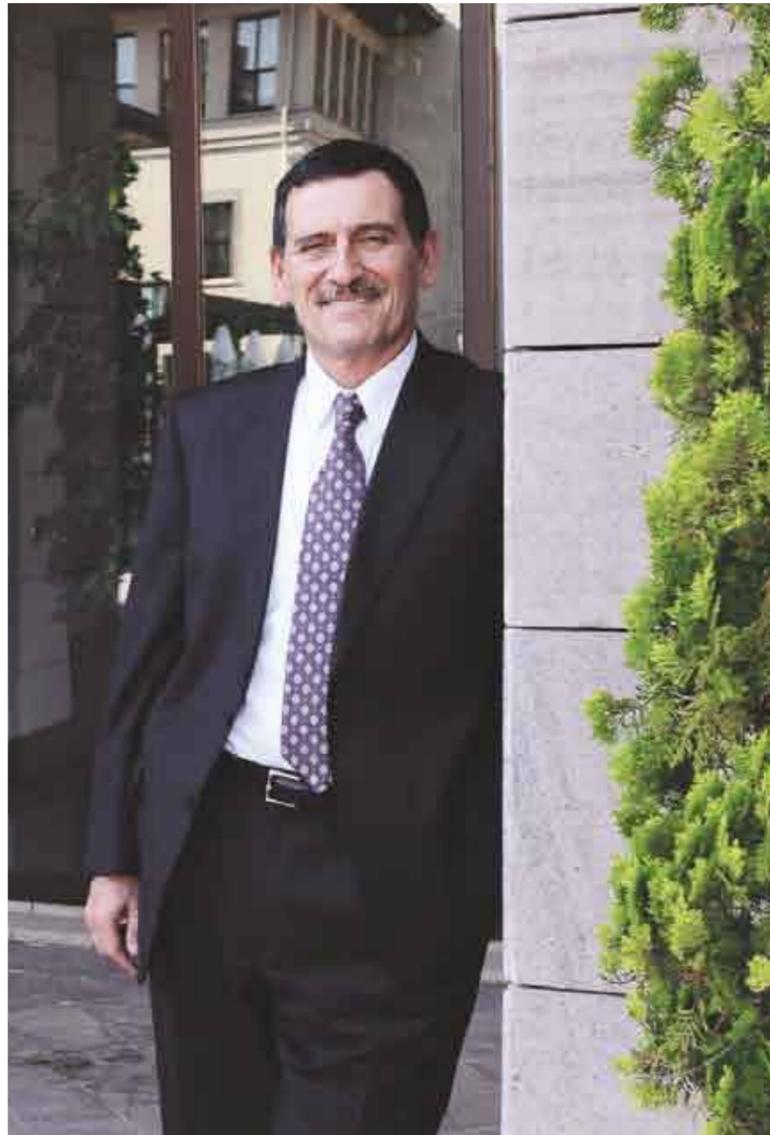
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# University-Industry Relationship and Innovation

■ **Umran İnan** President, Koç University

The quality of the faculty and students of the university is the most important resource for the industry that partners with it.



The mission of a university is to shape young minds, to educate them as individuals that can contribute to society, while at the same time generating knowledge, and disseminating the knowledge and its applications for the benefit of society. Universities should not be providing vocational education that is useful for industry, but should rather be concentrating on broad-based education focused on fundamentals. In this way, the students are taught to learn rather than being taught specific material, and are prepared for life after school as individuals who can question, investigate and evaluate on their own.

The general mission of industry is to design and produce products and services to improve the quality of life and in doing so to maintain and constantly improve a high standard of efficiency of production as well as the quality of products and services. For this purpose, institutions should select their employees from the widest possible pools, should continuously educate and develop them, should not be content with short-term goals, and should formulate mid- to long-term visions and targets. An important requirement of such long-range missions should be to invest serious resources in Research & Development (R&D).

Since employees are the most important resource for any organization, contributing to the well-being and excellence of universities should be the selfish duty of industry. At the same time, existence of a current and lively industry is important for the selfish benefit of universities. In this connection, student scholarships and different types of partnerships, correctly formulated educational partnerships (BS, MS, PhD), and real-time distant education programs can be win-win relationships.

The concept of R&D has to be correctly understood in the context of university-industry relationships. The simplest partnerships may involve development ('D') rather than R&D with faculty working on short term projects as consultants. In the same context, employees from industry could be enrolled in their Masters or PhD degree studies at the university. Such educationally-based collaborations may be complemented and enriched with information exchanges with joint seminars, publications and student summer practices.

The most important university-industry relationships are those R&D programs which involve mutual support of each others mission. In this context, it is very important that R&D is not just 'D'. Real R&D relationships can produce scientific publications for the university as well as results for the industry. Ideas and applications that would truly provide new impetus for industry and society can only be realized in the context of R&D studies involving substantially 'R' rather than 'D'.

What needs to be known about R&D problem types and university-industry relationships, but what is often not realized, is the difference between known unknowns and the unknown unknowns. The list of R&D problems that industry has may be short, mid- or long-term. These known problem lists may be matched with expertise and knowledge at the university to formulate extremely useful partnerships.

Since employees are the most important resource for any organization, contributing to the well-being and excellence of universities should be the selfish duty of industry.

The pursuit of the unknown unknowns is generally much more difficult. In every field there can be such developments that would be entirely unexpected, which can often be the difference between success or not for industry. These problems usually cannot be seen from inside the box of R&D divisions of industry. The only way to capture these unknowns is to formulate long term visions and unusual university-industry relationships.

Most important in this context is for university and industry to not have a mentality of taking advantage of one another, but instead to formulate partnerships that support one another in the long term. University faculty should not be viewed as desperate people with no alternatives who are in search of work and projects. Good quality faculty is already engaged in many projects, so the challenge for the industry is to be creative and supportive to attract their attention. The time of university faculty and students is valuable, and R&D projects should support this time, as well as infrastructure and operational costs of their projects.

R&D projects that pursue known unknowns are supported by industry, and results are published and reported. The intellectual property originating in such work should be owned by the university but the industry can cover the patent application costs and may have exclusive license to use the invention. The licensing royalty would be determined based on the particular application and the university

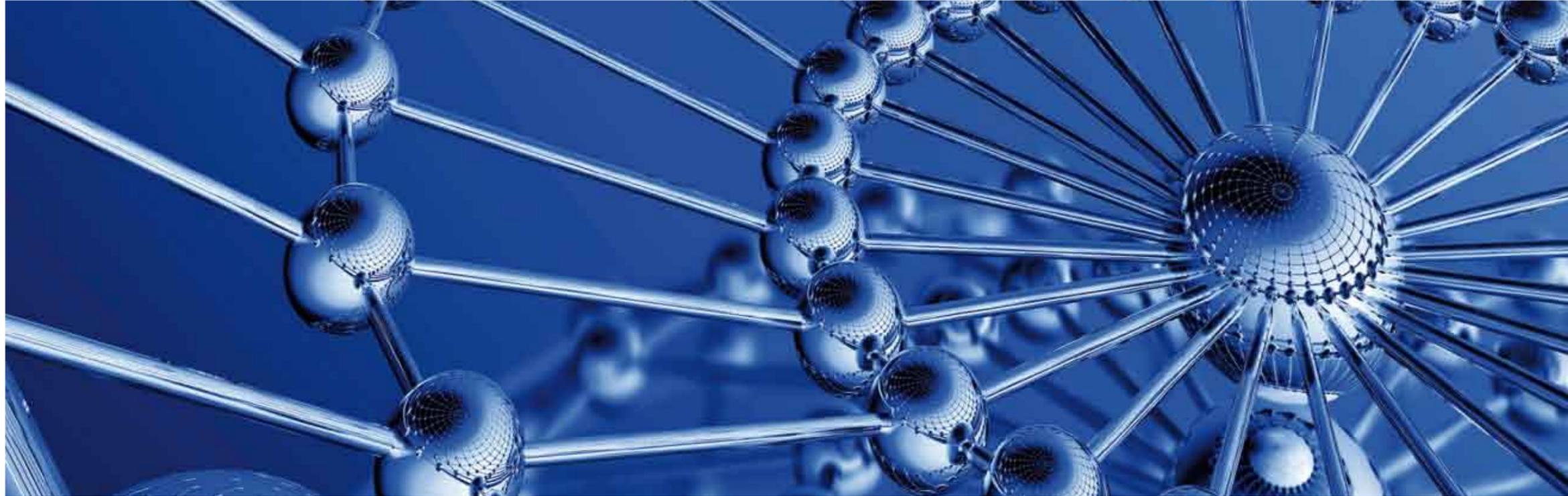
would determine how to distribute the royalty income, between the inventor, department, and R&D units.

For the pursuit of the unknown unknowns, a method that has been repeatedly used in United States is for the industry to establish seed research funding at the university. Research opportunities can then be announced under broad areas, asking for proposals from relevant faculty. These completely out-of-the-box proposals are then evaluated by a panel including people from university and industry, who pick projects for funding. Many of these projects would lead to interesting publications, and Master's & PhD theses, but one or two of them would produce those results that would make the difference between success or not for the industry. The intellectual property originating in these works can be handled in the same way.

In summary, the quality of the faculty and students of the university is the most important resource for the industry that partners with it. At the same time, industry is the only conduit by which the university can translate its research results to useful applications. University-industry relations must thus be formulated in a constructive manner that supports both institutions in the long term. Short term 'D' projects should be developed together with mid-term R&D projects. The only way to capture unknown unknowns is largely by means of 'R' projects and seed research support mechanisms.

# R&D at Koç University: New Horizons

The Vice President for Research and Development Office (VPRD Office) has been founded to significantly increase externally sponsored research and strengthen our university's position in sponsored research. An interview with Vice President for Research and Development İrşadi Aksun and Associate Vice President for Research Development Ebru Tan...



VPRD Office develops and administers strategic partnerships with external parties in the form of research and other projects and programs.

**Could you tell us the story of how the VPRD Office (Office of the Vice President for Research and Development) was founded? What are the Office's mission and vision? Can you give us information on the organizational structure?**

Our new president, Umran İnan, appointed İrşadi Aksun as Vice President for Research and Development right after he started his term. The VPRD Office was founded to significantly increase externally sponsored research and strengthen our university's position in sponsored research. With the appointment of

Ebru Tan as Associate Vice President for Research, the Office expanded to include grants specialists and administrative assistant. The Office serves the faculty with a full range of central administration services across the entire life-cycle of the award (pre-award and post-award).

VPRD Office develops and administers strategic partnerships with external parties in the form of research and other projects and programs. The Office builds long-term sustainable relations with

corporate partners, funding bodies and government departments and provides the interface between external parties and faculty to serve the university's research and development strategy.

**What are the main objectives of the VPRD Office?**

The main goal of the Office is to expand externally sponsored research significantly. The Office manages strategic relationships with funding bodies for his purpose. It supports the faculty in project proposals, and aims

to increase the number of sponsored projects through these endeavors. The Office had arranged top level meetings with funding bodies and matched the project needs with respective faculty members for possible projects.

**Which institutions and organizations is VPRD Office in collaboration with?**

The Office has determined a relationship management and business development strategy to significantly increase the sponsored research by government and private sector. The following institutions

have been visited for collaboration purposes: Aksa, Arçelik, Armerkom, Aselsan, Central Bank of the Republic of Turkey, Coca Cola, State Planning Organization, Eczacıbaşı Holding, Eczacıbaşı İpek Kağıt, Ford Otosan, Global Bilgi, IBM, Pos AŞ, Information and Communications Technology Authority, İstanbul Chamber of Industry, Katron, Koç Holding, Koç Sistem, Migros, Mechanical and Chemical Industry Corporation, MV Holding, Netaş, Prime Ministry Privatization Administration, RMK Marine, Sanofi Aventis, Tanı

Pazarlama, Tat, Tofaş, Trade Council for Shopping Centers and Retailers, TÜBİTAK, Tüpraş, Turkcell, Türk Telekom, Undersecretariat for Defense Industries and Yapı Kredi Bank. VPRD Office attended the Sinerjiturk Defense Conference 2010 with two faculty members. It also arranged the Dean of Engineering's participation to the Sinerjiturk Telecommunication and Information Technology 2010 Conference.

Koç University has signed research collaboration agreements with:

VPRD Office has determined a relationship management and business development strategy to significantly increase the sponsored research by government and private sector.



Grants Specialist Gizem Öztimur Toprak, Associate Vice President for Research and Development Ebru Tan, Vice President for Research and Development İrşadi Aksun, Administrative Assistant to VPRD Aşkım Demiryürek, Grants Financial Specialist Meltem İşanlar.



Dr. İrşadi Aksun started his academic career in Bilkent University and he worked there between 1992 and 2001. Dr. Aksun joined Koç University as a “Professor” in the Electrical and Electronics Engineering Department in 2001 and served as the Engineering Faculty Dean between 2004 - 2009 at Koç University. He has been serving as the Vice President for Research and Development since September 2009. İrşadi Aksun received a “TÜBİTAK Incentive Award” in 1994 and “The Best Professor Award” given annually by students votes at Bilkent University. He also received the “TÜBİTAK Science Award” in 2007.

- Information and Communications Technology Authority
- Koç Holding Energy Group Companies
- Mechanical and Chemical Industry Corporation

**Please give us information about the team and the team members working in this Office?**

Gizem Öztimur Toprak works as Grants Specialist, Meltem İşanlar works as Grants Financial Specialist, Aşkım Demiryürek works as Administrative Assistant to Vice President for Research and Development. Meltem İşanlar and Gizem Öztimur Toprak are experts in their field, and experienced in European Commission grants.

Grant Specialist Gizem Öztimur Toprak completed her undergraduate education at Istanbul University, Faculty of Economics and has a master's degree in Public Economics from there. Before joining Koç University, she worked in various economic and social development projects supported by the European Commission and other national and international agencies. Gizem Öztimur Toprak has solid experience in project proposal development,

implementation and evaluation stages. She also had extensive training in these subjects. In 2009, she completed her second masters in International Social Policy Analysis at Katholieke Leuven University, Belgium.

Grants Financial Specialist Meltem İşanlar has completed her undergraduate study in Business Management at Ithaca College, USA, in 1988. She has worked for different organizations in Canada, Turkey and United Kingdom before joining the Turkish Economic and Social History Foundation as a Project Finance Specialist for projects funded by EU and various national and international organizations. She also worked as consultant and trainer on EU projects for Non-Profit Organizations.

**What kind of support does the VPRD Office offer to the faculty members and research programs?**

VPRD Office provides support across the entire life-cycle of the award, and administers the sponsored projects. Services are given for both pre- and post-award period. Pre-award services can be summarized as follows: Grants specialist works closely with faculty members to

identify potential funding sources, review and assist in preparation of proposals and negotiations with sponsors. Grants financial specialist works with faculty members to ensure accurate accounting of income and expenditures on sponsored projects, completes and submits financial reporting required by sponsors and assists with reconciliation and closeout.

After a funding agency's approval of the project application, our project specialist Gizem Öztimur Toprak starts work on identifying funding sources for research projects, matching these sources with faculty members, facilitating project preparation, reviewing the proposals and working in coordination with relevant units from TÜBİTAK as well as assisting researchers to submit the proposal. In addition to the support she gives to the faculty members, she provides legal advice service for grant agreements, patents and other intellectual property related issues by consulting our legal advisors.

Grants Financial Specialist Meltem İşanlar is responsible for the financial side of the projects. She assists

the researcher, from the beginning of the project application, starting with the preparation of the proposal budget, continuing with the interim and final financial reports, according to the requirements of the sponsors. İşanlar ensures accurate accounting of income and expenditures and financial reporting of the projects in liaison with the Office of the Comptroller. She also assists with reconciliation and closeouts of the projects.

**How, do you think, will this Office contribute to Turkey, to Koç University and faculty members and industry in the long run?**

We strongly believe that our Office will contribute to the realization of the much talked about university-industry collaboration in Turkey which has not been effectively realized in the past due to mutual agreement on issues and economic situation in Turkey. We aim to facilitate and lead the transfer of research into commercial applications and find solutions to industry's medium and long term research problems. Our goal is to contribute to Turkey's much deserved position in technologically advanced countries by our leadership and facilitation.



Ebru Tan is the Associate Vice President for Research and Development at Koç University since 2009. She served as Corporate Relations Coordinator for Koç University between March 2002 and October 2009. She worked in the Finance sector in corporate marketing area before joining Koç University.

# Spotlight on Koç University's Research Center for Anatolian Civilizations

**Scott Redford** RCAC Director,  
Assoc. Prof. of Archaeology and History of Art, Koç University

Koç University's advanced research center for archaeology, history, and art history of Turkey, RCAC hosts 25 junior and senior scholars from around the globe every year. In this article, RCAC Director Scott Redford describes the events of the last year.

Anatolia has been known over the ages for its minerals and metals. This resource is utilized in many Anatolian civilizations, from the first electrum coinage of the Lydians in Western Anatolia to the massive copper cauldrons of the Urartians in Eastern Anatolia, from Hittite copper standards through Ottoman mosque finials.

This past year's fellows at Koç University's Research Center for Anatolian Civilizations (RCAC) heard Vulcan's hammer often, and must have bemoaned their own close connection between metal and art, as the piledrivers, welders, and others forged ahead with work on the last building of the RCAC's three building complex on Istiklal Caddesi in Istanbul's Beyoğlu district. The RCAC's two

other buildings, one a residential block for RCAC fellows, the other housing dining and library facilities, have been completed for four years now. Last winter, workers installed the steel girders necessary to make the third building, an historic building known as the Merkez Han, earthquake-resistant. This marked an important step in the completion of the RCAC, scheduled for the early fall of 2010.

When all construction halts, Koç University will not only have a dedicated residential facility for scholars (25 fellows a year: both advanced graduate students as well as PhD holders) researching the history, art history, and archaeology of Turkey's past with a 130 person auditorium for public lectures, it will

also have classrooms and a seminar room for smaller, more specialized scholarly meetings, a new library and a new gallery space that opens off Istiklal caddesi, and will be used for exhibitions relating to the past of Anatolia. In addition, quite literally crowning the whole enterprise, a spectacular new Koç University Alumni Association restaurant and bar will open. This two-story facility, atop the RCAC's Merkez Hanı building, will have jaw-dropping views of the Bosphorus, the skyline of the historic peninsula, and the Sea of Marmara. Those jaws, once dropped, should be filled with good conversation, food, and drink from the full-service restaurant and bar.

## Academic Agenda

While a great deal of time was spent

on construction planning, we at the RCAC were also busy with many other projects this past academic year. I convened the fourth annual RCAC symposium, on the first weekend in December of 2009. It was entitled "Cities and Citadels in Turkey". Fifteen speakers from three continents gave papers on the relationship between cities and citadels in Turkey, beginning in the Iron Age and ending with the rebuilding of Istanbul under Ottoman sultan Mehmed the Conqueror. Speakers adopted various approaches, dealing with ceremony, inscriptions, relief decoration on citadel walls, and other topics and methodologies to examine how citadels, centers of governance and power, are both part of and distinct from the cities they rule.

The proceedings of this symposium, like all RCAC annual symposia before it, will be published: in English by Peeters Press in Leuven, Belgium, and

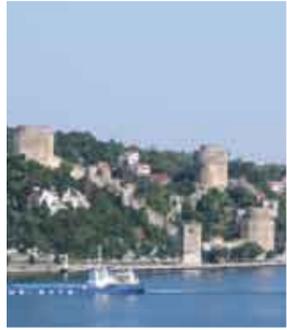
in Turkish by the newly established Koç University Press here in Istanbul. The Turkish version of the first RCAC symposium held in 2006 appeared first, in June of this year, an exciting event, giving a foretaste of other RCAC symposium publications planned, or already in the works.

There are many ways to let the world know of your existence, and your activities. Scholarly publication is one tried and true way, and, if the quality of the scholars and articles they produce is any index, it seems the RCAC is well on its way to establishing itself as a desired venue for intellectual discourse about the past of Anatolia.

One other way, a more recent one, is through the internet. One of the principal activities of this past summer at the RCAC was the choosing of a web designer for a new RCAC website. Working with her, we were able, later in

the fall, to launch our new website: <http://rcac.ku.edu.tr> This website is vital not only as a means of publicity for RCAC events, but also for potential RCAC fellows. Here you can find our online application form, but also views of the RCAC buildings, including





■ In December 2009, the fourth annual RCAC symposium on "Cities and Citadels in Turkey" was convened.

■ Scott Redford organized trips to the Marmaray Yenikapı Excavations in Istanbul, in Konya, and Antakya.



■ RCAC Senior Fellows Latife Summerer and Yaşar Ersoy led RCAC Fellows' study tours to Kastamonu & Environs, and Troy and Assos, respectively.

■ In early June, Prof. Aslihan Yener organized a symposium entitled "Across the Border: Late Bronze-Iron Age Relations between Syria and Anatolia".



housing, study, and dining facilities. Next year we hope to add another feature to the RCAC website: podcasts of the public talks the RCAC fellows make during the spring semester, as part of the RCAC Mini-Symposium series. In these Mini-Symposia, RCAC fellows organize their own panels, invite their own moderator, and choose themes or topics binding the papers given in any one mini-symposium together. This past year we had individual mini-symposia organized around such themes as: "The Sacred and the Mundane" in the archaeological record, and "Order and Disorder" in the early modern Ottoman world. A full list of these symposia can be found, of course, on the RCAC website!

One of the privileges of being a RCAC fellow is having no

responsibilities whatsoever, save one in-house presentation on your research in the fall, and one presentation at a mini-symposium in the spring. You are free to propose, organize, and/or participate in one of the study trips the RCAC conducts during the year—or not. This part year, RCAC Senior Fellows Latife Summerer and Yaşar Ersoy led RCAC Fellows' study tours to Kastamonu & Environs, and Troy and Assos, respectively. In addition, I organized trips to the Marmaray Yenikapı Excavations here in Istanbul, in Konya, and Antakya.

The academic year ended with a signal event, an international symposium on the transition from the Bronze to the Iron Age in what is now southeastern Turkey and northern Syria in the late second

and early first millennia. Prof. Aslihan Yener of Koç University's Department of Archaeology and History of Art and Director of the Alalakh Excavations near Antakya (<http://www.alalakh.org>), organized this symposium, entitled "Across the Border: Late Bronze-Iron Age Relations between Syria and Anatolia" in early June. In addition to bringing experts together to discuss vexing problems of chronology, style, and epigraphy (among other topics), it marked the continuation of another positive development, the continued integration of the RCAC into the activities of the main campus, and the faculty and students there. Later this year, when the hammers stop ringing, and the RCAC's construction is completed, this trend will accelerate.

Scott Redford is Director of Koç University's Research Center for Anatolian Civilizations and a member of the university's Department of Archaeology and Art History. He is a specialist in the art, archaeology, and architecture of medieval Anatolia and the eastern Mediterranean. He has worked on archaeological excavations and surveys in Adıyaman, Hatay, Sinop, and Antalya provinces of Turkey. Among his current projects is a book on urbanism in Anatolia under the Seljuk dynasty.



A non-profit and non-partisan organization, the Economic Research Forum (ERF) is devoted to promoting independent and objective analysis on Turkey's economic growth. An interview with Prof. Sumru Altuğ, Director of ERF...



## ERF: Generating Well-Founded Economic Research

### Could you please briefly describe the Economic Research Forum?

The Economic Research Forum (ERF), which was established in 2004 jointly by Koç University and TÜSİAD (Turkish Industrialists' and Businessmen's Association), is a non-profit and non-partisan organization that is devoted to "promoting independent and objective analysis on economic growth and discussing the implications of different economic policy options". When we talk about economic growth, of course, we mean broadly the long-term prospects for an economy. Hence, the policy options that will help to achieve this goal encompass issues on a variety of fronts – labor market

outcomes, productivity and growth, competitiveness, the source and nature of cyclical fluctuations, regional issues, short-term macroeconomic developments, fiscal policy including tax policy, monetary policy, to name a few.

As its name suggests, the ERF is a forum for generating and disseminating well-founded economic research. For this purpose, it relies on research that is produced by members of the Economics group at Koç University as well as ongoing research projects conducted by ERF staff, which includes myself, Dr. Sumru Öz, and Dr. Müge Adalet. This research activity



Prof. Sumru Altuğ:

“Our strength derives from our inclusiveness and our ability to pursue new and innovative lines of thinking.

So if the readers from the industry, government, or the academia have a new initiative that they would like to pursue with us, they should definitely let us know.”



is complemented with a series of conferences, public lectures, and workshops on topics of current interest. The ERF also seeks to provide short courses that may be of interest to policy-makers and members of the academic community alike.

Recently the ERF has also instituted a new Affiliates program which seeks to enlist economists outside of Koç University for the purpose of enlarging the pool of talent that can contribute to ERF activities. Currently we have 53 affiliates at the ERF, and this number is growing every day. The members of the Economics group, as well as several Finance faculty members, are ERF Affiliates. More importantly, well known and accomplished economists of Turkish and non-Turkish origin have been showing an interest in ERF activities. Our Affiliates from abroad are members of such institutions as the University of Chicago, NYU, Johns Hopkins, CMU, Duke, Minnesota, Virginia, Maryland, Houston, Louisiana State, Cambridge University in the UK, LBS, the University of Groningen, the IMF, CEU in Hungary, the University of Macedonia and Magyar Nemzeti Bank. We also have affiliates from Turkish institutions such as Bilkent, Sabancı, TOBB, and METU.

**You have recently become the Forum Director. What is your vision for the ERF?**

My vision for the Forum is to make it a venue of first-class research and policy-oriented discussion in the greater area that has İstanbul as its center. Turkey has made great strides in the last 20-30 years in establishing private (foundation) universities and also in promoting greater academic competitiveness in state-run institutions. However, there is an apparent lack of a network that can capture the full potential of such new developments. In our modern age, which is based on knowledge goods and the flow of information, solving policy problems in one part of the world requires intimate knowledge of developments both locally and globally. The ERF aims to create precisely such a network. It also seeks to make use of the unique status of Koç University as an institution devoted to academic excellence and that of TÜSİAD as an organization that has always contributed to forefront policy discussions with well grounded outputs.

**Could you tell us about the activities of the Forum since you have become the director?**

One of the key objectives of the ERF

is to develop a highly visible working paper series that can be used to provide the academic foundations of sound and timely discussion regarding current policies and the future prospects for Turkey and the region. Since its inception, the ERF has posted a total of 53 working papers in its working paper series. Twenty-two of these have been posted since January 2010. As a measure of the increasing visibility of this series which is indexed by the RePEc database, the number of abstract views has increased from 268 per month in January 2010 to 575 per month as of July 2010, while the number of downloads has increased from 142 per month to 263 per month. Besides the Working Paper series, ERF also has Research Notes and Policy Notes (in Turkish) series, in which current economic issues, such as the global crisis, growth, unemployment, and fiscal policy are discussed to propose economic policy options. The ERF has been posting approximately two Policy Notes every month since March 2009 and they are often cited by columnists in newspapers including Milliyet, Akşam, and Habertürk. Our website is a popular and sought-after venue for posting information on new books of interest.

Our inaugural conference took place on May 25, 2010 at the Conrad Hotel

in downtown İstanbul. Its topic was “Business Cycles and the Global Crisis”. The Honorable Ali Babacan attended and gave a speech as a member of the government, and Mrs. Ümit Boyner gave a talk on the current financial crisis. President Umran İnan of Koç University also participated and described the importance of such university-industry collaboration for promoting academic and policy-oriented activity. The speakers at the conference included Prof. Adrian Pagan from University of Technology, Sydney who talked about the difficulty of predicting recessions and Prof. Fabio Canova from the University of Pompeu Fabra, who discussed the impact of such institutional developments as the instigation of the euro or the adoption of the Maastricht criterion for business cycles in the greater euro area. The conference was well attended by members of the business and academic communities and received prominent coverage in the local media by stations such as CNBC, HT Bloomberg, and others.

A second important event was a joint conference with the World Bank Turkey Country Office to release the World Bank reports titled “Expanding Opportunities

for the Next Generation” and “Female Labor Force Participation in Turkey” on Friday, June 4, 2010. The conference was attended by World Bank Director Ulrich Zachau, TÜSİAD Board member and President of Company Affairs Mrs. Cansen Başaran Symes and Ms. Gülseren Onanç of KAGİDER. The discussants of the reports included Prof. Ayşe Buğra of Boğaziçi University and Dr. Alpay Filiztekin from Sabancı University.

The ERF also hosted an invited lecture series by Dr. Şebnem-Kalemlı Özcan on “Global Banks and the Transmission of the 2007-2008 Crisis” between May 26-28 at the Rumelifeneri Campus of Koç University as well as an earlier seminar entitled “Whither Greece and the Euro” presented by Denizbank Chief Economist Dr. Saruhan Özel on February 26, 2010.

**What else is in store in the near future?**

Our goal at the ERF is to initiate events to address important policy issues. In this vein, we will hold a conference on unemployment policy in October, which will be attended by academics and officials from the OECD, as well as a workshop in November on the new financial architecture. The invited speaker for the latter event will be Dr.

Frank Smets of the European Central Bank. We are also planning to institute a Visiting Scholar’s program at the ERF where a distinguished scholar could be invited to spend a stipulated amount of time in Turkey working on issues of his own choosing. We would also like to hold Summer Symposia-type events where we could organize a week-long series of seminars on a variety of topics for the purpose of bringing together national and international scholars in Turkey. We believe that the ERF has the potential to become a regional center of note. We have recently concluded cooperation agreements with the Ukrainian Academy of Banking, Ukraine and the Global Economic Symposium of the Kiel Institute in Germany. We hope to extend and strengthen such ties in the future for the purpose of collaborative research, conferences and the exchange of scholars.

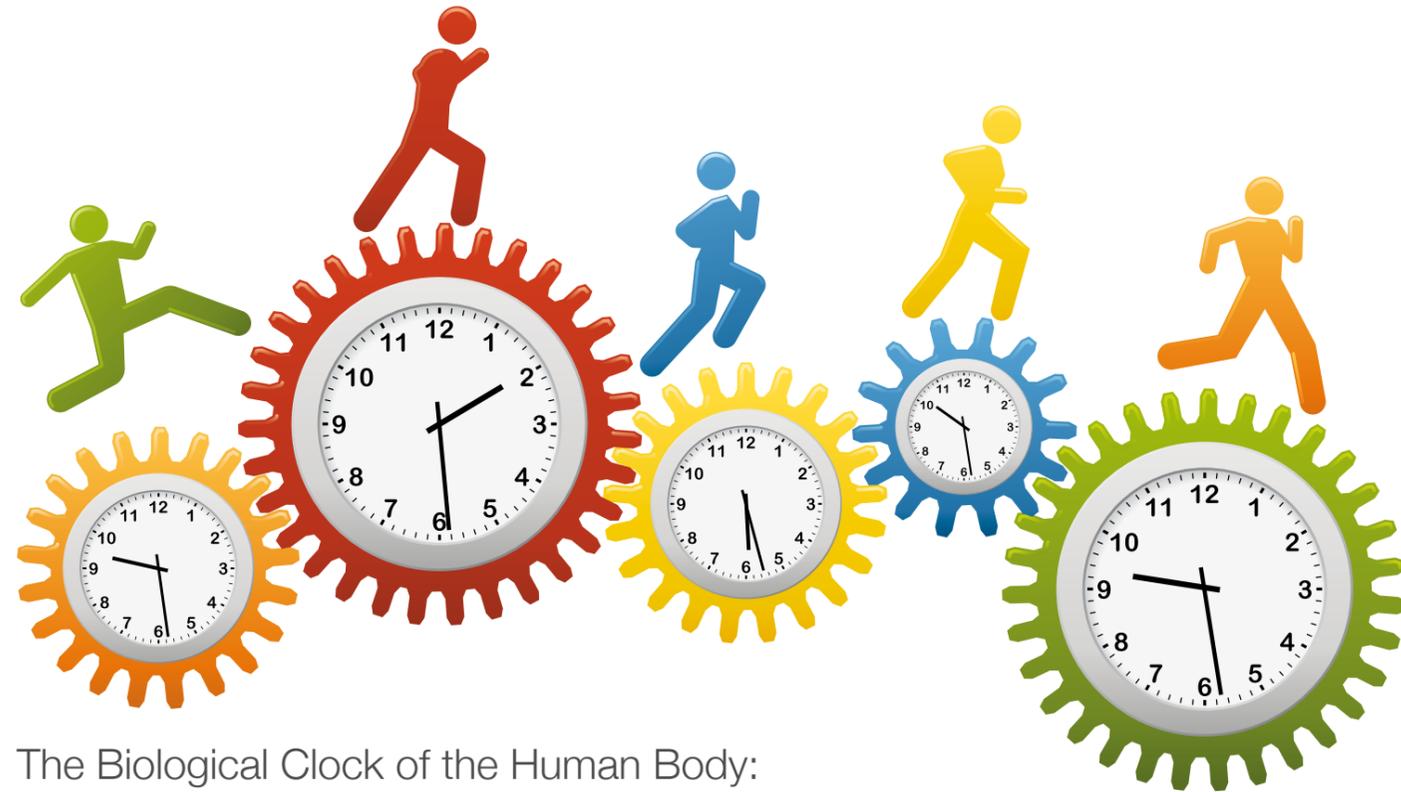
**Is there anything else you would like to add?**

Our strength derives from our inclusiveness and our ability to pursue new and innovative lines of thinking. So if the readers from industry, government, or the academia have a new initiative that they would like to pursue with us, they should definitely let us know.

ERF is planning to institute a Visiting Scholar’s program where a distinguished scholar could be invited to spend a stipulated amount of time in Turkey working on issues of his own choosing.



In Koç University's molecular biochemistry laboratory, we aim to understand how the biological clock works in the human body at the molecular level.



## The Biological Clock of the Human Body: Time Is Ticking!

**İ. Halil Kavaklı** Asst. Prof. of Chemical and Biological Engineering, Koç University

Understanding the human biological clock not only will contribute to our understanding of the clock at the molecular level, but also provide us with information to design drugs against clock-related diseases (e.g., jet lag, some forms of depression and sleep problems).

### The Biological Clock

The revolving of earth around the sun and its own axis generates the cycles of years and days, respectively. Organisms must adopt their behavioral and physiological variables according to these cycles. For example, during a daily cycle, organisms must regulate their DNA repair activity, secretion of some hormones, rate of metabolism, minimization of the harmful effect of light, their growth and finding food. To

regulate both physiological variables and behaviors cells possess a clock. Traditionally, the biological clock has been conceptualized in terms of three components: an input component, a clockwork component, and an output component. Recent studies, however, have shown that there are considerable overlaps between the three components at both macroscopic and microscopic levels, so that the three components may be organized into multiple interconnecting pathways. In mammals, the input component is mediated at the macroscopic level by the visual perception of light (Figure 1); the master circadian clock is located in the hypothalamus in the form of neuron clusters known as the suprachiasmatic nuclei (SCN) (Figure 1); and the output component is elaborated, particularly

in the form of prokineticin (PK2) and perhaps also transforming growth factor- $\alpha$  (TGF- $\alpha$ ), from the SCN, which may thereby engage, through neural connections, other regions of the brain.

Biological functions influenced by the circadian clock in humans include sleep-wake cycles, neuroendocrine levels, mental alertness, physical strength, body temperature, blood pressure, and blood viscosity (Figure 2). The phases of zeniths and nadirs of these functions can be affected by many factors, including feeding, emotional stress, and ambient temperature. Light, however, is the most dominant cue, or Zeitgeber, that synchronizes the circadian phases to the environment ("zeit" means "time" and "geber" means "giver" in German).



Dr. Halil Kavaklı has been working as a faculty member in the Chemical and Biological Engineering at Koç University since September 2004. He is currently working on several projects, including starch biosynthesis in plant and development of biosensor. His research projects are supported by TÜBİTAK, FP6 and TÜBA.

### The Biological Clock and Human Health

Ticking time in the cell will allow organisms to adopt themselves in a given environment by regulating both their behavior and physiological variables accordingly. Those variables are sleep-wake cycles, locomotors activities - water and food intake and oscillating the some of the hormones like melatonin, cortisones, and serotonin with 24 hour periodicity. The malfunctioning of a person's circadian system, or biological clock, causes circadian rhythm disorders. Disruption of biological clock may result in metabolic disorder, reproduction abnormalities, longevity, memory and reward mechanism in brain, mental alertness and some neurological disorder. The circadian rhythm disorder related to the sleep-wake cycle can be categorized into the following two main groups: Transient disorders and chronic disorders. Transient disorders include jet lag, altered sleep schedule due to work hours or social responsibilities, and illness while chronic diseases include delayed sleep-phase syndrome (characterized by a persistent inability to fall asleep and awaken at socially acceptable times), advanced sleep-phase syndrome (characterized by a persistent early evening sleep onset time), and irregular sleep-wake schedule.

Most of the time, a person's biological clock is in synchronization with the 24-hour day-night environment. In some individuals, however, the biological circadian rhythm of sleep and wakefulness is out of phase with the conventional or desired sleep-wake schedule. Some reasons for this breakdown may include the following: Sensitivity to zeitgebers ("time givers," such as light and other environmental cues), disrupted pacemaker function, environment (light, higher noise levels, and elevated room temperature), travel (the severity of jet lag), neurological disease (Alzheimer disease associated with a circadian rhythm disturbance), and shift work and life style. For all these reasons it is important to understand how biological clock works at molecular level. The aim of our group is to understand the fundamentals of biological clock at molecular level and develop drugs against biological clock related diseases in long-term.

Figure 1: Light reception by eye and signal transduction to SCN. Rods and cones, photoreceptor cells located in the inner retina, mediate the perception of light. There are other light-sensitive cells located in the inner nuclear layer (INL) and ganglion cell layer (GCL) that are involved in signal transduction to the SCN via the retinohypothalamic tract (RHT). The visual pathway, initiated from the outer retina, is omitted for simplicity.

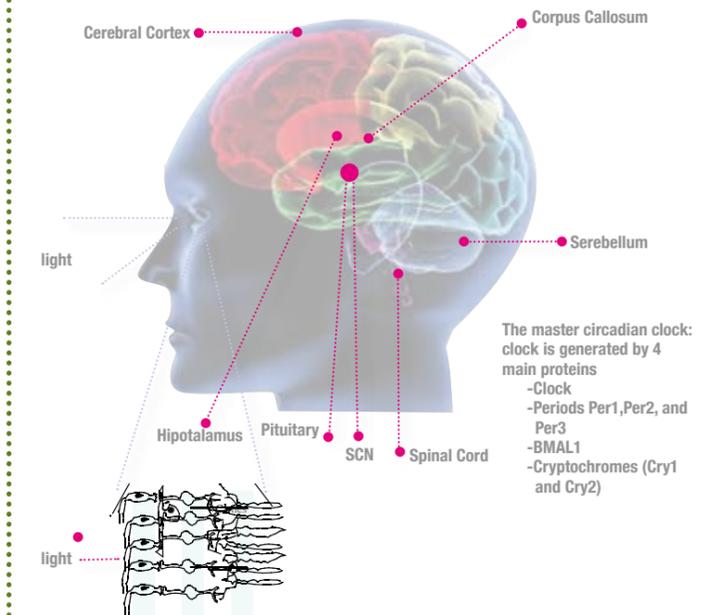
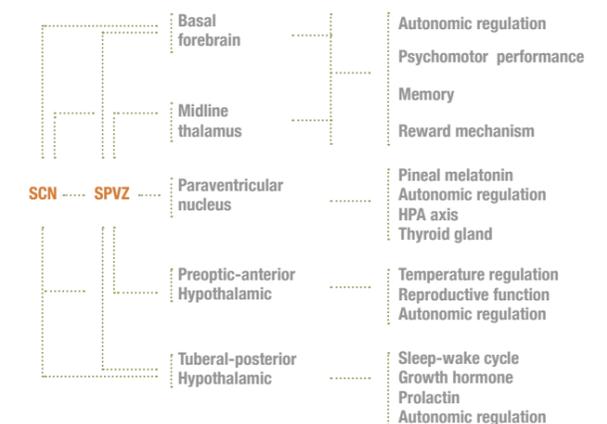
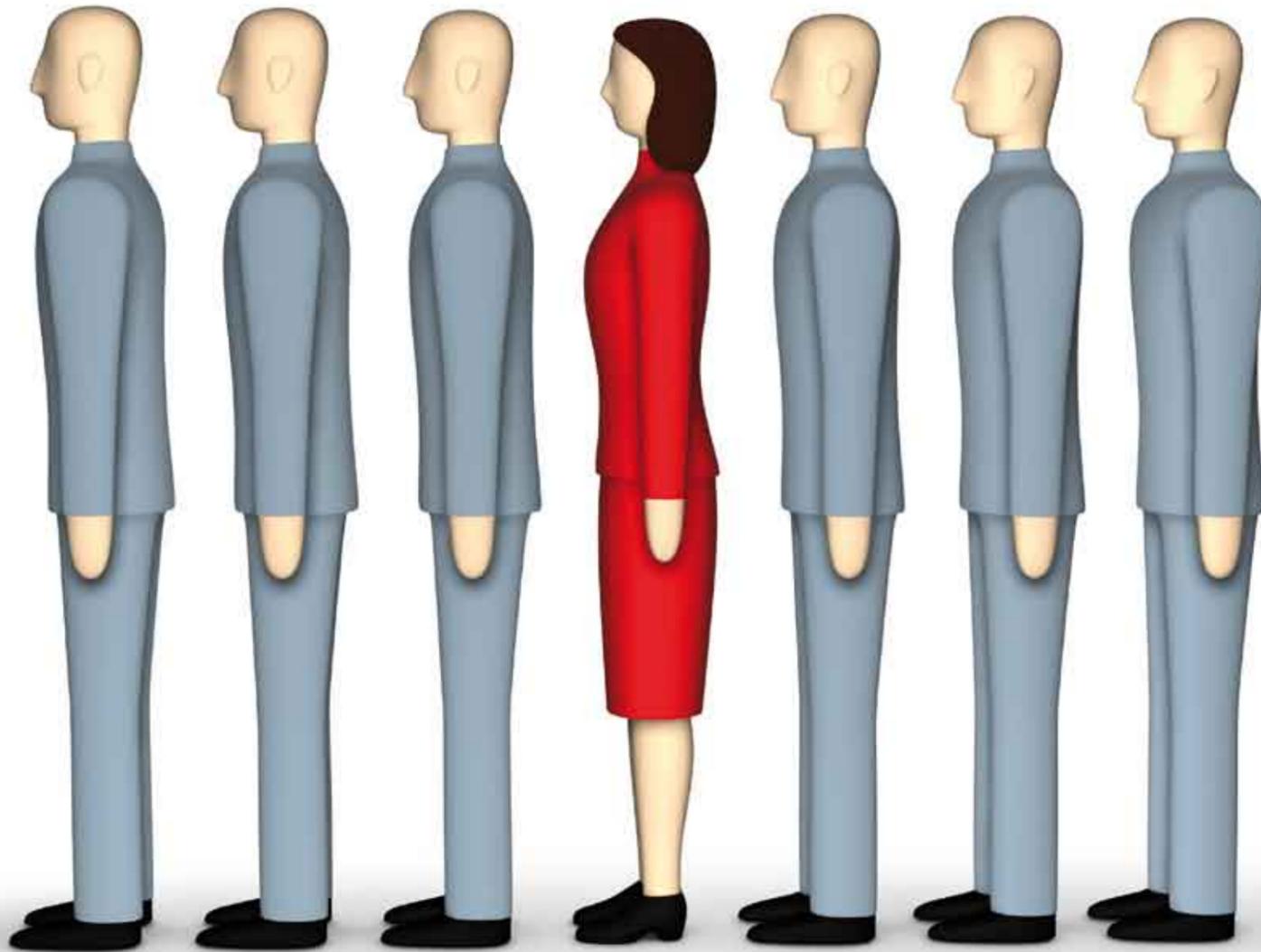


Figure 2: Output component of circadian clock in human. Projection of SCN neuronal cells to different region of brain, which is their functions regulated by clock.



# Promoting Gender Equality: Empowering Women

Established early in 2010, Koç University's Center for Gender Studies (KOÇ-KAM) aims to conduct scientific research and create educational programs for attaining greater gender equality.



Promoting gender equality in all spheres of social life remains an important goal in the Turkish social policy area. Universities bear a great responsibility for conducting research and proposing policies for attaining greater gender equality. The Koç University Center for Gender Studies (KOÇ-KAM) was established in the beginning of 2010 with the goal of conducting scientific and applied research, creating educational programs, conducting awareness-raising and scientific activities, and cooperating with national and international institutions for the purpose of applied research on gender issues.

Although there are centers at several state universities, and public institutions and non-governmental organizations conducting important research on gender issues, foundation universities have engaged in only a few activities in this field.

The administrative units of KOÇ-KAM are the Director, Executive Board and The Board of Advisors. The Director and the Associate Director of KOÇ-KAM are Prof. Çiğdem Kağıtçıbaşı and Asst. Prof. Hülya Durudoğan, respectively. They are joined by Prof. Sami Gülgöz, Prof. Zeynep Aycan, Assoc. Prof. Dilek Barlas, Assoc. Prof. Bertil Emrah Oder and Asst. Prof. Özlem Altan Olcay to form the Executive Board of the center. The Advisory Board is composed of well-known academicians and members of non-governmental organizations whose research and/or work focuses on gender issues. Koç University affiliates are drawn from multiple departments, reflecting the interdisciplinary breadth of gender studies.

KOÇ-KAM is an academic center which integrates the activities of the faculty

members and graduate students of the College of Social Sciences and Humanities, the College of Administrative Sciences and Economics, the Law School and the Graduate School of Social Sciences. Furthermore, the faculty members and graduate students of School of Nursing and College of Engineering who are interested in gender studies are also encouraged to participate in center activities.

## **KOÇ-KAM's Activities**

One of KOÇ-KAM's first initiatives was to establish a Gender Studies Certificate Program (GSCP). This program is geared towards developing an understanding of the issues, debates and concerns surrounding gender and, in particular, women's experience, through an interdisciplinary and multidisciplinary approach that takes as its subject matter all aspects of the human experience in a gendered world.

KOÇ-KAM's several activities include a workshop organized in March 2010, which brought together similar university-based centers in Turkey. This workshop not only provided the opportunity for sharing ideas and experiences, but was also a great occasion to think about ways of enhancing communication and collaboration among centers. In support of that, the center will conduct an inventory of various women's studies centers and programs in Turkey to facilitate joint research and application projects, and for sharing expertise and ideas. KOÇ-KAM will identify the areas in which there is need for information gathering, such as membership of these centers, their publications, activities and educational programs with the aim of identifying the strengths of each center, and areas in which the other centers would like to grow.

Also, jointly with the Institute of Graduate Studies in the Social Sciences and Humanities, KOÇ-KAM organized a distinguished scientist lecture by Prof. Deniz Kandiyoti. The title of the lecture was "Between the Global & the Local: The Politics of Gender in Afghanistan". Prof. Kandiyoti also conducted a study group with MA students. Another seminar that was organized by KOÇ-KAM (with the support of American Embassy) was with Professor Philippa Strum (Woodrow Wilson Center Senior Scholar), who gave a talk entitled "Women's Rights are Human Rights".

KOÇ-KAM is currently working on a European Science Foundation to fund an international workshop on two important issues affecting gender equality in European societies: The retreat of the welfare state and the simultaneous proliferation of civil society organizations targeting women's empowerment and poverty reduction. The workshop aims to study the effects of these developments on gendered divisions of labor, access to education, social citizenship rights, and political participation.

KOÇ-KAM plans to fund two postdoctoral fellowships for the research projects in any of the major areas in gender and women's studies. Graduate students also benefit from the center's Gender and Labor Reading Group. This is an informal scholarly reading group that brings together the graduate students from the Comparative Studies in History and Society and International Relations. They meet bimonthly to discuss academic articles in the fields of women and work, gender and development, and labor studies.

# A Conversation on Western Music in the Ottoman Empire

Koç University's Dr. Evren Kutlay Baydar has been researching Western Music in the Ottoman Empire. Her enthusiasm in this area grew out of her interest in Ottoman history.

Baydar's book entitled "European Musicians of Ottomans" was published in May 2010.



## Could you please tell us about yourself and your background?

I graduated from Çağaloğlu Anatolian High School and Boğaziçi University Mathematics Department while studying at İstanbul University State Conservatory Piano Department from 1985-1997. In 1999, I was invited to study with full-scholarship at University of West Georgia, where I received my MBA and MM in Piano Performance degrees with high honor and worked as a GRA both in the Business and Music departments, as well as for the University President's Business class offered to honors students. During my studies in the U.S., I was awarded the "Beta Gamma Sigma International Business Scholars Award" for my successful Business studies. In 2001, I received "Award of Excellence" for the Georgia Music Teacher's Association piano competition and, in 2002, the "Star of the Year" award from the Music Teacher's National Association as the only foreigner and was invited to become a member of the association. During my studies and afterwards, I performed solo and four-hand piano music, as well as chamber music in Turkey at venues such as İstanbul University, Boğaziçi University, Koç University, Kocaeli University, İstanbul and Ankara Austrian Consulate Cultural Office, Turkish-American Universities Society, Kadıköy Public Education Center, and at the Afyon International Classical Music Festival, and places in the U.S. I was invited to conferences in the U.S. to present papers, as well as to be a jury member at the WPPC International Piano Competition. In 2007, I completed my Ph.D. in Musicology at İstanbul University, Social Sciences Institute. Since 2003, I have been teaching at Koç University.

From 2003 to 2009, I worked as the first Art Director of Sevgi Gönül Auditorium, soon to be the Performing Arts Center of Koç University. To this end, I organized a Fall and Spring semester Arts and Culture Events program,

helping to make the auditorium recognized by individual artists, as well as other arts centers, a venue that the artists are eager to perform at. The auditorium is now one of the favorite performing halls of İstanbul. As the liaison between the university and the academic and freelance arts community, we continue to attract well-known and prestigious names for the arts and cultural events at the university.

## Please tell us about your recent research? How did you get interested in this subject?

My research activities are in the area of "Western Music in the Ottoman Empire", focusing on the effects of Ottoman modernization on music, the steps taken, musicians employed, works composed, the music politics of sultans, etc.

My interest in European music in the Ottoman period grew out of my general interest in Ottoman history. As a classically-trained pianist-musicologist, my initial steps began with the analysis and performance of works of the Ottoman era archived in the İstanbul University Rare Works Library. As I read the recent publications on this subject, I recognized that there was a limitation shared by most studies, almost all of which were based on the same sources, with information

being recycled without questioning their accuracy or inconsistencies. In addition, while all aspects of economics, politics, etc. of the Ottoman era are well-researched, there is a neglect of music, which mirrors a society's changing social and historical circumstances. I realized that only through studying Ottoman music can we fully understand the transformation of the arts during the republican era, a belief that led to the writing of my book, entitled "European Musicians of the Ottomans" published by Kapı Yayınları in May 2010. As I mentioned previously, there are many things to research in this area and this book is just a beginning.

In addition to my book, I published articles in national and international peer-reviewed academic journals, with such titles as "Western Side of Eastern Woman: 19. Century Ottoman Woman and European Music", "Vive La Liberté! Musical Celebration of II. Constitution", "Two Italian Musicians at Ottoman Courts: G. Donizetti and C. Guatelli", and "European Musicians Who Performed at Ottoman Courts and Their Contribution to the Development of Western Music in Ottoman Empire". Moreover, I gave a seminar series at the Suna and İnan Kıraç Foundation İstanbul Research Institute and a lecture-recital series, in which I performed the repertoire of the

period on piano at İstanbul Technical University's Music Advanced Research Center, under the title of "Western Music Adventure of the Ottomans." I also gave explanatory piano recitals, entitled "European Music from the Composer Sultans of the Ottomans" and "European Music in 19th Century İstanbul" at Koç and other Institutions.

## Could you share with us some of your findings? How would your work contribute to science and society?

I have tried to introduce scholars to unheralded Ottoman musicians who played a crucial role in the teaching and diffusion of European music throughout the empire, before the arts were affected by the cultural politics and policies of the new republic. In my book, I also presented Turkish musicians, who were sent to Europe to study music with scholarships provided by the Ottoman Empire, under the approval of the sultans. The European music works of Turkish women are also discussed. My findings show the sultans' far-sightedness, the important steps they took, including educating themselves and the imperial family, and their support for European music to be learned, produced and performed on Ottoman lands. Many of the musicians in the sultan's employ went on to take active roles in cultural activities of the republican era. Music has gone

Dr. Evren Kutlay Baydar: “I realized that only through studying Ottoman music can we fully understand the transformation of the arts during the republican era.”

hand-in-hand with historical events, such as the Declaration of Second Constitution, Ottoman – Greek War, celebrations of the sultan coming to the throne, etc. My findings reveal many previously unknown aspects of Ottoman history. Additionally, my research analyzes the modernization movement of Ottomans from a different perspective, which is looking at this process through changes in music.

The value of my work partly rests on uniqueness of the resources that I use. For the most part, the works produced in Ottoman period are preserved in various European libraries. Our own libraries are limited in that sense. Many of the works and documents were lost during the war years, and the remaining ones are either in European libraries or in the hands of private collectors. Accessing those sources was one of the difficulties I encountered while writing my book. In addition to studying the Ottoman archives and newspapers of the period, the Commerce Yearbooks of Orient (Şark Ticaret Yıllıkları) are an extraordinary resource for music history research, with information about musicians that lived in the specific years on Ottoman lands, their duties and professions, and titles, etc., a sort of “who’s who” of music in the Ottoman period.

I think my main contribution is to show that European music in Turkey is not a republican innovation, but instead goes far back into the Ottoman era, at least a hundred years before the establishment of the republic, with a multitude of skill musicians involved in the development of this part of our musical history. I think anyone who is interested in Ottoman history will enjoy it.

#### What are your future plans?

As I mentioned previously, there are plenty of things to discover in the area of European music in the Ottoman period. Right now, I am in the process of recording an audio recording of Ottoman era compositions for piano, which will be marketed soon. In addition to the articles, conference papers, and concert repertoire that I continue to work on, I will begin working on a new book project. In that book, I am planning to cover the history of European music on Turkish lands, beginning from early 19th century until the declaration of republic.

#### How has being at Koç University helped your research?

I have been working at Koç University since 2003. It is a great honor to be at such a valuable institution. Working at such a prestigious university has opened many doors for me. I get great enjoyment from doing research and sharing it with other scholars and

interested persons. To that end, the newly established Koç University Press has agreed to review my next book when it is finished.

#### Is there anything else you wish to add?

The arts and music act like a mirror to a society. You can get an idea of all the changes that happened in a society throughout its history by studying its music. Therefore, music research can shed valuable light on research in other sciences. We should be aware of both music’s performance side, but also its scientific side. And that scientific side always coincides with social and other sciences, like philosophy, sociology, history, psychology, mathematics, physics, and biology.

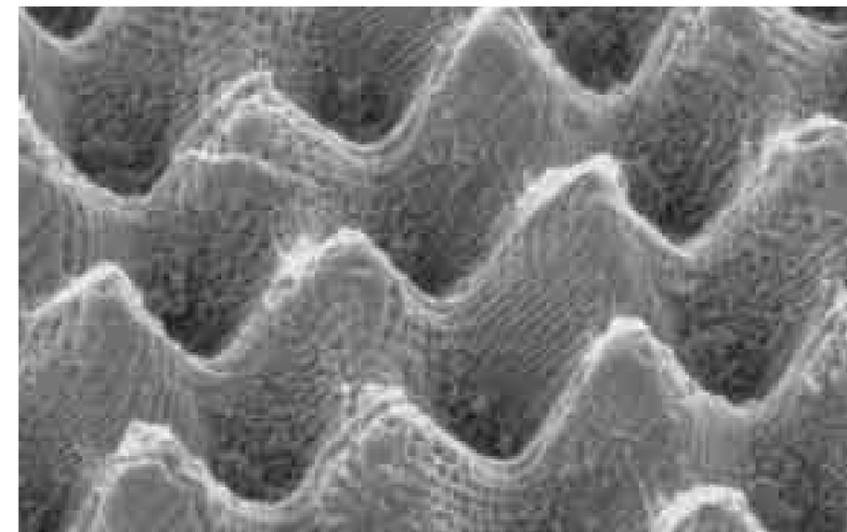
In the past, the value of music, as a branch of arts and sciences was appreciated, and it was studied along with mathematics, physics, and astronomy. We know that during Ottoman era, sultans appreciated musicians highly by giving them honorary awards, even promoting them to “Pasha”, which is the highest level in the military. Atatürk also held them in very high esteem, recognizing their role in societal progress. I hope that music will continue to be valued and appreciated today, in academics, as well as in daily life, as much as in the past and as it is abroad.

## Metals, Polymers, Ceramics and Others...

İskender Yılıgör KUYTAM Director, Professor of Chemistry, Koç University

Material science is one of the most critical fields of research for sustainable development. Metals, polymers, glasses, ceramics and composites are some of the most widely used materials to produce computers, cars, aeroplanes, houses, biomedical devices, textiles, weapons, etc. Material properties can be divided into two main groups, namely bulk properties and surface properties. Bulk properties mainly provide strength, dimensional stability and durability. They also determine the density, conductivity, ductility and malleability of the materials. Surface properties also play critical roles in the overall performance and applications of materials, which include radiation, corrosion and flame resistance, friction and wear, scratch resistance, water repellency, stain resistance, adhesion, biocompatibility, antibacterial properties and many others. Just to give an idea, it is estimated that loss due to wear and corrosion in the US is estimated to be over \$500 billion per year.

Although there are quite a number of academic research centers in Turkey devoted to materials science and related technologies, such as nanotechnology, polymer science, ceramics, composites, biomaterials, microelectronics and



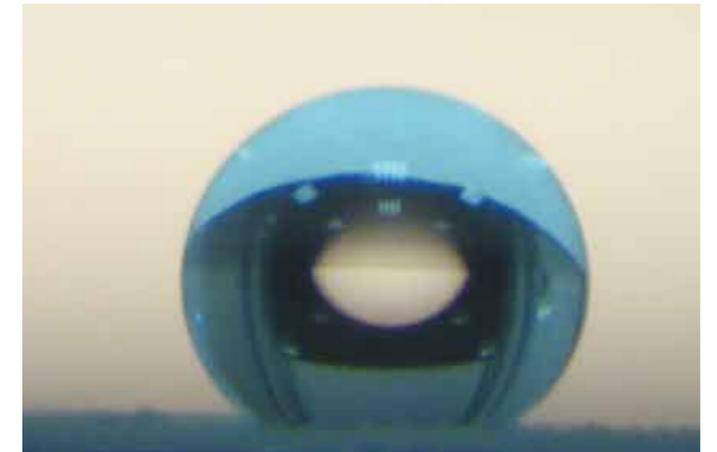
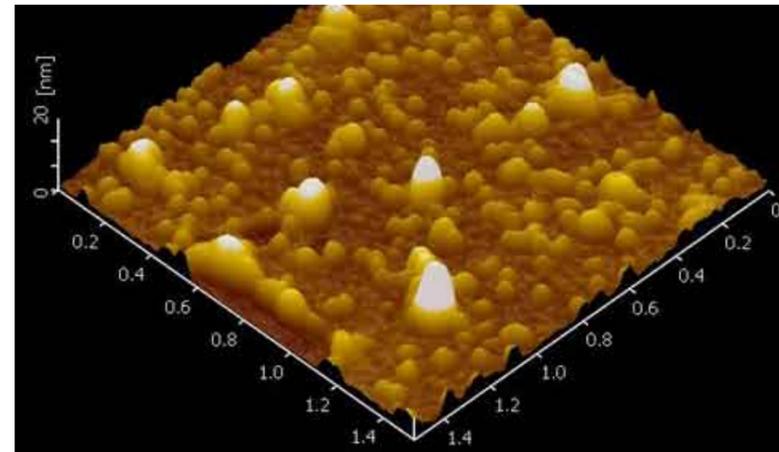
device manufacturing, Koç University Surface Science and Technology Center (KUYTAM) will be the first multidisciplinary effort to investigate surface science and related technologies.

KUYTAM will be established with a three year 15 million TL funding obtained from Turkish State Planning Organization (DPT), which will also be matched by Koç University. As a result total funding will reach to 30 million TL. Prof. Dr. İskender Yılıgör will be the Director of KUYTAM and 23 Koç University Faculty members from Chemistry, Physics,

Koç University Surface Science and Technology Center (KUYTAM) will be the first multidisciplinary effort to investigate surface science and related technologies.

Archeology, Mechanical, Electrical and Chemical and Biological Engineering Departments will be members of the research center. With such a diverse and multidisciplinary group of researchers we plan to perform a wide variety of research projects on basic surface science and related technologies. KUYTAM will be equipped with state-of-the-art laboratories and equipment, which will include atomic force microscopy, x-ray photoelectron spectroscopy, scanning electron microscopy, x-ray diffractometers, x-ray fluorescence spectroscopy and various laser systems and laser spectroscopy,

With the participation of a diverse and multidisciplinary group of researchers, KUYTAM plans to perform a wide variety of research projects on basic surface science and related technologies



reactive ion etching and chemical vapor deposition systems.

KUYTAM research projects will cover different aspects of surface chemistry, surface physics and surfac engineering, which are briefly discussed below.

**Surface chemistry** can be defined as the study of chemical reactions at the material surfaces and interfaces. The main aim of surface chemistry is to controllably modify the chemical structure or composition (or the nanostructure) of a surface by incorporation of selected elements or functional groups in order to produce various desired effects or improvements in the properties of the surface or the interface. Surface modification can be achieved by chemical or physical methods, such as; (i) chemical reactions involving

the surface atoms or molecules, (ii) chemical vapor deposition, (iii) ion implantation, (iv) etching, (vi) electroplating, and (vii) coating.

**Surface physics** can be defined as the study of physical changes that occur at the surfaces and interfaces. It may sometime overlap with surface chemistry and engineering. Some of the phenomena investigated by surface physics include; (i) electronic and magnetic properties, (ii) surface phonons and plasmons (iii) the emission and tunneling of electrons on the surface layer, (iv) surface hydrophobicity, (v) surface morphology or nanostructure, and (vi) tissue and blood compatibility.

**Surface engineering** is the branch of material science (metals, polymers, ceramics, composites) which deals

with the surface properties of solid materials. It has applications in chemical engineering (e. g. catalysts), mechanical engineering (e. g. corrosion prevention, friction reduction) and electrical engineering (e. g. semiconductor manufacturing). The surfaces of the materials are in continuous contact with the surrounding environment, such as radiation from the sun, air and oxygen and moisture and water. This interaction may degrade or change the surface over time. Surface engineering involves modifying or optimizing the properties of the surface in order to reduce the degradation over time. Surface engineering plays a very critical role in the automotive, aerospace, electronic, biomedical, textile, petrochemical, machine tools and construction industries.

The study and analysis of surfaces involves both physical and chemical techniques. Several modern methods that are useful to investigate the chemical structure and composition of material surfaces include x-ray photoelectron spectroscopy (XPS or ESCA), secondary ion mass spectroscopy (SIMS) and Auger electron spectroscopy (AES). Many of these techniques require very high vacuum ( $<10^{-7}$  Pa) as they rely on the detection of electrons or ions emitted from the surface under investigation. Optical techniques can also be used to study interfaces, such as infrared spectroscopy, surface enhanced Raman spectroscopy and sum frequency generation spectroscopy. Other important surface analytical methods include scanning electron microscopy (SEM), atomic force microscopy (AFM) and scanning-tunneling microscopy

(STM). Yet another very simple and affordable technique is the measurement of static or dynamic contact angle of a drop of liquid with the surface. KUYTAM will be equipped with most of the modern instrumentation used in the techniques discussed above.

Some of the research topics that will be more specifically focused on will include superhydrophobic and self-cleaning surfaces, non-fouling or foul release coatings, preparation and characterization of ultra-smooth metal surfaces, preparation and surface characterization of biocompatible polymeric materials and composites, sensors, microelectronic devices and laser systems for surface modification and characterization.

KUYTAM will be open to researchers from other universities, institutions and

industrial companies. In fact one of the aims of KUYTAM will be to cooperate with other institutions on scientific and technological projects in order to develop new knowledge, products and technologies, which will have a strong contribution to science and an important impact on national and international technology base.

Another major aim of KUYTAM will be to provide an excellent surface science program for undergraduate and graduate students and continuing education to professionals through workshops and conferences. KUYTAM will have an Advisory Board, where majority of the members will be from Turkish or foreign research institutions and industrial companies. Planning and operations of KUYTAM activities will be organized and managed by a team from KU faculty.

# Are Women **Less Competitive?**

**Seda Ertaç** Asst. Prof. of Economics, Koç University



Subjects performing the experimental task

It is well-known that gender affects economic decisions and outcomes. Women are under-represented at high-level positions in the workplace and are less likely to choose math and science majors. Researchers have come up with different explanations for the observed gender differences in behavior and outcomes, such as differences in innate ability, different preferences of the genders in terms of the career-family balance, and gender discrimination. Another explanation that has recently emerged is that men and women may have different attitudes toward competition. Top-level jobs usually require very competitive career paths, whereby one must surpass others in order to succeed. If women dislike this kind of environment, it is possible that they do not enter occupations in which they will have

to participate in such tournament-like competitions.

An important line of recent economic research has focused on conducting controlled laboratory and field experiments to test the hypothesis that women react differently to competitive incentive schemes than men do (e.g., Gneezy, Niederle and Rustichini 2003, Niederle and Vesterlund 2007). Two results emerged from these studies: (1) Tournaments motivate men more than they do women; (2) Women are more reluctant than men to engage in competition.

Such gender differences could result in economic inefficiencies, because some of the high ability women do not enter paths that lead to jobs that “matter”. Therefore, reducing the

gender gap is an important policy issue that concerns both educational and work settings. An immediate question here is whether the gender difference is due to nature (innate, biological factors) or nurture (societal, environmental factors). The nature vs. nurture debate is a long-standing one in disciplines such as psychology and sociobiology. For economists, the answers have important implications for policy. If gender differences are due to nature, then the gender gap could be closed only by constructing an educational system that is not competitive. If, on the other hand, differences are not innate and can be changed through socialization, then competitive schemes can be used in conjunction with education and socialization policies that inculcate girls to be more competitive.

It has been claimed that women are less competitive than men and this could be an important reason behind gender differences in the workplace and education.



Saliva collection for testosterone measurement

## Field Experiments

In order to gain more insight into the sources of gender differences in competitiveness, we conducted field experiments in matrilineal and patriarchal societies in Northeast India. The Khasi tribe who reside in the villages of the Meghalaya region of Northeast India is “matrilineal”, where lineage descends through the mother, inheritance and clan membership follow the female lineage, and women are the holders of land and economic power. In the Khasi, women never join the household of their husband’s family, and men reside in their wives’ or their mothers’ home. The status of men in the Khasi society has even spurred a men’s rights movement.

This societal structure provides us with a rare opportunity to study economic

behavior in a setting where gender socialization is different, and contrast it with experiments done in patriarchal societies. This research agenda started with Gneezy, Leonard and List (2008), who ran an initial set of experiments to compare the Khasi society with the Massai, an extremely patriarchal tribe in Tanzania. They found a striking result: while males competed more than females in the Massai, as in the Western societies, the opposite happened in the matrilineal society. Therefore, socialization seems to be playing a crucial role in gender differences and economic behavior.

An important question that has so far remained unanswered is when the gender difference starts. If policymakers would like to take measures to reduce the gender gap in



Seda Ertaç is currently an assistant professor of economics at Koç University. Dr. Ertaç’s fields of research are experimental economics and applied microeconomic theory. Her research agenda includes theoretically and experimentally studying the links between information, beliefs and incentive systems in the context of effort and motivation in organizations, as well as the effects of gender and personality on economic behavior. She is also involved in research projects in the emerging interdisciplinary field of neuroeconomics. Dr. Ertaç’s research has been supported by the United States National Science Foundation, Russell Sage Foundation, and the European Union.

Recent research, including my own conducted in India, shows that women are less competitive only in patriarchal societies and this difference seems to arise around puberty. These findings have important implications for policy design aiming to level the field for women.

competitiveness, it is crucial to know at what point in the socialization process the genders begin to diverge. In order to address this issue, we ran some experiments on kids and teens of age 7-15 in India (Andersen et al. 2010), comparing matrilineal and patriarchal tribes in the same region.

In our competition experiments, villagers are given a choice between tournament and piece-rate incentive schemes, in a task where they earn money for successfully throwing balls into a bucket from a distance. If they choose to compete in a tournament, subjects earn three times more per successful shot as in the piece-rate scheme, but only if they win. A striking result emerges when one looks at the behavior of children at different age groups: while there is no difference in behavior in any age group in the matrilineal society, boys get more competitive and girls less competitive around puberty in the patriarchal society [See Figure 1]. This suggests that boys and girls of a younger age are not different, but the patriarchal society may be encouraging boys reaching puberty to be more assertive and competitive, and doing the opposite for the girls,

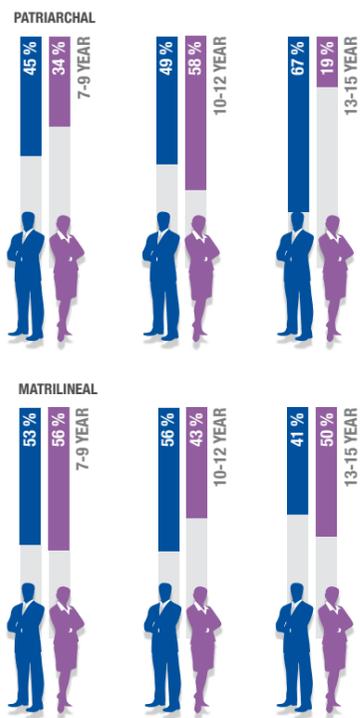
whereas no such socialization exists in the matrilineal society. Therefore, policymakers who would like to reduce the gender gap should employ socialization policies targeting children around puberty.

In a related experiment, whose data we are currently analyzing, we collected hormonal measures, such as the testosterone level, with the goal of correlating it with competitiveness and understanding whether the Khasi society has evolved to be biologically different from other societies. This research is an example of using biological measurements in understanding economic behavior, which is a new methodology that is being increasingly used in economics in recent years. In general, studying the institutional and personal factors that determine gender differences in different types of economic behavior (such as risk-taking, bargaining, and altruism) is a promising area of economic research, especially in Turkey, which provides a rich environment given the wide range of cultural and economic background of its residents.

A Khasi man carrying his baby



FREQUENCY OF INDIVIDUALS WHO COMPETE BY CULTURE, AGE GROUP AND GENDER



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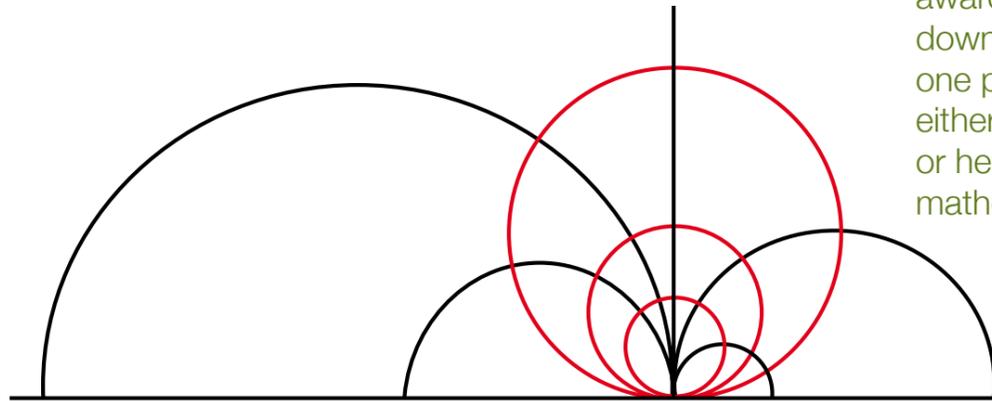
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# Geometric Topology and the Poincaré Conjecture

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If one reads "Someone is offered a one million dollar award, but he turned it down!" in the newspaper, one probably thinks that either this guy is very rich or he is crazy! Or, is he a mathematician?

Until recently, if one reads "Someone is offered a one million dollar award, but he turned it down!" in the newspaper, one probably thinks that either this guy is very rich –which is still not an excuse, by the way- or he is crazy! However, a report that came out very recently showed that there is another possibility: This guy is a mathematician!

Grigory Perelman has solved the Poincaré Conjecture, which is recognized as one of the most important problems in mathematics today. Because of this, it was announced as a Millennium problem with a one million dollar prize. On the other hand, a couple of years ago, Perelman was offered the Fields Medal, the most prestigious award in mathematics, but he declined it. Recently, he is part of the news everywhere as he has turned one million dollars down. In this article, we will introduce the Poincaré Conjecture in an elementary way, and the basic elements of Geometric Topology, the field which the conjecture belongs.

Geometric Topology is a subfield of Topology, and its main aim is to decide whether two shapes can be deformed into each other "smoothly". The problems are easy to describe since

it involves working with shapes, but the solutions need a variety of original ideas. Because of this, especially in the last three decades, geometric topology became one of the most popular areas in mathematics.

Before introducing the basic concepts of Geometric Topology, let's warm up with a couple of toy examples. Let's say you have a cube and a sphere (both are empty). Then someone ask you whether you can deform the cube to the sphere without tearing nor gluing. After a couple of seconds, you realize that this is easy. All you should do is to round up the corners in the cube, and inflate the faces. Hence, we see that we can deform a cube to a sphere smoothly (See Figure 1).

The next question is whether you can do the same thing with a sphere and a torus (See Figure 2). In other words, can you deform a sphere into a torus without tearing or gluing. After a couple of tries, you realize that this question is not so simple, and it seems impossible. If we want to give a convincing argument for that, one way is to notice that if you take any circle (not necessarily round) in the sphere, you can contract this circle into a point on the sphere. However, this is not possible on the torus. If you take the

horizontal or vertical circle, it is not possible to contract these circles to a point while staying on the torus. If we could have deformed the sphere into the torus (or vice versa), by using this deformation, we could have find a way to contract the horizontal (or vertical) circle into a point in the torus. Hence, we say that a sphere cannot be deformed into a torus smoothly. In very basic terms, Geometric Topology is the field which studies whether given objects can be deformed into each other smoothly, and tries to classify all objects formally by using very original methods.

If we consider the deformation of a cube into a sphere, we see that every point in the cube corresponds to a point in the sphere after deformation. This defines exactly a map  $F$ : Cube  $\rightarrow$  Sphere. The conditions "without tearing or gluing" are equivalent saying that  $F$  is a continuous map, and its inverse  $F^{-1}$ : Sphere  $\rightarrow$  Cube is also continuous. We call such a map a homeomorphism. If there is a homeomorphism (smooth deformation) between two objects, we call these objects homeomorphic (topologically equivalent). In other words, if one can deform one object to the other one smoothly, one considers these objects to have basically the same shape.

Geometric Topology's main aim is to decide whether two shapes can be deformed into each other "smoothly".

Figure 1: Transformation of cube to sphere

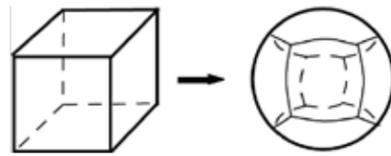
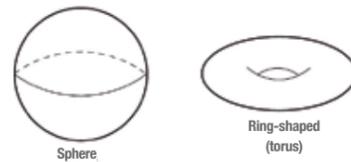


Figure 2: Sphere and ring-shaped (torus)



### Topological Invariants

In Geometric Topology, there are various tools to show that two objects cannot be deformed into each other. For instance, in the example we mentioned above, we see that the question of whether a sphere can be deformed into a torus is not trivial at all. To solve such questions, the most effective tools in geometric topology are the topological invariants. The topological invariants assigns a value to each object such that if two objects are homeomorphic (can be deformed into each other), then they have the same value. Hence, if two objects have different values for a topological invariant, then they cannot deform into each other. As an example for a topological invariant, Euler Characteristics of a surface (2 dimensional objects) can be described as follows. Take a surface, and triangulate it (write as a union of triangles). Then, Euler Characteristics is equal to (number of vertices - number of edges + number of triangles) in this triangulation. The interesting fact is that for any triangulation for a given surface, this number will be same. For example, while the Euler characteristics of a sphere is equal to 2, the Euler characteristics of a torus is equal to 0. This shows that it is impossible to deform a sphere into torus smoothly. Another example for a topological invariant is the Fundamental Group.

Fundamental group is an algebraic structure (a group) by using the nontrivial circles in the object. We call a circle trivial if it can be contracted to a point in the object, nontrivial otherwise. For example, all circles in the sphere are trivial, while horizontal or vertical circles in the torus are nontrivial. Hence, a sphere has trivial fundamental group, and a torus has nontrivial fundamental group. Since Fundamental Group is a topological invariant, this also shows a sphere cannot be deformed into a torus.

### Classification of Surfaces

After this introduction, we can describe Geometric Topology. Basically, Geometric Topology aims to classify all objects up to deformation (homeomorphism). The main results and questions in Geometric Topology can be summarized as follows: The classification of surfaces (two dimensional objects) was shown a century ago by using Euler Characteristics. Note that by saying two dimensional object, we mean the dimension of the material which the object is made of, not where it stands. For example, a sphere or a torus is an example of a two dimensional object.

It has long been known that the classification of the  $n$  dimensional objects is unfortunately not possible by algebraic reasons for  $n \geq 4$ . On the other hand,

even though it is not possible to classify all four dimensional objects, it is a very active research area to classify a specified subclass of four dimensional objects. The famous mathematician Michael Freedman solved this problem for trivial fundamental group case in the late 1970s and made a major breakthrough in the field.

Also, the classification of three dimensional objects has been completed very recently. In 1970s, William Thurston proposed a program (so called Thurston's Geometrization Conjecture) to classify all three dimensional objects, and finished an important part of the program himself. With this work, he was awarded the Fields Medal in 1982. This program, which is also author's PhD thesis subject, attracted many researchers in the field. Even though a great progress has been achieved in the following years, the complete classification seemed to be very far away. While the situation seemed hopeless after 20 years of effort, Grigory Perelman surprised everyone by giving an astonishing proof of the Thurston's Geometrization Conjecture, (hence the complete classification of the three dimensional objects and the proof of the Poincaré Conjecture) by using Ricci Flow techniques. With this revolutionary solution, Perelman was awarded the Fields Medal in 2006.



Dr. Barış Coşkunüzler is a member of Mathematics Department at Koç University since September 2007. He was awarded TÜBİTAK Career Research Grant in 2007, EU-FP7 Marie Curie Reintegration Grant in 2008, Turkish Academy of Sciences' Outstanding Young Scholar Award (TÜBA-GEBİP) and Sedat Semavi Science Award in 2009. He received his associate professorship title from the Council of Higher Education in 2009 and has 3 preprints and 10 articles published in highly prestigious math journals.

### Poincaré Conjecture

While discussing Geometric Topology, we must tell a little bit about the famous Poincaré conjecture. To explain this conjecture, we should remember that a topological invariant is an effective tool to distinguish two objects. This is because if two objects can be deformed into each other (homeomorphic), then the topological invariant would give the same value. The next natural question is the following: If all the topological invariants are giving the same values for two different objects, then must these objects be homeomorphic? The famous Poincaré Conjecture is also a question of this type. In the early 1900s, Poincaré conjectured that "If a three dimensional object has a trivial fundamental group, then it is homeomorphic to the three dimensional sphere." In other words, if  $M$  is a three dimensional object such that any circle in  $M$  can be contracted to a point in  $M$ , then  $M$  is homeomorphic to the three dimensional sphere (unit sphere in  $R^4$ ). The Poincaré Conjecture can be considered as the starting point of the geometric topology, and one of the most important problems of the field. Stephen Smale solved this conjecture for the dimensions five and above, and got the Fields Medal in 1966. Michael Freedman solved this conjecture for dimension four, and got the Fields Medal in 1986. Finally, Grigory Perelman solved the original Poincaré

conjecture (dimension three), and was awarded the Fields Medal in 2006. In other words, so far, three different versions of the Poincaré Conjecture were solved and each one of them was awarded the most prestigious award in mathematics.

On the other hand, thanks to Perelman, Geometric Topology and the Poincaré Conjecture has become very popular recently. In the mid 1990s, Clay Mathematics Institute determined the most important seven problems in mathematics for the day, and called them the Millennium Problems with a one million dollar prize for each. With three preprints, Perelman claimed a proof of the Poincaré conjecture in 2003. Finally in the last March, Clay Mathematics Institute announced that the proof is verified, and Perelman will be awarded one million dollars. However, Perelman who declined the Fields Medal, the most prestigious award in mathematics, with the reason that such prizes, positions, etc. contradicts the purity of mathematics, has also declined the one million dollar prize money with the same reasons recently.

As we mentioned above, Geometric Topology is one of the most popular fields in the world of mathematics. If we look at the status of geometric topology in Turkey, especially after the early 1990s, we have a very promising young

generation of mathematicians in this field thanks to the Gokova Geometry - Topology Conferences. In 1992, Prof. Selman Akbulut from Michigan State University, and Prof. Turgut Önder from METU initiated this annual conference at Gokova, and it became one of the most prestigious conferences in geometric topology worldwide. This conference has given many undergraduate and graduate students the opportunity to encounter the world of geometric topology and meet with the most famous geometric topologists in the world. Today, Turkey has a very promising future in the field of geometric topology with this young generation.

Koç University has one of the most active math departments in the field in Turkey with three faculty members (Assoc. Prof. Burak Özbağcı, Assoc. Prof. Tolga Etgü, and the author), many postdoctoral fellows, and graduate students. We should also note that almost all of the graduate students, who finished a masters degree in this field at Koç University, have been accepted by very prestigious PhD programs in the United States.

Before finishing up, we should mention that the ones who wish to earn a quick one million dollars should not be upset by Perelman's solution. There are six more problems to solve.



Grigory Perelman, has solved the Poincaré Conjecture, which is recognized as one of the most important problems in mathematics today.



Dr. Artuç: “It is very important to know the exact effects of globalization so that we can develop policies that will help workers during this irreversible process we are all facing.”

## Workers and Globalization: Threat or Opportunity?

An interview with Dr. Erhan Artuç on how globalization affects workers.

### Could you please tell us about yourself and your background?

I started college as a business administration major in 1996, but after a year as a BA major I realized that I was more interested in Economics and I changed my major to Economics. I have been working in economics ever since. Right after completion of my PhD from University of Virginia, I joined Koç University.

### Please tell us about your recent research. How did you get interested in this subject?

My research is, in general, about economic globalization's effect on workers. Trade liberalization affects workers' welfare, living standards, mobility, wages and unemployment rate. It has also different effects on different workers. For example, after free trade some workers might be better off while others are worse off, or unemployment rate might increase in some industries and decrease in others. It is very important to know the exact effects of globalization so that we can develop policies that will help workers during this irreversible process we are all facing.

Actually, these topics have been studied by economists for more than 50 years and labor economists have also been interested in these topics for a while. However labor economists and trade economists analyze them differently using completely different methods. Labor economists research workers' human capital, job finding process, skills, education and working conditions. On the other hand, trade economists see the economy as a general equilibrium system with different industries in which each industry affects the other. Therefore one of them focuses on people, while the other focuses on industries' interactions. However, to analyze free trade and workers rigorously we need to take both fields very seriously. We also need to think about the transition process, because people need to adjust to new policies, which is usually not considered in either fields. I try to combine

labor economics with trade and bring a new perspective on classical problems of trade economics.

When I was an undergrad student at Bilkent, my favorite class was econometrics because of my professor Faruk Selçuk (rest in peace). He realized that the class was not enough of a challenge for me and this was causing my grades to fall, so he assigned me an advanced econometrics project different from the rest of the class to keep me interested. My interest in econometrics continued at Virginia, but my main field was international trade and traditionally it doesn't involve much econometrics. Most of the econometrics methods I am interested in had applications in labor economics, so I started to attend labor economics lectures. Then I realized the gap between trade and labor, and how interesting it could be to combine methodology of both fields (hence econometrics as well) to answer questions about effects of globalization on workers. In addition to trade and labor I also worked on various macroeconomics policy topics like research and development and central bank policies.

### Could you share with us some of your findings? How would your work contribute to science and society?

My work on young and old workers shows that globalization affects all young workers in a more or less similar way, while it affects middle aged workers very differently. Globalization might destroy human capital of some middle aged people, while making others' human capital very valuable. For example, in Turkey the textile sector is in decline, while some

services are becoming very popular (like online shopping). Young workers who did not accumulate much human capital in the textiles can change their jobs relatively easily compared to a worker who has been working in a textile plant for 20 years. On the other hand, a young worker in another sector is losing his option of finding a job in textiles, which is taking out some of the positive effects of free trade for him. But older people working in other sectors are very unlikely to change jobs, so this negative effect is not there for them. In the end, young workers will not lose much from free trade, while some older people will win a lot and some will lose a lot. This is like a mirror effect: If a worker in textile sector loses a lot, a similar worker in another sector will win a lot. If a worker in textile doesn't lose much, a similar worker in another sector will not win much.

I also worked on the effects of free trade on wage inequality and showed that free trade has almost no effect on wage inequality among occupations. Free trade affects sectors a lot but doesn't affect occupations independent from sectors. For example a blue collar worker in a textile factory might lose after the abolishment of quotas, but not because he is a blue collar worker but because he is in textiles. Other blue collar workers won't be affected from this trade shock. This finding contradicts one of the most fundamental trade theorems (i.e. what I teach in my undergraduate trade class).

Most recently, I am working on unemployment and free trade. In economics, especially more so when

we combine different fields and econometrics, each project takes several years to complete. I started this project with Burcu Eyigüngör and John McLaren about six months ago, so it is very preliminary. Our initial findings show that free trade causes extremely high unemployment rates, for example it can double total unemployment rate. But after such high unemployment rates, it should not take long to recover: In two to five years the unemployment rates will go below the original rates. This is under the assumption that workers live in a big city with many options. If a town has a certain industry focus, like agriculture or textiles, then our analysis will not be valid and we would expect long term high unemployment rates in small towns. Finally, if the government opens the economy to free trade gradually rather than open as a shock therapy, the negative effects of free trade on unemployment rates can be reduced significantly. All these results can be used to develop economic policies to reduce negative effects of globalization on workers.

### What are your future plans?

I plan to continue work on globalization and workers; there are many interesting problems in this field still untouched by economists.

### How has being at Koç University helped your research?

Koç is a great place to do research; the administration supported my every research related request since I started here. The support is as good as a top American research university. Things like teaching, assistant support, on campus family housing help us focus on research without being distracted.





## Current Approaches in Legal Education

**Bertil Emrah Oder** Assoc. Prof. of Law, Associate Dean of Law School, Koç University

The *Bologna* and *Lisbon* processes are leading factors that are reframing higher education policies in Europe. Those reflect Europeanization in the field of higher education. The *Bologna* process, that represents the first pillar and embraces Turkey, amounts to a cooperation striving for creation of the European Higher Education Area in 2010. In general, it is a structure composed of many targets to be achieved. Those could be summarized under certain headings such as: Recognition of degrees in higher education by establishing a common and comparative framework in Europe; consolidation of cooperation among higher education institutions; raising the quality of higher education;

supporting the mobilization of students and faculty; enhancing the attraction and competitiveness of Europe in the field of higher education. The *Bologna* process strives for common standards, including credits, while it maintains plurality and diversity in higher education. As an integral part of process, the European Credit Transfer System (*ECTS*) is one of the principled structures providing minimum harmonization.

### The Lisbon Process

Under the jurisdiction of EU Member States, The *Lisbon* process represents the second pillar of European higher education policy. European Qualifications Framework for Lifelong

Learning (*EQF*) is to be identified as an act defining basic principals for operation of the *Lisbon* process. *EQF* is of advisory nature since it has been adopted according to the open method of coordination on the ground of national powers of Member States in the field of higher education. However, it puts *benchmarks* and guidelines in concrete terms for enhancing the quality of higher education and harmonization of policies thereto. *EQF* prescribes eight different levels, extending to foundational and advanced levels, as well as to those of general academic and professional qualifications. It depends on the criteria that concentrate on the “outputs” of education, but not duration and



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Europeanization and internationalization are factors affecting contemporary legal education.

curriculums adopted and applied by national higher education institutions. This approach derives from the necessity to maintain educational diversity and plurality in respect of differences among disciplines and approaches in higher education. The aim of the process is an approximation based on quality and outputs without providing monolithic and uniform structures for higher education. Such an approximation helps mobilization, recognition, accreditation and transnational cooperation.

At Level 6 of *EQF*, it has been provided that higher education will be structured on the basis of a trilogy, namely “knowledge, ability and capacity”. Level 6 is of primary concern for policies determining and enhancing quality. Adaptation of Level 6 for legal education has been realized by Quality, Accreditation and Assessment Group (*QUAACAS*) established under auspices of European Law Faculties Association (*ELFA*). In a study submitted by *QUAACAS*, outputs that are to be achieved at the end of legal education are developed on the basis of concrete criteria. Taking into account some of *QUAACAS*’ criteria in the case of Turkey, certain critical problems

could be pointed out which mostly depend on structure of legal education in Turkey. For particular faculties other *QUAACAS*’ criteria would of course result in different conclusions if identified problems were considered in the light of extra differences, such as infrastructures of faculties, total number of students, scores of students in university entrance exams or numbers of qualified and nominated faculty members. Here, major points of dispute can be summarized under following headings in accordance with *QUAACAS*’ criteria:

- Ability to make a distinction between reasoning founded on law and policy-based arguments.
- Awareness of the ethical dimension of legal work
- Ability to identify societal concerns and values behind legal principles and rules.
- Ability to develop alternative strategies for outcome of a case, and outline strategies leading to different solutions.
- Ability to seek and make use of feedback.
- Ability to conduct academic research.
- Ability to identify and collate relevant statistical or numerical information and use it in an academic study or for

resolution of a legal conflict.  
-Ability to be aware of the need for a multidisciplinary view of legal problems.  
-Ability to conceive the importance of in-depth knowledge in specific fields necessitating expertise.

Some of those points cited above relate to current structure of legal education in general. For example legal ethics, which specifically frames the judicial ethics in the case of Turkey, is almost a rarity in curriculums as well as in seminars and certificate programs. In fact, legal ethics is of primary concern both in Europe and North America for legal education and bar associations. Major part of deficiencies is closely related to the fact that proved preferences, methods and instruments of established legal education have been abandoned or are not reviewed from a perspective oriented towards rights, freedoms and values. In some faculties, sensitive faculty members complain that purely theoretical and conceptual comprehension exams substitutes for analytical case-study techniques. Similarly, texts of lectures prepared by students took the place of comprehensive masterpieces of legal

The *Bologna* and *Lisbon* processes are leading factors that are reframing higher education policies in Europe. Those reflect Europeanization in the field of higher education.

literature. Besides such substitutions rejecting in-depth learning, purely normative memorization and learning without knowing may be observed in different branches of law in respect to both lecturers and students. Deficiencies of education emerge in following matters: awareness as regards significance of multidisciplinary approaches; cooperation of theory and practice; research and use of numerical techniques and multifaceted readings for examination success. A multidisciplinary approach gains importance not only for interactions between law and other disciplines, but also for an integrated approach among individual branches of public and private law. Taking into account the problems mentioned above, a quality of discrepancy will be inevitably visible in favor of faculties which recruit high quality faculty members and accept only high-scored candidate students.

#### Legal Education and Internationalization

Internationalization is another factor affecting contemporary legal education. Internationalization of legal education became visible at the end of 1990s as a result of globalization in the field of law. Globalization affected legal education remarkably in three different ways: (1) Transnational cooperation in the field of scientific research or education; (2) Mobilization of students and faculty members; and (3) Internationalization of educational content as a result of international

conventions, treaties and case-law affecting various branches of law. The first two points opened legal education to differences and led to sharing experiences of the other for legal branches which are in majority depicted with national values and concerns in local context. Internationalization has a limited impact in the case of mobilization of faculty members, i.e. introducing foreign law to the audience concerned. It is expected to reach more successful outputs in inter-institutional twinning and rotation, which function according to consortiums and thematic programs. Meaningful results are achieved in transnational cooperation in the field of scientific research and education. Successful applications and models could be cited: European-American Consortium for Legal Education (EACLE); double degree programs based on collaborations of continental and Anglo-Saxon legal families; and post-graduate studies of French universities as an integral part of legal education, which comprises common law approaches and African law programs.

Internationalization of course contents -above point 3- requires development of current legal courses in the light of international norms and case-law, besides a single course of international law which belongs to public law. Since in Turkey a comparative approach is a matter of concern for many years in almost every kind of legal branches,



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adoption of international impact was not difficult. Mighty and less accepted approach is integration of relevant international documents and case-law especially in the field of social and cultural transformation. It could be useful for Turkey to discuss contributions of consortium applications and facilities for thematic cooperation in the field of legal education. Such undertakings necessitate accreditation of law schools so that policies for faculty and research development are enhanced.

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## A Vigorous Agenda

Koç University Law Faculty Dr. Nüsret-Semahat Arsel International Business Law Implementation and Research Center has organized a conference on November 24, 2009, with the topic "Board of Directors in Joint Stock Companies and Principles of Group Companies Law According to the Draft Turkish Commercial Code" within the Commercial Law Conferences Series. Prof. Dr. Ünal Tekinalp, the Chairman of the Preparatory Commission of the Draft Turkish Commercial Code, gave a speech in two sections on the board of directors in joint stock companies and the principles of group companies' law. The Conference was of great importance and made an essential contribution to Turkish commercial and corporate law practice, due to Professor Tekinalp's significant contributions to the Draft Turkish Commercial Code as the chairman of the Preparatory Commission and as an outstanding scholar in the area of commercial law and corporate law. 240 participants, among them many scholars, lawyers and practitioners, attended the conference on the 24th of November 2009.

The other conference within the Commercial Law Conferences Series, was organized on the April 15, 2010, with the topic "Assessments about the Draft Turkish Commercial Code". Prof. Dr. Erdoğan Moroğlu made an overall evaluation of the draft Turkish commercial code, and then Prof. Dr. Ömer Teoman discussed provisions in the Draft Turkish Commercial Code, concerning the board of directors. The third speaker, Prof. Dr. Ersin Çamoğlu, talked on the liability of the board of directors according to the Draft Turkish Commercial Code. The three speakers of the conference the audience of 280 persons an assessment, through different points of view of the draft Turkish commercial code.

Another conference within the Commercial Law Conferences Series was on the "Insurance Law Provisions of the Draft Turkish Commercial Code" which took place on March 18, 2010. The session has been chaired by Draft Commercial Code

Insurance Law Sub-Commission Chair Prof. Dr. Hüseyin Ülgen. The speakers included Assoc. Prof. Dr. Mertol Can, Gazi University Law Faculty, Assoc. Prof. Dr. Kerim Atamer, Bilgi University Law Faculty, and Dr. Dilek Kabukçuoğlu-Özer, Turkish Treasury Head of Department. Each speaker presented a speech on general provisions, non-life insurance provisions and life insurance provisions respectively. The conference was attended by insurance companies, lawyers and academics. Insurance law provisions of the current Turkish Commercial Code, numbered 6762 and dated 29.6.1956 were drafted temporarily. However, despite the fact that over 50 years have passed, these provisions are still in effect. Therefore discussing the insurance law provisions of the Draft Commercial Code are of great importance.

The conference titled "The Assessment of the Draft Turkish Code of Obligations" was organized by Dr. Nüsret-Semahat Arsel International Business Law Implementation and Research Center of International Business Law in cooperation with the Istanbul Bar Association and took place on April 17, 2010. The Draft Turkish Code of Obligations revises the law of obligations, which comprises the fundamentals of private law and thus concerns all segments of Turkish society. The mentioned Draft, which is still being discussed in the General Assembly of the Turkish National Grand Assembly, gives rise to debates involving both theoretical and practical aspects. The participants of the conference were five professors including Prof. Teoman Akünal and Prof. Cumhuri Özakman from Koç University Law School, as well as the president of the 19th Chamber of the Turkish Court of Cassation Seyit Çavdar and other three members of the same Chamber. The topics handled during the conference were as follows: transfer of claims, transfer of claims deriving out of the leasing contract to the administering cooperation, general terms of condition, transfers carried out via fiduciary

Conferences organized by the Dr. Nüsret-Semahat Arsel International Business Law Implementation and Research Center

contracts, warranty contracts and ordinary partnerships.

The last conference organized by the Dr. Nüsret-Semahat Arsel International Business Law Implementation and Research Center in the 2009-2010 academic year was related to maritime law. Conventions regulating international carriage of goods by sea -which are 1924 Hague Rules, 1968 Visby Protocol amending Hague Rules and 1978 Hamburg Rules- are not capable of fulfilling industries' needs like containerization and electronic communication. Hence in order to replace the existing rules "The Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea", which is known as the "Rotterdam Rules", has been adopted on September 23, 2009. On May 6-7, 2010 the Center held a conference on the Rotterdam Rules in order to discuss this new convention. The speakers of the conference, being the very first comprehensive occasion related to this convention, were Prof. Michael Sturley, University of Texas Law School and senior advisor of US delegation to UNCITRAL Working Group III; Prof. Tomotaka Fujita, Graduate Schools of Law and Politics, University of Tokyo and head of the Japanese delegation to UNCITRAL Working Group III; Emeritus Prof. Dr. Gertjan van der Ziel, Erasmus University School of Law and head of Netherlands delegation to UNCITRAL Working Group III; Dr. Anders Møllman, University of Copenhagen Faculty of Law; Asst. Prof. M. Deniz Güner-Özbek and Asst. Prof. Z. Derya Tarman, Koç University Faculty of Law; Prof. Dr. Samim Ünan, Galatasaray University Faculty of Law, Prof. Dr. Fehmi Ülgener, Istanbul University Faculty of Law, Assoc. Prof. Dr. Kerim Atamer, Bilgi University Law Faculty and Assoc. Prof. Dr. Hakan Karan, Ankara University Law Faculty. The audiences included individuals from various maritime sectors, particularly legal, shipping, logistics and insurance. The conference proved to be a success in terms of discussions and the organization.

Dr. Demircan Canadınç's research activities focus mainly on solid mechanics and materials science.

## Material Works



### Could you please tell us about yourself and your background?

I was born in 1978 in Eskişehir. I completed my combined elementary and high school education at a German high school in Ankara, and then started with the Mechanical Engineering program at the Middle East Technical University. Upon graduation in 2000, I was admitted to the University of Illinois at Urbana-Champaign as a graduate research assistant, where I completed my Masters and Ph.D. Then I moved to Paderborn, Germany, where I worked as a post-doctorate research associate during 2006, and then moved back to the United States and worked for the University of Illinois as a research associate. I was offered a position at Koç University in 2007, and since then I have been working here as an Assistant Professor of Mechanical Engineering.

### Please tell us about your recent research? How did you get interested in this subject?

My research activities focus mainly on solid mechanics and materials science. More specifically, I investigate the deformation behavior of new-generation high strength steels and shape memory alloys, and try to both uncover the underlying reasons for various interesting behavior observed in these classes of alloys and find new uses in various interdisciplinary fields, such as medicine. Materials science attracted my attention when

I was at college, and this interest has taken me to my current status since then.

### Could you share with us some of your findings? How would your work contribute to science and society?

Well, I have worked on various materials so far, but let me tell you about one finding that is recent. These days, energy conservation is one of the top priorities in almost all applications, and thus, light-weight alloys are preferred and utilized in various products. Steel, which has been around for a long time, had been losing its popularity recently, mainly due to its weight. However, we have recently shown that a special class of steels, named twinning-induced plasticity (TWIP) steels, demonstrates remarkable strength and a combination of various superior properties under certain conditions, in comparison to the classical steel variants. This means that the required properties can be attained by using much less material, eliminating the weight problem. Furthermore, steel is superior in terms of formability and is much cheaper than other light-weight alloys. This is a topic that still needs elaboration, but our work and other studies on the subject matter can bring

Dr. Canadınç: "I will continue to educate both undergraduate and graduate students, and hopefully, I will be able to steer the careers of some these bright young people towards academia."

the costs and energy consumption down in many applications.

In parallel, I am carrying out research on shape memory alloys and other metallic materials to find new uses for these materials in other engineering-related and interdisciplinary fields. For instance, niobium-zirconium alloy, a well known biomedical implant material, unfortunately suffers from low corrosion resistance, which prevents it from being used in a wide range of human body implants. However, we have recently shown that the corrosion resistance of this material can be tremendously increased by severe plastic deformation methods. Currently, we are conducting corrosion experiments on this new variant in collaboration with German colleagues. If proven successful, this material can be safely utilized in various orthopedic implants.

### What are your future plans?

I have so far dedicated a significant fraction of my career to high-strength steels, and I will continue along this direction. One of my main goals is to further contribute in the area of new-generation high-strength steels. I also would like to continue with my research

on biomedical sciences and hopefully contribute to human health. Meanwhile, I will continue to educate both undergraduate and graduate students, and hopefully, I will be able to steer the careers of some these bright young people towards academia. This is one of the things Turkey needs the most: to stand out in the scientific arena.

### How has being at Koç University helped your research?

Koç University has provided me with the necessary environment to focus on scientific problems and advising students. In academia, it is very important to have peace and focus on your work. Everybody has other things in mind, but for success, these distractions should be kept to a minimum. Koç University is just doing that, by providing you with both material and immaterial support, and by attracting bright students to work with.

### Is there anything else you wish to add?

I think that research is a life-long marathon, and I would like to run this marathon as long as I can. So far, Koç University has shown me that it provides the necessary environment and means to achieve this goal.



## Koç Executive MBA Program

### KOÇ EXECUTIVE MBA PROGRAM RANKED 57th BY FINANCIAL TIMES

Koç Executive MBA Program is ranked 57th by Financial Times this year (2010), moving up from 63rd place in 2009. This ranking places Koç University Graduate School of Business among the leading graduate schools of business in the world. With regard to the diversity of the school, Koç University Graduate School of Business again ranked number 1 in the world in terms of women faculty ratio.

Koç Executive MBA program was established in 1994 as the first Executive MBA program in Turkey. Now Koç Executive MBA Program is the only program in Turkey and in our region that appears in such a prestigious list. The criteria used in FT Rankings include the profile of alumni, their career progress, their satisfaction with the program, publications of faculty members in the top journals, profile of faculty and internationalization of the program.

#### Financial Times 2010 ranking:

<http://rankings.ft.com/businessschoolrankings/emba-rankings-2010>

#### Financial Times 2010 ranking on the map:

<http://rankings.ft.com/businessschoolrankings/map/emba-rankings-2010>



## Department of International Relations

### EURASIAN PEACE SCIENCE CONFERENCE

The Eurasian Peace Science Conference was hosted by Koç University faculty members Reşat Bayer and Michael Mousseau on January 8-9, 2010 at Koç University. The conference aimed to broaden cooperation amongst Eurasian and Middle East peace science scholars. Forty researchers from Greece, India, Israel, Sweden, Turkey, United Arab Emirates, United Kingdom, and the United States participated. Papers were on conflict and peace-related topics from throughout the world, with special emphasis on quantitative and formal analyses of conflict and peace processes and peace science methodology and theory. Many participants encouraged a follow-up conference, and the second annual Eurasian Peace Science Conference is now scheduled for January 7th-8th 2011 at Koç University, to be hosted by Koç University faculty members Belgin San Akça, Reşat Bayer and Michael Mousseau.

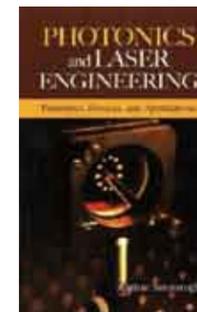


## The Migration Research Program at Koç University (MiReKoc)

### MIGRATION RESEARCH CONFERENCE

Dissemination of the Findings from 2009 Projects was held on June 4, 2010 at Koç University, with the participation of researchers, practitioners and civil society representatives. Eight research projects pertaining to the fourth round of MiReKoc were presented and discussed in three different sessions. In addition, two distinguished keynote speakers -representative of the Ministry of Foreign Affairs, Berlan Alan Pars, and the chief of the International Organization for Migration (IOM) in Turkey, Maurizio Busatti- brought different perspectives and methods of analysis to the discussion of international migration studies in Turkey.

All of the presentations were based on original research conducted by 2008-2009 MiReKoc grantees. Moreover, they all generated new insights into migration studies in Turkey and underscored the argument that the experience of migration and migration policies are embedded within broader processes of global re-structuring, social change and development. The program of the research conference and the abstracts for each research project are available at [www.mirekoc.com](http://www.mirekoc.com). The MiReKoc website also contains information on past and forthcoming activities of the research center and also provides comprehensive statistics, documents and policy briefs.



## Photonics and Laser Engineering

### PRINCIPLES, APPLICATIONS, AND DEVICES

Photonics is the interdisciplinary field that provides solutions to scientific and technological problems by using devices which generate, transmit, or detect photons. The book *Photonics and Laser Engineering: Principles, Applications, and Devices*, recently authored by Alphan Sennaroğlu, is intended to provide an introduction to the principles and some of the mainstream areas of Photonics and Lasers at the senior or beginning graduate level. It has originated from several courses taught by the author for over a decade at Koç University on lasers, photonic materials, and devices. The text includes two extensive background chapters, one on classical electromagnetism and one on elementary quantum mechanics to make the treatment self-contained and to enable readers from a diverse range of technical fields to easily grasp the concepts in different chapters.

The book consists of 11 chapters which focus on classical electromagnetism with applications to photonics, analysis and design of paraxial optical systems, laser beams and resonators, classical and quantum theory of light-matter interactions, theory of stimulated emission and optical gain, design principles of lasers, electrical and optical properties of semiconductors, semiconductor lasers, optics of anisotropic media, modulation of light, theory of noise, optical detection, translationally invariant dielectric waveguides, optical fibers, and selected topics in nonlinear optics. The book was published by McGraw-Hill in May 2010 (ISBN: 0071606084 / 9780071606080).



## Koç University Social Policy Center (KOÇ-SPM) A PIONEERING ROLE IN THE AREA OF SOCIAL POLICY

Turkey has been going through a period of rapid social change, yet the area of social policy, where social problems might be discussed and addressed, has received little academic attention. Koç University hopes to play a pioneering role in the area of social policy through conducting scientific research on and raising awareness about important social issues. Many faculty members at Koç University are already engaged in policy-relevant research, including such topics as education, internal and international migration, citizenship and social exclusion, labor markets and unemployment, labor law, inequalities in taxation, disabilities, urban renewal, and cultural structures and boundaries.

Given that only a few universities in Turkey have centers and academic programs that focus on social policy, Koç University has decided to build on its existing base of policy-related research in establishing a research center in order to fill this gap. Founded in April 2010, Koç University Social Policy Center (KOÇ-SPM) defines social policy broadly and aims to conduct scientific activities, research and publication, and public dissemination accordingly. KOÇ-SPM's social policy focus will reflect the research interests of faculty affiliates, including the participation of women, youth, children, elderly people, disabled people and immigrants in social, economic and cultural life; primary and

secondary education; employment and labor markets; health; social security; social services and welfare; gender equality; social rights, and historical changes in all these areas. As such, the center will gather together the activities of the faculties of Social Sciences and Humanities, Administrative Sciences and Economics, the Law School, School of Nursing and any professors or graduate students with an interest in research or work in the area of social policy.

KOÇ-SPM embraces diverse methodological approaches, including quantitative analyses of nationwide survey data, as well as research which uses qualitative methods at the local level. In addition to research and publication activities, the center seeks to foster social policy dialogue both inside and outside of academia by organizing scientific meetings, facilitating policy-makers' access to academic research, and promoting awareness of important social policy issues in the broader society.

## Law School SUMMER SCHOOL PROGRAM

Koç University Law School organized its fourth summer programme in cooperation with Santa Clara University School of Law, Santa Clara, California, USA, from 10 June-23 July 2010, in Istanbul. The ABA accredited summer programme is directed by Eric Schneider, Professor of Santa Clara University Law Faculty, and it consisted of two sessions of three weeks each.

The first session was designed to combine seminars which provide a general introduction to the Turkish and the Middle Eastern Law with those specifically dealing with the main topic of the programme "Protection of Cultural Property". Seminars were mostly given by distinguished scholars of Koç University Law School and Archaeology and History of Art Department. Participants were provided with understanding of basic Turkish Law, including principles of constitutional, administrative, criminal, civil and commercial law areas. Turkish legislation and international regulations aiming protection of cultural property were described as regards to these various aspects. Comparative Middle Eastern Law lectures covered various approaches to Shari'a, as well as family law, commercial law, investment law and practice in the region.

Participants enjoyed the privilege of attending a general presentation of Turkish criminal procedure and a discussion of cases relating to cultural property crimes

with Istanbul's Chief Prosecutor and a judge at the Courthouse. In order to contribute to understanding cultural property protection in a broader context, tours of some ancient districts of Istanbul city and archaeological excavations were arranged in relation with archaeology lectures.

In the second session, participants were given opportunity to do internships at Turkish or Middle Eastern law firms. Participants earned four credits for the first session and three credits for their internship.





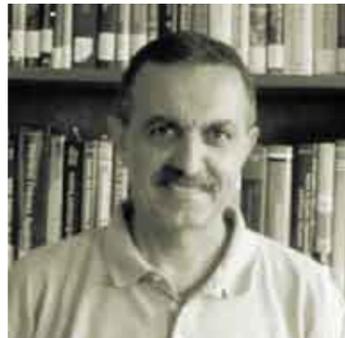
**Demircan Canadinç** hosted a workshop on shape memory alloys at Koç University campus between 20 and 24 of June, 2010. The workshop provided a ground for the sharing and discussion of new results on shape memory alloys to more than 70 leading researchers from all over the world. The CEO of Turkish Airlines, Dr. Temel Kotil, who previously worked on shape memory alloys with Dr. Canadinç in the United States, was also present at the workshop both as a speaker and sponsor.



**İsmail Lazoğlu**, was selected as the Advisory Board Member of The Scientific and Technological Research Council of Turkey (TÜBİTAK) -Technology and Innovation Funding Program Directorate (TEYDEB) Machine and Manufacturing Division. Aiming to speed up the process of conversion of technology to profit, the Technology and Innovation Funding Programs Directorate (TEYDEB) was established to fund technology development and innovation activities of companies in Turkey. There are 10 members in the TÜBİTAK-TEYDEB Machinery and Manufacturing Advisory Board.



**Zeynep Aycan** received an Honorary Professorship from Renmin University. Renmin University (also known as the People's University of China) is one of the oldest and top-ranking research universities in China, with a particularly strong emphasis on research in humanities and social sciences. Aycan received her honorary degree after delivering a keynote address at the Annual Forum for Social Sciences and Humanities, which is a well-known forum in China that invites world-famous scholars, including Nobel Prize winners.



**İskender Yılğör** has been elected as the member of TÜBİTAK Science Board. Prof. Yılğör has also been assigned as the TÜBİTAK Representative for the Engineering and Natural Sciences Standing Committee of European Science Foundation (ESF) for a three-year period starting from the 1st of September, 2010. European Science Foundation (ESF) which is an international non-profit and non-governmental organization with the membership of 78 associations from 30 European countries was founded in 1974 in order to promote and support high level scientific research. ESF executes several activities to provide coordination and cooperation in scientific research areas. Among these activities, there are also long term research projects about specific scientific themes which are studied by multinational research teams.



**Çiğdem Kağıtçıbaşı**, has been elected as the "Honorary Member" of the International Association of Applied Psychology (IAAP) in their 27th Congress which was held in Melbourne, Australia in July, 2010. IAAP also awarded Prof. Kağıtçıbaşı with the "Distinguished Contributions to the International Advancement of Psychology" in 1998. IAAP is the oldest international psychology association founded in 1920 and has members from over 80 countries. They organize an international congress every four years.



**Hakan Ürey** will chair the IEEE Optical MEMS and Nanophotonics conference in Istanbul in 8-11 August 2011. The conference will be held at Koç University campus. It will bring together communities working in the fields of micromechanical systems and photonics.



**Çağatay Başdoğan** will chair the IEEE World Haptics Conference in Istanbul in 2011. This is the largest conference on haptics in the world and brings together researchers from different disciplines who are interested in all aspects of the sense of touch. Haptics research aims to understand how humans and machines can touch, explore, and manipulate objects and has progressed significantly during the last decade.



**Özlem Keskin** was elected to the Editor Boards of BMC Structural Biology and PLoS ONE journals. Both journals are open access journals publishing original peer-reviewed research articles. BMC Structural Biology concentrates on the structure of biological macromolecules, including solving structures, structural and functional analyses, and computational modeling. PLoS ONE welcomes reports on primary research from any discipline within science and medicine.



**A. Murat Tekalp**, has been elected as Vice Chair of the Computer Science and Informatics Panel for the Advanced Investigator Grants Program of European Research Council (ERC). He is also a member of the European Commission Taskforce on Future Media Internet and was appointed by TÜBİTAK as National Expert for the European Commission on Information and Communication Technologies (ICT). The ERC Advanced Investigator Grants Panel evaluates innovative proposals coming from researchers who have already established themselves as independent research leaders in their own field. The taskforce on Future Media Internet promotes and supports advances in networked media technologies that lead to massive creation of new multimedia content and internet applications, including 3D videos, immersive environments, network gaming, and virtual worlds.

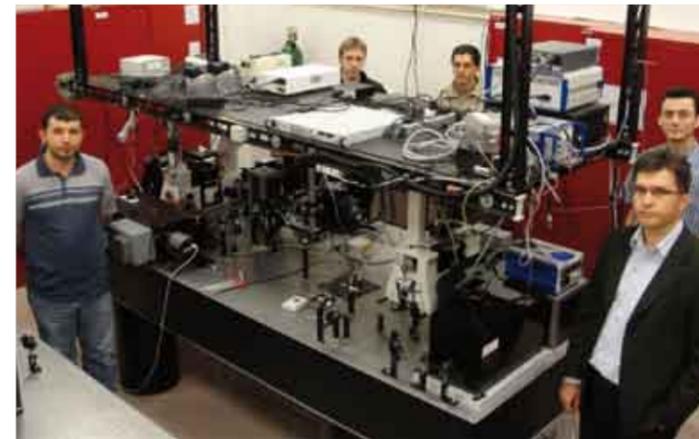
# Summer Research Programs at Koç University

## Summer Research Program for Undergraduate Students

This program offers the undergraduate students the opportunity to gain research experience that helps them decide if they want to pursue graduate education or a professional research career. The duration of the program is at least seven weeks. They work closely with faculty mentors and their research groups that include graduate students and advanced high school students who participate in KU Summer Research Experience for High School Students. For the summer 2010, 170 applications from national and international universities, such as Carnegie Mellon University, University of Essex, Rice University, Lahore University, Whitworth University, Bilkent University, METÜ, İTÜ and Bogaziçi University, were received and 67 of them have been placed.

## Summer Research Program for High School Students

This program is for motivated high school students who want to sharpen their research skills and plan to attend research oriented universities. Students who have good academic standings, have completed 10th grade, and will continue their high school education next year, are recommended by their schools. For the summer 2010, 38 high school students from Robert College, Üsküdar American Academy, VKV Koç High School, TEV İnanç Türkeş High School, Bornova Anatolian High School, Darüşaffaka High School and İTÜ Ekrem Elginkan High School were accepted to participate in the program. More information about the projects can be found by following the link to Summer Research Program at [www.ku.edu.tr](http://www.ku.edu.tr)



## College of Sciences

### Computerized Motor Control Applications for Micro/Nano Technology

Micro/Nano technology applications are increasing at the speed of light. The aim of this summer research project was to design and build a small motorized rotation stage used in a micro/nano technology application in our laboratory for fine adjustment of the intensity direction of a laser source. The fundamental components of this stage included a stepper motor, an electronics control circuit, a data acquisition unit and a ball bearing. The students who worked in this project first purchased the stepper motor. Then, they designed the parts of the stage in computer using AutoCAD software package and contacted a machine shop and sent them the technical drawings of the parts for machining. As they were waiting for the parts to arrive, they started to develop a software code to control the motor of the stage using LabVIEW software package. Finally, they assembled the parts, installed the software, and demonstrated the project (see the movie of the project at the web-site).

**Students:** Orhan Tunç Çeliker (Bornova Anatolian High School) Kutalmış Bayraktar (Istanbul University) Lukas Kuzmiak (IAESTE Summer Trainee, Czech Republic)

**Technical Support:** Michael Mestre (Post-Doctoral Researcher, Koç University), Yasin Karadağ (Graduate Student, Koç University)

**Supervisor:** Prof. Alper Kiraz (Nano-Optics Research Laboratory, Physics Dept., Koç University)



## College of Social Sciences and Humanities Language Development of Preschool Children

Children learn to use and comprehend communicative gestures and verbal language before they learn how to tie their shoes. Ayça Bilmez, Dilara Çalışkan and Pelin Dikmen helped to study how this happens in three different projects during the summer of 2009. Ayça used the TİGE (Turkish Communication Improvement Inventory) to ask the caregivers of 8 to 16 months to report on the communicative devices their children are starting to use. Dilara successfully trained 2-year-old children to learn relative clause constructions such as “I want the man who is eating a carrot” in a communication experiment. Pelin coded the oral narratives of three-year-olds’ mothers with less than five years of education and helped to determine the factors that differentiate coherent narratives from not so incoherent ones.

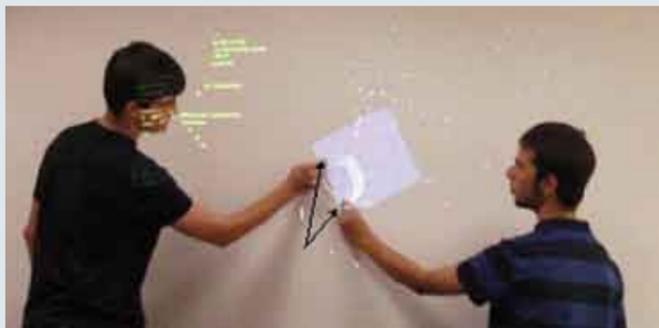
**Students:** Ayça Bilmez, Bilkent University  
Dilara Çalışkan, Bilgi University  
Pelin Dikmen, Boğaziçi University

**Technical Support:** Sevcan Ayaş Köksal (Graduate Student, Koç University), Beyza Ateş (Graduate Student, Koç University), Ayşe Sarılar (Graduate Student, Koç University)

**Supervisor:** Prof. Aylin Küntay (Language and Communication Development Laboratory, Psychology Dept., Koç University)

## College of Engineering

### A Finger Tracking and Gesture Interface for Interactive Haptic Manipulation of Documents and Data



**Students:** Tolga Zeybek, (Robert College), Abdullah Avlaç, (İnanç Türkeş High School)

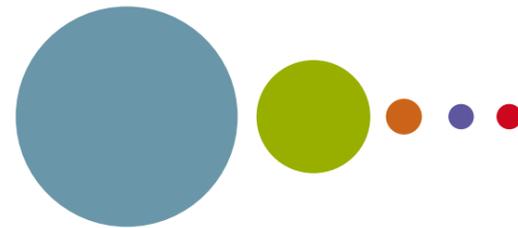
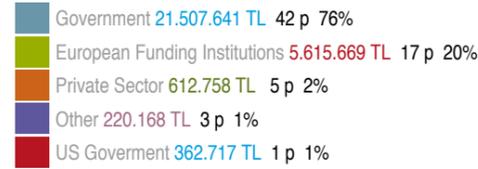
**Technical Support:** S. Özgür Oğuz, (Graduate Student, Koç University), Selim Ölçer (Technician, Koç University)

**Supervisor:** Prof. Çağatay Başdoğan (Robotics and Mechatronics Laboratory, Mechanical Eng. Dept, Koç University)

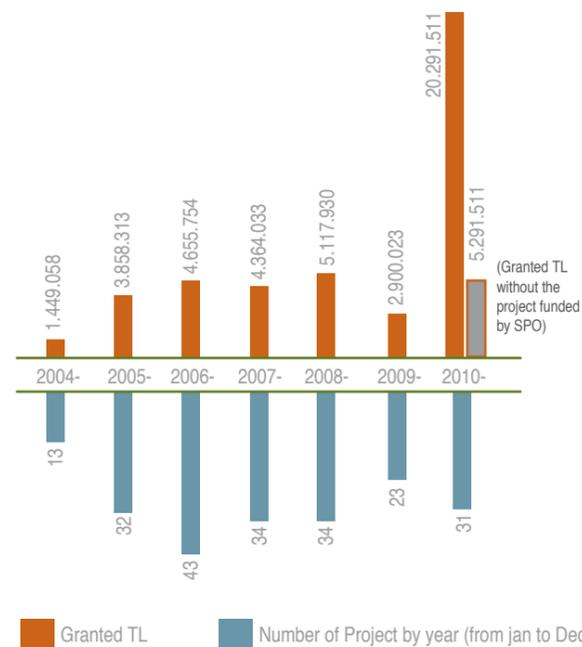
Minority Report is mostly famous for Tom Cruise’s use of the hand gesture recognition system in the movie. Inspired by this movie, high school students Tolga Zeybek and Abdullah Avlaç developed a finger tracking interface similar to the one shown in the movie using an infrared camera and two sensors. They coupled this interface with a projective display to manipulate documents and data interactively on the screen as in Minority Report. In order to develop this interface, students packaged an infra-red sensor in the form of a ring and then worn on their finger. An infrared camera tracks the movements of the sensor on the ring as the finger moves. The switch on each ring acts like a mouse button and enables them to interact with the documents and objects projected on the screen (please see the movie of the project at the web-site).

KUYTAM Project with 15 million TL budget is the highest grant received by Koç University.

## Research Projects at KU



Granted Projects by Years  
Years and Number of Projects



The total number of externally funded projects, starting from January 2004 to August 2010, is 210, with a present value of 43.106.790 million TL. As of August 2010, the total number of ongoing projects is 68 with a present value of 28.318.952 million TL. The breakdown of these projects according to sources of funding is provided below.

### Current Research Sponsors Include:

US Government - Department of Health and Human Services  
Public Health Service  
Devlet Planlama Teşkilatı (State Planning Organization)  
European Commission - FP7  
European Commission Lifelong Learning Program  
European Office of Aerospace Research and Development  
Istanbul 2010  
MICROVISION INC.  
Microsoft Corporation  
Reproductive Health Working Group (RHWG)  
Sanayi Bakanlığı (Ministry of Industry)  
TÜBA-GEBİP (Turkish Academy of Sciences)  
TÜBİTAK (Scientific and Technological Research Council of Turkey)  
TÜPRAŞ  
University of California Berkeley  
Varlıbaşlar Sağlık Yatırımları (VSY) AŞ  
Yapı Kredi Bankası

Exchange rates taken as: 1 USD= 1.5 TL. 1 Euro= 2.0 TL.

The graph to the left shows the number of research projects granted by funding institutions starting from January 2005. Until 2010 the number of granted projects has slightly changed from one year to another in terms of the total amount of received grants compared to 2010. There is a steep increase from the total budget (2.900.023 TL) granted in 2009's to the total budget (19.497.277 TL) granted in 2010. The major reason for this increase is a research infrastructure project; "Koç University Surface Science and Technology Center" granted by the State Planning Organization. The total budget of this project is 15.000.000 TL for the period of 36 months starting from May 2010. This amount is the highest grant received by Koç University. This is also the first capacity building grant received by Koç University.



### TÜBİTAK/TÜBA Award Recipients

#### 2009

Bahar Rumelili TÜBA GEBİP (International Relations)  
Barış Coşkunüzer TÜBA GEBİP (Mathematics)  
Erdem Alaca TÜBA GEBİP (Mechanical Engineering)  
Fikri Karaesmen TÜBİTAK ENCOURAGEMENT (Engineering)  
Hakan Ürey TÜBİTAK ENCOURAGEMENT (Engineering)  
Metin Muradoğlu TÜBA GEBİP (Mechanical Engineering)  
Özlem Keskin TÜBİTAK-TWAS ENCOURAGEMENT (Engineering)  
Tolga Etgü TÜBİTAK ENCOURAGEMENT (Sciences)

#### 2010

Umran Savaş İnan TÜBİTAK SPECIAL (Engineering)  
Demircan Canadınç TÜBA GEBİP (Mechanical Engineering)  
Erhan Artuç TÜBA GEBİP (Economics)  
Serdar Kozat TÜBA GEBİP (Electrical and Electronics Engineering)  
Tarcan Kumkale TÜBA GEBİP (Psychology)  
Caner Bakır TÜBİTAK ENCOURAGEMENT (Social Sciences)  
Metin Muradoğlu TÜBİTAK ENCOURAGEMENT (Engineering)  
Alper Tunga Erdoğan TÜBİTAK ENCOURAGEMENT (Engineering)

TÜBA GEBİP: Turkish Academy of Sciences Distinguished Young Scientist  
TÜBİTAK TWAS: The Scientific and Technological Council of Turkey Third World Academy of Sciences

#### Feyzi Akkaya Award

Metin Muradoğlu 2009 (Distinguished Young Scientist)  
Alper Kiraz 2009 (Distinguished Young Scientist Research)

<http://www.fabed.com/>

#### Mustafa Parlar Award

Bilge Yağmurlu 2009  
Metin Muradoğlu 2009

<http://www.parlar.org.tr/>

**Sedat Simavi Award** Barış Coşkunüzer (2009)

#### International Awards

Seda Kızılel	L'Oréal Turkey National Fellowship for Young Women in Science - 2009	Umran S. İnan	American Physical Society (APS) Fellow - 2009
Zeynep Aycan	Research Fellow to the Center for Global Workforce Strategy at Simon Fraser University, Segal Graduate School of Business - 2009	İrem Erel	L'Oréal Turkey National Fellowship for Young Women in Science - 2010
Murat Somer	Sakıp Sabancı International Research Award - 2009	İsmail Lazoğlu	Machine Tool Technology Research Foundation Award - 2010
Metin Türkay	IBM Faculty Award - 2009	Şener Aktürk	Sakıp Sabancı International Research Award - 2010



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