

# research newsletter



Eastern Mediterranean University

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Dear Colleagues,

We are pleased to bring you the second issue of *EMU Research Newsletter* for 2007. I hope you will enjoy reading the articles featured in this issue: Bahar Taneri and Ekrem Varoğlu describe their multidisciplinary bioinformatics research project targeted towards deciphering interaction networks of proteins coded by alternatively spliced genes; Mehmet M. Erginel provides us with a philosophical outlook on pleasure and happiness; and finally, Cemre Kortun outlines her research on model-based analysis of biophotonics, a rapidly emerging field with significant potential for medical applications including early cancer diagnosis.

Since the establishment of EMU, our faculty members have placed a strong emphasis on research with an understanding that it plays a critical role in transferring up-to-date knowledge to students at both undergraduate and graduate level. Our mission, as the newsletter staff, is to promote exciting research directions that are being explored by our faculty members and students. In our future issues, we hope to continue to bring out high-quality and cutting-edge research that has already received or will potentially receive commendation from an audience worldwide.

We always welcome your feedback and suggestions on any aspect of the newsletter.

With best regards,

Dizem Arifler

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## ■ News Highlights ■

### ■ Spring 2007 Ministry of Education and Culture project award recipients announced

In the Spring of 2007, the TRNC Ministry of Education and Culture approved financial support for ten research projects from EMU. These projects will be funded jointly by the Ministry within the framework of 'Support for Scientific Activities in Higher Education' and by the Eastern Mediterranean University. Below is a list of the principal investigators whose projects were approved, the project titles in Turkish as originally proposed by the investigators, and the total amount of funding for each project:

- Gürcü Öz Akıncı (Computer Engineering)  
*Project Title:* Mobil Ünitelerin Hücresel Ağlarda Destekli Küresel Konumlandırma Sistemi (A-GPS) Kullanılarak Yerleştirilmesi  
*Amount:* 13,750 YTL
- Hasan Demirel (Electrical and Electronic Engineering)  
*Project Title:* Biyometrik Tabanlı Güvenlik Uygulamaları İçin Gerçek Zamanlı Kimlik Doğrulama  
*Amount:* 13,100 YTL
- Atilla Elçi (Computer Engineering)  
*Project Title:* SIN 2007 Uluslararası Kongresi  
*Amount:* 5,000 YTL
- Naciye Kunt (English Language Teaching)  
*Project Title:* Kuzey Kıbrıs'taki Devlet Liseleri ve Özel Liselerde Okuyan Öğrencilerin Beklentilerinin, İnançlarının, Motivasyon ve Kaygı Düzeylerinin İngilizce Dil Eğitimine Etkilerinin İncelenmesi ve Karşılaştırılması  
*Amount:* 6,000 YTL
- Nazım Mahmudov (Mathematics)  
*Project Title:* Meyer-Köning-Zeller Operatörü Yardımıyla Başlangıç Değer Probleminin Çözümü  
*Amount:* 8,200 YTL
- Ülker Vancı Osam (English Language Teaching)  
*Project Title:* 6. Uluslararası Kıbrıs Araştırmaları Kongresi  
*Amount:* 5,000 YTL

- Ülker Vancı Osam (English Language Teaching)  
*Project Title:* Orta Dereceli Okullardaki İngilizce Derslerinde Bağımsız Öğrenmeyi Gerçekleştirme  
*Amount:* 9,000 YTL
- A. Tarık Timur (Business Administration)  
*Project Title:* KKTC'de Camdan Tavan Uygulamalarının Varlığı, Bu Uygulamaların Bayan Yöneticilerin Kariyer Planlamalarına ve Kurumların Etkinliğine Etkisi  
*Amount:* 5,700 YTL
- Önsen Toygar (Computer Engineering)  
*Project Title:* Birden Fazla Biyometrik Verinin Birleştirilmesine Dayalı Kimlik Tanıma/Doğrulama  
*Amount:* 14,000 YTL
- Mehmet Ali Tut (Mathematics)  
*Project Title:* İlkokul Öğrencilerinin Matematik Öğrenme Yeteneklerinin Ölçülmesi ile İlgili Bir Standart Soru Kütüphanesinin Evrimsel Yöntemlerle Tasarımı  
*Amount:* 10,000 YTL

### ■ EMU professor wins the prestigious Emerald Award for Excellence

B. N. Ghosh from the Department of Economics of EMU has recently been awarded (December 2006) the prestigious international Emerald Award for Excellence for his original article "The Ontological Principles of Gandhian Political Economy" that appeared in *Humanomics* (21:1/2, 2005). *Humanomics* is an international refereed journal published in Canada and features papers on economic philosophy, economics and ethics, political economy, and economic methodology. The Emerald Award is given every year by the Emerald Group of Publishers in the United Kingdom for the best articles in various journals published by this group.

Using the conceptual-perceptual space and the nomological parameters of the Gandhian philosophy, Ghosh has shown that some useful principles of political economy can be formulated. The basic purpose of Ghosh's paper was to unfold these hitherto unknown and unacknowledged principles, and to superimpose them onto the Gandhian philosophy. The analytical outcome then becomes deterministic at once for Gandhian political economy (GPE) principles. These principles are pervasive in the entire corpus of the Gandhian system, which Ghosh has explored in detail in his recent book *Gandhian Political*

*Economy: Principles, Practice and Policy* (Ashgate Publishing, UK, 2007). The article delineates the fundamental ontological principles of GPE, on the basis of which it identifies a few critical commonalities between GPE and the heterodox political economy. The paper establishes that Gandhian political economy is essentially a clash between the historical actuality of British imperialism and the spiritual reality of India. Gandhian political economy is a new and nebulous area of research created by Ghosh for the first time in the domain of Gandhian philosophy.

### ■ EMU robot awarded first prize in national robotics competition organized in Turkey

A team of four students, Reza Abrishambaf from the Department of Electrical and Electronic Engineering, Mustafa Akkoç and Behnam Rahnama from the Department of Computer Engineering, and Ali Kemal Yetişen from the Department of Mechanical Engineering, represented EMU at the National Robotics Competition organized by Middle East Technical University in Turkey on March 3-4, 2007. The team won first prize in the 'Freestyle' Category with their Cooperative Labyrinth Discovery (CLD) Robot that can find its way out of an uncharted labyrinth. CLD Robot was designed and developed under the supervision of Atilla Elçi from the Department of Computer Engineering, with financial support provided by the TRNC Ministry of Education and Culture.

### ■ Urban Research & Development Center (URDC/KENT-AG) hosts two prominent guests



Robert Marans

Robert Marans from the University of Michigan, Taubman College of Architecture & Urban Planning, Senior Researcher at the Institute for Social Science, and the Higher Commissioner for Huron-Clinton Metropolitan Authority, visited EMU as the guest of the Urban Research & Development Center (URDC)

from 20-28 March 2007 (sponsored by the Municipality of Famagusta and EMU). During his visit, he gave two lectures on "Alternative Career Paths for Architects: A Professional Autobiography" and "Quality of Urban Life Studies and Their Contributions to Planning and Policy". Marans is also acting as the advisor for the URDC's ongoing TÜBİTAK project titled "Measuring the Quality of Life in Famagusta", which is led by Derya Oktay.

Lucien Kroll, an internationally renowned Belgian architect, was the guest of the URDC from 24-28 April 2007 (sponsored by the Chamber of Architects and EMU). He gave two lectures titled "Animal Town Planning and Homeopathic Architecture" and "Order, Disorder, Counter-Order". Kroll has been considered by the Agha Khan Architecture Awards Foundation as a 'social architect' who devoted himself both to ecological design and community development through design.



Lucien Kroll

### ■ Faculty of Architecture organizes a field trip to İzmir-Muğla in Turkey

A group of graduate students from the Faculty of Architecture participated in a field trip to İzmir-Muğla, Turkey, on April 7-13, 2007. The trip was organized by Beril Ö. Mayer and Hıfsiye Pulhan. The main goal was to bring about a discussion on *Global-Local Identity* issues reflecting *City-Anticity Scenarios*. The first part of the trip focused on observation of old and new fabric and traditional houses of Muğla, and the research group attended a workshop by the Chamber of Architects of Muğla and University of Muğla. In the second part of the trip, the coastal regions of Muğla as well as Milas, Bodrum and Kuşadası were observed in order to compare new and old fabric in urban settlement. Finally, with cooperation of the Department of Fine Arts of İzmir Economy University and European Academy of Design, the group participated in the International Design Congress "Dancing with Disorder: Design, Discourse and Disaster".

## ■ Two new issues of *Journal of Cyprus Studies* by EMU Press



The 30th issue of *Journal of Cyprus Studies*, *JCS 30*, was edited by Özlem Çaykent and Mehmet M. Erginel, and includes the following articles and supporting material:

- J. Asmussen, "Introduction to Disturbances in Cyprus in October, 1931"
- J. Asmussen, "Disturbances in Cyprus in October, 1931"
- G. Şengör, "Milli Arşiv ve Araştırma Dairesi"

■ The National Archive at Girne, *Index: British Reports on Cyprus from the Colonial Period*

The latest issue, *JCS 31*, also edited by Özlem Çaykent and Mehmet M. Erginel, encompasses the following articles:

- A. Baktıaya, "'93 Harbi' Sırasında İngilizler ve Araplar"
- D. Goldman, "Jewish Settlers in Cyprus During the British Rule, 1880s-1940s"
- B. Ocak, "Arapça Ezana Dönüş ve Bunun Kıbrıs Türk Basını'ndaki Yankıları"
- M. Bailie, "Women and the Media in Northern Cyprus: A Political Economy of Communication and Gender"
- B. Ertan, "Avrupa Birliği Çevre Hukuku ve KKTC"



There are also five book reviews in *JCS 31*:

- N. Tocci, *EU Accession Dynamics and Conflict Resolution. Catalysing Peace or Consolidating Partition in Cyprus?*, reviewed by J. Asmussen
- Y. Papadakis, *Echoes From The Dead Zone: Across the Cyprus Divide*, reviewed by A. Nevzat
- Ş. Kantarcı, Ed., *Kıbrıs Laboratuvarı*, reviewed by B. Ertan
- Ü. İnatçı, *Yarılma*, reviewed by A. Sururi
- Y. Papadakis, N. Peristianis, and G. Welz, Eds., *Divided Cyprus: Modernity, History, and an Island in Conflict*, reviewed by J. Wall

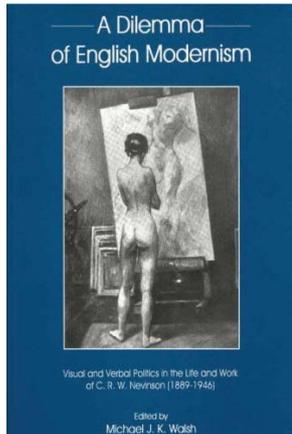
*Journal of Cyprus Studies* is a refereed, international, and interdisciplinary publication, published twice a year by EMU Press for the Center for Cyprus Studies. The primary purpose of the journal is twofold: i) to develop an authoritative archive and bibliography of sources for the study of ideas on social, cultural, historical, political and legal matters relevant to the past, present, or future of the island of Cyprus, and ii) to provide a scholarly, academic forum for the analysis, development, exchange and critique of ideas on these matters. The journal is bilingual, publishing material in English and/or Turkish, and is indexed in the following databases: CSA Sociological Abstracts, Social Services Abstracts, Linguistics and Language Behavior Abstracts, ASSIA, Worldwide Political Science Abstracts, InfoTrac Custom, InfoTrac OneFile, Expanded Academic Index, History RC: Modern World, International Political Science Abstracts, and ABC-Clio Historical Abstracts. Contributions can be sent to [jcs@emu.edu.tr](mailto:jcs@emu.edu.tr).

## ■ Recent books or book chapters by EMU researchers

The following is a list of recent books and book chapters written or edited by EMU researchers. The list provided here may not be comprehensive as it has been put together based on e-mails sent to the newsletter staff before June 1, 2007.

- Y. Çolak, "Türkiye'de Kültür, Farklılık ve Resmi İdeoloji," in *Türkiye-AB İlişkileri*, M. S. Erol and E. Efeğil, Eds., pp. 421-450, Ankara: Orion Yayınevi (2007).
- A. A. Dosiyevev and S. Cival Buranay, "A fourth order accurate difference-analytical method for solving Laplace's boundary value problem with singularities," in *Mathematical Methods in Engineering*, K. Taş, J. A. T. Machado, and D. Baleanu, Eds., pp. 167-176, Springer (2007).
- B. N. Ghosh and P. K. Chopra, Eds., *Globalisation, Human Degradation and Unequal Competition*, Wisdom House, UK (2006).
- B. N. Ghosh and A. Ghafoor, Eds., *Economic Development in Turkey*, Wisdom House, UK (2006).

■ M. J. K. Walsh, Ed., *A Dilemma of English Modernism: Visual and Verbal Politics in the Life and Work of C. R. W. Nevinson (1889-1946)*, University of Delaware Press (2007).



■ N. Yıldız, “The Wakf System in Cyprus as Philanthropic and Religious Institution. A Special Case on Housing the Poor: The Complex of Saman Bahçe Houses in Nicosia (Cyprus),” in *Religions and Philanthropy: Global Issues in Historical Perspective*, G. Gemelli, Ed., pp. 217-266, Baskerville, Bologna (2007).

# A bioinformatics approach to deciphering interaction networks of proteins coded by alternatively spliced genes

By Bahar Taneri and Ekrem Varoğlu



Left to right:  
Şenay Kafkas,  
Ekrem Varoğlu,  
Terry Gaasterland, and  
Bahar Taneri

Bioinformatics is one of the most interesting contemporary and interdisciplinary fields combining biology and computer science, and it has been increasingly playing a key role in furthering biomedical research. The field has gained significant momentum after a working draft of the human genome sequence was announced in 2000.

A recently initiated collaborative research project named “Building Interaction Networks of Proteins Coded by Alternatively Spliced Genes Using Text Mining Approaches” is funded jointly by the TRNC Ministry of Education and Culture and the Eastern Mediterranean University (MEKB-06-19). It is led by Ekrem Varoğlu from the Department of Computer Engineering and Bahar Taneri from the Department of Psychology. Şenay Kafkas, a graduate student in the Department of Computer Engineering, is working on the project as part of her Ph.D. thesis. Bahar Taneri is providing her expertise on molecular biology and Ekrem Varoğlu is providing guidance on computer science aspects of the project. Terry Gaasterland, the director of the

Scripps Genome Center, Scripps Institution of Oceanography (University of California at San Diego, USA), is acting as the project consultant.

In this bioinformatics project, the researchers are exploring computational genomics, transcriptomics, and proteomics, which can briefly be summarized as analysis of all currently available gene, transcript and protein sequences in human and mouse [1]. Particularly, they are studying an important cellular phenomenon known as alternative splicing.

Alternative splicing is a process by which premature messenger RNAs (pre-mRNAs) are spliced into different transcripts by taking out the intronic sequences and ligating the exonic sequences, hence producing several different mRNAs. This process results

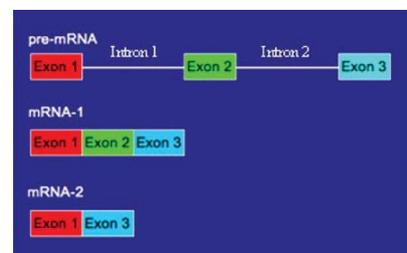
in production of various proteins from the same gene, with potentially different structures and functions. As a result, alternative splicing significantly increases the complexity of genomes. Gene expression is controlled by alternative splicing in a tissue-specific, developmental stage and physiological condition dependent manner.

Alternative splicing not only occurs in the human genome, but is also conserved among many other species, including mammals, other animals and plants [2-4]. More information about alternative splicing and an animated version of the figure shown below can be accessed at <http://brahms.emu.edu.tr/btaneri/research-newsletter.htm>.

In cells, proteins systematically interact with each other, creating dynamic interaction networks to regulate biological activities. Investigating protein-protein interactions (PPIs) is essential for understanding cellular activities as well as disease processes. Protein-Protein Interaction Networks (PPINs) enable observation of the functional organization of proteomes along with providing insight into individual protein function.

Most PPIs still exist in natural-language form since scientists continuously report their work in scientific journals. Availability of a vast number of biological texts and insufficient, hand-curated, and small-sized experimental databases has encouraged bioinformaticians to computationally predict PPIs from biological literature. The first step in extracting PPIs from free text is to retrieve research articles that discuss these interactions. Several statistical and Machine Learning (ML) approaches

Generation of two different m-RNA transcripts from the same pre-mRNA through alternative splicing



can be applied for this task [5, 6]. The second step is to extract PPIs from the retrieved articles. The simplest way to extract PPIs from biological literature is to detect the co-occurrence statistics of proteins [7]. This approach extracts only well-known but not newly discovered PPIs. Another approach relies on predefined patterns or rules [8]. More advanced systems utilize shallow-parsing methods [9]. These systems decompose the sentences partially, identify certain phrasal components and extract local dependencies between them. Rule-based systems utilize pre-defined patterns and cannot discover new patterns. Various ML tools have been employed to discover new and existing PPIs. Here, several diverse lexical, syntactic and semantic features are combined and the systems are trained using training samples for PPI extraction [10]. These systems are able to extract newly discovered PPIs and discover new patterns in contrast to co-occurrence-based and rule-based approaches. As a result, a PPIN consisting of existing and newly discovered interactions can be formed.

The main aim of this study is to create PPINs for proteins coded by alternatively spliced genes throughout the human and mouse transcriptomes using text mining approaches. To this extent, human and mouse databases of alternatively spliced genes created in the Laboratory of Computational Genomics at Rockefeller University (New York, USA) are being utilized [3, 4]. These databases include variant clusters, each of which represents an alternatively spliced gene. The clusters contain transcripts sequenced from that particular gene. With the transcript information at hand, text mining approaches are currently being implemented to analyze free text and to extract PPI information through screening biomedical abstracts available via a public database called PubMed [11].

The PPINs that the researchers are aiming to develop will help further understand how alternative splicing

increases the complexity of proteomes through potential differential interactions of protein isoforms, revealing the functional differences of these molecules. Earlier findings indicate that transcripts of alternatively spliced genes sequenced from cancer tissues have different exon structures compared to those sequenced from unaffected tissues [12]. Protein pathways uncovered in this study are expected to provide information about the role of alternative splicing in pathological conditions such as cancer. These results will be made available via an interactive webpage to facilitate information exchange about the protein-protein interaction pathways.

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# Plato on pleasure and happiness

By Mehmet M. Erginel



*Mehmet M. Erginel in front of the Parthenon on the Acropolis in Athens. The ancient site is at the heart of the area where Plato spent his life.*

We do not, ordinarily, worry about *how much* pleasure we get from the things we enjoy, such as having a cold beer in summer or reading a good novel. Yet questions like these have occupied an important place in the history of moral philosophy, going all the way back to Plato (427-347 BC). Plato was especially concerned about two things: (i) the philosophical view known as ‘hedonism’ – the view that the ultimate good for human beings is pleasure and that the ultimate evil is pain; (ii) the widely held belief, shared by some ancient hedonists, that a life filled with bodily pleasures is the most pleasant and happiest. This was the life generally attributed to the ancient Greek tyrants – the life of a man who uses his power to seize from others whatever he wants, eating and drinking whatever he likes, and sleeping with whomever he likes. Plato considered as dangerous the view that such a life is the most pleasant and happiest, and that one should aim to live such a life. In particular, he wanted to show that the life of a virtuous human being – who, according to Plato, must be a philosopher – is the most pleasant and happiest one.

Plato takes up this issue in several dialogues, but it constitutes an overarching thesis in the *Republic*, which is undoubtedly one of the greatest and most influential works of Western philosophy. In Book II of the *Republic* (which consists of ten books), Plato sets up the challenge to prove that the virtuous (just) human being is the happiest, presenting three proofs for this thesis in Book IX, after much preparatory work. The second and third of these proofs aim to make the case by showing that the virtuous person’s/philosopher’s life is more pleasant than all the other kinds of lives. It is the third proof, however, that Plato considers to be the “greatest and most decisive” argument for the thesis in question (583b6-7).

The received view about this proof, however, has been not only negative but dismissive as well: the account of pleasure on which it is based has been criticized as fraught with serious problems and inadequacies. Indeed, it has generally been treated as a largely unsuccessful account, one that is in need of being revised, or rather, replaced (see especially [1] and [2]). I am convinced,

however, that this received view of the *Republic’s* account is false. My research has been focused on developing an alternative interpretation of the relevant passages, showing that Plato’s view is much more sophisticated and compelling than Plato scholars have generally supposed.

Plato needs to make the difficult case that the virtuous philosopher’s intellectual pleasures are more pleasant than the most pleasant bodily pleasures, even though most people disagree. To this end, Plato argues that people are often mistaken about their own pleasures, and that they do not know how pleasant their experiences *actually* are. One of the mistakes he focuses on is judging that an experience of ours is pleasant when, in fact, it is not. The view that such a mistake is possible is an unpopular one, and scholars have attacked Plato’s position. Urmson argues not only that this position is deeply flawed, but also that it results from a confusion on Plato’s part [3]. I have argued, however, that Urmson’s criticism is misguided, defending Plato against the idea that it is impossible for someone to make the mistake in question. In doing so, I brought out details in Plato’s text and showed that his account of the phenomenology involved in making this mistake is far more sophisticated than has so far been recognized [4].

Indeed, scholars have greatly misunderstood Plato’s account of the psychology of pleasure and pain. This is a critical element of Plato’s proof, since he argues that the philosopher’s pleasures are most pleasant in part because only those pleasures are pure, whereas all other pleasures are mixed with pain. Scholars have dismissed this argument on the grounds that it is full of ambiguity and confusion, but this criticism is based on their misunderstanding of Plato’s account of the psychology of pleasure and pain [5, 6]. I have offered an unorthodox interpre-

tation of the text, establishing that this criticism is groundless, and that Plato's argument is both interesting and persuasive on many points [7].

My continuing research seeks to provide an improved interpretation of Plato's position. This would, in turn, allow a better understanding of his grand thesis that a virtuous human being's life is the most pleasant and happiest, whether or not we ultimately agree with him.

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# ‘Optical biopsy’: A new approach to early cancer diagnosis

By Cemre Kortun

Cancer is a significant health problem throughout the entire world. According to the World Health Organization statistics [1], 7.6 million people died of cancer in 2005, corresponding to about 13% of deaths worldwide. Projections indicate that cancer deaths will continue to rise with an estimated 9 million people dying in 2015, and 11.4 million dying in 2030. It is well-known that early diagnosis of precancerous changes in tissues greatly increases the chances for successful treatment and can dramatically reduce the mortality associated with cancer. Thus, there is an increasing demand for highly sensitive and cost-effective screening and diagnostic tools that can identify curable preinvasive cancer.

Biomedical optics or biophotonics focuses on development of optical technologies for medical imaging, diagnosis and therapy. Early cancer diagnosis has long been in the forefront of biophotonics research, and recent studies provide good evidence that optical spectroscopic and imaging techniques are promising tools for noninvasive, real-time detection of changes associated with precancer progression in various tissues such as the skin, oral cavity, colon, cervix, breast, and lung [2-4]. In optical spectroscopy, light is delivered to the tissue site of interest via a fiber-optic probe that can be brought into contact with the tissue surface either externally or through an endoscopic channel. When light impinges on tissue, photons can either be absorbed by tissue chromophores or exit at the surface after undergoing multiple scattering events. Scattering and absorption characteristics of biological tissues are depend-

ent on morphological, structural, and biochemical properties of tissues. Precancerous changes, such as abnormalities in cell shape and DNA profile, increase in hemoglobin content, or degradation of collagen fibers, all lead to alterations in scattering and absorption properties of tissues. Changes in optical properties of tissues strongly affect the spectral profile of light that re-emerges at the tissue surface. If the reflected light is collected with the optical probe and the wavelength dependence is analyzed, spectral differences resulting from precancerous changes can be effectively monitored.

Optical imaging techniques, including confocal microscopy, optical coherence tomography, and optical coherence microscopy, are also emerging as promising new technologies for diagnosis of precancer. These imaging modalities generate high-resolution images of morphological microstructures in human tissue by constructing a three-dimensional backscattering map. Optical imaging provides sub-cellular resolution and hence is ideally suited to detecting cancer-related structural and morphological alterations.

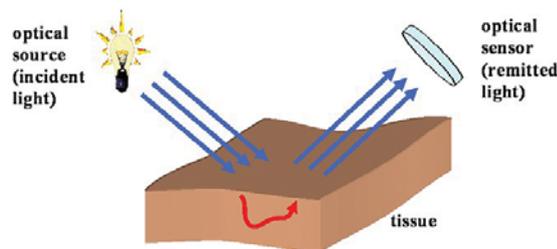


Cemre Kortun

Further, recent advances in optics miniaturization and nanofabrication make optical imaging an ideal candidate for endoscopic implementation [5].

Optical diagnostic techniques can be implemented in real time and at a low cost. Most importantly, these techniques enable noninvasive assessment of tissue morphology and structure. This is a significant advantage over the current clinical practice, where precancerous transformation can only be assessed through histopathologic analysis following invasive biopsy, which is time-consuming, expensive, and painful.

Modeling studies play an integral role in technology development and assessment, and the field of biomedical optics is no exception. Numerical and computational analysis of light-tissue interaction can facilitate development and optimization of optical diagnostic techniques. As an undergraduate student in the Department of Electrical and Electronic Engineering, I recently had an opportunity to contribute to a biophotonic modeling research project under the supervision of Dizem Arifler from the



- Noninvasive (no need for tissue removal)
- Real-time
- Inexpensive
- Robust
- Cellular or even sub-cellular resolution
- Molecular specificity
- Ability to scan large areas
- Less patient distress

*Concept of ‘optical biopsy’ and potential impact of instant, noninvasive analysis of tissue pathology using optical techniques*

Department of Physics. For the past year, I have worked on developing a novel computational framework that can be used to study light propagation in tissues. This is a hybrid framework that combines Monte Carlo modeling and Finite-Difference Time-Domain (FDTD) modeling. Monte Carlo modeling is a popular statistical approach used to analyze light propagation in scattering and absorbing media [6], and it has been widely employed to study optical response of tissues on the bulk or macroscopic scale. Analysis of light propagation on the cellular or sub-cellular level can most appropriately be carried out using FDTD modeling that can be employed to solve electromagnetic wave equations and to study optical properties of tissue constituents on the microscopic scale [7, 8]. Our hybrid framework can be used to merge these two modeling techniques and allows simultaneous consideration of macroscopic as well as microscopic optical properties of tissues. This provides a flexible approach for improved and detailed analysis of light-tissue interaction. Modeling studies using the developed tool will provide guidelines for optimized design of sensors that maximize diagnostic contrast between optical signals acquired from normal and precancerous tissues. Implementation of this hybrid computational framework was part of a project entitled "Biomedical optics for early cancer diagnosis: optimization of optical imaging sensors via model-based analysis of biophotonics", which was funded jointly by the TRNC Ministry of Education and Culture and the Eastern Mediterranean University

(MEKB-06-01).

In recent years, advances in biomedical optics research have motivated several companies in the United States (for example Lucid, Inc., MediSpectra, Inc., and SpectRx, Inc.) to commercialize the described optical technologies for screening and diagnosis of precancer. These efforts are indicative of the fact that these technologies are on the verge of finding their place in the marketplace. Commercialization of optical diagnostic techniques will significantly improve cancer management in developing as well as developed countries, since optical instrumentation is inexpensive, easy to use, and hence adaptable to healthcare systems with limited budgets.

It was very exciting to be a part of such a research project that carries a vital role in improvement of human health. I personally think that this study helped me improve my research skills and broaden my vision for application areas of biomedical engineering. I believe that the knowledge and experience I gained through this project will reflect positively on my studies while I continue my education at University College London in Biomedical Engineering and Medical Imaging M.Sc. Program.

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## ■ Spring 2006-2007 Postgraduate Degrees ■

*The following is a list of students who completed their master or doctoral degrees in Spring 2006-2007 and has been provided by the Institute of Graduate Studies and Research.*

### ■ LL.M ■

Gamze G. Dünder (Law)  
*Thesis Title:* Gemilerin Tabiiyeti  
*Supervisor:* Turgut Turhan

Tacan Reynar (Law)  
*Thesis Title:* Federasyonda Federal Yönetim ile Federe Yönetimler Arasındaki İlişkiler ve Uyuşmazlıkların Çözümü  
*Supervisor:* Sultan Üzeltürk

### ■ MA ■

Esra Akpınar (Communication and Media Studies)  
*Thesis Title:* Experience and Representations of the Life of London Turkish Cypriot and Black Identities  
*Supervisor:* Peter Remington

Rovshan Rahımlı (International Relations)  
*Thesis Title:* "Oil Rentierism", Democracy, and Economic Development in the Post Soviet World: The Case of Azerbaijan  
*Supervisor:* Seymen Atasoy

Mehmet Talaykurt (International Relations)  
*Thesis Title:* Position of the Israel Lobby in the United States' Political System and Its Effects on the United States' Foreign Policy Regarding the Middle East  
*Supervisor:* Erik Knudsen

Elsa Tomja (Banking and Finance)  
*Thesis Title:* Good Practices in Management of Contingent Liabilities in PPP Infrastructure Projects: The Case of Transport Sector  
*Supervisor:* Glenn P. Jenkins

### ■ M.Arch ■

Seydedeh T. Alavi (Architecture)  
*Thesis Title:* Water as an Architectural Element: A Limited Study Through the Use of Water in Persian Architecture  
*Supervisor:* İbrahim Numan

Kamyar Arab (Architecture)  
*Thesis Title:* Architectural Evolution Under the Scope of Technological Advancements  
*Supervisor:* İbrahim Numan

Halleh Nejadriahi (Architecture)  
*Thesis Title:* Design Principles and Space Organizations in Persepolis  
*Supervisor:* İbrahim Numan

Mohammad H. Sadeh (Architecture)  
*Thesis Title:* Selection of Glazing Materials for Transparent Building Envelope  
*Supervisor:* Erdal Aksugür

### ■ M.Ed ■

Emine Nurtunç (Educational Sciences)  
*Thesis Title:* Teachers' Perceptions on Classroom Discipline Problems in the Secondary Schools of TRNC  
*Supervisor:* Hüseyin Yaratan

Fikriye Toker (Educational Sciences)  
*Thesis Title:* The Relationship between Self-Esteem, Attitude towards English and Academic Achievement of the Students at an English Preparatory School  
*Supervisor:* Mesude Atay

### ■ MS ■

Mohammad M. S. Ahmad (Electrical and Electronic Engineering)  
*Thesis Title:* Frequency-Response-Shaped Least Mean Square Adaptive Channel Estimation  
*Supervisor:* Aykut Hocanın

Bashar M. Al-Najdawi (Tourism Management)  
*Thesis Title:* The Influence of Selected Antecedent on Frontline Employee's Perceptions of Job Stress and Its Outcomes: Some Evidence from Jordanian Hotel Industry  
*Supervisor:* Hüseyin Araslı

Gözde Altunok (Industrial Engineering)  
*Thesis Title:* Simulation Modeling and Analysis of CIM Implementation in SMEs - A Case Study in Die-Casting Industry  
*Supervisor:* Nureddin Kirkavak

Reza A. Baf (Electrical and Electronic Engineering)  
*Thesis Title:* Fingerprint Recognition System Using Cellular Neural Networks  
*Supervisor:* Hasan Demirel  
*Co-Supervisor:* İzzet Kale

Cemal Egemen (Economics)  
*Thesis Title:* An Assessment of the Future Fiscal Impacts of the Pension System in North Cyprus  
*Supervisor:* Glenn P. Jenkins

Deniz Erkuş (Tourism Management)  
*Thesis Title:* Residents' Perceptions of Socio-Cultural Impacts of Tourism Development in the Bafra Village of Turkish Republic of Northern Cyprus  
*Supervisor:* İlkay Yorgancı

Hossein Mehrabani (Electrical and Electronic Engineering)  
*Thesis Title:* Discrete-time Control for Single-phase UPS Inverters Using Disturbance Prediction  
*Supervisor:* Osman Kükrer

Hafed H. Mohammed (Civil Engineering)  
*Thesis Title:* Strength Prediction of Concrete by Destructive and Non-Destructive Test Methods  
*Supervisor:* Özgür Eren

Mohamadreza Najiminaini (Computer Engineering)  
*Thesis Title:* Complexity Reduction of TOA Hardware Oriented Positioning Algorithms  
*Supervisor:* Evgueni Doukhitch

Latif Polat (Computer Engineering)  
*Thesis Title:* Coevolutionary Genetic Algorithms for Fuzzy Vehicular Routing Problems  
*Supervisor:* Adnan Acan

Habibe Tilim (Mathematics)  
*Thesis Title:* Volterra Integral Equations of the Second Kind  
*Supervisor:* Mehmet A. Özarslan

Saam Vaziri (Tourism Management)  
*Thesis Title:* Sustainable Tourism and Role of Planning: Case of North Cyprus  
*Supervisor:* Habib Alipour

### ■ Ph.D ■

Terin Adalı (Chemistry)  
*Thesis Title:* Grafting of Polymethacrylates onto Chitosan and Characterization of the Products  
*Supervisor:* Elvan Yılmaz

Syed A. Ali (Electrical and Electronic Engineering)  
*Thesis Title:* Performance Analysis of Turbo Codes over Fading Channels with Additive White Gaussian and Impulsive Noise  
*Supervisor:* Erhan A. İnce

Nabil Khalil (Computer Engineering)  
*Thesis Title:* Dynamic Bandwidth Allocation Scheme for Wireless Overlay Networks  
*Supervisor:* Muhammed Salamah

Eriş Uygur (Civil Engineering)  
*Thesis Title:* Mechanics of Fine Granular Media under One-Dimensional and Plane Strain Conditions  
*Supervisor:* Huriye Bilsel

## ■ Recent Publications and Presentations (January - March 2007) ■

### ■ Journal Publications (ISI) ■

The journal publications presented are limited to those that are listed in Arts & Humanities Citation Index (A&HCI), Science Citation Index Expanded (SCI-Expanded), or Social Sciences Citation Index (SSCI). A search was performed on June 15, 2007 to automatically extract the indexed journal articles from ISI Web of Science®. The articles included in the list that follows have at least one author with EMU affiliation.

H. Akdur, Z. Yigit, U. O. Arabaci, B. S. Kocazeybek, and H. N. Gurses, "Investigation of the relationship between the duration of postoperative mechanical ventilation and complication incidence following coronary artery bypass graft," *Medical Science Monitor* **13**(2), CR105-CR110 (2007).

L. B. Y. Aldabbagh and A. A. Mohamad, "Effect of jet-to-plate spacing in laminar array jets impinging," *Heat and Mass Transfer* **43**(3), 265-273 (2007).

D. Arifler, G. de Veciana, and B. L. Evans, "A factor analytic approach to inferring congestion sharing based on flow level measurements," *IEEE-ACM Transactions on Networking* **15**(1), 67-79 (2007).

A. E. Bashirov, N. Mahmudov, N. Semi, and H. Etikan, "Partial controllability concepts," *International Journal of Control* **80**(1), 1-7 (2007).

E. Bektas, "The persistence of profits in the Turkish banking system," *Applied Economics Letters* **14**(3), 187-190 (2007).

I. Candan and M. Salamah, "Analytical modeling of a time-threshold based bandwidth allocation scheme for cellular networks," *Computer Communications* **30**(5), 1036-1043 (2007).

D. S. Daoud and N. Gurbuz, "Time lagging and explicit interface prediction for nonoverlapping domain decomposition with parallel additive splitting method for multi-dimensional parabolic problem," *Applied Mathematics and Computation* **186**(2), 1094-1103 (2007).

N. Doratli, S. O. Hoskara, B. O. Vehbi, and M. Fasli, "Revitalizing a declining historic urban quarter - The walled city of Famagusta, North Cyprus," *Journal of Architectural and Planning Research* **24**(1), 65-88 (2007).

M. Egemen and A. N. Mohamed, "A framework for contractors to reach strategically correct bid/no bid and mark-up size decisions," *Building and Environment* **42**(3), 1373-1385 (2007).

T. Ilter, "The otherness of cyberspace, virtual reality, and hypertext vis-a-vis 'the traditional'," *Open House International* **32**(1), 83-88 (2007).

O. M. Karatepe and H. Kilic, "Relationships of supervisor support and conflicts in the work-family interface with the selected job outcomes of frontline employees," *Tourism Management* **28**(1), 238-252 (2007).

O. Mustafa and S. H. Mazharimousavi, "Comment on 'Position-dependent effective mass Dirac equations with PT-symmetric and non-PT-symmetric potentials'," *Journal of Physics A - Mathematical and Theoretical* **40**(4), 863-865 (2007) [Editorial Material].

O. G. Mustafa and Y. V. Rogovchenko, "Estimates for domains of local invertibility of diffeomorphisms," *Proceedings of the American Mathematical Society* **135**(1), 69-75 (2007).

M. A. Ozarslan, "q-Laguerre type linear positive operators," *Studia Scientiarum Mathematicarum Hungarica* **44**(1), 65-80 (2007).

N. O. Pagan, "Inside Fateh Azzam's 'Baggage': Monologue and forced migration," *Theatre Research International* **32**(1), 16-31 (2007).

C. Pinteá, "The plane CS infinity non-criticality of certain closed sets," *Topology and Its Applications* **154**(2), 367-373 (2007).

O. Ramadan, "Complex envelope ADI-PML algorithm for truncating Lorentz dispersive 2-D-FDTD domains," *IEEE Microwave and Wireless Components Letters* **17**(1), 4-6 (2007).

O. Ramadan, "Unconditionally stable complex envelope wave equation PML algorithm for band limited FDTD simulations," *International Journal of Infrared and Millimeter Waves* **28**(1), 113-119 (2007).

O. Ramadan, "An efficient state-space ADI-PML algorithm for truncating DNG metamaterial FDTD domains," *Microwave and Optical Technology Letters* **49**(2), 494-498 (2007).

- O. Ramadan, "Three dimensional MPT parallel implementation of the PML algorithm for truncating finite-difference time-domain grids," *Parallel Computing* **33**(2), 109-115 (2007).
- O. Ramadan, "Unsplit field implicit PML algorithm for complex envelope dispersive LOD-FDTD simulations," *Electronics Letters* **43**(5), 267-268 (2007).
- H. Sarper and I. Aybay, "Improving VoD performance with LAN client back-end buffering," *IEEE Multimedia* **14**(1), 48-60 (2007).
- A. Sozen and K. Ozersay, "The Annan plan: State succession or continuity," *Middle Eastern Studies* **43**(1), 125-141 (2007).
- C. Tanova and H. Nadiri, "An empirical study of some demographic and work-related variables on job satisfaction of academics in a Turkish university," *Psychological Reports* **100**(1), 67-75 (2007).
- M. Walsh, "The re-emergence of The Forty Martyrs of Sebaste in the church of Saint Peter and Paul, Famagusta, Northern Cyprus," *Journal of Cultural Heritage* **8**(1), 81-86 (2007).
- E. Yilmaz, T. Adali, O. Yilmaz, and M. Bengisu, "Grafting of poly(triethylene glycol dimethacrylate) onto chitosan by ceric ion initiation," *Reactive & Functional Polymers* **67**(1), 10-18 (2007).
- Communications (ICWMC 2007)*, p. 66, Gosier, Guadeloupe, French Caribbean, March 2007.
- D. Oktay and C. Kara, "Neighbourhood Sustainability: A Comparative Analysis in the Northern and Southern Sections of Nicosia," International Conference on Environment: Survival and Sustainability (ESS 2007), Near East University, Nicosia, Cyprus, February 2007.
- N. O. Pagan, "Configuring the Moral Self: Aristotle and Dewey," Aristotelian Encounters, Roosevelt Academy, Middelburg, The Netherlands, January 2007.
- C. Payashloğlu, "A New IS-LM Framework for the Turkish Economy in the Aftermath of the 2001 crisis," in *Proceedings of the 6th International Conference of the Middle East Economic Association (MEEA 2007)*, Zayed University, Dubai, UAE, March 2007.
- A. Sözen, "Clash of Civilizations or Consensus of Civilizations: The Case of Turkish membership to the European Union," International Studies Association (ISA) 48th Annual Convention, Chicago, Illinois, February-March 2007.
- A. Sururi, "F. Nietzsche and M. Heidegger; Building up an Ecophilosophical Outlook," International Conference on Environment: Survival and Sustainability (ESS 2007), Near East University, Nicosia, Cyprus, February 2007.
- G. Tuna, "Measuring Monetary Policy Shocks under Inflation Targeting in Turkey," in *Proceedings of the 6th International Conference of the Middle East Economic Association (MEEA 2007)*, Zayed University, Dubai, UAE, March 2007.
- Y. Vural and E. Özuyanık, "Resurgence of Turkish Cypriot Nationalism and Redefining Identity in the Process of Political Transformation," The 8th Mediterranean Social and Political Research Meeting of the European University Institute – Robert Schuman Centre for Advanced Studies (EUI – RSCAS), Florence and Montecatini Terme, Italy, March 2007.

## ■ Conference Papers and Presentations ■

*The following list of conference papers and presentations may not be comprehensive as the information presented here has been put together based on e-mails sent to the newsletter staff by EMU researchers before June 1, 2007.*

- B. Çelebi, B. Dericioğulları, and Y. Bitirim, "Performance Evaluation of IEEE 802.11b, IEEE 802.11g and GPRS/EDGE based on Query Retrieval Time," in *Proceedings of the 3rd International Conference on Wireless and Mobile*

