

## CONCEPT-TO-CLINIC

Center for Targeted Therapy

THE DEPARTMENT OF EXPERIMENTAL THERAPEUTICS

VOLUME II – ISSUE 3 – DECEMBER 2007

## Molecular Modeling: Does it compute?

Computational modeling. Computer-aided drug design. *In silico* modeling. Molecular modeling. These terms mean what, exactly?

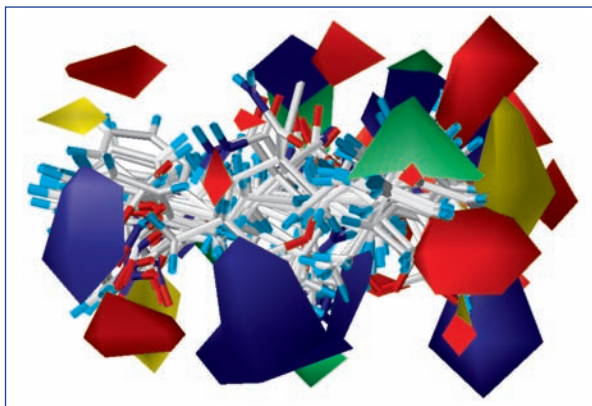
Well, for investigators at M. D. Anderson the meaning is clear – molecular modeling provides the opportunity to utilize a quicker and more cost-effective method of enabling drug discovery and development from the research bench to the patients' bedside.

According to **Shuxing Zhang, Ph.D.**, assistant professor in the Department of Experimental Therapeutics, molecular modeling for drug discovery is a relatively young discipline which has not yet come full circle. It creates models based on known data and then uses these models to predict unknown elements. There are two major types of computational drug discovery approaches – structural-based and ligand-based – each with its own set of advantages.

To state the obvious, with structural-based approaches the structure of the target is known or can be predicted and this method is most commonly used by the pharmaceutical industry.

Ligand-based models typically offer greater flexibility in their approaches since there is little-to-no information about the protein's structure and the mixed functions of other proteins can be utilized. Hence, when there is such little knowledge of the make-up, by using ligand-based approaches you are less restricted by what you don't know. On the down side, your work is not as focused or effective because there is less to build on.

It is best to use both approaches, says Zhang, because it allows the opportunity to search for an overlap or consensus of leads and provides more confidence in these predictions. He cautions not to look only for an overlap though because including too many restrictions could cause you to overlook important information. Zhang and his team are in the process of collecting the properties of every commercial drug on the market and have, thus far, accumulated information on more than 1000 human drugs.



Model of Comparative Molecular Field Analysis (CoMFA) based on a series of Akt inhibitors generated from SYBYL (Tripos, Inc). The different colors represent the preference of electrostatic or steric properties.

This data will aid them in building ligand-based approaches for ADME/Tox (Absorption, Distribution, Metabolism, Excretion and Toxicity) studies.

The **Molecular Modeling Service (MMS)** of the **Center for Targeted Therapy** is directed by Zhang whose background is in pharmacy and computational and medicinal chemistry. The MMS is

able to screen 5 million compounds from its multiple databases utilizing 1052-CPU's (central processing unit), high-performance computing cluster (HPC) and multiple software programs. The core facility uses a local cluster of 32 CPU's with 24" widescreen monitors for optimal molecular visualization. A recent example of a relatively straightforward screening of 53,000 existing drugs took the service approximately two days using 200 CPU's. Zhang indicates that the amount of time it takes to run a screen correlates directly to the initial parameters. For instance, a screen with intensive parameters performed on the same 53,000 compounds in the previously illustrated example could take up to 10 days to perform.

Proficient with both structural- and ligand-based methods of molecular modeling, Zhang and his team can provide investigators with other options as well. Homology modeling, for instance, is a bioinformatics approach that allows a structure to be built based on the structure of other proteins. Another example is protein structure prediction, which is a method of basically trying to predict a structure from scratch, called *ab initio* prediction.

According to Zhang, the interaction between computer predictions and wet bench experiments is essential to successful molecular modeling. For example, cell-based assays and animal models are indispensable to validating or invalidating the identified hit compounds. The MMS can perform preclinical *in silico* ADME/Tox studies to aid in its prediction capabilities. Still required, however, is the validation of its predictions through pharmacodynamics, pharmacokinetics and mass spectrometry to ensure that *in silico* predictions and experimental data are consistent with one another.

(continued on page 3)

**Experimental Therapeutics Lecture Series • Wednesdays • 9 a.m. • AT&T Auditorium B2.4750**

January 16, 2008.....**Jim Paulson, Ph.D.**, The Scripps Research Institute

January 30, 2008.....**John DiGiovanni, Ph.D.**, The University of Texas M. D. Anderson Cancer Center

February 13, 2008.....**Ralph B. Arlinghaus, Ph.D.**, The University of Texas M. D. Anderson Cancer Center

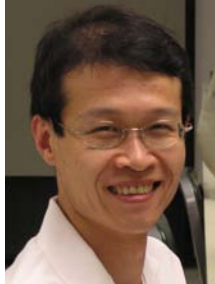


**John McMurray, Ph.D.**, associate professor in the Department of Experimental Therapeutics, recently was honored with the **American Chemical Society – Greater Houston Section Award**.

The award recognizes meritorious contributions to the welfare and distinction of the Greater Houston Section by contributions made to education, research or sectional or community service.

**Ruoning Wang, Ph.D.**, a postdoctoral fellow in Dr. Jian Kuang’s laboratory in the Department of Experimental Therapeutics, will receive the **2006-2007 Alfred G. Knudson Jr. Outstanding Dissertation Award** at M. D. Anderson’s annual Faculty Honors Convocation held in November 2007.

Wang’s dissertation, **“ERK-MAPK-Mediated Activation of Cdc25 During G2/M Transition,”** was selected unanimously over 10 other nominations. The selection committee based its decision on the quality of Wang’s thesis work and its impact on his field of study, as well as his potential for future success as an independent investigator.



**Melissa Rubalcaba**, senior financial analyst in the Department of Experimental Therapeutics, was the recipient of the **Citation for Excellence in Financial Services** in the Division of Cancer Medicine’s Annual Employee Recognition and Awards Program 2007.

Nominated by Garth Powis, D.Phil., department chair, and Kristen Anderson, department administrator, Rubalcaba’s contributions over the past year included developing and launching a new grants management system across the department; assisting in the planning of a conference for NCI; and assisting the Office of Financial Controls with two pilot projects.



**Lisa Chen, Ph.D.**, a postdoctoral fellow in Dr. Varsha Gandhi’s laboratory, is the winner of a \$500 **Trainee Excellence Award** from the M. D. Anderson Alumni and Faculty Association.

Chen’s winning abstract, **“Inhibition of Mammalian Polyadenylation by ATP Analogs,”** was one of eight selected from 96 applications.

**Julie Izzo, M.D.**, assistant professor, and **Nancy Poindexter, Ph.D.**, associate professor, both in the Department of Experimental Therapeutics, recently were elected by their peers to the Faculty Senate to represent the department beginning Sept. 1, 2007.

GRANTS

**Bryant Darnay, Ph.D.**, assistant professor in the Department of Experimental Therapeutics, received an R01 grant in the amount of \$688,000 from the **National Institute of Arthritis and Musculoskeletal and Skin Diseases** for his application, **“TRAF6 E3 Ligase Function in Osteoclastogenesis.”**

**Zhen Fan, M.D.**, associate professor in the Department of Experimental Therapeutics, recently was granted with a **Breast Cancer Research Program (BCRP) Concept Award** from the Department of the Army.

Fan’s proposal, **“Unraveling a Novel Role of Brk in Regulating EGFR in Triple-Negative Breast Cancer,”** earned funding in the amount of \$115,500 for one year.

Proposals were evaluated with a two-tier review process consisting of scientific peer review and programmatic review where neither the name of the principal investigator nor the applicant institution were provided.

Fan was one of three researchers at M. D. Anderson to receive a BCRP Concept Award for this fiscal year. Eighty-three Concept Awards were granted out of 1,207 award proposals.

**Robert Newman, Ph.D.**, professor in the Department of Experimental Therapeutics, received funding as a PI on a sub-contract for an R21 grant in the amount of \$45,000 from the **National Center for Complementary and Alternative Medicine** for an application entitled, **“Antiangiogenic Properties of Sweet Leaf Tea Extract.”**

**Waldemar Priebe, Ph.D.**, professor in the Department of Experimental Therapeutics, recently received a grant from **Collaborative Medical Research LLC** in the amount of \$331,720 for his application, **“Developmental Therapeutics.”**

PROMOTIONS

*Congratulations on a job well done!*

The following ET employees were recently promoted:

**Nga Bich Thi Nguyen** and **Jibin Ding**

both to research assistant II in Dr. Newman’s lab;

**Nancy Poindexter, Ph.D.**, to associate professor, and **Carolyn Cooke**, to senior research assistant, both in Dr. Grimm’s lab;

**Mi-Ae Lyu** to research scientist in Dr. Rosenblum’s lab;

and **Vanity McMurtry** to research assistant II in Dr. Lopez-Berestein’s lab.

## PEOPLE NOTES

The Department of Experimental Therapeutics is growing by leaps and bounds. Please welcome these new and returning faces. Please check Lotus Notes for telephone numbers and office locations.

Midan Ai	Graduate Research Assistant	Fan
Juliana Benito, Ph.D.	Postdoctoral Fellow	Lopez-Berestein
Kimberly Boley	Research Assistant II	Robertson
Yu Cao, Ph.D.	Postdoctoral Fellow	Rosenblum
Chandrani Chattopadhyay	Research Scientist	Grimm
Wenting Chen	Student Extern	Bast
Paul Cherukuri, Ph.D.	Assistant Professor	Joint Appointment (Surgical Oncology – Research)
Deyanira "Janet" Cruz	Senior Secretary	Gandhi, Plunkett
Gina Dimiceli	Administrative Assistant	Ferrari, Robertson
Lei Du-Cuny, Ph.D.	Postdoctoral Fellow	Zhang
Stephanie Elizondo	Research Assistant I	Bast
Knox "Alex" Evans	Research Investigator	Madden
Victoria Greene	Research Scientist	Grimm
Laura Gumbiner-Russo, Ph.D.	Postdoctoral Fellow	Powis
Arumugam Jayakumar	Research Scientist	Priebe
Oiki Sylvia Lai	Research Intern	Aggarwal
Warren Liao, Ph.D.	Associate Professor	Bast
Zhigang Liu	Research Scientist	Rosenblum
Abhijit Mazumdar, Ph.D.	Instructor	Robertson
Anh V. Nguyen	Research Assistant I	Robertson
Milena Nicoloso	Senior Research Assistant	Calin
Billie Nowak	Research Investigator (p/t)	Plunkett
Stacey Prieto	Senior Secretary	Calin, Fan, Mehta & Siddik
Rishika Sharma	Research Assistant II	Hittelman

## CONFERENCE HIGHLIGHTS



**Fredika Robertson, Ph.D.**, professor in the Department of Experimental Therapeutics, was an invited speaker at the **XIII International Charles Heidelberger Symposium and 50 Years of Fluoropyrimidines in Cancer Therapy** held Sept. 6 through 8, 2007 at the New York University Cancer Institute.

Robertson, who trained with Heidelberger – best known for his rational design and synthesis of 5-Fluorouracil – as a postdoctoral fellow, spoke on skin carcinogenesis in the “Models of Cancer Causation” session.

**John McMurray, Ph.D.**, associate professor, and **Pijus Mandal, Ph.D.**, research scientist, both in the Department of Experimental Therapeutics, attended the **20th American Peptide Society Symposium** held June 26 through 30, 2007 in Montreal.



The pair presented the following three posters:

- **“Inhibition of Stat3 by Cell-Permeable Peptidomimetic Prodrugs Targeted to its SH2 Domain”** – authors JS McMurray, PK Mandal, WS Liao, Z Ren, X Chen.
- **“Application of Triethylsilane and Palladium-Charcoal-Induced Reductions in the Synthesis of Fmoc-Glutamic Acid Analogues”** – authors PK Mandal, JS McMurray.
- **“Model of Intermolecular Interactions between High Affinity Phosphopeptides and Stat3”** – authors JS McMurray, Z Ren, PK Mandal, X Chen.

## Molecular Modeling: Does it compute?

*(continued from front page)*

Zhang believes there is a disconnect between bioinformatics, chemoinformatics and systems biology and his goal is to develop a program that will bridge that gap for investigators at M. D. Anderson. He, and others in his field, has coined the phrase “Systems Chemical Biology” to begin the process of amalgamating the three disciplines.

“The object is to borrow concepts from bioinformatics and systems biology and apply them to chemoinformatics via computer science,” says Zhang. “I want to integrate computers with biology and chemistry.”

And to do this, Zhang is developing what he calls the “MD Workbench” – a Web-based portal that allows investigators to: use a relational database to identify and study signaling pathways in cancers; build models and make predictions for new data; perform computations connected through the service’s HPC; and utilize visualization tools that provide an opportunity to see the structure.

Still a work in progress, MD Workbench will be high-quality, easy to access, easy to use and free to academia. Investigators will register with the service, upload data, utilize the default parameters or parameter optimization tool and wait for the predictions which are a mere coffee break away. A promising drug candidate with good efficacy can yield cross interactions, side effects and toxicities (through ADME-Toxicity studies). Employing systems biology approaches, the MD Workbench can predict these off-target properties and illustrate the polypharmacology of lead compounds.

As of now, Zhang indicates there is no other free, publicly accessible and highly comprehensive system as unique as the MD Workbench. For more information on the **Molecular Modeling Service** or the upcoming Web-based modeling application, please contact **Shuxing Zhang, Ph.D.** at [shuzhang@mdanderson.org](mailto:shuzhang@mdanderson.org).

## Apoptosis

Tissue transglutaminase induces the release of apoptosis inducing factor and results in apoptotic death of pancreatic cancer cells.

Fok JY, Mehta K.

[Apoptosis. 2007 Aug;12\(8\):1455-63.](#)

## Autophagy

PKC delta and tissue transglutaminase are novel inhibitors of autophagy in pancreatic cancer cells.

Ozpolat B, Akar U, Mehta K, Lopez-Berestein G.

[Autophagy. 2007 Sep-Oct;3\(5\):480-3. Epub 2007 Apr 27.](#)

## Biochemical and Biophysical Research Communications

Inhibition of RANKL-mediated osteoclast differentiation by selective TRAF6 decoy peptides.

Poblenz AT, Jacoby JJ, Singh S, Darnay BG.

[Biochem Biophys Res Commun. 2007 Aug 3;359\(3\):510-5. Epub 2007 May 30.](#)

TRAF-interacting protein (TRIP) is a RING-dependent ubiquitin ligase.

Besse A, Campos AD, Webster WK, Darnay BG.

[Biochem Biophys Res Commun. 2007 Aug 3;359\(3\):660-4. Epub 2007 May 30.](#)

TRAF6 ubiquitin ligase is essential for RANKL signaling and osteoclast differentiation.

Lamothe B, Webster WK, Gopinathan A, Besse A, Campos AD, Darnay BG.

[Biochem Biophys Res Commun. 2007 Aug 10;359\(4\):1044-9. Epub 2007 Jun 11.](#)

## Biochemical Pharmacology

Guggulsterone inhibits tumor cell proliferation, induces S-phase arrest, and promotes apoptosis through activation of c-Jun N-terminal kinase, suppression of Akt pathway, and downregulation of antiapoptotic gene products.

Shishodia S, Sethi G, Ahn KS, Aggarwal BB.

[Biochem Pharmacol. 2007 Jun 30;74\(1\):118-30. Epub 2007 Mar 30.](#)

## Bioconjugate Chemistry

N,N-dimethylsphingosine-coumarin: synthesis, chemical characterization, and biological evaluation.

Ghosh SC, Auzenne E, Farquhar D, Klostergaard J.

[Bioconjug Chem. 2007 May-Jun;18\(3\):731-5. Epub 2007 Apr 14.](#)

## Blood

Gossypin, a pentahydroxy glucosyl flavone, inhibits the transforming growth factor beta-activated kinase-1-mediated NF-kappaB activation pathway, leading to potentiation of apoptosis, suppression of invasion, and abrogation of osteoclastogenesis.

Kunnumakkara AB, Nair AS, Ahn KS, Pandey MK, Yi Z, Liu M, Aggarwal BB.

[Blood. 2007 Jun 15;109\(12\):5112-21. Epub 2007 Mar 1.](#)

## Cancer Cell

Ultraconserved regions encoding ncRNAs are altered in human leukemias and carcinomas.

Calin GA, Liu CG, Ferracin M, Hyslop T, Spizzo R, Sevignani C, Fabbri M, Cimmino A, Lee EJ, Wojcik SE, Shimizu M, Tili E, Rossi S, Taccioli C, Pichiorri F, Liu X, Zupo S, Herlea V, Gramantieri L, Lanza G, Alder H, Rassenti L, Volinia S, Schmittgen TD, Kipps TJ, Negrini M, Croce CM.

[Cancer Cell. 2007 Sep;12\(3\):215-29.](#)

## Cancer Epidemiology Biomarkers & Prevention

Clinical biology of esophageal adenocarcinoma after surgery is influenced by nuclear factor-kappaB expression.

Izzo JG, Malhotra U, Wu TT, Luthra R, Correa AM, Swisher SG, Hofstetter W, Chao KS, Hung MC, Ajani JA.

[Cancer Epidemiol Biomarkers Prev. 2007 Jun;16\(6\):1200-5.](#)

## Cell Cycle

Targeting the hedgehog pathway to mitigate treatment resistance.

Chen YJ, Sims-Mourtada J, Izzo J, Chao KS.

[Cell Cycle. 2007 Aug 1;6\(15\):1826-30. Epub 2007 Jun 5.](#)

## Clinical Cancer Research

Capsaicin is a novel blocker of constitutive and interleukin-6-inducible STAT3 activation.

Bhutani M, Pathak AK, Nair AS, Kunnumakkara AB, Guha S, Sethi G, Aggarwal BB.

[Clin Cancer Res. 2007 May 15;13\(10\):3024-32.](#)

Comparative Analysis of Peritoneum and Tumor Eicosanoids and Pathways in Advanced Ovarian Cancer.

Freedman RS, Wang E, Voiculescu S, Patenia R, Bassett RL Jr, Deavers M, Marincola FM, Yang P, Newman RA.

[Clin Cancer Res. 2007 Oct 1;13\(19\):5736-5744.](#)

Curcumin inhibits tumor growth and angiogenesis in ovarian carcinoma by targeting the nuclear factor-kappaB pathway.

Lin YG, Kunnumakkara AB, Nair A, Merritt WM, Han LY, Armaiz-Pena GN, Kamat AA, Spannuth WA, Gershenson DM, Lutgendorf SK, Aggarwal BB, Sood AK

[Clin Cancer Res. 2007 Jun 1;13\(11\):3423-30.](#)

## Current Opinion in Pharmacology

Natural products as a gold mine for arthritis treatment.

Khanna D, Sethi G, Ahn KS, Pandey MK, Kunnumakkara AB, Sung B, Aggarwal A, Aggarwal BB.

[Curr Opin Pharmacol. 2007 Jun;7\(3\):344-51. Epub 2007 May 1.](#)

## Developmental Biology

Tumor distribution to cytoplasmic membrane of neural plate cells is positively regulated by Xenopus p21-activated kinase 1 (X-PAK1).

Wu CF, Delsert C, Faure S, Traverso EE, Kloc M, Kuang J, Etkin LD, Morin N.

[Dev Biol. 2007 Aug 1;308\(1\):169-86. Epub 2007 May 24.](#)

## Free Radical Biology and Medicine

**Role of pro-oxidants and antioxidants in the anti-inflammatory and apoptotic effects of curcumin (diferuloylmethane).**

Sandur SK, Ichikawa H, Pandey MK, Kunnumakkara AB, Sung B, Sethi G, Aggarwal BB.

[Free Radic Biol Med. 2007 Aug 15;43\(4\):568-80. Epub 2007 May 16.](#)

## Investigational New Drugs

**A thermally targeted elastin-like polypeptide-doxorubicin conjugate overcomes drug resistance.**

Bidwell GL 3rd, Davis AN, Fokt I, Priebe W, Raucher D.

[Invest New Drugs. 2007 Aug;25\(4\):313-26. Epub 2007 May 5.](#)

## Journal of Biological Chemistry

**Butein, a tetrahydroxychalcone, inhibits nuclear factor (NF)-kappaB and NF-kappaB-regulated gene expression through direct inhibition of IkappaBalpha kinase beta on cysteine 179 residue.**

Pandey MK, Sandur SK, Sung B, Sethi G, Kunnumakkara AB, Aggarwal BB.

[J Biol Chem. 2007 Jun 15;282\(24\):17340-50. Epub 2007 Apr 17.](#)

## Journal of Immunology

**A previously unrecognized protein-protein interaction between TWEAK and CD163: potential biological implications.**

Bover LC, Cardo-Vila M, Kuniyasu A, Sun J, Rangel R, Takeya M, Aggarwal BB, Arap W, Pasqualini R.

[J Immunol. 2007 Jun 15;178\(12\):8183-94.](#)

**Targeted Deletion of MKK4 Gene Potentiates TNF-Induced Apoptosis through the Down-Regulation of NF- $\kappa$ B Activation and NF- $\kappa$ B-Regulated Antiapoptotic Gene Products.**

Sethi G, Ahn KS, Xia D, Kurie JM, Aggarwal BB.

[J Immunol. 2007 Aug 1;179\(3\):1926-33.](#)

## Journal of Organic Chemistry

**Pd-C-induced catalytic transfer hydrogenation with triethylsilane.**

Mandal PK, McMurray JS.

[J Org Chem. 2007 Aug 17;72\(17\):6599-601.](#)

[Epub 2007 Jul 14.](#)

## Letters in Drug Design & Discovery

**Copper complexes of henna-sulforaphane conjugates as potent antiproliferative agents against human myeloma KBM-5 cells through blockade of transcription factor NF-KappaB.**

Shirisha K, Patole J, Padhye S, Sinn E, Shishodia S, Aggarwal BB.

[Lett Drug Des Discov. 2007 June; 4\(4\):257-62](#)

## Molecular and Cellular Biochemistry

**PTEN down regulates AP-1 and targets c-fos in human glioma cells Via PI3-kinase/Akt pathway.**

Koul D, Shen R, Shishodia S, Takada Y, Bhat KP, Reddy SA, Aggarwal BB, Yung WK.

[Mol Cell Biochem. 2007 Jun;300\(1-2\):77-87. Epub 2007 Jan 18.](#)

## Molecular Pharmacology

**Evidence that curcumin suppresses the growth of malignant gliomas in vitro and in vivo through induction of autophagy: role of Akt and extracellular signal-regulated kinase signaling pathways.**

Aoki H, Takada Y, Kondo S, Sawaya R, Aggarwal BB, Kondo Y.

[Mol Pharmacol. 2007 Jul;72\(1\):29-39. Epub 2007 Mar 29.](#)

**Fisetin, an inhibitor of cyclin-dependent kinase 6, down-regulates nuclear factor-kappaB-regulated cell proliferation, antiapoptotic and metastatic gene products through the suppression of TAK-1 and receptor-interacting protein-regulated IkappaBalpha kinase activation.**

Sung B, Pandey MK, Aggarwal BB.

[Mol Pharmacol. 2007 Jun;71\(6\):1703-14. Epub 2007 Mar 26.](#)

## Neoplasia

**Hyaluronic acid-paclitaxel: antitumor efficacy against CD44(+) human ovarian carcinoma xenografts.**

Auzenne E, Ghosh SC, Khodadadian M, Rivera B, Farquhar D, Price RE, Ravoori M, Kundra V, Freedman RS, Klostergaard J.

[Neoplasia. 2007 Jun;9\(6\):479-86.](#)

## Nutrition and Cancer

**Zyflamend, a polyherbal preparation, inhibits invasion, suppresses osteoclastogenesis, and potentiates apoptosis through down-regulation of NF-kappa B activation and NF-kappa B-regulated gene products.**

Sandur SK, Ahn KS, Ichikawa H, Sethi G, Shishodia S, Newman RA, Aggarwal BB.

[Biol Blood Marrow Transplant. 2007 Jan;13\(1\):56-64.](#)

## Oncogene

**Sonic Hedgehog promotes multiple drug resistance by regulation of drug transport.**

Sims-Mourtada J, Izzo JG, Ajani J, Chao KS.

[Oncogene. 2007 Aug 16;26\(38\):5674-9. Epub 2007 Mar 12.](#)

## Urology

**Granulocyte colony-stimulating factor/granulocyte colony-stimulating factor receptor biological axis promotes survival and growth of bladder cancer cells.**

Chakraborty A, Guha S.

[Urology. 2007 Jun;69\(6\):1210-5.](#)



**INTRODUCING...**



**Name:** George A. Calin  
**Title:** Associate Professor  
**Departmental Role:** To discover non-coding RNAs important for the diagnosis, prognosis and therapy of human cancers.

**Birthplace:** Bucharest, Romania

**The word that best describes me is:** Action

**My proudest accomplishment is:** My Kids

**People who know me would say:** I'm charged

**When not working for a living:** I spend time power lifting, going with my kids to sporting events, reading and listening to music.

**My heroes and/or heroines include:** Arnold Schwarzeneger, who went from nothing to governor of the most well-known U.S. state

**Favorite or recent books:** "Foucault's Pendulum" by Umberto Eco

**The most unique thing about me is:** I started learning genetics by myself – in a communist country.

**Favorite quote(s):** "A crown is not a crown without a diamond."

**Favorite song(s):** Too many to list

**What I like most about Houston:** There is a lot of green and it is multicultural.

**What I like least about Houston:** I haven't been here long enough to know...



**Something most people don't know about me:** I was once a bodybuilder.

**International Flavor Is the Spice of Life**



An International Potluck Luncheon was enjoyed by the labs of Drs. Calin, Powis, Priebe, Robertson and Zhang on Friday, Aug. 3, 2007. The cuisine of China, India, Italy, Japan, Mexico, Poland, Romania, the United Kingdom and the U.S was represented in full force.

**The ABCs of Giving**

A call for help went out and ET answered!



Chloe Franklin, a research assistant I in Dr. Powis' lab, mentors 13-year-old Quentasia (and has for several years).

This year, Quentasia's mom was not able to afford school supplies for Quentasia and her siblings. So Chloe got on the horn (via email, of course) and

asked her ET colleagues for donations to assist the family with their back-to-school preparations.

The response was overwhelming and Chloe filled not only the trunk of her car with school supplies, but the backseat as well. Smiles were on the faces of all as the kids filled their backpacks in anticipation of the first day of classes.

**ET gets an A+ in Giving 101!**



**Concept-to-Clinic** is a publication of the Department of Experimental Therapeutics at The University of Texas M. D. Anderson Cancer Center.

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Please send submissions to:  
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