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# Innovator Spotlight

*Feeding the World: Martin Yanofsky at Work*

In a world where resources for food production are becoming increasingly scarce, Dr. Martin Yanofsky and his research group have devised new genetic procedures that can dramatically increase seed yield in fruit crops. Yanofsky's career spans more than 20 years at UC San Diego with the majority of his tenure focused on understanding the genetic control of flower and fruit development.

In 2008, this basic genetic research attained new levels of recognition when the National Academy of Sciences elected Yanofsky into their prestigious group. With 35 invention disclosures at UC San Diego's Technology Transfer Office and 22 patents to his credit, Yanofsky has an impressive patent portfolio that has caught the attention of industry commercialization partners.

As an undergraduate student in 1974, Yanofsky arrived at UC San Diego uncertain about his major. In his freshman year, he began working in the lab of Professor Don Helinski during winter break. Although initially assigned to simple tasks, working in the lab was a turning point in Yanofsky's career path. From washing lab dishes to mixing solutions, then assisting with experiments, Yanofsky progressed to his future as a researcher. He has had an exceptionally successful career, from obtaining his Ph.D. from the University of Washington, to his postdoctoral training in plant biology at Caltech, to joining the

*Martin F. Yanofsky, Ph.D.*
*Distinguished Professor of Cell and Developmental Biology*

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# Entrepreneur Challenge $100K Business Plan Competition

The UC San Diego Entrepreneur Challenge 5th Annual Business Plan Competition will be held on June 1, 2011, 6:00 pm - 8:30 pm, at the Neurosciences Institute. The top five business plan submissions will compete for $100,000 in prizes. The 5th Annual Entrepreneur Challenge celebrates student driven entrepreneurship at its best and is rapidly becoming the premiere business plan competition on the west coast. A gathering of San Diego's who's who in science, technology, and business will determine the winners during a live pitchfest that features the cutting edge of San Diego up and coming entrepreneurs. The Entrepreneur Challenge is offered as a free university and community service.

# Number of Issued U.S. Patents Continues to Rise

An important part of licensing technology is protecting the university's intellectual property by filing and prosecuting patents. From a company's perspective, acquiring patent protection is often crucial when raising venture financing and commercializing technology.

In the last fiscal year, over 70 U.S. patents were issued to UC San Diego innovators. In the current fiscal year, 67 U.S. patents have issued as of May 2011, and the fiscal year ends June 30. Listed below are the patents issued in FY2011 with those in each division or school grouped together.

***Division of Biological Sciences***

7,811,996 - David, Michael - Methods and compositions for prevention and treatment of inflammatory disease, autoimmune disease, and transplant rejection

7,897,848 - Yanofsky, Martin et al. - Control of fruit dehiscence in plants by indehiscent1 genes

7,842,786 - Zuker, Charles et al. - Mammalian sweet and amino acid heterodimeric taste receptors comprising T1R3 and T1R1

7,863,433 - Zuker, Charles et al. - Nucleic acids encoding a G-protein coupled receptor involved in sensory transduction

7,867,721 - Zuker, Charles et al. - *In vitro* method for identifying a compound using an eukaryotic mechanosensory transduction channel

7,868,150 - Zuker, Charles et al. - Nucleic acids encoding T2R taste receptors

7,888,045 - Zuker, Charles et al. - Methods for identifying modulators of SF taste receptor signaling

***Health Sciences***

7,807,645 - Akassoglou, Katerina - Method of treating degenerative disorders of the nervous system by administration of fibrinogen fragment

7,790,158 - Albani, Salvatore et al. - Methods for epitope-specific and cytokine/anticytokine combination immunotherapies

7,795,869 - Bydder, Mark - Processing of multiple echo data sets in magnetic resonance imaging

7,906,638 - Cantwell, Mark et al. - Chimeric nucleic acids encoding polypeptides comprising CD70 and Fas ligand domains

7,816,352 - Carson, Dennis A. et al. - Apoptosis inhibitors

7,906,104 - Chessler, Steven D. et al. - Methods for detecting pancreatic beta-islet cells and diseases thereof

7,851,228 - Dewji, Nazneen et al. - Methods for screening agents that modulate presenilin activity and A-.beta. production

7,919,475 - Dillman, Wolfgang et al. - Compositions and methods for improving heart function

7,749,976 - Dixon, Jack et al. - Isolated PTPMT1 protein which mediates insulin production and uses thereof

7,772,192 - Esko, Jeffrey D. - Compositions and methods for treatment of disease with acetylated disaccharides

7,776,823 - Gallo, Richard L. et al. - Human cathelicidin antimicrobial peptides

7,777,000 - Gallo, Richard L. et al. - Anti-viral activity of cathelicidin peptides

7,749,983 - Hostetler, Karl et al. - Metabolically stable alkoxyalkyl esters of antiviral or antiproliferative phosphonates, nucleoside phosphonates and nucleoside phosphates

7,790,703 - Hostetler, Karl et al. - Phosphonate compounds

7,846,664 - Insel, Paul A. et al. - Diagnosis and treatment of chronic lymphocytic leukemia (CLL)

7,776,527 - Karin, Michael et al. - Methods and compositions for reducing microbial induced apoptosis

7,906,281 - Kelsoe, John Jr - Method to predict the response to lithium treatment

7,786,282 - Kipps, Thomas et al. - Nucleic acid molecules encoding TNF-.alpha. ligand polypeptides having a CD154 domain

7,867,476 - Knowlton, Kirk et al. - Method and materials for use in diagnosing viral myocarditis

7,776,593 - Levine, Fred et al. - Hes6 as a marker of pancreatic endocrine cells

7,795,495 - Masliah, Eliezer et al. - Transgenic mice for screening for inhibitors of protein aggregation and methods for making and using them

7,749,720 - Olefsky, Jerrold et al. - Methods of identifying compounds for producing insulin sensitization

7,888,372 - Terkeltaub, Robert et al. - Compositions and methods for modulating bone mineral deposition

7,906,636 - Tsien, Roger et al. - Monomeric and dimeric fluorescent protein variants and methods for making same

7,879,548 - Tsuang, Ming T. et al. - Detection of biomarkers for neuropsychiatric disorders

7,776,320 - Tuszynski, Mark - Methods for therapeutic use of brain derived neurotrophic factor in the entorhinal cortex

7,824,680 - Varner, Judith A. - Methods for inhibiting angiogenesis

7,786,091 - Williams, David et al. - Compositions and methods for ameliorating myosin VIIa defects

***Jacobs School of Engineering***

7,782,803 - Al-Harthi, Saleh - Half-duplex wireless network scheduling

7,802,236 - Calder, Bradley et al. - Method and apparatus for identifying similar regions of a program's execution

7,765,497 - Cheng, Chung-Kuan et al. - Circuit network analysis using algebraic multigrid approach

7,793,188 - Dey, Sujit et al. - Apparatus and method for improving reliability of collected sensor data over a network

7,808,941 - Dey, Sujit et al. - Dynamic adaptation for wireless communications with enhanced quality of service

7,771,630 - Esener, Sadik et al. - Precise fabrication of polymer microlens arrays

7,898,749 - Fainman, Shaya et al. - Multiple reflective lenses and lens systems

7,871,456 - Gough, David et al. - Membranes with controlled permeability to polar and apolar molecules in solution and methods of making same

7,820,064 - Jin, Sungho - Spinodally patterned nanostructures

7,873,929 - Kahng, Andrew et al. - Method, apparatus and system for designing an integrated circuit including generating at least one auxiliary pattern for cell-based optical proximity correction

7,860,306 - Kriegman, David et al. - Method for editing multi-channel images

RE41,582 - Larson, Lawrence et al. - S-band low-noise amplifier with self-adjusting bias for improved power consumption and dynamic range in a mobile environment

7,826,145 - Lo, Yu-Hwa et al. - Fluidic adaptive lens systems with pumping systems

7,751,981 - Palsson, Bernhard et al. - Articles of manufacture and methods for modeling *Saccharomyces cerevisiae* metabolism

7,788,041 - Palsson, Bernhard et al. - Compositions and methods for modeling human metabolism

7,869,957 - Palsson, Bernhard et al. - Methods and systems to identify operational reaction pathways

7,756,305 - Price, Jeffrey H - Fast 3D cytometry for information in tissue engineering

7,796,244 - Radic, Stojan - Method for mapping of dispersion and other optical properties of optical waveguides

RE41,644 - Yu, Paul - Method for optical modulation at periodic optical structure band edges

***Division of Physical Sciences***

7,825,402 - Butov, Leonid - Excitonic signal processing optically interfaced electrically controlled devices

7,786,316 - Cohen, Seth et al. - Metalloprotein inhibitors

7,749,694 - Ghosh, Partho et al.- C-type lectin fold as a scaffold for massive sequence variation

7,862,807 - Goodman, Murray et al. - Dendrimers as molecular translocators

7,892,836 - Groisman, Alexander et al. - Pneumatic capillary gun for ballistic delivery of microscopic particles into tissue

7,851,764 - Nguyen-huu, Xuong et al. - Method of high-energy particle imaging by computing a difference between sampled pixel voltages

7,759,129 - Sailor, Michael et al. - Optical sensor for detecting chemical reaction activity

7,889,954 - Sailor, Michael et al. - Optical fiber-mounted porous photonic crystals and sensors

7,903,239 - Sailor, Michael et al. - Porous photonic crystal with light scattering domains and methods of synthesis and use thereof

7,764,454 - Schuller, Ivan K. et al. - Exchange-bias based multi-state magnetic memory and logic devices and magnetically stabilized magnetic storage

7,892,776 - Taylor, Susan et al. - Screening assay to identify modulators of protein kinase A

7,893,299 - Theodorakis, Emmanuel et al. - Interleukin-1 and tumor necrosis factor-.alpha.modulators; syntheses of such modulators and methods of using such modulators

***Scripps Institution of Oceanography***

7,879,576 -Fenical, William et al. - Marine actinomycete taxon for drug and fermentation product discovery

# News Round-up on Licensees

**Meritage Pharma Reports Positive Phase 2b Data for Oral Budesonide Suspension in Pediatric Patients with Eosinophilic Esophagitis**

Data Presented at Digestive Disease Week Highlight OBS in Chronic Inflammatory Condition
CHICAGO, (5/10/11)/PRNewswire/ — Meritage Pharma, Inc. announced today its proprietary oral budesonide suspension (OBS) met the primary endpoint of reduction of esophageal eosinophilia and symptoms in a Phase 2b dose-ranging clinical trial in pediatric patients with eosinophilic esophagitis (EoE), an allergic inflammatory condition of the esophagus. Results from the Pediatric Eosinophilic Esophagitis Research (PEER) study were presented by principal investigators at Digestive Disease Week (DDW) in Chicago, Illinois.

"Eosinophilic esophagitis is an emerging, orphan disease that has challenged gastroenterologists who don't have an approved therapy for patients who experience nausea, have difficulty swallowing, and in severe cases are incapable of eating normally," said Elaine Phillips, President and CEO of Meritage Pharma, Inc. "We have clear guidance from the FDA on the requirements of the OBS Phase 3 program and are eager to advance this therapeutic option to enable EoE patients to thrive, despite their disease."
*...more*

**Neoprobe Corporation (NEOP)'s Lymphoseek(R) Meets All Endpoints in NEO3-09 Phase 3 Study**

DUBLIN, Ohio-(5/4/11)/BUSINESS WIRE/ — Neoprobe Corporation (NYSE Amex: NEOP), a diversified developer of innovative oncology diagnostic products, today announced top-line results from its Lymphoseek® (tilmanocept) NEO3-09 study. The NEO3-09 study met all primary and secondary endpoints and highlighted the superior performance by Lymphoseek compared to vital blue dye in intraoperative lymphatic mapping (ILM), a procedure in which lymph nodes are identified for biopsy to assess for the presence of tumor. The NEO3-09 Phase 3 clinical study, the Company's second successful Phase 3 study for Lymphoseek, enrolled over 150 subjects with either breast cancer or melanoma within the intent-to-treat (ITT) population. Lymphoseek performed equally well in both cancer types. As previously disclosed by the Company, the full NEO3-09 data set will be presented at the 2011 Annual Meeting of the American Society of Clinical Oncology, June 3-7, in Chicago.

**Potential New Blood Test and Treatment for Breast Cancer Announced by Sialix, Inc. and Researchers at the University of California, San Diego** (4/19/11)

*Promising test reveals possible correlation between diet of red meat and increased cancer risk*

Vista, CA — Sialix, Inc. a pioneer in glycobiology, today announced the results of a study it participated in with researchers at the University of California, San Diego School of Medicine that could have significant impact in the prediction, early detection and treatment of cancer in humans. The findings focus on using antibodies towards a non-human sugar molecule (Neu5Gc) commonly found in people and obtained primarily through a diet

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## JUNIOR SOLAR SPRINT

The San Diego Renewable Energy Society (SDRES), Sullivan Solar Power , Butler Sun Solutions, and the San Diego Electrical Training Center invite teachers and their students to participate in the 2011 San Diego Junior Solar Sprint to be held on Saturday, June 4, 2011. Please see the schedule for a breakdown of events leading up to the race.

The Junior Solar Sprint is an opportunity for local sixth, seventh, and eighth-grade science students to use scientific know-how, creative thinking, experimentation, and teamwork to design and build small, solar-powered model cars. All participants will use a standardized solar cell and motor. With the exception of a few car specification regulations, unlimited ingenuity and inventiveness can be used in car construction. Awards will be given for design in addition to the track event itself.

The Junior Solar Sprint is a hands-on, multi-disciplinary project that motivates students and illustrates how pursuing careers in the fields of science, math, and engineering can be exciting and highly rewarding, particularly when applied to renewable energy sources.

*To register for the Junior Solar Sprint please go to http://www.juniorsolarsprint.com/forms*

Continued from Yanofsky page 1

faculty at the UC San Diego Cell and Developmental Biology Department.

More recently, Yanofsky served as chair of the Cell and Developmental Biology Department from 2006 to 2010. While it proved a challenge to balance his research, teaching, and administrative duties, Yanofsky said he "enjoyed representing the faculty and liked having an influence on the future of the department by hiring amazing faculty."

*"We have to find a way to feed a growing population in a sustainable way."*

The work from Yanofsky's lab continues to revolve around understanding fruit development. Yanofsky has developed several technologies that could significantly increase seed yield—something he refers to as pod shatter control technology. "We have to find a way to feed a growing population in a sustainable way," he states. Yanofsky is convinced that genetic technologies offer the potential to increase yields. These technologies would, in turn, allow farmers to be more productive and to use less water and fewer environmentally unfriendly pesticides and fertilizers.

What are the inventor's plans for the future? While he's identified the pieces of the puzzle, Yanofsky now wants to put together a model. "We've identified a number of genes that play important roles during fruit development. Now we're trying to understand how those genes interact in order to build a model for the network of gene activity

that controls fruit development." And other goals? "I'd like to see our basic research applied to crop plants. We need to increase food production and plant science offers a solution."

For more information on Dr. Yanofsky's work or any UC San Diego invention, please contact the UC San Diego Office of Technology Transfer at invent@ucsd.edu.

## San Diego Bio-Pharma Conference June 4th

The 10th Annual Symposium on Biopharmaceuticals, a.k.a. 2011 San Diego Bio-Pharma Conference, is dedicated to educating and empowering the biotech and pharmaceutical community in Southern California. The conference fosters collaborations, information exchange, economic development, and technology transfer and will be held on Saturday, June 4, 2011, 8:00 am - 5:30 pm, at the Hilton Del Mar. Click here for more information and to register for the conference.

News Round-up: continued from page 4

of red meat. The study showed that a blood test of antibodies to one specific Neu5Gc-containing sugar chain could be used to diagnose breast cancer about as effectively as the standard PSA test which is used to test for prostate cancer today.

The results were published online in Cancer Research, (See Release: "A Cancer Marker and Treatment in One? UC San Diego Researchers Find Promise in Non-Human Sialic Acid Antibodies.")

**Proveri Inc. Announces Publication in 'Cancer Research' of Study Results with Biomarker Set for Prostate Cancer Diagnosis in Non-Tumor Tissue**

•*Test conducted in the non-cancerous part of the prostate.*
•*May aid in localization of cancer lesion within the prostate gland.*

SAN DIEGO (4/7/11)/ PRNewswire/ – Researchers have found that gene expression changes in prostate tissue surrounding cancer lesions may allow diagnosis of prostate cancer even if no cancer cells are present in biopsy tissue, according to study results published in *Cancer Research*, a journal of the American Association for Cancer Research.

**Genomatica Raises $45M, for Demonstration-scale Production and Commercial Plant Engineering**
*New investors include VantagePoint, Bright Capital and Waste Management*
SAN DIEGO, (3/1/11) — Genomatica, the emerging leader in sustainable chemicals, announced it has raised an additional $45 million dollars. New investors include VantagePoint Venture Partners, the largest investor in this new round, which has committed $2.5 billion dollars to cleantech investment; Bright Capital, the venture arm of RU-COM group, a diversified business group based in Russia with investments in industrial engineering and construction management, power and coal-mining, agriculture, housing and public utilities; and Waste Management, the leading provider of waste management services in North America. All existing investors joined the new round – Alloy Ventures, Draper Fisher Jurvetson, Mohr Davidow Ventures, and TPG Biotech.

The new investment will be used to complete demonstration-scale production and early commercialization plans for Genomatica's first commercial product, Bio-BDO, a "green" version of 1,4-butanediol (BDO) made from renewable feedstocks rather than oil or natural gas. BDO, an intermediate chemical with a $4 billion dollar market worldwide, is used to make spandex, automotive plastics, running shoes, and more. Successful operation at demonstration scale during 2011 will validate organisms, processes, and manufacturing economics, and allow development of the basic engineering package to be used in construction of Genomatica's first commercial-scale plant, planned for operation in late 2013. The investment will also accelerate the development of additional major chemicals in Genomatica's product pipeline.

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## INNOVATION NOW

### Solar Energy Forecasting in Cloudy Locales

Tech ID: 21479 / UC Case 2011-819-0

Through an effort to better predict the solar energy conversion of photo voltaic (PV) cells in regions of occasional cloudiness, this software was developed to process optically captured whole-sky images, differentiate clouds from clear sky, and correlate the cloud coverage with the productivity of nearby PV installations. Mapping the frequency and density of local cloud coverage can have valuable implications in planning a new solar collection installation, and/or for load balancing with other sources of power when the system identifies an impending reduction in solar efficiency due to passing clouds.

This technology can be more fully explored at the following link, which features a roll-out of this system at UC San Diego. See http://maeresearch.ucsd.edu/kleissl/SolarPowerForecasting.pdf

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