INSIGHT
Tufts University Sackler School Graduate Student Council Newsletter — November 2015

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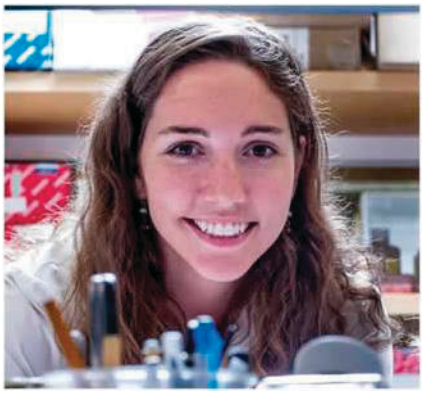
Notes from Up North

by Jess Davis-Knowlton[CMDB]

About two hours north of where you sit reading your *InSight* there is another site of Tufts scientific discovery waiting to greet you! Tufts Sackler and Tufts University Medical School have partnerships with institutes in Maine allowing students to experience research and medicine in a unique setting with a strong emphasis on collaboration. During the third and fourth rotations, first year students in Sackler have the opportunity to rotate with faculty members at the Maine Medical Center Research Institute (MMCRI) in Scarborough, Maine before joining the CMDB program or with faculty at Jackson Laboratories (Jax) in Bar Harbor, Maine before joining the Genetics program. For TUSM students in the Maine Track Program immersion in the particular challenges facing Maine physicians starts with brief stints to Maine in the first and second years followed by a 9-month Longitudinal Integrated Clerkship in the third year.

Enough background though; what is particularly exciting about Maine this November is that MMCRI will be holding their annual Open House on the 20th and all are encouraged visit! The Open House is a great opportunity to investigate our cores (Transgenics and Gene Targeting, Histopathology and Antibody Production, Confocal Microscopy, Small Animal Imaging, Protein and Nucleic Acid Analysis, Molecular Phenotyping, Physiology and Behavior, and Clinical and Translational Research Services/Tissue Bank), see posters from Tufts and UMaine MMCRI grad students, meet the faculty, tour the building, and of course see green mice.

For first year CMDB students coming to visit on the 20th I'd like to highlight the newest principal investigator to join MMCRI and Jumbo alum, Michaela Regan, PhD. Dr. Reagan has a B.S. in Engineering from Harvey Mudd College in Claremont, California and a Ph.D. in Biomedical Engineering from Tufts University in Medford, Massachusetts. During her graduate research, Dr. Regan studied Breast Cancer Bone Metastasis by investigating mesenchymal stem cell (MSC) tumor homing and developed silk scaffold



MMCRI Investigator and Tufts alumna Michaela Regan, Ph.D.

implants with therapeutic bone marrow MSCs that deliver anti-tumor proteins to breast tumors. Her post-doctoral fellowship was in the lab of Dr. Irene Ghobrial at the Dana-Farber Cancer Institute/Harvard Medical School where she focused on understanding how multiple myeloma cells manipulate their bone marrow niche to support their growth and cause osteolytic lesion formation. She developed a 3D model of inhibited osteogenesis in silk scaffolds and examined the roles of abnormally expressed microRNAs in MSCs in this process. She also developed bone-targeted, bortezomib-loaded nanoparticles to modulate the bone microenvironment and make it less receptive to cancer cell colonization. When you see Dr. Regan, ask her about her path to becoming a PI: it's all about collaboration and networking folks!

Collaboration is the name of the game up here in Maine, as research institutes scattered about the state are relatively small. As a fortuitous consequence, a culture of cooperativeness and the drive to reach far outside normal comfort zones to seek said cooperation has prevented research in Maine from becoming insular. As pressure by publishers for completeness and complexity in manuscripts mounts, partnerships between labs, and the skills to develop such partnerships, have become ever more indispensible.

Remember, Boston had more snow than Portland last year so don't fear the "winter, still winter, almost winter, and road construction" description of seasons in Maine: come see the Maine-Tufts partnership in action!

2015-16 GSC Officers

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Kathryn Lange[SK]

[1,2] Denotes years on GSC

InSight Team

Information on page 14

GSC Updates

Welcome to the new Faculty Liaison

The GSC would like to welcome our new faculty liaison, Michael Malamy[MMB], who volunteered to fill the position before even hearing the description of the role.

Committees

Advertising

Kevin Child[GENE], Jaymes Farrell[GENE], Joshua Oppenheimer[PPET]

Career Paths

Christina McGuire[BCHM], Kevin Child[GENE], Amanda Gross[PPET], Julia Yelick[CMDB]

Newsletter

Daniel Wong[CMP], Nafis Hasan[CMDB], Sanna Herwald[MMB/MSTP]

Social

Frankie Velazquez[IMM], David Dickson[NRSC/MSTP], Jaymes Farrell[GENE], Cho Low[CMDB], Megan McPhillips[IMM]

Liaisons

Clubs & Student Groups

Julia Yelick[CMDB]

Library

Sanna Herwald[MMB/MSTP]

Outreach

Megan McPhillips[IMM]

Postdoctoral Association

Michaela Tolman[NRSC]

Safety

Cho Low[CMDB]

Scientific Affairs

Amanda Gross[PPET]

Social Media

David Dickson[NRSC/MSTP]

sites.tufts.edu/insight

Tufts University Sackler School Students

sackler_gsc

Committee Reports

Career Paths

Recent Events:

- Th Sep 17 — **Science Open Mic Night**. Joint event with TBBC. Event recap by Alex Jones[NRSC] on page 13.

Newsletter

- Thank you to our guest writers Jess Davis-Knowlton[CMDB] and Ania Wronski[POST-DOC/DMCB], contributors Kayla Gross[CMDB], Kofi Gyan[PREP], and Laura Pavlech[HHSL] for their work in writing and compiling pieces for the *InSight*. Additional thanks to Claudette Gardel[MMB] for her photos, and student club leaders for their updates.
- Check out our new blog: http://sites.tufts.edu/insight
- We will be transitioning to the blog as the primary focus of the InSight, as it provides us with greater flexibility. The PDF version of the InSight will continue to be produced at least until the end of the 2015-2016 academic year.

Social

Recent Events:

- F Oct 23 — **GSC Oktoberfest**.

CLAUDETTE GARDEL

CLAUDETTE GARDEL

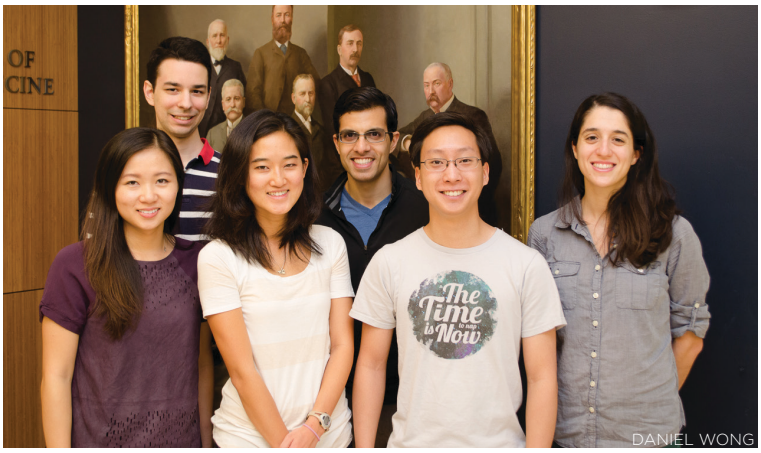
Charlton Lecture and Poster Competition

by Kofi Gyan[PREP]

The Charlton Lectureship, named in honor of Mr. Earle P. Charlton, has been held annually since 1975. This celebrated lectureship has evolved over the years to include a student poster competition. Held in conjunction with the lectureship, the poster competition is a platform to recognize outstanding research work being done by Tufts graduate, medical, dental, and veterinary students. The Charlton Poster Competition and Lecture are sponsored and hosted by the Academic Research Awards Committee of the Tufts University School of Medicine.

This year's lecture was held on October 27, 2015, in the Sackler DeBlois Auditorium. The 2015-16 Charlton Lecturer was delivered by Virginia M.-Y. Lee, PhD. Dr. Lee obtained her PhD in Biochemistry from the University of California in San Francisco (1973) and an MBA at the Wharton School of Business (1984). Dr. Lee is the John H. Ware 3rd Chair for Alzheimer's Research, and directs the center for Neurodegenerative Disease Research at the University of Pennsylvania's Perelman School of Medicine. Dr. Lee's work was instrumental in demonstrating that tau, α-synuclein, and TDP-43 proteins form unique brain aggregates with a central role in numerous neurodegenerative diseases, including Alzheimer's, Parkinson's, and amyotrophic lateral sclerosis.

The poster competition was held on October 26, 2015 with finalists competing again the following morning. Students with similar levels of training are evaluated with their peers. This year, the Isner Memorial Lectureship was also accompanied by a poster competition award, which was evaluated at the Charlton Poster Competition and awarded to Kevin Golcalves[CMP]. Congratulations to all participants, finalists, and award winners.



Charlton Poster Competition award winners (L to R) Mary Tam[MED], Kevin Goncalves[CMP], Jennifer Shih[NRSC], Danish Saleh[MSTP/NRSC], Brian Lin[CMDB], and Marianna Papageorge[MED].

Division 1: Junior

Sackler PhD, MD/PhD students in years 1-3, Sackler MS students

Division 2: Senior

Sackler PhD, MD/PhD students in year 4+, Sackler CTS PhD students

Division 3: Professional

Medical, Dental, Veterinary Medicine students, MD/PhD students in TUSM years 1 & 2

Division 1: Junior

Danish Saleh[MSTP/NRSC] **FINALIST, 2ND PLACE**: Kinase activities of RIPK1 and RIPK3 are required for GNB-induced IFN-I synthesis

Joseph Sarhan[MSTP/IMM] **FINALIST, 1ST PLACE**: Basal levels of Interferon β Regulates Necroptosis in Macrophages

Frank Scangarello[MSTP/IMM]: ADAP and SKAP55 enable the assembly of contractile myosin filaments in T cells.

Joshua Oppenheimer[PDD]: The Neurobiology of the Placebo Response in an Animal Model: Implications for Therapeutics and Personalized Medicine

Chang Xue[PDD]: The Role of Central Insulin Resistance in Neuronal Synaptic Plasticity Associated with Neuropsychiatric Disorders

Andrew Coleman[NRSC]: Integrating roles of the cytoskeletal regulator Farp1 in synapse and dendrite development

Jessica Davis-Knowlton[CMDB]: Characterization of Notch signaling in vascular smooth muscle cells from diseased human vessels

Payel Ghatak[GENE] **FINALIST, 3RD PLACE**: Digital ELISA Based Ultrasensitive Strategy to Detect microRNAs at Subfemtomolar Concentration.

Christina McGuire[BCHM]: Function of Regulated Assembly of the V-ATPase in Energy Sensing in Mammalian Cells

Division 2: Senior

Lauren Andresen[NRSC]: Targeting α2δ-1 signaling prevents epileptogenic circuit reorganization, pathological synaptogenesis, and cell death following neonatal cortical insult

Heidi Burke[MMB] **FINALIST**: Crystal structure of the human cytomegalovirus glycoprotein B

Julie Coleman[NRSC]: Location, Location, Location: Neuronal Diversification in the Olfactory Epithelium

Kristina Cotter[CMP]: Subunit a3 of the Vacuolar ATPase Localizes to the Plasma Membrane and is Overexpressed in Invasive Human Breast Cancer

Jaclyn Dunphy[NRSC]: Developing STING: Light Activated Spatio-Temporal INactivation of Gliotransmission

Surbhi Goel[GENE]: An RNAi kinome screen identifies YES1 as a potential target for glioblastoma

Kevin Goncalves[CMP] **FINALIST, 1ST PLACE**: Angiogenin promotes hematopoietic regeneration by dichotomously regulating quiescence and expansion of stem and progenitor cells

Elizabeth Hanson[NRSC]: Developmental regulation of glutamate uptake causes neonatal window of elevated ambient glutamate and enhanced interneuron activity.

Andrew Hooper[NRSC]: Hypothalamic CRH Neurons: KCC2 Regulation in Stress Signaling and Behavior

Soyoon Hwang[BCHM]: SiMoA assays for cancer biomarker detection in human serum

Bina Julian[PPET] **FINALIST**: Molecular Analysis of CCR6: A GPCR Mediator of Inflammation

Sarah Jung[MMB]: Quadruple Quorum-Sensing Inputs Control Vibrio cholerae Virulence and Maintain System Robustness

Continued on page 14, Charlton Poster Competition

Notes from the Library...

by Laura Pavelch[HHSL]

How do I find journal articles about...?

The best place to search for journal articles is a bibliographic database, such as PubMed or Web of Science. Bibliographic databases index and organize citations to published literature, such as journal, newspaper and magazine articles or books and book chapters. Databases are often devoted to specific subjects, such as life sciences or engineering, and have sophisticated search features that allow you to retrieve relevant results.

How do I choose which database to search?

Tufts subscribes, or otherwise provides access to, hundreds of databases. When choosing a database, consider the subjects, dates and types of material (journal articles, books, conference proceedings, patents, etc.) that the database covers. The Find Articles page of the Biomedical Sciences Resource Guide (http://researchguides.library.tufts.edu/biomedical_research) provides a brief list of databases. A complete list of biomedical databases available at Tufts can be found here: http://www.library.tufts.edu/hsl/resources/dbases.html. Depending on your topic and purpose, you many need to search more than one database. When in doubt, just ask!

What about Google Scholar?

Google Scholar uses an algorithm to search scholarly literature available on the web. Like Google, results in Google Scholar are ranked and displayed according to relevance, with few options to filter the results. The careful selection of materials, indexing, and search capabilities of databases mean that you will usually get more precise results than a search in Google Scholar. I use Google Scholar to: supplement searches that I have done in databases; find grey literature (literature produced by government, academia, business or organizations and made available by means other than commercial publishers, for example, reports or white papers); find the full text of an article.

How do I find the full text of an article?

If you have found the article in a database, then look for the blue 'Find It@Tufts' button, which should take you directly to the full text if it is available through Tufts. Remember, you must access PubMed via the library homepage to see this button.

If you access Google Scholar from the library homepage, then you will see a 'Get This Item at Tufts' link if the article is available electronically through Tufts Libraries.

If you have the title of a journal article and want to know whether or not the full text is available through Tufts, simply copy and paste the title into JumboSearch (http://tufts.summon.serialssolutions.com/#!/; also accessible from the library homepage).

An article that I want is only available in print at a Tufts library. Does this mean that I have to go to the library to retrieve it?

No! If an article is available in print at any Tufts library (including Hirsh Health Sciences Library), then you can request that it be scanned and delivered to you electronically. This service is free and there is no limit to the number of requests that you may submit. Submit requests via ILLiad (https://illiad.library.tufts.edu/illiad/TFH/logon.html).

What if the full text of an article that I need is not available either in print or electronically at Tufts?

If an article is not available at Tufts, then you can submit a request for the article to be retrieved from another library and delivered to you electronically. Students have 20 free requests per academic year for items from non-Tufts libraries. A $4 fee per request will be charged once the 20 request limit has been surpassed (for more information, see: http://www.library.tufts.edu/hsl/services/docDelPolProc.html). Submit requests via ILLiad (https://illiad.library.tufts.edu/illiad/TFH/logon.html).

What if I want to browse the contents of specific journals?

The easiest way to browse and read journals available through Tufts is to use BrowZine, a mobile app that provides direct access to (most) of the journals that Tufts receives electronically. Available for free for both Apple and Android devices, this app allows you to: view current and past journal issues; create a bookshelf of journals of interest to you; and save articles for later reading. BrowZine recently released a web version of their service (http://www.browzine.com/). If you access this site from on campus, then you will be brought directly to the Tufts BrowZine Library. If you access the site from off campus, then select Tufts University and log in with your Tufts username and password. Eventually, you will be able to sync your bookshelf and reading lists between the web version and app. The library does receive some journals in print; current print issues can be found on the 4th floor of Sackler, older issues on the 7th floor.

Upcoming Library Events

Registration for any of the listed Open Workshops: http://www.library.tufts.edu/hsl/education/workshops.html

Open Workshop: Using Images

W Nov 4 & Th Nov 5, 12-1 PM
Sackler 510
This workshop will survey image collections licensed by Tufts and show you how to find images available in the public domain. Options for storing, displaying and citing images will also be discussed.

Open Workshop: Basic PubMed

W Nov 18 & Th Nov 19, 12-1 PM
Sackler 510
This workshop will review: the structure of PubMed; planning and executing a search; narrowing search results; finding full text and exporting citations into citation management programs, such as EndNote and RefWorks.

Fun Fridays: Elementary School Throwback

F Nov 20, time TBD
Library Service Desk, Sackler 4
Come make hand turkeys and other crafts that will remind you of your younger days!

Hirsh Health Sciences Library on Social Media:

Tufts Univeristy Hirsh Health Sciences Library

TuftsHHSL

On the Shelf

by Laura Pavelch[HHSL]

For work...

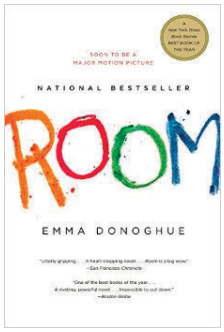
Electronic Resource: Knovel

Location: Search for 'Knovel' in E-Resources Finder (http://www.library.tufts.edu/hsl/CentralDatabase/centraldatabase.html)

A collection of engineering and applied science reference books and databases. While this collection is designed for engineers, it does cover biochemistry, biotechnology and pharmaceutical topics. A unique search feature of Knovel allows you to find data within tables, graphics and equations. Two particularly useful resources in this collection are Knovel Critical Tables and the Biology Data Book. Knovel Critical Tables are a set of interactive tables of constants and physical, electrical and thermodynamic properties. The Biology Data Book is an old, but indispensable resource that provides basic biomedical data for biological substances and hundreds of organisms, including humans and common laboratory species.

And leisure...

Room



Emma Donoghue

Location: HHSL Leisure Reading Fiction D687

This 2010 novel, told from the perspective of a 5-year boy, tells the story of a woman and her son held captive in a single room. This riveting and thought-provoking book has recently been made into a movie.

Sackler Student Publications

October 2015 to present

compiled by Laura Pavlech[HHSL]

Al-Naamani N[CTS], Palevsky HI, Lederer DJ, Horn EM, Mathai SC, Roberts KE, Tracy RP, Hassoun PM, Girgis RE, Shimbo D, Post WS, Kawut SM. Prognostic significance of biomarkers in pulmonary arterial hypertension. Ann Am Thorac Soc. 2015; PubMed PMID: 26501464.

Burke HG[MMB], Heldwein EE. Crystal structure of the human cytomegalovirus glycoprotein B. PLoS Pathog. 2015;11(10):e1005227; PubMed PMID: 26484870.

Gilbert MA, **Lin B**[CMDB], **Peterson J**[CMDB], Jang W, Schwob JE. Neuregulin1 and ErbB expression in the uninjured and regenerating olfactory mucosa. Gene Expr Patterns. 2015; PubMed PMID: 26474499.

Hardie RC, Liu CH, Randall AS, **Sengupta S**[CMP]. In vivo tracking of phosphoinositides in Drosophila photoreceptors. J Cell Sci. 2015; PubMed PMID: 26483384.

Heinze KE, **Rodday AM**[CTS], Nolan MT, Bingen K, Kupst MJ, Patel SK, Syrjala K, Harris L, Recklitis C, Schwartz L, Davies S, Guinan EC, Noll R, Chang G, Parsons SK. The impact of pediatric blood and marrow transplant on parents: introduction of the parent impact scale. Health Qual Life Outcomes. 2015;13:46; PubMed PMID: 25890070.

Johnson LN, **Linder DE**[CTS], Heinze CR, Kehs RL, Freeman LM. Evaluation of owner experiences and adherence to home-cooked diet recipes for dogs. J Small Anim Pract. 2015; PubMed PMID: 26493128.

Klein BA, Chen T, Scott JC, **Koenigsberg AL**[MMB], Duncan MJ, Hu LT. Identification and characterization of a minisatellite contained within a novel miniature inverted-repeat transposable element (MITE) of Porphyromonas gingivalis. Mob DNA. 2015;6:18; PubMed PMID: 26448788.

Moss ME[CMDB], Jaffe IZ. Mineralocorticoid receptors in the pathophysiology of vascular inflammation and atherosclerosis. Front Endocrinol (Lausanne). 2015;6:153; PubMed PMID: 26441842.

Olchanski N[CTS], Zhong Y, Cohen JT, Saret C, Bala M, Neumann PJ. The peculiar economics of life-extending therapies: a review of costing methods in health economic evaluations in oncology. Expert Rev Pharmacoecon Outcomes Res. 2015:1-10; PubMed PMID: 26478989.

Soto I, **Graham LC**[GENE], Richter HJ, Simeone SN, Radell JE, Grabowska W, Funkhouser WK, Howell MC, Howell GR. APOE Stabilization by exercise prevents aging neurovascular dysfunction and complement induction. PLoS Biol. 2015;13(10):e1002279; PubMed PMID: 26512759.

Thoonen R, Giovanni S, Govindan S, Lee DI, Wang GR, Calamaras TD, Takimoto E, Kass DA, Sadayappan S, **Blanton RM**[CTS]. A Molecular screen identifies cardiac myosin binding protein-C as a protein kinase G I alpha substrate. Circ Heart Fail. 2015; PubMed PMID: 26477830.

Uchimura T[CMDB], Foote AT, Smith EL, Matzkin EG, Zeng L. Insulin-like growth factor II (IGF-II) inhibits IL-1beta-induced cartilage matrix loss and promotes cartilage integrity in experimental osteoarthritis. J Cell Biochem. 2015;116(12):2858-69; PubMed PMID: 26015264.

PubMed Tip of the Month: Clipboard

The Clipboard feature in PubMed allows you to temporarily store citations for review; items are deleted after 8 hours of inactivity. To place citations on the Clipboard, check the box to the left of an article title on the results page. Choose Clipboard from the Send to menu at the top of the page. Click Add to Clipboard. An icon will appear at the top of the page with a link showing the number of items on your Clipboard. I use this feature in a two-step review process. When I am satisfied that I have a good search, I do a first pass through the results, quickly scanning the title of each article and checking the box for any citation that may be relevant. I send these items to the Clipboard. Once I have completed the initial review, I go to the Clipboard, change the view from Summary to Abstract (menu at the top of the page) and read the abstract of each article to decide whether or not it is truly relevant.

Re-Cap: 2015 Nobel Prizes in the fields of Physiology or Medicine and Chemistry

by Kofi Gyan[PREP]

First awarded in 1901; The Nobel Prize is widely regarded as the most prestigious award available in the fields of physiology or medicine, chemistry, physics, economics, and literature. Nobel Prizes are awarded annually in recognition of outstanding academic, cultural and/or scientific advances. Each Nobel Laureate receives a Nobel Foundation medal, a diploma, and a sum of money, which is decided by the Nobel Foundation. As of 2012, each prize was worth approximately $1.2 million (USD).

This year, Nobel prizes in the fields of physiology or medicine and chemistry were awarded for: discoveries concerning a novel therapy against malaria and infections caused by roundworm parasites; and mechanistic studies of DNA repair, respectively.

Novel Therapies for Parasitic Infections

Diseases caused by parasites have plagued humankind for millennia and constitute a major global health problem. In particular, parasitic diseases affect the world's poorest populations and represent a huge barrier to improving human health and well-being. This year's Nobel Laureates for the field of physiology or medicine developed therapies that revolutionized the treatment of some of the most devastating parasitic diseases. The Nobel was awarded ½ to Youyou Tu and ¼ each to William C. Campbell and Satoshi Ōmura.

Youyou Tu is recognized for her discovery of Artemisinin, a drug that has significantly reduced the mortality rates for patients suffering from Malaria. William C. Campbell and Satoshi Ōmura are recognized for their discovery of Avermectin, the derivatives of which have radically lowered the incidence of River Blindness and Lymphatic Filariasis, as well as showing efficacy against an expanding number of other parasitic diseases. These two discoveries have provided humankind with powerful new means to combat debilitating diseases that affect hundreds of millions of people annually.

The discoveries of Artemisinin and Avermectin have fundamentally changed the treatment of parasitic diseases. Malaria infects close to 200 million individuals yearly. Artemisinin is used in all Malaria-ridden parts of the world. When used in combination therapy, it is estimated to reduce mortality from Malaria by more than 20% overall and by more than 30% in children. For Africa alone, this means that more than 100 000 lives are saved each year. Today the Avermectin-derivative Ivermectin is used in all parts of the world that are plagued by parasitic diseases. Ivermectin is highly effective against a range of parasites, has limited side effects and is freely available across the globe. The importance of Ivermectin for improving the health and well-being of millions of individuals with River Blindness and Lymphatic Filariasis, primarily in the poorest regions of the world, is immeasurable. Treatment is so successful that these diseases are on the verge of eradication, which would be a major feat in the medical history of humankind.

The discoveries of Artemisinin and Avermectin have revolutionized therapy for patients suffering from devastating parasitic diseases. Tu, Campbell, and Ōmura have transformed the treatment of parasitic diseases. The global impact of their discoveries and the resulting benefit to mankind are truly unfathomable.

The cells' toolbox for DNA repair

Each day, our DNA is damaged by UV radiation, free radicals and other carcinogenic substances, but even without such external attacks, a DNA molecule is inherently unstable. Thousands of spontaneous changes to a cell's genome occur on a daily basis. Furthermore, defects can also arise when DNA is copied during cell division, a process that occurs several million times every day in the human body. The reason our genetic material does not disintegrate into complete chemical chaos is that a host of molecular systems continuously monitor and repair DNA.

The Nobel Prize in Chemistry was awarded to Tomas Lindahl, Paul Modrich and Aziz Sancar for having mapped, at a molecular level, how cells repair damaged DNA and safeguard the genetic information. Their work has provided fundamental knowledge and insight into how a living cell functions.

In the early 1970s, scientists believed that DNA was an extremely stable molecule, but Tomas Lindahl demonstrated that DNA decays at a rate that ought to have made the development of life on Earth impossible. This insight led him to discover a molecular machinery, base excision repair, which constantly counteracts the collapse of our DNA.

Paul Modrich has demonstrated how the cell corrects errors that occur when DNA is replicated during cell division. This mechanism, mismatch repair, reduces the error frequency during DNA replication by about a thousand fold. Congenital defects in mismatch repair are known, for example, to cause a hereditary variant of colon cancer.

Aziz Sancar has mapped nucleotide excision repair, the mechanism that cells use to repair UV damage to DNA. People born with defects in this repair system will develop skin cancer if they are exposed to sunlight. The cell also utilizes nucleotide excision repair to correct defects caused by mutagenic substances, among other things.

These Nobel Laureates have provided fundamental knowledge and insight into how a living cell functions. Their respective breakthrough discoveries have been applied and used for the development and advancement of novel cancer treatments.

Breast cancer lecturer emphasizes need for whole-body research and whole-community wellness

by Kayla Gross[CMDB]

We probably all remember elementary school science worksheets, those ink-marked copied pages with large Comic Sans text that asked us the most basic questions: What do you see? What do you smell? What do you hear? These are simple enough questions, with simple answers to simple experiments. As the science gets more complex, so do the questions, and the fact that a researcher's daily bread-and-butter, the core component of our work, is merely observation often gets lost among that complexity. The importance of it, however, cannot be forgotten.

Dr. Vicky Seewaldt, formerly of Duke University and now a clinician and Population Sciences department chair at City of Hope in California, and her work investigating the mechanisms of malignant progression in high-risk breast cancer patients highlight the crucial role that simple observation can play, and how it can lead to more tangible advances in how we conceptualize, research, and treat disease. When she made the move from University of Washington to Durham, North Carolina, she found herself treating a new patient population, the majority of whom were women of color. When some of her high-risk patients came to her and described their cancers as seemingly 'appearing from nowhere'—a concept that, at the time, was at odds with her previous experience with breast cancer diagnosis—she did not dismiss them. Instead, she listened to their very personal experience with their very personalized disease. She listened, she observed, and then she began to wonder and plan.

For more than a decade, Dr. Seewaldt worked for and with her patients to delve more deeply into understanding why certain populations display such aggressive disease progression. Her main focus was on identifying biomarkers for short-term risk assessment within this subset of triple-negative breast tumors, as well as understanding how the breast microenvironment contributes to disease occurrence and development. Simply by listening, she launched a career that would benefit many and carve out new inroads to understanding breast cancer heterogeneity.

Yet her listening didn't end with the disease, either. Dr. Seewaldt took note of her patients' requests for wellness treatment beyond the one part of their anatomy that at the time needed it the most. Thus the Women's Wellness Clinic came into play at Duke. Through the clinic, Seewaldt and colleagues not only sought to provide underserved women with access to information and services regarding breast health and cancer detection, diagnosis, and treatment, but also to encourage overall wellness within the community.

She reiterated this idea as she concluded her talk given for the 3rd Diane Connolly-Zaniboni Lecture in Breast Cancer at Tufts Medical Center earlier last month, commenting that clinicians should treat "the whole body, not just the breast." Her work in Durham, which will no doubt be continued in the same enthusiastic and innovative capacity at her new position at City of Hope, demonstrates this idea of whole-body medicine and whole-body research, a reminder that a snapshot won't do to truly eradicate disease. Rather, you need a mural, made up of bits and pieces of the many, in order to see the whole picture.

Tufts Public Health

WORKING ACROSS DISCIPLINES AND GLOBAL BOUNDARIES

November Research Seminar

Preparing Women to Fight Back: There are No Quick Fixes to Sexual Assault on University Campuses

Misha Eliasziw, PhD
Th Nov 12, 2015; 12:00–1:00PM
MV105 (Conference Room 2),
136 Harrison Ave

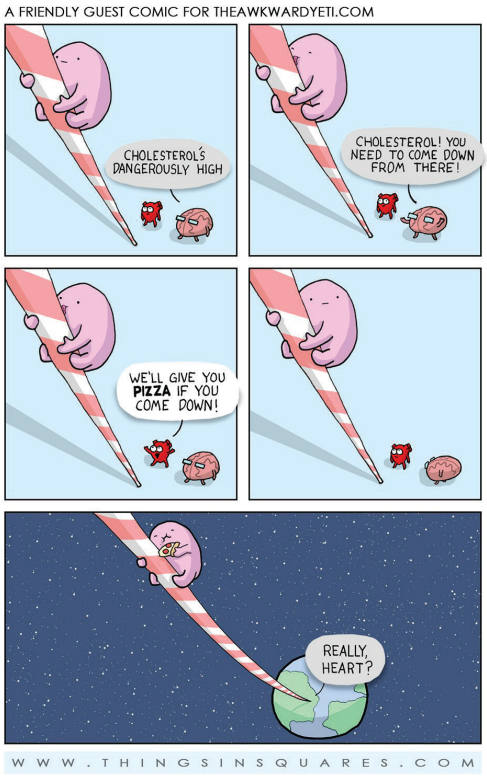
Lunch will be provided and water will be available. Please bring your own cup/mug.

The research seminar will briefly summarize the design and results of the SARE trial (NEJM 2015), as well as highlighting five of its unique features: measurement of outcomes, use of incentives, accounting for clustering effects, time-to-event analysis, and number needed to educate.

Dr. Misha Eliasziw is a co-investigator and biostatistician for the trial.

Heart and Brain

by theawkwardyeti.com. Guest comic by thingsinsquares.com.



Sackler student groups updates, November

A monthly update from GSC-funded clubs about their activities.

Tufts Biomedical Business Club (TBBC) from Jaclyn Dunphy[NRSC]

The Tufts Biomedical Business Club (TBBC) is a student run organization whose mission is to cultivate business leaders in the health and life sciences. TBBC is a growing community of graduate, medical, dental and nutrition students, postdocs, physicians, scientists and alumni. It provides members with opportunities to learn about consulting, business development, entrepreneurship, intellectual property and more. We engage our members though a number of initiatives including a seminar series, Biotech Journal Club, Consulting Case Study Group, panel discussions, and most recently Biotech BUZZ. E-mail tuftsbiotech@gmail.com for more information.

Tufts University Biomedical Queer Alliance (TBQA)

from Laura Darnieder[NRSC]

Tufts University Biomedical Queer Alliance (TBQA) is a graduate school-based, student-led club organized to create a supportive environment for non-heterosexual and non-cisgendered (NH&NC) individuals between the different professional health and degree programs within the downtown Tufts University campus. In addition, we aim to increase engagement and awareness of the student body in LGBTQ issues that affect both their fellow students as well as the communities they serve. Our organization fosters collaboration and mentorship between physicians, researchers, and students, and aims to strengthen the commitment of Tufts Medical Center and Tufts University Health Sciences campus in supporting NH&NC health, research, and career development. We aim to do this through a variety of activities, including panel discussions, creating mentoring opportunities, orientation events, curriculum feedback, and social events. E-mail TuftsBQA@elist.tufts.edu for more information.

Tufts Mentoring Circles Program (TMCP)

from Siobhan McRee[GENE] and Carrie Hui[CMDB]

The Tufts Mentoring Circles Program (TMCP) is a student run organization whose mission is create a confidential space that enables meaningful and helpful discussion of career development and/or work-life balance topics to facilitate personal growth and aid in goal exploration. Through the formation of small group mentoring circles, we aim to connect individuals who will become each other's advocates and accountability partners. These mentoring circles will be a general resource for providing insight, fostering cross-program and cross-departmental collaboration, supporting graduate student life and well-being, and promoting opportunities for networking within the greater Tufts community. If you would like to get involved, including helping organize circles, reach out to alumni, or plan events, e-mail tuftsmentoring@gmail.com for more information.

Upcoming Events:

- **TMCP Circle Meetings**
  Nov 1-30 — *Various locations*
- **TBQA Joint Monthly Meeting**
  Early Nov — TBD, *Sackler*
  Lunch meeting with PhD, MD, DDS, and post-bac students.
- **TBBC Dr. Greg Babcock**
  Tue Nov 10 — 5PM, *Jaharis 508*
  Dr. Greg Babcock, Executive Director of Research at Visterra Inc. will be speaking on the topic of "Traversing the Transition from Academia to Industry"
- **TBBC Biotech BUZZ!**
  Wed Nov 11 — 8:45AM, *Stearns 108*
  Start your day with a jolt of caffeine and learn about entrepreneurship with Frank Rimalovski, Executive Director of the NYU Entrepreneurial Institute.
- **TBBC Biotech Journal Club**
  F Nov 20: Farrah Roy will be presenting on the topic of improving pharma R&D. To join the mailing list, email tuftsbiotech@gmail.com with the subject line: BJC.
- **TBQA Professional Progression Panel: *"How does one choose and get into an LGBTQ-friendly graduate school?"***
  F Nov 20 — 6-8PM, *Medford Campus TBD*
  This is a joint venture between oSTEM and TBQA, with a focus on guiding LGBTQ undergraduates interested in applying to PhD/MD/Dental/Professional Health programs and the hurdles they might encounter during the process.

Recent Events:

- **TMCP Circle Meetings**
  Oct 1-31: Mentoring circles met, and discussed various topics.
- **TBBC Biotech Journal Club**
  F Oct 2: Julie Hewitt-Coleman presented to the Biotech Journal Club on the topic of "The Billion Dollar Biotech" startup, Moderna.
- **TBBC Dr. Ted Sybertz**
  M Oct 5: The former VP of Drug Discovery and Development at Genzyme came to share his experiences of his more than 30 year career in the biotech and pharmaceutical industries.
- **TBBC Biotech BUZZ**
  F Oct 9: A discussion on Martin Shkreli and drug pricing.
- **TBBC Science Open Mic Night**
  Tu Oct 20: Hosted by Dan Jay, PhD. Two-minute flash talks were presented by Dr. Jay and a number of students. This event served as an opportunity to practice engaging audiences and improving scientific communication.
- **TBBC Biotech Journal Club**
  F Oct 30: Aaron Bernstein presented to the Biotech Journal Club on the topic of mechanisms of speeding the FDA review and approval process for new drugs.
- **TBQA LGBTQ Health Training with Cambridge Health Alliance Health Advisor**
  W Oct 14: Co-hosted with Sharewood Project. Raimi Marx, a community health educator at Malden Family Medicine Center, spoke about LGBTQ-inclusive sexual health care.
- **TBQA Mass Medical Society LGBT Mixer**
  Th Oct 15: Mixer for medical students and physicians at Club Cafe.

7th Annual Tufts Neuroscience Symposium and William Shucart Lecture

by Michaela Tolman[NRSC]

On Thursday October 8th, the Neuroscience Department hosted its 7th annual Neuroscience Symposium and William Shucart Lecture. The daylong event brings together neuroscience enthusiasts from the entire Tufts community, including the Departments of Neurosurgery, Psychiatry and Neurology as well as the basic science departments of Tufts University School of Medicine. The day is filled with talks celebrating the cutting edge of neuroscience research and stimulating conversations. The final lecture of the day honors William Shucart, MD. With nearly 200 people in attendance, the 2015 Symposium was a great success.

This year, Dr. Thomas Biederer of the Neuroscience department served as symposium director. Invited speakers included Dr. QiuFu Ma from Dana-Farber/Harvard Medical School: "Spinal circuits transmitting mechanical pain", Dr Scott Soderling from Duke University Medical Center: "Actin badly – cytoskeletal drivers of neuropsychiatric disorder", Dr. Elly Nedivi from MIT: "Structural dynamics of inhibitory synapses", Dr. Pavel Osten from Cold Spring Harbor Laboratories: "Automated analysis of functional and anatomical circuits in the mouse brain", and Dr. Christina Alberini from New York University: "Molecular mechanisms of memory consolidation and enhancement". Students and post docs had the opportunity to meet the speakers in small groups during lunch and talk more in depth about their research and experiences.


MICHAELA TOLMAN

The day concluded with Dr. Gordon Fishell from New York University giving the 2015 William Shucart Lecture on his work in the field of interneuron development. Dr. Philip Haydon, chair of the Neuroscience Department, describes in his welcome Dr. Shucart's contribution to the Neuroscience Department, "…William Shucart, MD, who at that time was chair of Neurosurgery, recognized the importance of basic Neuroscience and was unwavering in his support for the formation of our Department. It is only fitting therefore that the last lecture recognizes his important contributions." Previous Shucart Lecturers include Dr. Martha Constantine-Paton, Dr. Karl Deisseroth, and Dr. Mark Schnitzer to name a few. More information can be found on the Symposium website at http://medicine.tufts.edu/Education/Academic-Departments/Basic-Science-Departments/Neuroscience/Neuroscience-Symposium-and-Shucart-Lecture and the Neuroscience Department's Facebook page.

Things to do around Boston: Theater & Skating

by Kofi Gyan[PREP] and Sanna Herwald[MSTP/MMB]

Enjoy a classic cultural experience at Central Square Theater!

Central Square Theater houses two award winning and professional theater companies; The Nora Theatre Company and The Underground Railway Theater. This vibrant hub of theatrical, educational, and social activity, is where artists and audiences can come together to create theater that is both vital and captivating to the community.
Live performances for the month of November include:

Einstein's Dreams (ending Nov. 14th)

Switzerland, 1905: A modest, newly-married patent clerk struggles to make ends meet while re-conceiving time. What happens when Albert Einstein completes his Theory of Relativity? Absurd, comic, and poetic, Einstein's Dreams captures the poignancy of the human condition. In celebration of the 100th anniversary of Einstein's Theory of General Relativity, Underground Railway Theater reunites the original 2007 world premiere cast, adapted by director Wesley Savick from the novel by Alan Lightman.

Copenhagen (ending Nov. 15th)

Copenhagen, 1941: Two brilliant physicists – fast friends from enemy nations – famously confront each other at the height of WWII. This award-winning psychological mystery unravels what transpired on that fateful night. Werner Heisenberg and his mentor Niels Bohr meet again in the afterlife, goaded by Bohr's wife, Margrethe. Who will remember the truth that changed the course of history? Commemorating the 70th anniversary of the dropping of the Atomic Bomb, Eric Tucker cracks open Michael Frayn's contemporary classic play.

Arabian Nights (beginning Nov. 27th)

Become enchanted by the power of storytelling one final time! The Nora Theatre Company and Underground Railway Theater revive their award-winning production of Dominic Cooke's Arabian Nights. Based on One Thousand and One Nights, a collection of folk tales from the Middle East and Asia, Arabian Nights is rich with suspense, romance and hilarity—stories irresistible for all ages, and at its heart, the power of the imagination to heal, inspire, and transform.

Another fun activity in Boston is ice skating at the Frog Pond in Boston Common, which opens in mid- to late November. Discounts with student ID available Tuesday nights. More information: http://boston-frogpond.com/winter-programs/pricing-season-passes/

10 Cardinal rules for being a lab scientist

by Ania Wronski POST-DOC/DMCB

1. Write everything down

Whether you are learning a technique from someone or you are running you thousandth PCR reaction, if you do something different or noteworthy – write it down. I assure you, when months down the line you need to repeat a similar reaction (and you will!) you will NOT remember the conditions that you thought were so obvious that you didn't write it down. Even details that may not seem very significant – like, I had a longer lunch so my blot was in blocking solution for 2 hours instead of one, may make a big different to the end result and knowing why may vastly improve your reproduction of the results.

2. Be organized

When you start a project, identify a storage structure and STICK TO IT. This sounds relatively simple, but it isn't! Are you going to organize your scientific literature by topic? What if it covers multiple topics? What filename will you use to save it? How are you going to organize your data? By experimental type? Date? Project? You want to be able to find things relatively easily and NOT have multiple copies of the same or similar files floating around.

Same goes for labelling tubes. Please, for the love of the PCR fairy, please DO NOT label your tubes 1-8. At least put the date and some redeeming feature. One of the best things to do is to log it in a database with its details and location so you have the capacity to search for it electronically – but it does take time to establish these systems and it is often MUCH harder to go back and re-organize your samples once you have 4 boxes of plasmids and several boxes of primers…

3. Be consistent

Science is already hard – why make life harder for yourself? When you get in stock solutions, make them to a nice, repeatable number. Dilute primers to 50 or 100uM every time you get a new primer tube. That way, you don't need to look up what you did. It is a standard dilution for all your primers. This also leads to better science as consistency is often the best way to reduce variability and increase the reproduction of results. Passage cells a certain way? Why deviate? You could be introducing variability that may influence your downstream applications.

4. Re write protocols for a dummies guide.

You could be a cloning god or goddess, but what happens when you don't have to do a technique for an extended period of time? You forget. Re-write your protocols so they explain all the steps, including the little quirks that you discovered are the keys to success. This is especially important for logins to shared equipment that you may not access very frequently (I.e. the nanodrop password on level 5 is DropitLikeItsHot). I often write several versions of protocols: a lengthy "extended" protocol with explanations and detailed information and a short "mini" protocol that I can just fill out the blanks as I need for the experiment. One warning about having spreadsheet protocols: you can accidently introduce errors and not even realize it! So it's always good to check your spreadsheet or have some "control" calculations that will let you know if something is wrong.

5. Make sure you use the appropriate controls!

If an experiment fails, controls can help you determine if it was a technical failure or a negative result (same with the inverse – a positive result or a technical glitch). Many may think that controls are a waste of time and reagents, however controls are more important than your experimental sample because it tells you if your result can be trusted. You are only as good as your positive and negative controls!

6. Understand your techniques

Nowadays there is a kit for everything technique conceivable – the age of convenience has hit the world of scientific research. Although kits can make your experiments much easier, they are also a very easy way to become complacent. If you don't know how an experiment actually works, you won't know the limitations of your results and the conclusions you can or cannot draw from them. In addition, troubleshooting is MUCH easier if you understand the rationale behind how an experiment works.

7. Never stop learning

The vast majority of scientists has an innate desire for knowledge – it's why we are scientists to begin with! You can learn something from everybody, from the new grad student to the seasoned postdoc. This includes the lab down the hall working on a random organism that doesn't seem related. Some of the greatest discoveries in science came about when multiple fields crossed paths. Never turn down an opportunity to learn, as your knowledge is your best asset as a scientist.

8. Ask for help

Everyone is always busy so it can seem daunting to ask someone with a full plate for help. However, you are surrounded by incredibly skilled and intelligent individuals. If you do not ask, you cannot ever receive. When you do ask, try to be mindful of their time, maybe even email them to ask for a good time to sit down and chat with them. Know what you want to ask and make sure it's not an answer that can be relatively easily answered by google or a lab protocol that is easily accessed. Much of the knowledge of science is passed down from lab member to lab member.

9. Don't think about the how, think about the WHY

When you are the bench, it is very easy to fall into a pattern of simply doing experiments because that feels comfortable. A great scientist will consider why they are doing an experiment. Before you rush into anything new, sit down and consider all of your data. What is it telling you? What would the next logical step be? What question are you really asking? What is the big picture? It is pointless to mindless conduct experiments if they will not help further your question and the eventual result. Even if you know it is highly unlikely that you will achieve your end goal, you should still one in mind.

10. Be prepared for change.

Two years ago, CRISPR sounded like a type of cracker, nowadays it's the hot new technique. Science is dynamic and is constantly changing. You need to be prepared for these and be amendable to changes, whether it be new techniques, a change in direction or even location. If you are working in industry, it is common for projects to suddenly be terminated or drastically change, even if everything is going well. In academia, we are not as efficient at culling projects and tend to beat the proverbial dead research horse because we really want a project to work out. One critical skill of a researcher is to know when they have hit a dead end and to move on. It is extremely difficult and you often need to convince powerful people (i.e. your PI) that it's the right decision.

Originally published on AdageOfAnia.com

Movie Review: *The Martian*

by Kayla Gross[CMDB]

Who wouldn't want to be a space pirate? Granted, if you had to be stranded alone on a barren planet for over a year for that chance to happen, it might not be so appealing. Still, space pirate: think of the possibilities.

It is this optimistic, jocular tone that Ridley Scott's The Martian, based on the book by Andy Weir, takes as it follows astronaut and botanist Mark Watney, played by Matt Damon, through the trials and tribulations of having to "science the sh--" out of rudimentary living conditions after being presumed dead and left behind by his crew during a mission to Mars. Stranded initially without means of communication to Earth, Watney's life-saving ventures range from making water using hydrogen and oxygen gas (which almost gets him blown up) to growing potatoes in a homemade greenhouse (you don't want to know where he got the fertilizer for that project, just saying). His life gets a little less difficult when an observant mission control operator notices a moving rover on the satellite surveillance of Mars' surface late one night, giving those on Earth the first sign that Watney is in fact alive. With some quick thinking and teamwork, they rig up a way to communicate and suddenly Watney isn't so alone anymore. They continue to help him survive in the harsh conditions of the planet, which he does all to the lively beats of disco hits, as that is apparently all his team's commander, played by Jessica Chastain, loaded into the system during their stay, much to his chagrin.

The 1970s soundtrack calls back to the post-space race era, using the backdrop of where we have been to throw into sharp relief how far we have come, and also how far we can still go in exploring the stars. Still, The Martian, at its heart, is not a two-hour promotion for NASA and its programs. Though it does get ample on-screen time, political maneuverings and calculated public relations decisions made in board rooms rival the time spent problem solving in mission control or the Jet Propulsion Laboratory (JPL), giving the organization an almost ominous corporate vibe. Driven by Jeff Davis' performance as the callous program director, NASA becomes the antagonist when the decision is made to keep the news of Watney's survival from his crew, who are making their way back to Earth, in an attempt to keep their focus on the mission to return home safely.

It is this theme--balancing the lives of several versus one--that refracts throughout the back half of the film, making the humanity of this survival story begin to outshine the science in a subtle and heartwarming way. Thus it comes as no surprise that the returning Ares III crew chooses to risk their lives in a genius attempt, crafted by an eccentric but endearing JPL engineer, to change course and retrieve Watney even though NASA initially rejects the plan. As every pirate adventure should, mutiny and risky swashbuckling ensue, ending in a daring rescue attempt that requires the brains and particular STEM skills of all six members of the Ares III team. In a breathtakingly beautiful and nerve-wracking sequence, an injured, exhausted, and bearded Watney attempts to launch into Mars' atmosphere with a jerry-rigged pod to reach his crew's ship which is orbiting by, all while the whole world watches on.

Whether or not he makes it--well, you'll have to go see The Martian yourself to find out the answer to that question. Though the AMC Loews Boston Common 19 will no longer screen the sci-fi adventure after this week, Regal Fenway Stadium 13 and AMC Assembly Row 12 have showings scheduled for the next two weeks, so catch it while you can.

Lastly, for those interested in how accurate Watney's efforts to "science the sh--" out of his surroundings are, NASA [1] and The Guardian [2] both addressed this question, and Neil deGrasse Tyson also weighed in on the matter via Twitter with some very amusing and pointed commentary [3].

[1] Fox, Steve. "Nine Real NASA Technologies in 'The Martian.'" NASA. National Aeronautics and Space Administration, 11 Sept 2015. Web. 03 Nov 2015. https://www.nasa.gov/feature/nine-real-nasa-technologies-in-the-martian

[2] Zubrin, Robert. "How Scientifically Accurate Is The Martin?" The Guardian. Guardian News and Media, Limited. 06 Oct 2015. Web. 03 Nov 2015. http://www.theguardian.com/film/2015/oct/06/how-scientifically-accurate-is-the-martian

[3] Gettell, Oliver. "Neil deGrasse Tyson Tweets His Thoughts on The Martian." Entertainment Weekly. Entertainment Weekly, Inc. 2 Oct 2015. Web. 03 Nov 2015. http://www.ew.com/article/2015/10/02/neil-degrasse-tyson-the-martian

BIOBUGS

Call for Volunteers

Are you interested in getting some teaching and outreach experience? If so, consider volunteering to participate in the fall semester's BIOBUGS (Biology Inquiry and Outreach with Boston University Graduate Students) program. BIOBUGS is a week-long program where we invite Boston area high school biology classes to come to Boston University and participate in a newly redesigned 3 hour lab, Comparative Vertebrate Anatomy!

We are looking for Sackler graduate students who want to either teach or volunteer for one or more days of the program. No prior experience in vertebrate anatomy is required – instruction will be provided! The labs will be run December 10-11 and December 14-16, 2015 from 9am-12pm, and are followed by a free pizza lunch from 12pm-1pm for all teachers and volunteers. Please contact Melissa LaBonty (melissa.labonty@tufts.edu) or Joslyn Mills (joslyn.mills@tufts.edu) to sign up by December 9 or get more information.

Meating adjourned?

by Nafis Hasan[CMDB]

On 29th October of this year, the Lancet Oncology published a report on the carcinogenicity of red meat and processed meat [1]. The Working Group, consisting of 22 scientists from 10 different countries, recommended to the International Association of Research on Cancer (IARC) (part of the World Health Organization) to classify processed meat to be "carcinogenic to humans" (Group 1) and red meat to be "probably carcinogenic to humans" (Group 2). These recommendations were made after evaluation of more than 800 epidemiological studies.

Since the publication of the report, mainstream media has picked it up with a fervor that painted the report with a facade of novelty. However, as Tufts University's very own Dariush Mozaffarian (Dean of Friedman School of Nutrition Science) pointed out in an interview with National Public Radio (NPR), this report only served to solidify what has been known for quite a while now. Given the significant associations made between cancer risk and consumption of red and processed meat, what is the public supposed to do?

Besides following Chik-fil-A's advice, here is what you need to know before you decide get well done with meat.

Definitions

Red meat include beef, lamb, pork, goat. Processed meat include anything that has been cured, salted, smoked, or preserved in some way, e.g. – sausages, bacon, hot dogs, etc.

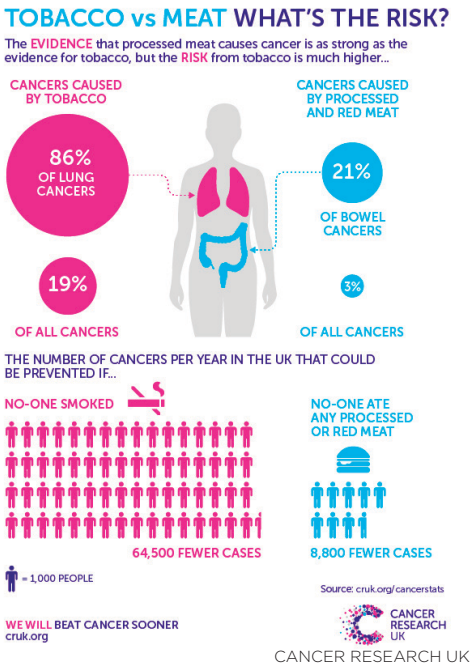
What did the IARC find?

Colorectal/bowel cancer showed the strongest association with high red and processed meat consumption. Positive associations were also seen between red meat consumption and pancreatic and prostatic cancers, and between processed meat consumption and cancer of the stomach [1].

How scary are these findings?

The Working Group found that there is a 17% increased risk of colorectal cancer for those who ate the most processed and red meat compared to those who ate the least [1]. Is this number really big? As Cancer Research UK blogged, the "17%" represents a relative risk; out of every 1000 people in the UK, 61 people develop bowel cancer at some point in their lives compared to about 56 cases per 1000 low meat-eaters. Therefore, according to the analysis, a 17% increased risk translates to 66 people per 1000 would develop bowel cancer at some point in their lives [2].

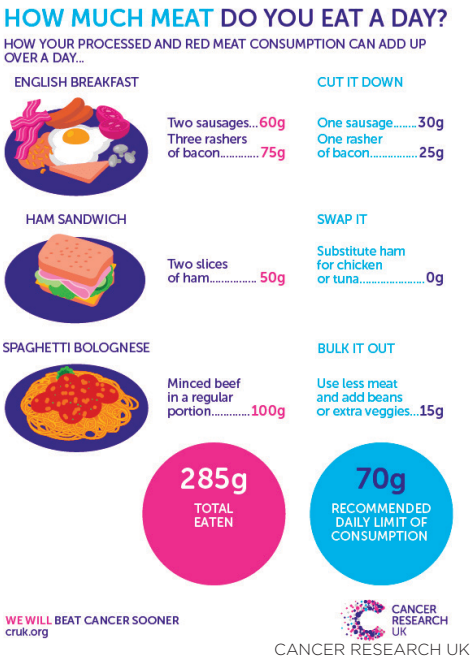
However, labeling processed meat as cancer causing and red meat as probably cancer causing does little to soothe our worries. But! As Cancer Research UK points out, IARC does "hazard identification" and not "risk assessment" [2]. Therefore, IARC classifications can only provide a qualitative assessment and does not tell us how potent something is in causing cancer. This is exemplified when red/processed meat is compared to tobacco, which is also classified into Group 1. In the UK, excessive consumption of red/processed meat resulted in 3% of all cancer cases annually whereas smoking caused 19% of all annual cancer cases.



CANCER RESEARCH UK

How to balance your bacon

Dariush Mozaffarian suggests no more than, one or two servings of processed meat per month and of red meat per week. For more customizable options, check out the awesome infographic from Cancer Research UK below: Credit: Cancer Research UK



CANCER RESEARCH UK

So, as with everything, MODERATION IS KEY! Unless, of course you are Ron Swanson.

While the meat industry does not agree with the recommendations based on scientific evidence to eat less meat [3], nothing topped the Far Right's claim that this must be a Muslim Conspiracy to establish Sharia Law [4].

1. Bouvard, V et al 2015 Lancet Oncology. doi:10.1016/S1470-2045(15)00444-1.
2. Dunlop, C. 2015. Cancer Research UK, Science blog. http://scienceblog.cancerresearchuk.org/2015/10/26/processed-meat-and-cancer-what-you-need-to-know/
3. Aubrey A. National Public Radio. http://www.npr.org/2015/10/26/452012186/world-health-organization-report-links-red-processed-meats-to-cancer
4. Bartlett, E. 2015. Independent. http://i100.independent.co.uk/article/the-world-health-organisation-says-bacon-is-carcinogenic-and-rightwingers-think-its-a-muslim-conspiracy-ZJLDa_0B_I

Top Techniques: Western Blotting

by Nafis Hasan[CMDB] and Kayla Gross[CMDB]

- Always check ladder migration pattern based on specific gel and electrophoresis conditions, as these factors can shift the apparent molecular weights from the supposed "standard" ladder image given out by the company.
- When testing a new antibody, leave the blot intact, opting to strip it and perform a control protein blot after probing for your target protein. Cutting the blot and using different pieces for your target and control protein on a first try may obscure alternative target protein isoforms or off-target background staining.
- High background? Try a more stringent blocking condition than just BSA or milk by adding goat serum or fish gelatin to your solution. Blocking overnight also can help clean up your blots.
- Is you gel "smiling" or "frowning"? This usually happens when your sample buffer has too much salt.
- Make sure your PVDF membrane is pre-activated with methanol for 20 minutes before making gel sandwich. It's also a good idea to mark which side of the membrane is facing the gel with a sharpie, on a top corner.
- It's always a good idea to do a Ponceau stain on your membrane after transfer to make sure your transfer went all right. Alternatively, you can also stain your gel with Coomassie blue.
- It is possible to over-transfer, especially for low MW proteins (<10 kDa) – optimize transfer time or reduce voltage. On the other hand, high MW proteins will take longer time to transfer.
- Have a dirty secondary? Consider adding a wee-bit of Tween-20 to your washes (0.01-0.5%).
- When loading your samples, press on the pipet just enough to get any possible air bubbles out and run the tip through the running buffer in the tank before putting it in the well. And make sure your sample was denatured prior to running.
- If power supply reading shows 0 when switched on, make sure your power cables are properly connected to the power supply. If that doesn't work, check for broken electrodes or blown fuses. Lastly, try with a higher limit power supply.
- As always, make sure you write down the protocol before-hand and check through every step when performing. This will help you track your steps back to see at which step things could have gone wrong.

Sackler Science Open Mic Night

by Alex Jones[NRSC]

Of the myriad skills a scientist must have in his repertoire, arguably the most important is the ability to clearly present his findings. Whether speaking amongst colleagues, giving a talk at a scientific meeting or simply answering the age-old question, "So, what do you do?" at a cocktail party, the need for better scientific communication skills is ever present. But how does one improve their public speaking abilities insofar as they relate to science? The answer is as simple as it is nerve-wracking (at least for some); that is, speaking publicly about science.

With this in mind, on October 20th, the Sackler Graduate Student Council Career Paths committee and the Tufts Biomedical Business Club teamed up to present the first "Sackler Science Open Mic Night". The goal of the event was for students to present short, two to three minute talks covering some aspect of their research and to help each other workshop these talks, in the hopes of improving. This "flash talk" style of presentation is challenging as it leaves only enough time for the speaker to present the most crucial aspects of their research, but it is also one of the most frequently used skills whether it be at a networking event, an interview, or even in response to that question at a cocktail party.

ALEX JONES

Professor Dan Jay joined students for the event and to kick it off he gave a flash talk of his own on a favorite subject of his, "the intersection between art and science". Student presenters from all over Sackler gave talks ranging from astrocytes (and their communication with neurons via vesicular release of transmitters) to v-ATPases (and the signaling pathways that control their assembly). Presenters and spectators alike made the event a success, providing tons of feedback on how to improve those talks for future presentations. Keep an eye out for more events similar to the Sackler Science Open Mic Night in the future as the Sackler Graduate Student Council and Tufts Biomedical Business Club look for more ways to promote scientific communication.

Charlton Poster Competition, cont'd

Shreya Kulkarni[CMP] **FINALIST**: Identification of Genes required for Glioblastoma Stem Cell Growth and Survival using Pooled RNAi Screening with Next Generation Sequencing

Brian Lin[CMDB] **FINALIST 3RD PLACE**: Neuronally committed progenitors can dedifferentiate, become multipotent, and generate nonneuronal cell lineages following injury

Jacob Ludington[IMM]: The Ctype Lectin Domain-Containing Protein Clec of Cryptosporidium parvum Mediates Infection of Intestinal Epithelial Cells via Interactions with Sulfated Proteoglycans

Meagan Montesion[GENE]: The impact of cellular environment on HERV-K (HML-2) promoter activity in breast cancer

Micaella Panessiti[NRSC]: Regulation of energy and glucose homeostasis by mGluR5 acting downstream of BDNF in the VMH

Arti Patel[BCHM]: Neurotensin stimulates proinflammatory mediator expression in human microglia through activation of mTOR, attenuated by the novel flavone tetramethoxyluteolin

Maria RePass[IMM]: A Novel Bioengineered 3D Human Intestinal Model to Support in vitro Infection and Propagation of Cryptosporidium parvum

James Schiemer[CMP]: Gα3 Regulates Talin1 Autoinhibition and Integrin Activation in Platelets

Anthony Sheets[CMP]: Novel Bioactive Peptides Accelerate Wound Healing Angiogenesis

Jennifer Shih[NRSC] **FINALIST, 2ND PLACE**: Partial genetic deletion of the astrocytic glutamate transporter GLAST disrupts organization of the cerebral cortex and causes network hyperexcitability

Laura Stransky[CMP]: Understanding mechanisms of nutrient homeostasis: Amino acids are novel regulators of the Vacuolar H+-ATPase

Nil Vanli[BCHM]: Identification of RNASE4 as a Novel Target for Diagnosis and Therapy of Prostate Cancer

Samantha You[NRSC]: Glial microRNAs regulate circadian behavior in Drosophila

Division 3: Professional

[Medical, Dental, Veterinary Medicine Students, MD/PhD M1-2]

Shatha Alharthi[DENT]: Associations between duration of smoking and periodontal disease among smokers: Results from the National Health and Nutrition Examination Survey

Ali Azeem[MED]: Biochemical insights into Kip3's microtubule depolymerase activity

Seda Babroudi[MED] **FINALIST, 2ND PLACE**: A Novel Compound, Membrane-Tethered E2, Selectively Activates the ER Rapid Signaling
Pathway – Implications for Vascular Benefit

Natalie Erlich-Malona[MED]: Can Patterns of Ganglion Cell Loss Help Distinguish Optic Neuritis from Ischemic Optic Neuropathy?

Sung Min Ma[MED]: Cost Containment and Resource Utilization in the Management of Laryngomalacia

Rachel Madenjian[VET]: Comparative Hematology of Wild and Captive Little Skates

Sahar Mostafavi[DENT]: The effects of Using an Injection Simulation Model to Prepare for First Patient Injection

Zuhair Natto[DENT]: Usage of Bone Replacement Grafts in Periodontics and Oral Implantology and their Current Levels of Clinical Evidence – A Systematic Assessment.

Marianna Papageorge[MED] **FINALIST, 3RD PLACE**: Cyst Aspiration of Endometriomas Prior to In-Vitro Fertilization

Mary Tam[MED] **FINALIST, 1ST PLACE**: The HBP1 Gene: A Pre-clinical Model for Genetic and De novo epilepsies

Boston Future of Research Symposium

by Sanna Herwald[MSTP/MMB]

From October 22nd to 24th, the 2nd Boston Future of Research Symposium took place at Boston University. The Symposium focused on the collection of more accurate data about the scientific workforce (number of people, demographics, and outcomes), and the use of that information to make informed improvements to the structure of scientific research, including Ph.D. training. To read more about the symposium (and to access to videos and slides from the symposium itself), please see the blog post of Gary McDowell, a Postdoctoral Fellow here at Tufts University and a co-lead organizer of the event.
http://www.ascb.org/future-of-research-boston-2015-can-data-collection-about-the-scientific-enterprise-help-advocate-for-change/

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