

TUSM Faculty takes steps to unionize

by Nafis Hasan^{CMDB}

On December 11, 2014, tenured and tenure-track faculty members of the Tufts University School of Medicine (TUSM) filed a petition to the National Labor Relations Board (NLRB) to hold on-campus union elections. If this election is allowed by NLRB, then the 70 members of the TUSM faculty will join the ranks of their Medford colleagues in the Faculty Forward union at Tufts, a division of the Service Employees' International Union (SEIU) Local 509⁽¹⁾. As mentioned, this is not the first time Tufts-affiliated faculty have filed for unionizing. In February 2015, majority of the Medford/Somerville campus faculty had voted in favor of unionizing in an effort to improve working conditions⁽²⁾. And even before that in 2014, adjunct faculty members on the Medford campus, rallying under the Adjunct Action division of SEIU, negotiated a significant raise in their pay⁽³⁾ that is set to be completely in effect by September 2016⁽⁴⁾.

The TUSM faculty appears to be motivated for similar reasons; in a joint email to Tufts Daily, Dr. Karina Meiri, Professor of Developmental, Chemical & Molecular Biology (DMCB), and Dr. Henry Wortis, Professor of Integrated Physiology & Pathobiology (IPP), mentioned issues regarding salary and research funding as major sources of motivation. They elaborated in the letter that while faculty members are trying to get funding in an increasingly competitive environment with diminishing sources, the university is putting on additional pressure on them by providing "negative incentives". Drs. Meiri and Wortis mentioned, "If faculty were unsuccessful, [in their application] as they were pretty much bound to be, given the odds, their salaries would immediately be cut, often by very significant amounts." They also pointed out that many faculty felt that their ability to speak their minds on administrative decisions was being limited. Drs. Meiri and Wortis believe that through unionization, financial transparency and partial restoration of decision-making ability, job security and stability can be achieved for the faculty. To quote, "Our strong belief is that the educa-

tors and researchers at a university need to be deeply involved in decisions that shape its mission and that unionization will provide a path towards...the return of collegiality". It seems that majority of the TUSM faculty are in favor of unionizing, as almost 60% of them had voted in favor of holding on-campus elections. The ones who did not vote, either did not do so because they do not want a union or they do not feel strongly enough for the need of one, as Drs. Meiri & Wortis explained in their letter.

Faculty unions are not new in this part of the country - if the TUSM faculty are allowed to hold elections on campus, they will join their colleagues at Northeastern, BU, Lesley and Bentley Universities⁽⁵⁾. There is also an increasing trend of faculty unionization throughout the country, and Drs. Meiri & Wortis believe it to be a reactionary movement to the increasing adaption of a for-profit model by universities. They explained in their letter, "Many universities have chosen to save money by shifting the burden of teaching to part-time untenured...adjunct faculty members. Others have increased the cost of enrollment to plug financial holes. University priorities are increasingly being set by financial rather than academic agenda. Across the country whenever universities are being managed as corporations rather than collegial institutions faculty are increasingly looking towards unionization as a means to re-assert the original model of shared decision-making."

While it may seem reasonable to allow tenured and tenure-track faculty to unionize, it is not the case. The legal precedent set by the 1980 ruling in the NLRB v. Yeshiva University, which found the tenured faculty not eligible for unionization for their significant influence on administrative decisions, stacks the odds against the TUSM faculty's hopes of holding on-campus elections. This precedent is also partially responsible for the opposition of the TUSM administration to the faculty's petition at the NLRB. As the Executive Director of Public Relations, Kim Thurler, told Tufts Daily "that 1980 Supreme Court



ruling ... recognizes the substantial authority faculty members hold and their significant voice in determining curriculum, academic standards and policies. Many NLRB decisions since 1980 have followed this Supreme Court precedent."⁽¹⁾

Currently, the TUSM faculty waits on the NLRB's decision on whether they will be allowed to hold elections or not. Regardless of this decision, the fact that this has become a trend across universities, institutions founded on principles of non-profit due to their increasing profiteering nature, is a great cause of concern indeed.

Drs. Meiri & Wortis' quotes have been reproduced from their letter to Tufts Daily with their permission. The Tufts Daily article was published on Jan 29, 2016, and can be found at the address for link ⁽¹⁾ below.

Related articles and resources:

Faculty Forward: tuftsfacultyforward.org

- (1) Steiner, E. (2016, January 29). [Tufts School of Medicine tenure and tenure-track faculty file for union elections](#). The Tufts Daily.
- (2) Rocheleau, M. (2015, February 13). [Tufts full-time professors vote to unionize](#). The Boston Globe.
- (3) Flaherty, C. (2014, October 24). [Tufts adjuncts tout pay and job security gains in first union contract](#). Inside Higher Ed.
- (4) Flaherty, C. (2015, February 12). [\\$15,000 Per Course?](#) Slate.
- (5) Steiner, E. (2015, March 10). [Unionization spreads across Boston, throughout country](#). The Tufts Daily.

2015-16 GSC

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^{1,2} Denotes years on GSC

InSight Team

Information on page 14

GSC Updates

Committees

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We'd like your contribution! Works about both science and non-science topics accepted. Writers will be acknowledged, with increasing recognition (guest writer, contributor, staff writer) for additional content submissions and publication. E-mail us: insight@elist.tufts.edu

Committee Reports

Career Paths

Recent Events:

- W Jan 6 — **Career Paths Start Up Mixer**
Shortly after returning from the holidays, the Career Paths Committee of the Sackler Graduate Council coordinated a biotech/startup mixer on January 6th, 2016 at the Field in Central Square. Representatives from bosWell, Neumitra, Genometry, Thrive Bioscience, as well as the COO of Editas Medicine donated their time to chat about their careers. The event was remarkably well attended by PhD students, as well as a handful of post-docs and MD/PhD students. Whether it was the draw of learning more about alternative career paths, or the casual venue, the event was a success.



- Th Feb 4 — **Sackler Speaks**

Newsletter

- Check out our new blog:
<http://sites.tufts.edu/insight>

Social

- F Jan 22 — **Game Night**

Sackler student groups updates, February

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

Upcoming Events:

- **TMCP Circle Meetings**
Jan & Feb — *Various locations*
- **TBBC Case Study Group**
M, weekly — 5-7PM, *Jaharis 508*
Julie Hewitt Coleman guides students and postdocs through the case interview process. Practice solving cases, gain insight and tips, and learn more about the field of consulting.
- **TBBC Dave Greenwald, PhD**
Tu Feb 9 — 5-6:30PM, *Sackler 114E*
Dr. Dave Greenwald, a 2010 Sackler alum, now Director of Business Development and Corporate Sponsorships at Johns Hopkins Technology Ventures, will give a career seminar titled, "Starting a Company: Practical Advice for a Precarious Pursuit."
- **TBBC Lauren Linton, PhD**
Th Feb 25 — 5-6:30PM, *Sackler 316*
Dr. Lauren Linton, Deputy Director of the Tufts Institute for Innovation, formerly co-Director of the Sequencing Center at the Whitehead Institute and Associate Director of the Center for Genome Research at the Whitehead/MIT, will give a career seminar titled, "Don't Be Afraid to Experiment."
- **TBBC Biotech Journal Club**
F Jan 26 — 12PM Noon, *Jaharis 155*
BJC will meet to discuss current topics in the biotech industry. To join the mailing list, email tuftsbiotech@gmail.com with the subject line: BJC.

- **TBBC|GSC Sackler Speaks**
Th Feb 4: TBBC partnered with the Sackler GSC to host a flash talk competition among Tufts students. Eleven speakers gave 3-minute presentations on their research; Jess Davis-Knowlton^{CMD} took home first prize.

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 through 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^{CMD}

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.

GSC Career Paths Committee (GSC)

Duties include: organize the Career Paths Seminar series; recruit external speakers from a diverse set of professional environments to speak about their career experiences; work with the Dean's office to recruit speakers and to help facilitate events.

Recent Events:

- **TBQA End-of-Term PhD Coffee Hour**
F Dec 18
- **GSC Career Paths Start Up Mixer**
W Jan 6 — 8PM, *The Field Pub, Central Square; 20 Prospect St, Cambridge, MA*
- **TBBC Biotech Journal Club**
F Jan 29: Townsend Benard gave a presentation on the Innovative Medicines Initiative, Europe's largest public-private effort aimed at speeding the development of better and safer medicines for patients.



sites.tufts.edu/insight



Tufts University Sackler School Students



[sackler_gsc](https://twitter.com/sackler_gsc)

New Dietary Guidelines focus on longevity of healthy eating habits

by Kayla Gross ^{CMDR}

This year, Valentine's Day may end up being a little less sweet, at least for those following the new 2015-2020 Dietary Guidelines for Americans. This most recent report on the current status of nutritional health in the U.S. suggests reduction in sugar intake as one major priority for improving the diet of the American public. While not a particularly unexpected suggestion, sugar overconsumption was emphasized more than in past reports, which primarily focused on decreasing total calorie consumption as well as sodium and saturated fat intake. While the report also dictated that these latter two troublesome nutrient groups also be consumed less, it was sweet versus savory that emerged as the one of the more challenging adversaries to healthy diet that needs to be faced in coming years.

This eighth edition of the guidelines was released at the start of the new year by the U.S. Department of Health and Human Services (HHS) and the U.S. Department of Agriculture (USDA). Updated every five years since its introduction in 1980, this report not only outlines the current state of nutritional health in the U.S. but also provides standards for improvement over the next five-year period. Each report encourages changes in Americans' diet to improve overall health and prevent disease by suggesting key recommendations for beneficial food and beverage consumption as well as methods that organizations can use to enforce their implementation.

To make these recommendations, a Dietary Guidelines Advisory Committee consisting of leading nutrition scientists and medical experts reviews available nutritional data in the form of existing literature reviews, committee-generated literature reviews, national data from federal agencies, and food pattern modeling analyses. From there, they summarize the scientific evidence and the corresponding proposals for dietary changes to pass off to a combined HHS and USDA policy contingent that assembles the final report. Professionals from federal and private organizations can then

use this report to direct and shift public perception and practices regarding nutrition. The ultimate goal is to have these changes then improve public health in relation to diet and overall well-being.

Currently, about 60% of the U.S. population over two years of age exhibits a healthy eating index, while only around 20% meet physical activity guidelines. However, this is contrasted by the fact that over half the population of American adults has one or more diet-related chronic diseases. Thus, this year's report framed its key recommendations in the context of being necessary to reduce chronic disease; specifically, they highlighted how a healthy diet can reduce the risk or progression of obesity, type-2 diabetes, and cardiovascular disease. It argues that encouraging disease prevention through healthy diet would not only improve quality of life, it would also reduce national medical expenses by a significant amount. Chronic disease focus was an expansion of previous years' disease prevention aims, which centered on weight and obesity alone.

As such, the key recommendations in previous reports emphasized calorie intake in addition to calorie balance (intake versus expenditure of calories) as crucial to maintaining health-beneficial weight. In contrast, this year's report instead put the term eating patterns in the spotlight, with emphasis on variety within food groups and nutrient

The Guidelines



- 1. Follow a healthy eating pattern across the lifespan.** All food and beverage choices matter. Choose a healthy eating pattern at an appropriate calorie level to help achieve and maintain a healthy body weight, support nutrient adequacy, and reduce the risk of chronic disease.
- 2. Focus on variety, nutrient density, and amount.** To meet nutrient needs within calorie limits, choose a variety of nutrient-dense foods across and within all food groups in recommended amounts.
- 3. Limit calories from added sugars and saturated fats and reduce sodium intake.** Consume an eating pattern low in added sugars, saturated fats, and sodium. Cut back on foods and beverages higher in these components to amounts that fit within healthy eating patterns.
- 4. Shift to healthier food and beverage choices.** Choose nutrient-dense foods and beverages across and within all food groups in place of less healthy choices. Consider cultural and personal preferences to make these shifts easier to accomplish and maintain.
- 5. Support healthy eating patterns for all.** Everyone has a role in helping to create and support healthy eating patterns in multiple settings nationwide, from home to school to work to communities.

HHS AND USDA 2015-2020 DIETARY GUIDELINES

density, as part of their five key recommendations (see Box 1). While earlier editions of the guidelines also encouraged these three principles, the 2015-2020 Dietary Guidelines push them front and center as a way to encourage the American public to make more long-term, and thus hopefully longer lasting, changes to their diets.

The revised Dietary Guidelines themselves are not particularly different than past years and are what you would expect. Lots of veggies and fruit, some dairy, protein and grains, with limited amounts (<10% of overall calorie intake) of salt, fat, oil, and sugar is the recommended pattern of eating for the U.S.-style diet plan. Two alternatives were also described, where the Mediterranean-style plan contains more fruit and seafood and less dairy while the Vegetarian plan obviously eliminates meat, poultry, and seafood while emphasizing legume, soy product, and whole grains intake.

In addition to listing daily intake amounts and limits for the food groups, each plan also frames these recommendations in the context of weekly amounts and limits. The unique aim of this dual description is to encourage more flexibility in adhering to

"This edition of the Dietary Guidelines focuses on shifts to emphasize the need to make substitutions—that is, choosing nutrient-dense foods and beverages in place of less healthy choices—rather than increasing intake overall."

*U.S. Department of Health and Human Services and
U.S. Department of Agriculture. 2015 - 2020 Dietary Guidelines for Americans.*

the guidelines. It will hopefully allow Americans to recognize even if they cannot consistently meet daily quotas of appropriate nutrient and food group intake, they still can adhere to a healthy eating plan on a broader time scale.

The report also placed heavy emphasis on considering the nutrient density of consumed food. For example, a glass of juice serves as a fruit serving, but eating ‘whole fruit’ such as an apple or orange is better, as is eating whole grain bread over other types. The lack of variety in food groups—especially vegetables and protein—consumed by Americans was also a concern. Specifically, more range in veggie types (dark green, red and orange, legumes, and starchy) as well as a shift away from meat and poultry towards seafood was encouraged. Again, these are suggestions that have been made previously by the USDA and HHS, but combined with the flexibility from the newly emphasized weekly guidelines and eating patterns as a whole, the hope is to increase specifically the ease of following these nutritional recommendations.

The report also warns to keep an eye out for hidden sources of nutrient groups that should be ingested in limited amounts and have been linked by moderate to strong evidence to chronic disease (such as sugar, saturated or trans fats, sodium, and oil). For example, many types of meat are a source of high saturated fat, and yogurt can often contain high amounts of sugar, with processed foods and mixed dishes (such as burger or pasta plates) at restaurants typically containing significant amounts of salt. Given that the average American consumes almost twice the recommended levels of both sugar and salt in their diet, shifting eating patterns to lessen intake of these disease-linked food groups would be one significant way of improving general health.

To shift American diet towards a healthier nutritional composition, the guidelines helpfully provide a wide variety of suggestions in how to make this change. To incorporate more fruits and vegetables, they suggested skewing the balance of mixed meals towards

Terms to Know from the Dietary Guidelines for Americans, 2015-2020

Eating pattern

The combination of foods and beverages that constitute an individual's complete dietary intake over time.

Nutrient dense

A characteristic of foods and beverages that provide vitamins, minerals, and other substances that contribute to adequate nutrient intakes or may have positive healthy effects, with little or no solid fats and added sugars, refined starches, and sodium.

Variety

A diverse assortment of foods and beverages across and within all food groups and subgroups selected to fulfill the recommended amounts without exceeding the limits for calories and other dietary components.

these groups. For example, making an omelet for breakfast or a stir-fry for dinner that is composed of more vegetables than meat or poultry. They also give specific examples of how to make healthier exchanges in other food choices: celery and humus instead of chips and salsa, baked chicken over fried, an apple or unsalted nuts instead of commercially made granola bars, and oil instead of butter or shortening for cooking. It emphasizes that small modifications, when combined with one another, can compound into large changes to diet that, if maintained, can lead to beneficial improvements in health.

One outstanding gender-specific suggestion included reduced meat consumption by teen and adult males, who tend to over-consume that food subgroup. Additionally, adolescents and young adults as a whole typically demonstrate the worst adherence to past guidelines. This report's heavy focus on how to shift eating patterns towards more nutrient-dense options hopefully will encourage adoption of healthy nutrition at a young age that will then be preserved into adolescence and adulthood.

Improving access to healthy food both outside and inside American homes was a major hurdle that the Dietary Guidelines identified in implementing these shifts in eating patterns. Grocery store development and access to other sources of food such as farmers markets, shelters, food banks, and

Table 1-1. Healthy U.S.-Style Eating Pattern at the 2,000-Calorie Level, With Daily or Weekly Amounts From Food Groups, Subgroups, and Components

Food Group ^a	Amount ^b in the 2,000-Calorie-Level Pattern
Vegetables	2½ c-eq/day
Dark green	1½ c-eq/wk
Red and orange	5½ c-eq/wk
Legumes (beans and peas)	1½ c-eq/wk
Starchy	5 c-eq/wk
Other	4 c-eq/wk
Fruits	2 c-eq/day
Grains	6 oz-eq/day
Whole grains	≥ 3 oz-eq/day
Refined grains	≤ 3 oz-eq/day
Dairy	3 c-eq/day
Protein Foods	5½ oz-eq/day
Seafood	8 oz-eq/wk
Meats, poultry, eggs	26 oz-eq/wk
Nuts, seeds, soy products	5 oz-eq/wk
Oils	27 g/day
Limit on Calories for Other Uses (% of calories)^c	270 kcal/day (14%)

HHS and USDA 2015-2020 DIETARY GUIDELINES

community gardens or cooperatives were specific examples provided for how government and private sector professionals can make that challenge smaller. Household food insecurity—defined as the lack of consistent maintenance of healthy food choices within a home—was also a major concern, especially for families or individuals who struggle financially. Educational and nutrition assistance programs would need expansion and increased penetrance into communities to combat this issue in a more effective manner, especially given this report's focus on healthy diet patterns that have longevity.

More than anything else, the Dietary Guidelines, 2015-2020 heavily emphasizes cementing long-term healthy eating habits by encouraging variety and flexibility in food choices over counting total calories or quantifying diet by calories alone. Directing changes to national nutrition in this way will hopefully begin to address the significant need for large changes in American diet required to reduce chronic disease in our population.

Read the new guidelines:
U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015 – 2020 Dietary Guidelines for Americans. 8th Edition. December 2015. Available at <http://health.gov/dietaryguidelines/2015/guidelines/>.

Notes from the Library... Finding Protocols & Methods

by Laura Pavelch^{HHSL}

In December, I mentioned *Journal of Visualized Experiments* (JoVE), a journal that publishes experimental techniques in video format. In addition to JoVE, there are several other resources available for finding protocols and methods:

- **Bio-Protocol** Open-access, peer-reviewed e-journal established by a group of Stanford researchers. Publishes detailed biomedical protocols for cancer biology, immunology, molecular biology, neuroscience and more. Freely available at: <http://www.bio-protocol.org/>.
- **Cold Spring Harbor Protocols** Publishes both well-established and cutting-edge research methods in cell, developmental and molecular biology, genetics, protein science, immunology, etc. Available online through Tufts Libraries: <https://library.tufts.edu:443/record=b2164037-S1>.
- **Current Protocols** Peer-reviewed, regularly updated laboratory protocols for cell biology, human genetics, immunology, molecular biology, etc. Available online through Tufts Libraries: <http://www.library.tufts.edu/ezproxy/ezproxy.asp?LOCA-TION=WBCurPro>.
- **Journal of Visualized Experiments (JoVE)** Available online through Tufts Libraries: <https://library.tufts.edu:443/record=b2178505-S10>
- **Methods** Journal that focuses on developing techniques in the biomedical sciences. Each topical issue is comprised of invited articles by specialist authors. Available online through Tufts Libraries: <https://library.tufts.edu:443/record=b2180868-S10>.
- **Nature Methods** Publishes novel methods, and significant improvements to established techniques, in life sciences and chemistry research. Available online through Tufts Libraries: <https://library.tufts.edu:443/record=b1694504-S10>.

- **Nature Protocols** Publishes laboratory protocols, providing step-by-step descriptions of procedures. Available online through Tufts Libraries: <https://library.tufts.edu:443/record=b2182128-S10>.
- **Protocol Exchange** Open repository for the deposition and sharing of protocols, from Nature Protocols. Protocols are not peer-reviewed or edited, but free to use or comment upon. Free: <http://www.nature.com/protocolexchange/>.
- **Springer Protocols** Collection of step-by-step protocols and methods published in the Methods in... book series and other laboratory handbooks. Available online through Tufts Libraries: <https://www.library.tufts.edu/ezproxy/ezproxy.asp?LOCA-TION=http://www.springerlink.com/protocols/>.

Upcoming Library Events

Full calendar of HHSL events: <http://hirshlibrary.tufts.edu/events>

Valentine's Day Crafts

Th Feb 11 & F Feb 12, Starting at 12 PM

Library Service Desk, Sackler 4

Make your own Valentine's Day cards and other heart-themed crafts. All supplies provided, just bring your love and creativity!

Open Workshop: Using Images

W Feb 24, 4-5 PM | F Feb 26, 9-10 AM

Sackler 510

Survey of image collections licensed by Tufts, and available in the public domain, and discussion of appropriate image use and citation.

Open Workshop: Database Crash Course

W Mar 2, 4-5 PM | F Mar 4, 9-10 AM

Sackler 510

Go beyond PubMed to learn about other health sciences literature databases, including PsycINFO, CINAHL (Cumulative Index to Nursing and Allied Health Literature), SPORTDiscus and CAB Abstracts.

PubMed Tip of the Month: Searching for Methods

There are several techniques that can help you find methodology articles in PubMed:

- **MeSH Headings for Methodology** 'Methods' and 'Research Design' are MeSH headings. You can try combining these terms with MeSH headings or keywords for your topic.
- **MeSH Headings for Particular Technique(s)** Depending on your area of research, there may be a specific MeSH term for the category of techniques in which you are interested, e.g. "Cell Culture Techniques".
- **Subheadings** Subheadings are used in conjunction with

MeSH terms to further describe a particular aspect of that term. Subheadings follow a MeSH term, e.g. "Polymerase Chain Reaction/methods"[MeSH]. Subheadings can also be free-floated in a search, e.g. "DNA Replication"[MeSH] AND "Methods"[Subheading]. Two useful subheadings for methodology searches are 'Isolation and Purification' and 'Methods'.

- **Search Particular Journal(s)** You may wish to narrow your search to one or more journals devoted to methodology. To do so, open the Advanced Search Builder by clicking the Advanced link below the PubMed search box. Select Journal from the dropdown menu and start typing the title of the journal in the adjacent search box. Choose the journal from the list of titles that appear. Enter a search term in the next search box to search the journal for articles on a specific topic, e.g. "Methods in molecular biology"[Journal] AND CRISPR.

Builder

Journal: Methods in molecular biology (Clifton, N.J.)

AND MeSH Terms Clustered Regularly Interspaced Short Palindromic Repeats

AND All Fields

Search or Add to history

On the Shelf

For work...

Electronic Resource: Henry Stewart Talks – Biomedical & Life Sciences Collection

Location: Search for 'Henry Stewart Talks' in Databases search box on the HHSL homepage (<http://hirshlibrary.tufts.edu/>)

Video collection of seminar style lectures by leading scientists on the fundamentals and latest research in a variety of areas, including: cancer, cell biology, immunology and pharmacology. Separate subject area devoted to methods.

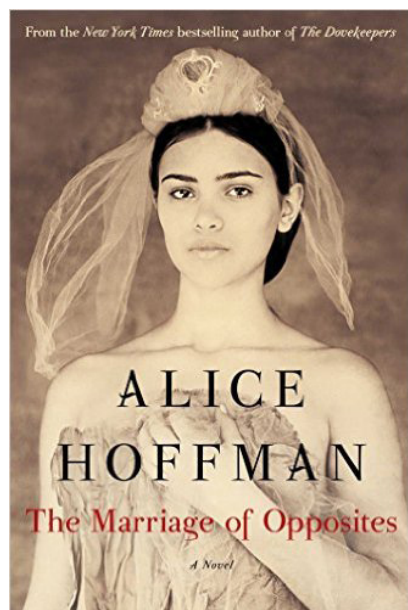


And leisure...

The Marriage of Opposites, by Alice Hoffman

Location: HHSL Leisure Reading, Sackler, 4th Floor (<http://library.tufts.edu:80/record=b2798246-S1>)

Novel based on the life of Rachel Pissarro, mother of the Impressionist painter Camille Pissarro.



Sackler Student Publications

December 2015 to present

compiled by Laura Pavlech^{HHSL}

Al-Naamani N^{CTS}, Espitia HG, Velazquez-Moreno H, Macuil-Chazaro B, Serrano-Lopez A, Vega-Barrientos RS, Hill NS, Preston IR. Chronic thromboembolic pulmonary hypertension: experience from a single center in Mexico. Lung. 2016; PubMed PMID: 26748498.

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. 2016;13(1):25-30; PubMed PMID: 26501464.

Gardiner BJ^{CTS}, Snyderman DR. Editorial commentary: chronic lung allograft dysfunction in lung transplant recipients: another piece of the puzzle. Clin Infect Dis. 2016;62(3):320-2; PubMed PMID: 26565009.

Hooper A^{NRSC}, Maguire J. Characterization of a novel subtype of hippocampal interneurons that express corticotropin-releasing hormone. Hippocampus. 2016;26(1):41-53; PubMed PMID: 26135556.

Jena N, Sheng J, Hu JK, Li W, **Zhou W^{CMDB}**, Lee G, Tschlis N, Pathak A, Brown N, Deshpande A, Luo C, Hu GF, Hinds PW, Van Etten RA, Hu MG. CDK6-mediated repression of CD25 is required for induction and maintenance of Notch1-induced T-cell acute lymphoblastic leukemia. Leukemia. 2015; PubMed PMID: 26707936.

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. 2016;57(1):23-7; PubMed PMID: 26493128.

Ram DR^{IMM}, Ilyukha V, Volkova T, Buzdin A, Tai A, Smirnova I, Poltorak A. Balance between short and long isoforms of cFLIP regulates Fas-mediated apoptosis in vivo. Proc Natl Acad Sci U S A. 2016; PubMed PMID: 26798068.

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Hirsh Health Sciences Library on Social Media:



Tufts University Hirsh Health Sciences Library



TuftsHHSL

Notes from the North - Northern Networking

by Jess Davis-Knowlton^{CMD}

Teleconferencing from 100 miles away into classes, meetings, and extracurricular events is all well and good, but sometimes you just feel the need to practice schmoozing in person. The Sackler Graduate Student Council holds really relevant and useful networking events, and much of the content of these events can be taken advantage of through a teleconference connection, but it is hard to beat the rapport that is established when chatting, or bemoaning, face to face with colleagues over hors d'oeuvres. For anyone who does the bulk of their work away from the main campus of their organization it is imperative to find and cultivate local career enhancement resources. Not only does this give you access to opportunities in your local sphere, it also improves your connection with the members of the satellite facility.

For Sackler students studying at the Maine Medical Center Research Institute (MMCRI) in Scarborough, ME this resource is available in the form of the MMCRI Research Fellows Association (RFA). Because MMCRI is a relatively small institute, we currently have about twenty principal investigators, we have a fairly small number of postdoctoral fellows and even fewer graduate students at any given time. The RFA was originally founded to serve both groups and has recently expanded to serve non-faculty scientific staff and technicians as well. These groups share many of the same needs in terms of networking and professional development events, so the inclusiveness of the organization has worked well for us thus far.

The RFA leadership team and active members are constantly kept busy to ensure we are providing meaningful events each month. Here's just a small taste of what we do:

- Increase MMCRI visibility in the community by sending members to participate in local career fairs and the Maine Science Festival
- Organize scientific talks from speakers suggested and voted on by RFA members
- Hold professional development workshops such as "Intro to LinkedIn" and "The Art of Schmoozing" lead by University of New England's Career Services Coordinator, Jeff Nevers

- Maintain a library of material on resume writing, cover letter writing, grant writing, and networking advice

- Work closely with MMCRI and MMC Human Resources to utilize hospital resources such as MMC's Training and Organizational Development department for the benefit of our members

- Poll members annually on which of their professional development needs are being met and which still need to be filled

One of our newest events is also one of my favorites. In the spirit of positive reinforcement we recognize and celebrate either a mentor or a pair of researchers (one technician and one academic) of the year. This occasion allows the RFA to show appreciation for mentors and colleagues who demonstrate superlative qualities. Appreciation in the case of researchers includes \$500 from the RFA



RFA members handing out treats at the 2015 Barbra Bush Children's hospital costume parade

discretionary fund (supported by our fundraising efforts) to participate in further career enhancement.

MMCRI may be 100 miles away from the biotech hub that is Boston, but we're no backwater slouches when it comes to career enhancement and professional development!

Below: Former RFA president Dave Kuhrt, PhD presenting the 2014 Mentor of the year certificate to Dr. Rob Smith



Top Techniques: Go with the FLOW

What is Flow Cytometry and what can it do for you?

by Stephen Kwok^{FACS Core}

Flow Cytometry is something I never heard about in school, but once I learned about it, the possibilities seemed endless as to how I could use it as a tool to make work and research better. FACS (Fluorescence Activated Cell Sorting) Sounds like an office tool, not a state of the art piece of scientific equipment. In reality, it is like a multitude of fluorescent microscopes all working together to gather data at the same time. Wait, it gets better... you can actually physically separate your cells from one single cell per well on a 96 well plate, to millions of cells in a 15ml tube! The human eye has a habit to have bias; these machines convert the analog data into a digital plot or histogram that can't be argued with! Is it 30% positive or 35% positive? Yes, we can actually tell the difference!

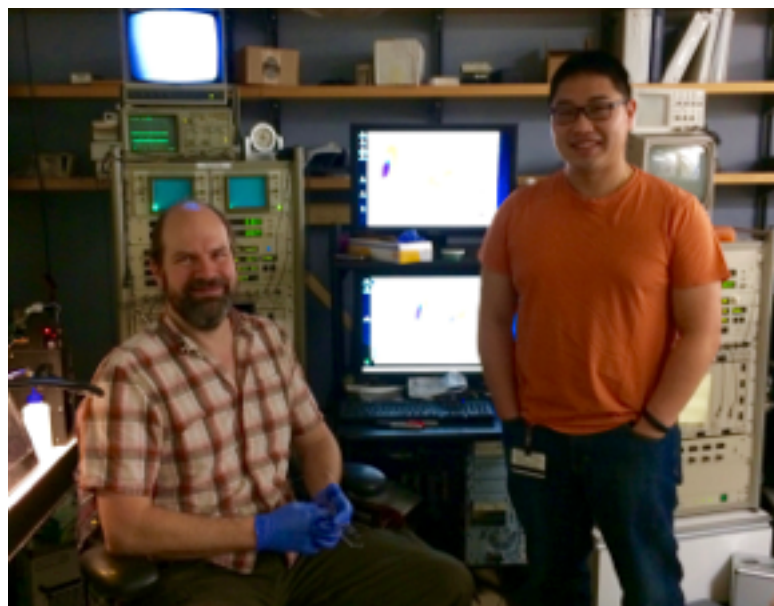
Let's back up a step here. The technology is best used if you have markers for your cells. You can take fluorescently labeled antibodies to identify cells. Let's say you are looking for stem cells. Cd34, SCA-1, and c-Kit are common for hematopoietic stem cells. Label these three, throw in a viability marker, and you have successfully identified these cells. You can move forward with your experiment and simply ANALYZE the cells. Or, you can try to isolate these cells by SORTING them. Fluorescent protein transfections with a GFP or RFP marker are common. Why grow cells in harsh selection media when you can simply pluck them out and put them into a plate? I need to do some PCR, but I have to figure out how to get 1 cell, 5 cells, 25 cells, 50 cells. Limited dilution is going to take me forever! In as fast as 30 seconds you can have those exact numbers of cells lined up into your pcr tubes or a 96 well plate.



At our facility we have cell analyzers available for use 24/7. We train people in basic theory, and then help them get started on how to run the instruments. Sorting, however, is a little more complicated and is done by the two intimidating guys running the facility: Allen and Steve.

There are always plenty of questions to answer about FLOW. How fast is fast? Well the Analyzers can run approximately 3,000 cells per second. The high speed cell sorters. 30,000 cells per second! This can translate to over 100e6 per hour. How sensitive are the machines? We can detect one cell in 10e6 cells! How many markers can I use? The most common is 4 different colors at a time, but we could do up to 17. Be wary, however, just because we said you can. Doesn't mean you should. Work smarter, not harder! I have 4 different populations: can I sort them all at once? Yes! In fact, we can do up to 6 simultaneous separate populations at once.

How can I do good flow cytometry? The key is sample prep! Yes, they seem like magical boxes, but the experiment is only as good as the components. Titer your antibodies. TEST them with a positive control. Bring a negative or untreated control as a baseline. Would you run a gel without the markers?



Find the correct markers, and look for the greatest separation. Cells need to be in Single Cell format. It is highly recommended to filter/strain your samples because the pathway for the cells are 70-150um in size, a clump of cells can clog the machines and render them inoperable.

Come by, check out the machines, ask us questions...we hope you'll be pleasantly surprised at the possibilities.

Tufts Laser Cytometry

Special points of interest:

- No Color Cloning
- Bulk Sorting
- Fluorescent work
- Cell Cycle
- Apoptosis
- Ca²⁺ Flux
- Single Cell PCR
- Rare Event
- Bacteria
- CRISPR
- Stem Cells
- Neurons
- Transfections
- Infections
- Libraries

More information:
<http://medicine.tufts.edu/Faculty-and-Research/Core-Research-Facilities/Flow-Cytometry-Core>



Contributing to the Healthcare Ecosystem through Evidence-based Investing

by Kofi Gyan^{PREP}

In an effort to continually explore the interface between science and business, Tufts Biomedical Business Club recently caught up with Dr. Zach Scheiner, an Associate at RA Capital Management, for a discussion about his experience in the healthcare investment industry.

RA Capital Management is a crossover fund manager dedicated to evidence-based investing in public and private healthcare and life science companies. Prior to his current role at RA Capital, Zach worked as a Science Officer at the California Institute for Regenerative Medicine, where he managed a portfolio of research programs concentrated in translational neuroscience. He holds a BS in Molecular Biophysics and Biochemistry from Yale University, and a PhD in Neurobiology and Behavior from the University of Washington.



Zach Scheiner, PhD

As an Associate for RA Capital, Zach's efforts are realized through the team's core research division, TechAtlas. This division is a scientifically trained team that maps out competitive landscapes in a continual effort to survey the landscape and identify emerging therapeutics and technologies that will reshape how physicians treat disease. The interview is edited for brevity and clarity.

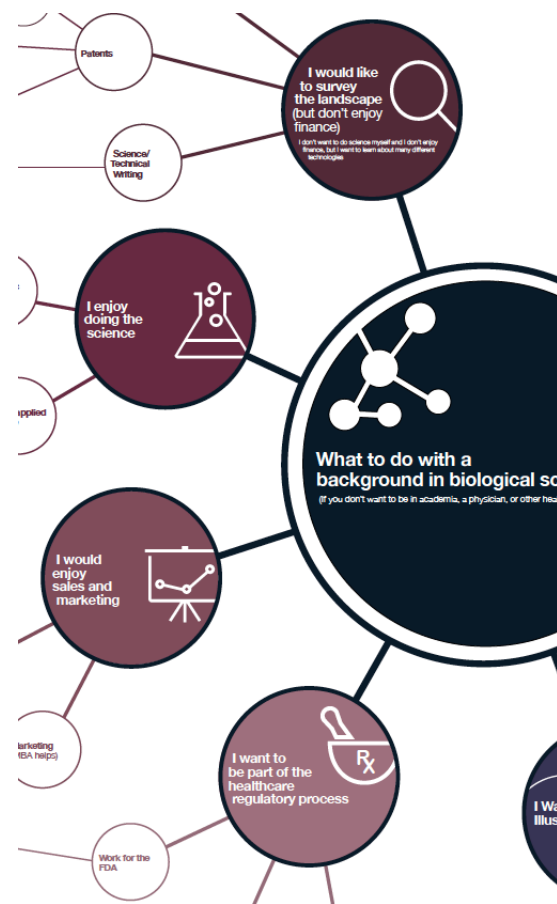
Tell me about the career path that led you to your job. How did you become involved with RA Capital Management?

My interest in biomedical science and research began as an undergrad, when I had several summer research internships and was exposed to a few different fields of research. At the same time I had my first opportunity to teach science classes at a local high school and quickly realized that I also had a passion for teaching. After graduating, I decided to teach middle school science and math for a year (which turned into three) before returning to research and going to grad school.

I attended the Neurobiology & Behavior graduate program at The University of Washington in Seattle. My thesis work focused on the molecular basis of memory and drug addiction. Though I enjoyed my time as a graduate student, by my fourth year I began to realize that the academic career path and spending more years at the lab bench were not for me. I really enjoyed reading primary literature, planning experiments, and reviewing/analyzing data, so as I finished up graduate school I began looking at alternatives where I might be able to incorporate these interests as well as leverage my scientific background in a non-research capacity.

I found a great opportunity at the California Institute for Regenerative Medicine (CIRM) in San Francisco. CIRM funds stem cell research at institutions throughout California with the goal of advancing promising stem cell based therapies into clinical trials and ultimately to patients. I began as a science writer and quickly moved to a position managing a portfolio of translational research programs. In this position, I worked closely with funded scientists to help set milestones and success criteria, assess progress, and, however possible, facilitate success. In my six years at CIRM I learned a tremendous amount about the drug development process, gained experience reviewing and analyzing data, and developed management skills, all of which have been invaluable in my current role at RA Capital.

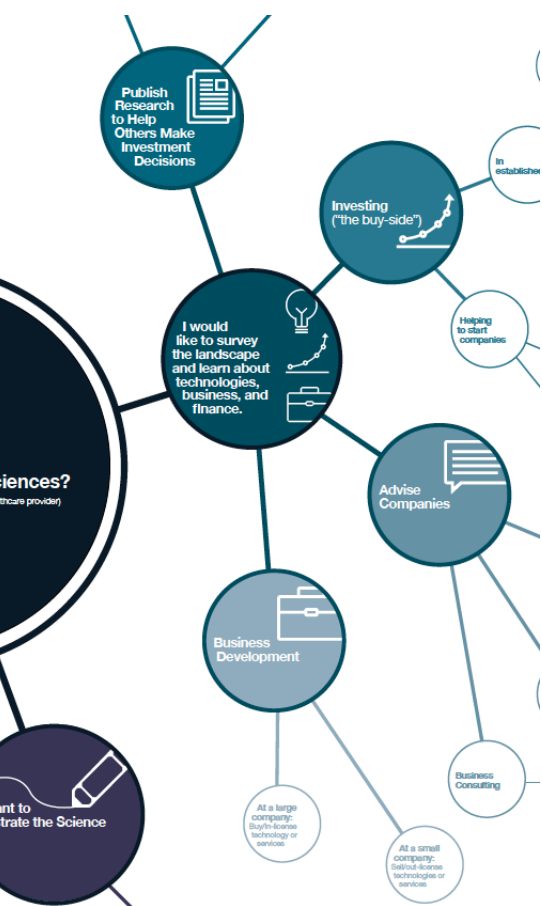
My move to RA Capital was the result of my wife being offered an assistant professorship at Brown University. In preparation



for the move from one coast to the other I reached out to everyone in my network, including an old lab-mate I had stayed in touch with from graduate school who was now an Associate for RA Capital. I had a long-time interest in biotech investing, nurtured by my dad, and had been learning about this part of the industry in my spare time. Luckily, RA was hiring and the rest is history. For me, RA Capital was a perfect fit. I can put my communication and analytical skills from teaching, grad school and CIRM to good use and I love staying immersed in cutting-edge science while learning more about the investment side of the biotech industry.

What are the duties/functions/responsibilities of your job?

As an Associate with RA Capital, my primary role involves creating dendrograms (mind-maps) of specific diseases or capabilities within the healthcare industry. These comprehensive landscape maps take all the



RA CAPITAL TECHATLAS CAREER MAP

available drugs, both on the market and still in development, and put them into the context of current standard of care and unmet needs. They help our team fully appreciate and contextualize the market potential of assets and companies before making investments. Mapping out a disease landscape is a research-intensive process that involves surveying the literature, meeting with companies with assets in the space, speaking directly to physicians, attending scientific conferences, and analyzing data. The process can take several months to complete but the maps are never truly finished. Therapeutic landscapes are constantly evolving, new data are released and new licensing and acquisition deals are made. Our maps are equally dynamic and a lot of my time is spent staying up to date with the latest news and data coming out in the areas I cover.

In addition to mapping, Associates also join the investment team in diligence projects

on specific investment opportunities. Our maps are a great way of contextualizing drugs and their competitors and can help our team identify potential new opportunities but it's always critical to dig deeper before making an investment. One of the most rewarding parts of my job is seeing all the work I've put in researching and understanding a therapeutic space pay off with insights that are potentially investable, or that directly benefit a diligence project.

On a day-to-day basis I also survey industry news and the scientific literature not only to keep up with the science but to search for new investment opportunities that could be licensable for an RA Capital portfolio company or even form the basis for a new company. I also enjoy being involved in the recruiting process at RA and playing a small role in shaping the future of the company.

What is the most rewarding part about your job?

Personally, the most rewarding part of my work is knowing that we are investing in companies that are developing therapies for patients that really need them! These companies often have no marketed drugs and need capital to advance their assets through clinical trials and into the hands of patients. When I think about the work that I do, I know I am helping to identify great science, underappreciated drugs, and promising new opportunities. And I hope that by influencing where RA Capital's dollars are invested, I'm impacting the whole healthcare ecosystem in a positive way.

What experiences best prepared you for your job?

I think all of my previous work experiences helped prepare me for RA Capital, the first of which was teaching. Communication is such an essential skill and getting an opportunity to develop this early in my career has been a huge benefit. Having controlled a classroom every day for three years definitely makes communicating with colleagues, companies and scientific experts a little easier. Effective communication is a vital part of this

job.

The second experience is my time spent as a graduate student. In graduate school I learned how to rigorously analyze data, both my own and from the literature. I developed my critical thinking and analytical skills and the ability to quickly identify key questions, design key experiments, and understand the limitations of a study.

Lastly, at CIRM I learned the process of moving a drug from the lab to the market and everything in between. I also regularly participated in grant review meetings with panels of scientists, clinicians, and patient advocates. These meetings gave me the opportunity to learn what was truly important to each group. While the views and opinions would often vary between the groups, one key takeaway was that for a drug to succeed, doctors have to want to prescribe it and patients have to want to use it. My experience at CIRM taught me

The ability to rigorously analyze data and quickly get to the "meat" of primary literature or a clinical data set is invaluable.

to evaluate drugs with the patient perspective in mind; new therapies are worthless unless patients will use them,

and sometimes improvements that appear marginal can be very meaningful to patients.

What skills or personal characteristics do you feel contribute most to success in this industry?

Very often, investment firms require that applicants have a background in finance, an MBA, or prior experience in the industry. That is not the case at RA Capital. I wouldn't say any particular background or degree is required, but there are certainly skills that are critical. Analytical skills, for example. The ability to rigorously analyze data and quickly get to the "meat" of primary literature or a clinical data set is invaluable. Another key skill is effective writing and communication. Much of my day is spent writing and talking. I am continuously expressing my thoughts and providing analysis and it is important to do so concisely and effectively.

[Continued on p. 12, "RA Capital"](#)

RACAPITAL

ABOUT US TEAM TECHATLAS VENTURE CONTACT OUTREACH

EVIDENCE-BASED INVESTING IN
HEALTHCARE & LIFE SCIENCES.

RA Capital Management, LLC ("RA Capital") is a crossover fund manager dedicated to evidence-based investing in public and private healthcare and life science companies that are developing drugs, medical devices, and diagnostics.

DENALI
NATIONAL PARK & RESERVE
Alaska**RA Capital, cont'd.**

In terms of personal characteristics, I would highlight skepticism. Being skeptical is a common trait among scientists due to the nature of research, but this skill is especially important when meeting with companies. Every company is trying to convince us that their assets or data are the best. Skepticism is required to separate the pitch from the quality of the science.

Humility is another important personal characteristic. To put it simply, in something as complicated as drug development, it's easy to be wrong! There are so many variables to consider, and science changes so quickly; it's essential to have an open mind and be humble about everything you do not know.

What are the biggest challenges you face as an associate for RA Capital Management?

I think the largest challenge I face is simply the pace of the industry and science itself. There is new data coming out all the time; from company press releases, new primary literature, scientific conferences—the amount of information can be overwhelming. Developing the ability to quickly assimilate and analyze new information is the biggest challenge. But it's also one of the things I enjoy most about my job. In this field you have to enjoy constant learning and also get good at processing information quickly enough to inform an investment decision. The fast pace is challenging but exciting.

What are some other opportunities within RA Capital Management for scientists aside from the TechAtlas Research Division?

Most opportunities for PhD trained scientists are within our TechAtlas research team. This team is made up primarily of PhD trained scientists in either Associate or Scientific Writer positions. The Science Writers work closely with the Associates as they build the story of their map, acting as a thought partner to develop the key insights for standard of care, unmet needs, and investable opportunities for each disease. As members of the research team gain experience, they can specialize in one of several areas, including early-stage assets, strategic analysis of licensing and partnerships, and equity analysis.

For somebody interested in pursuing this career, what would be your advice to best prepare them?

I would highly recommend that PhD candidates supplement their education in three areas: biostatistics, clinical trials, and FDA regulatory pathways. These topics are not always emphasized or even addressed in many graduate programs. A working knowledge of biostatistics goes a long way; being able to understand statistical pitfalls and the pros and cons of different analyses is invaluable. I would also recommend becoming familiar with clinical trials: the general FDA

requirements for advancing drugs into Phase 1 trials and the typical development path for new therapies in your field of interest. Few

PhD candidates [should] supplement their education in three areas: biostatistics, clinical trials, and FDA regulatory pathways.

graduate students get exposed to these areas. I would strongly suggest looking beyond the specific questions of own research project to get

an understanding of the broader context: the standard of care for the disease, unmet needs, and competing approaches. If your research isn't disease or therapy focused, choose a disease of interest or imagine potential applications of your work and research those. Putting new research and data into a broad context is a lot of what we do, so the earlier you can start practicing, the better prepared you will be.

More information about TechAtlas is available on their website, <http://www.racap.com/techatlas/>. A full version of the TechAtlas Career Map is also available there.

INSIGHT ESSAY CONTEST

Developing Resilience

by Matt Kelley^{NRSC}

The pillars supporting a good scientist remain unbroken. They have changed little since Galileo dropped spheres in Pisa and Pasteur confirmed germs cause disease. It is the understanding and mastery of these core principles that should be the dominant focus of graduate training. The journey of a scientist is one of vistas and ditches. For the PhD student, so quickly can things shift from shining moments of discovery to the fierce harshness of figuratively banging their head against a lab bench after another failed experiment. Unless the student enters this land prepared, they will collapse in the first journey over the top. Discoveries require failures. Without resilience to failure, decisions are tainted by fear of failure. The process of gaining a PhD is overflowing with decisions of consequence including selection of advisors, scientific projects, and career paths. Resilience, the capability to adapt to diverse stressors, is critical to making these decisions with a clear and strong mind. Outlined here are four ways resilience can be improved during PhD training.



Understand mental well-being.

"We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard..."

In 1962, in the sun drenched football stadium at Rice University, President Kennedy declared why the American people must pursue this great achievement. But the path to the Apollo 11 landing on the moon was far from smooth. A raging fire consumed all three astronauts of the first mission, Apollo 1. There were many reasons to scrap the program. Yet America pressed on to reach the lunar surface due to the ultimate resilience of an entire team following Kennedy's call. We do things because they are hard.

In order to achieve such resilience in science, the PhD student must understand their own resilience. Are problems avoided because of failure's sting? Do roadblocks bring the desire to avoid difficulties all together? It is critical to understand how stress affects personal decision making. A healthy mind underlies balanced processing of information. The student must be guided to recognize when their thinking is warped by stress, resulting in a lost desire to pursue difficult problems. The watchful gaze of the student's committee is critical, but can be supplemented with mental health counseling focused on developing introspective thought. When such self-awareness is gained, resilience becomes a tangible trait to personally and actively increase. Hard problems are no longer fearsome, but glorious challenges.

Place failures in proper perspective

Great people fail, but understand the meaning of failure. Failure isn't a worthless enterprise, a waste of time and resources. Far from it. Failure is the journey.

In order to develop resilience as a PhD student, it is important to understand what failure is. When an experiment fails, it is not a fatal loss. Negative data retains value. And failed experiments can be further optimized to better answer the chosen question. In the process of

PhD training, negative results or outcomes must not be hidden away, but acknowledged by student, advisor, and committee as a critical part of scientific training. Once failures are defined as constructive parts of training, resilience to their sting becomes much easier to develop.

Build skills to create positive experiences

Some of the most resilient people on TV appear on Junior MasterChef, a culinary competition of children under the judgment of Chef Gordon Ramsay. He presents ingredients and a goal, and four-foot tall competitors bring him their completed dishes, some terminating in crying defeat under his carefully worded criticism. However the winners don't break. They remain resilient to the criticism and create beautiful dishes that ultimately wow both Ramsay and audience. What sets these children apart? It's both resilience to criticism and a mastery of cooking technique. These kid chefs are so skilled in their cooking finesse, that when a challenge comes this confidence sets them up for success.

In the same way, the PhD student can be set up for scientific success by becoming a master in their chosen area of technique. If skills are mediocre, failures are sure to increase, to the point where the student gives up and quits. Resilience is hard to build when one is set up for failure. It is an important role of the student's advisor and committee to critique student technique, because in its improvement lies the path to increased positive student experience. And mastery of technique brings certain confidence, because though an experiment may answer or negate a hypothesis, a clean result remains a beautiful thing.

Create supportive relationships

Neil Armstrong stepping onto the lunar service was a culmination of years of rigorous work. Thousands contributed so one man could take one small step. Science is a team sport. Without a supportive network of mentors and peers, problems become harder and resilience difficult to sustain.

It is easy as a PhD student to become intellectually isolated in pursuit of a project. This can and should be avoided. In order to gain resilience and pursue the hardest of problems, guidance is needed from those that have been there before. Opportunities to present work provide an outlet for constructive criticism and guidance. The selection and pairing of mentors outside the student-advisor relationship serves as a platform for dealing with failure. Support networks can be facilitated, but ultimately are an active process on the part of the student. Such relationships should be encouraged during graduate training to build the resilience to the failures and press to the successes.

Resilience is a trait able to be learned and developed by anyone. When scientific resilience is gained, hard problems can be pursued resulting in a fulfilling PhD training experience. A fulfilling scientific life requires resilience to separate one from the psychological weight of failure. And resilience not only gives the ability to think clear and true in science, but throughout the hard and difficult decisions that are guaranteed to appear during the human life. Developing resilience in science should be a major focus of graduate training.

Qualifying Exam Survival Toolkit: Faith, Trust & Post-its

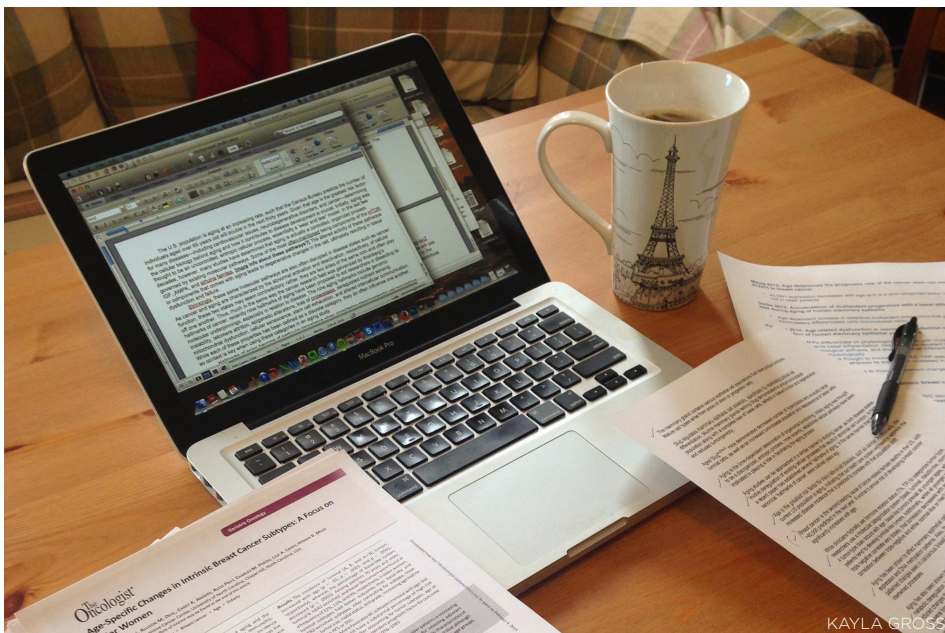
by Kayla Gross^{CMDB}

I read my drafted email with the attached qualifying exam proposal for the fifteenth time, hit send, and then I felt like I was going to throw up.

It was March, the snow outside was half-melted and tinged gray with grime, and I had just submitted my qualifying exam proposal. Three weeks of carrying highlighters in my pockets, drinking tea morning to night, and rarely parting from my computer, and it all came down to the click of a button. At the time, it felt like the most deciding thing I would ever do during my PhD, and that was terrifying. Looking back, it was probably just the irregular sleep hours and too much takeout that had me feeling slightly nauseous.

So, my advice, first and foremost: buy a lot of groceries and do your laundry ahead of time. I sound like a parent, I know, but still: do it. Good food and clean clothes--as well as having those tasks checked off your list in advance--really can save you in the midst of spirals of self-doubt or experimental design frustration. And you will have those moments, but it is important to know they will either pass eventually, or you will beat it by finding a way to prove yourself wrong.

Everyone--and I do mean everyone--told me, with fond amusement: you'll be fine, it won't be that bad, no one is out to get you. And I can tell you, with complete certainty, that is true in retrospect. I have become the older student whom I regarded with respectful but extreme skepticism this time last year. Like they said, I ended up being just fine. Still, I remember the stress and the worry, the cycle of figuring out a problem in my proposal to only have that create yet another problem, and so it went, on and on. So I will avoid telling you what most others will and instead advise this: trust your knowledge and your intuition, even if you try to convince yourself otherwise, because you do know what you are talking about. Have faith. You are going to be your own worst enemy in this four weeks of research and writing, planning and designing, but at least it is an enemy you know well. Use that to your benefit: trust your doubt, because it will help you find holes in your work where others will as well.



KAYLA GROSS

And there will be holes; you can't catch them all. This is where help from older students comes in. Your practice talk with them will be one of the most valuable experiences in this process. Be prepared for your 10-15 minute talk to take an hour, or probably two, to be critiqued by your peers. You may not be able to answer all of their questions, but those are questions you then will be able to answer in your exam if they get asked. Their advice on layout and presenting style is also invaluable; they have gone through this before, and their experiences and mistakes in their own exams will be your gain. Take full advantage, even if you have to bribe them to attend with baked goods (just kidding!).

Lastly, invest in some post-its. Keep them everywhere--by your desk, by your bed, in your bag. When an idea or a question or a worry strikes, you'll have somewhere to record it, especially if you don't have time to deal with it at that moment.

Faith. Trust. Post-its.

Good luck!

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Contributors: Contributed substantial content this year, and not a GSC program representative.

Guest Writers: Contributed a single long article or a few short articles this year aside from club updates, and not a GSC program representative.