INSIGHT
Tufts University Sackler School Graduate Student Council Newsletter — April 2016

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Sackler Spotlight: Wei-sheng Chen

by Kayla Gross[CMDB]

As part of a new endeavor to highlight exciting and groundbreaking work done at Sackler, we are now interviewing current students about their science and themselves.

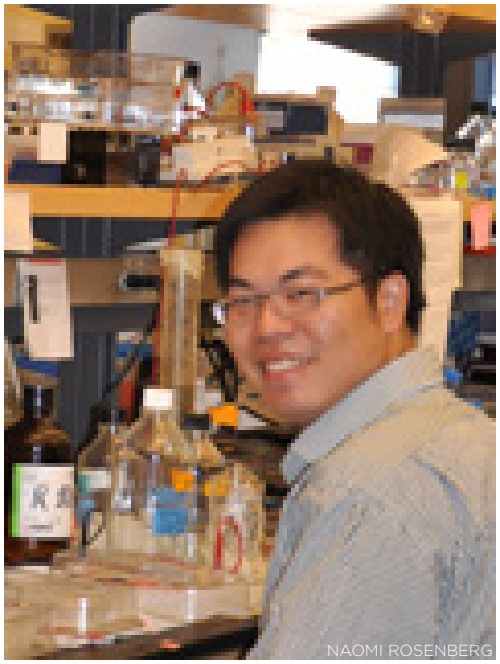
This month's spotlight is on Weisheng Chen, who earned his PhD from Sackler last year and whose dissertation work will be published in Nature Communications.

What is the focus of your research?

My research focused on the role of galectins, a family of carbohydrate binding proteins, in the ocular diseases. During my Ph.D., I investigated (i) the role of galectins in modulating angiogenesis and lymphangiogenesis, (ii) effect of inhibiting galectin-3 and galectin-8 on corneal and choroidal neovascularization, and (iii) therapeutic opportunities of treating glaucoma.

What are some of your major findings?

My thesis project is to study the role of galectin-8 in modulating the process of lymphangiogenesis. Compared to blood vessels, lymphatic vessels were considered less important, invisible, and thus largely neglected by scientists and clinicians. Only in recent years, subsequent to the identification of lymphatic-specific markers (such as podoplanin), it is becoming increasingly clear that lymphatic vessels do not just serve as passive conduits for interstitial fluid and cells, but is actively involved in the pathogenesis of numerous diseases. In addition, the role of carbohydrate recognition system in the regulation of lymphangiogenesis is poorly understood. For my thesis project, using the avascular cornea as a canvas, I demonstrated that galectin-8 is a key mediator of crosstalk among VEGF-C (vascular endothelial growth factor-C), podoplanin and integrin lymphangiogenic pathways. Also, this is the first report demonstrating that podoplanin is a key player in VEGF-C-induced lymphangiogenesis.


NAOMI ROSENBERG

What short- and long-term implications does your research have in your field?

In this study, we demonstrated that in the mouse model of corneal allogeneic transplantation, galectin-8-induced lymphangiogenesis is associated with an increased rate of corneal graft rejection. In addition, in the mouse model of herpes simplex virus keratitis, corneal pathology and lymphangiogenesis are ameliorated in galectin-8 knockout mice. Targeting galectin-8 can be a potential novel therapy for corneal graft rejection and herpes simplex virus keratitis. In addition, these results have broad implications for developing novel therapeutic agents to treat numerous diseases, including, but are not limited to, lymphedema, tumor metastasis, cardiovascular diseases (myocardial infarction, hypercholesterolemia, and hypertension), inflammation and immunity, obesity, glaucoma, dry eye disease, and allergic eye disease.

What initially got you interested in science in general, as well as your current field, and this project(s)?

I began my scientific career as a part-time undergrad student in a cardiovascular lab in National Cheng Kung University, Taiwan. My job was to purify plasminogen from human plasma, and further process the protein enzymatically to generate different forms of anti-angiogenic angiostatins. I guess ever since then, I have been fascinated by vascular biology.

During my first year at Tufts, I was looking for a lab studying vascular biology and have done different projects related to the field. Fortunately, I joined Prof. Noorjahan Panjwani's lab at Ophthalmology Department in 2011 to start my thesis project. During my Ph.D., I have learned a lot about the diverse functions of glycans and glycan binding proteins. In addition, I was encouraged to attend regional and international conferences and have developed great interests in pathogenesis of ocular diseases such as glaucoma and age-related macular degeneration.

Where do you see your career heading in the short or long term?

In the short term, I would like to learn more about the interaction between blood/lymphatic vessels and immune cells such as macrophages and T cells in the setting of eye diseases and/or cancers.
In the long term, I would like to become an independent scientist focusing on vascular biology in the hope to find new therapies for ocular and cardiovascular diseases.

Anything interesting that you do outside of lab or that is science-related but not connected to your research?

I like to travel and try different cuisines. I especially like conferences that are held close to beaches. In my free time at home, I also like to watch food channel. Some of my favorite programs are "Chopped", "Guy's Grocery Games" and "Worst Cooks in America".

which the notch signaling pathway impacts the function of endothelial cells in vasculature, science and journalism share the understanding that we are all better off for knowing.

2015-16 GSC Officers

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Vice President
Sarah Jung

Treasurer
Alex Jones

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Nafis Hasan[1]
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Daniel Wong[2]

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Dean's Office Liaison
Kathryn Lange[SK]

[1,2] *Denotes years on GSC*

InSight Team

Information on page 10

GSC Updates

New Executive Committee for 2016-2017

Julia Yelick, Christina McGuire, and Cho Low were elected to be the GSC President, Vice President, and Treasurer, respectively, of the Sackler GSC for the 2016-2017 academic year.

Committees

Advertising

Kevin Child[GENE], Jaymes Farrell[GENE], Joshua Oppenheimer[PPET]
gsc_advertising@elist.tufts.edu

Career Paths

Christina McGuire[BCHM], Kevin Child[GENE], Amanda Gross[PPET], Julia Yelick[CMDB]
sackler_gsc_career_paths@elist.tufts.edu

Newsletter

Daniel Wong[CMP], Nafis Hasan[CMDB], Sanna Herwald[MMB/MSTP]
sackler_gsc_newsletter@elist.tufts.edu

Social

Frankie Velazquez[IMM], David Dickson[NRSC/MSTP], Jaymes Farrell[GENE], Cho Low[CMDB], Megan McPhillips[IMM]
sackler_gsc_social@elist.tufts.edu

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]

Committee Reports

Career Paths

- See student group updates, page 3.

Newsletter

- Interested in joining the Newsletter commitee next year? All Sackler community members are invited. E-mail us at insight@elist.tufts.edu, Subject: "Joining the committee" to be added to the list. We're looking for writers, editors, photographers, people interested in helping to manage the blog, and people interested in page layout using Adobe InDesign. No experience necessary, just keen interest and creativity.
- No experience using InDesign, but interested in learning? Want to take over making the Insight PDFs next year? Let us know by e-mail: insight@elist.tufts.edu, Subject: "InDesign". Dan Wong will be offering a crash course, details TBA.
- Check out our new blog: http://sites.tufts.edu/insight

Social

- See student group updates, page 3.

Relays

- **March Madness**
  Congratulations to Michaela Tolman[NRSC] for winning the March Madness bracket! Neuroscience students swept the competition, and will be awarded six points to their team score at the Sackler Relays this year.
- **Team Mergers, new MD/PhD team**
  Recent changes in the student population and distribution across programs have necessitated a change in the composition of teams for the Sackler Relays. As a result, the former ISP programs (Biochem, CMDB, and CMP) will merge to form one team, Genetics and Immunology will merge to form another, and PPET will merge with Micro, leaving Neuroscience as the only un-merged team remaining. Additionally, the proposal by students from the MD/PhD program to form their own Relays team was approved, though MD/PhDs are allowed to remain on the PhD teams.

sites.tufts.edu/insight
Tufts University Sackler School Students
sackler_gsc

Sackler student group updates, April

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

Upcoming Events:

- **TMCP Circle Meetings**
  Apr — *Various locations*
- **TBQA BQA Lunch Meeting**
  Tu, Apr 19 — 12-1PM
  Come hang out and chat about everything Queer (and even stuff that's not!)
- **TBBC Case Study Group**
  M, weekly — 5-7PM, *Jaharis 508*
  Practice solving cases, gain insight and interview tips, and learn more about the field of consulting.
- **TBBC Consulting Seminar Series**
  Tu Apr 12 — 5-6:30PM, *Sackler 316*
  Simon-Kucher & Partners, a global consulting firm specializing in TopLine Power®, which encompasses strategy, marketing, pricing, and sales, will be holding an informational session.
- **GSC:S & Medford GSC Spring Mixer @ Aeronaut Brewery**
  Th Apr 14 — 5:30-7:30PM, *14 Tyler St, Somerville, MA*
- **TBBC Biotech Journal Club**
  F Apr 29 — 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.
- **TBQA LGBT Health Workforce Conference Presentation**
  W May 11 — 12-1PM
  Can't make it to the conference? Come hear about what went on at the meeting!
- **GSC:CP & Tufts PDA Vendor Fair**
  W May 11 — *TBA*
- **GSC:CP & Tufts PDA Speed Networking with R&D Industry Professionals**
  W May 18 — *TBA*
- **TBBC Venture Capital Panel**
  Th May 19 — 5-7 PM, *Location TBD*
  Dr. Greg Sieczkiewicz, JD, PhD, a Sackler alum, now Managing Director and Chief IP Counsel at MPM Capital, will be bringing a number of his colleagues to Sackler for a panel discussion focused on venture capital.

Recent Events:

- **GSC:O Clothing Drive**
  Thanks to the Sackler community, approximately 200 lbs clothing was collected and donated to Second Chances, a Somerville-based organization serving to local homeless and low-income population.
- **GSC:CP Versatile PhD**
  W Mar 16 — Founder and CEO Paula Chambers spoke about starting Versatile PhD, and what this resource has to offer Sackler. Post-doc Sarah Dykstra also spoke about how she uses Versatile PhD and what opportunities there are around Boston to get involved.
- **Tufts Public Health and Nutrition Career Expo**
  Tu Mar 29 — The Tufts School of Public Health and Nutrition extended an invitation to their Career Expo to Sackler Students. The expo was an opportunity to network with Boston-based employers and talk about internships, fellowships, and job opportunities.
- **TBBC & MD/MBA Lunch & Learn**
  M Apr 4 — Physician-Entrepreneur Dr. Bill Greenberg, shared insightful anecdotes of his experiences at the intersection of technology and practicing medicine. Extended recap on page 9.
- **GSC:CP & Dean's Office The Job Interview: Practical Tips for Success**
  Tu Apr 5 — Lauren Celano of Propel Careers will be moderated a panel of speakers from non-academic career paths to discuss the different types of interviews processes. A networking reception followed the presentation and discussion.
- **TBBC Biotech Journal Club**
  F Mar 25 — Meagan Montesion[GENE] led a discussion on the CRISPR patent battle.

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. 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. 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. E-mail tuftsmentoring@gmail.com for more information.

GSC Career Paths Committee (GSC:CP)

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.

GSC Outreach Committee (GSC:O)

Responsible for organizing volunteer and community service events for the Sackler community.

GSC Social Committee (GSC:S)

Duties: Organize social events to promote GSC visibility within the student community.

Notes from the Library...

Measuring Research Impact: Author Metrics

by Laura Pavelch[HHSL]

At some point in your career, you will be asked to demonstrate the impact of your work. You may be asked to do this for a grant application, progress report or renewal, or on a CV for a job application, promotion, tenure or performance review. Traditionally, this has meant providing a list of publications you have authored, and perhaps the number of citations that those publications have received. Alternative methods of demonstrating research impact will be discussed in a later post.

How can I create a list of publications that I have authored?

You can do an author search in any bibliographic database, such as PubMed (see this month's PubMed tip), Web of Science, or Scopus. It may be necessary to search more than one database to generate a complete list. Once you have run the search, you can save the results within the database (for example, send results to the My Bibliography section of My NCBI in PubMed) or export them to a citation manager.

Where can I find how many times my articles have been cited?

Several databases provide the number of times an article has been cited. Traditionally, Web of Science has been used to obtain citations counts; recently, Scopus and Google Scholar have emerged as alternatives to Web of Science. Each resource provides a different citation count because each indexes (or, in the case of Google Scholar searches) a different set of journals over a different period of time. Web of Science remains the best choice for authors with a long publishing history because Scopus indexes articles published from 1996 to the present (although older content is being added). Google Scholar is a moving target because it "generally reflects the state of the web as it is currently visible to our search robots and the majority of users" (https://scholar.google.com/intl/us/scholar/citations.html - citations). Regardless of the source that you choose, it is important to always cite that source.

How can I create a citation report in Web of Science or Scopus?

A Web of Science or Scopus citation report provides aggregate statistics for a set of search results. See the library's 'Measuring your Research Impact' guide for step-by-step instructions on generating a citation report in Web of Science and Scopus.

What is the h-index?

You may have heard of, or noticed on your citation report, a metric called the h-index. The h-index is the number of papers (h) in a set of results that have received h or more citations. For example, an author with an h-index of 10 has 10 articles that have each received 10 or more citations. This metric is an attempt to measure both quantity (number of publications) and quality (number of citations). Therefore, it is considered a measure of the cumulative impact of an author's work. For a recent discussion of the h-index and other measures of academic impact, see Anne-Wil Harzing's 'Reflections on the h-index': http://www.harzing.com/publications/white-papers/reflections-on-the-h-index.

PubMed Tip of the Month: *Author Search*

Go to the Advanced Search Builder by clicking the 'Advanced' link under the PubMed search box.

Choose Author from the All Fields dropdown menu (just Author, not Author – Last, Author – Full, or any of the other options). Enter the author's last name, followed by 1 or 2 initials with no intervening punctuation (for example: Jones EA). If you are unsure about the inclusion of the second initial, then do not include it.

If the author has a common last name, then you probably want to narrow your search by including an affiliation. To do so, choose Affiliation from the All Fields dropdown menu below the boxes where you have entered the author's name. Enter the name and/or location of the institution with which the author is associated. Affiliation can become complicated if the author has been (or is currently) associated with multiple institutions, or the name of the institution has several possible variations. If the author has an uncommon last name, then first try searching without an affiliation.

Check the results to ensure that they authored by the person in whom you are interested.

If you have searched for your own name, then you can send the results to the My Bibliography section of My NCBI by clicking 'Send to:' in the top right corner of the results page.

Upcoming Library Events

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

Open Workshop: PubMed – The Basics
W Apr 13, 4-5 PM | F Apr 15, 9-10 AM
Sackler 510
In this workshop, we will review the structure of PubMed; planning and executing a search strategy; narrowing the search results; finding full text; and exporting citations.

Therapy Dogs
Th Apr 14, 3-5 PM
Sackler 516
The therapy dogs are back! Stop by Sackler 516 for some puppy love.

Open Workshop: Mendeley – The Basics
W Apr 20, 4-5 PM | F Apr 22, 9-10 AM
Sackler 510
This workshop will introduce you to the basics of using the citation management program Mendeley. The session will cover: exporting citations from databases, such as PubMed, to Mendeley; generating references from PDFs; inserting in-text citations and bibliographies into Word documents; sharing references and getting article recommendations.

Open Workshop: Systematic Reviews – Laying the Groundwork
F Apr 29, 9-10 AM
Sackler 510
Thinking about writing a systematic review? Curious about what the process entails? Not sure what a systematic review is? In this workshop, we will explore systematic reviews, meta-analyses, and other types of high-level research reviews. Topics covered include: elements of a systematic review, protocols, resources, timelines, and suggested databases.

Open Workshop: Telling Your Story
F Apr 29, 11 AM-12 PM
Sackler 510
Christine Smith, a Health Sciences Writing Consultant on the Boston Campus, adjunct lecturer at the Friedman School and former Senior Editor of the Tufts University Health & Nutrition Letter, will provide advice on writing personal statements and her top writing tips. We will also discuss some of the career resources available through the library.

Off the Shelf

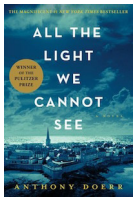
For work...

Electronic Resource: Essential Science Indicators

Location: Search for 'Essential Science Indicators' in Databases search box on the HHSL homepage, http://hirshlibrary.tufts.edu/
This research analysis tool, integrated with Web of Science, provides performance statistics for authors, journals and articles for 22 subject fields. Essential Science Indicators can answer questions like: who are the most-cited authors in my field; what journals publish the top papers in my field; what is the average number of citations per article in my field; or what is the minimum number of citations that my article needs to receive to be in the 10% percentile in my field?

And leisure...

All the Light We Cannot See
by Anthony Doerr



Location: HHSL Leisure Reading, Sackler, 4th Floor, Fiction D652
Winner of the 2015 Pulitzer Prize for fiction and numerous other awards, this book tells the parallel, and eventually intersecting, stories of a girl in France and a boy in the German army during World War II.

Sackler Student Publications

March 2016 to present

compiled by Laura Pavlech[HHSL]

Coppage AL[BCHM], Heard KR, DiMare MT, Liu Y, Wu W, Lai JH, Bachovchin WW. Human FGF-21 is a substrate of fibroblast activation protein. PLoS One. 2016;11(3):e0151269; PMID: 26962859.

de Ferranti SD, **Rodday AM**[CTS], Mendelson MM, Wong JB, Leslie LK, Sheldrick RC. Prevalence of familial hypercholesterolemia in the 1999 to 2012 United States National Health and Nutrition Examination Surveys (NHANES). Circulation. 2016;133(11):1067-72; PMID: 26976914.

Jung SA[MMID], Chapman CA, Ng WL. Quadruple quorum-sensing inputs control Vibrio cholerae virulence and maintain system robustness. PLoS Pathog. 2015;11(4):e1004837; PMID: 25874462.

Kwon H[CMDB], Rainbow RS, Sun L, **Hui CK**[CMDB], **Cairns DM**[CMDB/POST-DOC], Preda RC, Kaplan DL, Zeng L. Scaffold structure and fabrication method affect proinflammatory milieu in three-dimensional-cultured chondrocytes. J Biomed Mater Res A. 2015;103(2):534-44; PMID: 24753349.

Leung LY[CTS], Caplan LR. Factors associated with delay in presentation to the hospital for young adults with ischemic stroke. Cerebrovasc Dis. 2016;42(1-2):10-4; PMID: 26953591.

Ludington JG[IMM], Ward HD. The cryptosporidium parvum C-type lectin CpClec mediates infection of intestinal epithelial cells via interactions with sulfated proteoglycans. Infect Immun. 2016; PMID: 26975991.

Petra AI, **Panagiotidou S**[PPET], Hatziagelaki E, Stewart JM, Conti P, Theoharides TC. Gut-microbiota-brain axis and its effect on neuropsychiatric disorders with suspected immune dysregulation. Clin Ther. 2015;37(5):984-95; PMID: 26046241.

Rodday AM[CTS], Parsons SK, Mankiw C, Correll CU, Robb AS, Zima BT, Saunders TS, Leslie LK. Child and adolescent psychiatrists' reported monitoring behaviors for second-generation antipsychotics. J Child Adolesc Psychopharmacol. 2015;25(4):351-61; PMID: 25918843.

Wildschutte JH, **Williams ZH**[MMB], **Montesion M**[GENE], Subramanian RP, Kidd JM, Coffin JM. Discovery of unfixed endogenous retrovirus insertions in diverse human populations. Proc Natl Acad Sci U S A. 2016; PMID: 27001843.

Did we miss a post-doc or recent Sackler alum? E-mail us so we can update our lists: insight@elist.tufts.edu, *Subject: Publications List*

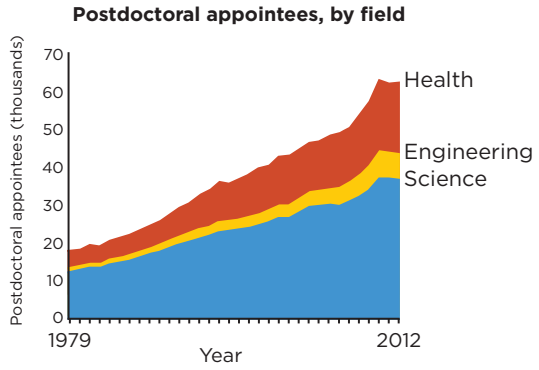
Hirsh Health Sciences Library on Social Media:
Tufts Univeristy Hirsh Health Sciences Library
TuftsHHSL

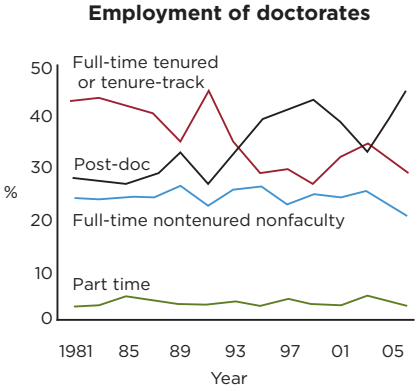
InSight Editorial

Sackler would benefit from additional career development resources and alumni interactions

This two-part editorial by the InSight team seeks to open a discussion between faculty, students, postdocs and the school administration about whether the school is prepared for meeting the changes in the future of PhD holders. The first part will address the current available resources and the unmet needs of the students/postdocs, and will also explore some possible solutions. The second part, to be published in the next issue of the InSight, will carry the opinions of all parties involved collected through a survey and communication, which will serve as a stepping stone towards meaningful changes that will benefit us all.

The Doctorate in Philosophy (PhD) is a degree awarded to recognize original contributions to collective human knowledge. Thus, it is no surprise that the next step after getting a PhD is to join the bastions where such knowledge is curated and cultivated, i.e., to pursue an academic career. However, given the current structure of an academic job and the nature of academic tenure, a bottleneck in academic positions have taken firm root in the last years. According to Nature, the number of postdocs have jumped by 150% between 2000 and 2012 while the number of tenured or full time faculty positions in the US has either remained stagnant or fallen. While the debate on how to improve the lives of postdocs and other non-faculty PhD holders rages on and restructuring of federal funding for scientific research is ongoing, the increasing number of PhDs leaving the traditional path and venturing into other professions is readily apparent.

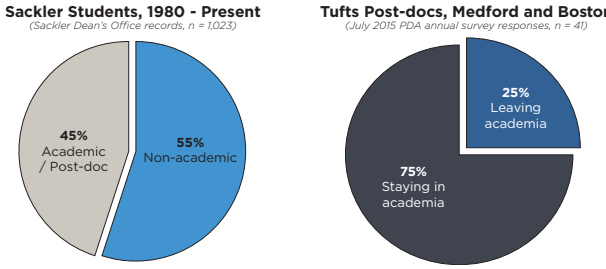




Graphs adapted from Powell, 2015, Nature (top); Cyranoski, et al. 2011, Nature (bottom)

In recent years, the PhD degree has been developed as a marketable asset with a accompanied with a powerful skill set — the ability to think critically, solve problems and troubleshoot, be organized and detail-oriented. The idea that the skills required for obtaining a PhD are also recognized as required to be successful in any other profession, and is now being echoed by career counselors. While industry research positions were once spoken about in hushed voices before, these positions are now not only coveted, but other non-research jobs are also becoming more prominent in seminars and career advice panels for biomedical graduate students and postdocs.

This trend is also evident within the graduate student population here at Sackler School of Biomedical Graduate Sciences, where more than half the alumni have pursued non-academic careers. As the funding climate struggles to recover and academic positions become more scarce, the question arises of whether the existing model of career development for student and postdoctoral trainees is sufficient to ensure future success and achieving their goals. It is apparent that career development training outside of academia is required, but the support for this by the curriculum and administration at the Sackler School seems to lag behind our peer institutions, and even our colleagues on the Medford campus have access to the Tufts Career Center and the students in the Fletcher School have their own Career Services office.



Resources currently available for students at Sackler interested pursuing non-academic careers are mostly driven and organized by the students themselves. These student-led initiatives have produced a full roster of seminars and workshops focusing on such career options held nearly weekly between the Career Paths Committee of the Sackler Graduate Student Council (GSC) and the Tufts Biomedical Business Club (TBBC). These groups have become increasingly active over the past few years, with their efforts growing into independent events like the Tufts New

England Case Competition (TUNECC), as well as collaborations with the Tufts Postdoctoral Association and student groups in the School of Medicine. Additionally, the Tufts Mentoring Circles group has provided students peer guidance and spaces to discuss such career options among themselves. Every student initiative listed here has sought more interactions with Sackler alumni, but the information to facilitate that exchange is not readily available. Student leaders at Sackler have expended great effort to build the career resources the student body needs, but these efforts are reaching the limit of what they can achieve and will only be short term and partial solutions without additional resources and support infrastructure. Some of this could be built by students, like shared repositories for maintaining records and thus institutional memory so energy is expended solving new problems instead of rehashing old ones. The most important piece, however, cannot be done by students alone: an accurate, current database of Sackler alumni and their occupations that is accessible and searchable.

We appreciate that the Dean's Office has recently increased its support of these student efforts, but believe that more can be done. An increased contribution to co-sponsorship from partial funding of one or two events with the GSC annually to a series of three annual workshops and career panels over the past two academic years, and the interactions between a handful of students with Sackler alumni through the new "Day in the Life" program are good starting points. However, the student body and Sackler as an institution would derive greater benefit and return on an investment in career development and advising staff, similar to those available at the Fletcher School and the Medford campus, but scaled for Sackler. It would be mutually beneficial, as it works to the advantage of a school to have an engaged student body that will recognize and appreciate the school's support in shaping their careers as alumni; this infrastructure could also be a common point for alumni to rely upon and connect with students and each other.

The lack of formal career development resources at Sackler has been identified by peer reviewers as an area for improvement, and puts us at a competitive disadvantage for student recruitment and securing grant funding. Prospective students actively seek graduate programs that provide career development, and among the recommendations made by the review committee for the newly-merged CMDB program were formal non-academic career training options and an expansion of extramural internships through the alumni network and faculty connections. Funding agencies such as the National Institutes of Health (NIH) evaluate grant applications on this aspect of graduate training as well. For example, F31 grant applications to support graduate students require descriptions of career training and development; the proposed changes will essentially strengthen the Sackler students' applications and may increase the number of extramurally funded students, alleviating the pressure on the school. A recent example includes the NIH Broadening Experience in Scientific Training (BEST) awards, a funding opportunity established in 2013 in response to the state of the biomedical workforce and to prepare trainees for diverse career paths that utilize their PhD training. Boston University received a BEST award in 2014 for its biomedical research programs in part because of its existing career development and support infrastructure. It should be noted that Sackler, along with other graduate schools at Tufts, had applied for the BEST award. While the reviewers had found the application to be strong in certain areas and to have "potential for high impact", they also noted weaknesses that included "complex administrative structure and the evaluation and dissemination plans", which could partly be responsible for the award not being funded (source – email communication with Sackler Dean's office). These issues can be addressed with the establishment of the proposed infrastructure development and can further strengthen such grant applications in the future.

The faculty mentor plays an important role in shaping a mentee's future career — the mentor's support and guidance are essential for the mentee's career development. While Sackler faculty are generally supportive of students and postdocs, it is critical for them to come forward and actively support mentees' who choose to pursue careers outside of academia and research. The Greater Boston area is known as a hub for biotechnology research and business, with companies specializing in everything from drug development to consulting. Many recent and local alumni maintain a connection to Tufts through their faculty mentors absent a career development office at Sackler, and both students and postdocs would greatly benefit if the faculty mentors shared these connections, and offered guidance and support on leaving academia.

The current funding climate and the stagnation of academic positions, along with the burgeoning postdoc crisis, amount to conditions favorable for a paradigm shift. We cannot just keep focusing on the academic jobs traditionally held by PhDs. In order to better adapt to this changing landscape of post-doctoral work, the students, postdocs, faculty, and administration need to work together to bring about improvements to the environment at Sackler, specifically:

1. Developing an accessible, searchable, up-to-date database of Sackler alumni that can be used by students, postdocs and faculty looking for career advice and connections.
2. Faculty support in the form of guidance and connections in developing non-academic careers.
3. Career development support staff and infrastructure for students from the Tufts and Sackler administration, so as to cultivate an engaged alumni population.

Comments, suggestions, and other feedback on this editorial can be left on either the InSight blog or via this online form: Anonymous feedback form: http://goo.gl/forms/PXEfcLfgeX

A survey to collect more detailed data from the student body will be conducted by the Sackler GSC in the coming weeks.

Implicit Bias:

A Conscious Discussion of Unconscious Actions

by Kofi Gyan[PREP]

It is no secret that unconscious biases penetrate various realms of society; from hiring decisions[4] to medical care[2] and even foul calls in the NBA[5].

But what about implicit bias in our everyday lives? Does it really play a role in who we form relationships with, or the way we interact with others, or even the way we perceive a stranger?

Implicit bias refers to attitudes or stereotypes that affect our understanding, actions and decisions in an unconscious manner, according to the Kirwan Institute for the Study of Race and Ethnicity, which publishes an annual Implicit Bias Review[1]. Unlike explicit bias, which reflects the attitudes or beliefs that one endorses at a conscious level, implicit bias is judgment and/or behavior that results from subtle cognitive processes that often operate at a level below conscious awareness and without intentional control.

KIRWAN INSTITUTE for the Study of Race and Ethnicity

Recent claims of overt and covert discrimination on college campuses and in policing raise the question: How does someone's unconscious reaction to people of a different race, religion or sexuality influence their judgment and behavior? Psychologists and social scientists working within this field do not have a concise answer to explain how implicit bias manifests in everyday life, as it is hard to rule out alternative explanations.

In other words, implicit bias can and does happen, but it is complicated to prove.

Project Implicit®

"Some biases seem obviously wrong, like treating equally qualified people differently when hiring or promoting," said Calvin Lai, director of research for Harvard's Project Implicit. "Every day biases are hard to wrap our heads around because they're so much more personal, and you can point to other reasons."

Similarly, structural factors beyond your control might come into play. If most of your friends look like you, or you tend to date people of the same race as you, it could largely be just a reflection of the demographics in your community.

However, research shows that those relationships, along with the interactions and experiences that come from them, are key contributors of implicit biases. These biases begin forming at a young age and are easily reinforced into adulthood through social settings and mass media.

"When you think backwards, what you think is normal is really cultural pressure that pushes you into bias, implicit and conscious," said sociologist Charles Gallagher, chairman of the Department of Sociology and Criminal Justice at LaSalle University in Philadelphia.

Hanging out with friends that look like you isn't necessarily a bad thing, especially if they're nice people! However, research suggests that implicit biases and stereotypes, both positive and negative, are

maintained through persistent lack of contact with others beyond your "in-group," that is people who share certain characteristics.

The good news? We are not helpless to combat implicit bias. It can be mitigated through intervention strategies, starting with recognizing where it might exist in your life and seeking exposure to people and experiences beyond your regular circles.

Psychologists and social scientist who study implicit bias are working to gather more data with the goal of making people more aware of their unconscious decision-making and its consequences.

Harvard's Project Implicit features a battery of "implicit association tests" where participants can measure levels of implicit bias around certain topics based on the strength of associations between concepts and evaluations.

"The goal of the organization is to educate the public about hidden biases and to provide a 'virtual laboratory' for collecting data on the Internet."

If you're interested in measuring your levels of implicit bias (almost everyone displays bias in some way, according to the experts!), here are a few tests you can take:

Project Implicit: Implicit Association Tests
Understanding Prejudice: Implicit Association Test
Look Different: Bias Cleanse

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Event Recap: Computer Technology and the Future of Medicine

April Entrepreneurship Seminar co-hosted by the Tufts Biomedical Business Club and the TUSM MD-MBA Program

by Townsend Bernard[MBMN-Nutrition]

Dr. Bill Greenberg leveraged his undergraduate education in computer engineering at Tufts to become a pioneer in the proliferation of technology into clinical practice, contributing to the NIH's Computers in Medicine initiative, co-founding Physicians Online (now known as WebMD) and advising a number of high-profile start-ups. His insights into the history of technological advancements highlighted just how rapidly the clinical landscape is changing - the cloud, automation and increased computational power are fundamentally altering the roles and capacities of physicians and the healthcare industry. The biotechnology sector is further driving this change with advances in personalized medicine (Human Longevity Incorporated), diagnostic efficiency (DermaCompare) and pharmaceutical sales (SmartRx).

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Resources

Online Biomedical Business Resource Guide
TBBC, with the Hirsh Health Sciences Library http://researchguides.library.tufts.edu/biomedicalbusiness

Biotech Business Journal Club
Monthly, 4th Fridays, noon. Coordinator: Aaron Bernstein[CMP].

Case Study Group
Mondays, 5pm, Jaharis 508. Coordinators: Julie Coleman[NRSC] and Alexandra Taracanova[PPET].

TBBC Google Calendar
tuftsbiotech@gmail.com

Join TBBC
About us: tuftsbiotech.com
LinkedIn Group: bit.ly/TBBCLinkedIn
E-mail list: bit.ly/joinTBBCelist
TBBC Events Calendar: bit.ly/TBBCcal
Biotech Calendar: bit.ly/TBBCBOScal
Contact us: tuftsbiotech@gmail.com

What is TBBC?
We are an active, business-oriented organization run by Sackler graduate students. We want our members to expand their network, recognize their transferrable skills, and build a foundation in core business principles that will make them leaders in the biotech arena. Membership is open to all Tufts affiliates.

Tufts Biomedical Business Club

Resources for learning how to code

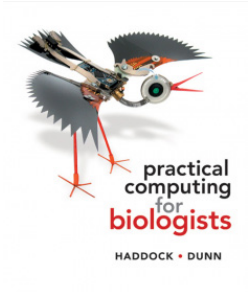
by Daniel Wong[CMP]

Last month, I put together a small script that made the calendar from the Sackler website accessible to calendar software such as Google Calendar, Apple Calendar, Outlook, and others, that a majority of people now use. This little simple bit of code solved a problem of the Sackler website that has existed for years and requires no further intervention on my part. I've put the source code online on GitHub for anyone who is interested in seeing how it works (https://github.com/danielsenhwong/sackler). For anyone who is interested in learning how to code or, like me, would like to develop their skills beyond the introductory undergraduate level, I've compiled a list of resources that may be useful.

Getting started

This is in many ways the most difficult part about learning how to code. Many resources exist, but it's difficult to know which is the most approrpiate for your current skill level. You may already be somewhat familiar with some specific coding techniques or languagees, but significant gaps may still remain in your knowledgebase. Such gaps could include understanding how to set up a coding environment on your computer, which language is most suitable for your work, or how to interface with a database instead of just reading data from a file generated by your plate reader. As biomedical scientists, our familiarity with computers and code is limited compared to more computationally-intensive fields, but not compeltely absent, and our field is rapidly becoming more computational.

Fortunately, there is a book specifically intended for biologists who are interested in developing their computing skillset: Practical Computing for Biologists, by Steven Haddock and Casey Dunn. The book introduces basic concepts of coding while also providing a thorough walkthrough of how to set up a suitable envrionment on your computer before moving on to practical applications of coding



and tools for data analysis, including working with databases and best practices for working with graphics and generating figures for publication. The companion website for the book makes much of the example code freely available, along with some other extras, including the reference tables, which are extremely useful while you're still learning the commands: http://practicalcomputing.org/

Tufts Technology Services (Tufts IT) also has some resources available for free to the Tufts community, including access to Lynda.com, which hosts self-paced online tutorials for a number of different topics, including coding as well as software-specific training (Adobe Photoshop, Illustrator, InDesign, etc.). Additional details can be found on the Tufts IT website: https://it.tufts.edu/lynda

Integrating coding into your work

It can be difficult to learn how to code if it's siloed away as a separate skill you're trying to learn, so one effective technique is to integrate it into your normal workflow. One example would be to use R (r-project.org) in place of Excel or Prism to perform your statistical analysis. A good book for learning how to get started is Introductory Statistics with R, by Peter Dalgaard. A PDF version of this book is available for free through the Tufts library or heavily discounted for purchase: http://link.springer.com/book/10.1007%2F978-0-387-79054-1

Tufts University Presidential Award for Citizenship and Public Service

Congratulations to both Bina Julian[PPET] and Jen Nwankwo[PPET], who have both been awarded the Tufts Presidential Award for Citizenship and Public Service this year in recognition of outstanding achievement in community service and community leadership. The awards will be conferred at a ceremony on April 21. Additional information about the award is available online: http://president.tufts.edu/presidential-award-for-citizenship/

Interested in writing?

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

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