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This issue is chock full of useful information! Learn how to set up your own wireless network. Get pointers on giving a high impact talk. Pick up tips on furnishing your apartment. And find out how to invigorate your experiments. All this, plus free advice, great lines to pull on the first years, and a useful test to see if you’ve been spending too much time in the lab. And hey, who kidnapped the eppis??

What’s the Frequency Levin? WIRELESS NETWORKING AT YALE AND AT HOME
AN INVESTIGATIVE REPORT
BY C. MASON

For those who haven’t been on Earth for the last couple of years, wireless ethernet connectivity has taken over the landscape. But, what card should you get and from where? What is packet sniffing? What are WEP, SSID, and all those other slippery acronyms? Well, you’ve come to the right place, because here is a quick tutorial on 802.11 and setting up your own wireless network.

Basics
All wireless technology for connecting computers (and most mobile phones) operates exactly like tiny, omnidirectional radio stations, with exchange of radio waves flowing back and forth. For transmission of data between computing devices, the IEEE (Institute for Electrical and Electronics Engineers, full of geeky, pocket-protractor-wearing engineers) decided to set up a standard called 802.11 for wireless local area networks (WLANs) to resolve issues arising between different companies who wanted to use the technology. These dorks can get biblical on companies when they need to. To compare, the old-school Ethernet cables run on the 802.3 standard, and some of the security practices in the 802.3 standard are implemented in 802.11 – more on that later.

802.11 comes in three flavors: 802.11a, 802.11b, and 802.11g. For speed demons, 802.11g and b are both running at a maximum of 54 Mbps (mega-bits per second), which is equal to 7 MBps (mega-bytes per second, since there are 8 bits to a byte). Although 802.11b only moves at 11 Mbps (1.5 MBps), it is still more bandwidth than you will need if you have a DSL or cable modem which often give only 900 Kbps. The noticeable speed difference comes into play not when surfing the web or downloading music but rather when you want to move big files within your local network or at Yale.

<table>
<thead>
<tr>
<th>Standard</th>
<th>802.11a</th>
<th>802.11b</th>
<th>802.11g</th>
</tr>
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<tbody>
<tr>
<td>Maximum speed</td>
<td>54 Mbps</td>
<td>11 Mbps</td>
<td>54 Mbps</td>
</tr>
<tr>
<td>Frequency</td>
<td>5.2 GHz</td>
<td>2.4 GHz</td>
<td>2.4 GHz</td>
</tr>
<tr>
<td>Range (Indoor/Outdoor)</td>
<td>30/50m</td>
<td>100/200m</td>
<td>50/150m</td>
</tr>
<tr>
<td>Color</td>
<td>only a</td>
<td>b &amp; g</td>
<td>b &amp; g</td>
</tr>
<tr>
<td>Price (per network card(s))</td>
<td>$100</td>
<td>$60</td>
<td>$60</td>
</tr>
</tbody>
</table>

There is also an important frequency-related-difference, and that is interference. Many devices run near the range of 2.4 GHz, including microwaves and cordless phones. Such devices will decrease or nullify the fidelity of your signal, unless you use 802.11a (at 5.2 GHz). Finally, Wireless continued on page 4
Op-Ed
On Assumption - A Philosophical Critique of Science  By N. McCurley

We’ve all done it. You stare at a figure in a paper and wonder how the authors could possibly come to the conclusion that they’ve reached. Yes, you agree, the axes seem to be labeled correctly and the figure numbers all seem to correspond to the authors’ explanation, but given the data in front of you, you’d come to the opposite conclusion. One is often left wondering whether the authors were sincere in their interpretation or were instead attempting to pull the wool over your proverbial eyes. Benefit of the doubt: they’re ignorant. But perhaps it’s not this easy. Perhaps what the authors are taking for granted when they view the data is slightly afield from what you are taking for granted. At times we also see this with ourselves, when we modify our interpretation of our own old data in light of new data that we gather. This points to the iterative nature of science: namely, new data is always approached in light of an accepted body of evidence which body is itself subject to reinterpretation in light of the new data. Thus, fitting in new data with old is somewhat of a negotiation process: if you view the accepted body of data a little differently, then you have a slightly new perspective on the new data which may then fit better or worse with the accepted.

There are different levels on which disagreements over data can occur. You’ve repeated your own novel experiment several times and find that it’s in disagreement with previously published data. You take these findings to your PI. If your data disagrees with some competitor’s claim, your PI will probably encourage you to continue characterizing the phenomenon. If you data disagrees with some fundamental law of nature, your PI will kindly dismiss your mistake and then laugh hysterically once you’ve left the room. This is merely exemplary of the fact that some claims to truth are considered more fundamental to the scientific community and therefore seem somewhat unassailable. Yet the categories of “fundamental claims” and “dispensable claims” are not strict, but rather, lie along a continuum. Our willingness to accept newly arising data therefore depends upon how fundamental the beliefs that it challenges are. The body of fundamental claims that one adopts therefore determines how and which new scientific claims are accepted.

Hence, there is a sense in which assumption plays a large role in science, both in the day-to-day interpretation of data as well as in the grand schematizing of the great scientific minds. One might wonder, though, if there are at least a couple of truly unassailable claims, i.e. some things that are so universally accepted that they cannot in fact be untrue. Given the extraordinary explanatory power of our current set of fundamental beliefs (we utilize them every day in the laboratory), is it possible that even these are questionable at one level or another? A short journey through the history of science would give one a bit of reserve in answering this question in the negative (e.g. the Ptolemaic system of astronomy had greater explanatory power than did its successor (the Copernican system) for over a century after the Copernican system was developed. Thus even a system that seems pragmatically necessary is not thereby necessarily correct).

It seems that most scientists take themselves to be anti-dogmatists and free-thinkers. Science has had, after all, numerous bouts with strict dogmatism. But self-consistency is of the utmost importance even though it may take us places that we may not want to go, viz. to calling into question our most fundamental beliefs. This doesn’t necessarily mean that we will deny our most fundamental beliefs. It is, however, exactly on the unwillingness of scientists to question their most fundamental beliefs that the postmodern critics of science dwell, and perhaps not without some merit. For it’s possible that our daily disagreements with the interpretations of others are merely indicative of an underlying fluidity in our systems of fundamental beliefs. Yet such uncertainty haunts. *I’m new.

Funding for B magazine provided by the Bristol-Myers Squibb Educational Alliance
**BBS Departmental Administration, Requirements, and Qualifying exams.** This is an inexhaustive summary. Direct specific questions to the DGS of each department.

Notes: (1) Courses are expressed as the number of specifically required courses over the total number of courses to be taken. * Microbiology requires students to choose at least 3 courses from a set of six; the remaining three courses are at the student’s discretion. # MCDB does not have a minimum number of required courses. (2) INP and Neurobiology attempt to develop their curriculum and requirements coordinately so that large differences do not exist between the departmental requirements. (3) Anti-thesis has entered the BBS vernacular to mean a written proposal other than the student’s actual thesis. Its usage does not imply that one is arguing the opposite of one’s thesis.

<table>
<thead>
<tr>
<th>Administrative</th>
<th>Student Services Officer</th>
<th>Courses (1)</th>
<th>Teaching</th>
<th># Reading Topics</th>
<th>Written Component (3)</th>
<th>Exam Format</th>
<th>Separate Prospectus</th>
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<tbody>
<tr>
<td><strong>Cell Biology</strong></td>
<td>Mari Kawaguchi</td>
<td>4/5</td>
<td>2 Semesters</td>
<td>2</td>
<td>Thesis</td>
<td>Oral Presentation, defense of proposals, questions on reading</td>
<td>No</td>
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<tr>
<td><strong>Cellular and Molecular Physiology</strong></td>
<td>Maria Unger</td>
<td>3/6</td>
<td>2 Semesters</td>
<td>2</td>
<td>Thesis</td>
<td>Oral presentation, defense of proposals, questions on reading</td>
<td>No</td>
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<tr>
<td><strong>Computational Biology and Bioinformatics</strong></td>
<td>JoAnn DelVecchio</td>
<td>3/10</td>
<td>2 Semesters</td>
<td>Structure of Exam To Be Determined</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Experimental Pathology</strong></td>
<td>JoAnn Falato</td>
<td>2/6</td>
<td>2 Semesters</td>
<td>3</td>
<td>Written Exam</td>
<td>Oral and Written Exam</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Genetics</strong></td>
<td>Betsy Jaslowkowksi</td>
<td>0/6</td>
<td>2 Semesters</td>
<td>3</td>
<td>Thesis and Anti-Thesis</td>
<td>Oral presentation, defense of proposals, general questions</td>
<td>No</td>
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<tr>
<td><strong>Immunobiology</strong></td>
<td>Barbara Giannatelli</td>
<td>4/7</td>
<td>2 Semesters</td>
<td>4</td>
<td>Thesis</td>
<td>Oral presentation, defense of proposals, questions on reading</td>
<td>No</td>
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<tr>
<td><strong>Interdepartmental Neuroscience Program (2)</strong></td>
<td>Carol Russo</td>
<td>4/7</td>
<td>2 Semesters</td>
<td>4</td>
<td>Written Exam</td>
<td>48-hr open book written exam, Oral Exam</td>
<td>Yes, Apply for NRSA Pre-Doc Fellowship</td>
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<tr>
<td><strong>Microbiology</strong></td>
<td>Darlene Smith</td>
<td>3/6</td>
<td>2 Semesters</td>
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<td>Thesis and Anti-Thesis</td>
<td>Oral presentation, defense of proposals</td>
<td>Yes</td>
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<tr>
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<td>Neill Stewart</td>
<td>4/7</td>
<td>2 Semesters</td>
<td>3</td>
<td>Thesis and Anti-Thesis</td>
<td>Oral presentation, defense of proposals, general questions</td>
<td>No</td>
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<td><strong>Molecular, Cellular, and Developmental Biology</strong></td>
<td>Anne Scott</td>
<td>1/0</td>
<td>2 Semesters</td>
<td>4 to 5</td>
<td>Thesis</td>
<td>Oral presentation, defense of proposals, questions on reading</td>
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<td>Lynne Baumgarten</td>
<td>4/7</td>
<td>2 Semesters</td>
<td>4</td>
<td>Written Exam</td>
<td>Four, 3-hour writing periods over 2 days</td>
<td>Yes</td>
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<td><strong>Pharmacology</strong></td>
<td>Kathy Fisher</td>
<td>2/6</td>
<td>2 Semesters</td>
<td>3</td>
<td>Proposal, not related to thesis</td>
<td>Oral Presentation, defense of proposal, general questions</td>
<td>Yes</td>
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</tbody>
</table>
Wireless continued from page 1

802.11a is more expensive (but not by much), and 802.11g is becoming very popular because it is backwards compatible with 802.11b products and is about as fast as 802.11a. 802.11g is the recommended buy these days.

Security 802.11 had the same problem that cellular phones first had in that anyone could listen in on your conversation if they just “tuned in” to your frequency. To counter-act this, manufacturers have created WEP (wired equivalent protection). WEP encrypts the data before it is sent, and you would need to know the key in order to decode it. WEP can provide the same protection that is inherently built into a wired network, whereby if someone tried to splice the wire and tap into your network traffic, you would be able to stop it.

Encryption keys come at different complexities, from 32, 64, to 128-bit, with a higher number cipher being harder to crack (a 128-bit cipher is supposed to take 540 trillion years to crack). Encryption is recommended, but the higher it is, the slower the speed of your network (although tests have shown this speed loss to be no more than 10-15 Mbps with later models). You do not need to worry too much about people seeing your credit card numbers or SSNs, since most web browsers work with protocols by which your router gives an IP address (internet protocol address) to a computer once it connects to that local area network (LAN). It’s like moving to a new street and getting an address at which mail can be received.

DHCP uses NAT (network address translation) to create a virtual network behind the router. You can connect up to 253 computers into that virtual network, wired or wireless. Addresses behind the router usually start at 192.168.x.x, and the exact configuration is up to you, since the numbers are arbitrary and in a virtual world anyway. All of this traffic along these DHCP-given IP addresses in the LAN move according to something called TCP/IP (Transmission Control Protocol/ Internet Protocol). This is how computers communicate to each other when sending data, just like when we use FedEx or the post office for those important packages of information.

I know it’s a lot of jargon, but stay with me.
How is this done? In order for your ISP (Internet Service Provider such as Yale or SBC) to give you access to their systems, they too have to give you some “address” on their “network street.” They dish out IP addresses in either a fixed method (fixed IP), or dynamic way (DHCP). Yale uses fixed IP addresses, while most other ISPs in the city use DHCP. They do this so that you cannot start up your own web server on their connection.

This is important because, in order to set up your wireless network to share your internet connection behind the router, you will need to know which configuration you have. You will also need a few other things.

**Setup – Necessities** You will need to know these things: Host Name, Domain Name, SSID, and MAC address. If you have a fixed IP, you will need more: subnet mask, default gateway address, and DNSs. Let’s go through them:

Your host name is needed if you are on Yale’s network, and it becomes what your computer used to be called on Yale’s network (like SmithLab2). At Yale, the domain is a server’s domain (such as med.yale.edu or cis.yale.edu), but you shouldn’t need them unless you have a cross-campus connection. The Domain Name is needed if you are on Comcast’s or SNET’s networks. Type in “comcast.net” or “SNET.net” for this name, type nothing for the host name.

SSID is the service set identifier – the name of your little radio station. This can be anything you want it to be, and you have an option to broadcast that name (so others can see it and readily connect) or not.

MAC address is the media access controller address – the fingerprint of your Ethernet card. Every Ethernet card, be it wireless or wired, has a fingerprint MAC address. Every ISP needs to know who is using their systems and takes note of the MAC address when on their network. They only want you to have one computer connected, so they keep tabs on you this way. With routers, however, is an option called MAC address cloning, which propagates that one MAC address to all the computers in the DHCP network, making the outside world believe it is still only one computer. Sneaky, heh?

**Fixed IP** — If you have this, you MUST write down the information about your computer before you change anything. You will need this in the router setup, again, to make the world still believe it is only one computer that is downloading twelve albums per second. This can be found in Windows by clicking Start ->Run->cmd->ipconfig /all. In Macs (OS 9) you go Apple-Control Panels->TCP/IP->Options->get info or (OS X) System Preferences->Network ->TCP/IP. If you are a Linux or Unix users and do not know where it is, come see me.

Take down ALL the information if you have a fixed IP. Also, the directions above will show you what your MAC address is as well, and it should be a six-couplet hexadecimal (letters and numbers) code separated by colons (for example, B9:11:2K:L1:E2:G4).

In summary, you need to clone your MAC address, decide on a SSID, enable WEP if you want it, and configure your host and domain names. Most routers come with 24-7 tech support and helpful manuals.

**Setup – Extras** There are many other options that can be enabled but are not required. You can use MAC address filtering, whereby you guarantee no computers other than the ones you know of can get onto your network. You can use IP forwarding, setting up a little hole in the network for traffic to flow through. You can change the channel (from 1-11) of your wireless network, which tweaks the exact frequency between 2.412 and 2.462 GHz, which might help if you are getting interference from another device. You can use DMZ (de-militarized zone) to make one computer on your network seem to the rest of the world as if it is not behind the router at all.

For placement of the router, go for high, and stay away from large metallic objects. To enjoy your wireless network seem to the rest of the world as if it is only one computer. Sneaky, heh?

**Final Notes** All over Yale, there are official and unofficial WLANs. For a map of the official networks, see: http://www.yale.edu/amt/doco/wireless. This site provides instructions on how to use Yale’s systems (Yale’s SSID is yale wireless), and all they really need is your MAC address to let you hop on (they use MAC address filtering). Yale plans to move to 802.11g sometime soon, but are currently strictly 802.11b.

Figure’s Sources: Tom’s Hardware Guide http://www.asante.com/support/routerguide/faqs/hardware.html B
Eppis continued from page 5

graphs, right in the middle of the freezer!

CHASE: Don’t forget the endorsement, sweetie.

SIMONE: Oh, right! We’ve also been asked to be the spokes-dwarves for Fisher. Isn’t it wild?

B: It is! So, which cover is your favorite?

SIMONE: Wow, we had so much fun doing them all! I really liked the winter one where we sat in front of the fire, drinking hot cocoa. The perspective on that one was so inspired—you two really have an amazing vision. Also, it was just so cozy!

CHASE: It was...although I have to say I felt pretty bad-ass going into the CAB when it was under construction, wearing one of those cool hard hats—the workers even let me hammer a little! Now, when I walk by, I think to myself, I helped build that!

B: Nice work! Now, could we ask your thoughts on the controversial “dark issue,” when the cover photo was simply of a new building on science hill, and the shot of the two of you canoeing on the Connecticut river was relegated to the inside of the magazine?

CHASE: Yeah...um, we’re not really at liberty to comment on that.

SIMONE: Sorry. We were afraid you’d say that. But we had to try, right? Well, it’s been great talking to you two—we’ll see you in a few days for this issue’s photo shoot, right?

CHASE: Absolutely.

SIMONE: See you soon!

CHASE and Simone have not been seen since this interview. Any information regarding their whereabouts should be directed to bmail@yale.edu and will be kept in the strictest confidence.

A Quick and Easy Guideline to a Successful 10-Minute Talk

By E. Schmidt

Whether it’s for a research-in-progress seminar or a national symposium, you will have to give a 10-15 minute talk at some point in your graduate career. These talks are an opportunity to show the world why your project is so cool and important. Below are guidelines to help you maximize this time in the spotlight.

Organization is key when giving a successful 10-minute talk. Time is extremely limited so you need to know exactly what you want to convey and what information is necessary to convey it. The talk should not have more than 8-9 slides - that means only about a minute to talk about each slide.

Start with a clearly defined problem and progress through the talk in a logical manner. State a question/problem (“I was interested in the following question...”). How did you go about answering it? (“This is the strategy I used to answer the question...”) What did you find? (“These are my results...”) What do the findings mean? (“This is how I interpreted the results...”)

Do not linger on the introduction and/or summarize the entire history of the field. You should provide enough information to give a general understanding of why you are asking the question you are asking. The introduction should last no more that 1-2 minutes and consist of 1-2 slides.

Data should be the bulk of your talk. The whole point of giving the talk is to present your data. Therefore, spend as much time as possible doing so. Do not be afraid to jump right into the data - limiting the use of transition slides allows for a smoother presentation. You do not need to go into extreme details of the methods used unless it is absolutely critical for proper interpretation of the data. If people are curious about how you did something, they will ask. Data should be limited to 3-6 slides and last 6-8 minutes.

Show only relevant data - anything more will just confuse the audience. Please, do not use the talk as a forum to demonstrate how hard you worked or how many gels you are capable of running at once. We don’t care. We know you work hard!

Rotation talks. It may be tempting to show a barrage of experiments you tried but did not work. Such a presentation can be very tedious to give and listen to. It is in everyone’s best interest if you focus on what worked and what you learned (even if you did not get the desired results). Also, a 10-minute talk is not the time or place for senior students to present your entire thesis. All of those years of hard work do not deserve to be crammed into ten minutes. Focus on current experiments or a side project.

The conclusion is the part of the talk in which you interpret your results in light of the question posed at the beginning of the talk. An effective conclusion can fit onto 1 slide and be stated in 1-2 minutes.

Practice! Practice! Practice! This cannot be stressed enough. Go through the talk at least 2-3 times before actually giving it. You will be surprised how long it will be the first time around. Practice out loud, and edit the talk until you can do it in less than 10 minutes. This will give you breathing room for questions and any technical difficulties. Practice with friends, labmates, or even your PI. - they will have invaluable feedback.

Five steps to successful figures.

1. Have one main point per slide. Do not show a collection of assorted data.
2. Make slides simple, clear, and easy to understand. If the audience is trying to figure out what the slide is showing, then they are not paying attention to what you are saying.
3. Slides should be free of nonessential information - other data will only distract and confuse. Do not show a table with comprehensive data; just show the important stuff. Save the rest for the paper!
4. Avoid abusing Power Point animation. A successful talk should rely on data, not Power Point prowess.
5. More often than not, animation is distracting and sometimes even condescending.

Five more steps to successful figures.

1. Use common sense with visual contrast: No black text on blue background. No fluorescent colors. No gradient backgrounds (light backgrounds and dark text always works best). You get the idea.

Finally, the most important piece of advice anyone can give is to stay within the time allotted! At best, going over the time limit will cut into the question-and-answer period (a vital part of the talk). At worst, you will be yanked from the podium before finishing. That is both humiliating and nullifies all of the hard work invested in the talk.

By following these simple guidelines you should have no problem wowing your audience with your great experiments. All you need to do now is go out and collect some data!
OUTTA HERE!

Congratulations to everyone who defended their theses this past calendar year.

Cell Biology

Warren Kim (Pietro De Camilli) Delayed Synaptic Vesicle Reformation in Synaptojanin 1 Knockout Mice: Insights into the Role of Phosphoinositides in Synaptic Vesicle Recycling

David Hesslein (David Schatz) Early Developmental Control of the Immunoglobulin Heavy Chain Locus

Khashayar Farsad (Pietro De Camilli) Direct Evidence for a Membrane Deforming Motif in Endophilin: Implications Beyond Synaptic Vesicle Recycling

Genetics

Cathleen Brdlik (Craig Crews) Investigation of Mechanisms of Resistance to the Fumagillin Class of Angiogenesis Inhibitors

Michelle Duquette (Nancy Maizels) G-Quadroplex DNA Formation Induced by Transcription in vitro and in vivo: Implications for a DNA Structure Mediated Mechanism of Recombination

Margaret Macris (Peter Glazer) Site-Specific Chromosome Targeting Using Triplex-Forming Oligonucleotides

Chun Wu (Sankar Ghosh) Comparative Analysis of NFκB Inhibitors IκB-beta and IκB-alpha

Immunobiology

Francis Balamuth (Kim Bottomly) Distinct Regulation of Macromolecular Signaling Complex Formation in Th1 and Th2 Effector Cells: The role of Lipid Rafts and the Immunological Synapse

Stephanie Eisenbarth (Kim Bottomly) Th2 Sensitization to Aeroallergens in Asthma

Alfred Lee (David Schatz) Molecular Workings of the RAG1-RAG2 V(D) Recombinase Complex on Atypical Recombination Signal Sequences

Tiffany Horng (Ruslan Medzhitov) Mechanisms of Toll Signal Transduction

Suk-Jo Kang (Peter Cresswell) Biochemical and Cellular Aspects of Antigen Presentation by Human CD1d

Interdepartmental Neuroscience Program

Ji-Eun Kim (Steve Strittmatter) Genetic Investigation of Nogo and Nogo-66 Receptor Function: Focus on Spinal Cord Injury

John McGann (Tom Brown) Late Spiking Neurons in Perirhinal Cortex and the Timing of Conditioned Fear

Iris Bonilla (Steve Strittmatter) Characterization of SPRR1A: A Novel Regeneration-Associated Gene

Angela Purcell (Tom Carew) The Role of Tyrosine Kinase Signaling Cascades in Different Forms of Neuronal Plasticity in Aplysia californica

Microbiology

Deborah Mariasha Cholon (Craig Roy) Characterization of the Legionella pneumophila LcmW and LcmS Proteins

Jonathan Kagan (Craig Roy) Cellular and Molecular Aspects of Legionella pneumophila Transport to the Endoplasmic Reticulum

Miguelina Matthews (Craig Roy) Analysis of Novel Type IV Secretion System Components Encoded by Legionella pneumophila

Molecular Biophysics & Biochemistry

Jack Tsai (David Schatz) Mechanism and Regulation of Postcleavage Activities of the RAG1/RAG2 Recombinase

Yongli Zhang (Don Crothers) Experimental and Theoretical Studies of Sequence-dependent DNA Bending and Flexibility with DNA Cyclization

Shae Padrick (Andrew Miranker) The Kinetic Mechanism of Islet Amyloid Polypeptide Fiber Formation

John Gehman (Kurt Zilm) Theoretical Macromolecular Structure Elucidation using Solid State Nuclear Magnetic Resonance

Jessica Dawson (Don Engelman) Polar Residues Mediate Differential Effects in Transmembrane Helix Association

Georgia Patikoglou (Michael Koelle) An N-terminal Region of C. elegans RGS Proteins EGL-10 and EAT-16 Directs Inhibition of G alpha(o) versus G alpha(q) signaling

Fatima Jones (Scott Strobel) Nucleotide Analog Interference Mapping of the Neurospora VS Ribozyme: Implications for the Catalytic Mechanism

Scott Bidlingmaier (Mike Snyder) Regulation of Oscillatory Behavior by the Polarisome and Cdc42 Regulators

Charu Chaudhry (Axel Brunger) Functional and Structural Analysis of the ATP-driven GroEL-GroES Reaction: Role of the -phosphate of ATP as a Crucial Trigger of The Work of Protein Folding

Jennifer Hall (Andrew Miranker) Mechanism of Insulin Action on Islet Amyloid Polypeptide Fiber Formation

Robert Rambo (Jennifer Doudna) The L1.1trB Group II Intron: RNP Interactions and Elements of Assembly

MCDB

Dhara Amin (David Stern) Gene Expression Analysis of ErbB Family Signaling: Encodement of Signaling Specificity and Identification of Targets of ErbB2 and ErbB4

Stephanie Brewer (Trevor Williams) Analysis of the Mechanisms of Ventral Body Wall and Heart Outflow Tract Development in Wild-type

Outta Here continued on page 8
You know you’ve been working in the lab too long when... by J. Kuan and R. Jensen

- You have enough dry food goods stuffed in your desk to get through several natural disasters.
- When you’re at home you think about experiments, when you’re in your car you think about experiments, when you’re in the shower you think about experiments, when you’re not thinking about experiments you think “I really should be thinking about my experiments.”
- Even though your have a $3,000 state of the art stereo system at home, all your CDs are at lab for playing on the crappy boombox
- While cooking you think about how useful it would be to have a pipet-aid and some 25 mL pipettes to measure out that milk.
- You think 70% ethanol will clean anything (or at least sterilize anything).
- Those 50 mL falcon conicle tubes make fun leak-proof and travel-size containers for shampoo and lotion!
- When chicken is on sale in bulk at stop & shop you tell your roommate you can just "aliquot" it into smaller freezer bags when you get home. In fact, you “aliquot” everything.
- You laugh at those scientists on CSI:Miami because they have a printer hooked up to their microfuge.
- Parafilm is a wonderful solution for leaky pipes and resealing that bottle of salad dressing whose cap fell behind the refrigerator. Yeah, you know which one I’m talking about...
- You have accidentally referred to "lab" as "home."
- You think it would be hilarious to write your next rent check for $7.75 \times 10^2$ dollars...but then realize that you’re the only one who thinks that would be funny.
- Maybe it wouldn’t be such a bad idea to make a "Slip N' Slide" for the backyard with Tygon tubing and biohazard bags.
- You think, "gee, if I had a PCR machine here, I wouldn’t have to go into lab for a few more hours..."
- You know Sharpies aren’t the indelible "permanent markers" they advertise themselves to be. VWR is your only true lab friend.
- Sometimes you think that freshly autoclaved LB smells kinda yummy.
- You get tired of people around you referring to things as "elegant," "novel," or "hand-waving."
- You begin finishing all your emails with "cheers №"
Mating Habits – A Soundtrack  

BY C. MASON

Shakespeare believed that someone who could not appreciate music was lacking an innate human quality, but I would argue that music is enjoyed by more than just our species. Rumors have been rampant in the halls of HGS, and the rumors are true – there is music that can make your experiments work better. In particular, when you are performing crosses, be it with mice, flies, zebrafish, or even if you want your C. Elegans hermaphroditic lifestyle to become a beacon of self-enjoyment, then you have to give those animals a beat to make a move with.

Now, this is no small task, since every animal has a different range at which they hear. Humans can detect a paltry 64-23,000 Hz, and so most of our music is in that range. Lower frequencies (base) might not reach all organisms, so be careful. Keep that in mind when making your choices, and reference the following hearing range chart:

<table>
<thead>
<tr>
<th>Species</th>
<th>Approximate Range (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>human</td>
<td>64-23,000</td>
</tr>
<tr>
<td>dog</td>
<td>67-45,000</td>
</tr>
<tr>
<td>cat</td>
<td>45-64,000</td>
</tr>
<tr>
<td>rabbit</td>
<td>360-42,000</td>
</tr>
<tr>
<td>mouse</td>
<td>1,000-91,000</td>
</tr>
<tr>
<td>gerbil</td>
<td>100-60,000</td>
</tr>
<tr>
<td>elephant</td>
<td>16-12,000</td>
</tr>
<tr>
<td>zebrafish</td>
<td>50-1,100</td>
</tr>
<tr>
<td>tree frog</td>
<td>50-4,000</td>
</tr>
</tbody>
</table>

Now, onto the recommendations:

**Miles Davis – Kind of Blue -1997** This may be one of the best American albums ever recorded and slowly brings animals into the scene of a smoky jazz club in the 1960s. The sharp, yet sometimes sad, trumpet of Miles is complemented beautifully by John Coltrane on tenor saxophone, Julian "Cannonball" Adderley on alto, with great work on piano by Bill Evans. If you get the latest version of the album, there is an alternate take of “Flamenco Sketches” that brings a twist to an old favorite. The album is slow most times, especially with “Blue in Green,” but it has its movers too, like “So What.” Expect your brood size to leap up.

**Bill Withers – Lean on me - The Best of Bill Withers -2000** At times gleeful, at others just plain soulful, this collection of Bill Withers’s hits includes some that we all know (“Lean on Me”) and some gems that most people are not familiar with ("Grandma’s Hands"). Bill has a good mix of slow beats with heartfelt lyrics, as well as faster songs that will catch you surprising yourself when you sing along (as with “Use Me”). Animals will feel a little funk, but not too much (as with the P-Funk), and dominating males will be inspired by such lyrics as, “If it feels this good getting used, well, you just keep on using me, until you use me up.”

**Marvin Gaye – The Very Best of Marvin Gaye – 2001** This one is obvious. Put in disc two, and you will have more progeny than you know what to do with. Tracks such as “Sexual Healing” and “Let’s get it on” have been getting animals excited throughout the entire animal kingdom for decades now.

**Al Green – Greatest Hits - 1995** Another greatest hits album? Sure, you have to give the animals what they will recognize. In this case, “Let’s Stay Together” and “Love and Happiness” will make any couple feel like Romeo and Juliet, and Al’s voice is happy while being melancholy. This whole album is a treat, and your experiments will show this.

**Enigma – MCMX A.D. – 1992** This album has a holy, yet dirty, feeling to it, like Prince playing in a monk’s music room. The album clearly lays out its “Principle of Lust” and encourages listeners to take an active role in their fulfillment, while providing a primordial beat that rises and fall throughout the meditation of the CD. It also has some French spoken over the beats, which, as John Cusack can attest to in Better Off Dead, is the language of love.

---

Dear **B**,

Got a problem? Got questions? Just ask **B**. (Advice is for entertainment purposes only, and you have only yourself to blame if you follow any of the stupid suggestions.)

Dear **B**,  

After I give my thesis talk and am then grilled by my committee, they’ll ask me to leave the room while they confer. What, exactly, do they do behind those closed doors?  

--Anticipating in Anlyan

Dear **Anticipating,**  

You've hit upon one of the central mysteries of graduate school. What do faculty do once the defending student has left the room? Some have postulated that the faculty use that time to play poker. Others hint at power naps, fantasy football discussions, and slide shows of family vacations. More than likely, though, your committee will use this time to actually start reading your thesis.

Dear **B**,  

My manuscript was rejected 3 times! What should I do?  

--Rejected and Dejected

Dear **Rejected,**  

As mentioned previously in this space, scientists in general are lousy writers. I bet you are, too. You should hire a ghost writer. Aim high - see if Stephen King is available. Just imagine what he could do to your Methods section! We’re talking best seller here.

Dear **B**,  

My PI, who apparently doesn’t have enough to do, hovers near my bench and looks over my shoulder constantly. It's driving me crazy. Advice?  

--Just Go Away

Dear **Just,**  

Those pesky PIs. Sometimes they just don’t know their place. Well here’s one sure-fire way to get rid of any PI: Wrinkle your brow and say to him/her, “Don’t you have a grant to write?” Watch gleefully as your PI droops his shoulders, casts his eyes to the ground, and shuffles dejectedly

Dear **B** continued on page 10
Although we all have our moments of reluctance to call New Haven home, there are a few good reasons to conjure up a warm fuzzy feeling for the Elm City. For instance, did you know that there are nearly 1,000 acres of parks in New Haven proper? Parks hosting a myriad of recreational activities such as canoe/kayaking, mountain/road biking, hiking, walking, fishing, boating. Not to mention all the spectacular views of the fall colors! So this installment of Trail Mix offers a quick reference guide to all the local outdoor goodies.

**East Rock Park** (East Rock Rd; 203-946-6086): As chlorophyll gives way to a brilliant display of carotene (orange), xanthophyll (yellow), anthocyanin (red/purple), East Rock Park is the place to be! You don’t even have to leave your car. East Rock Road winds up 1.5 miles with immense draping trees for an impressive view of the autumn leaves. There are also 8 miles of hiking/biking trails if you want to see the leaves up close and personal. New Haven’s oldest park boasts 400+ acres, the Pardee Rose Garden, a covered bridge, 2 picnic gazebos, two playgrounds, athletic fields, and the Throwbridge Environmental Center and ranger station. Perhaps the best part of all is the view from the summit! You can see all of your favorite scientific landmarks in New Haven plus a great view of the Long Island Sound.

**West Rock Park**: Raising 627 feet up above sea level, West Rock Park offers the best vista view in the area. It is said that on a clear day one can see up to 200 square miles of landscape. West Rock also has 12 miles of trails that are great for hiking, mountain biking, and running, including breathtaking stretches along the ridge. West Rock, like East Rock, has a long winding road up to the summit and is also a nice place to see the leaves in the comfort of your car.

**Edgerton Park** (Whitney Ave and Cliff St): Weighing in at 22 acres, Edgerton Park is the smallest park in New Haven but packs a special punch. Designed as an 18th Century English Garden, this park has a meandering sidewalk through a vast, lush and deep green lawn. Edgerton is the place to go when pondering the deeper aspects of life, love and lab and is a top-notch picnic spot to boot. As a bonus, Edgerton hosts free “Shakespeare in the Park” performances every summer.

**Farmington Canal** (Brookvale Park, Hamden; 203-785-1482): Stretching 80 miles from New Haven to Massachusetts, the Farmington Canal is a paved trail that is flatter than a pancake! The trail is great for all levels of rollerblading, biking, running, and walking. The Trail has long straight stretches encased by woods, although you will have to cross a few streets. Another bonus is that the mileage is marked in tenths of miles, so you know how far you’ve gone and when to turn back.

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**A Call For Recipes**

*By R. Reznick*

Imagine it is 7:30pm on a Tuesday. You just walked into your apartment after a 45-minute tour of downtown New Haven and beyond courtesy of the shuttle bus. After a long day in lab (with no results to show for it, of course), you still have to stop back in at 9pm just to change a buffer. But you aren’t even thinking that far ahead yet because you are so frickin’ hungry. Sound familiar?

Then wouldn’t it be nice to have a list of quick, cheap, easy, and healthy dinner recipes for nights like these? Kind of like a Qiagen Dinner Kit. We think so. That is why we are asking you, our loyal graduate student and post-doc readers, to submit us your favorite quick, cheap, easy, and healthy dinner recipes for those nights where there just isn’t enough time to make a seven-course meal. In turn, we will publish a selection of the submissions in the next B Magazine issue.

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Dear B,

None of my experiments are working, and it’s really bringing me down. How can I cheer myself up in a hurry?

-- Bummed Out in B-wing

Dear Bummed,

I know you know this, but let me remind you of one of the central tenets of healthy living. This maxim has cured untold millions of people of their maladies and will come to your aid as well: “When things go wrong, go shopping.”

Sure, you may not have the JCPenney fall catalog at your bench, but I bet you’ve got the latest from Promega, Amersham, or Sigma. Haven’t you ever wanted to own EVERY plasmid ever constructed? How about enough radionuclides to melt that chunk of ice in the back of the freezer? And don’t forget equipment! Can a lab every have too many confocal microscopes? I don’t think so.

Go to town! B

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Views from West Rock Park. Photos courtesy of J. Rinn.
From Bleak to Chic
By J. Yelinek

Your apartment needs everything, and you don’t know where to start! Whether you’re a first-year setting up your first apartment or an Nth year moving around the Elm City, you’re going to need home furnishings and need them on a budget. Sure, nothing does more to bring a room to life than a fresh coat of paint (if your landlord will let you), and a few choice prints of art will make all the difference on those walls as well. But you’re still left with the unanswered question: “Where do I get cheap furniture??” Have no fear. Jordan is here. Take a look at some of my furniture solutions.

For those of you looking for dirt cheap stuff, do it the undergraduate way. Hotel Liquidators (1175 State St, 776-7000) does just what it says: buys things from hotels and then sells them at cheap prices. The selection is hit-or-miss. Sometimes you’ll find 50 identical tables, all supremely ugly. Sometimes you’ll strike it rich and find matching chairs. You never know.

You might not be used to the name, but a Tag Sale is New England’s own version of a Garage or Yard sale. They appear more in the spring and summer months when students are leaving New Haven, but there are still a fair number even in the fall. These are great places to find things that you just can’t live without. Sometimes posted on street corners, or read the New Haven Register’s classified section on Saturdays.

For new furniture that looks good but is relatively cheap, check out the selection of desks, dressers, bookcases, and tables at Home Depot, Lowes, Staples, or Wal-Mart. You’ll have to put this stuff together yourself, and don’t expect real wood!

For a step up in quality, my favorite place is a short 2-hour drive down I-95 to exit 13-A off the NJ Turnpike. You guessed it - IKEA. Who knew that heaven could be found in Swedish furniture? Most things are reasonably priced, and for under $1,000 you can outfit your apartment with key furniture. If you can wait until the summer of 2004, an IKEA will be opening in New Haven! If you can’t wait and are unwilling to fight the traffic through the Cross-Bronx Expressway, you can order online at www.IKEA.com. Whichever method you use, keep in mind that most IKEA furniture requires assembly.

Still not satisfied? Get stylish accent pieces or upscale furniture at a slight discount at the Clinton Crossings outlet mall (I-95 N Exit 63). Here you will find a plethora of shopping for everything you can imagine, including the Bombay Company outlet and many stores to help you outfit your kitchen in professional form!

Once you find the furniture, give your place a sense of style by choosing colors and prints that compliment the furnishings. A comfortable home is important for your grad school years, as it gives you a place to get away from the lab, relax, and entertain friends.

Creative Arts
By B. Shansky

Dictionary.com provides the following definitions for the word “outlet”: a) "A receptacle, especially one mounted in a wall, that is connected to a power supply and equipped with a socket for a plug." b) "A means of release or gratification, as for energies, drives, or desires."

We all know what the first one is—it’s pretty much one of the most essential things in our lives. While the blackout was fun for a day, we really wouldn’t be happy without it. What you may not know, however, is that we need the second kind of outlet, too. After a long day in the lab, you might want to do nothing else but flop down on your sofa and watch Joe Millionaire 2. But during the commercials, do you ever think to yourself, “Self, wouldn’t it be cool to use a darkroom to develop something that didn’t have bands. Could I learn something totally unrelated to science and meet people who’ve never heard the word “phosphorylation” before?” This kind of dialogue is a sign that you might benefit from an outlet other than the kind that plugs you into reality TV.

Once you find the furniture, give your place a sense of style by choosing colors and prints that compliment the furnishings. A comfortable home is important for your grad school years, as it gives you a place to get away from the lab, relax, and entertain friends.
The BUZZ

The main BBS recruiting weekends for 2004 will be February 5-7 and February 12-14. The Neuroscience track will recruit on February 26-28.

Congratulations to Randy Teel, 3rd year Immunobiology, and Anna Drejer, 3rd year Genetics, who got engaged on September 10.

Congratulations to Stefanie West, who recently became engaged to Rob Leacock of the Divinity School.

Congratulations to Sharon Pozner, 2nd year MCDB, who married Daniel Moulis on August 2nd.

Congratulations to Jennifer Harrell, 5th year Genetics, who recently married Alan Jonason.

Congratulations to B mag alumus, Brian Dowd, who married Libby Ciresi on October 4.

Congratulations to B mag’s Amanda Sleeper, 5th year Pharmacology, who married Zach Bagdon, SOM ’04, on September 6.

Congratulations to Elias Lolis, Assoc. Professor of Pharmacology, and his wife on the September 2nd birth of their son, Andrew.

Congratulations to Sam Hernandez, 5th year INP, and Dariel Ortiz, 6th year Cell Biology, on the birth of Sam, 6 lbs 9 oz and 19 inches, on September 1 (Labor Day!).

Fall BBS Sports Teams

Need some exercise? Looking to meet new people? Or do you just want to show your support for BBS teams! Fall BBS Sports Teams still want you! Grad-Pro Soccer and Softball games every Sunday afternoon. Volleyball games on Saturday. No prior experience necessary. Open rosters until the playoffs (November). Please email steven.becker@yale.edu to register.

Your Advertisement Here

Reach over 800 Yale students, post-docs, faculty, and administrators.

The B magazine

“Top 10 Lines to Tell a First Year” Contest

PART OF THE GREAT B-YOND - A SHOWCASE OF STUDENT CREATIVITY

Here are classic lines that work year after year after year on unsuspecting first year students.

Congratulations to our winners.

#10. All the grad students are here on Sunday because they love to be here. Chris Mason, Genetics

#9. If you stick your finger in, the rat will give you a kiss. Craig Gibson, C & M Physiology

#8. In a few years law school is going to look good. Dylan Burnette, MCDB

#7. No, by extension, all other hours are not “unhappy”. Well -- where do you work, again? Michael Seringhaus, MB&B

#6. They don’t tell you this, but if you blow your stipend, they’ll always give you more. Craig Gibson, C & M Physiology

#5. If the scale’s busy, guestimate. Craig Gibson, C & M Physiology

#4. It’s like any other 9-5 job, just 9am-5am. Chris Mason, Genetics

#3. You’ll graduate in 5 years. Anna Drejer, Genetics

#2. Gimme your lunch money. Dylan Burnette, MCDB

#1. Our grant’s running out. Stop using gloves. Craig Gibson, C & M Physiology

Other Notable Entries

Lines from an actual 1st Year, Michael Coggins, Physiology & Int. Med. Biology Track

› The campus is beautiful especially when seen from your lab at 10pm.
› New Haven is big enough to be interesting, but small enough to feel like a community.
› The guys/girls here are hot AND smart.

Thoughts from Wai-Tsing Chan, Microbiology

› Want to learn how to place orders?
› Don’t worry. We drink at every lab meeting.
› Really, the cell culture hood only works at night.

More from Dylan Burnette, MCDB

› I barely went to lab during my rotations, you shouldn’t either.
› You know you could get an industry job right now and make $500,000/year.
› How many papers did you publish as an undergrad...4...I’m not talking to you anymore.
› Today is the first day of the rest of your life.....do you really want to spend that time in grad school?

Words from Mike Akins, INP

› Whatever you do, don’t make eye contact with the tenth year.
› All right, now we begin the initiation rite.

Additional classics from Craig Gibson, C & M Physiology

› Stick your hand in. They’re designed with safety in mind.
› The new guy always makes our solutions.
› You don’t have to actually read the journal club article.
› No, really, they don’t mind if you take stuff from next door.
› You’re just a rotation student. Any work you do gets my name on it.
› There’s a pool going around for the one who can bang the most undergrads. You don’t want to lose, do you?

Final thoughts from Michael Seringhaus, MB&B

› You have chosen... POORLY!
› Take your passion and make it happen, kid. Yeah, somewhere else.
› What are you in for?
› Just sign here. No, in blood.