

# MicroNews

San Francisco Microscopical Society

Volume 4, #4 November 2009

**MEETINGS:** Next meeting **November 10, 2009 at 7:30, Randall Museum, SF**

Future meeting: Tuesday, January 12, 2010 at 7:30, Randall Museum, SF

## Enormously Microscopic Evening A Big Success

In the Mission, in a rather small but effective space on the ground floor of a residential building, where you might find a boutique, is a space called *The Studio For Urban Projects* where Phil Ross with the help of Lauren Allen and others organized an evening of microscopy. SFMS had a table with displays but we were surrounded by other fascinating displays. The one that caught my eye was the CellScope being developed at UCB's Fletcher Lab. It attaches to a conventional cell phone and can send clinical-quality images from the field to clinicians for analysis. Think Africa or the Brazilian jungle.

We will strive to give you a more complete picture in future issues. Thanks to several members who came to the event with their microscopes. HS

## INSIDE

Bug Day	2
The Amazing Insects	2
Spiders	3
Lichen Microscopy	3
Dues Do Benefit	3
MEETING NOTICE	4

## Making a Wet Mount Last Longer

By Robert D. Griffin, Member, SFMS

Nearly every biology laboratory manual or book on microscopy describes how to make a simple "wet mount" of some liquid sample containing microorganisms. All that is needed is to apply a drop or two of the liquid on a microscope slide and carefully lower a cover glass onto it, one edge first, then the other, to minimize air bubbles.

The problem is that the liquid rapidly evaporates from the edges of the coverglass and the coverglass then proceeds to squash any organisms present. The larger species of amoebae often react from

the very beginning by drawing up into an inactive blob, and with further evaporation even the smaller protozoa are squashed until they explode – very disappointing. This can be avoided by repeatedly adding a drop of water to the edge of the coverglass, from where it will diffuse under the coverglass to replace what has evaporated, but there is a way to avoid this constant distraction and observe the specimen for a considerable length of time.

Barely a minute is required to prepare a wet mount that will avoid this problem. It is simply a mat-

ter of sealing the edges of the cover glass with petroleum jelly (best known by the trade name, "Vaseline"). Many lab manuals advise applying the petroleum jelly with a toothpick; others suggest filling a syringe with molten petroleum and using that to apply the petroleum jelly when it cools. (Don't set your kitchen on fire trying to melt the petroleum jelly to get it into the syringe. A friend of mine did just that.) Both of these methods are excessively tedious and unnecessary.

A much simpler and more reliable method involves nothing more than using

## RECESSION HITS SFMS BANK ACCOUNT

We are not immune from the banking catastrophe that has hit the U.S. but we are, fortunately, well protected. On Friday, August 21, 2009, Guaranty Bank was closed by the Office of Thrift Supervision and the Federal Deposit Insurance Corporation. You may recognize the initials FDIC. They represent the corporation that makes sure deposits up to \$250,000 are protected when a bank fails. We are a long way from that maximum. The bank was then

taken over by the Compass Bank of Birmingham, AL, 35233. BBVA Compass is the trade name of the bank, a member of the BBVA Group.

Under federal law 12 U.S.C. Section 1822(e) we (SFMS) must claim ownership of our deposit at the new institution (Compass Bank) within 18 months from the closing date. Your treasurer has done that by making a deposit of the dues paid by our newest member, Wolf Frommer, who joined

last month.

Please note that we will need to make more deposits. The dues for 2010 are due now and can be paid by sending your check for \$12.00 to Treasurer, SFMS, 20 Drake Lane, Oakland, CA 94611-2613. By responding to this notice now, you can save the treasurer a lot of work and time. That will free up time to produce the next Micro News. Perhaps I can even persuade you to send in \$144.– for a Life Membership. HS

# San Francisco Microscopical Society

## The AMAZING INSECTS by Michael Chinery,

**Thank you, Helmut**

### BUG DAY AT SF ZOO

The event was held in a large tent set up with 12 tables for local organizations to inform the visiting public about their activities. Present and making interesting demonstrations were The Arachnid Society, The San Mateo Co. Mosquito Control Board, The S.F. Park and Recreation Department, The Insect Discovery Lab, SFMS and others.

There was also an area for entertainment (song and dance) for children. It was similar to the Bug Day at Randall Museum, but I believe we had more visitors here.

I spent both days alone with my display of 2 stereo microscopes, but it was no strain. I had copies made of new SFMS Prospectus, which I passed out to interested visitors. It was a successful event and will very likely be repeated next year. We should participate again.

Helmut Will

The jaws are fierce and have sharp dagger-like barbs. The eyes encompass a wide field of view that see, it would seem, in all directions, hairs abound and joints present engineering marvels of complexity. The AMAZING INSECTS by Michael Chinery, Firefly Books, 2008 (ISBN 13-978-1-55407-352-8) reveals through text and a series of amazing images the unique and diverse forms of insect surface anatomy. Every gardener who has encountered aphids will be struck by the image of the tiny "needle" these creatures use to extract the sugar rich sap. Of the 279 richly illustrated pages, the first 63 are devoted to microscopic images that let us view the insect world with wonderfully colored and clear

images of structures we have seldom seen in other books. The text is limited to captions for each picture that provide in one paragraph a descriptive explanation but fail to give magnification or other photographic data. False coloration, perhaps created through one of the photo enhancing programs is also ignored in the caption. None of these criticisms should take away from the excellent photography and selection of pictures that are found throughout this wonderful book. The picture sources are wide-ranging and their quality is superb but this is not a text or encyclopedia. It is a book of insect structural wonders and behavioral patterns. In the chapter entitled *Homes and Habitats* you will see an image of

the extraordinary compass termite's over 4 meter high mounds built on a north-south axis to capture the morning sun but minimize the noon-day heat. *Amitermis meridionalis* termites are found in northern Australia and from a distance, these mounds resemble enormous tombstones. It is an admirable work but I would favor a detailed compendium of a few representative insects that also includes an occasional exploration of internal structures over this arrangement that strives to give some insight in six chapters focusing on behavioral aspects such as *Food and Drink* (Ch. 3), *Life Cycles* (Ch. 5), and *Homes and Habitats* (Ch. 6).  
HS

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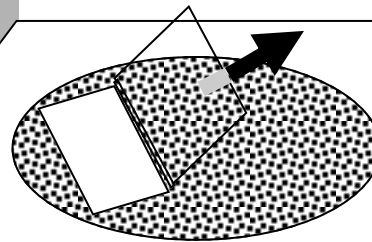
one finger to apply a film of petroleum jelly to the heel of one's hand or, better yet, to an index card or sheet of paper, and carefully drag each edge of a cover glass through that film to build up a bead of the desired thickness on all four sides.

(Don't use paper towel; it is too rough and is likely to snag and break the coverglass. A paper towel is handy for removing the petroleum jelly from the finger after the spreading, of course.) The cover glass and slide should be handled only by their edges. For very small specimens, the bead can be small; for larger specimens, a thicker bead is required, as is illustrated in figure 2.

Next, as is illustrated in Figure 1, one edge of the

cover glass is dipped into the film of petroleum jelly and gently dragged to build up a bead on that edge, as is illustrated in Figure 1.

[Figure 1



The size of that bead is determined by the kind of specimen that one is planning to observe. If the organisms in that droplet are expected to be quite small, such as *Parmecium*, *Euglena*, *Blepharisma*, i.a., the bead should be 0.5 – 1.0mm thick; for larger specimens, such as the exceptionally large amoeba previously known as *Chaos chaos*,

(although I believe that species has been officially renamed something else), the bead can be 2mm in thickness or more, because larger specimens become inactive when pressed by the

coverglass. The coverglass is then placed -- petroleum jelly side up -- on a flat surface, a drop or two of liquid is placed in the center of the cover glass, and then the slide is carefully pressed onto that preparation to stick the cover glass to the slide. Figure 2a shows a cover glass with a bead and a droplet appropriate for very small organisms, while Figure 2b shows a coverglass with a bead and a droplet appropriate for a larger specimen. (Some trial and error is obviously

(Continued on page 4)

## Spiders

By Burkhard Bilger, *Spider Woman*. The Reporter at Large, The New Yorker, March 5, 2007

[Greta] Binford and I pulled into Yarnell, Arizona, a former mining town in the high country northwest of Phoenix. ...Chuck Kristensen...lived in a pink stucco house near center of town, with his wife...and fifty thousand spiders, half of them black widows. He called the place the Spider Pharm.

Drug companies had a long history of prospecting for chemicals in the rain forest, but venom struck Kristensen as a more promising source. Its toxins were already targeted at cells and nerve receptors, and prepackaged for injection with stabilizers and emulsifiers. The problem was getting a sufficient supply. ...Kristensen sketched a design for a spider-milking machine – the first of its kind – then began to collect and breed dozens of species for their venom.

Kristensen kept the smaller species in plastic cups covered in

chiffon and stacked in six-foot metal racks. The tarantulas were in larger containers and had their own steamier room. A few spiders escaped every so often, he said, but most of them were eaten by the daddy longlegs that patrolled the halls.

After the tour, Kristensen brought in a tub of homegrown maggots for the spiders – the babies had to be fed every day, the adults once a week – and Anita [his wife] milked a few recluses. First, she tranquilized the spiders with carbon-dioxide gas (it lowers their oxygen levels until they pass out), then she grasped one with a pair of tweezers, held it under the microscope, and stepped on a foot switch. The tweezers were wired to an electrical stimulator. When Anita's foot hit the switch, the spider received a small shock, which made the venom gland contract. This forced a droplet through the fangs, where Anita caught it in a thin glass tube.

"I never touched a spider in my life before I met Chuck," she said,



as a pair of fangs ballooned into view under the microscope. "But I liked it right away. It never gets boring." On a good day, Anita might milk a thousand spiders and get less than a thimbleful of venom. Yet medical biologists have found a remarkable range of compounds in it over the years—from a Chinese-tarantula toxin that stops heart fibrillations to a Chinese-tarantula toxin that prompts insulin secretions. None has yet been turned into a drug. ... \_\_ 000\_\_

### Lichen Microscopy Meeting at Randall

"This evening, November 10, 2009 at the Randall Museum, we consider how microscopy is involved with the identification and study of lichens. Learn about the rich and beautiful details of these interesting organisms that can be discovered when put under the microscope -- and how often one MUST use microscopes to investigate and understand them."

This will be mostly a fun 'show and tell' of what we do as lichenologists. I hope to demonstrate 'headgear magnifier' that can be worn while out in the field, and we will also demonstrate how we use hand lenses correctly(!) to see lichens and other plant structures in the field. *Bill Hill* VP & Program Chair

## DUES DO BRING BENEFITS DUE TO FISCAL RESPONSIBILITY

"You can never tell how much good money can do unless you spend it wisely." That is the mantra that the board exercises at every meeting when it sits down to review the budget and approves the treasurer's report.

Because we are a small organization, some even consider us microscopic, the flow of money for each fiscal year is not exactly a flood. In fact, we have suffered the same financial "drought" for several years but have judiciously used reserves to maintain our services to members and produce

the publication you are reading.

I recently learned that SFMS's financial well being was achieved by the generous donations made by a company that provided a means by which the long time treasurer, Helmut Will, could sell on e-Bay outdated equipment and thus insure our financial stability. I hope that sometime he will share with us some of the details of that event.

Now it is up to you! The new fiscal year is just around the corner and we hope to have a budget that reflects greater service and an

expanding publication. By paying your 2010 dues in response to this request, you free up additional mailings and time, the most precious commodity of all. \$12 is not much to ask you to send. (More is always appreciated,) Life memberships of \$144 are also a bargain. Several of us paid \$200 to become life members. (See— you have saved \$56 dollars already!)

Mail 2010 dues to:  
SFMS Treasurer, 20 Drake Lane,  
Oakland, CA 94611-2613  
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# NOVEMBER 10 MEETING NOTICE

Stamp



**Tuesday, 7:30-9:30, Nov. 10 at Randall Museum in SF.** Bill Hill will explore the effective use of microscopy in plant identification, particularly as it relates to Lichens. Bill was for several years the president of the Lichen Society and continues to be active. He has worked on the large collection of lichens that were donated to SF State University.

FROM:

## Micro News

San Francisco Microscopical Society  
20 Drake Lane  
Oakland, CA 94611-2613

### MEMBERSHIP INFORMATION

To join the Society, fill in the form available at [www.sfmicrosoc.org](http://www.sfmicrosoc.org) and mail it to the above address with your annual 2009 dues of \$12.— made out to SFMS.

Life membership is \$144.00

TO:

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necessary.)

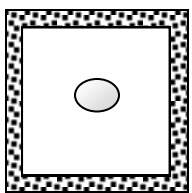


Figure 2a

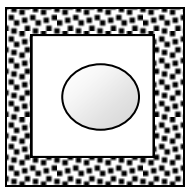


Figure 2b

Next, the slide is carefully lowered onto that preparation and gently pressed until the coverglass is securely stuck to the slide (not illustrated). Again, some finesse and trial and

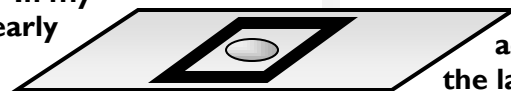
error may be necessary.

The preparation must, of course, be inverted to bring the cover glass on top for observation. It won't do to have petroleum jelly smeared all over the microscope stage.

It is important that the amount of liquid be very small relative to the cover glass so that when the preparation is finished there is significant air space around the liquid. The object is to obtain a preparation such as that illustrated in Figure 3, where the slide has contacted the droplet and there is no air space between the droplet and the slide, but there is still considerable air space around

the droplet. The petroleum jelly seals the preparation to prevent any evaporation and the surrounding air space provides enough oxygen to keep the microscopic organisms alive for a considerable length of time. Figure 3

In my early



years at City College of San Francisco, we had an introductory zoology class which had five or six lecture sections enrolling more than 500 liberal arts majors every semesters, requiring as many as 19 separate observation-type laboratory/

discussion sections, and we routinely made petroleum-jelly-sealed wet mounts of protozoa at 7:00 AM on Mondays, had students observing all day every day, stored them in a refrigerator each night, and found the protozoa still quite active for the last lab section ending at 3:00 PM on Fridays.

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Robert Griffin