

## Division of Comparative Biomechanics

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### DCB Officers & Representatives

**Sharon Swartz**  
Chair 2011-2013

**Mark Denny**  
Chair-Elect 2011-2013

**Robert Full**  
Past Chair 2011-2013

**Miriam A. Ashley-Ross**  
Secretary 2006-2012

**Stephen M. Deban**  
Program Officer 2010-2012

**Marianne Porter**  
Student/Postdoc Representative  
2010-2013

**Adam P. Summers**  
ICB Editorial Board Representative

### Message from the Chair

*Sharon Swartz*

I'd like to begin by offering my thanks to Bob Full for guiding this division through its infancy and well into, well, wherever it is we are now! I know I'm not alone in my gratitude to Bob for his leadership in making SICB a wonderful home for integrative and organismal biomechanics, and I'm confident that the stage has been set for our division to flourish for many years to come. Our membership continues to increase, and we have numerous postdocs, graduate student, and undergraduate members who confer a dynamism to the division that I believe is unparalleled within SICB. It is truly an honor to follow in Bob's footsteps as your chair.

### Membership

The Division of Comparative Biomechanics membership remains high, currently 538 at the time of writing this newsletter. Membership is driven in part by the size of the annual meeting, and our divisional membership peaked in 2010 when our meeting was held in Seattle, the year that SICB attendance reached its second-highest level ever. I encourage all of us to bring new members into our organization, particularly colleagues who are not yet familiar with SICB, such as engineers, physicists, and mathematicians interested in biological subjects. Invite them along to a SICB meeting – they'll be fascinated and engaged!

### Elections

Our new chair-elect is Mark Denny, and Mark will join the SICB Executive Committee in January at the end of the Annual Meeting in San Francisco. It is a pleasure to have Mark as a member of the DCB leadership! We are also preparing for elections for both Secretary and Program Officer, as, sadly, both Miriam Ashley-Ross and Steve Deban are preparing to complete their terms. We have outstanding candidates for both positions, and it would be great to see a large fraction of our members participate in the upcoming elections.

### SICB Meetings

Our recent meeting in Salt Lake City, Utah, was a great success. Attendance was excellent, the third highest in SICB's history, after the 2009 Boston and 2010 Seattle meetings. There were 32 sessions topically related to biomechanics, with over 170 papers within our field. Even more strikingly, this year's meeting featured 105 posters on biomechanical subjects, and increase of more than 30 from last year. This is an exciting development, particularly given the excellent poster venue we had this year, that greatly facilitated interaction at the posters.

Our student competition was ably overseen by Jake Socha, and the paper prize was given jointly to Nicole George of the University of Washington, for 'Molecular and structural evidence for temperature dependent



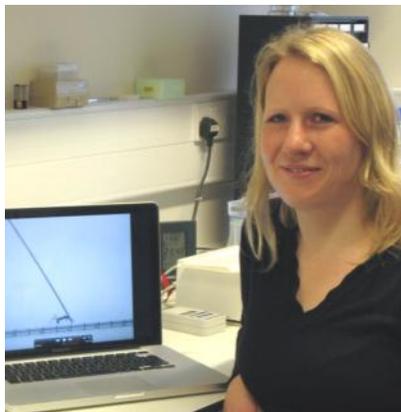
elastic energy storage in *Manduca sexta*," a paper co-authored with H. M. Hsu, T. C. Irving, and T. L. Daniel, and Thomas Libby from UC-Berkeley, for "Active Muscle Enhances Rapid Perturbation Recovery in an Insect Limb," co-authored with R. J. Full. The best poster, "Metabolic cost of transport in grass-cutting ants depends on load shape," was presented by Karin Moll, University of Cambridge, for work carried out with colleagues W. Federle and F. Roces. Congratulations to these outstanding students! I



Thomas Libby

know the judges had a very difficult time choosing among many wonderful presentations, and the quality of student work within the Division continues to inspire. We express deep gratitude to the many people who volunteered time and energy to the judging process; we even had more people volunteer to judge this year than we had students in the competition! But please don't let this diminish your enthusiasm; your volunteer efforts make an enormous contribution to the students of the Division.

We supported three wonderful symposia, "Bioinspiration: Applying Mechanical Design to Experimental Biology" organized by Brooke Flammang and Marianne Porter, "The Biomechan-



Karen Moll



Nicole George

ics and Behavior of Gliding Flight" organized by Robert Dudley, and "I've Got Rhythm: Neuronal Mechanisms of Central Pattern Generators" organized by Duane McPherson.

I want to remind our membership that this is the time to be thinking about symposia for the 2013 meeting in San Francisco; proposals will be due by August 19, 2011. Symposia are one of the most exciting aspects of our divisional activities at annual conferences, and, just as importantly, symposium papers published in *Integrative and Comparative Biology* help determine the success of the journal. The journal itself is central to the health of our society; financial success of *ICB* helps to finance the rest of SICB's activities, including our annual meetings, and the journal's readership, impact factor, etc. fluctuate tremendously depending on the topics and quality of the symposium papers. So put your best ideas forward for symposia! If you're not sure how to proceed to develop a symposium proposal, start with the SICB Symposium Guidelines for Symposium Organizers, <http://www.sicb.org/meetings/symposiaguidelines.php3>, then contact a Divisional Program Officer – ours is Steve Deban for a little while longer!

Finally, the Charleston, South Carolina Meeting in 2011 should be wonderful! We expect a record number of submissions, including in the best student paper and poster competitions. I hope to see many DCB members there, both old and new.

### **Carl Gans Award**

It was a special treat for the Division to award the inaugural Carl Gans Award at the recent Salt Lake City meeting. This award recognizes Carl Gans' scientific career and editorial contributions to animal morphology, biomechanics, and functional biology, and beginning this year, will be given annually to either an outstanding young investigator (doctorate completed within the past seven years) for distinguished contributions to the field of comparative biomechanics and functional biology, or to any investigator for the single best contribution of the past year to the literature of comparative biomechanics and functional biology.



This award was endowed in part by the Gans Family, in particular, Carl's brother Leo Gans, and Sandy Gaunt, and many SICB members, especially from DCB and DVM. Once again, the Division sends special thanks to Robert Dudley, David Carrier and Ray Huey for all their efforts in initiating and launching this wonderful tribute to Carl Gans' memory. Remember that it is always possible to make donations to this fund, which supports awards to the Gans Award winners.

This year, our former chair, Bob Full, appointed an Award Committee comprising three members of the division with diverse areas of expertise. Among the many nominations, they selected Dr. Rita Mehta as the inaugural Carl Gans Award Winner.

Rita is presently an Assistant Professor in the Department of Ecology and Evolution at the University of California, Santa Cruz and the Long Marine Laboratory, following postdoctoral work in the Wainwright lab at the University of California, Davis and a Ph. D. at the University of Tennessee-Knoxville. Letter writers noted Rita as an outstanding choice for this award for a whole host of reasons! As one said, "Carl's work on functional demands created by body elongation has inspired Rita's research program, which focuses on the functional morphology of elongate vertebrates." Another elaborated that "Like Gans, she is broadly synthetic, fearless in tackling new approaches, and has phenomenal command of natural history and organismal biology. She is unique among her peers in possessing a firm grasp of the 'big picture' while she applies her experimental skill to address mechanistic questions of function."

Her most well-known study, published in *Nature* (Mehta, R.S. and P.C. Wainwright. 2007. Raptorial jaws help moray eels swallow large prey. *Nature* 449: 79-82.), revealed that eels solve the prey-transport problem using a second pair of raptorial jaws located in the pharynx. As one letter said, "The functional morphology of feeding in fish is dominated by suction feeding. But Rita wondered how eels, a lineage which apparently could not suction feed, would apprehend and transport food? Her exploration of this puzzle has resulted in the discovery of a hitherto unknown mode of feeding-- evolve jaws that move from the back of the throat to the mouth! That someone could discover an additional mode of feeding (which no one has done in many years) at such a young age is truly amazing."

Rita's research program is not only scientifically substantive, her work has generated a great deal of interest in the popular press. She has been featured in a variety of media including *National Geographic*, and her work has been disseminated to the public via news sites and museum exhibits.

We congratulate Rita, and hope that the Carl Gans Award is an auspicious beginning for a wonderful 2011 for her!

### ***Upcoming conferences***

There are several conferences in the next months that may be of particular interest to our membership.

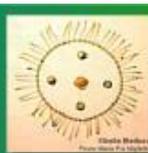
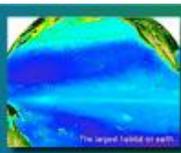
### ***Society of Experimental Biology***

Annual Main Meeting 2011.

The Society for Experimental Biology 2011 Annual Main Meeting will return to the Scottish Exhibition and Conference Centre in Glasgow. The meeting will take place from the 1st - 4th of July



Bob Full presents the Gans Award to Rita Mehta



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2011. This meeting is open to members and non-members alike.

Registration: Registration for the meeting opened November 2010.

Scientific Topics: SEB Glasgow is multi-disciplinary. For a full list of scientific sessions running at the meeting see: [http://www.sebiology.org/meetings/Glasgow\\_2011/Glasgow.html](http://www.sebiology.org/meetings/Glasgow_2011/Glasgow.html)

More information on the scientific sessions will follow soon.

Students/Early Career Scientists:

There are travel grants available to students. SEB student grant applications opened on 1st October 2010.

In particular, two sessions are relevant to our division.

*"General Biomechanics"*

Dates: 1st - 2nd July

Organized by: Peter Aerts (University of Antwerp) and Eize Stamhuis (Groningen University)

Contact: [peter.aerts@ua.ac.be](mailto:peter.aerts@ua.ac.be)

**Description:** The 'general biomechanics session' brings (young) scientists together dealing in their research with the mechanics of the most diverse topics in biology. From insect flight to suspension feeding, from horse locomotion to the mechanics of water transport in plants, from material properties to kinematics of bird flocks, from muscle mechanics to... all topics find their place in the session which is traditionally attended by a large and broadly interested audience. Moreover, six years ago, we started a new initiative: General Biomechanics Best Poster and Best Presentation prizes (3 for each category).

*"Multi-scale mechanics of biological and bio-inspired hierarchical materials and surfaces"*

Dates: 3rd July (pm only), 4th July

Organized by: Thomas Speck (Plant Biomechanics Group Freiburg)

Johan Van Leeuwen (Wageningen University), Tom Masselter (Plant Biomechanics Group Freiburg) and Claudia Fleck (Technical University Berlin)

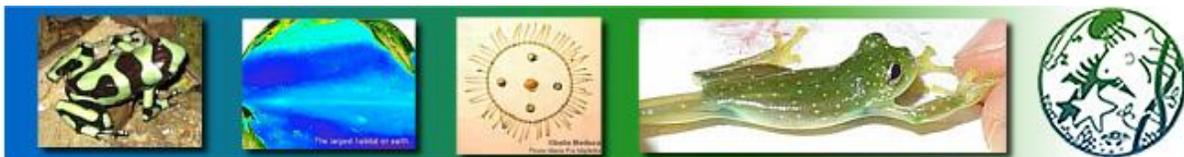
Contact: [thomas.speck@biologie.uni-freiburg.de](mailto:thomas.speck@biologie.uni-freiburg.de)

**Confirmed Speakers:** Peter Fratzl (Max Planck Institute), Lorna Gibson (MIT), Joanna Aizenberg (Harvard University), Olga Speck (University of Freiburg), Stanislav Gorb (Christian-Albrechts-University of Kiel)

**Description:** Biological materials and surfaces are characterized by a limited number of basic chemical components and a large variety of micro- and nanostructures. The outstanding mechanical properties of biological 'constructions' are mainly based on a complex multi-scale structuring, and not on a huge variety of constitutive materials as typically used in traditional engineering. The basis of this extremely efficient biological 'materials design' is the evolution of hierarchical structures covering more than ten orders of magnitude which are well adapted to the requirements at each level of hierarchy. In addition to their fascinating mechanical functions many biological materials and surfaces possess 'self-x-properties' (self-organization, self-adaptability, self-healing, self-cleaning.) which allows them to interact very efficiently with their respective environment.

Over the last decade new sophisticated methods for quantitatively analysing and simulating the form-structure-functions-relationship on various hierarchical levels allowed new fascinating insights in multi-scale mechanics of biological materials and surfaces. On the other hand, new production methods allow for the first time to transfer the outstanding properties of the biological role models into innovative biomimetic products.

The session deals with new findings as to the multi-scale mechanics and the underlying structural basis on the side of biological materials and structures, as well as with the potential to produce innovative hierarchically structured



technical materials and surfaces in the realm of biomimetics. In addition to the presentation of the latest scientific findings from both fields, the session aims to stimulate interdisciplinary collaboration between biologists and engineers in the seminal field of biomimetics.

### *The American Society of Biomechanics*

August 10 - 13, 2011. The 35th Annual Meeting of the American Society of Biomechanics, Long Beach, California

Program planning for ASB 2011 is currently underway. The complete ASB 2011 Schedule and Proceedings will be posted at: <http://www.visitlongbeach.com/asb2011>

The topics include aging, biofluidics, comparative biomechanics, cellular and tissue mechanics, computational biomechanics, ergonomics, imaging, injury prevention, instrumentation, locomotion, molecular motors, motor control, neuromechanics, orthopedics, prosthetics, rehabilitation, robotics, sports, tissue engineering, and vehicle occupant safety. Both modeling and experimental work at scales ranging from molecular to whole body are featured.

Keynote speakers this year will be:

Dr. Christine Ortiz, Dean for Graduate Education and Professor of Materials Science and Engineering at MIT. Dr. Ortiz is a prolific scientist with over 100 publications in more than 20 different academic journals. Her research program focuses on the mechanics of structural biological materials, in particular musculoskeletal and exoskeletal tissues with the objective of obtaining a fundamental, mechanistic-based understanding of tissue function, quality, and pathology. Model systems include; articular cartilage, bone, natural flexible armor, transparent armor, and biological armor for extreme conditions (e.g. blast, heat, thermal). Dr. Ortiz's research employs novel experimental and theoretical methodologies across multiple scales, ranging from individual molecules to live animal biomechanics. Her work has relevance to medical and engineering fields, fa-

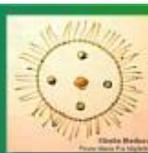
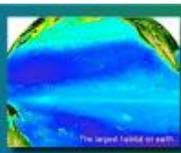
ilitating development of improved medical treatments for musculoskeletal disease and injury as well as providing guidance for improved materials for protective applications, such as armor for biochemical toxin resistance. Dr. Ortiz has numerous national and international honors including, the National Security Science and Engineering Faculty Fellow (NSSEFF) Award and the National Science Foundation Presidential Early Career Award for Scientists and Engineers (NSF-PECASE). In 2009, she was awarded the MIT Martin Luther King Jr. Leadership Award for her important and lasting impact on students, staff and faculty at MIT.

Dr. Jessica Hodgins, Professor, Computer Science and Robotics, Carnegie Mellon University, Director of Disney Research.

Dr. Hodgins has had a significant impact on our understanding, simulation, and animation of movement. Her research lab has played a leadership role in the development of new techniques in simulation, control systems, and motion capture. Dr. Hodgins is best known for her work on animating humans; her papers from the early 1990s on legged motion and human athletics laid the groundwork for use of dynamics to simulate complex characters in computer graphics. Hodgins also applied physics to create realistic animations of inanimate objects, including the animation of brittle fracture, explosions, and the motion of complex media like sand, mud, and snow. Her work has resulted in improved techniques for capturing and modeling the deformable elements of human motion and she has made major contributions in the area of user control of complex, synthesized motions. Dr. Hodgins has received a NSF Young Investigator Award, a Packard Fellowship, and a Sloan Fellowship. She was editor-in-chief of ACM Transactions on Graphics from 2000-2002 and ACM SIGGRAPH Papers Chair in 2003. In 2010, she was awarded the ACM SIGGRAPH Computer Graphics Achievement Award.

### *International Society of Biomechanics*

In 2011 ISB will be hosted in Brussels.



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It will be "an exciting opportunity for scientists, experts and students to exchange ideas about the most recent advances concerning topics and approaches in the fields related to Biomechanics". The ISB organizes its papers around six fundamental approaches to biomechanics, 1) Anatomy-oriented, 2) Physiology-oriented, 3) Clinically-oriented, 4) Bioengineering, 5) Modeling & Methods, and 6) Integrated research.

More information is available at <http://www.isb2011.org/> and from [info@isb2011.org](mailto:info@isb2011.org)

Tutorials will take place on July 3<sup>rd</sup> on the following topics:

Translating Biomechanical Ideas into Commercial Products (Brian Davis and Kit Vaughan)

The Aging Motor System (Roger Enoka)

Optimization in Sports Mechanics (Mont Hubbard)

Adaptation of Bone: Diet, Exercise & Injury (Ronald Zernicke)

The full Congress is July 3<sup>rd</sup> – 7<sup>th</sup>, 2011 and the keynotes will be:

William Buford - Musculoskeletal kinematics and interactive modeling: simulation, prediction and validation within question-driven research

Jan Pieter Clarijs (Wartenweiler Memorial Lecture) -The schizophrenic balance of old techniques and new technologies in body composition and their (assumed) support in biomechanics, ergonomics and health care

Geneviève Dumas - Biomechanics of pregnancy

Alain Berthoz - title will be announced later

Taija Finni (ISEK keynote) - Muscle-tendon architecture and function

Jae Kun Shim (PYSA 2s009) - Motor Synergies in Multi-digit Actions: Handwriting

Marco Viceconti (ESB Keynote) - Personalized and multiscale neuromusculoskeletal modeling: examples of clinical application

Fred Yeadon - Computer simulation of sport: insight, optimisation and application

Roger Enoka (Muybridge lecture) - The neuro-mechanics of muscle fatigue

The early bird and presenter deadline for registration is April 30<sup>th</sup>, 2011, and registration closes June 15<sup>th</sup>, 2011.

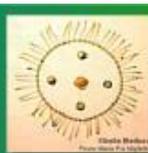
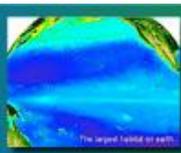
### Message from the Program Officer

*Steve Deban*

The Salt Lake meeting was very successful, thanks in large part to your excellent biomechanics talks and posters. Biomechanics featured in approximately 250 presentations of huge diversity. In addition to the contributed papers, DCB supported three wonderful symposia: "Bioinspiration: Applying Mechanical Design to Experimental Biology" organized by Brooke Flammang and Marianne Porter, "The Biomechanics and Behavior of Gliding Flight" organized by Robert Dudley, and "I've Got Rhythm: Neuronal Mechanisms of Central Pattern Generators" organized by Duane McPherson.

The meeting ran a full four days and it was great to see the large number of energetic attendees at the final sessions of the last day. The biomechanics program received several compliments and I heard only one complaint about conflicting sessions, which I count as a huge success. DCB joined with DVM, DEDB, and DSEB for a huge dessert social midway through the meeting that was successful in fostering interdivisional schmoozing.

Looking ahead to future SICB meetings, DCB is sponsoring two symposia for the 2012 meeting on computational methods, analysis and modeling of animal movement. If you have a symposium idea that can be developed for symposia for the 2013 meeting and beyond, please contact me. The deadline for proposals is in August 19, 2011. SICB will reimburse up to \$100 for each symposium presenter. Registration, lodging, and



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travel expenses can be paid from divisional funds (often more than one division) as well as from grants from outside agencies, journals and publishers, and equipment companies. If you are considering putting together a symposium, consider adding complementary sessions of oral and poster presentations to expand the range of topics and the number of participants.

A final note about abstract submission for future SICB meetings: choose your abstract topics wisely! The DCB program officer handles abstracts that have Topic #1 under the heading of "E. Morphology." The three topics you choose when you submit your abstract play a huge part in determining the session in which your presentation is placed, so please pick your topics wisely, especially Topic #1.

### Message from the Secretary

Miriam Ashley-Ross

The meeting in Salt Lake City reminded me of why I love SICB – not only do I get to see the “old crowd” and catch up, but I get to see some truly amazing research reports, and plan new adventures. I think the most incredible thing I saw was the high-speed video of kicking grasshoppers, where the energy of the kick was absorbed by the tibia bending nearly 90 degrees at a defined region containing a big pad of resilin. Everyone’s jaw dropped at that! At the risk of sounding my true age, we as experimental biomechanists have come so far so fast! It wasn’t so long ago that 2D kinematics were the state of the art. It’s a great time to be in Comparative Biomechanics!

Speaking of the future of our discipline, let’s all congratulate the winners of the Best Student Paper competitions. The judging committee couldn’t decide between two top-notch oral presentations, and ultimately decided to call it a tie for Best Oral Presentation. The winners were Nicole George of University of Washington, and Thomas Libby of the University of California at Berkeley. Nicole’s talk was entitled, “Molecular

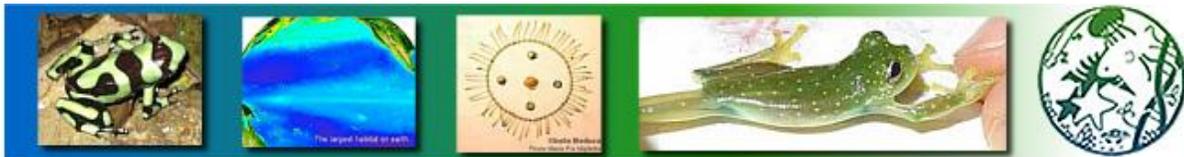
and structural evidence for temperature dependent elastic energy storage in *Manduca sexta*.”

Thomas’ talk was “Active Muscle Enhances Rapid Perturbation Recovery in an Insect Limb.”

In the Best Poster Presentation category, the winner was Karin Moll of the University of Cambridge. Her poster showed “Metabolic cost of transport in grass-cutting ants depends on load shape.”

Congratulations Nicole, Thomas and Karin! Also congratulations to all the student competitors. In a first, the hard-working judging team sent individual feedback to each competitor, providing them with constructive criticism to help them continue to improve their presentation skills.

DCB continues to grow and mature as a Division. The Salt Lake City meeting program for us was planned by Steve Deban, our second-ever Program Officer – I think all of us would agree that it was an excellent schedule of talks and posters. Also, it felt almost like the end of an era, in that it was Bob Full’s last time to address us as Chair. I want to personally thank Bob for his tireless efforts on the Division’s, and SICB’s, behalf. DCB would never have gotten off the ground if it weren’t for him, and now it’s SICB’s fastest-growing division. Bob passed his responsibilities as Chair on to Sharon Swartz, who is a more than able replacement. And Mark Denny took on the mantle of Chair-Elect – he’ll succeed Sharon at the end of the 2013 meeting. This Spring, the Division takes the final step on the journey toward an entirely new slate of officers – you get to select my replacement! Sharon was kind enough to tell me that she’ll miss having me as Secretary, but I pointed out that it would be selfish of me in the extreme to hoard to myself (1) the opportunity to serve the Society, and (2) such great experience. And I really mean that – I’ve learned a lot in my time as Secretary, and it’s been a privilege to work with such dedicated people. We also need to select a new Program Officer to replace Steve Deban next year. The best part is, we’ve got terrific candidates for both positions! Actually, that’s



the worst part, in a way – it's hard to know which way to cast your vote! Please make sure you read the statements of the candidates (below), and make sure to vote in the election (even if you end up flipping a coin), which will be held online in May.

I also want to make you aware of the Southeast Regional DCB/DVM meeting, which will be held in October at Wake Forest University in Winston-Salem, NC. The meeting is being organized by myself and Nickolay Hristov of the Center for Design Innovation and Winston-Salem State University. The past few years have seen well-attended and terrific meetings at Clemson, UNC-Chapel Hill, and Virginia Tech. The scientific program takes place on one day (Saturday), with students giving the bulk of the talks, each of which only lasts ~7 minutes. It's an intense but efficient way to learn what all your colleagues are doing. So keep your calendars free in mid-October – we'll have beautiful Fall weather in NC at that time.

Finally, I need to make my obligatory plug for you to help me out in the Researchers Database department. Relative to the number of members in our Division, we're ridiculously underpopulated. So – if your name isn't in the database (and you know who you are!), please e-mail me a short description of your research, along with a nifty picture related to it, for inclusion. You don't need to reinvent the wheel – just copy the most relevant points from your already-existing website, and send it along.

Have a terrific summer!

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### Message from the Student/Post-doctoral Affairs Committee Representative

Marianne Porter

#### How to organize a symposium?

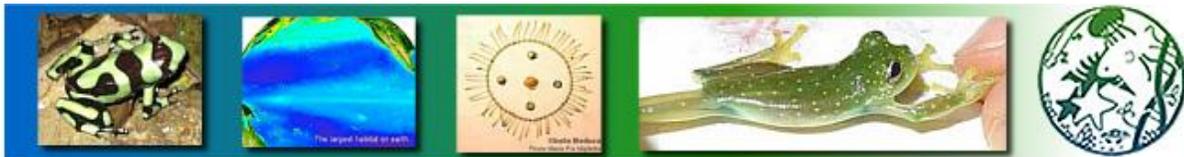
SICB symposia are an important part of the

society meetings and also the society publication, *Integrative and Comparative Biology*, since the contents of *ICB* come from symposium topics. Co-organizing a symposium can be a fun and productive way for students and postdocs to participate in the society. It is a great way to make sure there is a whole day devoted to a topic that really interests you during a meeting. You are able to invite people whose research you have admired from within the society. Also, one of the goals of symposia is to bring in new people to SICB. So you can invite people doing exciting research in your field who do not normally attend the SICB meetings. Personally, the whole organizing experience has been a great way for me to meet new people and also get to better know some long time SICB members in my field. Below I have listed the major sections of the symposium application form, and I include a little information from my recent experience co-organizing the Bioinspirations symposium in Salt Lake City with my friend and fellow postdoc, Brooke Flammang.

**Start early!** The deadline for symposium proposals for the 2013 San Francisco meeting is August 19, 2011. Planning something this far in advance is a little difficult to fathom for students and postdocs because we change a lot (as scientists and our locations) in short periods of time. But you just need to make the symposium a permanent part of your life for a couple of years.

**Symposium rationale:** Why is this topic important to your field? Why is it an issue that needs to be addressed in a timely fashion? It is also useful to speak with your advisors, mentors, and other colleagues to get ideas. *Steve Deban* your DCB Program Officer is also an important resource when thinking about your topic.

**Contact your Program Officer!** Decide if you think this is a Society-wide or divisional proposal. Email Brian Tsukimura (the SICB program officer; [ProgramOfficer@sicb.org](mailto:ProgramOfficer@sicb.org)) about Society-wide interest in your symposium topic. It is also impor-



tant to get in touch with your DCB PO (Steve Deban; [sdeban@usf.edu](mailto:sdeban@usf.edu)) as well as the PO of any other division that might have an interest in your topic. The PO will be able to guide you in many ways through this process!

**Timeliness of the symposium:** Why is the symposium topic an important topic now? Why is it important for the direction your field is headed in?

**Recent symposia on a similar subject:** How many similar symposia have been run in recent years? How many are currently planned? Where were those taking place?

**Program outline with sequence of eleven speakers.** This is where things get tricky. Who do you invite and what sort of commitment will you get from them in July of 2011 (before your proposal is due) to give a talk in January of 2013? Start emailing people early. Decide who can definitely *NOT* attend and who *ARE* your potential attendees.

It is also good to remember that you can have more talks and posters on the subject by running complementary sessions.

**Publication plans:** You will need to contact the editor of *Integrative and Comparative Biology*, Hal Heatwole ([Editor@sicb.org](mailto:Editor@sicb.org)), to see if he would be interested in your topic. *ICB* has first right of refusal to publish the symposium so do not plan on submitting the proceedings of your symposium anywhere else before making sure you talk to Hal.

**Outline plans for obtaining outside funding.** Funding can come from a number of sources. You can contact journals in your field and other relevant organizations that might be willing to give you some funding. Trying to secure outside funding is an important part of the process. You must apply for outside funding for your symposium to be eligible for registration fee reimbursement from SICB. NSF is also a

good place to apply for symposium funding, but their deadline is early. For the 2013 meeting, the NSF deadline will be around March 1<sup>st</sup>, 2012.

<http://www.nsf.gov/bio/ios/confworkshopguidance.jsp>

**Symposium Papers.** Realize that the symposium papers are due Jan 31, 2013, just a few weeks after the annual meeting ends. This portion of the organization process is what people refer to as 'herding cats.' As the organizer you need to make sure your speakers are getting their papers submitted on time and be in contact with the Hal, the *ICB* editor, when other little issues pop up.

Other potentially important things to consider:

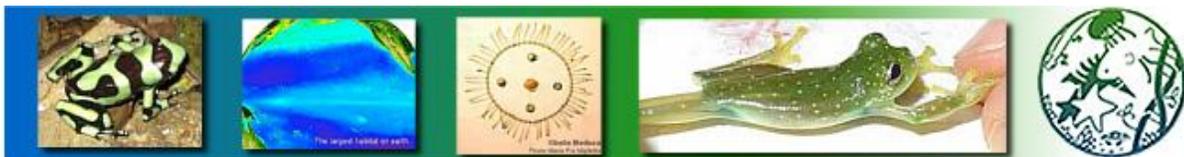
**Work with an awesome co-organizer.** You will all have more fun writing the proposal, grants, and overall organization if you work well together.

**Keep in contact with your speakers.** Make sure they know where you are at in your funding process. This can be important for those speakers who may need to secure meeting funding independently.

This is the link to the application and direction on the SICB website. Additional information and email addresses can be found here:

<http://www.sicb.org/meetings/2013/callsymp.php3>

Please free to email me ([mepporter@vassar.edu](mailto:mepporter@vassar.edu)) if you have any questions. I hope you are all having a fantastic 2011 and good luck organizing!



### Minutes of the Division of Comparative Biomechanics business meeting, January 4, 2011

Bob Full, the Division Chair, opened the meeting with a brief report on numerical trends within DCB. Four years ago the division was created; it started with 198 members, and now the official count is 538. A point of pride is that more of our new members consist of students and postdocs and new faculty members than any other division.

Last year's meeting in Seattle was very successful for DCB, which sponsored two symposia: "Mechanics without Muscle: Evolutionary Design of Macrophytes," organized by Patrick Martone, and "Evolution of the Fish Body Plan," organized by Jeff Walker (cosponsored with DVM). This meeting shows an even stronger showing by our Division. Total registration for the meeting was 1149, making Salt Lake City the 3<sup>rd</sup> largest meeting. There were 1082 contributed papers, and 11 symposia. DCB sponsored three symposia: "Bioinspiration: Applying Mechanical Design to Experimental Biology," organized by Brooke Flammang and Marianne Porter, "The Biomechanics and Behavior of Gliding Flight," organized by Robert Dudley, and "I've Got Rhythm: Neuronal Mechanisms of Central Pattern Generators," organized by Duane McPherson. At the Salt Lake City meeting, there are 32 sessions related to biomechanics, with 171 oral presentations and 32 posters – the largest number of papers and posters since we started the Division.

At the SLC meeting, there were 41 competitors for the DCB Best Student Paper/Poster. Jake Socha chaired the judging committee; we thank him and the rest of the judges for all of their efforts.

Bill Zamer of NSF addressed the members present. He revealed that NSF does not have an appropriation from Congress – it is operating on a continuing resolution until March. That means that NSF has 85% of the funds it had last fiscal year until a budget gets approved. In FY 2010, for the Physiological and Structural Systems

Cluster, the overall success rate for biomechanics-oriented full proposals was 16.5%.

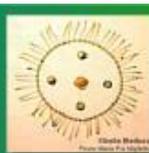
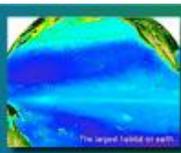
Zamer then discussed the Grand Challenges workshop – NSF wants organismal biologists to tell it where science is going, and what we need in order to do the studies that we need. He encouraged everyone to please participate and help set the direction of NSF. He sees this as particularly important for integrative organismal biology. The American Physiological Society is running a Grand Challenges workshop in DC in April – he encouraged everyone who can to attend their Grand Challenges workshop.

Another NSF program that Bill Zamer spoke about was the RCN (Research Collaboration Network) program, which is evidently very underutilized. The program aims to coordinate activities among researchers than may not normally talk to each other, but should (for example, biologists and engineers). RCN grants can support travel between labs, procurement of common equipment that may be shared, common training, and coordination of research efforts. It does not support bench or field work associated with a single lab. Information describing the program may be found at

<http://www.nsf.gov/pubs/2011/nsf11531/nsf11531.htm?org=NSF>.

Bob Full mentioned the two current IGERTs that are in the field of Biomechanics: one administered by Melina Hale at the University of Chicago, focusing on motor systems, and the other at UC Berkeley under the direction of Bob Full, on Biological and Bio-inspired Motion Systems Operating in Complex Environments. We should all encourage our best students to apply.

The most contentious point of the entire business meeting was then raised by Bob Full. At the first Executive Committee (ExComm) meeting at the Annual Meeting, a proposal was heard to institute Society-wide divisional dues. In order to support more divisional autonomy, ExComm will support instituting a mandatory \$5 per year charge. Individual Divisions can charge more than \$5 if they want to, but \$5 is the minimum. Each SICB member has to select a primary divi-



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sion that the dues would be applied to. Division Chairs have discretion on what the funds are used for. This issue would be revisited on Friday at the last ExComm meeting of the meeting. Bob asked for comments on the proposal.

Sharon Swartz spoke to oppose the mandatory charge, because it requires that each member has a primary divisional affiliation. The Society has just finished a multi-year painful process that got rid of the primary divisional affiliation, allowing everyone to choose as many divisions as they wanted. She thinks this a step backward.

Bob Full answered a question from the floor asking, Is this helpful for the society? He said that wasn't the major issue – it was more of an accounting issue. One proposal considered by the ExComm was that the dues would be divided proportionally according to division membership.

At that point, the SICB Society Officers entered and introduced themselves. Rich Satterlie, the outgoing Society President, reminded the members that Spring elections need candidates, and asked folks to attend the SICB business meeting. Bob Roer, the new Treasurer, introduced himself and also asked members to attend the Society business meeting. Brian Tsukimura, Society Program Officer, encouraged us to come up with great symposia, and work with Steve Deban, our Divisional PO. SICB is looking for proposals for the San Francisco meeting in 2013; these are due mid-August.

The Society Officers asked for comments and questions. There were positive comments on how much space there was between poster boards at the poster sessions. The Society Officers then left the room.

The discussion on divisional dues then resumed. Marianne Porter suggested that members could choose divisions as they do now, and then select which division(s) to give money to. Bob Full said there was some problem with designating donations, but that Brett Burk would be able to handle all the financial wrangling. Chris Marshall seconded

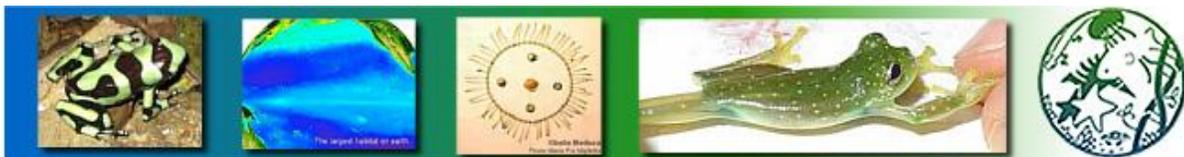
what Sharon Swartz said. Bob Full asked for a vote on the proposal (\$5 charge, pick primary division). Bob said it will make things better for divisions. There was overwhelming opposition to the motion.

Bob Full then said that the other major issue discussed at the ExComm meeting was broadening participation. Cheryl Wilga, representing SICB's Broadening Participation Committee, said that this year the committee has made travel awards to support students, postdocs, and new faculty (assistant profs) attending. 28 awards were made, and all but one person came. Cheryl also mentioned that there was a Broadening Participation social, and two workshops at the meeting.

Bob reminded the members that there are around a half-dozen minority national societies that have annual meetings. We'd like those students to come here to SICB. We need to reach out to those societies and students. Most undergrads who go to the meetings are juniors and seniors looking for grad schools. We need to go to the meetings and tell those students that they're doing competitive work and could come to any of our labs and do well. You can get information from Bob if you are interested in attending those meetings, or in serving as a mentor to the students and profs from those societies who come to SICB.

Bob then revealed that we have our first Carl Gans award winner! The Gans award is structured as an annual prize given either to a distinguished young investigator (must have earned their PhD within 7 years), or for the single best contribution to the biomechanical literature during the previous year. Bob, as the Division Chair, appointed a selection committee, and they found a winner. The winner will be announced at the SICB Business meeting, so everyone from DCB should attend and show their support.

Steve Deban, the Divisional Program Officer, spoke next. He said we've got ~270 contributed papers and posters in biomechanics, representing very diverse topics. Steve worked with Rick Blob from DVM to



schedule the talks and posters; they tried to arrange things so there was something for everyone every day, and minimum of conflicts in sessions. Steve asked the members to tell him if you like things, and if you like where your talk is. If you don't, be aware that when you select keywords when submitting your abstract, pick the right ones – the first keyword is the most important. Pick keywords that will help the POs in putting the right talks together. Regarding the complaint that, "Thursday is packed, and it's impossible to see everything!," he said he knows that already...

Steve urged all DCB members to attend the SICB Business Meeting, and also reminded everyone of the multidivisional social (DCB, DVM, DEDB, DSEB) on Wednesday evening, and the dessert social in honor of students and postdocs.

Steve then brought up symposia. At the SLC meeting, DCB sponsored or co-sponsored three symposia – "I've Got Rhythm," "Biomimetics and Bioinspiration," and "Gliding Flight." For the 2012 meeting in Charleston, SC, DCB is sponsoring two symposia dealing with computational methods and approaches. For the 2013 meeting in San Francisco and beyond, Steve wants us to send him our ideas. The deadline is August 19, 2011 for symposium applications for the San Francisco meeting.

Bob Full questioned Steve about having the full day at the end of the meeting rather than ½ day, as it has been for many years now – was that easier, in terms of scheduling talks? Steve said he didn't have any comparison, because it was his first year as Program Officer, but that he thought it would have been harder with just a half day. Bob Full said that the society leadership wants feedback on how well the full day at the end of the meeting works. Rick Blob, Program Officer for DVM, said that in his opinion it was very helpful.

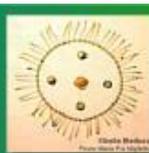
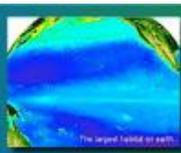
Sharon Swartz mentioned one other proposal, from Adam Summers, that we insti-

tute a new type of session starting next year: each talk during the session would be limited to 5 minutes. Each 20 minute block would thus be 3 talks plus 5 minutes for questions. Adam argues that this would work well in podcast format. The ExComm was positive on trying it for next year –it may appear in the options when you submit an abstract. You would be able to choose a 5 minute talk or a regular length talk when you submit the abstract. Frank Fish asked whether you could give a 20 minute talk, a 5 minute talk, and a poster, all at the same meeting. Sharon admitted that she didn't know whether that had been discussed.

Miriam Ashley-Ross, the Divisional Secretary, gave the next report. DCB needs to elect two officers this spring for the positions of Program Officer and Secretary. She urged the members to be willing to serve the division as an officer, since the division doesn't run without the officers. She also urged any members who are not currently listed in the Researchers Database to send her a short statement of research interests, and a photo of either an experimental animal or one that illustrates a technique used by the researcher. Finally, she thanked all the members who were serving as judges for the Best Student Paper/Poster competitions.

Marianne Porter, the DCB Representative to the Student/Postdoctoral Affairs Committee (SPDAC), spoke next. She asked for suggestions for topics for the newsletters. She also related that SPDAC is tasked with updating the career page on the SICB website; she asked that we give her comments on whether it is useful, what works well, and what needs to be changed. There were two SPDAC workshops during the meeting: one on mentoring, and one about issues facing new faculty. She also reminded the members of the dessert social on Friday evening in honor of students and postdocs.

Bob Full asked whether there were any announcements about courses, field station opportunities, or symposia. No takers. Was there any other new business? There was



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none.

Bob encouraged us to continue to evangelize the Division and make great symposia. He said that after Chairing the Division for five years, he was excited to turn things over to Sharon. He said that it had been a privilege to help getting the Division started, and that SICB is the right home for Comparative Biomechanics.

There being no further business or discussion, the meeting was adjourned.

### Elections

#### Candidates for Program Officer

##### Christopher "Darrin" Hulsey

**Current Position:** Assistant Professor, Department of Ecology and Evolutionary Biology, University of Tennessee



**Education:** Ph.D. Population Biology, University of California-Davis, 2004; B.S. Zoology & B.A. Humanities, University of Texas-Austin, 1997

**Professional Experience:** Postdoc in Developmental genetics and functional morphology of African cichlid fishes, Georgia Tech-Atlanta, 2005-2008; Postdoc in Phylogenetics and rates of evolution, University of Tennessee-Knoxville, 2004-2005.

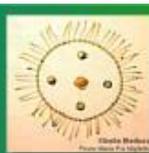
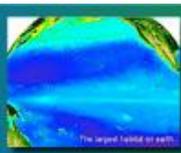
**SICB Activities:** I have attended eight of the last ten SICB meetings. I also co-organized a successful symposium at the Boston SICB in 2009 entitled "Genomics and Vertebrate Adaptive Radiation: A Celebration of the First Cichlid Genome".

**Other Memberships:** American Society of Ichthyologists and Herpetologists, Society

for the Study of Evolution

**Research Interests:** I study the evolution of complex phenotypes and concentrate on the feeding apparatus of teleost fish because it offers an ideal system for examining the forces that structure functional adaptation. For example, within cichlid fishes, the group at the center of my research program, a huge number of historically independent and convergent trophic phenotypes have arisen. This replicated evolutionary framework provides the power to comparatively investigate biomechanical mechanisms underlying feeding specialization. I examine the evolution of these predatory phenotypes with biomechanical models, phylogenetics, and comparative methods to elucidate patterns among species. To understand the processes generating trophic diversity, I augment these macroevolutionary inferences with experiments and genetics within species. My research program seeks to link disciplines such as functional morphology and development that are often studied on a macroevolutionary level into our thinking about population level processes.

**Goals:** As Program Officer for the Division of Comparative Biomechanics, I think the most important duties are effectively putting together the SICB meeting schedule and improving our division's symposia. I will continue to organize DCB talks at the meeting along conceptual lines, and believe the recent extension of the last day of the meeting was a big success and should continue as it increased attendance and provided more flexibility in scheduling. I will also emphasize that conference attendees giving talks try to identify their talks as complementary to a symposium as this generally reduces scheduling conflicts among collaborators. I will especially promote co-organized symposia between DCB and other morphologically focused divisions of SICB such as vertebrate morphology (DVM) and evolutionary developmental biology (DEDB). I will also push symposium organizers early in formulating



their plans to pursue support from external sources such as NIH and NSF.

### Laura Miller

**Current Position:** Assistant Professor, Department of Mathematics, University of North Carolina, Chapel Hill



**Education:** B.A. Biological Sciences, University of Chicago, 1995; M.S. Zoology, Duke University, 1999; Ph.D. Mathematics, New York University, 2004.

**Professional Experience:** 1996-1999, Teaching Assistant, Department of Zoology, Duke University; 1999-2004; Teaching and Research Assistant, Department of Mathematics, NYU; 2004-2005, Wylie Postdoctoral Fellow, Department of Mathematics, University of Utah; 2006, Burroughs Wellcome Postdoctoral Fellow, Department of Mathematics, University of Utah; 2007-current, Assistant Professor, Department of Mathematics (since 2007), Curriculum in Bioinformatics and Computational Biology (since 2008), University of North Carolina, Chapel Hill

2004-2005, Wylie Postdoctoral Fellow, Department of Mathematics, University of Utah; 2006, Burroughs Wellcome Postdoctoral Fellow, Department of Mathematics, University of Utah; 2007-current, Assistant Professor, Department of Mathematics (since 2007), Curriculum in Bioinformatics and Computational Biology (since 2008), University of North Carolina, Chapel Hill

**SICB activities:** Divisions of Comparative Biomechanics and Invertebrate Zoology; Meeting Presenter, 12 of past 14 years; Student Presentation Judge several times; Symposium Co-organizer - Combining experiments with modeling and computational methods to study animal locomotion (Charleston, SC, January 3-7, 2012).

**Other memberships:** American Physical Society, Society of Mathematical Biology, Society for Industrial and Applied Mathematics, Biophysical Society, Association for Women in Mathematics

**Research interests:** Fluid dynamics of

feeding, swimming and flying; computational physiology; mathematical biology. One focus of my research group is to investigate fluid dynamic scaling effects and the resulting implications for organisms as they grow or shrink in size over evolutionary or developmental time. Our group has focused on several model systems: flight adaptations in the smallest flying insects, Reynolds number limits for jet propulsion and pulsatile feeding, and mechanisms of blood pumping during development of the embryonic heart. A new direction in our group is to construct mathematical models that coupled neurobiology, muscle mechanics, and fluid dynamics to understand how small changes in tissue physics can result in large changes in performance at the organismal level.

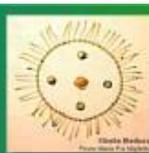
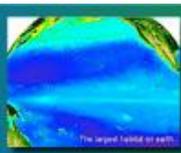
**Goals statement:** I attended my first SICB meeting in 1997 as a graduate student in Zoology and have attended every year since with the exception of two years when I was working on my Ph.D. in mathematics. One of SICB's unique strengths is that it provides a friendly atmosphere for those interested in comparative biology from many disciplines, even those that are seemingly far removed such as engineering, physics and mathematics. As Program Officer for DCB, I would work to increase participation in the Division, both within the biological sciences and beyond. I will also work to increase participation between the Divisions, with a particular focus on supporting symposiums that integrate biomechanics with ecology, evolution, neurobiology, and behavior.

### Candidates for Secretary

#### Tim Higham

**Current Position:** Assistant Professor, Department of Biological Sciences, Clemson University, Clemson, SC

**Education:** Ph.D. University of California, Davis, 2006; M.S. University of Cincinnati, 2003; B.S. University of Calgary, 2000



### Professional Experience:



2008-present: Assistant Professor, Department of Biological Sciences, Clemson University (courses taught include Comparative Physiology, Ichthyology, Herpetology); 2006-2008: Postdoctoral Fellow, Concord Field Station, Harvard University; 2008: NSERC postdoctoral fellowship (declined); 2006: *Journal of Experimental Biology* Traveling Fellowship & William S. Hoar Award for best student oral presentation at the annual meeting of the Canadian Society of Zoologists

**SICB Activities:** I have attended and presented at 10 annual meetings (first meeting was in Chicago, 2001) and several regional DVM meetings (Northeast and Southeast). Specific activities: 2010: Session chair (2 sessions), DVM Best Student Presentation committee, and judge for DCB Best Student Award competition; 2009: Session chair; 2007: symposium co-organizer (with P. Wainwright), "Evolution of Feeding Mechanisms in Vertebrates"

**Other Memberships:** International Society of Vertebrate Morphology (ISVM), Canadian Society of Zoologists (CSZ), American Physiological Society (APS), Society for Experimental Biology (SEB).

**Research Interests:** Comparative biomechanics of feeding and locomotion, functional morphology, muscle physiology, hydrodynamics of suction feeding in fishes, and

motor control of tail autotomy in lizards.

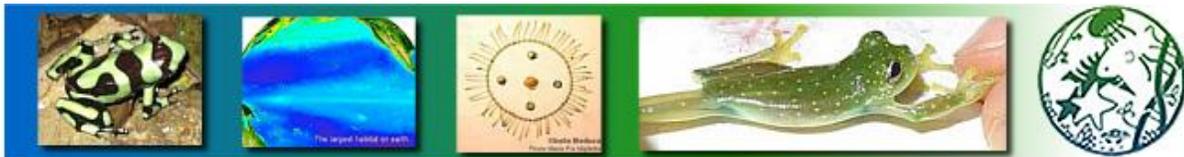
**Goals:** I am thrilled to be nominated for the position of secretary. DCB is an outstanding division that has grown immensely over the past few years. Comparative biomechanics is extremely integrative and benefits from strong connections between diverse scientific disciplines. If elected, I will work very hard to expand the membership of DCB, work closely with other officers in the division, and enhance the exposure of the division. One way to accomplish the latter is by increasing the number of contributions to the DCB researchers database (currently at 19 entries). This is an outstanding tool for prospective students, potential collaborators, and members of other divisions and societies who wish to learn more about our division. Expanding our ties with other societies, such as the American Society of Biomechanics, is also a goal that I will pursue if elected. In addition to being the Official Cat Herder (Ashley-Ross, 2010), I see the secretary as an advocate for comparative biomechanics. I will strive to increase the number and quality of regional DCB meetings, maintain and improve the student competitions, and convey information and news to the members of the division. Maintaining the superior work by Miriam will be no easy task, but one that I am confident and excited about!

### Tonia Hsieh

**Current Position:** Assistant Professor of Biology, Temple University, Philadelphia, PA

**Education:** Ph.D. Harvard University, Cambridge, MA, 2005; A.M. Harvard University, Cambridge, MA, 2002; B.A. University of California, Berkeley, 1999

**Professional experience:** 2010-Present: Assistant Professor, Temple University, Philadelphia, PA; 2008-2010: Assistant



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Professor, University of Florida, Gainesville, FL; 2007-2008: Post-doctoral Research Associate, Harvard University, Cambridge, MA; 2006-2007: Post-doctoral Research Associate, Brown University, Providence, RI

**SICB activities:** Oral and poster presentations at annual meetings since 1999; 2008-2010: SICB Student Support Committee;

2009-2010: DCB Best Student Paper Award Judge; 2003: Recipient of a SICB Student Travel Fellowship

**Research interests:** (1) Evolutionary morphology; (2) comparative biomechanics of terrestrial locomotion; (3) neuromechanical control of stable locomotion on complex terrain.

**Goals statement:** SICB has played a central role in my scientific development, starting with my first meeting as an undergraduate in 1999. What makes this society and its meetings unique are their unwavering dedication to promoting and training students. The formation of DCB has created a forum through which we can now create symposia focused on biomechanical principles applicable to a diversity of taxa. This has also continued to make SICB annual meetings one of the most valuable conferences for those interested in organismal biomechanics. Since its formation, I have been thrilled to witness the rapidly rising membership and activity of this division, and would be equally thrilled to help in promoting the mission of DCB. If elected as Secretary, I look forward to putting together the

Newsletters, taking notes at the business meetings (which I'm embarrassed to admit my geekiness in actually enjoying them – although I will never admit it in person!), and finding new ways to continue increasing the visibility of our division both within our society and also to our existing members. Ideas for doing so could include developing online resources that would be useful to all of us during the year rather than just during the “meeting season,” or more explicitly working with a division such as DVM to hold regional conferences during the year.