The Matrix Letter

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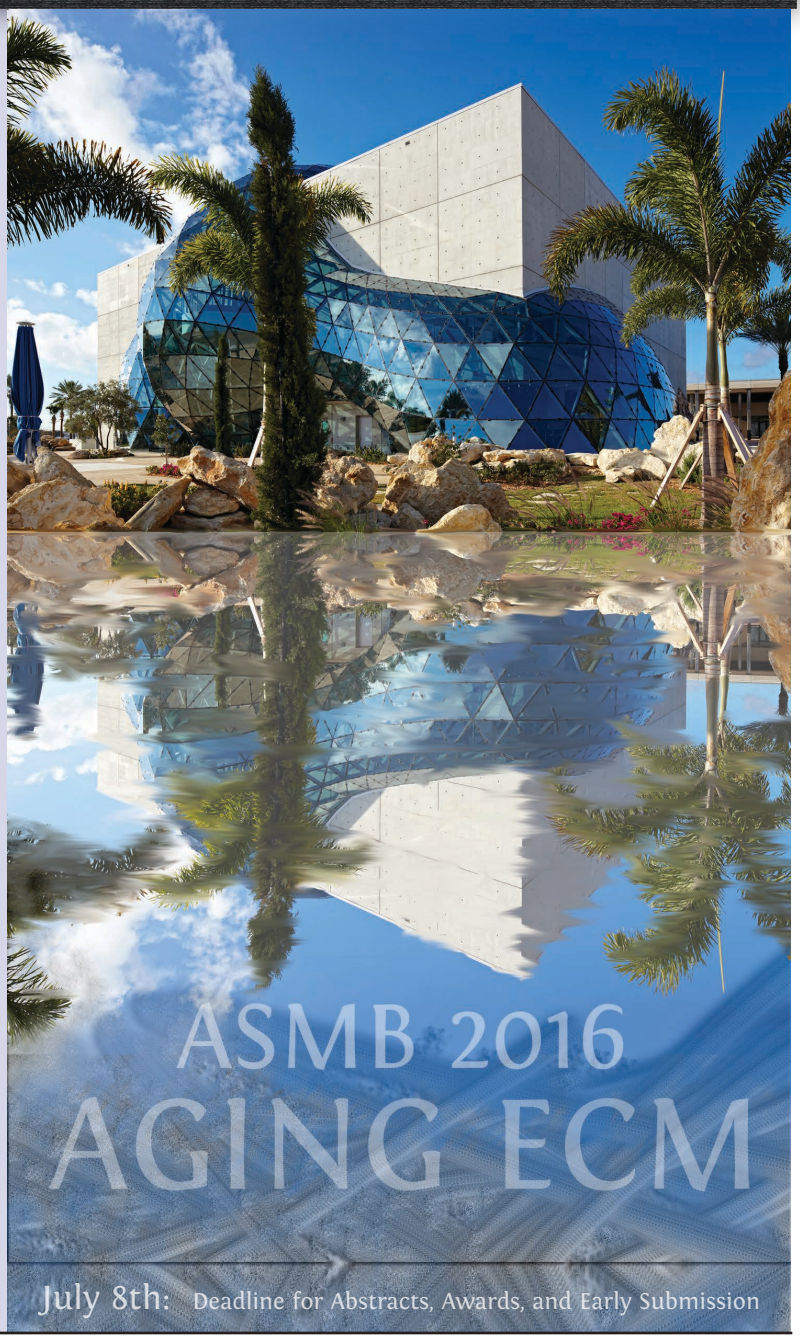

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at the Bayfront Hilton
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BANQUET AT THE DALI MUSEUM NOV. 15TH

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- CCN Society

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- ECM in Vascular Development
- Mechanisms Of Novel ECM-Modifying Proteases: Focus on Substrates

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Signaling from Within and Without
Judith Campisi, *Buck Institute for Research on Aging*

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3. Tumor Microenvironment
4. Basement Membranes
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11. Mechanobiology
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13. ECM in Wound Healing and Skin Diseases
14. ECM in Morphogenesis
15. ECM in Exosomes: Intercellular Communication

Featuring 60+ talks selected from abstracts.

SUBMISSION DUE JULY 8TH

New this year – *Poster-Only Sessions.*
Including ECM and Metabolic Disease, Tissue Engineering, Stem Cell Niche, Novel Mechanisms of Protein Regulation, Matricellular Proteins, Therapeutics for ECM-related Diseases, ECM in models of Aging, *AND More!*

Mentoring Breakfasts Return. *Don't forget to sign up for a mentoring breakfast early. They always fill up!*

Get all the information as ***www.ASMB.net***

ASMB 2016 Features 15 concurrent sessions!

There are many opportunities to share your resesarch. Each session will choose several talks from abstracts.

More than 60 talks will be selected from the submitted abstracts!

ASMB Workshop 2017

Extending the ASMB meetings to include activities in the off-years has been an unrealized goal of the executive council for many years. Now, it is a reality.

Beginning in 2017, we will have small focused meetings sanctioned by ASMB. These meetings are designed to be smaller, workshop type of events that focus on critical subspecialties within matrix biology.

Each 'odd' year, ASMB will put out a call for concepts (as we did by email this year). One will be selected by the executive council for sanctioning and further development. See the letter from the President for more information!

ASMB is pleased to announce our inaugural workshop:

BASEMENT MEMBRANES

July 12-14, 2017. Vanderbilt University, Nashville, TN.
Event Organizers:
Roy Zent (Vanderbilt University)
Jeffrey H. Miner (Washington University)

Please save the date.
More information coming soon.

Letter from the President

Dear Fellow Matrix Biologists:

I wish you a productive, successful and enjoyable 2016 and like you, I look forward to the many exciting new discoveries and advances that the year will bring.

Our 2016 conference will be held in St. Petersburg, Florida from November 13-17. Joanne Murphy-Ullrich, ASMB President-Elect, and the 2016 Organizing Committee have put together a stimulating conference program on the theme of The ECM Microenvironment: A Regulatory Force in Aging and Disease. I encourage you to visit the conference website and to begin to think about your attendance at the conference and the abstracts you may wish to submit. Conference registration and abstract submission will be available online in the near future. Please share details of the conference with any colleagues who have an interest in matrix biology and cell-matrix interactions and urge them to attend the conference and join ASMB.

In addition to the 2016 Biennial meeting, ASMB is pleased to announce a new initiative, namely, a workshop-style meeting to be held for the first time in 2017. It is intended that these shorter, sub-specialty meetings (to be known as the ASMB Workshops) will also be held biennially, but in odd calendar years, and on a different topic each time. The topic of each workshop will be selected by the ASMB Council from proposals submitted by the prospective co-organizers in the prior year. ASMB Workshops will provide a forum for intense, productive interactions within relatively narrow fields and will be attended by both established scientists and scientists-in-training. However, they are intended to substantially comprise presentations by scientists-in-training and young faculty.

Letter from the President (con't)

An ASMB Workshop can be proposed on any topic that is of relevance to extracellular matrix and cell-matrix interactions, and does not already have an established conference. Please think hard about whether there is a need for a conference in your field, or for an emerging topic. The RFP information, with application guidelines, will be posted at ASMB.net.

What was the motivation for this initiative? The traditional ASMB biennial conference has a broad scope, encompassing diverse aspects of matrix biology. We have now held several of these with much success, but with an inevitable fading of engagement of ASMB with its members in the "off years". We feel that the off year presents a hitherto unused opportunity for us maintain and enhance the energy level in matrix biology. We feel it would benefit the society and its membership if we were proactive in promoting emerging topics or those that may not have a regular conference of their own, such as a Keystone, FASEB or Gordon conference. The low budget, short-duration model we propose in the guidelines was specifically developed to make the workshops more easily accessible and affordable, as well as intensely focused to "jump-start" fields that are primed for further momentum.

One of the goals of the ASMB is the professional development of scientists-in-training. Both the Biennial Conference and the ASMB Workshops emphasize presentations by young scientists, offer ample opportunity to display posters, to share the excitement of discoveries and to interact with other scientists. The 2016 ASMB conference offers mentoring breakfasts as well as special interest sessions on topics proposed by graduate students and fellows. We need strong participation by our youngest members for the continued health of the matrix biology field.

Membership has many benefits, one of which is a discounted conference registration fee (for the ASMB conferences as well as the workshops). Another prime benefit of membership is eligibility to participate in the ASMB awards program. Members are eligible for nomination for the Junior, Iozzo, or Senior Investigator awards. Member abstract submissions are considered for travel awards to support presentation at the conference, and when ASMB partners with other societies, travel awards may be available for our members to attend their conference. The ASMB Newsletter, edited by Dwayne Stupack, is emailed to all members on a quarterly basis. Please send us more content for inclusion, including news about upcoming conferences, relevant information from other professional societies, job openings, news and publications from your lab, and visually appealing images from your work. We hope that our conference activities and newsletter will continue to help build a strong camaraderie among matrix biologists.

One of the highlights of our Biennial Conference is recognition of extraordinary merit within our ranks. Congratulations to our Junior and Senior Investigator Awardees Vincent Tagliabracci and Renato Iozzo, and to the Iozzo Award winner, Tom Barker (who is interviewed in this edition of the Matrix letter). We look forward to congratulating you in person and to hearing about your exciting work at the conference later this year. We welcome Karen Posey and Tom Barker on their election to the ASMB Council. Thank you for your willingness to serve ASMB. We hope to involve many more of you in steering the society to prosperity in future years. We also welcome input from the membership at large. Finally, I want to thank all our officers and especially, our Executive Director, Kendra LaDuca, who works hard behind the scenes to keep the ASMB running smoothly.

With all best wishes,
Suneel S. Apte, MBBS, DPhil
ASMB President

An Interview with Thomas Barker

The Matrix Letter recently chatted with Dr. Thomas Barker. This was not an easy thing to do, as Tom is moving his lab from Georgia to Virginia, and is a newly elected councilor who sits on the ASMB executive. A past recipient of the Junior research award, this year, he will also be honored as the second recipient of the Iozzo award for mid-career scientists.

ML: Tom, you've enjoyed great success in the field of matrix biology. What drew you to the field initially?

TB: Entering graduate school I'm not sure I knew exactly what I wanted to do. Certainly matrix biology was not on my radar. I joined the Biomedical Engineering Graduate program at the University of Alabama at Birmingham and the two core strengths of that program were cardiac electrophysiology and biomaterials. My chemistry and physics background and interest in "building something" lead me to biomaterials. Those were the days of tradition tissue engineering, meaning the thought that one could design and build tissues and organs on the benchtop using engineering principles with materials and cells as our building blocks. The more I dug into what the field was doing at the time the more concerned I became that we generally lacked a sufficient understanding of how cells interact with their surroundings. As it turned out, I discovered that UAB had an outstanding collection of world-renowned faculty including Joanne Murphy-Ullrich, John Couchman, Anne Woods, and others, including my PhD advisor, James Hagood, that comprised the Cell Adhesion and Matrix Research Center, thus my journey began.

ML: So that was the beginning. Why does matrix biology continue to hold interest for you?

TB: As a bioengineer, the matrix is, in my humble opinion, the most wonderfully complex material in existence.

ML: Would you like to expand on that thought?

TB: Sure. Matrix has the power to instruct cells - to tell them what to do and who to become, yet is itself a product of those same cells. One could spend their entire career, and many of us do, focused on just one aspect of the matrix. Now, with the increased interest and scientific activity in the physics of biological systems we now appreciate that the mechanics of the matrix mater to resident cells, not just the biochemistry; that cells must perform a complex integration of the biochemical and biophysical properties of the matrix. We are finding that even the biochemistry of the matrix changes in response to the physical manipulations of the resident cells, not just the biochemical species being secreted. I find this absolutely fascinating.

It's like the relativity of simultaneity in Quantum Physics (yes... pulling from my physics undergrad), the state of the matrix, and our ability to define it, is dependent on the context from which we make our observations, and indeed the context of the physical manipulations by the cells which are inherently transient. It means we are charged with understanding not only the biochemistry of the soluble forms of matrix proteins, but the polymers they form, and the polymers under force. It can boggle the mind thinking about how much remains to be uncovered. Considering how critical the matrix is to instructing tissue homeostasis and disease, I feel motivated each and every day. We have just scratched the surface of our knowledge on the matrix and there are a seemingly infinite number of compelling questions to be asked and answered that will impact our ability to do things like instruct tissue regeneration, therapeutic approaches to fibrosis, understand resistance to cancer treatment approaches like chemotherapy, and a host of other impactful applications.

ML: Aside from a strong background in physics, your development has followed a different path than a lot of US-born researchers, at least in that you've done research in Europe. Was it a similar experience to the US?

TB: I love getting this question. My experience in Europe was so impactful to me that I spend probably too much time helping students find opportunities overseas, including a joint study and work abroad program I ran for a few years. If I could sum up the take-away from my experiences there it would be that there are a multitude of ways to skin the same cat. I found that the way the labs worked and the way the scientists worked in Europe was different, not better or worse, just different. Of course, I was in a lab in Switzerland so each country has its own dynamic, but I found ways to work more productively in less time with a more sustained and balanced approach. My experiences in the U.S. were, and have been, that we tend to work on a 'peak-and-valley' system, which can be good and bad. When things are working you want to leverage the momentum you have, but the negative is that when you are in a valley and need to give yourself time to think and contemplate we don't always know how to slow down. I have to remind myself when we are in a valley with our work to not fill my day with silly tasks that satiates my need to accomplish something tangible. Because the work environment was more balanced and even-keeled in Europe I feel that my creativity was more active on a regular basis.

ML: Has it left you with any lasting contacts, or impressions?

TB: Be balanced and give yourself time to mentally digest your scientific findings in the context of the broader field and their impact. Don't fill your day with busy work but focus on the task(s) at hand, even if it is to sit quietly and think. Most of my long-lasting contacts in Europe were other postdocs at the time, some of whom are in the U.S. now. We are on each other's grants and also rely on each other for personal and professional advice.

It was an amazing time at the École Polytechnique Fédérale de Lausanne (EPFL). The Faculty of Life Sciences was in the first few years of existence so we were a small group that formed very strong bonds; one of my wife's very best friends was made there and is still in the area. Thankfully some of the students, postdocs and young faculty are still in Europe. We certainly have places to visit when my wife and I take the kids back to Europe.

ML: Tom, you are the only ASMB member to ever receive two of our awards. The Iozzo award and the Junior Investigator award. That's really a fantastic achievement. How does something like that happen?

TB: Well, I *am* such an amazing scientist....

(**ML+ TB:** *laughing*)

TB: I'd like to say it has something to do with me, but in all honestly it speaks far more to the tremendous effort of my students and postdocs and to the support I've always received from my senior colleagues in ASMB. I remember going to the very first ASMB meeting in Houston. It was when I was transitioning from my PhD studies to my first postdoc position with Helene Sage in Seattle. Helene and Joanne (who was on my PhD committee) introduced me to as many folks as they could. Even then there was such a vested interest in cultivating the young matrix biologists' career by getting them engaged and comfortable with the senior scientists. I feel like I was welcomed into the society at its initiation and the support has never waivered.

In the lab I try to cultivate a community of collaborators and push students and postdocs to think about whether the questions they are asking are worthy of the inordinate amounts of time they will spend on them... will they make a meaningful impact. It doesn't mean a publication in Nature or Science, it means pushing the field forward in even a small, but meaningful way. My research success rests on the shoulders of the committed students and postdocs in my lab that embrace this philosophy.

ML: It must be particularly special to win this year, concurrent with Dr. Iozzo finally receiving the senior investigator award.

TB: YES!!! I remember asking Helene as a postdoc in 2004 why my abstract was not picked up for a talk at ASMB. Her comment was, "You have to earn it. There are lots of good scientists here." Perhaps it is just the stars aligning, but it feels particularly special not receive the Iozzo award AND to give a talk in the same awards session. Renato, as many other senior scientists in ASMB, has been very supportive of our work and of my participation with the journal.

TB: As one of the founding members of ASMB, he is long past due for the Senior Investigator Award. To be giving a talk in the same session as him is both exhilarating and humbling... and nerve-racking.

ML: I'm not certain that also qualifies as an award, but you were just elected to council in the recent round of elections. What inspired you run for ASMB executive?

TB: As you are now getting a sense of, ASMB is my 'home'. I've been involved behind the scenes on a few initiatives, like the ASMB-TERMIS relationship which started out of a conversation in a restaurant with a number of ASMB and TERMIS members during the 2008 meeting which coincided with TERMIS' meeting in La Jolla that year. I've felt for some time that it was important for me to get more visibly involved and try to make a bigger impact on the growth of the society. Once 'the powers that be' decided to let me keep my job (i.e. tenure) I decided to work toward being on the ASMB council. We have such a strong and committed membership that it actually took a couple of election cycles.

MT: You've enjoyed a lot of success in Georgia. What inspired your upcoming move?

TB: The Georgia Institute of Technology has been a great home for the last decade. However, it was not where I thought I'd be when I decided to pursue an academic career. In fact, I remember telling my post-doc mentor at the time, Jeff Hubbell, that I thought I belonged in a medical school or a research institute. I think he said something like, 'I see you in an engineering school'. Of course it did not stop me from pursuing what I thought I wanted, but I also applied to a number of engineering schools with a strong interest in matrix as a biomaterial for regenerative medicine. GT offered and boasted a strong reputation in attracting some of the best students in Bioengineering so I went where the students were. The rest is history. I think my research is better today because I came to a place outside my comfort zone as a young faculty member. GT has been very supportive of both me and my wife, but over the past couple of years we both began to see some limits in what we could accomplish in the future at GT. My research has really become even more focused on the matrix and cell biology of fibrosis.

TB: I was invited to give a seminar at the University of Virginia and after my talk I think everyone I meet wanted to talk about fibrosis and matrix and how they need to tackle these things in their own work. I think we even sketched out a P01 and a couple of R01s on that first visit and I joined an existing grant at UVA on the topic a few months later. I guess you could say it was like my first interaction with ASMB, I just felt 'home'. UVA is at the beginning of a tremendous growth phase and has empowered me to help build a fibrosis initiative 'on Grounds' which is very exciting. They currently have 20+ faculty working in fibrosis or complimentary areas so I have a rich environment already. My wife will be the Director of Graduate Studies in the school of Engineering and Applied Sciences, so she too has room to grow and develop professionally.

ML: Are many people from your lab coming with you? Should younger people reading this consider sending you CVs?

TB: I have one young PhD student, two postdocs and a senior scientist coming with me. These guys have all embraced the philosophy of doing what needs to be done, rather than simply what can be done, so I'm lucky they've decided to join me! I definitely need ambitious and thoughtful scientists in the lab and I have room and resources to grow, so yes, please, send me your CVs...

ML: And family? Will the change work for everyone?

TB: Well, as I mentioned, I think my wife is getting the bigger promotion at UVA. She's moving from a departmental Director of Graduate Training position to leading the graduate studies team for all engineering programs in the School of Engineering Dean's office at UVA. We have two kids. Leo (3 y.o.) is 'going with the flow' while Finna (6 y.o.) asked that we move to a place that 1) gets more snow than Atlanta and 2) can have horses? Thankfully Charlottesville fits the bill, so we have no anarchy in the household... yet.

We are transitioning from one of the largest cities in the U.S. to a college town and surrounding rural community so there will be bumps. Thankfully the area is known for its outstanding chefs/restaurants, wineries, microbreweries, and calm Appalachian foothill views... those should smoothen out any major bumps!

Matrix Interactions

ASMB News and Announcements in Brief

ASMB Election Results

Congratulations to **Thomas Barker** *and* **Karen Posey** *on their election to the ASMB executive Council.*
Many thanks to all that stepped up as candidates in the election (Drs. Gill, Gould and Leask) and were willing to help serve ASMB. Thanks to the outgoing councilors (Bayless, Stupack) who Dr. Posey and Barker will replace.

2016 Travel Awards

Student and Post-Doc members apply for travel awards to attend the 2016 meeting in St. Petersburg! When you register for the ASMB meeting and submit an abstract, indicate that you'd like to be considered for a travel award. Several types of awards are available:

Travel Awards: Selected Talks

Travel Awards will be given to outstanding abstracts selected for oral presentation in one of the thematic concurrent sessions at the ASMB biennial meeting.

Diversity Travel Awards

This year ASMB will be awarding an additional three travel awards for diversity candidates. When submitting your application, please indicate if you would like to be considered for one of the diversity travel awards. Candidates who apply for this award will **also** be considered for the general travel awards but would not be awarded both.

Travel Awards: Poster Presentations

Five Travel Awards are selected onsite at each biennial meeting by a panel of judges who review the presented posters.
http://www.asmb.net/2016_awards.php

ISMB Travel Awards

ISMB provides financial support for young scientists (graduate students or postdocs up to 5 years after Ph.D.) in the form of international travel grants to allow them to attend major meetings in matrix biology anywhere in the world. Priority will be given to meetings directly supported by ISMB (such as the American Society for Matrix Biology biennial meeting.) For more information about ISMB Travel Awards, visit http://ismb.org/travel-grants-2.

Upcoming Events

June 11-14, 2016
Matrix Biology Europe
Athens, Greece,
http://www.mbe2016.upatras.gr/

June 24-July 1st, 2016
Signal Transduction by Engineered Extracellular Matrices,
Biddeford, Maine, USA
https://www.grc.org/programs.aspx?id=12911

July 17-22, 2016
Matricellular Proteins in Development, Health, and Disease,
Marriott West Palm Beach, Florida USA
http://www.faseb.org/src/micro/Site/MatProtein/Home.aspx

August 7-12, 2016
Stepping Across Disciplines to Spur Innovation in Musculoskeletal Biology and Bioengineering,
Andover New Hampshire, USA
https://www.grc.org/programs.aspx?id=10990

November 13-16, 2016
American Society for Matrix Biology
St. Petersburg, Florida USA
http://www.mbe2016.upatras.gr/

Abstracts due by July 8th!

December 11-16, 2016
TERMIS Americas
San Diego, California USA
http://www.mbe2016.upatras.gr/

ISACB 2016 Meeting - ASMB Participation Announced

ISACB 2016 Meeting - Sept 7th-10th 2016.
ASMB is pleased to announce a partnership with International Society for Applied Cardiovascular Biology for their September meeting in Banff. ASMB members Kayla Bayless and Scott LeMaire are invited speakers. For more information, please go to
http://isacb.org/biennial-meeting

Post Doctoral Positions

For students as well as for PI's who are looking to help their students find their next position:
http://asmb.net/careeropps.php.

Off the Presses:
Chloride "Switch" Critical for Collagen Scaffolding

Sodium choride provides the osmality of most of our laboratory salts, and provides two of the most common ions in nature. Who would have expected that such 'common currency' is critical to the formation of the extracellular matrix? But recent studies from Vanderbilt suggest that chloride plays a key role in the formation of the basement membrane. In particular, chloride signals the assembly of collagen IV "smart scaffolds," a critical step for subsequent basement membrane formation. This new role in establishing a "microenvironment" on the outside of cells highlights the importance of collagen IV in the evolution of animal tissues. It also provides novel insight into diseases that affect the basement membrane, and their potential treatments. Chloride has not previously been implicated in signaling- rather, its functions have been linked simply to its role as an electrolyte which helps maintain proper blood volume, blood pressure and acid-base balance.

The work was done in ASMB founding member, and Elliott V. Newman Professor, Billy Hudson's lab. It involved eighteen other scientists from several departments and research centers at Vanderbilt University, including the medical school. Four of the co-authors were participants in the "***Aspirnaut***" summer research program for high school and college students from disadvantaged backgrounds co-founded by Hudson and his wife, Julie.

The work highlights that we are still only beginning to appreciate ECM complexity. This is true of 'well characterized' components such as collagen IV, which is found throughout the animal kingdom. Universally, collagens provide tensile strength to epithelial tissues, tether diverse macromolecules and growth factors, and are bound by integrins and other cell surface receptors. For the past 45 years, Hudson and his colleagues have helped define the structure and function of collagen IV, which caps the standard collagen triple helix with a globule of amino acid molecules called the NC1 domain (that also associates in a trimer). Scaffold assembly is initiated when the domains of two assembled trimers interact.

A key early finding was the presence of chloride ion on the surface of the crystallized NC1 domain. That raised the improtant question as to whether it was playing a functional role in vivo, and might be key for the regulation of the assembly of collagen IV chains into scaffolds.

Through a series of experiments, chloride was shown to be required for collagen IV assembly on the outside of cells. Chloride binding to NC1 domains induces a conformational change critical for subsequent assembly. Since these binding motifs are found throughout the animal kingdom, the obvious inference is that the switch is evolutionarily ancient, and represents a fundamental mechanism of collagen IV scaffold assembly.

Accordingly, scaffold assembly was disrupted in fruit flies with a mutation in region of the NC1 domain responsible for chloride binding.

Strikingly, similar mutations in humans have been associated with stroke and with Alport disease, a genetic disease that causes hearing loss and lung and kidney damage. The findings underscore the message that an understanding of basic biology is also an understanding of disease mechanism.

Reference:

Extracellular chloride signals collagen IV network assembly during basement membrane formation. Cummings, C.F., et al. 2016. **J. Cell Biol.** http://dx.doi.org/10.1083/jcb.201510065

Recent reads in ECM biology:

Sonic hedgehog controls enteric nervous system development by patterning the extracellular matrix.
Nagy N, et al., . **Development**. 2016 Jan 15;143(2):264-75. doi: 10.1242/dev.128132. Epub 2015 Dec 16. PMID:26674309

In vivo confinement promotes collective migration of neural crest cells. Szabó A, Melchionda M, Nastasi G, Woods ML, Campo S, Perris R, Mayor R. **J. Cell Biol.** 2016 May 30. pii: jcb.201602083. [*Epub ahead of print*]

Editorial

Scientific Integrity & Productivity: The New Rigor is a Good Thing.

Excuse me while I break the fourth wall here.

Editorials, if done correctly, are valuable to the population they serve and a forum for their author to touch on significant issues of the times. They reflect personal views and their goal is to provoke thought. We don't want to touch on the same issue too frequently, because the idea is always to provide something new and interesting for our community to consider. But this is not unique to editorials, or to me. In fact, this is something we all do in our daily work. We seek new and interesting things for people to read, consider and reflect on. Constant innovations and alterations in method and technical approaches help to feed our scientific march forward. But it might be a good question to ask how this impacts the way science is done.

I 've been giving it some thought recently based on two different developments in the day to day operations of my own lab. The first was my own grant preparation, and a consideration of how the NIH will implement the new section on its grant proposals regarding transparency in science, which requires the validation of reagents and cell lines in the science that we do. This new section is meant to enhance rigor in science.

The second significant development was the recent editorial retraction of a paper in my own field (1). I admit I am not an innocent bystander in this process. I requested that the paper be recalled. The paper in question featured several panels of figures in which immunofluorescent antibody-stained cells were 'cut and paste' reproduced from a prior manuscript that originated from my lab (2). The figures were conveniently relabelled and republished as representing distinct molecules, but related to those in my own work. Its the surreal kind of thing you sometimes hear of, but don't believe could actually ever truly happen.

But they do happen.

The discovery prompted thoughts about all the implications of data fabrication. What if they were correct anyway? Did that validate them? I wrote to the journal and requested an investigation. The editors wrote to the authors, who absolutely denied any wrong-doing despite the rather clear evidence against them. Their denial eliminated any sympathy I might have had or any reluctance to push for corrective action, and we asked for complete retraction of the paper. After some negotiation, the editors agreed, but it still took much more than a year to have the retraction done. I saw it printed in the journal just this month. Pubmed does not yet acknowledge it, and follow up papers have been published.

I find it morbidly interesting that the authors have leveraged this early work into publishing in "better" journals. Less interesting, perhaps, is the fact that these authors have made it difficult for my lab to publish our own work in an environment where their findings are already noted. It has been damaging to our program.

Thinking about it in this way, the fabricated data has made real progress difficult to publish, and this is the inherent danger. Regardless of our initial sympathy, - and I know our membership is a sympathetic group- we must act quickly and strongly when this happens, or risk propagation of myth, with wasted time and money.

If one visits the Retraction Watch website, one can see several of the top ten retracted papers on retraction watch (http://retractionwatch.com) continue to be cited after they were retracted - and some have more citations after their retraction than they did before (http://retractionwatch.com/the-retraction-watch-leaderboard/top-10-most-highly-cited-retracted-papers/). The site is very interesting, and it hits home that this must be happening with some regularity, affecting many labs, to even warrant a web site with the activity documented. Pharmaceutical companies are perhaps right in their 'believe but verify' policies.

Given this backdrop of somewhat incomplete veracity/exaggeration, it becomes much easier to understand why the NIH might begin to ask for a new section on scientific rigor.

Editorial, Con't

It is not unreasonable to ask recipients of NIH funding for some measure of diligence in ascertaining the origins of their cell or rodent lines. I've received cell lines I thought were the original parental lines, but which ended up harboring an empy vector in them conferring antibiotic resistance. Similarly, I uncomfortably recall receiving a letter from ATCC on April 1st, 1998, explaining that my immortalized endothelial ECV304 cells were not actually endothelial cells. They were a type of bladder carcinoma (T24). I had been working with these cells for years, establishing expression mutants of different integrins, based on the premise that they truly were endothelial cells. Given the date on which I had received the letter, I even tried to determine who in my lab was playing such an elaborate April Fools joke on me.

But it was no joke. These things happen, but when they are done intentionally, they are truly detrimental to our trade. I think we can all benefit from an additional level of rigor in documenting that our cells are actually what we think they are. Nonetheless, one is not certain whether this is a real move by NIH to promote reproducibility of data, or whether it is just lip service to address an issue that we should accept as an inherent weakness in our pursuits. There is no doubt that this is a step in the right direction. However, it lacks teeth.

There is not yet a penalty to proposal scoring if this section is addressed in a 'cursory' manner. For the study section reviewers, it is technically not a scorable category. It may be with time, however. NIH may be simply phasing these sections in 'gently' to condition us. And it is definitely none too soon. Scientific misconduct is decades old.

Who do we hold accountable? If it is the PIs who ultimately sign off on most of the research, then it would also mean increasing your risk as you increase your laboratory size. Do we penalize success by doing this? Or do we simply acknowledge that there are limitations on each of us? The latter option may not ultimately be a bad thing, but it could mean restructuring our departmental models and our programs.

In the end, making errors in science, or outright cheating (such as in plagiarism and fabrication) costs us all. As much we all may sympathize with the career pressures felt at all levels of our profession, it is probably time we stopped 'forgiving' those who run errant of the system and started more standardized, regulated, sanctioning. The typical method to deal with this is via ad hoc committees within our individual institutions. It may be useful to develop dedicated bodies outside our institutions, or within our states, to do this. Extra-institutional bodies might be less benevolent, but would also be less swayed by indirect costs or prestige that a transgressor may have brought to an institution. They could impart true rigor.

I don't yet see clear answers, but these are things that are worth considering by all of us. As annoyed as one might be with an additional section in the grant proposal, we have to admit that its not just bureaucracy. It is a step towards better science in the long run.

References.

1) Zhao Y, Li X, Sun X, Zhang Y, Ren H. EMT phenotype is induced by increased Src kinases activity vai Src-mediated caspase-8 phosphorylation. Cell Physiol Biochem. 2012, 29:341-352.

2) Torres, VA, Mielgo A, Barila D, Anderson DH, Stupack D. Caspase 8 promotes peripheral localization and activation of Rab5. J Biol Chem. 2008, 283:36280-36289.

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Faculty Positions

Cranofacial Research & Intrinsic Defects in Cartilage/Bone

The The Department of Pediatrics invites applications for two tenure track positions: one at the professor and the other at assistant or associate professor level. The area of research should be in intrinsic defects affecting cartilage/bone and/or craniofacial structures. These research interests complement those already established in the department and will allow for collaborations. The positions are highly competitive with regard to salary, start-up funds and laboratory space. Applicants must have one of the following degrees: PhD, MD or MD/PhD or equivalent degrees.

The ideal candidates should have a record of research accomplishments and have current (Professor) or strong promise (Assistant) of extramural grant funding. Successful candidates will be expected to maintain or develop and sustain research programs with extramural funding, play an integral role in new program initiatives and contribute to the teaching mission of the department and the school. The McGovern School of Medicine is one of six schools in The University of Texas Health Science Center at Houston (UTHealth) and is located in the world's largest medical center, the Texas Medical Center. Facilities within the University include state-of the art facilities including microscopy, genomics, proteomics, histopathology cores and vivariums.

UTHealth is an EEO/AA employer. UTHealth does not discriminate on the basis of race, color, religion, sex gender, gender identity or expression, sexual orientation, national origin, genetics information, disability, age, veteran status, or any other basis prohibited by law or university policy. EOE/M/F/Disabled/Vet. Under section 504 of the Rehabilitation Act and the Americans with Disabilities Act, reasonable disability accommodations will be provided, as needed. This is a security sensitive position and thereby subject to Texas Education Code §51.215.

A background check will be required for the final candidate.

Instructions to Applicants: Please complete the online application at the following links:

Professor –Pediatrics Research Center
Req#161902
https://jobs.uth.tmc.edu/applicants/Central?quickFind=109850

Assistant/Associate Professor Pediatrics Research Center
Req#161905
https://jobs.uth.tmc.edu/applicants/Central?quickFind=109849
Application should include: letter of application, curriculum vitae, statement of teaching and research interests and three (3) letters of references.

Confidential inquiries can be sent to:
Dr. Jacqueline T. Hecht: Jacqueline.t.hecht@uth.tmc.edu
Applications accepted until positions are filled.

Contributing Content

The content of ***The Matrix Letter*** includes both ASMB news items and also research-directed content that fosters the mission of the ASMB:

...to promote basic, translational, and clinical research on the extracellular matrix (ECM), cell-ECM interactions, and ECM-based therapies and devices, and to support the growth and professional development of the ECM research community...

From the perspective of this communication, connecting ASMB researchers with each other, based on their research focus or their approaches is the ultimate goal. The Matrix Letter currently publishes the following categories of lab-initiated content;

Mini-Reviews
The Mini-review feature is a focused summary the contribution of a particular lab in the context of the current state of knowledge in that field. Usually written by students, postdoctoral fellows or young faculty, the minireview runs about a single written page, with a single scientific illustration and a lab photo, and less than 10 references.

Essays & Opinions
The purpose of a Matrix Essay is to promote a new or breaking hypothesis in the field of Matrix biology, with the expressed purpose of garnering supporting evidence and collaborators from the greater ASMB membership. Matrix essays are about one running page and may include a single illustration and up to 10 references.

Letters
A letter to the editor should be short and succinct, and will focus on alerting the ASMB membership to recent advances or concerns in our, and related, fields. A letter to the editor is limited to 200 words and three references.

Images
These are submissions of particularly aesthetic or educational images that you are willing to share with the membership, along with a caption explaining the image.

We welcome your contributions. ASMB@faseb.org

Reference Format
1) Lewis R, Ravindran S, Wirthlin L, Traeger G, Fernandes RJ, McAlinden A. Disruption of the developmentally-regulated Col2a1 alternative splicing switch in a transgenic knock-in mouse model. Matrix Biol. 2012;31:214-26.

The Matrix Letter is a communication of the ASMB.