The Matrix Letter

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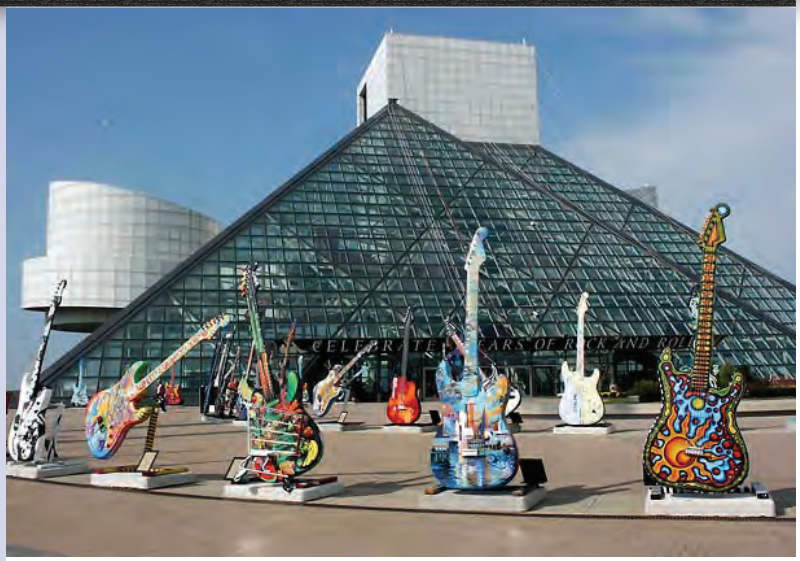

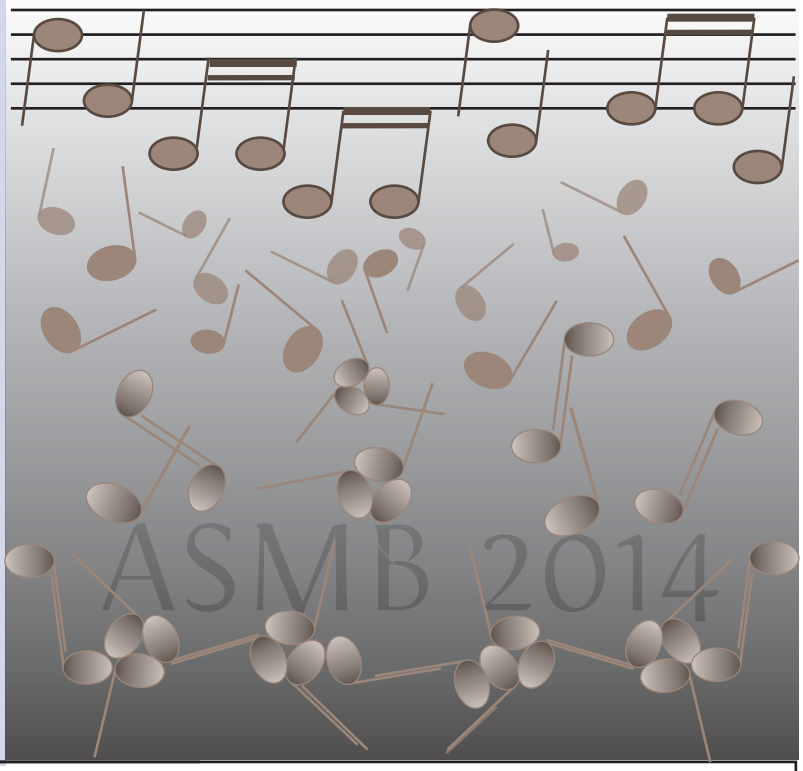

Contents

Letter from the President-Elect

I write you in my capacity as Program Chair, and next President of ASMB and also, as a 18-year Cleveland resident, inviting you to come to Cleveland, Ohio, this October for the 2014 ASMB conference. The Program Committee has assembled an exciting series of presentations, featuring a stellar Keynote Speaker, Jack Dixon, who tells us something about his life and work in this issue of the newsletter. Also in this newsletter, one of our invited plenary speakers, Sally Horne-Badovinac, tells us about her work and interests. Each conveys the excitement and joy they get from science, which I feel is crucial to be reminded of, as we struggle with funding and career prospects today as never before. With your enthusiastic participation, the poster sessions will be tremendously exciting, the discussions free, forthright and constructive. We intend this to be a memorable conference that will strengthen our field and community of scientists, as well as enhance what we can offer science and human disorders. For the next generation of independent scientists, I think you will get a lot out of your interactions with senior colleagues, the mentoring breakfasts, and discussions with your peers. So please submit an abstract, and make the most of everything the conference has to offer you. The conference pre-program adds to the topic diversity. In future years, we hope that these sessions will be organized by students, post-docs and new faculty, emulating the successful Gordon Research Seminars. We've made a start toward this in 2014. And don't miss the conference banquet at Cleveland's signature venue, the I.M. Pei-designed Rock and Roll Hall of Fame (See page 2). Purchase your banquet ticket now- it includes exclusive admission to the exhibits at this fun venue.

Helped in great measure by our capable and efficient ASMB Executive Director, Kendra LaDuca, and by generous local, national and international sponsorship, we are trying to ensure you have a positive conference experience in many ways. The conference website now contains complete information about local transportation links, and the bright and inviting conference venue, located in the resurgent heart of Cleveland. Within walking distance are Lake Erie, Public Square, Playhouse Square and many major sporting venues (Cleveland Indians, Browns and Cavaliers). Cleveland is noted for its innovative and diverse dining scene and many of the best-regarded restaurants are within walking distance or a short drive or bus ride away in Tremont or Ohio City. All this is the new Cleveland, but the old Cleveland also beckons. Food-enthusiasts will enjoy wandering through the deservedly celebrated West Side market, also nearby in Ohio City. A short bus ride away on the new Health-Line, is University Circle, home to one of the finest museums in the world, the Cleveland Museum of Art (http://www.clevelandart.org, closed Mondays, open late on Wednesday and Friday, always free) which has just reopened after a spectacular renovation, rebuild and expansion. Next door to it are the Cleveland Botanic Garden, with beautiful outdoor gardens and indoor exhibits, and the Cleveland Museum of Natural History, which any accompanying children will love. And right next door too, is Severance Hall, one of the most beautiful concert halls in the world and home to The Cleveland Orchestra (http://www.clevelandorchestra.com), of which we are proud. The season begins around the time of ASMB, with concerts by Lang Lang and a performance of the Bach Mass in B Minor, so book your tickets now!! And all of this is just steps away from the Cleveland Clinic and Case Western Reserve University, should you be visiting colleagues there!

For those with days to spare and an interest in outdoor pursuits, downtown is a short (20 minute) drive to the Cuyahoga Valley National Park with over 150 miles of hiking trails and a serene beauty to enjoy, with waterfalls, creeks and in October, splendid autumn foliage to enjoy(CVNP, http://www.nps.gov/cuva/index.htm). The nearly 100-mile Ohio and Erie Canal Towpath trail (http://www.ohioanderiecanalway.com/Main/Pages/The_Towpath_Trail_56.aspx), is fabulous for a scenic bike ride and goes right through the CVNP. You will find that astounding natural beauty surrounds the city, and it is well-worth planning an extra day or two to make the most of this and enjoy the fall colors. If you plan to stay longer, you can venture into Ohio's Amish Country or to wine tasting in Ashtabula county.

So, register now to take advantage of low registration rates, join ASMB for even lower rates, book your room at the conference hotel, **submit your abstracts by June 26** for consideration as a short talk, and make your plans to travel to Cleveland for a productive and enjoyable time! We look forward to making ASMB2014 a huge success with your help.

Best wishes
Suneel

ASMB Banquet at the *Rock and Roll Hall of Fame*

ASMB has secured this unique venue for the Tuesday night Banquet. ASMB ticket holders will have exclusive access to the museum for the evening, complete with food and drink! Member's tickets are $50, and include admission to the museum.

"The greatest stories and biggest names in rock and roll shine on at the Rock and Roll Hall of Fame and Museum in Cleveland, Ohio. With a permanent collection drawing from the most impressive and iconic rock and roll artifacts and a wide-ranging roster of on-going and temporary exhibits, the Rock and Roll Hall of Fame and Museum is dedicated to exploring the past, present and future of the music and the cultural context from which it emerges. The Museum continually augments its own collection of thousands of artifacts with items on loan from artists and collectors from around the world. In addition to these items, the Museum's exhibits utilize film, video, interactive kiosks and, of course, music." (see www.rockhall.com for more information about exhibits.)

Guests are welcome to join us at the banquet as well! Tickets are $75 for guests and include admission to the museum. *Pre-registration is required for both members and guests!*

The Rock and Roll Hall of Fame is a comfortable walk from the Marriott Key Center, but transportation will also be provided. Get your tickets when you register for the meeting. ASMB at the Rock and Roll Hall of Fame - it's going to be fun!

Interview with Jack Dixon
Keynote Speaker, ASMB 2014

ASMB: Could you give us a précis of the general content of your presentation at ASMB2014?

JD: I would like to share with ASMB the discovery and history of reversible phosphorylation. Then I will focus on kinases that work in the secretory pathway and their impact on biology and disease. We recently discovered a small family of kinases operating in the secretory pathway of the cell. These kinases have a role in bone and mineral metabolism. We've gone on to identify substrates of these kinases. Our lab has also determined the structure of one of the kinases. Mutations in the kinase cause genetic disorders that have interesting phenotypes. This work has potential relevance to many secreted proteins, especially matrix proteins. This is the message I'd like to share with the ASMB 2014 attendees.

ASMB: How did you become a scientist and what course did your career take to get to this point?

JD: I was an undiagnosed dyslexic child, and I struggled with reading, gravitating to visual learning. From this perspective, I found organic chemistry fascinating and, blessed with superb mentors and encouragement from many along the way, I developed my strengths further in the direction of chemistry. I did my undergraduate and graduate work in the University of California system, and later joined the faculty at Purdue University. In 1991 I became the Chair of the Department of Biological Chemistry at the University of Michigan, where I established the Life Sciences Institute.

In 2003, I returned to Southern California to become Dean for Scientific Affairs and Professor in the Department of Pharmacology at the University of California, San Diego. In 2006, I accepted the position of Vice-President and Chief Scientific Officer at the Howard Hughes Medical Institute (HHMI) and only recently, in 2013, did I return full time to my laboratory and university duties at UCSD, where I am now based. During these various appointments, I had the opportunity to become a mentor myself. I had the good fortune to train many students and post-doctoral fellows, and to experience the joy that comes from making a positive difference in the life of others.

Professor Jack Dixon
UCSD

ASMB: Tell us something about a discovery you made that gives you the most pleasure and pride.

JD: The most pleasurable discoveries are those that are both unexpected and important. For example, during our studies on protein tyrosine phosphatases, we noticed that a protein in Yersinia pestis, the bacterium that causes the plague, seemed similar in its sequence to mammalian protein tyrosine phosphatases. This didn't seem to make sense, because bacteria don't contain phosphotyrosine. Yet we showed that the Yersinia phosphatase was the most active protein tyrosine phosphatase yet found. It turned out that the Yersinia phosphatase was a deadly toxin that the bacterium injects into mammalian cells and, by removing phosphate from the mammalian proteins, causes havoc in normal cellular processes.

ASMB: What are some of the current developments in science that you follow closely and what are your interests outside science?

JD: My laboratory is very broad in its outlook, so I follow diverse areas of the biological and biochemical sciences by reading the latest literature. Outside of this, I am fascinated by anthropology and the science of the origins of life. My time at HHMI was unique, because it gave me an opportunity to attend seminars on a vast variety of topics at the cutting edge in respective fields, which I really enjoyed. Outside of work, I played a little golf and closely followed the activities and budding careers of my two children. And of course, like many of you, I enjoy good food and appreciate fine wine!

-Suneel Apte

Interview with Sally Horne-Badovinac

Plenary Speaker, ASMB 2014

ASMB: Could you give us a précis of the general content of your presentation at ASMB2014?

SHB: My lab wants to understand how regulated changes in basement membrane architecture help to create an organ's shape during embryonic development. To this end, we are using genetic and cell biological approaches in Drosophila to investigate how the fly egg gets its elliptical shape. Each egg arises from a transient organ-like structure within the ovary called an egg chamber. Though initially spherical, egg chambers elongate dramatically as they grow. This process depends on the formation of unusual fibril-like structures in the basement membrane that surrounds the organ. These linear matrix elements are all oriented perpendicular to the axis of elongation, and are thought to act as a "molecular corset" that directionally biases egg chamber growth. My presentation will have two parts. First, I will talk about our work characterizing the exocytic machinery that targets newly synthesized basement membrane proteins to the basal epithelial surface. Second, I'll talk about how developmentally regulated changes in the basement membrane secretion program help to create fibril-like structures in the matrix.

ASMB: How did you become a scientist and what course did your career take to get to this point?

SHB: It is somewhat surprising that I ever became a scientist. I dropped out of high school in my senior year and ran off to San Juan, Puerto Rico with two girlfriends at the age of 18. Over the next several years, I worked in bars and generally lived the "island life". During this time I also met my husband Nick, who has been my constant companion and biggest supporter for the past 27 years. By the time I felt ready to attend college I was 23 years old, had no money, and was plagued with an abysmal academic record. There was a small four-year college where I was then living called the Oregon Institute of Technology. I naively walked into a Dean's office and asked if I could start taking classes. After talking with me awhile, she made an executive decision to admit me as a full-time student and escorted me to the financial aid office. I am deeply grateful for her generosity to this day.

SHB: After one year at OIT I transferred to the University of Oregon, where I had the good fortune to wander into John Postlethwait's lab. It was such an exciting time in Eugene. George Streisinger had recently introduced the zebrafish as a new model organism for developmental genetics, and there was a vibrant group of labs working cooperatively on the new system. John's lab was constructing the first genetic linkage map. Within six months of joining the group I was co-author on a paper in Science describing this work. I didn't really understand what this meant at the time, but I had fallen in love with research and knew that I had to keep doing it.
I went on to do my graduate training with Didier Stainier at UCSF and my postdoctoral work with David Bilder at UC Berkeley. In both labs I was primarily interested in how the collective behaviors of epithelial cells sculpt tissues and organs during development. This topic continues to be the focus of my lab at the University of Chicago. Our entry into the field of matrix biology is recent, and has been spurred by a new-found interest in the contributions that basement membranes make to these processes.

ASMB: Tell us something about a discovery you made that gives you the most pleasure and pride.

SHB: I made my favorite discovery during my fifth year in graduate school, completely by accident.

I had become interested in how the lumen forms in the primitive endodermal rod that will become the zebrafish's intestine. During one of my first experiments to characterize this process, I noticed an interesting pattern in an adjacent tissue called the lateral plate mesoderm (LPM). The LPM cells on the left half of the embryo looked very different than the LPM cells on the right half. Many organs that arise from the endodermal rod, like the stomach, liver and pancreas, eventually lie on either the left side or the right side of the embryo. I immediately got the idea that asymmetric changes in the structure of the LPM could be responsible for the positioning of these organs. I was so excited about my hypothesis that, by the next morning, I had forgotten all about studying lumen formation, and had outlined the full set of experiments that eventually went into a paper on the LPM. Needless to say, I now encourage my trainees to keep their eyes open for unexpected patterns in their own experiments and to run with new and exciting ideas when they arise.

Sally Horne-Badovinac,

Cont'd

Sally Horne Badovinac

ASMB: What are some of the current developments in science that you follow closely and what are your interests outside science?

SHB: I have become increasingly interested in the basic cell biology underlying the synthesis and secretion of collagens. Collagens are the most abundant proteins in the human body, and yet the length and rigidity of the triple helix poses a number of unique challenges to the cell. This starts from the problem of trimer assembly in the ER and extends through the subsequent steps in the secretory pathway. There is a lot of exciting research on this topic at the moment, and I really enjoy thinking about it. I am also incredibly excited about CRISPR/Cas9. The sophistication with which we can now modify the genome of almost any organism is going to make science move so much faster, and in directions we could only dream of before.

-Suneel Apte

The Editor's Page

Rock Stars & Science

Given the rapidly approaching meeting in Cleveland and the ASMB banquet venue, I think it is as good a time as any to ask a simple quesion. Are there still any Rock Stars in science? The question is worth asking because we need them now as much as ever.

I suppose we should define what a rock star is. For our thought process here, we can define a scientific rock star as an individual whose body of work is widely appreciated, if not outright respected, and whose day to day work is widely desired. Sometimes, their use of money is excessive. They are frequently seen as a model of who we might want to be (or be like). Importantly, a true rock star is viewed as a celebrity outside their domain, regardless of whether others can fully appreciate their work.

Why is this important? Clearly, there are motivational considerations. Some might want to meet, work with, or be, a rock star. Certainly, it can be inspiring to be around intelligent and creative people for any of us. But more importantly, perhaps, rock stars are 'known' by everyday people. Rock Stars put a face on the work that we all do, everyday. They create an appreciation in the populus that can help to counter fundamentalism, or form a catalytist for public interest groups. The most effective rock stars are going to be those that can talk to a lay audience, and let them see the intelligence, beauty and hope - the artistry - of our craft. They don't forget where they came from. ***Carl Sagan*** and now ***Neil Degrasse Tyson*** does this beautifully for the field of physics. ***Craig Venter*** represents a nice equivalent in biology, though perhaps less well known than Tyson to the average person.

Do we still have Rock Stars within Science? Well, there are certainly those that approach this status associated with our fields. Yamanaka, Hunter, Hynes might qualify. Jack Dixon? Hey, I personally think so, and you probably will too, after you see him at ASMB2014. And we have an 'up and coming' rock star with Sally (*see interview*). But if reality TV indicates anything about the current world-psyche, it is that your acquired star status need not be proportional to the ultimate impact of your work. Passion is often enough. We can all get out there and be stars. And so, I earnestly encourage you to relate your work not only at scientific conferences, but take it to the lay audience in local halls and community centers, as well as other charitable organizations.

Just as a serious musician might understand music at the technical and the popular level, we need to do the same with science. We could begin by having two sets of talks. In particular, I having a second version where we need to keep things simple. Keep it snappy. Don't focus on each of the elegant controls, just hit the high points, and deliver it to as many people as you can. Your time will be well spent, and we will all benefit.

And you know, some research into how the actual rock stars do what they do? Probably not a bad place to start. So, I'll see you at the banquet.

For academic reasons, of course.

-D. Stupack

Matrix Interactions

ASMB News and Announcements in Brief

Abstracts Due for ASMB 2014

*The submission deadline for abstracts, **June 26th**, is fast approaching this year . With 50% of this year's talks being selected from the abstracts, this is a great opportunity to share your data via power point presentation instead of a poster.*

Sign up for Mentoring

*Two mentoring sessions are planned for this year's meeting. There will be a new '**Women Mentoring Women**' session that will be added to the highly popular '**Career Mentoring Breakfast**' that debuted in 2012. Both of these sessions are expected to be fully subscribed, so remember to register early.*

Congratulations New ASMB Council Members

Congratulations to the new members elected to ASMB council (visit the ASMB website to learn more about them):

David Birk
(University of South Florida)
Beth Kozel
(Washington University School of Medicine)
Liliana Schaefer
(Goethe University)

Upcoming Events

June 21-24, 2014
1st Matrix Biology Europe (MBE) Conference
Rotterdam, Netherlands
www.MBE2014.eu

July 6-11, 2014
Gordon Research Conference
Signal Transduction by Engineered Extracellular Matrices
Waltham, MA, USA
www.grc.org/programs.aspx?year=2014&program=sigtrans

July 6-11, 2014
Gordon Research Conference
Proteoglycans. Diverse Regulators of Health and Disease
Andover, NH, USA
www.grc.org/programs.aspx?year=2014&program=protglyc

September 25-27, 2014
9th International Research Symposium on Marfan Syndrome
Paris, France
www.marfan.org/resources-answers/researchers/scientific-meetings/symposium

October 12-15, 2014
American Society for Matrix Biology
Cleveland Ohio
http://www.asmb.net/2014_meeting.php

Marriott Key Center, Cleveland

Travel Awards

For students and fellows on their way to Cleveland...

*Five **ASMB Travel Awards** are provided to selected talks, and five are selected onsite from the posters at each biennial meeting by a panel of judges who review the presented posters. The award is open to students and postdoctoral fellows who indicate at the time of their abstract submission that they wish to apply for the award. Candidates must be active ASMB members and must submit a CV and letter of recommendation (advisor or other senior investigator) during the abstract submission process. The award is presented onsite at the biennial meeting and is accompanied by a certificate and an honorarium ($500).*

*Five **Ehlers-Danlos National Foundation Travel Awards** are also available. The honoraria ($400) will support young investigators presenting work related to EDS, ranging from the basic invetigations (collagen assembly, biosynthesis, modifying enzymes, related matrix molecules) to translational research (genetics, clinical reports, therapy).*

*And don't forget **MARCs** travel awards are also available! These are accessible directly from FASEB, here; http://www.faseb.org/Science-Research-Conferences/Awards-and-Travel-Grants.aspx*

2014 Meeting Sponsorship

Thank-you from the membership of the ASMB to all of our generous sponsors who make our meeting possible. We are still welcoming potential conference sponsors and exhibitors. If you have a contact in industry who may have an interest in sponsoring a special event or in providing general conference support, please let us know and we will reach out to them.

Email us at asmb@faseb.org with potential sponsor information.

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Remembering

Scott Argraves

ASMB Pioneer

Fibronectin, Fibulin and Beyond

The science community, and in particular the Matrix community, mourns the loss of William Scott Argraves, a long-time ASMB member and past ASMB executive council member (2003-2006), who passed away in May of this year. Scott was born January 30th, 1956 in Shelton Connecticut. He earned a B.S. in 1978, and then his Ph.D. in Cellular and Developmental Biology in 1985, from The University of Connecticut. He worked with Paul Goetinck at the University of Connecticut where he began his highly productive career working in extracellular matrix biology. His post-doctoral years were spent at the La Jolla Cancer Research Foundation (Sanford-Burnham) working with Erkki Rouslahti on mechanisms of cell adhesion, particularly integrin biology.

Scott began his independent career working at the American Red Cross, J.H. Holland Laboratory in Rockville MD, as a senior scientist in the Department of Biochemistry. During his short tenure at the American Red Cross, he authored 31 peer-reviewed publications in highly respected journals as well as mentoring several graduate students and post-doctoral fellows. However, the most important event for Scott at the American Red Cross was undoubtedly meeting his wife, Kelley. They married in 1992 and formed a highly successful team that bridged both work and family.

Scott and Kelley moved to Charleston in 1995 where they both were appointed to the faculty of The Medical University of South Carolina (MUSC) in the Department of Regenerative Medicine. Scott became a full professor in 2001, and Associate Chair for Research in 2009.

Scott's list of accomplishments in science is both long and varied. As evidence, Scott published 127 peer-reviewed papers while in Charleston. Scott's pioneering work on the protein, fibulin, which he identified and named at the Red Cross, continued at MUSC. His current recognition as the "father" of the field of fibulin biology is representative of his many seminal contributions to Matrix Biology. Scott was also a great advocate of new technology to drive scientific development. He was responsible for establishing our institutional technology core at MUSC that has helped hundreds of investigators both here and at other sites, advance their research using cutting-edge technology. In addition, Scott provided leadership for a statewide research effort in tissue biofabrication and helped to create the Advanced Tissue Biofabrication Center – home of the "Palmetto Printer", a 3D bioprinter designed to print vessels for use in blood vessel replacement therapy.

Despite Scott's many scientific achievements and contributions, he took greatest pride in his family. Kelley and their two daughters were his passion and his greatest source of joy. He was a tireless champion of their many endeavors, a truly devoted father and husband.

At MUSC, we will remember Scott as a wonderful force for good science. He pushed and challenged those around him to be the best that they could be. He was a mentor to many, both students and post-docs in his own lab, and to those on campus. He advocated for all of us to push boundaries and to go farther than one's comfort zone to discover new and exciting paths. Scott's enthusiasm, his intelligence and his vision were frequently sought after by those of us at MUSC and by his many collaborators far and wide. He will be greatly missed by all of us.

- Amy Bradshaw

Sugar-Coating Flow in the Vasculature

Rafael Rubio
Departamento de Fisologia, Universidad Autonoma de San Luis Potosi, San Luis Pososi, Mexico

Our lab is focused on understanding the mechanisms by which endothelial cells react to physiological stimuli to modulate vascular tone. This is critical to understanding not only pathological states, such as elevated blood pressure, but also physiologic flow and normal organ function. In past studies, we found using angiotensin II polymers that clustering of receptors with multivalent ligands actively promotes signaling on the cell surface [1]. This led us to consider that other surface elements that influence the macro-geometry of endothelial cell surface receptors could play key roles in governing downstream signaling.

It has long been known that endothelial cells sense the flow of blood, but the study of mechanisms by which this occurs have been focused in large part on the basolateral side of the cell. Appreciably, mechanical receptors such as integrins have been studied [2]. However, this is, in a way, like focusing on the bottom of a sail boat to understand how it reacts with wind. While the keel is important, even critical, to this interaction, it doesn't tell you anything about the sail.

In the case of endothelial cells, one might then consider the glycocalyx as the sail, and this has been the focus of our work. It has been known for decades that lectins differentiate specific microdomains on the endothelial cell surface [3]. We have been interested in the role of lectins on the surface of endothelial cells for the past several years, identifying that Man, Gal and GlcNAc binding moieties exist and functionally alter the reponses of endothelial cells [4][5]. Nonetheless, these lectins and associated proteins (lectinic complexes) had remained relatively ambiguous.

Recently, we undertook studies to isolate and identify these. Since different lectins might bind more than one sugar, we used a multiligand column with all three sugars polymerized to the surface, and isolated total sugar-binding moieties from the endothelial cell surface [6].

The studies implicated at least 167 proteins on the endothelial cell surface as lectinic. Among the receptors identified, we found Ig family members including ICAM-1, VCAM-1 and PECAM-1 that have not previously been identified to be lectins (but which may associate with lectins). Notably, several G proteins were also identified; among them the bradykinin receptor, the endothelin receptor and the angiotensin receptor. Treatment of cultured endothelial cells with hyaluronidase disrupts both lectin organization of the cell surface and responses to G-protein agonists, such as bradykinin. The results provide further support for the idea that cell surface polysaccharides and lectins are critical regulators of subdomains, and that this organization is necessary for subsequent signaling function.

[1] Torres-Tirado D1, Ramiro-Diaz J, Knabb MT, Rubio R. Molecular weight of different angiotensin II polymers directly determines: density of endothelial membrane AT1 receptors and coronary vasoconstriction. Vascul Pharmacol. 2013;58:346-355.

[2] Shyy JY, Chien S., Role of integrins in enodtheilial mechanosensing of shear stress. 2002;Circ Res 91:769-775.

[3] Simionescu M, Simionescu N, Palade GE. Differentiated microdomains on the luminal surface of capillary endothelium: distribution of lectin receptors. J Cell Biol 1982;94:406-413.

[4] Ramiro-Diaz J, Barajas-Espinosa A, Chi-Ahumada E, Perez-Aguilar S, Torres-Tirado D, Castillo-Hernandez J, Knabb M, de Rosa AB, Rubio R. Luminal endothelial lectins with affinity for N-acetylglucosamine determine flow-induced cardiac and vascular paracrine-dependent responses. Am J Physiol heart Cirk Physiol 2010;117:743-751.

[5] Barajas-Espinosa A, Ramiro-Diaz J, Briones-Cerecero E, Chi-Ahumada E, De la Rosa AB, Arroyo-Flores B, Rubio R. AInvolvement of endothelial Man and Gal-binding lectins in sensing the flow in coronary arteries. Front Biosci. 2008;13:5421-5431.

[6] Perez-Aguilar S, Torres-Tirado D, Martell-Gallegos G, Velarde-Salcedo J, Barba-de la Rosa AP, Knabb M, Rubio R. G protein-coupled receptors mediate coronary flow- and agonist-induced responses via lectin-oligosaccharide interactions. Am J Physiol Heart Circ Physiol. 2014 306:H699-708.

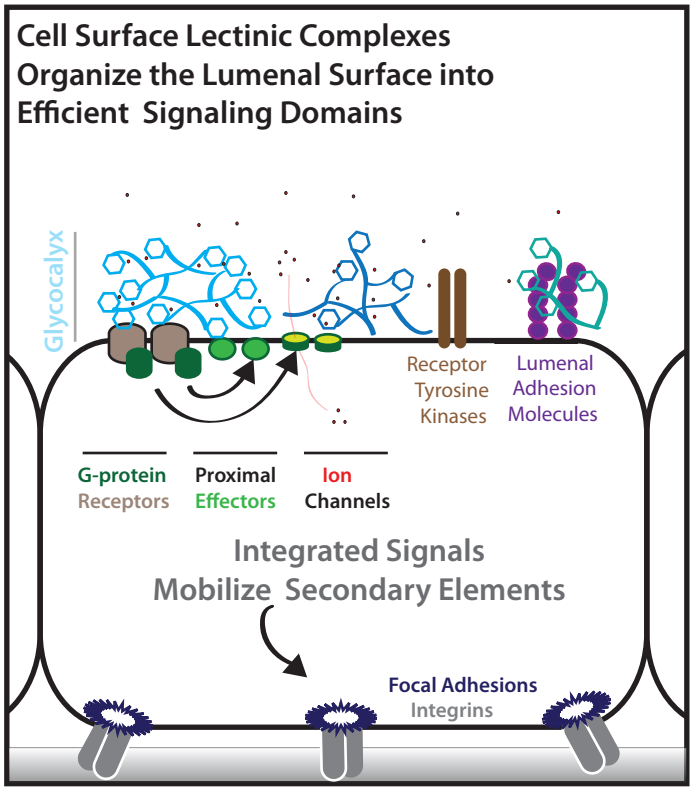

Figure 1. Summary of Cell Surface Sugars and Lectins.
We have identifed a variety of lectinic proteins on the endothelial cell surface. These proteins existing in discrete subdomains and are involved in a variety of signaling processes. In particular, we can show a dependence for G-protein coupled receptor signaling on glycan integrity, but other lectinic proteins we identified include adhesion receptors and members of the receptor tyrosine kinase family. It is possible that these may also be orgainzed into functional domains by glycans and cell surface lectins.

The Back Page

Postdoctoral Positions

Mentor: **Joanne E. Murphy-Ullrich, Ph.D.**
Department of Pathology,
University of Alabama at Birmingham

A post-doctoral position is available in the laboratory of Joanne Murphy-Ullrich, PhD, in the Department of Pathology at the Alabama at Birmingham. Our research examines the role of the endoplasmic reticulum stress protein calreticulin in regulating TGF-beta signaling and fibrosis through control of calcium-dependent signaling. This position is funded by a new grant to study the role of calreticulin in TGF-beta signaling in the kidney proximal tubule under diabetic conditions. The applicant will be expected to examine in vitro mechanisms of calreticulin-TGF-beta regulation under high glucose and oxidant conditions and also to perform in vivo studies using several novel mouse models of diabetic nephropathy.

Candidates must have a recent Ph.D. and/or M.D., or equivalent. Priority will be given to qualified candidates with a strong background in cell culture, molecular biology, biochemistry, animal models, and diabetes-related research. The candidate will be expected to write manuscripts and present his/her work at scientific meetings and assist with training of graduate level personnel in the lab. Salary (with benefits) will follow NIH guidelines commensurate with training and experience. Competitive applicants should have a proven track record with publications and the potential for career development. UAB is a highly collegial and interactive environment that has an active Office of Post-doctoral Education which provides mentoring and career guidance in addition to that provided by the mentor.
If interested, please send a letter describing your research experience/interest/future career goals, your CV, and contact information for three references electronically to murphy@uab.edu.

Mentor: **Shukti Chakravarti, PhD**
Department of Medicine, Cell Biology and Ophthalmology,
Johns Hopkins School of Medicine.

NIH-funded postdoctoral position is available immediately for 4 years to investigate interactions of lumican, and other extracellular matrix (ECM) proteins with toll-like receptors and integrins in monocyte and neutrophil migration, phagocytosis and innate immune response. The candidate must be highly motivated, within 2 years of completion of a PhD in the areas of cell biology, immunology or biochemistry.

To apply please submit a brief statement of past research accomplishments and future goals along with your CV and names of two references to Professer Shukti Chakravarti, Department of Medicine, Cell Biology and Ophthalmology, Johns Hopkins School of Medicine. Email schakra1@jhmi.edu http://www.jhu.edu/~schakravarti/

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;

Matrix Mini-reviews

The Matrix Mini-review feature will be 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.

Matrix Essays

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 to the Editor

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.

Matrix 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.

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.