

## In This Issue...

1. ["The Matrix Scientist: A Rebel with a Cause", by Suneel Apte](#)
2. [Iozzo Trainee Awardees in Their Own Words](#)
3. [Matrix Biology Call for Papers](#)
4. [e-Symposia Schedule](#)
5. [Upcoming Events and Announcements](#)

## Welcome to a New Year!

Dear Members, I think we can unanimously agree that we are glad to bid farewell to 2020 and welcome in a new year. May 2021 bring you all professional successes and personal joy. Be well and stay safe!

Alexandra Naba, Editor-in-Chief



### **The Matrix Scientist: A Rebel with a Cause**

This issue, we welcome an invited author and long-time member of ASMB, Suneel S. Apte, M.B.B.S. D. Phil, of the Cleveland Clinic, Lerner Research Institute. Suneel is a former ASMB President and the current ISMB President. While his volunteer service and science career are noteworthy, you may also know Suneel as an avid outdoor enthusiast with a calming zen personality. We are pleased to feature his words of wisdom in this winter submission:

#### **The Matrix Scientist: A rebel with a cause**

If the cell is the basis of life, the matrix is the basis of multicellular life. This you and I know already if we are receiving this newsletter. But at many of the meetings and seminars I attend, especially when our colleagues speak of cell regulation and microenvironment, there is an empty space portrayed around cells through which regulatory soluble proteins move effortlessly, cells go to and from merrily, and entire blocks of cells change their shape and translocate with the wave of a wand (or more typically a transcription factor or a signaling pathway). The proverbial elephant is in the room, but it remains invisible. I speak of the matrix. Is it so well understood and is there such great awareness of it that it requires no mention? I fear this is not the case and the contrary is proven true time and time again. I vividly recall having breakfast at a conference with a Celebrity in biology, one whose name and Nobel are frequently mentioned in the same breath, who kindly asked me what I worked on. Extracellular matrix, I replied, and The Celebrity duly asked me what that was. When informed, The Celebrity asked if I could send any reviews on this new topic. This is not at all an apocryphal tale. I sent a few reviews by email, but you can imagine that my sentiments were akin to someone being asked to send a review or two on the cell. Some of us call ourselves matrix biologists. Some of you do not label yourself as such, but are something else-ologists who also study the matrix. I am an

---

avowed matrix biologist, advocate, and propagandist since the time I started as a post-doc in Bjorn Olsen's lab many years ago, and I happily dabble in proteases, proteoglycans, fibrillins and collagens. I had heard it said at the time that Bjorn was very clever, but why did he work on collagens and ECM? If that doesn't sum up the then prevailing attitude to matrix which has continued to this day, I don't know what does. So, to call oneself a matrix biologist is perhaps to be somewhat iconoclastic, rebellious, perhaps to be envied by the other fields of science. May it be so in the future, may our field become trendy, fashionable, with late-to-the-party gatecrashers crowding to get in. When that happens, we will, of course, let them in, collegial and benevolent group that we are, and provide a couple of reviews on the ECM to help with their conversion. The distinction of whether we define ourselves as core matrix biologists or not is less important than our shared commitment to fostering excellence in the field of matrix biology and promoting its growth. So, I'd like to share my thoughts with you about how we can influence the world's ability to recognize and reward the science of matrix biology. In large part it must occur through the matrix societies, which provide a platform for bringing people together and disseminating information. The societies welcome and integrate new members under their roof, remember and celebrate the careers of our departed colleagues, and provide all sub-specialties in the matrix field with a forum for exchange of ideas, reagents, collaboration, and an audience. The purpose of this essay is to say a bit more about these societies. Broadly, there are national societies (ASMB being one example) and international societies (e.g., ISMB). In this regard, I'd like to mention and welcome The Meshwork, a wonderful way to allow informal exchanges between ECM groups around the world that will undoubtedly enhance our research and professional development, especially of our early career colleagues.

ASMB and ISMB are quite different in their structure and activities. The ASMB, founded in 2001 by a group of visionary matrix biologists (we could call them renegades, so they can assume a bit of swagger) led by the late Paul Bornstein, had its first meeting in 2002. The ISMB came into being earlier, in the early 1990s, and does not organize conferences. Its goal is to enable and harmonize activities in matrix research globally and to aid all the national societies and young scientists around the world when it can. Among its many activities, ISMB provides funds to matrix conferences to support invited speakers, and makes travel awards to young scientists to attend conferences. ISMB supports the ASMB conference, for example, by recognizing a noted matrix scientist as an invited speaker at the biennial ASMB conference via the ISMB Distinguished Investigator Award (Bob Mecham is the awardee for 2021). ASMB has an able and valued Executive Director, Kendra LaDuca, who takes care of all logistics supported by the ASMB officers. ISMB has no staff, but a rotating team consisting of a council of scientists. Society officers are elected by members and everyone in our community is invited to serve if they wish. I have had the privilege of working with both societies and so I have seen something of the inner workings of both. ASMB has expenses related to the running of the society and its conferences, whereas ISMB has no significant regular expenses to speak of, but basically gives money away to deserving matrix-related causes. Importantly, both ASMB and ISMB primarily depend on member dues for support of their activities, although ASMB conferences are additionally supported generously by the NIH and corporate sponsors. The Renato Iozzo Award, the Iozzo Trainee Award and the Founders Awards are examples of ASMB achievement/career development prizes supported by generous donations to ASMB by its benefactors. ISMB relies mostly on member dues and also accepts donations in support of its activities. Both societies have a strong working relationship and affiliation with the journals Matrix Biology and Matrix Biology Plus, which are owned by Elsevier. At all times, both societies seek to enhance their membership rosters and hope that incoming funds will balance outgoings. In the year of Covid, this has been a greater concern than usual as membership revenue has dropped significantly. The greater concern is that the number of matrix biologists (already a threatened species) has dropped, and we hope that is not the case. In case you see this as a thinly disguised request to renew your memberships, you are quite wrong. It is not thinly disguised. If you have gotten this far in the essay, please reach for your credit card and do the honorable thing! Your institution will find a way to reimburse you. If you'd like to make a donation, convert your benevolence into action. A little goes a long way. ASMB and ISMB (please join both!) and via these societies, the matrix field, need your membership, fellowship, service, contributions.....and renewals.

Thank you.

Suneel Apte

---

## lozzo Trainee Awardees in Their Own Words

### Post Doc Awardees

#### Aastha Kapoor, *Thomas Jefferson University*



I am immensely honored to receive the ASMB lozzo Trainee Award. I thoroughly enjoyed presenting my work before such a large audience via this competition. I want to express my heartfelt gratitude to my mentor Dr. Renato lozzo for his unwavering support throughout my postdoctoral journey and for encouraging me to apply for this award. Under his tutelage, I have worked on varied independent projects over four years, all focusing on matrix biology. With the support of colleagues in the lozzo lab, I delineated the canonical stress pathway's activation in the vasculature by Endorepellin, a proteoglycan fragment. I presented the stress axis members, PERK/eIF2/ATF4/GADD45, as targets for constricting angiogenesis. Activation of stress has direct implications in impeding tumor progression and holds great promise.

As a subsidiary of this project, I refined and simplified a significant angiogenic assay, the 'aortic ring assay.' I extensively used this assay for my stress-project and the angiogenesis-related studies of my peers. I developed the aortic ring assay using my collagen-expertise acquired from my graduate school training with Dr. Shamik Sen at the Indian Institute of Technology, Bombay, India. My graduate work focused on cellular contractility, which I elucidated controls both protease-dependent and force-dependent modes of invasion. I presented the Rho-ROCK pathway as the underlying driver of the chemo-resistant ovarian cancer invasion.

By combining my graduate and postdoc training, I want to improve the anti-angiogenic paradigm of cancer treatment using proteoglycans as the therapeutic molecules.



-----

#### Yael Efraim, *University of California San Francisco*

Yael Efraim is a postdoctoral fellow in the department of cell and tissue biology at the University of California in San Francisco. She earned her PhD at the Technion - Israel Institute of Technology under the supervision of Prof. Machluf, where she developed a novel biohybrid ECM based hydrogel for the treatment of myocardial infarction (MI) as well as an arterial ECM-based hydrogel for modeling angiogenesis. She was later recruited to the Knox lab to study the cellular biomechanics of the cornea and how it was influenced by dry eye. Yael research is currently focusing on 3 main aims: 1) to unravel the heterogeneity of the healthy and diseased cornea, which includes identifying specific stem cell populations of the epithelia and stroma and how these are impacted by inflammation, 2) to define the impact of dry eye on corneal biomechanics and the ECM composition and structure and, 3) to discover the role for functional innervation in corneal homeostasis and tissue regeneration. In order to achieve these goals, Yael has developed a single cell signaling platform along with a new atomic force microscopy protocol specifically for the cornea which provides essential information on how dry eye disease impacts cell heterogeneity and tissue biomechanics.

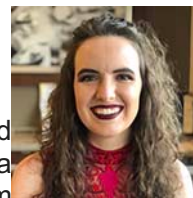
Yael notes: I am both honored and thrilled to have receive the lozzo award. The matrix biology field has been the main interest of my academic career, and I hope to use the opportunities given me to advance the ocular and biomechanical fields.

-----

---

## Student Awardees

### Claire Gianakas, *Duke University*



Receiving the Iozzo Training Award is truly an honor and I am so grateful to have had the opportunity to share my work with the greater matrix biology community. As a graduate student in the laboratory of Dr. David Sherwood at Duke University, I am using *C. elegans* to study basement membrane biology. Specifically, I am focused on furthering our understanding of basement membrane flexibility and basement membrane adhesion systems. During my time in the lab, I have developed the *C. elegans* spermatheca as a powerful new *in vivo* model to investigate basement membrane stretching and have identified several matrix components that could play important roles in regulating basement membrane stretching and recovery. This work will not only clarify how dense, extracellular matrices are able to stretch and recover in dynamic environments, but will also help us understand how these processes are disrupted in vascular disease. In addition to this work, I have also identified four basement membrane components that are key regulators of basement membrane adhesion and characterized the roles of these components in both facilitating initial adhesion and maintaining sustained adhesion. Receiving the Iozzo Training Award has not only supplemented my graduate training, but also introduced me to other matrix biology research and encouraged me to pursue my ultimate goal of leading an interdisciplinary, independent research program focused on understanding the mechanical properties of basement membrane and how they contribute to vascular disease.

---

### Samantha Schwager, *Vanderbilt University*



I am honored to be a recipient of the inaugural Iozzo Trainee Award. I am incredibly thankful to my mentor, Dr. Cynthia Reinhart-King, for nominating me, my fellow lab members for their support, and the ASMB Award Committee for recognizing the impact of my work in the field on matrix biology. As a 4<sup>th</sup> year biomedical engineering PhD student in the Reinhart-King lab at Vanderbilt University, my work has focused on understanding the contribution of breast cancer intratumor heterogeneity to cancer metastasis. I am specifically investigating heterogeneity in cancer cell migratory ability and how this relates to their metastatic potential. Understanding which cancer cells are capable of leaving the primary tumor and metastasizing has the potential to lead to new cancer therapies that target metastatic cancer cells. Support from the Iozzo Trainee Award will continue to motivate me to be an empowering female role model in STEM.

---

## Matrix Biology Call for Papers

### "Beyond the Matrisome: New Frontiers in ECM Research"

2021 marks a decade since the conception and delineation of the matrisome, which provided a road map for extracellular matrix research. To mark the occasion, [Matrix Biology](#) will host a Special Issue titled "Beyond the Matrisome: New Frontiers in ECM Research" guest-edited by Alexandra Naba and Suneel Apte. The overall goal of the Special Issue is a forward-looking view of the matrisome illustrated by state-of-the-art invited reviews and conceptually novel and preferably mechanistic research articles. For more information about this special issue and how to submit your paper, [click here](#).



---

## e-Symposia Schedule

All webinars begin at 11:00am EDT. [Check website for registration links.](#)

**February 11 - *Fibroblast Cell Phenotypic Changes in Development and Disease***

Morgan Salmon, *University of Virginia School of Medicine*

**March 11 - *Matrix Math: Computational Modeling of the ECM***

William Richardson, *Clemson University*

**April 8 - *Growth factor regulation by extracellular matrices***

Dirk Hubmacher, *Icahn School of Medicine at Mount Sinai*

**Abstract submission is open for these events. [Click here to submit.](#)**

---

## Upcoming Events and Announcements

### Biennial Meeting

*It's still on!* The ASMB biennial meeting is planned for **September 12-15, 2021** at the [Hyatt Regency St. Louis at the Arch](#) in St. Louis, MO. We are monitoring vaccine distribution, travel regulations, and safety recommendations for gatherings during the pandemic. We are optimistic that the event will be safe for in-person attendance, but we are also exploring options for a virtual component as well. Stay tuned to the [ASMB website](#) and email for updates as the year progresses. We remain optimistic that we will see you in person, in St. Louis in September!



### Giving Tuesday

Our first *Giving Tuesday* event was a great success! Many ASMB members donated generously to the society. We plan to continue this initiative each year as a reminder to support our organization and community. Thank you to everyone who supported ASMB on Giving Tuesday and to those who give generously throughout the year! [Donate to ASMB](#)

### Membership Renewal

It is not too late! You can still renew your membership. Renewing your membership is critical to the financial well-being of the society during this difficult time. Every membership dollar goes toward the mission of the society. If you are having difficulty paying your renewal fee, let us know. If you'd like to help a fellow member pay their renewal or join, [let us know!](#) ASMB is a community that supports one another.

---

## Stay Safe and Be Well



[Twitter](#) [Website](#) [Calendar](#)

American Society for Matrix Biology