



UNIVERSITY OF MICHIGAN MEDICAL SCHOOL
MICHIGAN MEDICINE

DEPARTMENT OF CELL & DEVELOPMENTAL BIOLOGY

2023 ANNUAL REPORT

**Invading My Space, Cover image from U-M BioArtography bioartography.com
Deborah Gumucio, Ph.D., Professor Emerita of Cell & Developmental Biology and Kate Walton, Ph.D.,
Research Assistant Professor (Gumucio Laboratory) University of Michigan Medical School**

"You've got lung cancer." "What?? I've never smoked or been chronically exposed to second-hand smoke!!" Surprisingly, ~150,000 cases of solitary lung nodules are found on chest X-rays every year (many in nonsmokers) and some of these are in fact, early cancers. Lung adenocarcinomas are the most frequent type of the non-small cell lung cancers in never-smokers.

This image shows the edge of an adenocarcinoma (bottom) as it invades the normal, airy, delicate lung tissue (top). This happens to be my own lung; I am thrilled to be rid of this invader! The brown nuclear stain in the image marks the expression of a nuclear factor known as TTF1, which is diagnostic for the adenocarcinoma. While this protein is only expressed in a few of the normal cells (the type II pneumocytes that make surfactant), all of the cancer cells are positive for this protein, giving them a heavy and ominous appearance.

FROM OUR CHAIR

It gives me great pleasure to share our annual report for the year 2023. There is much to highlight and celebrate from this past year – please enjoy the newsletter, but remember that a few pages of information cannot do justice to all CDB'ers who deserve kudos and recognition.

The faculty is the key determinant of the strength and impact of any academic department. Earlier this year, we succeeded in recruiting Dr. Hisham Bazzi through an international search for faculty with expertise in developmental biology. Dr. Bazzi, featured on page 4, studies the role of the cell cycle and its regulation during early development in utero and in the genesis and maintenance of skin epithelia. In addition, we just concluded an effort to recruit Dr. Herman Fung to the CDB faculty. Dr. Fung is an outstanding structural biologist with expertise in Correlative Light and Electron Microscopy (CLEM) and cryoelectron tomography, an area for which we have been actively recruiting for many years. Dr. Fung studies the organization of the genome in mammalian cells. We will showcase Dr. Fung in our 2024 newsletter. Drs. Bazzi and Fung are the sixth and seventh faculty recruits to join the ranks of CDB over the last six years, a truly remarkable accomplishment that reflects the outstanding reputation of the department and the generous support received from the medical school administration.

Significant changes also occurred this past year in the administrative team that will continue to provide superb support for all aspects of the department's operations. Both Ms. Karen Lang, who had been serving as our Chief Department Administrator (CDA) since 2008, and Ms. Lori Longeway-Mirabitor, who had been serving as a Faculty Program Manager since 2002, retired after long tenures of great service to CDB. Mr. Olushola Samuel joined us as our new CDA, Ms. Holly Martin joined us as a Special Projects Manager and Executive Assistant, and Ms. Becky Dresselhouse-Nauss was hired as our new Senior Financial Specialist. I want to take this opportunity to sincerely thank Karen and Lori for their dedication and service to CDB and welcome Olushola, Holly, and Becky to our team.

Until recently, the CDB primary faculty was housed exclusively in either the Biomedical Sciences Research Building (BSRB) or the Life Sciences Institute (LSI), which is just across the Washtenaw Avenue bridge from BSRB.



This past year, two CDB faculty colleagues (Dawen Cai and Changyang Linghu) set up their laboratories in the North Campus Research Complex (NCRC) to join the Michigan Neuroscience Institute in its new home. We are highly confident that the research programs of Drs. Cai and Linghu will thrive in this new and exciting environment. Indeed, the NCRC campus is strategically very important to the growth and development of the research enterprise at the University of Michigan Medical School, and the establishment of a strong presence in that environment will help CDB expand and deepen an already strong institutional footprint, and open new horizons for research and collaborations.

An additional strength of CDB relates to its collegiality, inclusive culture, and outreach activities. The Ph.D. graduate students and postdoctoral fellows pursuing research in CDB laboratories deserve a large share of the credit for these qualities and activities. Collectively, the trainees are making a huge difference in CDB's ability to provide an environment where aspiring young scientists can grow and blossom in a positive, inclusive, and successful environment.

I am very proud to share this document with you, and I wish to express my deep gratitude for the vibrant and inspiring community and individuals who make up CDB.

Pierre Coulombe
G. Carl Huber Professor
Chair, Department of Cell & Developmental Biology

NEURONS CAN FLY: INTERVIEW WITH DAWEN CAI, PH.D.



The Cai Lab educational research program "Neurons Can Fly" hosted its first session in July 2023. Cai Lab graduate students, postdocs, and staff mentored 15 participating high school and undergraduate students from the metro Detroit area.

What inspired this program?

Our lab wanted to create an outreach program to introduce students to STEM fields. We specifically wanted to work with students who are underrepresented in science or come from disadvantaged backgrounds to excite them about scientific research and motivate them to pursue higher education in these fields.

How did you come up with the name Neurons Can Fly?

Part of our research uses *Drosophila* to map neurocircuits and study behavioral neuroscience and fruit flies are easy for the students to handle. Our goal is to inspire students to aim high to reach their career goals, ideally in STEM/neuroscience-related fields. Thus, the program name combined neuroscience and flies to create the name "Neurons Can Fly."

What was the student feedback about this program? Every participant who completed the end-of-program survey expressed interest in participating in our lab's current research. When asked if this program increased their interest in scientific research, 54.5% of participants agreed, and 45.5% strongly agreed.



What outcomes do you anticipate for those who participated in this program?

Students are encouraged to contribute to our lab's research. For example, students can work remotely to perform neuron tracing and data analysis of our images. During summers, students can complete in-person internships, with rotations through our collaborator's labs, to gain more hands-on skills. If admitted to U-M, students can work in our lab. In fact, two 2023 Neurons Can Fly students will work in our lab through UROP and a paid position this fall.

What are your plans for the future of this program?

We've partnered with the Center for Educational Outreach and the Wolverine Pathways college readiness program for the summer of 2024 to create an alternative pipeline to reach high school students and nurture their engagement in STEM fields throughout their undergraduate years. We will also expand the program by offering housing in the U-M dorms and afternoon/evening programming throughout the week.

Dawen Cai, Ph.D.

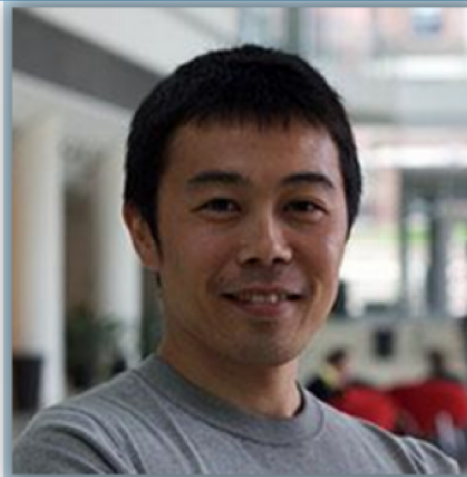
Associate Professor, Cell & Developmental Biology
Associate Professor, Biophysics

One student said, “Neurons Can Fly is a great program for anyone interested in medicine, research, or data analysis. We experienced what it is like to conduct research in a real lab surrounded by knowledgeable mentors and peers. With step-by-step guidance and detailed modules, students build a foundation of knowledge in neuroscience and expand their networks.”

You can learn more about the program at neuronscanfly.org.

FACULTY PROMOTION

MEET OUR NEW CDA



Takashi Hotta, Ph.D.
Research Assistant Professor
Cell & Developmental Biology
Puck Ohi Lab

☺ My favorite Japanese quote, 雲外蒼天, summarizes my perspective best. It means "The sun always shines above the clouds". The path in academia is rarely an easy one, but despite these challenges, I want to keep moving forward and cherish the scientific journey. For me, this is what life is all about.



I believe we need to be kind to ourselves so that we can be the best colleagues possible. Brene Brown once said, "When we're kind to ourselves, we create a reservoir of compassion that we can extend to others."



Olushola Samuel, M.P.H.
Chief Department Administrator
Cell & Developmental Biology
Member CDB Leadership Team

What are you proud of in terms of your career?

I used to work as an assistant professor of plant biology in Japan, studying microtubule assembly in plants. Because I wanted to delve deeper and understand the more fundamental aspects of the microtubule cytoskeleton, I decided to switch to a mammalian cell model—a move that brought me to Michigan. I am proud to say that this was not a detour, but a necessary path to get me to where I am today.

What excites you about your career?

My focus is on the fascinating "tubulin code". Although each code represents a tiny post-translational modification on a tubulin molecule, modified microtubules gain specialized functional properties that are integral to various fundamental cellular processes. I am excited to be a "molecular hacker" deciphering this complex biological code.

What attracted you to CDB and U-M?

No science can be done in isolation, but finding colleagues who share enthusiasm and philosophy is not necessarily easy. I always appreciate the collaborative and cohesive environment that the CDB and U-M provide.

What are you proud of in terms of your career?

I love supporting faculty and trainees and helping them achieve their goals in research and scholarship.

What excites you about your career?

Before CDB, I worked in Internal Medicine as the administrator for Metabolism, Endocrinology & Diabetes. There, I supported a strong clinical enterprise and a robust research portfolio like CDB's. I helped guide the division through the pandemic, and that taught me a lot about empathy, resilience, and overall well-being. I plan to bring a similar approach to CDB.

What attracted you to CDB and U-M?

CDB strives to be first-class and cutting-edge in everything it does, from research to administration to teaching. Also, CDB has numerous efforts to expose individuals from underrepresented communities to opportunities in science.

What is your vision for the future of CDB's administrative support?

My vision is that our team will lift up our fellow CDB colleagues. We will lift up our faculty, trainees, students, and staff by removing barriers and championing their success. We will bring enthusiasm, compassion, and dedication that will lift up the spirits of everyone we encounter.

MEET OUR NEW FACULTY



Hisham Bazzi, Ph.D.

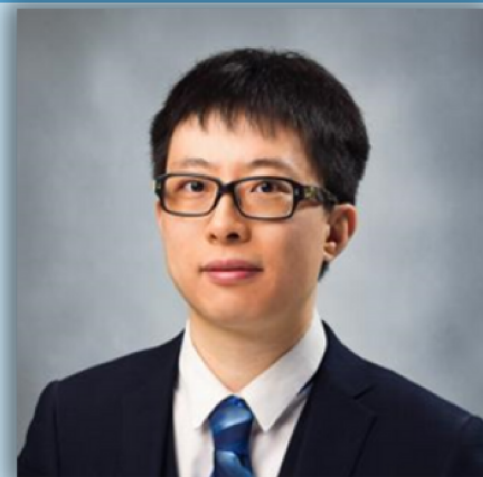
Associate Professor, Cell & Developmental Biology
Associate Professor, Dermatology
Affiliate, Center for Cell Plasticity and Organ Design



Love what you
do and do it
with love.



The only thing
you can't get
back is time.
Make sure it
counts!



Changyang Linghu, Ph.D.

Assistant Professor, Cell & Developmental Biology
Member, Single Cell Spatial Analysis Program
Affiliate, Michigan Neuroscience Institute

What is your Research Focus?

Our research is focused on how signaling pathways regulate the cell cycle and cell division during cell fate determination, including death or differentiation. We address this question using the mouse as a genetic model system, during early organismal development as well as skin development.

What excites you about building your lab at U-M?

I am quite excited about transitioning my lab from the University of Cologne, Germany, to CDB and BSRB primarily because of the shared research interests, fresh ideas, and potential collaborations, as well as long-term perspectives with my colleagues here in CDB and U-M overall.

What influenced your decision to become a faculty member in CDB?

The main factors influencing my decision to join CDB are my colleagues with whom I share common interests in skin biology, signaling pathways, cytoskeleton, and cell division. Equally relevant are the department leadership and administrative support in CDB. In addition, the quality of life and diversity in Ann Arbor also played important roles in our decision.

What is your Research Focus?

Our goal is to unravel how transient cellular activities drive long-lasting changes in tissue function. To do this, we are developing and applying novel technologies for scalable and multiplexable interrogation of cell physiology in vivo. We are particularly interested in memory formation in the brain and development of the vascular system.

What excites you about building your lab in North Campus Research Complex (NCRC)?

NCRC is an interdisciplinary research complex, with many labs working on basic sciences, engineering, and translational research. Being physically surrounded by scientists, engineers, and clinicians is a blessing, and I look forward to opportunities to collaborate with many of them.

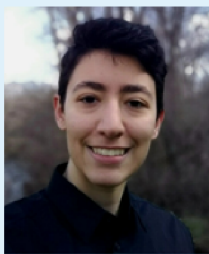
What influenced your decision to become a faculty member in CDB?

The number one reason is the wonderful CDB people, of course! My research has many synergies with existing CDB labs. Another reason is that CDB is very strong in both basic science and technology development. I hope to join forces with existing efforts and contribute to bridging the gap between enduring questions in basic science and technology development to address those questions.

GRADUATE STUDENTS



Charlie Childs
Spence Lab
NIH F31



Emily Freeburne
Heemskerk Lab
Defended her
Ph.D. Thesis



Hannah Hafner
Giger Lab
NIH F31



Mara Harwood
Tsai Lab
Defended her
Ph.D. Thesis



Tyler Hoard
Allen Lab
Bradley M. Patten
Award for
Excellence in
Research



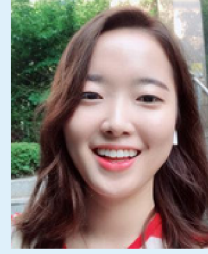
Fatima Javed
Parent Lab
Defended her
Ph.D. Thesis



Nafisa Nuzhat
Pearring Lab
Defended her
Ph.D. Thesis



Greg Myers
Engel/Khoriaty Labs
NIH Urology &
Hematology
Research Training
Network Fellowship



Haeyoung Park
Allen Lab
NIH Hearing,
Balance, & Chemical
Senses Training
Program Fellowship



Jun Park
Yamashita & Ye Labs
Defended his
Ph.D. Thesis



Ryan Passino
Giger Lab
Defended his
Ph.D. Thesis



Sarah Pizzano
Ye Lab
Defended her
Ph.D. Thesis



Catherine Redmond
Coulombe Lab
NIH F99



Kaitlyn Speckhart
Tsai Lab
NIH F31



Sarah Steiner
Coulombe Lab
Sarah Winans
Newman Graduate
Student Teaching
Award



Rachel Torrez
Melanie Ohi Lab
Defended her
Ph.D. Thesis



Bridget Waas
Allen Lab
Defended her
Ph.D. Thesis



Logan Walker
Cai Lab
Defended his
Ph.D. Thesis



Karen Wang
Spriggs Lab
Shelley J. Almburg
Graduate Student
Service Award

RESIDENT AWARD



Ayobami Ward MD
Giger lab
Merkin Peripheral
Nerve Fellowship

POSTDOCTORAL AWARDS



Subhash Arya PhD

Parent Lab

2023 Society of
Leukocyte Biology
Presidential Scholar
Postdoctoral Award



Erez Cohen PhD

Coulombe Lab

National Psoriasis Foundation Early
Career Research Award and CDB
Bradley Merrill Patten Award for
Excellence in Postdoctoral Research



Kyoung Jo PhD

Heemskerk Lab

NIH F32



Morgan Pimm PhD

*Verhey and Puck Ohi
Labs*

Michigan Pioneer
Fellowship



Ligia Schmitd PhD

Giger Lab

NIH T32 Tissue
Engineering and
Regeneration
Fellowship

FACULTY AWARDS



Scott Barolo PhD

Endowment for the
Basic Sciences
Teaching Award



Maria Castro, PhD

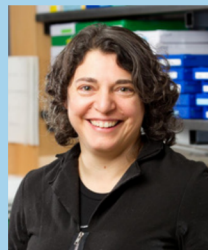
Induction as Fellow
of the American
Institute for Medical
& Biological
Engineering



Takashi Hotta PhD

Puck Ohio Lab

Promoted to
Research Assistant
Professor



**Marina Pasca
di Magliano PhD**

Induction as Fellow
of the American
Association for the
Advancement of
Science



Michael Hortsch PhD

2023 Henry Gray
Distinguished
Educator Award of the
American Association
for Anatomy



Yujia Hu PhD

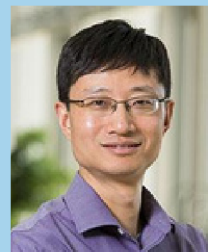
Ye Lab

CDB Research
Faculty Excellence
in Research Award



Chelsey Spriggs PhD

Presented at her
alma mater (MSU)
commencement
ceremony



Bing Ye PhD

Appointed as
Research Scout for
new Medical
School "Bold
Science" Program

STAFF AWARDS



Louise Chang

Melanie Ohi Lab

Endowment for the
Basic Sciences
Research Staff
Award



Nicole Franks

Allen Lab

CDB Staff
Excellence Award



Jacqueline Popma

Administrative Team

CDB Staff
Excellence Award

ADMINISTRATIVE TEAM CHANGES



Lori Longeway-Mirabatur
Faculty Program Manager
Cell & Developmental Biology
2002 - 2023

Karen Lang, Ph.D.
Chief Department Administrator
Cell & Developmental Biology
2008 - 2023

Two of CDB's cherished administrative team members retired this year. Karen Lang, Chief Department Administrator, retired after 27 years of dedicated service to U-M. At Karen's retirement party, CDB community members, past and present, came to celebrate her compassionate leadership, with remarks describing Karen as an excellent facilitator with leadership skills to build people up and recognition as the best boss of all time.

Lori Longeway-Mirabatur, Faculty Program Manager and Assistant to Dr. Pierre A. Coulombe, retired following a 29-year career at U-M. During Lori's retirement party,



Karen Lang and Lori Longeway-Mirabatur

Friends and colleagues shared fun stories and highlights from her many achievements while working in the CDB Department over the past 21 years. Without a doubt, those of us with the pleasure of working with Karen and Lori will miss them.

Olushola Samuel (featured on page 5) joined CDB as our new Chief Department Administrator. Olushola comes to us with substantial experience in the management of resources, finances, and personnel through his experiences in the Department of Internal Medicine.



Holly Martin
Special Projects Manager
Cell & Developmental Biology

Holly Martin was hired as CDB's Special Projects Manager for the CDB Leadership Team and Executive Assistant to Pierre. Holly brings over 20 years of progressive experience in administrative support and project management, most recently from the Michigan Center for Translational Pathology.



Becky Dresselhouse-Nauss
Senior Financial Specialist
Cell & Developmental Biology

In addition, Becky Dresselhouse-Nauss joins us as CDB's new senior financial specialist. Becky brings a wealth of research administration and department financial experience from her work at the UM-Dearborn dean's office.

INSPIRING ALUMNI

**Alana Chin, Ph.D.**

Science Communicator

Resides in San Mateo, CA

Graduate Student with

Jason Spence

2012 - 2017

What do you do on a typical day?

When I was working as a Product Scientist for 23andMe, my job duties ranged from science writing to product development. Some days I would write, edit, or review content to be used inside the product or for marketing for scientific accuracy and readability. Sometimes I would read tons of literature on a specific scientific topic to become the subject matter expert and advise product development. Other times I would meet with collaborators across the company, like from R&D, regulatory affairs, medical affairs, design, and engineering, to ideate new products and strategize development.

How did you find your career path?

Serendipitously. I honestly didn't have a set plan after graduating and explored many options. While I was looking, a fellow recent U-M alum sent me this job opening at her new work. I hadn't considered science writing before, but because she knew that I used to write blogs for Rackham, she thought I might be a good fit. I decided to apply, ended up getting the job, and fell in love with it.

What advice would you give to current CDB trainees?

Save at least 10% of your daily time and energy for yourself. Protect your mental health, practice self-care, indulge in your hobbies, foster your relationships. It's easy to get swept up in the pressures of school and work and feel obligated to produce as much as possible, but that's not sustainable nor healthy. Plus, doing things just for you makes you a more interesting human and you never know where it will take you. When I was in grad school, I blogged just because it was fun. I didn't even write about science; my favorite blog was titled "Ode to coffee" (shoutout to Rackham for enabling my creative side!). And through that blog, I met amazing people and discovered a job I love.

**Michele Forster, Ph.D.**

Compliance officer in the
Center for Biologics
Evaluation and Research at
the Food and Drug
Administration
Graduate Student with
Billy Tsai
2004 - 2008

What do you do on a typical day?

A typical day includes reviewing cases involving non-compliance with regulations for biological drug products, participating in workgroups to write guidance documents or to revise regulations, and conducting internet surveillance for unapproved products. I'm fortunate to be able to work from home. I take my dogs for a walk at lunch, and when I'm done for the day, I'm free to pursue other things I enjoy—free from any worries about work.

How did you find your career path?

By the end of graduate school, I realized that I wanted to do work with an immediate impact. I wanted to be able to see more clearly how the work I'm doing today would help someone tomorrow (literally). I looked to the FDA as a place I could do that, while using the analytical skills I learned in graduate school. I got my foot in the door with the FDA by working as an investigator, conducting drug inspections. From there, I was easily able to develop my expertise with biological drug products given my education.

What advice would you give to current CDB trainees?

If you are considering a career outside of academia, take time to explore all your options now and get some experience in your area of interest. It will help immeasurably when it comes time to secure a job.

JOIN CDB ON

Now you can connect with
[@CDB Michigan Medicine on
LinkedIn to read and share news, find
alumni, and connect with others
within our CDB network.](#)

[Be sure to list UMCD as your school
or place of work on their personal
LinkedIn pages.](#)



SPECIAL EVENTS IN 2023



CDB Town Hall



CDB Pride Month Celebration



CDB Picnic



CDB National Postdoc Appreciation Breakfast



CDB National Graduate Students Appreciation Break



Science BITES



CDB 2023 Scientific Retreat

MICHIGAN PIONEER FELLOWS PROGRAM: INTERVIEW WITH CAROLE PARENT, PH.D.



Carole Parent, Director of the Michigan Pioneer Fellows Program, welcomes the 2023 Michigan Pioneer Fellows and their mentors on September 21, 2023, during a social hour at Casa Dominick's in Ann Arbor, MI.

How did the Michigan Pioneer Fellows Program evolve from the Michigan Life Sciences Fellows (MLSF) program and the Michigan Pioneer Postdoctoral Program (MP3)?

The MLSF and MP3 programs were established independently in 2018 and 2019, respectively. Though different in key respects, MLSF and MP3 shared a common goal of identifying early-stage postdoctoral fellows and nurturing them to succeed in research-intensive professional careers. The programs merged in 2023 to maximize the input of resources dedicated to professional growth, mentorship, and collaborative opportunities for the participants. The merger brings fellows from the Medical School (clinical and basic science departments); the College of Pharmacy; the College of Literature, Science, and the Arts; and the Life Sciences Institute at the University of Michigan. The Michigan Pioneer Fellows Program offers fellows unique opportunities to interact and grow with a cohort of peers while developing the skills and independence to pursue their research.

Describe what makes a fellow successful in this program.

A successful Pioneer Fellow shows dedication to their research, willingness to participate, contribute and explore, openness to advice, and peer support.

In the center, Morgan Pimm, CDB Postdoctoral Fellow (Verhey and Ohi Labs), with Dr. Kristen Verhey on the left and co-mentor Dr. Puck Ohi on the right.

What distinguishes this fellowship program from others?

First, the strong mentoring provided to Pioneer fellows is delivered through monthly meetings with program leaders and, in part, through establishing a mentoring committee for each fellow. These elements complement the mentoring given by the PI of laboratories in which fellows are embedded. Second, the program helps fellows develop additional skills necessary for a successful career in research, including scientific writing, oral presentation, lab management, and applying for jobs. These frequent in-person meetings provide an environment where fellows get to know each other and form a strong and supportive cohort. The latter, cohort building, is the third element of strength in this program.

Is there anything you would like to add?

It is a great time to push discovery research forward, and we need highly trained and motivated fellows to prepare themselves to be the next generation of leaders. We think that the University of Michigan is uniquely poised to contribute and lead in this regard.



Gifts of any size help CDB support our faculty, students, and postdocs in their research projects and community outreach efforts.

When supporting our department through donations, you are helping to harness the power of these creative young scientists, allowing them to take risks, develop preliminary data, and explore more deeply into their research. Programs like the ones listed below provide opportunities for our students and postdocs to develop educational materials, mentor young learners and promote their interest in science and scientific careers, communicate science effectively, and impact a larger scientific community. These opportunities not only furnish a better educational experience for our students but provide the world at large with a deeper understanding of science.

- Developing Future Biologists

- Neurons Can Fly

For further information or to donate, please visit: www.umichcdb.com.

Thank you for your continued support!

Regents of the University of Michigan:

Jordan B. Acker, Michael J. Behm,
Mark J. Bernstein, Paul W. Brown,
Sarah Hubbard, Denise Ilitch, Ron Weiser,
Katherine E. White, Santa J. Ono (ex officio)

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DEPARTMENT OF CELL & DEVELOPMENTAL BIOLOGY