

CBP IN THE LOOP

THE LATEST NEWS AND UPDATES FROM CELL BIOLOGY AND
PHYSIOLOGY

Editors: Janice Warfford, Laura McCormick, Matthew Billard and Kathleen Caron

**WE'RE
NUMBER
ONE**



The Department of Cell Biology and Physiology is ranked #1 in the US by the Blue Ridge Institute for Medical Research and follows the guiding principles of our School of Medicine to be nationally recognized for excellence in our discipline by leading, teaching, and caring.



DEPARTMENTAL MISSION

The Department of Cell Biology and Physiology follows the guiding principles of our School of Medicine: to be nationally recognized for excellence in our discipline by leading, teaching, and caring.

- *Leading: to conduct cutting-edge, innovative research that advances the discipline of cell biology and physiology, with emphasis on topics that contribute to the improvement of human health*
- *Teaching: to provide a rigorous and competitive educational experience for a diverse population of graduate and professional trainees which enables them to succeed in their future careers*
- *Caring: to serve the people of North Carolina, the United States, and the international community, by excelling in our research and education missions which advance the discipline of cell biology and physiology*

MESSAGE FROM OUR CHAIR



Dear CBP Community,

We are delighted to be sharing our latest edition of the CBP “In the Loop” Newsletter! We are entering a new phase of recovery from the global COVID-19 pandemic and are looking forward to a bright and new future! To kick things off, the Cell Biology and Physiology department was recently ranked #1 by the Blueridge Institute! We are also excited by the return of many in-person events, such as our CBP seminars, FUSION student works in progress, and annual Research Day! As we welcome back our students and activities, we also welcome new faces to our faculty and staff. The CBP department will continue to go through changes and will come back stronger and more innovative than ever! I’d like to recognize the struggles of our recent past and look forward to continued future success. Here’s to all of all of our fabulous CBP community...always #1 in our hearts!

Kathleen

Please visit our **Make a Gift** website to give:

<https://www.med.unc.edu/cellbiophysio/make-a-gift/funding-opportunities>

Current opportunities to support the Department of Cell Biology and Physiology:

CELL BIOLOGY AND PHYSIOLOGY GIFT TRUST

This fund is a general fund to help support invited experts, informative speakers, and events that foster collaboration, professional development, and scientific growth.

MAREN TRUST FOR GRADUATE STUDENTS

The Thomas P. Maren Graduate Student Fund is intended to provide CBP Curriculum graduate students with opportunities to learn new skills and gain experience with emerging technologies.

CELL BIOLOGY AND PHYSIOLOGY POST-DOC FUND

This fund is intended to provide CBP postdoctoral trainees with funds to support travel expenses and registration fees for scientific conferences and specialized training opportunities or workshops.



Stay Connected to Cell Biology and Physiology

<https://www.med.unc.edu/cellbiophysio>

Follow us on Twitter:



https://twitter.com/UNC_CBP





In Memorium

Dr. Kenneth Jacobson
Emeritus Professor
Kenan Distinguished Professor

Cell Biology and Physiology Emeritus Professor and Kenan Distinguished Professor, Dr. Kenneth Jacobson passed away on Monday, February 7th after a short and precipitous battle with cancer. Ken was surrounded by his loving wife, Judy, and two daughters and extended family. Ken was an inspirational scientist, thoughtful mentor and beloved colleague to so many people.



**Donations can be made in
Ken's name to:
The Sierra Club or
The National Brain Tumor
Society**



ANNUAL DEI VIRTUAL WORKSHOP

On Thursday, April 21st, 10:30 – 11:30 AM, the Cell Biology and Physiology Department held our annual DEI workshop facilitated by Amanda Storyward of ODEI. This year the training was entitled, The Understanding and Responding to Microaggressions. This training explored the concept of microaggressions, explain important terminology related to microaggressions and discuss some of the reasons microaggressions can be challenging to identify and address. The training gave participants the opportunity to work in small groups to analyze specific examples of microaggressions that occur commonly in different SOM work and learning environments. At the completion of the training, participants are expected to have a better grasp on how to identify and handle microaggressions in the future. This training required active participation.

Microaggressions can emanate from and be directed towards any member of our community. Therefore, consistent with our overall CBP DEI Recommendations, this training is **REQUIRED** for all employees hired through the CBP Dept. This includes all faculty, CBP Curriculum students, postdocs, and staff members. Furthermore, we encourage PIs of CBP-affiliated labs to extend an invitation to any lab members who may be formally hired through other units—all were welcome to participate.



WELCOME NEW FACULTY

WE'D LIKE TO WELCOME OUR NEW CBP FACULTY THAT JOINED US IN 2021. SOME NAMES WILL SOUND FAMILIAR, AND SOME HAVE BEEN ANNOUNCED PREVIOUSLY, BUT WE'D LIKE TO RECAP ALL THESE GREAT ADDITIONS TO OUR FACULTY RANKS!



Dr. Jessica Thaxton, Ph.D., MsCR. was appointed as Associate Professor in the Tenure Track and a member of the UNC Lineberger Comprehensive Cancer Center (LCCC) in January 2022. Dr. Thaxton's research focuses on stress signaling and metabolism in T-cells within the tumor microenvironment, with an emphasis on the intersection between endoplasmic reticulum biology and cell metabolism. The overarching goal of her research program is to create and implement novel immune-based strategies that advance the care of patients with cancer. <https://www.thaxtonimmuno.com/>

Dr. Edward Bahnson, Ph.D. joined the Department of Cell Biology and Physiology as an Assistant Professor in the Tenure Track in December 2021 after transferring from the Division of Vascular Surgery in the Department of Surgery. Dr. Bahnson's work focuses on how redox regulation affects the pathophysiology of vascular disease. His research uses novel rat models of atherosclerosis and type II diabetes combined with nanocarrier delivery systems to improve the outcomes of vascular interventions. The overarching goals of his research program are to develop targeted therapies to normalize the redox imbalance of diseased arteries and to study how exposure to environmental stressors affect vascular outcomes after revascularization. <https://bahnsonlab.web.unc.edu/>



Dr. Katie Baldwin, Ph.D. was appointed as an Assistant Professor in the Tenure Track in the Department of Cell Biology and Physiology and as a member of the UNC Neuroscience Center in April 2021. Dr. Baldwin's research combines novel mouse models with cutting-edge molecular, proteomic, and physiological techniques to investigate the relationship between astrocyte and brain development. Katie's work focuses on the cellular and molecular mechanisms that regulate how astrocytes develop their morphological complexity and interact with other brain cell types and how astrocyte dysfunction drives the pathogenesis of neurodevelopmental disorders, such as leukodystrophy, autism spectrum disorder, and schizophrenia. <https://www.med.unc.edu/cellbiophysio/baldwinlab/>



Dr. Adam Hantman, Ph.D. was appointed as an Associate Professor in the Tenure Track in the Department of Cell Biology and Physiology and a member of the UNC Neuroscience Center in September of 2021. Adam is an expert in the physiology of the cerebellum and the coordination of skilled movements by the motor cortex. The overarching goal of his research program is to discover novel paradigms of how the nervous system controls movement, leading to a greater understanding of movement disorders including stroke, ataxia, dystonia, Parkinson's, tremor, and amyotrophic lateral sclerosis (ALS). <https://www.med.unc.edu/neuroscience/hantmanlab/>

Dr. Matthew Judson, Ph.D. was appointed to the position of Research Assistant Professor within the Department of Cell Biology and Physiology in January of 2022. Matt's research focuses on the relationship between UBE3A gain-of-function and loss-of-function mutations and trajectories of brain growth during early postnatal development. The overarching goal of his work is to develop Ube3a gene transfer as a therapy for Angelman Syndrome, a genetic disorder characterized by developmental delay, intellectual disability, severe speech impairment, problems with movement and balance (ataxia), epilepsy, and a small head size. <https://www.philpotlab.org/>



Dr. Flori Sassano, Ph.D. was appointed to the position of Research Assistant Professor within the Department of Cell Biology and Physiology in October of 2021. Dr. Sassano's research program focuses on the airways of Cystic Fibrosis patients and their susceptibility to infection and inflammation leading to chronic lung disease. The goal of Dr. Sassano's research is to identify and optimize naturally occurring, biologically active peptides (e.g. ELD403) that protect normal lung mucosa from infection as a novel anti-viral therapy in Cystic Fibrosis.

MEET

WENDY SALMON

In September, CBP welcomed Wendy Salmon as the new director of the Hooker Imaging Core (HIC). With her vast experience in microscopy, we look forward to the new ideas and initiatives that Wendy will bring to UNC!



Is there a moment when you knew that you had fallen in love with microscopy?

In college, I was fortunate to have a summer research project using immunofluorescence and I just loved the whole thing. The attention to detail on sample preparation, the beautiful images, the challenge of learning the microscope well enough to get high quality images of samples that photobleached almost instantly or imaging a live cell long enough. It's a wonderful combination of biology, physics, chemistry, attention to detail and artistry.

Do you have any "scientific heroes"?

I cannot pick just one. One of my early mentors, Clare Waterman, is a pioneer in quantitative fluorescence live cell imaging of the cytoskeleton and really showed me how to attack science and microscopy with gusto and rigor (and that it's OK to have a colorful personality). Alison North, who runs the imaging core at Rockefeller University, is just an amazing human being and scientist who really gets how to bring advanced imaging to a large group of researchers and I am constantly amazed at what she accomplishes in her core and in international groups. And Nina Allen, a pioneer in several imaging technologies including video enhanced DIC and using a confocal on a gyroscope to be able to study plants in the correct orientation--she is also an amazing human being and paved the way for so many women scientists and microscopists. I am so fortunate.

What microscope best represents your personality?

Oh my goodness, this is a hard one! Actually, I think I'm more like a core, with many related but different capabilities, than a "typical" microscope. But I'm going to have to think on this more.

Are there any recent advancements in the field of microscopy that you are especially excited about?

The boom in super-resolution technologies and accompanying analysis tools is really exciting for its ability to clarify and reveal important biology. I am also loving all the software tools the companies are incorporating that make setting up complex experiments much faster and more consistent.

What is a common challenge that you see microscopists facing at the core?

Many researchers approach their microscopy experiments hoping the final experiment can be done on the first try. This pretty much never works because there are way too many variables--from the sample itself, from the sample preparation and from the microscopy equipment. Doing the final experiment to start provides some guidance on what variables you are unsure of, but it's usually fastest to then quickly step back and address each of those variables using separate, targeted experiments. Small, targeted experiments are implemented and interpreted much faster and more robustly than changing lots of variables at once. I think of it like building a set of stairs to see over a wall instead of just trying to learn to jump higher.

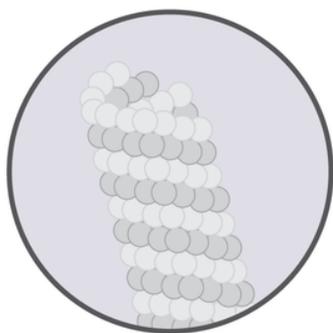
Are there any upcoming events at the Core that you'd like to share?

I'm super excited to be starting the UNC Microscopy Cafe in January 2022. It is part seminar, part working group. Each month there will be one seminar on a light microscopy topic (~1 hour) followed by time to just chat with light microscopists from across campus. The HIC is also hosting several equipment demos from various companies to see what resources are in demand. If you want announcements, send me an email!

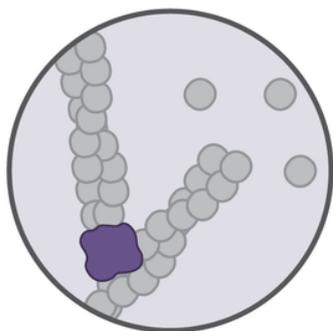
Anything else you'd like to add?

I love helping people figure out how best to use microscopes to answer scientific questions. Please don't hesitate to reach out with questions or invite me to give a presentation at your lab meeting (I can do a HIC overview in 5 min!)

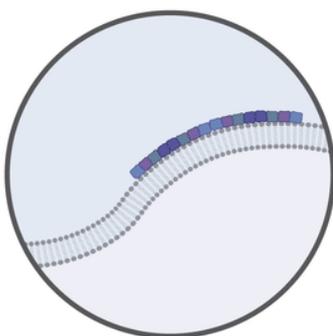
THE CYTOSKELETON CLUB



Cytoskeleton Club is a student-run organization that brings researchers from across campus together for informal talks once a month.



While our monthly meetings have been on hiatus during the COVID pandemic, we hope to resume them in 2022. All are welcome to attend!



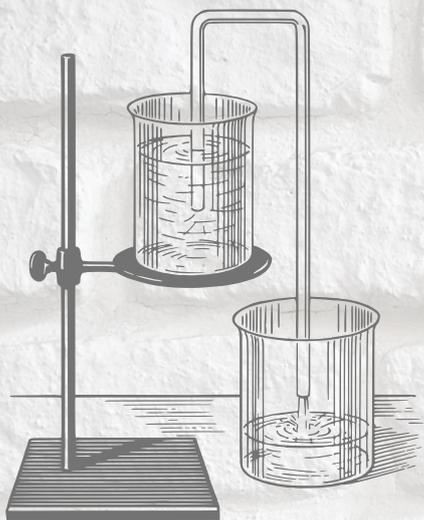
Our listserv is also a great resource for on-campus events, job opportunities & more! Recently, we advertised 7 talks & 30 posters given by the UNC community at ASCB 2021.

STAY UPDATED

Email cytoskeletonclub@gmail.com to join our listserv

Website: <http://cytoskeleton.bio.unc.edu>

Twitter: @CytoskeletonUNC



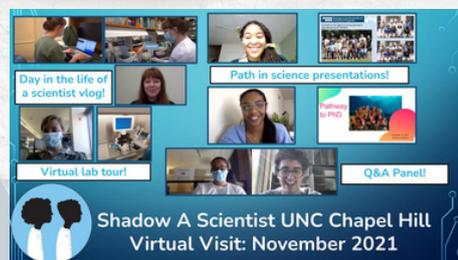
Graduate STUDENT CORNER

SHADOW A SCIENTIST

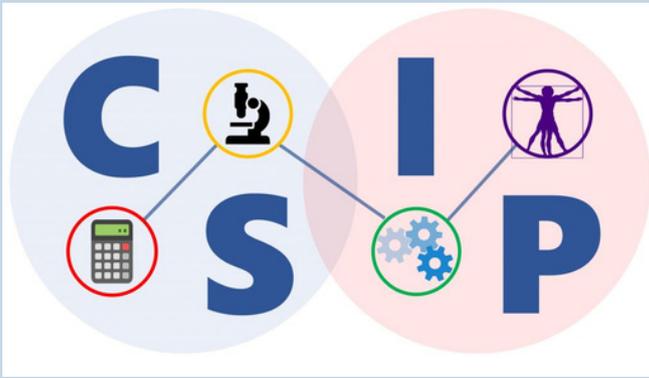
Shadow A Scientist is a graduate-student run organization that plans and conducts outreach visits for underserved communities in NC. CBP Graduate Students Max Hockenberry, Kimberly Lukasik, Molly Kulikauskas and Laura McCormick all participated in this program. With the help of our wonderful students and other volunteers, the program was able to reach over 300 high school students in 2021!

For more information on the Shadow a Scientist Program, please visit:

<https://shadowascientist.web.unc.edu/>



Cellular Systems and Integrative Physiology (CSIP) Training Program



The mission of the CSIP Training Program is to develop a diverse pool of responsible, rigorous scientists who have the skills to investigate the integrative, regulatory and developmental physiology of higher organisms and their organ systems by elucidating the functional cellular components of these processes and furthermore, can transition these skills into a wide variety of careers in the biomedical workforce and overall society.

This training grant is currently funding the following students:



Jocelyn Alvarado: (Mentor: Sharon Campbell, PhD)

Research: Investigate the coordination of vinculin and its splice isoform metavinculin in the regulation of cell morphology and force transmission at cellular adhesions of murine embryonic fibroblasts (MEFs) and the embryonic chick heart.



Anna Kim: (Mentor: Mohanish Deshmukh, PhD)

Research: Screening for viable single-cell overexpression clones in human embryonic stem cells (hESCs) to identify differences in gene-specific responses to cytotoxic stressors as well as examining apoptotic and axonal pruning processes in knockout models of primary murine neurons cultured in microfluidic chambers.



Juliet King: (Mentor: Scott Williams, PhD)

Research: Investigating how cell-cell and cell-matrix adhesion molecules regulate progenitor cell behavior in the developing murine epidermis and their broader impacts on epithelial form and function.

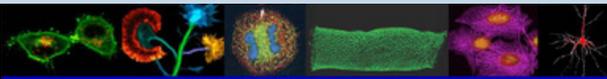


Allison Skinkle: (Mentor: Amy Gladfelter, PhD)

Research: Characterizing assembly of glycolytic condensates in placental syncytiotrophoblast, particularly as it relates to nutrient sensing at the maternal-fetal interface.

Save the Date

CBP SEMINARS AND RESEARCH DAY



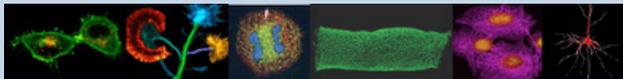
**DEPARTMENT AND CURRICULUM
of CELL BIOLOGY AND PHYSIOLOGY**

Spring 2022 FUSION Seminars

JAN 24	Ian Windham Natalie Tanke	<i>Dr. Sarah Cohen</i> <i>Dr. Vicki Bautch</i>
FEB 14	Laura McCormick Kshitij Sharma	<i>Dr. Stephanie Gupton</i> <i>Dr. Antonio Amelio</i>
FEB 21	Reggie Edwards Baggio Evangelista	<i>Dr. Damaris Lorenzo</i> <i>Dr. Todd Cohen</i>
FEB 28	Whitney Bell Kayleigh Voos	<i>Dr. Yuliya Pylayeva-Gupta</i> <i>Dr. Damaris Lorenzo</i>
MAR 7	Hernan Mendez Danielle Buglak	<i>Dr. Kathleen Caron</i> <i>Dr. Vicki Bautch</i>
MAR 28	Pu Zhang Pierre N'Guetta	<i>Dr. Bob Goldstein</i> <i>Dr. Lori O'Brien</i>
APR 4	Allison Skinkle Nate Nelson-Maney	<i>Dr. Amy Gladfelder</i> <i>Dr. Kathleen Caron</i>
APR 18	Sam Honeycutt Chris Ho	<i>Dr. Lori O'Brien</i> <i>Dr. Stephanie Gupton</i>

All Seminars (unless otherwise posted) are held **MONDAYS** at 12:30PM 6202 MBB

2022



**Department and Curriculum
of Cell Biology and Physiology**

Spring 2022 Seminars

Jan 31	Biafra Ahanonu, PhD (Joint w/ Neuroscience) HHMI Hannah Gray Fellow University of California San Francisco <i>Research Focus:</i> pain cell biology, neurophysiology <i>Host:</i> Drs. Kathleen Caron, Mark Zyka, Ben Philpot	
Feb 7	Samantha Butler, PhD Professor/Vice Chair, EDS University of California Los Angeles <i>Research Focus:</i> developmental neuroscience, circuit and regeneration <i>Host:</i> Dr. Stephanie Gupton	
Mar 14	Giorgia Quadrato, PhD Principal Investigator University of Southern California <i>Research Focus:</i> human brain development and disease <i>Host:</i> Dr. Notosho Snider	
Mar 21	Nicola Allen, PhD Associate Professor SALK Institute for Biological Studies <i>Research Focus:</i> Alzheimer's disease, astrocyte biology <i>Host:</i> Dr. Eva Anton	
Apr 11	Dale Abel, PhD Department of Medicine, Chair University of California Los Angeles <i>Research Focus:</i> cardiac failure, diabetes, mitochondria methods <i>Host:</i> Dr. Damaris Lorenzo	
Apr 25	Shernaz Bamji, PhD Head Neuroscience Research Group University of British Columbia <i>Research Focus:</i> synapse formation and function <i>Host:</i> Dr. Graham Diering	

All Seminars (unless otherwise posted) are held at 12:30PM

 **SCHOOL OF MEDICINE**
Cell Biology and Physiology

Mark your Calendars

CBP RESEARCH DAY

MONDAY, MAY 16TH

9:45AM-2:30PM



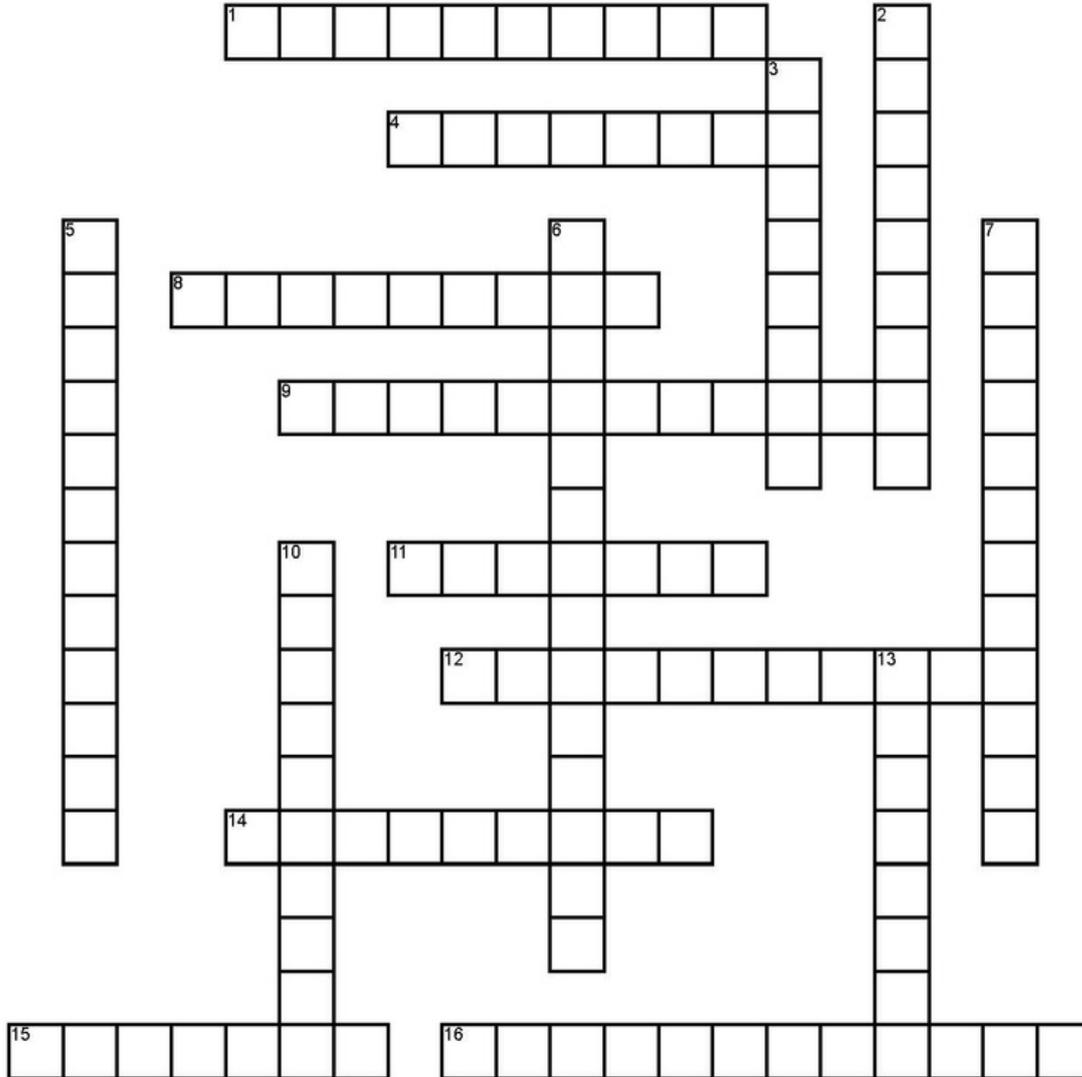
Cell Biology and Physiology

Holiday Gathering



Thursday, December 16, 2021

Cell Crossword Puzzle



Across

1. A small cylindrical organelle near the nucleus in animal cells, occurring in pairs and involved in the development of spindle fibers in cell division.
4. A digestive organelle in eukaryotic cells; contains hydrolytic enzymes that digest engulfed food or damaged organelles
8. A cell structure consisting of RNA and protein organized into two subunits and functioning as the site of protein synthesis in the cytoplasm; in the eukaryotic cells the ribosomal subunits are constructed in the molecules
9. The thickest of the three main kinds of fibers making up the cytoskeleton of a eukaryotic cell; a hollow tube made of globular proteins called tubulins; found in cilia and flagella
11. organelle composed of a double membrane that acts as the storehouse for most of a cell's DNA

12. A narrow thread of cytoplasm that passes through the cell walls of adjacent plant cells that allows connections between them.
14. A complex of vesicles and folded membranes within the cytoplasm of most eukaryotic cells, involved in secretion and intracellular transport.
15. That portion of the endoplasmic reticulum with ribosomes attached that make membrane proteins and secretory proteins
16. A thin flexible layer around the cells of all living things; it's job is to separate the cytoplasm from the cell's surroundings

Down

2. The contents of a eukaryotic cell between the plasma membrane and the nucleus; consists of a semi-fluid medium and organelles; can also refer to the interior of a prokaryotic cell
3. A protective layer external to the plasma membrane in plant cells bacteria fungi and some protists; protects the cell and helps maintain its shape

5. A bean-shaped organelle that supplies energy to the cell and has its own ribosomes and DNA
6. The central vacuole is a cellular organelle found in plant cells. It is often the largest organelle in the cell. It is surrounded by a membrane and functions to hold materials and wastes.
7. An organelle found in plants and algae that absorbs sunlight and uses it to drive the synthesis of organic compounds (sugars) from carbon dioxide and water
10. A structure found in animal cells from which microtubules originate and that is important during cell division (contains two centrioles)
13. The portion of the endoplasmic reticulum that lacks ribosomes centrioles/ A small cylindrical organelle near the nucleus in animal cells, occurring in pairs and involved in the development of spindle fibers in cell division.