

# THE BIOMEDER

UNIVERSITY  
of GUELPH

The official newsletter of the Department of Biomedical Sciences



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## The resilience of Biomeders!

As we enter our second year under COVID restrictions, I continue to be amazed and impressed by the level of activity and productivity around the department. Both teaching and research continue to be as productive and successful despite the limitations COVID has placed on us all.

Every year, Winter is always an especially stressful and challenging time, and this year with COVID and family situations (home schooling, taking care of elderly parents, etc) it is even more challenging. I have faith that our resilience has gotten us this far and our patience and knowledge that there is a light at the end of this dark tunnel will get us to the finish line.

**Stay safe and stay strong BIOMED!!**

# Dr. Jim Petrik's New Approach to Fighting Ovarian Cancer

A novel approach to ovarian cancer research at the University of Guelph's Ontario Veterinary College (OVC) is delivering promising results. "The treatment for women with advanced ovarian cancer has not changed appreciably in 40 years," notes OVC Biomedical Sciences professor **Jim Petrik**. Current treatments have limited effectiveness, focusing on destroying the tumour's blood supply and trying to starve it.



**The study was the first to investigate this approach in mouse models with advanced ovarian cancer.**

His research team developed an approach to prune the dysfunctional blood vessels, establishing a tumour with a good blood supply. This pathway was then used to deliver treatment to the tumour, including new approaches such as oncolytic viruses and immunotherapy. The latter work, in collaboration with Profs. Byram Bridle and Sarah Wootton, in OVC's Department of Pathobiology, explores the power of oncolytic viruses to infect and kill cancer cells and to stimulate anti-tumour responses in the body. Part of the response is to also recruit and activate nearby immune cells which then also enter the tumour.

The study not only showed an uptake of the oncolytic virus, but also a dramatic increase in uptake and activation of the immune cells the virus produces. This is critical because in ovarian cancer, as with a lot of other late stage cancers, it's the metastatic disease that ultimately causes a lot of morbidity.

Close collaborations with McMaster University and Western University is further advancing the work. "We're collaborating with clinicians at both medical schools as we try and transition this to a **Phase 1 Clinical Trial with human patients**," says Petrik. "We're working with human ovarian cancer cells and so far we've been able to show that the therapy is equally as effective in human cancer samples as we see with our animal model."

An important translational step will include bringing the therapy to companion animals with naturally occurring cancers. He recently received funding from OVC Pet Trust to begin this work.

**Congrats Jim!**

# Dr. Jim Petrik's Funding Success



**Dr. Jim Petrik** has recently secured approximately **\$1 Million** in support of his cancer research program:

Jim is the principal applicant on TWO grants funded by **Ovarian Cancer Canada** "*Characterization of mouse models of ovarian cancer*" - Ovarian Cancer Canada - **\$41,738 over 2 Years**; and "*Response of syngeneic models of ovarian cancer to combination therapy*" - **\$62,500 over 2 Years**.

Jim is also co-Applicant on a **CIHR Project grant** (ranked 2nd in the competition) on "*Interrogating the critical requirement for LKB1-NUAK1 signalling in oxidative stress and cell adhesion during the ovarian tumorigenic program*". PI - Trevor Shepherd, Western. **\$994,000 over 5 Years**

**Congrats Jim, keep up the great work!!**

# Thomas Koch's funding success!



**Dr. Thomas Koch** was awarded funding from the **Grayson-Jockey Club Research Foundation!**

Thomas's grant titled "*Treatment of joint injury with mesenchymal stromal cells*", was awarded **\$117,000 USD!**

To quote from the President of the research foundation's letter,

*"Clearly this project was regarded as **one of the best** recommended by the Research Advisory Committee. We are pleased to support this important work".*

**Congrats Thomas!**

# Martino Lab Updates

## February is Heart Month!

Here's the latest news from the **Martino Cardiovascular Research Laboratory**.

1. Martino Lab holiday party! Since we couldn't celebrate in person this winter, we held a virtual Yoga Party, hosted by Arrive Yoga in Guelph. It was fabulous fun, and we all got some exercise!



2. Dr. Tami Martino is thrilled to be an Invited Speaker at the 2021 Canadian Women's Heart Health Summit, Feb 10-13 (virtual). This is the leading forum for Cardiovascular Scientists, Clinicians, Lived Experiences, State-of-the-Art programs, and trainees researching Women's Heart Health in Canada.

3. Tami was also chosen to lead the Career Mentoring Evening Session for Trainees in Basic Sciences, Women's Heart Health – focusing on research, career aspirations, and networking.

4. Martino visits California!! Virtually, that is. Dr. Martino was honoured to be an Invited Speaker on Circadian Medicine, to the prestigious Centre for Circadian Biology Symposium in San Diego California, Feb. 9-11, 2021. Outstanding line-up of leading International Researchers. This year they waived registration to make it available free to a world-wide audience. (PHOTO 4).

5. Dr. Tami Martino was featured as a “Women in Science at U of G” in the February issue of The Ontario. The full story can be found here: [https://issuu.com/ontarion/docs/190.2\\_web/s/11640365](https://issuu.com/ontarion/docs/190.2_web/s/11640365) (PHOTO 5).

# MBS Applied Reproductive Biotechnology in full swing!

Over the last 10 years, **Nicholas Prevedel** has been blessed to be involved in *Friends Helping Sick Kids*, which is a charity that hosts an annual disco event to raise money for Leukemia Research at SickKids. So far, they have raised over a million dollars to the cause!

This year, due to COVID the event had to be cancelled, and so they are seeking alternative ways to raise money. The link to the fundraising page is below, along with a statement from the founders of Friends Helping Sick Kids.

Link: <https://fundraise.sickkidsfoundation.com/friendshelpingsickkids>

*"Friends Helping Sick Kids hosts an annual Saturday Night Fever event where everyone can dance the night away while showing support for SickKids Foundation and Leukemia Research. This past year has brought so much change for all of us, including staying apart and not being able to be together. One of the things we love about our annual event, is that we can all get together and have so much fun, all in support of such a great cause. We have to continue to do our part, and as such, we are sad to share that this year's event is cancelled. But that doesn't change the need. SickKids still needs us. Research is still happening. We still need to fight to find a cure for Leukemia.*

*SickKids needs us. With your help we can continue to make a difference and change the lives of so many children and their families. In lieu of purchasing a ticket/table or sponsoring our event, we ask that you make a monetary donation instead, tax receipts will be provided.*

***Thank you for your generosity and your continued support."***

Your friends at Friends Helping Sick Kids

Martina and Frank Damiano

# Friends Helping Sick Kids

In preparation for the hands-on training in bovine IVF for students in the Applied Reproductive Biotechnologies MBS Program, **Dr Oluwole** spent some time during the month of January 2021 shooting instructional videos that are currently being be used as part of the training program.

Thanks to her effort and those of **Dr Favetta, Antenos** and **Liz St John**, they were able to find alternative sources of cow ovaries for teaching purposes, pending the time we regain entry into the nearby slaughter facility that has served as our constant supply of ovaries.

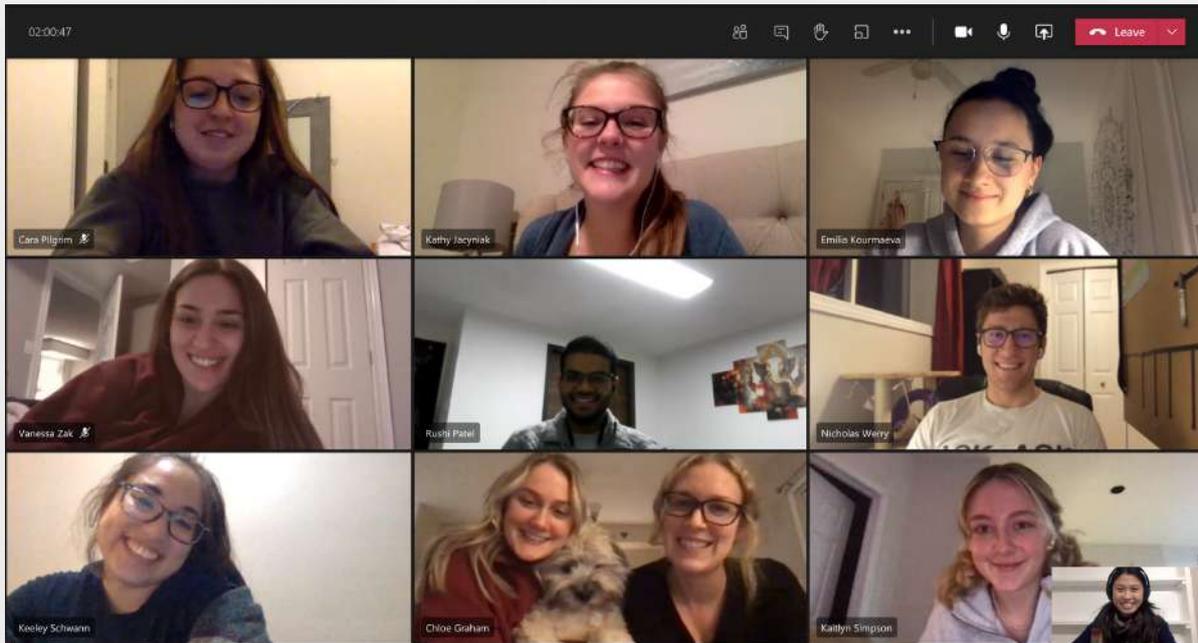
Training of students began early February 2021. All this would not have been possible without the hard work of **Liz St John** who has been driving an hour both ways, every week to pick up the cow ovaries.

Nothing goes to waste here. Other graduate students in the Lab have been using the left-over ovaries and granulosa cells from the aspirated ovaries. As a result, they have been able to culture several bovine granulosa cell lines and established a bovine granulosa cell pool for research purposes in the Reproductive Biotechnology lab



Dr. Oluwole on the set making her training video

# Graduate student trivia night a hit!



*Thanks to all the grad students that took part in our trivia night event on Feb 3rd!*

*Congratulations to the winning team - **"Team Kaitlyn"** - featuring **Kaitlyn, Emilia, Rushi and Nick!***

*We hope to play "Among Us" at our next social event! Stay tuned for details.*

# Publications from around the Dept this month...

*Circadian influence on the microbiome improves heart failure outcomes.*

**Mistry P, Reitz CJ, Khatua TN, Rasouli M, Oliphant K, Young ME, Allen-Vercoe E, Martino TA.** J Mol Cell Cardiol. 2020 Dec;149:54-72.



I am pleased to tell you that this paper, has been selected as one of JMCC's "Papers of the Year" in 2020. Well done Priya and Tami!

Effects of bisphenol A and bisphenol S on microRNA expression during bovine (*Bos taurus*) oocyte maturation and early embryo development. **Reem Sabry \*, Angela C. Saleh, Leanne Stalker, Jonathan LaMarre, Laura A. Favetta \***. Reproductive Toxicology, 2021. 99:96-108.

GSK-3 $\beta$  Disrupts Neuronal Oscillatory Function to Inhibit Learning and Memory in Male Rats. **Albeely AM, Williams OOF, Perreault ML.** Cell Mol Neurobiol. 2021 Jan 3. doi: 10.1007/s10571-020-01020-z. Online ahead of print.

A Review of Recent Advances in 3D Bioprinting With an Eye on Future Regenerative Therapies in Veterinary Medicine. **Colin Jamieson, Patrick Keenan, D'Arcy Kirkwood, Saba Oji , Caroline Webster, Keith A. Russell and Thomas G. Koch\***. Front in Vet Science; 2021. (<https://doi.org/10.3389/fvets.2020.584193>).

*\*This manuscript was a contribution from MBS students (Jamieson, Petrik; Keenan and Kirkwood, LaMarre; Oji and Webster, Madan) participating in Dr. Koch's BIOM\*6712 course (Dr. Russell is a PDF with Koch). Well done folks!!*

# Biomed Kudos Board

Don't forget to write your inspirational thoughts or send a shout out to someone in the department who went above and beyond, or your favourite recipe, by posting your message on our Kudos board

<https://uoguelph.kudoboard.com/boards/PLeZpiCG>



**Please** do not hesitate to knock on my door (with your mask!) or contact me by email if you have ANY questions/concerns at [tsaleh@uoguelph.ca](mailto:tsaleh@uoguelph.ca)

**Stay safe, stay well**

**#biomedstrong**