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MELANOMA Newsletter

2019-20 IMPACT REPORT

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YOUR GENEROUS SUPPORT

We are experiencing unprecedented and challenging times, but our commitment to improving the lives of those affected by melanoma and other cancers has not changed.

Thank you for your generous support in 2019/2020, we are sincerely grateful. Through your charitable donations our team has grown, and our research has expanded, driving changes in the management of patients with melanoma.

We thank all the **study participants** and **healthy donors** for their contribution to this vital research. Our projects could not continue without your invaluable support.

Our research is supported by a broad team of clinicians at Sir Charles Gairdner Hospital, Fiona Staley Hospital, Western Oncology, PathWest, Saint John of God, Joondalup Hospital, Level1 Melanoma, Perth Retina, Lions Eye Institute and other clinical sites. We thank them all for their incredible support.

In 2020, to enhance our world-leading expertise in Cancer Research, we are seeking your help to raise funds to support a research scientist with specialisation in bioinformatics. The position will support cutting-edge complex analyses to decipher the genetics of melanoma and other cancers.

We would deeply appreciate your support. If you can help, please donate by visiting us at www.ecu.edu.au/giving-to-ecu/supporting-our-communities.

Warm regards and thank you.



Associate Professor Elin Gray



PHOTO: Melanoma Research Group team with Prof Mel Ziman on her last day at the office.

CELEBRATING AN OUTSTANDING CAREER

Last December, we honoured the truly inspiring career of **Professor Mel Ziman** in a memorable retirement celebration. On that night, we celebrated her commitment and outstanding contribution to cancer research in Australia.

Professor Ziman's hard work and dedication has inspired various generations of scientists. Many of her past and present students, colleagues and collaborators were in attendance to honour her.

The night was full of moving speeches and anecdotes about Mel from those that worked at her side. Significantly, we heard emotional speeches from community members affected by melanoma that have been involved in our research studies from the very beginning.

We are all indebted to Mel for her kind words of encouragement and support through our research and careers. Her determination and vision will continue to inspire us in our continuous fight against cancer.

Professor Ziman remains involved with the team as an adjunct professor, serving as a mentor and advisor to the team.



PHOTO: Professor Mel Ziman.



PHOTO: Ms Michelle Periera and Ms Paula Van Miert.



PHOTO: Dr Afaf Abed (left) and Desiree Sexauer.

EBBS AND FLOWS

During the course of this year, we said goodbye to two great research assistants, **Michelle Pereira** and **Paula Van Miert**. They have significantly contributed to our research, the establishment of new methodologies in the laboratory and commitment to quality assurance.



PHOTO: Prof Michael Millward (left) and Dr Ashleigh McEvoy.

We also said goodbye to post-doctoral scientist Ashleigh McEvoy, who served as the team's clinical study coordinator and who will be missed both in the clinic and in the lab.

Ashleigh had a remarkable career completing her PhD studies with multiple high impact publications and receiving a prestigious Western Australian Health Translation Network fellowship. Her passion for clinical work has led her to undertake a position at the Fiona Staley Hospital clinical trials unit. We wish Ash all the best in this new adventure as she continues her important work in the search for better cancer treatments.

In 2020, we welcomed two postgraduate students.

Dr Afaf Abed, a clinical oncologist who is commencing her PhD on the study of immune molecules that affect response to immunotherapy in lung cancer patients. Afaf has been awarded a young investigator grant worth \$10,000 from the Fiona Stanley Hospital Clinical Trial Unit and a grant from The Lung Foundation Australia – Ellen Yates Memorial Grant-in-Aid for Lung Cancer Research worth \$20,000.

Desiree Sexauer has recently completed her Bachelor of Medical Science at Edith Cowan University. She has demonstrated continued academic and research excellence and has been awarded The Certificate of Recognition for being one of the Top 100 students at Edith Cowan University over two consecutive years. Desiree is undertaking a project on the analysis of serum autoantibodies for prognostic of melanoma as a Masters by Research candidate under the supervision of Dr Pauline Zaenker and A/ Prof Elin Gray.





PHOTO: Dr Pauline Zaenker (centre) with ECU vicechancellor Prof Steve Chapman and Prof Cobie Rudd.

BALANCING CANCER RESEARCH AND MOTHERHOOD

Balancing motherhood with an academic career is a challenging endeavour but early career researcher Dr Pauline Zaenker makes it looks easy.

On August 2019, Dr Pauline Zaenker was accompanied by her young son Arius Quinn as she was awarded the Athena Swan Kick-Start Science Prize at ECU. This prize recognised Dr Zaenker's achievements as an emerging research leader, and her commitment to greater gender diversity and the advancement of women in STEMM. The award of \$15,000 will be used to fund a project to evaluate the potential of autoantibody biomarkers to serve as an indicator of risk of progression and shortened patient survival in the prognosis of melanoma patients.

Furthermore, **Dr Pauline Zaenker** was appointed as the **ECU Vice-Chancellor's Research Fellow.** This highly competitive fellowship offers Dr Zaenker a three-year, fulltime, fixed-term appointment. The fellowship will allow Pauline to pursue her research on the development of an early diagnostic test for melanoma. Pauline's commitment to the commercialisation of the MelDx test, now covered by an international patent, is an inspiration to all of us in the fight against melanoma.



PHOTO: Aaron Beasley and A/Prof Elin Gray with conference convener Professor Evi Lianidou at the ACTC meeting (left). Aaron Beasley and Dr Leslie Calapre with their posters (right).

PHD STUDENT AARON BEASLEY WINS BEST POSTER AWARD

Three members of our team attended the fourth biennial Advances in Circulating Tumour Cells (ACTC) – Liquid biopsy: Latest Advances and Future Challenges.

A/Prof Elin Gray, Dr Leslie Calapre and PhD candidate Aaron Beasley were able to showcase their recent findings on blood-based melanoma markers at an international forum alongside well-respected leaders of the field. The ACTC conference afforded the opportunity to learn and discuss the challenges associated with liquid biopsy, as well as solutions to overcome current barriers.

Our congratulations to Mr **Aaron Beasley**, awarded the **Best Poster Award**. This is a testament to the high-quality research produced by the team. Aaron's work demonstrated the utility of cancer cells that are circulating in the blood as a minimally invasive alternative to an eye biopsy, for predicting the likelihood of uveal melanoma patients developing metastases.



PHOTO: PhD student Michael Clark at the Thomas Ashworth Symposium in Sydney.



PHOTO: PhD candidates Gabriela Marsavela and Michael Clark (left). Dr Leslie Calapre receiving her award.

TEAM SHOWCASE AT NATIONAL CONFERENCES

The Thomas Ashworth Symposium has become the must gathering in the calendar of Australian scientist working on the development of liquid biopsies to enhance precision oncology and improve patient outcome, as well as providing critical insights into cancer biology.

Our team was well represented at the 6th edition of this conference in October last year in Sydney. MSc student Isaac Spencer, PhD students Emmanuel Acheampong, Du-Bois Asante and Gabriela Marsavela, and research assistants Michelle Pereira and Michael Morici presented posters showcasing data and results from much hard work over the previous year. After two full days at the conference, everyone returned with plenty of new and exciting ideas and at least a few new connections.

PhD student Michael Clark was one of only three students selected to give podium presentations at the symposium. Michael's talk, "The Potential of Extracellular Vesicle Derived RNA as Predictors of Immune Checkpoint Blockade in Melanoma," was well received by national and international experts in the field. The potential of extracellular vesicles was a hot topic at the conference. The 2019 National Australian Society for Medical Research Conference was held for the first time in Fremantle, Perth. The conference afforded us the chance to showcase our research in an Australia-wide platform.

Five members of the team delivered oral presentations: Ms Gabriela Marsavela, Mr Michael Clark and Dr Leslie Calapre; and two presented posters: Mr Du-Bois Asante and Dr Pauline Zaenker. **Dr Leslie Calapre was awarded for Best Oral Presentation** by an Early Career Researcher for her research on the utility of a blood-based marker, termed circulating tumour DNA (ctDNA), as a potential replacement for tissue biopsy.





PHOTO: World-wide collaborations of the Melanoma Research Group.

LINKING LABS AND MAKING CONNECTIONS

Inter-laboratory collaboration is a crucial driver of advances in science.

In 2019, we had multiple members visiting laboratories and institutes across the world.

PhD student Lokeswari Tangella was awarded a School Collaboration Grant and a Research Collaboration Travel Grant to support a cross-disciplinary study aiming to understand the contribution of two cellular components (melanotransferrin and the transporter ABCB5) to treatment failure to current standard-of-care treatments for melanoma. Supported by these grants, Lokeswari visited Professor Des Richardson's laboratory at The University of Sydney in September 2019. The trip allowed her to master cutting-edge molecular biology techniques. During her stay, she also attended the Sydney Catalyst International Translational Cancer Research Symposium at the Garvan Institute of Medical Research.

PhD candidate **Aaron Beasley** was awarded a Research Collaboration Travel Grant to visit the Rotterdam Ocular Melanoma Study group at the **Erasmus University Medical Center**, The Netherlands, one of the topranking universities in the world. Mr Beasley was invited by Associate Professor Emine Kilic and Associate Professor Annelies de Klein to exchange expertise on the isolation of melanoma cells from the blood of uveal melanoma patients as part of a method he developed during his PhD studies. From this visit, an on-going international collaboration for longitudinal monitoring of uveal melanoma patients for early detection of cancer spread was established.

Dr Leslie Calapre also visited the **Erasmus University Medical Center**, undertaking a bioinformatics course. Her expertise has been applied to multiple projects undertaken by our team and has provided further insight into the genetics of melanoma and ovarian cancer.

In addition, several collaborative studies with research laboratories across the world were completed and published during this year. These include a study on the analysis of melanoma cells in the blood in collaboration with **Harvard Medical School**, Boston, USA. We are building upon this discovery, implementing the use of artificial intelligence for the analysis of tumour cells in partnership with the September AI (<u>https://september.</u> <u>ai/healthcare-ai-circulating-tumour-cells/</u>).



PHOTO: Our team at the ECU Opden Day.

ENGAGING THE COMMUNITY

Throughout the year, our team have participated in several initiatives, including the ECU Open Day, which enable us to show the community our research and the technologies we utilise. It also exposes the new generation to biomedical sciences and opening their imagination to the possibilities of building a healthy society.

We have hosted numerous laboratory visits by members of the community and donors. The team is always humbled by their interest and eager to explain our research and discoveries to our visitors. This year, two new Consumer Representatives joined our team: Mrs Michelle Slabbert and Mr Mark Drage.



PHOTO: Consumer Representatives: Mr Mark Drage, Ms Clare Moynihan, Mrs Michelle Slabbert and Mrs Annie Cordingley.

Doctoral students **Aaron Beasley** and **Michael Clark** addressed the ECU Men's Business Group in September. This weekly lunchtime group strides to highlight important issues facing men to ECU male staff members. Aaron and Michael gave a compelling presentation outlining melanoma risk factors, prevention and our team's research.

The Melanoma Research Group had a stall promoting our research at the ECU Health and Wellness Expo in October 2019, attended by over 700 ECU staff and students. Our participation aimed to raise awareness of melanoma and its prevention, as well as highlight our research. The stall was well received by the ECU community with many attendees expressing interest in our current and future research.



AUSTRALIA'S BIGGEST MORNING TEA

In May 2019, the melanoma research group hosted "the biggest morning tea" at ECU to raise funds for the Cancer Council. Everybody in the team contributed to the morning tea with freshly prepared sweet and savoury morning tea food delights. We had a great turn out on the day and raised a total of \$419.88. We received a thank you letter from the cancer council with a description on what our funds could be used for.



GRANTS AND PUBLICATIONS

Grants awarded and publications released since the June 2019 newsletter.

GRANTS

- Gray E.S., Ziman M, Millward M, Khattak A. Circulating melanoma cells as a biomarker of response to immune checkpoint blockade. Cancer Council WA. 2020. \$100,000.
- Millward M., Humphries T, Amanuel B, Robinson C, Giardina T, Thomas M, Robinson S, Thomas L, Khattak A, Meniawy T, Nowak K, Ardakani NM, Wood B, Gray E, Boyd J. Integrating Tumour Mutational Burden (TMB) testing for appropriate selection of immuno-oncology therapy in metastatic melanoma fit for the modern era. Rapid Applied Research Translation program. 2020. \$250,000.
- Abed A., Khattak MA. Lung Foundation Australia Ellen Yates Memorial Grant-in-Aid for Lung Cancer Research. Genomic HLA heterozygosity, T-cell receptor (TCR) – repertoire diversity and tumor PD-L1 expression as predictive biomarkers of response to immunotherapy in lung cancer patients. 2019/20. \$20,000.
- Gray ES. Medical and Health Research Infrastructure Fund. 2019. \$20,011.

PUBLICATIONS

- Lee JH, Menzies AM, Carlino MS, McEvoy AC, Sandhu S, Weppler AM, Diefenbach RJ, Dawson SJ, Kefford RF, Millward MJ, Al-Ogaili Z, Tra T, Gray ES, Wong SQ, Scolyer RA, Long GV and Rizos H.
 2020. Longitudinal monitoring of ctDNA in patients with melanoma and brain metastases treated with immune checkpoint inhibitors. *Clin Cancer Res.* doi: 10.1158/1078-0432.CCR-19-3926.
- Nguyen B, Meehan K, Pereira MR, Mirzai B, Lim SH, Leslie C, Clark M, Sader C, Friedland P, Lindsay A, Tang C, Millward M, Gray ES, Lim AM. 2020. A Comparative Study of Extracellular Vesicle-Associated and Cell-Free DNA and RNA for HPV Detection in Oropharyngeal Squamous Cell Carcinoma. *Scientific Reports*. 10(1):6083. doi: 10.1038/s41598-020-63180-8.
- Aya-Bonilla CA, Morici M, Hong X, McEvoy AC, Sullivan RJ, Freeman J, Calapre L, Khattak MA, Meniawy T, Millward M, Ziman M, Gray ES. 2020. Detection and prognostic role of heterogeneous populations of melanoma circulating tumour cells. *British Journal of Cancer*, 122(7):1059–1067. doi: 10.1038/s41416-020-0750-9.
- Beasley AB, Bentel J, Allcock RJN, Vermeulen T, Calapre L, Isaacs T, Ziman MR, Chen FK and Gray ES, 2020. Low-Pass Whole-Genome Sequencing as a Method of Determining Copy Number Variations in Uveal Melanoma Tissue Samples. *The Journal of Molecular Diagnostics*, 22(3):429–434. doi: 10.1016/j.jmoldx.2019.12.005.
- Khattak MA, Reid A, Freeman J, Pereira M, McEvoy A, Lo J, Frank MH, Meniawy TM, Didan A, Spencer I, Amanuel B, Millward M, Ziman M and Gray E. 2020. PD-L1 expression on circulating tumour cells may be predictive of response to pembrolizumab in advanced melanoma: results from a pilot study. *The Oncologist*, 25(3):e520–e527. doi: <u>10.1634/</u> <u>theoncologist.2019-0557</u>.



PUBLICATIONS

- Calapre, L.#, Warburton, L.#, Millward, M., Gray, E.S., 2019. Circulating tumour DNA (ctDNA) as a biomarker in metachronous melanoma and colorectal cancer- a case report. *BMC Cancer*, 14;19(1):1109. doi: 10.1186/s12885-019-6336-3. # equal contributors
- Osborne DG, Domenico J, Luo Y, Reid AL, Amato C, Zhai Z, Gao D, Ziman M, Dinarello CA, Robinson WA, Fujita M. 2019. Interleukin-37 is highly expressed in regulatory T cells of melanoma patients and enhanced by melanoma cell secretome. Mol Carcinog. Sep; 58(9):1670-1679. doi: 10.1002/mc.23044.
- Stark, M.S., Gray, E.S., Isaacs, T., Chen, F.K., Millward, M., McEvoy, A., Zaenker, P., Ziman, M., Soyer, H.P., Glasson, W.J., Warrier, S.K., Stark, A.L., Rolfe, O.J., Palmer, J.M., Hayward, N.K., 2019. A Panel of Circulating MicroRNAs Detects Uveal Melanoma With High Precision. *Transl Vis Sci Technol* 8, 12. doi: <u>10.1167/tvst.8.6.12</u>
- Armitage, J.D., Tan, D.B.A., Cha, L., Clark, M., Gray, E.S., Fuller, K.A., Moodley, Y.P., 2019. A standardised protocol for the evaluation of small extracellular vesicles in plasma by imaging flow cytometry. *J Immunol Methods* 468, 61–66. doi: <u>10.1167/tvst.8.6.12</u>.
- Aya-Bonilla C#, Gray ES#, Manikandan J, Freeman JB, Zaenker P, Reid AL, Khattak MA, Frank MH, Millward M, Ziman M. Immunomagnetic-Enriched Subpopulations of Melanoma Circulating Tumour Cells (CTCs) Exhibit Distinct Transcriptome Profiles. *Cancers* (Basel). 2019 Jan 30;11(2). doi: <u>10.3390/</u> <u>cancers11020157</u>. # equal contributors.

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- Gray ES, Witkowski T, Pereira M, Calapre L, Herron K, Irwin D, Chapman B., Khattak MA, Raleigh J, Hatzimihalis A, Cebon J, Sandhu S, McArthur G, Millward M, Ziman M, Dobrovic A, Wong SQ. 2019.
 Genomic analysis of circulating tumour DNA using a melanoma-specific UltraSEEK Oncogene panel. J Mol Diagn. 2019 Feb 5. pii: S1525-1578(18)30237-X.
- Calapre L. Giardina T, Robinson C, Reid A, Al-Ogaili Z, Pereira M, McEvoy A, Warburton L, Hayward N, Khattak M, Meniawy T, Millward M, Amanuel B, Ziman M, Gray E. 2019. Locus-specific concordance of genomic alterations between tissue and plasma circulating tumor DNA in metastatic melanoma. *Molecular Oncology*. 13(2):171-184.
- McEvoy AC, Pereira MR, Reid A, Pearce R, Cowell L, Warburton L, Al-Ogaili Z, Khattak MA, Millward M, Meniawy TM, Gray E, Ziman M. 2019. Monitoring melanoma recurrence with circulating tumor DNA: a proof of concept from three case studies. Oncotarget. Jan 4;10(2):113–122.
- Asante, D.B., Calapre, L., Ziman, M., Meniawy, T.M., Gray, E.S., 2020. Liquid biopsy in ovarian cancer using circulating tumor DNA and cells: Ready for prime time? *Cancer Lett* 468, 59–71.
- Acheampong, E., Spencer, I., Lin, W., Ziman, M., Millward, M., Gray, E., 2019. Is the Blood an Alternative for Programmed Cell Death Ligand 1 Assessment in Non-Small Cell Lung Cancer? *Cancers* (Basel) 11.
- Barrett, L.W., Gray, E.S., Wells, J.W., Waithman, J., 2019. Editorial: Insights Into Biomarkers, Cytokines, and Chemokines in Skin Cancer. *Front Med* (Lausanne) 6, 199.

HOW TO SUPPORT US

Asssociate Professor Elin Gray and her team are working to assist the many patients in Australia and the world diagnosed with melanoma. The team are committed to impacting people's lives and making a difference. Any donation received will greatly enhance our ability to purchase chemicals, state-of-the art equipment and will contribute to our postdoctoral researcher program.

Donations to Edith Cowan University are receipted under the ECU Foundation and are 100% tax deductible. 100% of your donation goes immediately to ECU Melanoma Research as Edith Cowan University bears all administrative costs.

For queries about making a gift now, or planning a gift in your Will, please contact us.



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THANK YOU

Our breakthroughs and discoveries make a great impact on people living with melanoma, and those at risk of developing melanoma.

You are an integral part of this journey. Without your generosity we would not have made it this far, thank you.

Your support is saving lives.

Donations of all sizes are vital, as even the smallest donation can make a difference.

If you are interested in supporting us for the first time, or if would like to increase your support, please get in contact with us.

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