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RESEARCH:

- Biotechnology
- Stem Cells
- Cell Differentiation
- Tissue Regeneration
- Natural Product (plant extract) on Cell Differentiation

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PUBLICATION	
REVIEWED JOURNAL <i>International</i>	
1.	Intan Zarina Zainol Abidin , Thanaletchumi Manogaran, Rohaya Megat Abdul Wahab, Saiful Anuar Karsani, Muhammad Dain Yazid, Farinawati Yazid, Zaidah Zainal Ariffin, Anis Nabilah Johari & Shahrul Hisham Zainal Ariffin. 2023. Label-free quantitative proteomic analysis of ascorbic acid-induced differentially expressed osteoblast-related proteins in dental pulp stem cells from deciduous and permanent teeth. <i>Current Stem Cell Research & Therapy</i> 18(3): 417-428 (IF: 3.828; Quartile 3).
2.	Intan Zarina Zainol Abidin* , Anis Nabilah Johari, Zaidah Zainal Ariffin & Shahrul Hisham Zainal Ariffin. 2022. Cytotoxicity of Hexane and Ethanol Piper Sarmentosum Extracts on Human Hematopoietic Stem Cells. <i>European Chemical Bulletin</i> 11(10): 7-11. (Cited: SCOPUS).
3.	Intan Zarina Zainol Abidin* , Yashvin Kumar, Zaidah Zainal Ariffin & Shahrul Hisham Zainal Ariffin. 2022. Human osteoblast and osteoclast stem cell differentiation: A systematic review of biochemical analysis. <i>International Journal of Health Sciences</i> 6(S7): 47121-47133. (Cited: SCOPUS).
4.	Shahrul Hisham Zainal Ariffin, Rus Dina Rus Din, Rohaya Megat Abdul Wahab, Siti Nur Zahidah Zahari, Hanis Nabilah Mohd Nazman & Intan Zarina Zainol Abidin* . 2022. Haplogroups determination from RNR1 and RNR2 regions of mitochondrial DNA. <i>International Journal of Health Sciences</i> 6(S7): 46831-46837. (Cited: SCOPUS).
5.	Shahrul Hisham Zainal Ariffin, Ker Wei Lim, Rohaya Megat Abdul Wahab, Zaidah Zainal Ariffin, Rus Dina Rus Din, Muhammad Ashraf Shahidan, Anis Nabilah Johari & Intan Zarina Zainol Abidin* . 2022. Gene expression profiles for in vitro human stem cell differentiation into

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6. Shahrul Hisham Zainal Ariffin, Thanaletchumi Manogaran, Rohaya Megat Abdul Wahab, Saiful Anuar Karsani, **Intan Zarina Zainol Abidin**, Farinawati Yazid, Muhammad Dain Yazid & Zaidah Zainal Ariffin. 2022. Secretome Protein Profile of Human Dental Pulp Stem Cells during Ascorbic Acid Induction (Profil Protein Sekretom Sel Stem Pulpa Gigi Manusia Semasa Aruhan Asid Askorbik). *Sains Malaysiana* 51(7): 2173-2186. (IF: 1.009; Quartile 4).
 7. **Intan Zarina Zainol Abidin**, Thanaletchumi Manogaran, Rohaya Megat Abdul Wahab, Farinawati Yazid & Shahrul Hisham Zainal Ariffin. 2022. A Comparative Analysis of Ascorbic Acid-induced Cytotoxicity and Differentiation between SHED and DPSC. *Current Stem Cell Research & Therapy* 17(6): 576-588. (IF: 3.828; Quartile 3).
 8. **Intan Zarina Zainol Abidin***, Shazwana Shaipul Islam, Ling Jun Ping, Zaidah Zainal Ariffin & Shahrul Hisham Zainal Ariffin. 2021. The Effects of Piper Sarmentosum Aqueous Extract on MC3T3-E1 Differentiation. *Natural Volatiles & Essential Oils* 8(4): 4063-4079. (Cited: SCOPUS).
 9. **Intan Zarina Zainol Abidin***, Shazrul Fazry, Nur Hidayah Jamar, Herryawan Ryadi Eziwar Dyari, Zaidah Zainal Ariffin, Anis Nabilah Johari, Nur Suhanawati Ashaari, Nor Azfa Johari, Rohaya Megat Abdul Wahab & Shahrul Hisham Zainal Ariffin. 2020. The effects of Piper sarmentosum aqueous extracts on zebrafish (*Danio rerio*) embryos and caudal fin tissue regeneration. *Scientific Reports* 10: 14165. <https://doi.org/10.1038/s41598-020-70962-7>. (IF: 3.998; Quartile 1).
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 13. Rohaya Megat Abdul Wahab, Farah Amirah Mohd Nasri, **Intan Zarina Zainol Abidin**, Zaidah Zainal Ariffin, Muhammad Dain Yazid & Shahrul Hisham Zainal Ariffin. 2017. Kesan Penyimpanan Sampel Air Liur Terhadap Kualiti DNA Genom (*Storage Effect of Saliva Sample on Quality of Genomic DNA*). *Sains Malaysiana* 46(6): 909-915. (IF: 0.470; Quartile 3).
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18. Rohaya Megat Abdul Wahab, Zulham Yamamoto, Albira Sintian, Nurfathiha Abu Kasim, **Intan Zarina Zainol Abidin**, Sahidan Senafi, Zaidah Zainal Ariffin & Shahrul Hisham Zainal Ariffin. 2015. The effects of orthodontic forces during canine retraction using self-ligating brackets on gingival crevicular fluid enzyme activity, canine movement and root resorption. *Sains Malaysiana* 44(2): 249-256. (IF: 0.480; Quartile 3).
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26. Shabnam Kermani, Rohaya Megat Abdul Wahab, **Intan Zarina Zainol Abidin**, Zaidah Zainal Ariffin, Sahidan Senafi & Shahrul Hisham Zainal Ariffin. 2014. Differentiation Capacity of Mouse Dental Pulp Stem Cells into Osteoblasts and Osteoclasts. *Cell Journal (Yakhteh)* 16(1): 31-42. (IF: 0.458; Quartile 4).
27. Siti Norhaiza, H., Siti NorSaidah, I., Rohaya, M.A.W., **Intan Zarina, Z.A.**, Sahidan, S., Zaidah, Z.A., Mohamad, A.R. & Shahrul Hisham, Z.A. 2014. Ascorbic acid induces osteoblast differentiation of human suspension mononuclear cells. *Cytotherapy* 16(5): 674-682. <http://dx.doi.org/10.1016/j.jcyt.2013.07.013>. (IF: 3.100; Quartile 2).

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36. Muniandy, M.K.R., Ruzanna, A.K., **Intan Zarina, Z.A.***, Rohaya, M.A.W., Sahidan, S., Majlis, B.Y. & Shahrul Hisham, Z.A. 2013. Proliferation Rate And Cell Size Analyses Of Human Peripheral Blood Suspension Stem Cells From Three Culturing Terms Populations. *Malaysian Applied Biology* 42(2): 1-5. (Cited: ISI & SCOPUS).
37. **Intan Zarina Zainol Abidin**, Shahrul Hisham Zainal Ariffin, Zaidah Zainal Ariffin & Rohaya Megat Abdul Wahab. 2010. Keupayaan Pembezaan Tiga Jenis Sel Primitif Daripada Hasil Perbezaan Tempoh Proliferasi Darah Mencit (*Potential differentiation of three types primitive cells originated from different proliferation terms of mouse blood*). *Sains Malaysiana* 39(2): 305-313. (IF: 0.268; Quartile 3).

38. Shahrul Hisham, Z.A., Rohaya, M.A.W., **Intan Zarina, Z.A.**, Sahidan, S., Nor Muhammad Mahadi & Zaidah, Z.A. 2005. REVIEW: Sel Stem dalam perkembangan darah. *Sains Malaysiana* 34(1): 1-17.

BOOK

1. Shahrul Hisham Zainal Ariffin, Rohaya Megat Abdul Wahab & **Intan Zarina Zainol Abidin**. 2011. *Bioteknologi Perubatan: Sejarah dan Pengenalan*. Bangi: Penerbit Universiti Kebangsaan Malaysia. ISBN 978-967-942-971-8.

CHAPTER IN BOOK

1. **Intan Zarina Zainol Abidin**, Shahrul Hisham Zainal Ariffin, Rohaya Megat Abdul Wahab & Wong Woan Yeen. 2016. Preliminary Study of Antibacterial Properties of Commercial Carrageenan, in Fahrul Zaman Huyop & Shahrul Hisham Zainal Ariffin (Pyt). *Advances in Biosciences, Volume 2*. Publisher: Penerbit UTM Press. Page: 71-84. ISBN 978-983-52-1346-5.
2. Rohaya Megat Abdul Wahab, Zulham Yamamoto, **Intan Zarina Zainol Abidin** & Shahrul Hisham Zainal Ariffin. 2017. Diagnostic Accuracy of Lactate Dehydrogenase as Prognostic Marker for External Apical Root Resorption, in Fahrul Zaman Huyop & Roswanira Ab. Wahab (Pyt). *Enzymes and Their Application*. Publisher: Penerbit UTM Press. Page: 1-15. ISBN 978-983-52-1421-9.
3. Shahrul Hisham Zainal Ariffin, Nur Akmal Mohamed Rozali, **Intan Zarina Zainol Abidin** & Rohaya Megat Abdul Wahab. 2017. Sensitivity of Alkaline Phosphatase as an Osteoblast Differentiation Marker for Dental Pulp Stem Cells in 2D versus 3D Cultures, in Fahrul Zaman Huyop & Roswanira Ab. Wahab (Pyt). *Enzymes and Their Application*. Publisher: Penerbit UTM Press. Page: 79-87. ISBN 978-983-52-1421-9.
4. Shahana Parveen Ridzam Shah Rajah, Thanaletchumi Manogaran, **Intan Zarina Zainol Abidin** & Shahrul Hisham Zainal Ariffin. 2017. Sitotoksiti Ekstrak Akueus Piper sarmentosum dan Asid Askorbik ke atas Sel Titisan MC3T3-E1 dan Potensi Pembezaannya kepada Sel Osteoblas, in Mahanem Mat Noor, Abdul Munir Abdul Murad, Herryawan Ryadi Eziwar Dyari, Noor Liyana Sukiran, Nur Hazlin Hazrin Chong & Shazilah Kamaruddin (Pyt). *Siri Penyelidikan Biosains dan Bioteknologi 2017*. Publisher: Fakulti Sains dan Teknologi, UKM. Page: 374-378. ISBN 978-967-10417-8-9.
5. Teffie Shallensey Tasing, Muniandy Ramansurvey, **Intan Zarina Zainol Abidin** & Shahrul Hisham Zainal Ariffin. 2017. Penentuan Julat Saiz Sel Mononukleus Darah Periferi Manusia daripada Tempoh Pengkulturan Berlainan, in Mahanem Mat Noor, Abdul Munir Abdul Murad, Herryawan Ryadi Eziwar Dyari, Noor Liyana Sukiran, Nur Hazlin Hazrin Chong & Shazilah Kamaruddin (Pyt). *Siri Penyelidikan Biosains dan Bioteknologi 2017*. Publisher: Fakulti Sains dan Teknologi, UKM. Page: 387-390. ISBN 978-967-10417-8-9.
6. **Intan Zarina Zainol Abidin**, Puteri Haslin Nadya Hasbullah & Shahrul Hisham Zainal Ariffin. 2018. Kesan Aktiviti Sitotoksik *Piper sarmentosum* Ke Atas Sel Titisan MC3T3-E1 Dan Potensi Pembezaannya Kepada Sel Osteoblas, in Zamri Zainal, Herryawan Ryadi Eziwar Dyari, Doris Quay Huai Xia, Nur Hazlin Hazrin Chong, Noor Liyana Sukiran, & Shazilah Kamaruddin (Pyt). *Siri Penyelidikan Biosains dan Bioteknologi 2018*. Publisher: Fakulti Sains dan Teknologi, UKM. Page: 189-192. ISBN 978-967-2224-19-8.

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1. **Intan Zarina Zainol Abidin**, Anis Nabilah Johari, Zaidah Zainal Ariffin and Shahrul Hisham Zainal Ariffin. 2022. The Differentiation Effect of Piper sarmentosum Ethanolic Extract.

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2. **Intan Zarina Zainol Abidin**, Anis Nabilah Johari, Shahrul Hisham Zainal Ariffin and Zaidah Zainal Ariffin. 2021. Cytotoxicity of Hexane and Ethanol Piper sarmentosum Extracts on Human Hematopoietic Stem Cells. *IOP Conference Series: Materials Science and Engineering*. **Accepted**. (Cited: SCOPUS).
3. Shahrul Hisham Zainal Ariffin, Thanaleetchumi Manogaran, **Intan Zarina Zainol Abidin**, Sahidan Senafi & Rohaya Megat Abdul Wahab. 2016. Isolation and morphology of Stem Cells from Deciduous Tooth (SHED) and Human Dental Pulp Stem Cells (hDPSC). *AIP Conference Proceedings*, 1784: 020008-1-020008-5. Doi: 10.1063/1.4966718.
4. Siti Norhaiza, H., Rohaya, M.A.W., **Intan Zarina, Z.A.** & Shahrul Hisham Z.A. 2013. In vitro expansion of Lin+ and Lin- mononuclear cells from human peripheral blood. *AIP Conference Proceedings*, 1571: 238-245. Doi: 10.1063/1.4858661.
5. Zulham Yamamoto, Ikmal Mohamad Jaafar, Rohaya Megat Abdul Wahab, **Intan Zarina Zainol Abidin** & Shahrul Hisham Zainal Ariffin. 2013. Orthodontic treatment effects on inflammatory marker profiles in saliva before and after 2 archwire changes. *AIP Conference Proceedings*, 1571: 208-214. Doi: 10.1063/1.4858656.
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8. **Intan Zarina, Z.A.**, Shahrul Hisham, Z.A., Rohaya, M.A.W. & Sahidan, S. 2010. Chondrocyte differentiation from *Mus musculus* suspension mononucleated cells. *Proceedings of the 3rd International Conference on Science and Technology (ICSTIE 2010)*, pg. 1-5.
9. Shahrul Hisham Zainal Ariffin, Muhammad Dain Yazid, **Intan Zarina Zainol Abidin**, Rohaya Megat Abdul Wahab & Sahidan Senafi. 2010. Sel ampaian mononukleus darah periferi mencit sebagai sel stem multipoten. *Proceeding of the 6th UKM-UNRI Seminar*, pg. 94-97.
10. Muhammad Dain, Y., **Intan Zarina, Z.A.**, Shahrul Hisham, Z.A., Rohaya, M.A.W., Zaidah, Z.A. & Sahidan, S. 2010. Pengkategorian proliferasi sel mononukleus dari sistem darah periferi mencit. *Proceedings of the International Seminar on Food and Agricultural Sciences*, pg. 292-294.
11. Shahrul Hisham, Z.A., **Intan Zarina, Z.A.** & Rohaya, M.A.W. 2008. Cellular Biochemical and Activation of Primitive Cells from Mice. *Proceedings of the 2nd International Conference on Science & Technology (ICSTIE 2008)*, pg. 2256-2261.
12. Shahrul Hisham, Z.A., **Intan Zarina, Z.A.**, Rohaya, M.A.W., Zaidah, Z.A., Nurulfarhana, H. & Siti Afwah, I. 2006. Isolation and proliferation of monocytes from mice peripheral blood. *Proceedings of the 1st USM Penang International Postgraduate Convention (Health & Medical Sciences Conference)*, pg. 199-203.

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14. Shahrul Hisham, Z.A., **Intan Zarina, Z.A.** & Rohaya, M.A.W. 2008. Peripheral Blood Mononucleated Cells Potentiality in Developing Osteoblast and Osteoclast. *Proceedings of the 10th Symposium of the Malaysian Society of Applied Biology*, pg. 410-413.
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16. **Intan Zarina, Z.A.**, Shahrul Hisham, Z.A., Rohaya, M.A.W., Zaidah, Z.A. & Zulkeflie, Z. 2005. Isolation and Cloning of Geneticin Resistance Gene. *Proceedings of the 8th Applied Biology Symposium*, pg. 9-12.

ABSTRACTS

International

1. **Intan Zarina, Z.A.**, Anis Nabilah, J., Zaidah, Z.A. & Shahrul Hisham, Z.A. 2022. The Effects of *Piper sarmentosum* Ethyl Acetate Extract on Osteoblast Differentiation of Peripheral Blood Stem Cells. Abstracts of the 4th *International Conference on Biosciences & Medical Engineering 2022 (ICBME 2022)*, pg. 42.
2. **Intan Zarina, Z.A.**, Anis Nabilah, J., Zaidah, Z.A. & Shahrul Hisham, Z.A. 2022. *Piper sarmentosum* Hexane Extract Induced Osteoblast Differentiation of Peripheral Blood Stem Cells. Abstracts of the 4th *International Conference on Biosciences & Medical Engineering 2022 (ICBME 2022)*, pg. 93.
3. **Intan Zarina, Z.A.** & Shahrul Hisham, Z.A. 2018. Human and Mice Peripheral Blood Stem Cell: *The Future of Bone Regeneration*. *Abstract of the 4th International Conference on Biological Sciences and Biotechnology (ICBSB) 2018, Medan Indonesia*.
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7. **Intan Zarina, Z.A.**, Shahrul Hisham, Z.A., Rohaya, M.A.W., Sahidan, S. & Zaidah, Z.A. 2008. Osteoblast and osteoclast differentiation from *Mus musculus* peripheral blood progenitor cells. *Abstract of the 2nd USM Penang International Postgraduate Convention 2008 (Health and Medical Sciences Conference)*, 18-20 Jun 2008, pg. 440.

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8. Nur Akmal Mohamed Rozali, Rohaya Megat Abdul Wahab, **Intan Zarina Zainol Abidin**, Sahidan Senafi, Zaidah Zainal Ariffin & Shahrul Hisham Zainal Ariffin. 2014. Characterization

and Cryopreservation of Murine Dental Pulp Stem Cells. *Abstract of The Malaysian Applied Biology Symposium*, pg. 68.

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15. Nurfathiha, A.K., Rohaya, M.A.W., Sahidan, S., **Intan Zarina, Z.A.**, Zaidah, Z.A. & Shahrul Hisham, Z.A. 2013. Effects of Orthodontic Treatment Using Self-Ligating Bracket on the Profile of Biomarkers from Human Saliva and Gingival Crevicular Fluid. *Abstract of the 9th National Biology Symposium*, pg. 7.
16. Rus Dina, R.D., Rohaya, M.A.W., Sahidan, S., **Intan Zarina, Z.A.**, Zaidah, Z.A., & Shahrul Hisham, Z.A. 2013. Mutation Analysis of Mitochondrial DNA Hypervariable Region of Ancient Human Bone Found in Pulau Kelumpang Archeological Site. *Abstract of the 9th National Biology Symposium*, pg. 13.
17. Shahrul Hisham, Z.A., **Intan Zarina, Z.A.**, Rohaya, M.A.W. & Zaidah, Z.A. 2007. Osteoblast and osteoclast development of mononucleated cells from mice peripheral blood. *Abstract of the 7th National Congress on Genetics*, pg. 53.

POPULAR ARTICLE

National

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2. Rus Dina Rus Din, **Intan Zarina Zainol Abidin**, Rohaya Megat Abdul Wahab, Sahidan Senafi & Shahrul Hisham Zainal Ariffin. 2016. Penyelidikan Rangka Manusia Pra-Sejarah di Pulau Kelumpang, Perak. Citra BsBt. Penerbitan: Pusat Pengajian Biosains dan Bioteknologi, UKM. Num. 2, Pg. 9. ISSN 0126-7302.
3. **Intan Zarina Zainol Abidin**. 2017. Molecular Research Lab. CUCMS Re:Search Bulletin. Penerbit: Cyberjaya University College of Medical Sciences. Issue April 2017, Pg. 36-37.

4. **Intan Zarina Zainol Abidin.** 2017. Enzyme/Protein Work. CUCMS Re:Search Bulletin. Penerbit: Cyberjaya University College of Medical Sciences. Issue August 2017, Pg. 44. ISSN 2590-3861.
5. **Intan Zarina Zainol Abidin.** 2017. The 1st Postgraduate Research Colloquium 2017. CUCMS Re:Search Bulletin. Penerbit: Cyberjaya University College of Medical Sciences. Issue August 2017, Pg. 47. ISSN 2590-3861.
6. **Intan Zarina Zainol Abidin.** 2017. HPLC (High-Performance Liquid Chromatography). CUCMS Re:Search Bulletin. Penerbit: Cyberjaya University College of Medical Sciences. Issue December 2017, Pg. 34. ISSN 2590-3861.
7. **Intan Zarina Zainol Abidin.** 2017. Istiadat Konvokesyen Ke-8. CUCMS Re:Search Bulletin. Penerbit: Cyberjaya University College of Medical Sciences. Issue December 2017, Pg. 43. ISSN 2590-3861.
8. **Intan Zarina Zainol Abidin.** 2018. 1st CUCMS Research Week. CUCMS Re:Search Bulletin. Penerbit: Cyberjaya University College of Medical Sciences. Issue April 2018, Pg. 11-18. ISSN 2590-3861.
9. **Intan Zarina Zainol Abidin.** 2018. Freeze Dryer. CUCMS Re:Search Bulletin. Penerbit: Cyberjaya University College of Medical Sciences. Issue April 2018, Pg. 46. ISSN 2590-3861.
10. **Intan Zarina Zainol Abidin.** 2018. Report on article: Impact of Isolation Method on Doubling Time and The Quality of Chondrocyte and Osteoblast Differentiated from Murine Dental Pulp Stem Cells. CUCMS Re:Search Bulletin. Penerbit: Cyberjaya University College of Medical Sciences. Issue August 2018, Pg. 34-37. ISSN 2590-3861.
11. **Intan Zarina Zainol Abidin.** 2018. PGM-TESMA Seminar 2018. CUCMS Re:Search Bulletin. Penerbit: Cyberjaya University College of Medical Sciences. Issue August 2018, Pg. 43. ISSN 2590-3861.

ORAL PRESENTATION

International

1. **Intan Zarina, Z.A.,** Anis Nabilah, J., Zaidah, Z.A. & Shahrul Hisham, Z.A. 2022. The Effects of *Piper sarmentosum* Ethyl Acetate Extract on Osteoblast Differentiation of Peripheral Blood Stem Cells. Abstracts of the 4th *International Conference on Biosciences & Medical Engineering 2022 (ICBME 2022)*, pg. 42.
 2. Shahrul Hisham, Z.A., **Intan Zarina, Z.A.,** Sahidan, S., Rohaya, M.A.W. & Zaidah, Z.A. 2011. Medium term Lin- stem cell from suspension peripheral blood cells potential for cellular therapy. *Proceedings of the International Seminar on the Current Research Progress in Sciences and Technology (ISSTECH 2011)*, pg. 1-4.
 3. **Intan Zarina, Z.A.,** Shahrul Hisham, Z.A., Rohaya, M.A.W. & Sahidan, S. 2011. Preliminary analyses of mice peripheral blood mononucleated stem cells. *Proceedings of the Annual International Conference Meeting on Stem Cell Research (SCR 2011)*, pg. 6-9.
- Intan Zarina, Z.A.,** Shahrul Hisham, Z.A., Rohaya, M.A.W., Sahidan, S. & Zaidah, Z.A. 2008. Osteoblast and osteoclast differentiation from *Mus musculus* peripheral blood progenitor cells. *Abstract of the 2nd USM Penang International Postgraduate Convention 2008 (Health and Medical Sciences Conference)*, pg. 440.

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4. **Intan Zarina Zainol Abidin**, Shahrul Hisham Zainal Ariffin & Rohaya Megat Abdul Wahab. 2011. Analisis ampaian sel stem mononukleus daripada darah periferi *Mus musculus*. *Proceedings of the 11th Postgraduate Colloquium*, pg. 243-245.
5. **Intan Zarina, Z.A.** & Shahrul Hisham, Z.A. 2008. Pembezaan sel progenitor mononuklear daripada darah periferi *Mus musculus* kepada sel osteoblas dan osteoklas. *Proceedings of the 8th Postgraduate Colloquium*, pg. 88-90.

AWARD/RECOGNITION

- Publication Award 2017
- Keynote Speaker. *The 4th International Conference on Biological Sciences and Biotechnology (ICBSB) 2018, Medan, Indonesia. 8-9 December 2018.* "Human and Mice Peripheral Blood Stem Cell: *The Future of Bone Regeneration*".
- Best Oral Paper Award. *The 11th Kuala Lumpur International Agriculture, Forestry & Plantation Conference, Selangor, Malaysia. 31 May-1 June 2022.* "The Differentiation Effect of *Piper sarmentosum* Ethanolic Extract".

RESEARCH PROJECT

RESEARCH PROJECT			
Role: <i>Principal Researcher</i>		Duration	Amount of Fund (RM)
1.	Fundamental Research Grant Scheme (FRGS), MOHE	2019-2021	96,234
2.	CUCMS Research Grant Scheme, CUCMS	2018-2020	20,000
Role: <i>Co-Researcher</i>		Duration	Amount of Fund (RM)
2.	Geran Universiti Penyelidikan, UKM	2017-2019	70,000
3.	Dana Padanan Kolaborasi, UKM	2015-2016	5,000
4.	Geran Universiti Penyelidikan, UKM	2014-2016	55,000
5.	Dana Pembangunan Penyelidikan, UKM	2014-2015	20,000
6.	Dana Lonjakan Penerbitan, UKM	2012-2014	100,000
Total		-	366,234

