

Sookja Kim Chung, Ph.D (Academic Achievement: 2015 to now)

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EDUCATION :

1987 Ph.D., Department of Anatomy and Cell Biology, University of Illinois College of Medicine, Chicago, U.S.A.

1981 M.A., Department of Chemistry, University of Illinois at Chicago, Chicago, U.S.A.

1978 B.A., Double Major in Biology & Chemistry, Lewis University, Lockport, IL, U.S.A.

PROFESSIONAL TRAINING:

June, 1988 – Mar., 1991

Winston Foundation Fellow, Laboratory of Neurobiology and Behavior, Rockefeller University, New York, N.Y., USA

Feb., 1987 - May, 1988

NIH Postdoctoral Fellow, Department of Physiology, Northwestern University Medical Center, Chicago, IL, USA

ACADEMIC APPOINTMENTS:

2019- present: Faculty of Medicine, Macau University of Science and Technology, Avenida Wai Long, Macau

2018- 2019: General Education Office/Division of Science and Technology (Food Science and Technology), Beijing Normal University-Hong Kong Baptist University, United International College, Zhuhai, China

2015- 2018: Professor at School of Biomedical Sciences, The University of Hong Kong

2006–2015: Professor, Department of Anatomy, The University of Hong Kong

2005–2006: Associate Professor, Department of Anatomy, The University of Hong Kong

1998- 2005: Honorary Associate Professor, Department of Anatomy, The University of Hong Kong

1992–2005: Investigator, Institute of Molecular Biology, May, 2001 substantiated, The University of Hong Kong

1991-1998: Honorary Lecturer, Department of Anatomy, The University of Hong Kong

1991-1992: Research Officer, Institute of Molecular Biology, The University of Hong Kong

1988-1991: Winston Foundation Fellow, Laboratory of Neurobiology and Behavior, The Rockefeller University, New York, USA

1987-1988: NIH Postdoctoral Fellow, Department of physiology, Northwestern University Medical Center, Chicago, USA,

1982 -1987 Research and teaching assistant, Department of Anatomy and Cell Biology, Health Sciences Center, University of Illinois at Chicago, Chicago, IL, USA

OTHER ACADEMIC APPOINTMENTS:

Current honorary positions:

Honorary Professor at School of Biomedical Sciences at The University of Hong Kong;
Honorary Professor at Air Force Military Medical University in Xian, China;
Adjunct Professor at Beijing Normal University-Hong Kong Baptist University, United International College in Zhuhai, China;
Honorary Professor at Chung-Nam Medical University in Daejeon, South Korea

2018-Present: Honorary Professor at School of Biomedical Sciences, The University of Hong Kong, Hong Kong

2013: Visiting Professor, Korea University, Seoul, Korea

2007–Present: Visiting Professor, The Airforce Medical University (previously called The Fourth Military Medical University)

2007–2018: Honorary Professor, Dept Ophthalmology, The University of Hong Kong

2007–2010: Research Fellow (equivalent to Honorary Professor), Shanghai Jiao Tong University, China

2001–2011: Management Committee for the Area of Excellence in Molecular Neuroscience (hosting Institution, HKUST, Program Director Prof. Nancy Ip)

2012- present: Management Committee for the Theme-based Research Scheme (TBRs) Project “Stem Cell Stem for Nervous System Disorder” (T13-607/12R)

HONORS AND AWARD:

- Norman and Rosita Winston Fellowship (1988-1991), The Rockefeller University
- Academic Scholarship (1974 - 1978), Lewis University
- International Molecular Biology Network, elected member

PROFESSIONAL AFFILIATIONS:

- Society for Neurosciences
- American Association for the Advancement of Science
- The Rockefeller University Chapter of the Society of Sigma X
- American Diabetes Association
- The New York Academy of Science
- Hong Kong Society for Neuroscience
- Korean Society for Neuroscience

EDITORIAL ADVISORY BOARD:

Recent Patents in Endocrinology and Metabolism; PLoS One; ET-12 Special Issue of Life Sciences; Research Signpost; OMICS Publishing Group - Anatomy & Physiology: Current Research; Lead Guest Editor for Special Issues in Experimental Diabetes Research; The Science Advisory Board: J of Biochemical and Pharmacological Research; Editorial board member for Metabolic Brain Disease; member of the Life Sciences Endothelin Special Editorial Advisory Board for the Proceedings of the Thirteenth International Conference on Endothelin (ET-13).

REVIEWER FOR THE FOLLOWING JOURNALS:

Diabetes; Biochim. Biophys Acta; Acta Pharmacologica Sinica; Diabetologia; Diabetes Care; Diabetes/Metabolism Research and Reviews Biochim Biophys Acta; Pharmacol Res; Diabetes and its complications; J. Neurochem.; Eur. J. of Biochem.; International J. Biochem. & Cell Biol.; International J. Andrology; J. of Biomedical Sci; Biological

signal; The Journal of DNA Sequencing & Mapping; Neuroscience Letters; Neuro-signal; Molecular Genetics and Metabolism; IBRO Reports; Experimental Biology and Medicine; Clinical and Experimental Pharmacology and Physiology; Free Radical Biology and Medicine; J. Neuroscience Research; Experimental Eye Research; PLoS One; Genesis, The J Genetic and Development; Experimental Neurology; The Anatomical Record, Journal of Diabetes Investigation; Experimental Diabetes Research; Molecular Biology Reports; J. Peripheral Nervous System; J. of Diabetes Investigation; Liver International; Alcoholism: Clinical and Experimental Research; Experimental Gerontology; Developmental dynamics

GRANTS REVIEWER FOR:

NIDDK (USA), NIH (USA); Wellcome Trust (UK); The HK Research Grant Council GRF; Croucher Foundation (Hong Kong) (Biology/Medicine Interview Panel); The University of Hong Kong, Li Ka Shing Faculty of Medicine, internal RGC proposals; The University of Hong Kong, CRCG; External reviewer for RGC for GRF

RESEARCH INTERESTS:

- Pathogenesis of diabetic and ischemic complications and drug discovery
- Cellular osmotic, oxidative and ischemic stress
- Development, degeneration and regeneration
- Diabetes mellitus and diabetes insipidus
- Stem cells and drug discovery for stroke, Alzheimer's Disease, Parkinson's and depression
- Biopharmaceutical research for vascular disease

UNDERGRADUATE TEACHING:

1978- 1979: Department of Chemistry, University of Illinois at Chicago, IL., U.S.A.
1982 - 1987: Department of Anatomy (Histology and Gross Anatomy), College of Medicine, University of Illinois, Chicago, IL, U.S.A.
1992 - 2016: Department of Anatomy (Participated in teaching and examination for Histology and Gross Anatomy and Problem Based Learning tutoring to Medical students; Histology to Medical, Traditional Chinese Medicine, Nursing, Bioengineering, Pharmacy students), Faculty of Medicine
2016- present: School of Biomedical Sciences, Faculty of Medicine (Organ system that integrate anatomy, biochemistry, and physiology)

UNDERGRADUATE AND POSTGRADUATE TEACHING ADMINISTRATION:

1. Member and Chairman of Departmental Research Postgraduate Committee
2. Chair of Anatomy Departmental Postgraduate Symposium
4. Coordinator for Postgraduate Journal Club
5. Coordinator for Current Topics in Morphological Science
6. Departmental representative for Master of Medical Science Program
7. Coordinator for Histology
8. Recruit students from top Korean Universities for Graduate Programs in the Faculty of Medicine.
9. Serve as a reviewer for teaching assessment.

10. Invited to discuss the Anatomy teaching at the 4th International Anatomical Sciences and Cell Biology Conference, Hong Kong, Dec 4 – 6th, 2016.

SUPERVISOR OF HIGH SCHOOL AND UNDERGRADUATE RESEARCH INTERNSHIPS:

To provide research experience to younger students who aspire to be scientists I mentored several research interns in the past 10 years, including 1 high school students, 8 medical students, and 4 undergraduate students

PRINCIPAL SUPERVISOR OF POSTGRADUATE STUDENTS:

34 PhD and MPhil students

CO-SUPERVISOR OF POSTGRADUATE STUDENTS:

37 PhD and MPhil students

PRIZES AND AWARDS RECEIVED BY POSTGRADUATE STUDENTS AND POSTDOCTORAL FELLOWS (for whom I served as principal supervisor:

27 Local and International conference presentation awards

MPhil/PhD THESIS EXAMINERS COMMITTEE:

Served as internal examiner: 45

Served as external Examiner: 12

Served as chairman of examination committees: 44

RESEARCH FUNDING AS PRINCIPAL INVESTIGATOR:

In the past 27 years I have obtained 46 research grants from the University of Hong Kong, Hong Kong Research Grant Council, National Science Foundation of China, Guangdong-Hong Kong Collaborative Grants, and pharmaceutical companies totalling HKD29,954,000.

HONG KONG RGC AREAS OF EXCELLENT AND THEME-BASED PROJECT AS CO-PI

I served as co-Principal Investigator in 6 Areas of Excellent and Theme-base Research Projects, with my part of funding totalling HKD8,930,000.

RESEARCH GRANTS AS CO-INVESTIGATOR

In the past 27 years I served as co-investigator in 57 research projects.

CURRENT RESEARCH GRANTS

1. S.K. Chung, PI, To determine the role of exchange protein directly activated by cAMP in the blood-retinal barrier and pathogenesis of diabetic retinopathy, Health and Medical Research Fund, 13142231, HK\$947,000, July 2016 – 2018
2. S.K. Chung, PI, Interaction between activated aldose reductase, non-enzymatic glycation, PKC and hexoamine pathways for the pathogenesis of diabetic complications, Health and Medical Research Fund, 13142221, HK\$967,000, July 2016 – 2018
3. SK Chung, Travel grant to discuss collaborative research with the Fourth Military Medical University, Xian, China HKD12,482
4. Wai Ho Tang and SK Chung (co-PI), Guangdong and Hong Kong Joint Innovation Field of Scientific and Technological Cooperation Project. The role and mechanism of platelet transfer by miRNA-143/145 on diabetic vascular disease”, May 2017 to Apr 2019 Total cost: RMB1,000,000
5. SK Chung (PI), NSFC, Endothelin-1 and tanshinone IIA, Chinese RMB 540,000, Jan 2018 to Dec 31, 2021
6. 省部共建中医湿证国家重点实验室项目 “基于差异蛋白组学探讨湿邪致缺血性中风的生物学机制” 申报合作框架协议书, 600,000 Yuen, 2021
7. Sookja Kim Chun, Molecular Docking of G Protein-coupled Receptor, Glucagon-like Peptide 1 Receptor, and Development of Exchange Protein Activated by cAMP-based Biosensor for Identifying Therapeutic Natural Small-molecules from Chinese Medicines Macau University of Science and Technology, Faculty Research Grants (General Research Grants, GRFs), FRG-22-024-FMD, 100,000 MOP, 2022
8. Riming Huang, Io Nam Wong, Sookja Kim Chung (Co-I), Baojun Xu, FDCT-NSFC, Project code: 0069/2021/AFJ, September 30, 2021- September 29, 2024

INVITED LECTURES:

99 local and international invited lectures

SYMPOSIUM/WORKSHOP AND SESSION LEADERSHIP:

Served as chairman or group leader in 86 local and international symposiums and workshops

LIST OF PUBLICATIONS:

182 full papers in ISI listed international journals (3 book chapters; 5 **invited review articles**)

242 conference papers

REPRESENTATIVE PUBLICATIONS:

Deng M, Sun J, Peng L, Huang Y, Jiang W, Wu S, Zhou L, Chung SK, Cheng X. Scutellarin acts on the AR-NOX axis to remediate oxidative stress injury in a mouse model of cerebral ischemia/reperfusion injury. *Phytomedicine*. 2022 Aug;103:154214. doi: 10.1016/j.phymed.2022.154214. Epub 2022 May 29. PMID: 35689902.

Lai AKW, Ng TC, Hung VKL, Tam KC, Cheung CW, Chung SK, Lo ACY. Exacerbated VEGF up-regulation accompanies diabetes-aggravated hemorrhage in mice after experimental cerebral ischemia and delayed reperfusion. *Neural Regen Res.* 2022 Jul;17(7):1566-1575. doi: 10.4103/1673-5374.330612. PMID: 34916442; PMCID: PMC8771109.

PeiCao, LeiZhang, YangYang, Xiao-dan Wang, Zhao-ping Liu, Jian-wen Li, Li-yuan Wang, SookjaChung, Moqin Zhou, Ke Deng, Ping-ping Zhou, Ping-gu Wu, Analysis of furan and its major furan derivatives in coffee products on the Chinese market using HS-GC-MS and the estimated exposure of the Chinese population. *Food Chemistry*, Available online 26 March 2022, 132823

Yang L, Liu J, Xia X, Wong IN, Chung SK, Xu B, El-Seedi HR, Wang B, Huang R. Sulfated heteropolysaccharides from *Undaria pinnatifida*: Structural characterization and transcript-metabolite profiling of immunostimulatory effects on RAW264.7 cells. *Food Chem X.* 2022 Feb 9;13:100251. doi: 10.1016/j.fochx.2022.100251. Erratum in: *Food Chem X.* 2022 Feb 24;13:100264. PMID: 35498964; PMCID: PMC9040004.

Zhang D, Hamdoun S, Chen R, Yang L, Ip CK, Qu Y, Li R, Jiang H, Yang Z, Chung SK, Liu L, Wong VKW. Identification of natural compounds as SARS-CoV-2 entry inhibitors by molecular docking-based virtual screening with bio-layer interferometry. *Pharmacol Res.* 2021 Oct;172:105820. doi: 10.1016/j.phrs.2021.105820. Epub 2021 Aug 14. PMID: 34403732

Zeng W, Wu AG, Zhou XG, Khan I, Zhang RL, Lo HH, Qu LQ, Song LL, Yun XY, Wang HM, Chen J, Ng JPL, Ren F, Yuan SY, Yu L, Tang Y, Huang GX, Wong VKW, Chung SK, Mok SWF, Qin DL, Sun HL, Liu L, Hsiao WLW, Law BYK. Saponins isolated from *Radix polygalae* extent lifespan by modulating complement C3 and gut microbiota. *Pharmacol Res.* 2021 Aug;170:105697. doi: 10.1016/j.phrs.2021.105697. Epub 2021 May 29. PMID: 34062240

de Seabra Rodrigues Dias IR, Lo HH, Zhang K, Law BYK, Nasim AA, Chung SK, Wong VKW, Liu L. Potential therapeutic compounds with antiarthritic activity from traditional Chinese Medicine by targeting endoplasmic reticulum stress, *Pharmacol Res.* 2021 Aug;170:105696. doi: 10.1016/j.phrs.2021.105696. Epub 2021 May 28. PMID: 34052360

Naoko Niimi *, Hideji Yako, Shizuka Takaku, Sookja K. Chung, Kazunori Sango, Aldose reductase and the polyol pathway in Schwann cells: old and new problems, *Int. J. Mol. Sci.* ('Molecular Pathology, Diagnostics, and Therapeutics' Section), 2021, 22(3), 1031; <https://doi.org/10.3390/ijms22031031>

Xuwei Xia, Huili Hao, Xiaoyong Zhang, Nam Wong, Sookja Kim Chung, Zexin Chen, BaojunXue, Riming Huang, Immunomodulatory sulfated polysaccharides from *Caulerpa racemosa* var. *peltata* induces metabolic shifts in NF- κ B signaling pathway in RAW 264.7 macrophages, *International Journal of Biological Macromolecules*, Volume 182, 1 July 2021, Pages 321-332

Boya Liao, Leiluo Geng, Ling Wei, Karen S.L. Lam, Sookja K. Chung, Patrick K.K. Yeung, Junlei Chang, AiminXu, Kai Wang, Ruby L.C. Hoo, Macrophage Derived A-FABP Promotes Cerebral Ischemia Injury via Enhancing MMP-9 Expression through JNK/c-Jun pathway, *European Heart Journal* [1522-9645], Published 2020, Pages 1-13 <https://doi.org/10.1093/eurheartj/ehaa207> (Impact factor 22.673)

Roy Chun-Laam Ng, Min Jian, Myriam Bunting, Oscar Ka-Fai Ma, Jason Kwan, Guang-Jie Zhou, Krishnamoorthi Senthilkumar, Ashok Iyaswamy, Min LI, Kenneth Mei-Yee Leung, Siva-Sundara Durairajan, Karen Lam, Sookja Kim Chung, Ping Kei CHAN, Leung Wing CHU, and Richard Festenstein, Koon-Ho Chan, Chronic oral administration of AdipoRon reverses cognitive impairments and ameliorates neuropathology in an Alzheimer's disease mouse model" [Paper #2019MP000320RRR] MOLECULAR PSYCHIATRY[1359-4184], Published 2020 (Impact factor 12.384)

So, WK., Kim, H.K., Chen, Y. Seung Hun Jeong, Patrick Ka Kit Yeung, Billy C. K. Chow, Jin Han & Sookja K. Chung, Pflügers Archiv - European Journal of Phet al. Exchange protein directly activated by cAMP (Epac) 1 plays an essential role in stress-induced exercise capacity by regulating PGC-1 α and fatty acid metabolism in skeletal muscle. Pflugers Arch - Eur J Physiol 472, 195–216 (2020). <https://doi.org/10.1007/s00424-019-02344-6>
Zhang, Kai, Ip, Chi, Chung, Sookja, Lei, Kei Kei, Zhang, Yao, Liu, Liang, Wong, Vincent, Drug-resistance in rheumatoid arthritis: the role of p53 gene mutations, ABC family transporters and personal factors, Current opinion in pharmacology Sept 2020, 54:59-71, DOI: 10.1016/j.coph.2020.08.002

Gu, Pan, Fan, Tingting, Wong, Stanley, Pan, Zhiqiang, Tai, Wai, Chung, Sookja, Cheung, Chiwai, Central Endothelin-1 Confers Analgesia by Triggering Spinal Neuronal Histone Deacetylase 5 (HDAC5) Nuclear Exclusion in Peripheral Neuropathic Pain in Mice, 2021/01/06, The Journal of Pain 10.1016/j.jpain.2020.12.004

Xiao Cheng; Patrick KK Yeung; Ke Zhong; Prince Last Mudenda Zilundu; Lihua Zhou; Sookja K Chung, Astrocytic endothelin-1 overexpression promotes neural progenitor cells proliferation and differentiation into astrocytes via the Jak2/Stat3 pathway after stroke, J Neuroinflammation. 2019; 16: 227. Published online 2019 Nov 16. doi: 10.1186/s12974-019-1597-yPMCID: PMC6858703

Zeng Z, Xia L, Fan X, Ostriker AC, Yarovinsky T, Su M, Zhang Y, Peng X, Xie Y, Sze-Wah Tam, Rui Feng, Way Kwok-Wai Lau, Andrew Chi-Kin Law, Patrick Ka-Kit Yeung and Sookja Kim Chung, Endothelin type B receptor promotes cofilin rod formation and dendritic loss in neurons by inducing oxidative stress and cofilin activation, The Journal of Biological Chemistry, 2019 Aug., 294, 12495-12506.

Pi L, Gu X, Chung SK, Martin KA, Liu R, Hwa J, Tang WH. Platelet-derived miR-223 promotes a phenotypic switch in arterial injury repair. J Clin Invest. 2019 Mar 1;129(3):1372-1386. doi: 10.1172/JCI124508. Epub 2019 Feb 18. PubMed PMID: 30645204; PubMed Central PMCID: PMC6391113.

Wong SSC, Lee UM, Wang XM, Chung SK, Cheung CW. Role of DLC2 and RhoA/ROCK pathway in formalin induced inflammatory pain in mice. Neurosci Lett. 2019 Sep 14;709:134379. doi: 10.1016/j.neulet.2019.134379. Epub 2019 Jul 16. PubMed PMID:31323253.

Bian G, Yu C, Liu L, Fang C, Chen K, Ren P, Zhang Q, Liu F, Zhang K, Xue Q, Xiang J, Guo H, Song J, Zhao Y, Wu W, Chung SK, Sun R, Ju G, Wang J. Sphingosine 1-phosphate stimulates eyelid closure in the developing rat by stimulating EGFR signaling. **Sci Signal.** 2018 Oct 23;11(553). pii: eaat1470. doi: 10.1126/scisignal.aat1470. PubMed PMID: 30352949.

He J, Xia M, Yeung PKK, Li J, Li Z, Chung KK, Chung SK, Xia J. PICK1 inhibits the E3 ubiquitin ligase activity of Parkin and reduces its neuronal protective effect. **Proc Natl Acad Sci U S A**. 2018 Jul 24;115(30):E7193-E7201. doi: 10.1073/pnas.1716506115. Epub 2018 Jul 9. PubMed PMID: 29987020; PubMed Central PMCID: PMC6064985.

Zhang SQ, Yung KK, Chung SK, Chung SS. Aldo-keto reductases-mediated cytotoxicity of 2-deoxyglucose: A novel anticancer mechanism. **Cancer Sci**. 2018 Jun;109(6):1970-1980. doi: 10.1111/cas.13604. Epub 2018 May 3. PubMed PMID: 29617059; PubMed Central PMCID: PMC5989857

Liu XB, Lo CM, Cheng Q, Ng KT, Shao Y, Li CX, Chung SK, Ng IOL, Yu J, Man K. Oval Cells Contribute to Fibrogenesis of Marginal Liver Grafts under Stepwise Regulation of Aldose Reductase and Notch Signaling. **Theranostics**. 2017 Oct 24;7(19):4879-4893. doi: 10.7150/thno.20085. eCollection 2017. PubMed PMID: 29187911; PubMed Central PMCID: PMC5706107.

Xu WW, Li B, Guan XY, Chung SK, Wang Y, Yip YL, Law SY, Chan KT, Lee NP, Chan KW, Xu LY, Li EM, Tsao SW, He QY, Cheung AL. Cancer cell-secreted IGF2 instigates fibroblasts and bone marrow-derived vascular progenitor cells to promote cancer progression. **Nat Commun**. 2017 Feb 10;8:14399. doi: 10.1038/ncomms14399. PubMed PMID: 28186102; PubMed Central PMCID: PMC5309924.

Patrick K.K.Yeung, Angela K.W.Lai, Hyo JinSon, XuZhang, , Stephen S.M.Chung & S K Chung, Aldose reductase deficiency leads to oxidative stress-induced dopaminergic neuronal loss and autophagic abnormality in an animal model of Parkinson's disease., **Neurobiol Aging**. 2017 Feb;50:119-133. <https://doi.org/10.1016/j.neurobiolaging.2016.11.008>

L Zhou, S L Ma, P K K Yeung, Y H Wong, K W K Tsim, K F So, L C W Lam, & S K Chung, Anxiety and depression with neurogenesis defects in exchange protein directly activated by cAMP 2-deficient mice are ameliorated by a selective serotonin reuptake inhibitor, Prozac., **Translational Psychiatry** (2016) 6, doi:10.1038/tp.2016.129, <https://www.nature.com/articles/tp2016129.pdf>

Victor KL Hung, Patrick KK Yeung, Angela KW Lai, Maggie CY Ho, Amy CY Lo, Kevin C Chan, Ed XK Wu, Stephen SM Chung, Chi W Cheung, Sookja K Chung Selective Astrocytic Endothelin-1 Overexpression Contributes to Dementia Associated with Ischemic Stroke by Exaggerating Astrocyte-Derived Amyloid Secretion . **J Cereb Blood Flow Metab**. 35(10):1687-96, 2015, <http://journals.sagepub.com/doi/pdf/10.1038/jcbfm.2015.109>

Kai AK, Lam AK, Chen Y, Tai AC, Zhang X, Lai AK, Yeung PK, Tam S, Wang J, Lam KS, Vanhoutte PM, Bos JL, Chung SS, Xu A, Chung SK., Exchange protein activated by cAMP 1 (Epac1)-deficient mice develop β -cell dysfunction and metabolic syndrome. **FASEB J**. 2013 Oct;27(10):4122-35. doi: 10.1096/fj.13-230433. Epub 2013 Jun 27. <http://www.fasebj.org/content/27/10/4122.short>

PATENTS OBTAINED:

1. Sookja Kim Chung, Stephen Chung and Chihiro Hibi, Preventive or therapeutic agent for cerebral ischemic injury or cerebral ischemia reperfusion in stroke, Filed on Aug 30, 2007, Patent No. 000144577
2. Sookja Kim Chung, Stephen Chung and Chihiro Hibi, Protective agent for retinal nerve or optic nerve, Patent Application 20100216856, 08/26/2010
3. Ip, Nancy Y, Ip, Fanny Chui Fun, Hu, Yueqing, Han, Yifan, Chung, Sookja Kim Heterodimers and methods of using them, United States Patent 7605265, Oct 20, 2009
4. Sookja Kim Chung, Stephen Chung and Chihiro Hibi, Protective agent for retinal nerve or optic nerve, European Patent Application, 13155114.5-1464, 23.04.13
5. Sookja Kim Chung and Philip So: 3D printing of microneedles: 201910278559.3
6. Licensing of aldose reductase-deficient Schwann cell line (IKARS1) in collaboration with Prof. Kazunori Sango, Japan to Applied Biological Materials Inc. (“Licensee”), with offices located at 1-3671 Viking Way Richmond, B.C.V6V 2J5 Canada.