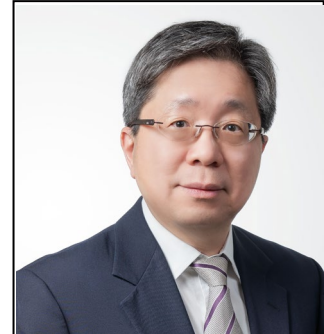


# CURRICULUM VITAE

## PERSONAL

### NAME(姓名，含英譯)

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### PROFESSIONAL APPOINTMENT (現職，含英譯)

2023/04~Present

財團法人工業技術研究院生醫與醫材研究所所長

General Director, Biomedical Technology and Device Research Laboratories, Industrial Technology Research Institute

2015/05~Present

國立臺灣大學醫療器材研發中心副主任

Deputy Director, Research and Development Center for Medical Devices, National Taiwan University

2011/08~Present

國立臺灣大學生物技術研究中心研究員

Research Fellow, Center of Biotechnology, National Taiwan University

國立臺灣大學腫瘤醫學研究所教授

Professor, Graduate Institute of Oncology, National Taiwan University

2010/08~Present 國立臺灣大學基因體與系統生物學學位學程教授

Professor, Genome and Systems Biology Degree Program, College of Life Science, National Taiwan University

2008/08~Present

國立臺灣大學電機工程學系暨研究所教授

Professor, Department of Electrical Engineering, National Taiwan University

國立臺灣大學流行病學與預防醫學研究所教授

Professor, Graduate Institute of Epidemiology and Preventive Medicine, National Taiwan University

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國立臺灣大學生醫電子與資訊學研究所教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University

2005/06~Present

國立臺灣大學基因體暨精準醫學研究中心-生物統計暨生物資訊核心實驗室主持人

Principal Investigator, Bioinformatics and Biostatistics Core, NTU Center of Genomic and Precision Medicine, National Taiwan University

### **EDUCATION(學歷)**

2015/09~2017/06 國立臺灣大學管理學院商學碩士(EMBA)

1991/09~1997/06 美國哈佛大學癌症生物學博士

1990/01~1991/08 美國伊利諾理工學院生物技術碩士

1982/09~1986/06 東海大學生物學學士

### **WORKING EXPERIENCE (經歷)**

2021/08~2023/03 中國醫藥大學產學合作處產學長

2021/02~2023/03 中國醫藥大學醫學工程學院院長

2021/02~2023/03 中國醫藥大學生物醫學工程碩士學位學程教授

2021/02~2023/03 財團法人工業技術研究院生醫與醫材研究所資深特聘研究

2018/09~2021/01 財團法人工業技術研究院生醫與醫材研究所副所長

2016/08~2021/01 中央研究院基因體中心合聘研究員

2012/08~2018/07 國立臺灣大學生醫電子與資訊學研究所教授兼任所長

2011/02~2017/01 國立臺灣大學永齡生醫工程中心(現永齡健康研究院)主任

2008/08~2013/07 國立臺灣大學動物學研究所教授

2006 ~2010 國立臺灣大學國家級卓越臨床試驗與研究中心轉譯實驗室三 主持人

2004 ~2018 Department of Environmental & Radiological Health Sciences, Colorado State University, Fort Collins, CO, U.S.A , Faculty Affiliate

2000 ~2004 Radiation Oncology Sciences Program, National Cancer Institute, National Institutes of Health, Gaithersburg, MD, U.S.A, Head of Microarray Lab

1998 ~2000 Radiation Biology Branch, National Cancer Institute, Bethesda, MD, U.S.A, CRTA Fellow

1997 ~1998 Department of Cancer Cell Biology, Harvard University, School of Public Health, Boston, MA, U.S.A, Postdoctoral Research Fellow

### **MAJOR RESEARCH AREA(研究領域)**

生物晶片、次世代定序、生物資訊、癌症生物、輻射生物、精準醫學

## PUBLICATION(In the nearest 5 years)(發表、出版物)

1. Y.F. Lee, C.Y. Lee, L.C. Lai, M.H. Tsai, T.P. Lu, **Eric Y. Chuang\***, CellExpress: a comprehensive microarray-based cancer cell line and clinical sample gene expression analysis online system, *DATABASE-OXFORD* (impact factor: 4.462, journal ranking: 19%), JAN 12 2018, 2018:bax101, DOI: 10.1093/ database/bax101
2. S.H. Huang, Y.S. Chang, J.M. Jimmy Juang, K.W. Chang, M.H. Tsai, T.P. Lu, L.C. Lai, **Eric Y. Chuang**, N.T. Huang, An automated microfluidic DNA microarray platform for genetic variant detection in inherited arrhythmic diseases, *ANALYST* (impact factor: 5.227, journal ranking: 21%), JAN 17 2018, 143:1367-1377, DOI: 10.1039/C7AN01648D
3. T.H. Hsiao, Y.H. Chen, H.I. Chen, Y.C. Chiu, **Eric Y. Chuang\***, Y. Chen, Utilizing Cancer-Functional Gene set-Compound Networks to Identify Putative Drugs for Breast Cancer, *COMB CHEM HIGH T SCR* (impact factor: 1.714, journal ranking: 69%), FEB 2018, 21(2):74-83, DOI: 10.2174/1574888X13666180105 125347
4. H.C. Lin, C.C. Yeh, L.Y. Chao, M.H. Tsai, H.H. Chen, **Eric Y. Chuang**, L.C. Lai, The hypoxia-responsive lncRNA NDRG-OT1 promotes NDRG1 degradation via ubiquitin-mediated proteolysis in breast cancer cells, *ONCOTARGET*, FEB 13 2018, 9(12):10470-10482, DOI: 10.18632/oncotarget.23732
5. C.Y. Lee, P.H. Hsieh, L.M. Chiang, A. Chattopadhyay, K.Y. Li, Y.F. Lee, T.P. Lu, L.C. Lai, E.C. Lin, H. Lee, S.T. Ding, M.H. Tsai, C.Y. Chen, **Eric Y. Chuang\***, Whole-Genome De Novo Sequencing Reveals Unique Genes that Contributed to the Adaptive Evolution of the Mikado Pheasant, *GIGASCIENCE* (impact factor: 7.658, journal ranking: 18%), MAY 02 2018, 7(5):giy044, DOI: 10.1093/gigascience/giy044
6. C.C. Yeh, J.L. Luo, N.N. Phan, Y.C. Cheng, L.P. Chow, M.H. Tsai, **Eric Y. Chuang**, L.C. Lai, Different effects of long noncoding RNA NDRG1-OT1 fragments on NDRG1 transcription in breast cancer cells under hypoxia, *RNA BIOL* (impact factor: 4.766, journal ranking: 41%), DEC 04 2018, 15(12):1487-1498, DOI: 10.1080/15476286.2018.1553480
7. C.Y. Shen, Y.C. Chang, L.H. Chen, W.C. Lin, Y.H. Lee, S.T. Yeh, H.K. Chen, W. Fang, C.P. Hsu, J.M. Lee, T.P. Lu, P.W. Hsiao, L.C. Lai, M.H. Tsai, **Eric Y. Chuang\***, The extracellular SEMA domain attenuates intracellular apoptotic signaling of semaphorin 6A in lung cancer cells, *ONCOGENESIS* (impact factor: 6.524, journal ranking: 25%), DEC 05 2018, 7(12):95, DOI: 10.1038/s41389-018-0105-z
8. C.S. Hsieh, C.T. Tsai, Y.H. Chen, S.N. Chang, J.J. Hwang, **Eric Y. Chuang\***, I.H. Wu, Global Expression Profiling Identifies a Novel Hyaluronan Synthases 2 Gene in the Pathogenesis of Lower Extremity Varicose Veins, *J CLIN MED* (impact factor: 4.964, journal ranking: 31%), DEC 11 2018, 7(12):537, DOI: 10.3390/jcm7120537
9. P.H. Ko, Y.C. Shen, K. Murugan, C.W. Huang, G. Sivakumar, P. Pal, C.C. Liao, K.S. Luo, **Eric Y. Chuang**, M.H. Tsai, L.C. Lai, Macrophage Migration Inhibitory Factor Acts as the Potential Target of a Newly Synthesized Compound, 1-(9'-methyl-3'-carbazole)-3, 4-dihydro- $\beta$ -carboline, *SCI REP-UK* (impact factor: 4.996, journal ranking: 26%), FEB 14 2019, 9(1):2147, DOI:

10.1038/s41598-019-38590-y

10. C.S. Hsieh, P.S. Huang, S.N. Chang, C.K. Wu, J.J. Hwang, **Eric Y. Chuang\***, C.T. Tsai, Genome-Wide Copy Number Variation Association Study of Atrial Fibrillation Related Thromboembolic Stroke, *J CLIN MED* (impact factor: 4.964, journal ranking: 31%), MAR 09 2019, 8(3):332, DOI: 10.3390/jcm8030332.
11. P.H. Ko, C.W. Huang, H.H. Chang, **Eric Y. Chuang**, M.H. Tsai, L.C. Lai, Identifying the functions and biomarkers of *Codonopsis pilosula* and *Astragalus membranaceus* aqueous extracts in hepatic cells, *CHIN MED-UK* (impact factor: 4.546, journal ranking: 20%), MAR 20 2019, 14:10(2019), DOI: 10.1186/s13020-019-0233-1
12. T.T. Wang, C.Y. Lee, L.C. Lai, M.H. Tsai, T.P. Lu, **Eric Y. Chuang\***, anamiR: integrated analysis of MicroRNA and gene expression profiling, *BMC BIOINFORMATICS* (impact factor: 3.328, journal ranking: 35%), MAY 14 2019, 20:239, DOI: 10.1186/s12859-019-2870-x
13. C.H. Lin, C.C. Chen, H.L. Chiang, J.M. Liou, C.M. Chang, T.P. Lu, **Eric Y. Chuang**, Y.C. Tai, C. Cheng, H.Y. Lin, M.S. Wu, Altered gut microbiota and inflammatory cytokine responses in patients with Parkinson's disease, *J NEUROINFLAMM* (impact factor: 9.594, journal ranking: 9%), JUN 27 2019, 16(1):129, DOI: 10.1186/s12974-019-1528-y
14. C.Y. Lee, A. Chattopadhyay, L.M. Chiang, J.M. Jimmy Juang, L.C. Lai, M.H. Tsai, T.P. Lu, **Eric Y. Chuang\***, VariED: the first integrated database of gene annotation and expression profiles for variants related to human diseases, *DATABASE-OXFORD* (impact factor: 4.462, journal ranking: 19%), JUL 17 2019, 2019:baz075, DOI: 10.1093/database/baz075
15. W.C. Lin, L.H. Chen, Y.C. Hsieh, P.W. Yang, L.C. Lai, **Eric Y. Chuang**, J.M. Lee, M.H. Tsai, miR-338-5p inhibits cell proliferation, colony formation, migration, and cisplatin resistance in esophageal squamous cancer cells by targeting FERMT2, *CARCINOGENESIS* (impact factor: 4.741, journal ranking: 42%), JUL 20 2019, 40(7):883-892, DOI: 10.1093/carcin/bgy189
16. L.C. Lai, Q.L. Sun, Y.A. Chen, Y.W. Hsiao, T.P. Lu, M.H. Tsai, L. Zhu, **Eric Y. Chuang\***, W.T. Fang, Using proteomic profiling to characterize protein signatures of different thymoma subtypes, *BMC Cancer* (impact factor: 4.638, journal ranking: 44%), AUG 13 2019, 19(1):796(2019), DOI: 10.1186/s12885-019-6023-4
17. L.H. Chen, C.Y. Liao, L.C. Lai, M.H. Tsai, **Eric Y. Chuang\***, Semaphorin 6A Attenuates the Migration Capability of Lung Cancer Cells via the NRF2/HMOX1 Axis, *SCI REP-UK* (impact factor: 4.996, journal ranking: 26%), SEP 16 2019, 9:13302(2019), DOI: 10.1038/s41598-019-49874-8
18. J.M. Liou, C.C. Chen, C.M. Chang, Y.J. Fang, M.J. Bair, P.Y. Chen, C.Y. Chang, Y.C. Hsu, M.J. Chen, C.C. Chen, J.Y. Lee, T.H. Yang, J.C. Luo, C.Y. Chen, W.F. Hsu, Y.N. Chen, J.Y. Wu, J.T. Lin, TP Lu, **Eric Y Chuang**, Emad M El-Omar, MS. Wu, Long-term changes of gut microbiota, antibiotic resistance, and metabolic parameters after *Helicobacter pylori* eradication: a multicentre, open-label, randomised trial, *LANCET INFECT DIS* (impact factor: 71.421, journal ranking: 2%), OCT 01 2019, 19(10):1109-1120, DOI: 10.1016/S1473-3099(19)30272-5

19. P.H. Ko, G. Lenka, Y.A. Chen, **Eric Y. Chuang**, M.H. Tsai, Y.P. Sher, L.C. Lai, Semaphorin 5A suppresses the proliferation and migration of lung adenocarcinoma cells, *INT J ONCOL (impact factor: 5.884, journal ranking: 30%)*, JAN 2020, 56(1):165-177, DOI: 10.3892/ijo.2019.4932
20. J.M. Jimmy Juang, A. Binda, S.J. Lee, J.J. Hwang, W.J. Chen, Y.B. Liu, L. Y. Lin, C. C. Yu, L. T. Ho, H. C. Huang, C. Y. Julius Chen, T. P. Lu, L. C. Lai, S. F. Sherri Yeh, L. P. Lai, **Eric Y. Chuang**, I. Rivolta, C. Antzelevitch, GSTM3 variant is a novel genetic modifier in Brugada syndrome, a disease with risk of sudden cardiac death, *EBioMedicine (impact factor: 11.205, journal ranking: 10%)*, JUL 07 2020, 57(2020):102843, DOI: 10.1016/j.ebiom.2020.102843
21. J.M. Jimmy Juang, Y.B. Liu, C.Y. Julius Chen, Q.Y. Yu, A. Chattopadhyay, L.Y. Lin, W.J. Chen, C.C. Yu, H.C. Huang, L.T. Ho, L.P. Lai, J.J. Hwang, T.T. Lin, M.C. Liao, J.J. Chen, S.F. Sherri Yeh, J.Y. Chuang, D.H. Yang, J.L. Lin, T.P. Lu, **Eric Y. Chuang**, M.J. Ackerman, Validation and Disease Risk Assessment of Previously Reported Genome-Wide Genetic Variants Associated with Brugada Syndrome: SADS-TW BrS Registry, *CIRC-CARDIOVASC GENE (impact factor: 4.534, journal ranking: 19%)*, AUG 2020, 13(4):e002797, DOI: 10.1161/CIRCGEN.119.002797
22. H.C. Lo, D.S. Yu, H.W. Gao, M.H. Tsai, **Eric Y. Chuang\***, IL-27/IL-27RA signaling may modulate inflammation and progression of benign prostatic hyperplasia via suppressing the LPS/TLR4 pathway, *TRANSL CANCER RES (impact factor: 0.496, journal ranking: 99%)*, AUG 2020, 9(8):4618-4634, DOI: 10.21037/tcr-20-1509
23. P. S. Huang, C. S. Hsieh, S. N. Chang, J. J. Chen, F. C. Chiu, C. K. Wu, J. J. Hwang, **Eric Y. Chuang**, C. T. Tsai, Prevalence of sudden arrhythmic death syndrome-related genetic mutations in an Asian cohort of whole genome sequence, *EUROPACE (impact factor: 5.486, journal ranking: 32%)*, AUG 01 2020, 22(8):1287-1297, DOI: 10.1093/europace/euaa092
24. H.C. Lo, J.H. Hsu, L.C. Lai, M.H. Tsai, **Eric Y. Chuang\***, MicroRNA-107 enhances radiosensitivity by suppressing granulin in PC-3 prostate cancer cells, *SCI REP-UK (impact factor: 4.996, journal ranking: 26%)*, SEP 03 2020, 10(1):14584(2020), DOI:10.1038/s41598-020-71128-1
25. C.C. Chen, W.K. Wu, C.M. Chang, S. Panyod, T.P. Lu, J.M. Liou, Y.J. Fang, **Eric Y. Chuang**, M.S. Wu, Comparison of DNA stabilizers and storage conditions on preserving fecal microbiota profiles, *J FORMOS MED ASSOC (impact factor: 3.871, journal ranking: 35%)*, DEC 2020, 119(12):1791-1798, DOI: 10.1016/j.jfma.2020.01.013
26. P.W. Yang, M.C. Lin, P.M. Huang, C.P. Wang, T.C. Chen, C.N. Chen, M.H. Tsai, Jason C.H. Cheng, **Eric Y. Chuang**, M.S. Hsieh, P.J. Lou, J.M. Lee, Risk Factors and Genetic Biomarkers of Multiple Primary Cancers in Esophageal Cancer Patients, *FRONT ONCOL (impact factor: 5.738, journal ranking: 32%)*, JAN 22 2021, 10:585621, DOI: 10.3389/fonc.2020.585621
27. H.C. Chan, A. Chattopadhyay, **Eric Y. Chuang**, T.P. Lu, Development of a Gene-Based Prediction Model for Recurrence of Colorectal Cancer Using an Ensemble Learning Algorithm, *FRONT ONCOL (impact factor: 5.738, journal ranking: 32%)*, FEB 22 2021, 11:631056, DOI: 10.3389/fonc.2021.631056

28. S. Shivani, A. Chattopadhyay, **Eric Y. Chuang\***, Targeting the gut microbiome for non-communicable diseases: present and future, *Ann Transl Med (impact factor: 3.616, journal ranking: 61%)*, MAR 05 2021, 9(5):361, DOI: 10.21037/atm-21-144
29. C.H. Wu, H.T. Yeh, C.S. Hsieh, C.C. Huang, A. Chattopadhyay, Y.C. Chung, S.H. Tu, Y.H. Li, T.P. Lu, L.C. Lai, M.F. Hou, K.J. Chang, M.H. Tsai, **Eric Y. Chuang\***, Evolutionary Trajectories and Genomic Divergence in Localized Breast Cancers after Ipsilateral Breast Tumor Recurrence, *CANCERS (impact factor: 6.575, journal ranking: 24%)*, APR 11 2021, 13(8):1821, DOI: 10.3390/cancers13081821
30. Y.W. Hsiao, C.L. Tao, **Eric Y. Chuang**, T.P. Lu, A risk prediction model of gene signatures in ovarian cancer through bagging of GA-XGBoost models, *J ADV RES (impact factor: 12.822, journal ranking: 11%)*, MAY 2021, 30(2021):113-122, DOI: 10.1016/j.jare.2020.11.006
31. J.M. Jimmy Juang, T.P. Lu, M.W. Su, C.W. Lin, J.H. Yang, H.W. Chu, C.H. Chen, Y.W. Hsiao, C.Y. Lee, L.M. Chiang, Q.Y. Yu, C.H. Kate Hsiao, C.Y. Julius Chen, P.E. Wu, C.H. Pai, **Eric Y. Chuang\***, C.Y. Shen, Rare variants discovery by extensive whole-genome sequencing of the Han Chinese population in Taiwan: Applications to cardiovascular medicine, *J ADV RES (impact factor: 12.822, journal ranking: 11%)*, MAY 2021, 30(2021):147-158, DOI: 10.1016/j.jare.2020.12.003
32. C.H. Shih, L.L. Chuang, M.H. Tsai, L.H. Chen, **Eric Y. Chuang**, T.P. Lu, and L.C. Lai, Hypoxia-Induced MALAT1 Promotes the Proliferation and Migration of Breast Cancer Cells by Sponging MiR-3064-5p, *FRONT ONCOL (impact factor: 5.738, journal ranking: 32%)*, MAY 03 2021, 11:658151, DOI: 10.3389/fonc.2021.658151
33. Y.M. Hung, M.H. Tsai, L.C. Lai, **Eric Y. Chuang\***, ATTRACTIVE – An Auto-Updating Database for Experimental Protocols in Regenerative Medicine, *IEEE Access (impact factor: 3.476, journal ranking: 38%)*, MAY 20 2021, 9:75202-75210, DOI: 10.1109/ACCESS.2021.3082403
34. Y.C. Cheng, L.Y. Su, L.H. Chen, T.P. Lu, **Eric Y. Chuang**, M.H. Tsai, L.L. Chuang, L.C. Lai, Regulatory Mechanisms and Functional Roles of Hypoxia-Induced Long Non-Coding RNA MTORT1 in Breast Cancer Cells, *FRONT ONCOL (impact factor: 5.738, journal ranking: 32%)*, JUN 01 2021, 11:663114, DOI:10.3389/fonc.2021.663114
35. C. Goswami, A. Chattopadhyay, **Eric Y. Chuang\***, Rare variants: data types and analysis strategies, *Ann Transl Med (impact factor: 3.616, journal ranking: 61%)*, JUN 01 2021, 9(12):961, DOI: 10.21037/atm-21-1635
36. C.H. Lin, Ruby Y.J. Huang, T.P. Lu, K.T. Kuo, K.Y. Lo, C.H. Chen, IC. Chen, Y.S. Lu, **Eric Y. Chuang**, J. P. Thiery, C.S. Huang, A.L. Cheng, High prevalence of APOA1/C3/A4/A5 alterations in luminal breast cancers among young women in East Asia, *npj Breast Cancer (impact factor: 7.519, journal ranking: 20%)*, JUL 05 2021, 7:88(2021), DOI: 10.6084/m9.figshare.14696499
37. A. Chattopadhyay, Z.H. Teoh, C.Y. Wu, J.M. J. Juang, L.C. Lai, M.H. Tsai, C.H. Wu, T.P. Lu, **Eric Y. Chuang\***, CNVIntegrate: the first multi-ethnic database for identifying copy number

- variations associated with cancer, *DATABASE-OXFORD* (impact factor: 4.462, journal ranking: 19%), JUL 14 2021, 2021:baab044, DOI: 10.1093/database/baab044
38. Y.M. Hung, T.P. Lu, M.H. Tsai, L.C. Lai, **Eric Y. Chuang\***, EasyMAP: A user-friendly online platform for analyzing 16S ribosomal DNA sequencing data, *NEW BIOTECHNOL* (impact factor: 6.490, journal ranking: 11%), JUL 25 2021, 63(2021):37-44, DOI: 10.1016/j.nbt.2021.03.001
  39. C.H. Wu, C.S. Hsieh, Y.C. Chang, C.C. Huang, H.T. Yeh, M.F. Hou, Y.C. Chung, S.H. Tu, K.J. Chang, A. Chattopadhyay, L.C. Lai, T.P. Lu, Y.H. Li, M.H. Tsai, **Eric Y. Chuang\***, Differential whole-genome doubling and homologous recombination deficiencies across breast cancer subtypes from the Taiwanese population, *COMMUN BIOL* (impact factor: 6.548, journal ranking: 16%), SEP 09 2021, 4:1052(2021), DOI: 10.1038/s42003-021-02597-x
  40. N.N. Phan, C.Y. Hsu, C.C. Huang, L.M. Tseng, **Eric Y. Chuang\***, Prediction of Breast Cancer Recurrence Using a Deep Convolutional Neural Network Without Region-of-Interest Labeling, *FRONT ONCOL* (impact factor: 5.738, journal ranking: 32%), OCT 21 2021, 11:734015, DOI: 10.3389/fonc.2021.734015
  41. N.N. Phan, A. Chattopadhyay, T.T. Lee, H.I. Yin, T.P. Lu, L.C. Lai, H.L. Hwa, M.H. Tsai, **Eric Y. Chuang\***, High-performance deep learning pipeline predicts individuals in mixtures of DNA using sequencing data, *BRIEF BIOINFORM* (impact factor: 13.994, journal ranking: 2%), NOV 05 2021, 22(6):bbab283, DOI: 10.1093/bib/bbab283
  42. W.T. Fang, C.H. Wu, Q.L. Sun, Z.T. Gu, L. Zhu, T. Mao, X.F. Zhang, N. Xu, T.P. Lu, M.H. Tsai, L.H. Chen, L.C. Lai, **Eric Y. Chuang\***, Novel Tumor-Specific Antigens for Immunotherapy Identified From Multi-omics Profiling in Thymic Carcinomas, *FRONT IMMUNOL* (impact factor: 8.786, journal ranking: 20%), NOV 16 2021, 12:748820, DOI: 10.3389/fimmu.2021.748820
  43. C.Y. Lee, Y.F. Lee, L.C. Lai, M.H. Tsai, T.P. Lu, **Eric Y. Chuang\***, MiDSytem: A comprehensive online system for de novo assembly and analysis of microbial genomes, *NEW BIOTECHNOL* (impact factor: 6.490, journal ranking: 11%), NOV 25 2021, 65:42-52, DOI: 10.1016/j.nbt.2021.08.002
  44. C.H. Lu, C.H. Wu, M.H. Tsai, L.C. Lai, **Eric Y. Chuang\***, MutScape: an analytical toolkit for probing the mutational landscape in cancer genomics, *NAR Genom Bioinform*, DEC 2021, 3(4):lqab099, DOI: 10.1093/nargab/lqab099
  45. N.N. Phan, C.C. Huang, L.M. Tseng, **Eric Y. Chuang\***, Predicting Breast Cancer Gene Expression Signature by Applying Deep Convolutional Neural Networks From Unannotated Pathological Images, *FRONT ONCOL* (impact factor: 5.738, journal ranking: 32%), DEC 01 2021, 11:769447, DOI: 10.3389/fonc.2021.769447
  46. C.Y. Lin, W.T. Tseng, Y.Y. Chang, M.H. Tsai, **Eric Y. Chuang\***, T.P. Lu, L.C. Lai, Lidocaine and Bupivacaine Downregulate MYB and DANCR lncRNA by Upregulating miR-187-5p in MCF-7 Cells, *FRONT MED-LAUSANNE* (impact factor: 5.058, journal ranking: 30%), JAN 13 2022, 8:732817, DOI: 10.3389/fmed.2021.732817

47. U.N. Wisesty, A. Purwarianti, A. Pancoro, A. Chattopadhyay, N.N. Phan, **Eric Y. Chuang**, T.R. Mengko, Join Classifier of Type and Index Mutation on Lung Cancer DNA Using Sequential Labeling Model, *IEEE Access* (impact factor: 3.476, journal ranking: 38%), JAN 13 2022, 10:9004-9021, DOI: 10.1109/ACCESS.2022.3142925
48. M.Z. Chen, L.Y. Su, P.H. Ko, M.H. Hsu, L.L. Chuang, L.H. Chen, T.P. Lu, **Eric Y. Chuang**, L.P. Chow, M.H. Tsai, H.H. Hsu, L.C. Lai, Extracellular domain of semaphorin 5A serves a tumor-suppressing role by activating interferon signaling pathways in lung adenocarcinoma cells, *INT J ONCOL* (impact factor: 5.884, journal ranking: 30%), FEB 2022, 60(2):21, DOI: 10.3892/ijo.2022.5311
49. P.S. Huang, Y.H. Tseng, C.F. Tsai, J.J. Chen, S.C. Yang, F.C. Chiu, Z.W. Chen, J.J. Hwang, **Eric Y. Chuang\***, Y.C. Wang, C.T. Tsai, An Artificial Intelligence-Enabled ECG Algorithm for the Prediction and Localization of Angiography-Proven Coronary Artery Disease, *BIOMEDICINES* (impact factor: 4.757, journal ranking: 31%), FEB 07 2022, 10(2):394, DOI: 10.3390/biomedicines10020394
50. F.C. Chiu, C.F. Tsai, P.S. Huang, C.Y. Shih, M.H. Tsai, J.J. Hwang, Y.C. Wang, **Eric Y. Chuang**, C.T. Tsai, S.N. Chang, The Gut Microbiome, Seleno-Compounds, and Acute Myocardial Infarction, *J CLIN MED* (impact factor: 4.964, journal ranking: 31%), MAR 7 2022, 11(5):1462, DOI: 10.3390/jcm11051462
51. S. Shivani, C.Y. Kao, A. Chattopadhyay, J.W. Chen, L.C. Lai, W.H. Lin, T.P. Lu I.H. Huang, M.H. Tsai, C.H. Teng, J.J. Wu, Y.H. Hsieh, M.C. Wang, **Eric Y. Chuang\***, Uremic Toxin-Producing Bacteroides Species Prevail in the Gut Microbiota of Taiwanese CKD Patients: An Analysis Using the New Taiwan Microbiome Baseline, *FRONT CELL INFECT MI* (impact factor: 6.073, journal ranking: 24%), APR 26 2022, 12:726256, DOI: 10.3389/fcimb.2022.726256
52. Y.M. Hung, W.N. Lyu, M.L. Tsai, C. Liu, L.C. Lai, M.H. Tsai, **Eric Y. Chuang\***, To compare the performance of prokaryotic taxonomy classifiers using curated 16S full-length rRNA sequences, *COMPUT BIOL MED* (impact factor: 6.698, journal ranking: 11%), JUN 2022, 145:105416, DOI: 10.1016/j.combiomed.2022.105416
53. Daniel T.L Chen, S.W. Cheng, Tiffany Chen, Jane P.C. Chang, B.F. Hwang, H.H. Chang, **Eric Y. Chuang**, C.H. Chen, K.P. Su, Identification of Genetic Variations in the NAD-Related Pathways for Patients with Major Depressive Disorder: A Case-Control Study in Taiwan, *J CLIN MED* (impact factor: 4.964, journal ranking: 31%), JUN 23 2022, 11(13):3622, DOI: 10.3390/jcm11133622
54. Y.P. Hsieh, Y.M. Hung, M.H. Tsai, L.C. Lai, **Eric Y. Chuang\***, 16S-ITGDB: An Integrated Database for Improving Species Classification of Prokaryotic 16S Ribosomal RNA Sequences, *Frontiers in Bioinformatics*, AUG 03 2022, 2:905489, DOI: 10.3389/fbinf.2022.905489
55. H.H. Chao, J.L. Luo, M.H. Hsu, L.H. Chen, T.P. Lu, M.H. Tsai, **Eric Y. Chuang**, L.L. Chuang, L.C. Lai, Regulatory mechanisms and function of hypoxia-induced long noncoding RNA NDRG1-OT1 in breast cancer cells, *CELL DEATH DIS* (impact factor: 9.696, journal ranking: 18%), SEP 20 2022, 13(9):807, DOI: 10.1038/s41419-022-05253-2



56. C.S. Huang, M.L. Tsai, T.P. Lu, C.C. Tu, C.Y. Liu, C.J. Huang, Y.S. Ho, S.H. Tu, **Eric Y Chuang**, L.M. Tseng, C.C. Huang, The extended concurrent genes signature for disease-free survival in breast cancer, *J FORMOS MED ASSOC* (impact factor: 3.871, journal ranking: 35%), OCT 01 2022, 121(10):1945-1955, DOI: 10.1016/j.jfma.2022.01.022
57. A. Chattopadhyay, C.Y. Shih, Y.C. Hsu, J.M. Jimmy Juang, **Eric Y. Chuang**, T.P. Lu, CLIN\_SKAT: an R package to conduct association analysis using functionally relevant variants, *BMC BIOINFORMATICS* (impact factor: 3.328, journal ranking: 35%), OCT 23 2022, 23(1):441, DOI: 10.1186/s12859-022-04987-2
58. P.S. Huang, J.F. Cheng, G.W. Li, **Eric Y. Chuang**, J.J. Chen, F.C. Chiu, C.K. Wu, Y.C. Wang, J.J. Hwang, C.T. Tsai, Copy number variation of gasdermin D gene is associated with atrial fibrillation-related thromboembolic stroke, *EP Europace*(impact factor: 3.328, journal ranking: 35%), 21 April 2023, euad103, DOI: 10.1093/europace/euad103

## 精準健康與照護科技

### Precision Health and Care Technology

人工智慧技術結合生物資訊學與生醫大數據，可使我們更深入地探索精準醫學及健康領域。本次演講將分享本人帶領研究團隊除了建置高通量資料分析平台與開發生物資訊學分析套件外，近年更結合 DNA 定序資料和數種醫學影像，開發出五種高效能的深度學習工具，可應用於分類及辨識 DNA 混合物、癌症分子分型、疾病預後、細菌學和腫瘤定位上，同時將其結果發表研究與部署專利，期望能由其模型開發、資料集建立和臨床實務的經驗，加速個人化醫療的推進和台灣醫療照護的轉型。

The combination of artificial intelligence technology with bioinformatics and biomedical big data allows in-depth exploration in the field of precision medicine and health. Bioinformatics brings together biology and data science, conferring machine learning and artificial intelligence methods an important purpose. During the past few years while I was actively involved in building a high-throughput data analysis platform and developing a bioinformatics analysis suite, I was also leading a research team that was working towards developing high performing deep learning tools. Five high-efficiency deep learning models for classification, identification and prediction purposes were developed and applied on high-throughput sequencing data and medical imaging data. The applications spanned across forensic identification, classification of patients with different cancer molecular subtypes, prediction of disease prognosis, bacterial compositions, and tumor localization. All of the mentioned works were

published in high quality research journals and patented. We expect that our accomplishments in this area would allow the medical community with important deep-learning based prediction platforms that would accelerate the advancement of personalized medicine and the transformation of medical care in Taiwan.