




## Bruce Ling

Senior Research Scientist, Pediatrics - Neonatology

 NIH Biosketch available Online

 Curriculum Vitae available Online

### CONTACT INFORMATION

#### • Administrative Contact

Zhi Han, Ph.D. - Group leader

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**Tel** 614-822-5347846

### Bio

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#### BIO

Clinical Focus

- Big data analytics for quality improvement and clinical effectiveness
- Disease biomarker discovery through multi-omics based analyses

Academic Appointments

- Assistant Professor Surgery

Professional Education

- B.S., Biochemistry, Fudan University, China (1990)
- M.A., Molecular and Developmental Biology, UCLA, US (1994)
- Ph.D., Biological Chemistry, UCLA, US (1996)
- Postdoctoral training, medicine/oncology/Computer science, Stanford University, US (1996-1998)
- Business administration, Leavey School of Business, Santa Clara University, US (2000-2001)

#### ACADEMIC APPOINTMENTS

- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute

#### LINKS

- My lab site: <http://translationalmedicine.stanford.edu>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

A significant focus of my career is the use of AI to decode real-world datasets of electronic health records, high-resolution LCMS-based liquid/tissue biopsy proteomics/metabolomics, and multiple modality medical imaging.

For population health management, we use tens of millions of real-world state-wide EMRs to develop risk surveillance systems that forecast aspects like disease progression, resource utilization, and mortality across a diverse patient demographic. This prompts timely clinical actions by simplifying intervention orders and crafting care strategies tailored to address modifiable patient risk components.

For first-in-class molecular diagnostics, we have developed unique LCMS based multi-omic approaches that allow the simultaneous absolute quantification of thousands of metabolites and proteins in blood and FFPE pathological slides to predict clinical outcomes. Our collaborations with key opinion leaders in pregnancy disorder and pediatric diseases, such as Kawasaki disease, have been productive and have helped to fill critical unmet medical needs.

For computer-aided pathology (CAP) and computer-aided medical imaging analytics (CAMIA), we have developed deep learning-based computational solutions to decode clinical outcome-correlating signals in pathological whole slide images and echocardiograms. Our multi-modality and multi-omics approaches synergize to promise the next generation of disease diagnostics and risk stratification solutions.

## Professional

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### PROFESSIONAL INTERESTS

Hypothesis driven, Big data Empowered, Translational Sciences

- The implementation and use of “big data” based medicine and data analysis in complex health care settings for improved cost and care effectiveness
- Multi-omics (genomics and proteomics focused) analyses of gene/protein biomarkers for the diagnosis and prognosis of the inflammatory entity of Necrotizing Enterocolitis (NEC), sepsis in premature infants, Kawasaki disease, CNS cancer metastasis, and women pregnancy preterm diseases.
- Precision medicine – development of novel computational analysis for NGS analysis and NGS based disease diagnostics integrating vast amount of public domain NGS genomic resources
- Clinical sensor – development of novel chemical based sensor technologies to allow urine based diagnostics

## Publications

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### PUBLICATIONS

- **AI learning for pediatric right ventricular assessment: development and validation across multiple centers.** *NPJ digital medicine*  
Reddy, C., Yan, Y., Qiu, M., Tang, Y., Jin, B., Han, Z., Li, Y., Zhou, S., Tang, Q., Xiao, H., Yang, S., Wen, Q., Wu, et al  
2025; 8 (1): 752
- **PRMT1 drives platelet metabolic reprogramming, thromboinflammation, and antiplatelet drug resistance**  
Li, A., Zhang, P., Liu, S., Wu, Z., Zheng, L., Ling, B. X., Tse, H. M., Zheng, X., Zhao, X.  
ELSEVIER.2025: 418-419
- **Real-world risk stratification for coronary heart disease: a one-year prediction model using health information exchange data.** *BMC public health*  
Zhang, Y., Mo, Y., Ozawa, N., Ichikawa, T., Huang, C. J., Han, Z., Tian, L., Alfreds, S. T., Sylvester, K. G., McElhinney, D. B., Ling, X. B.

2025; 25 (1): 3218

- **A plasma metabolite-based test to detect minimal residual disease in post-surgery patients with colorectal cancer.** *iScience*  
Zhou, Z., Mortensen, R., Hu, P., Jin, B., Zheng, X. B., Li, X., Schilling, J., Chou, C. J., Sylvester, K. G., Cong, Y., Wu, X., Gao, F., Ling, et al  
2025; 28 (9): 113138
- **Metabolic pathway alterations in cerebrospinal fluid as diagnostic biomarkers for primary central nervous system lymphoma.** *Clinica chimica acta; international journal of clinical chemistry*  
Ma, J., Wang, D., Li, X., Zhang, Y., Tang, Q., Ding, Y., Li, X., Jin, B., Luo, R. Y., Thyparambil, S., Han, Z., Chou, C. J., Zhou, et al  
2025: 120377
- **Intravenous Immunoglobulin Alone for Coronary Artery Lesion Treatment of Kawasaki Disease: A Randomized Clinical Trial.** *JAMA network open*  
Kuo, H. C., Lin, M. C., Kao, C. C., Weng, K. P., Ding, Y., Han, Z., Chen, C. J., Jan, S. L., Chien, K. J., Ko, C. H., Lin, C. Y., Lei, W. T., Guo, et al  
2025; 8 (4): e253063
- **Prediction of risk for early or very early preterm births using high-resolution urinary metabolomic profiling.** *BMC pregnancy and childbirth*  
Zhang, Y., Sylvester, K. G., Wong, R. J., Blumenfeld, Y. J., Hwa, K. Y., Chou, C. J., Thyparambil, S., Liao, W., Han, Z., Schilling, J., Jin, B., Marić, I., Aghaeepour, et al  
2024; 24 (1): 783
- **Towards a new taxonomy of preterm birth** *Journal of Perinatology*  
Stevenson, D. K., Chang, A. L., Wong, R. J., Reiss, J. D., Gaudillière, B., Sylvester, K. G., Ling, X. B., Angst, M. S., Shaw, G. M., Katz, M., Aghaeepour, N., Marić, I.  
2024
- **Towards a new taxonomy of preterm birth.** *Journal of perinatology : official journal of the California Perinatal Association*  
Stevenson, D. K., Chang, A. L., Wong, R. J., Reiss, J. D., Gaudillière, B., Sylvester, K. G., Ling, X. B., Angst, M. S., Shaw, G. M., Katz, M., Aghaeepour, N., Marić, I.  
2024
- **Targeted Multiplex Proteomics for the Development and Validation of Biomarkers in Primary Aldosteronism Subtyping.** *European journal of endocrinology*  
Zhou, F., Ding, Y., Chen, T., Tang, Q., Zhang, J., Thyparambil, S., Jin, B., Han, Z., Chou, C. J., Schilling, J., Luo, R. Y., Tian, H., Sylvester, et al  
2024
- **Mitochondrial Uncoupler and Retinoic Acid Synergistically Induce Differentiation in Neuroblastoma**  
Liang, N., Jiang, H., Tiche, S. J., Han, Z., Ling, X. B., Shimada, H., Ye, J., Chiu, B.  
LIPPINCOTT WILLIAMS & WILKINS.2024: S354
- **Targeted multiplex validation of CSF proteomic biomarkers: implications for differentiation of PCNSL from tumor-free controls and other brain tumors.** *Frontiers in immunology*  
Ma, J., Lin, Z., Zhang, Y., Ding, Y., Tang, Q., Qian, Y., Jin, B., Luo, R. Y., Liao, W. L., Thyparambil, S., Han, Z., Chou, C. J., Schilling, et al  
2024; 15: 1343109
- **Global metabolomics revealed deviations from the metabolic aging clock in colorectal cancer patients.** *Theranostics*  
Zhang, L., Mo, S., Zhu, X., Chou, C. J., Jin, B., Han, Z., Schilling, J., Liao, W., Thyparambil, S., Luo, R. Y., Whitin, J. C., Tian, L., Nagpal, et al  
2024; 14 (4): 1602-1614
- **Unveiling proteomic diversity: A quantitative study of antibody drug conjugate and chemotherapy targets in gastroesophageal cancer.**  
Thyparambil, S. P., Ghafourian, N., Heaton, R., Strasbaugh, A., Melkie, M., Chou, C., Ling, X.  
LIPPINCOTT WILLIAMS & WILKINS.2024: 261
- **Utility of smart watches for identifying arrhythmias in children.** *Communications medicine*  
Zahedivash, A., Chubb, H., Giaccone, H., Boramanand, N. K., Dubin, A. M., Trela, A., Lencioni, E., Motonaga, K. S., Goodyer, W., Navarre, B., Ravi, V., Schmiedmayer, P., Bikia, et al  
2023; 3 (1): 167
- **Correction: Exploring the feasibility of using long-term stored newborn dried blood spots to identify metabolic features for congenital heart disease screening.** *Biomarker research*  
Ceresnak, S. R., Zhang, Y., Ling, X. B., Su, K. J., Tang, Q., Jin, B., Schilling, J., Chou, C. J., Han, Z., Floyd, B. J., Whitin, J. C., Hwa, K. Y., Sylvester, et al

2023; 11 (1): 101

- **Exploring the feasibility of using long-term stored newborn dried blood spots to identify metabolic features for congenital heart disease screening.** *Biomarker research*  
Ceresnak, S. R., Zhang, Y., Ling, X. B., Su, K. J., Tang, Q., Jin, B., Schilling, J., Chou, C. J., Han, Z., Floyd, B. J., Whitin, J. C., Hwa, K. Y., Sylvester, et al  
2023; 11 (1): 97
- **High-throughput quantitation of amino acids and acylcarnitine in cerebrospinal fluid: identification of PCNSL biomarkers and potential metabolic messengers** *FRONTIERS IN MOLECULAR BIOSCIENCES*  
Ma, J., Chen, K., Ding, Y., Li, X., Tang, Q., Jin, B., Luo, R. Y., Thyparambil, S., Han, Z., Chou, C., Zhou, A., Schilling, J., Lin, et al  
2023; 10
- **High-throughput quantitation of amino acids and acylcarnitine in cerebrospinal fluid: identification of PCNSL biomarkers and potential metabolic messengers.** *Frontiers in molecular biosciences*  
Ma, J., Chen, K., Ding, Y., Li, X., Tang, Q., Jin, B., Luo, R. Y., Thyparambil, S., Han, Z., Chou, C. J., Zhou, A., Schilling, J., Lin, et al  
2023; 10: 1257079
- **Altered expression of the L-arginine/nitric oxide pathway in ovarian cancer: metabolic biomarkers and biological implications.** *BMC cancer*  
Chen, L., Tang, Q., Zhang, K., Huang, Q., Ding, Y., Jin, B., Liu, S., Hwa, K., Chou, C. J., Zhang, Y., Thyparambil, S., Liao, W., Han, et al  
2023; 23 (1): 844
- **Personalized therapy for head and neck squamous carcinoma (HNSCC) utilizing tissue proteomics profiling.**  
Thyparambil, S. P., Liao, W., Strasbaugh, A., Melkie, M., Ghafourian, N., Heaton, R., Ling, X.  
LIPPINCOTT WILLIAMS & WILKINS.2023
- **Development of a Urine Metabolomics Biomarker-Based Prediction Model for Preeclampsia during Early Pregnancy.** *Metabolites*  
Zhang, Y., Sylvester, K. G., Jin, B., Wong, R. J., Schilling, J., Chou, C. J., Han, Z., Luo, R. Y., Tian, L., Ladella, S., Mo, L., Maric, I., Blumenfeld, et al  
2023; 13 (6)
- **Engineered Living Intestinal Muscle Patch Produces Macroscopic Contractions that can Mix and Break down Artificial Intestinal Contents.** *Advanced materials (Deerfield Beach, Fla.)*  
Wang, Q., Wang, J., Tokhtaeva, E., Li, Z., Martín, M. G., Ling, X. B., Dunn, J. C.  
2023: e2207255
- **Proteomic profiling of antibody-drug conjugate (ADC) biomarkers in pancreatic cancer.**  
Thyparambil, S. P., Liao, W., Heaton, R., Strasbaugh, A., Melkie, M., Ling, X.  
LIPPINCOTT WILLIAMS & WILKINS.2023: 671
- **Early prediction and longitudinal modeling of preeclampsia from multiomics.** *Patterns (New York, N.Y.)*  
Maric, I., Contrepolis, K., Moufarrej, M. N., Stelzer, I. A., Feyaerts, D., Han, X., Tang, A., Stanley, N., Wong, R. J., Traber, G. M., Ellenberger, M., Chang, A. L., Fallahzadeh, et al  
2022; 3 (12): 100655
- **Single center blind testing of a US multi-center validated diagnostic algorithm for Kawasaki disease in Taiwan.** *Frontiers in immunology*  
Kuo, H. C., Hao, S., Jin, B., Chou, C. J., Han, Z., Chang, L. S., Huang, Y. H., Hwa, K., Whitin, J. C., Sylvester, K. G., Reddy, C. D., Chubb, H., Ceresnak, et al  
2022; 13: 1031387
- **A machine-learning algorithm for diagnosis of multisystem inflammatory syndrome in children and Kawasaki disease in the USA: a retrospective model development and validation study** *LANCET DIGITAL HEALTH*  
Lam, J. Y., Shimizu, C., Tremoulet, A. H., Bainto, E., Roberts, S. C., Sivilyay, N., Gardiner, M. A., Kanegaye, J. T., Hogan, A. H., Salazar, J. C., Mohandas, S., Szmuszkovicz, J. R., Mahanta, et al  
2022; 4 (10): E717-E726
- **Machine Learning for Pediatric Echocardiographic Mitral Regurgitation Detection.** *Journal of the American Society of Echocardiography : official publication of the American Society of Echocardiography*  
Edwards, L. A., Feng, F., Iqbal, M., Fu, Y., Sanyahumbi, A., Hao, S., McElhinney, D. B., Ling, X. B., Sable, C., Luo, J.  
2022
- **Progressive Metabolic Abnormalities Associated with the Development of Neonatal Bronchopulmonary Dysplasia.** *Nutrients*  
Ye, C., Wu, J., Reiss, J. D., Sinclair, T. J., Stevenson, D. K., Shaw, G. M., Chace, D. H., Clark, R. H., Prince, L. S., Ling, X. B., Sylvester, K. G.

2022; 14 (17)

- **Clinical survey of Trop2 antibody drug conjugate target and payload biomarkers in multiple cancer indications using multiplex mass spectrometry**  
Thyparambil, S. P., Liao, W., Heaton, R., Zhang, G., Strasbaugh, A., Melkie, M., Ling, X. B.  
AMER ASSOC CANCER RESEARCH.2022
- **Gestational Dating by Urine Metabolic Profile at High Resolution Weekly Sampling Timepoints: Discovery and Validation.** *Frontiers in molecular medicine*  
Sylvester, K. G., Hao, S., Li, Z., Han, Z., Tian, L., Ladella, S., Wong, R. J., Shaw, G. M., Stevenson, D. K., Cohen, H. J., Whitin, J. C., McElhinney, D. B., Ling, et al  
2022; 2: 844280
- **Multi-Omics Signatures Link to Ticagrelor Effects on Vascular Function in Patients With Acute Coronary Syndrome.** *Arteriosclerosis, thrombosis, and vascular biology*  
Tam, C. F., Chan, Y., Wong, Y., Li, Z., Zhu, X., Su, K., Ganguly, A., Hwa, K., Ling, X. B., Tse, H.  
2022: 101161ATVBAHA121317513
- **Deviation from the precisely timed age-associated patterns revealed by blood metabolomics to find CRC patients at risk of relapse at the CRC diagnosis**  
Thyparambil, S. P., Zhu, X., Zhang, Y., Sun, H., Peng, J., Cai, S., Li, Y., Fu, C., Bao, P., Hao, S., Li, Z., Ding, Y., Yao, et al  
LIPPINCOTT WILLIAMS & WILKINS.2022
- **Serological Phenotyping Analysis Uncovers a Unique Metabolomic Pattern Associated With Early Onset of Type 2 Diabetes Mellitus.** *Frontiers in molecular biosciences*  
Zhu, L., Huang, Q., Li, X., Jin, B., Ding, Y., Chou, C. J., Su, K., Zhang, Y., Chen, X., Hwa, K. Y., Thyparambil, S., Liao, W., Han, et al  
2022; 9: 841209
- **Early-pregnancy prediction of risk for pre-eclampsia using maternal blood leptin/ceramide ratio: discovery and confirmation.** *BMJ open*  
Huang, Q., Hao, S., You, J., Yao, X., Li, Z., Schilling, J., Thyparambil, S., Liao, W., Zhou, X., Mo, L., Ladella, S., Davies-Balch, S. R., Zhao, et al  
2021; 11 (11): e050963
- **Multi-omics longitudinal analyses in stages I to III CRC patients: Surveillance liquid biopsy test to predict early recurrence and enable risk-stratified postoperative CRC management.**  
Liu, X., Zhang, Y., Zhu, X., Thyparambil, S. P., Liao, W., Zheng, X., You, J., Masood, A., Li, Z., Yang, G., Yao, X., Hao, S., Heaton, et al  
LIPPINCOTT WILLIAMS & WILKINS.2021
- **Integrated trajectories of the maternal metabolome, proteome, and immunome predict labor onset.** *Science translational medicine*  
Stelzer, I. A., Ghaemi, M. S., Han, X., Ando, K., Hedou, J. J., Feyaerts, D., Peterson, L. S., Rumer, K. K., Tsai, E. S., Ganio, E. A., Gaudilliere, D. K., Tsai, A. S., Choisy, et al  
2021; 13 (592)
- **Understanding how biologic and social determinants affect disparities in preterm birth and outcomes of preterm infants in the NICU.** *Seminars in perinatology*  
Stevenson, D. K., Aghaeepour, N., Maric, I., Angst, M. S., Darmstadt, G. L., Druzin, M. L., Gaudilliere, B., Ling, X. B., Moufarrej, M. N., Peterson, L. S., Quake, S. R., Relman, D. A., Snyder, et al  
2021: 151408
- **Electronic Health Record-Based Prediction of 1-Year Risk of Incident Cardiac Dysrhythmia: Prospective Case-Finding Algorithm Development and Validation Study.** *JMIR medical informatics*  
Zhang, Y., Han, Y., Gao, P., Mo, Y., Hao, S., Huang, J., Ye, F., Li, Z., Zheng, L., Yao, X., Li, Z., Li, X., Wang, et al  
2021; 9 (2): e23606
- **Targeted multiplex proteomics (TMP) and genomics of early-onset colorectal cancer (EO-CRC)**  
Kam, A. E., Khaliq, A. M., Alam, N., Hayden, D., Bhamra, A. R., Govekar, H., Pappas, S., Ritz, E. M., Singh, A., Thyparambil, S. P., Liao, W., Bhalkikar, A., Ling, et al  
LIPPINCOTT WILLIAMS & WILKINS.2021
- **Proteomic signatures predict preeclampsia in individual cohorts but not across cohorts - implications for clinical biomarker studies.** *The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians*

- Ghaemi, M. S., Tarca, A. L., Romero, R. n., Stanley, N. n., Fallahzadeh, R. n., Tanada, A. n., Culos, A. n., Ando, K. n., Han, X. n., Blumenfeld, Y. J., Druzin, M. L., El-Sayed, Y. Y., Gibbs, et al  
2021: 1–8
- **Identification of patients at risk of new onset heart failure: Utilizing a large statewide health information exchange to train and validate a risk prediction model.** *PLoS one*  
Duong, S. Q., Zheng, L., Xia, M., Jin, B., Liu, M., Li, Z., Hao, S., Alfreds, S. T., Sylvester, K. G., Widen, E., Teuteberg, J. J., McElhinney, D. B., Ling, et al  
2021; 16 (12): e0260885
  - **Maternal metabolic profiling to assess fetal gestational age and predict preterm delivery: a two-centre retrospective cohort study in the US.** *BMJ open*  
Sylvester, K. G., Hao, S., You, J., Zheng, L., Tian, L., Yao, X., Mo, L., Ladella, S., Wong, R. J., Shaw, G. M., Stevenson, D. K., Cohen, H. J., Whitin, et al  
2020; 10 (12): e040647
  - **Towards personalized medicine in maternal and child health: integrating biologic and social determinants.** *Pediatric research*  
Stevenson, D. K., Wong, R. J., Aghaeepour, N., Maric, I., Angst, M. S., Contrefois, K., Darmstadt, G. L., Druzin, M. L., Eisenberg, M. L., Gaudilliere, B., Gibbs, R. S., Gottlieb, I. H., Gould, et al  
2020
  - **Proteomic profiling to identify therapeutics targets in glioblastoma (GBM).**  
Thyparambil, S. P., Liao, W., An, E., Bhalkikar, A., Heaton, R., Sylvester, K. G., Ling, X. B.  
AMER SOC CLINICAL ONCOLOGY.2020
  - **Deviation from the precisely timed phenomic ageotypes can assist in early CRC screening and reveal underlying pathophysiology.**  
Thyparambil, S. P., You, J., Liu, K., Sun, H., Peng, J., Cai, S., Li, Y., Fu, C., Bao, P., Li, Q., Hao, S., Zhang, Y., Li, et al  
LIPPINCOTT WILLIAMS & WILKINS.2020
  - **Progressive Metabolic Dysfunction and Nutritional Variability Precedes Necrotizing Enterocolitis.** *Nutrients*  
Sinclair, T. J., Ye, C., Chen, Y., Zhang, D., Li, T., Ling, X. B., Cohen, H. J., Shaw, G. M., Stevenson, D. K., Chace, D., Clark, R. H., Sylvester, K. G.  
2020; 12 (5)
  - **Expression of antibody-drug conjugates (ADC) biomarkers in colorectal cancer.**  
Thyparambil, S. P., Liao, W., An, E., Tian, Y., Heaton, R., Sylvester, K. G., Ling, X. B.  
AMER SOC CLINICAL ONCOLOGY.2020
  - **Development of an early-warning system for high-risk patients for suicide attempt using deep learning and electronic health records.** *Translational psychiatry*  
Zheng, L. n., Wang, O. n., Hao, S. n., Ye, C. n., Liu, M. n., Xia, M. n., Sabo, A. N., Markovic, L. n., Stearns, F. n., Kanov, L. n., Sylvester, K. G., Widen, E. n., McElhinney, et al  
2020; 10 (1): 72
  - **Changes in pregnancy-related serum biomarkers early in gestation are associated with later development of preeclampsia.** *PLoS one*  
Hao, S. n., You, J. n., Chen, L. n., Zhao, H. n., Huang, Y. n., Zheng, L. n., Tian, L. n., Maric, I. n., Liu, X. n., Li, T. n., Bianco, Y. K., Winn, V. D., Aghaeepour, et al  
2020; 15 (3): e0230000
  - **Kinetics of SARS-CoV-2 positivity of infected and recovered patients from a single center.** *Scientific reports*  
Huang, J. n., Zheng, L. n., Li, Z. n., Hao, S. n., Ye, F. n., Chen, J. n., Gans, H. A., Yao, X. n., Liao, J. n., Wang, S. n., Zeng, M. n., Qiu, L. n., Li, et al  
2020; 10 (1): 18629
  - **Changes in pregnancy-related serum biomarkers early in gestation are associated with later development of preeclampsia.** *PLoS one*  
Hao, S. n., You, J. n., Chen, L. n., Zhao, H. n., Huang, Y. n., Zheng, L. n., Tian, L. n., Maric, I. n., Liu, X. n., Li, T. n., Bianco, Y. K., Winn, V. D., Aghaeepour, et al  
2020; 15 (3): e0230000
  - **Identification of elders at higher risk for fall with statewide electronic health records and a machine learning algorithm.** *International journal of medical informatics*  
Ye, C. n., Li, J. n., Hao, S. n., Liu, M. n., Jin, H. n., Zheng, L. n., Xia, M. n., Jin, B. n., Zhu, C. n., Alfreds, S. T., Stearns, F. n., Kanov, L. n., Sylvester, et al

2020; 137: 104105

- **Development of an early-warning system for high-risk patients for suicide attempt using deep learning and electronic health records.** *Translational psychiatry*  
Zheng, L. n., Wang, O. n., Hao, S. n., Ye, C. n., Liu, M. n., Xia, M. n., Sabo, A. N., Markovic, L. n., Stearns, F. n., Kanov, L. n., Sylvester, K. G., Widen, E. n., McElhinney, et al  
2020; 10 (1): 72
- **A Real-Time Early Warning System for Monitoring Inpatient Mortality Risk: Prospective Study Using Electronic Medical Record Data.** *Journal of medical Internet research*  
Ye, C., Wang, O., Liu, M., Zheng, L., Xia, M., Hao, S., Jin, B., Jin, H., Zhu, C., Huang, C. J., Gao, P., Ellrodt, G., Brennan, et al  
2019; 21 (7): e13719
- **Prediction of the 1-Year Risk of Incident Lung Cancer: Prospective Study Using Electronic Health Records from the State of Maine** *JOURNAL OF MEDICAL INTERNET RESEARCH*  
Wang, X., Zhang, Y., Hao, S., Zheng, L., Liao, J., Ye, C., Xia, M., Wang, O., Liu, M., Weng, C., Duong, S. Q., Jin, B., Alfreds, et al  
2019; 21 (5)
- **A proteomic clock for malignant gliomas: The role of the environment in tumorigenesis at the presymptomatic stage.** *PloS one*  
Zheng, L. n., Zhang, Y. n., Hao, S. n., Chen, L. n., Sun, Z. n., Yan, C. n., Whitin, J. C., Jang, T. n., Merchant, M. n., McElhinney, D. B., Sylvester, K. G., Cohen, H. J., Recht, et al  
2019; 14 (10): e0223558
- **Prediction of the 1-Year Risk of Incident Lung Cancer: Prospective Study Using Electronic Health Records from the State of Maine.** *Journal of medical Internet research*  
Wang, X. n., Zhang, Y. n., Hao, S. n., Zheng, L. n., Liao, J. n., Ye, C. n., Xia, M. n., Wang, O. n., Liu, M. n., Weng, C. H., Duong, S. Q., Jin, B. n., Alfreds, et al  
2019; 21 (5): e13260
- **Validation of a novel automated signal analysis tool for ablation of Wolff-Parkinson-White Syndrome.** *PloS one*  
Ceresnak, S. R., Pass, R. H., Dubin, A. M., Yang, L., Motonaga, K. S., Hedlin, H., Avasarala, K., Trela, A., McElhinney, D. B., Janson, C., Nappo, L., Ling, X. B., Gates, et al  
2019; 14 (6): e0217282
- **Improved detection of prostate cancer using a magneto-nanosensor assay for serum circulating autoantibodies.** *PloS one*  
Xu, L., Lee, J., Hao, S., Ling, X. B., Brooks, J. D., Wang, S. X., Gambhir, S. S.  
2019; 14 (8): e0221051
- **Prediction of Incident Hypertension Within the Next Year: Prospective Study Using Statewide Electronic Health Records and Machine Learning.** *Journal of medical Internet research*  
Ye, C. n., Fu, T. n., Hao, S. n., Zhang, Y. n., Wang, O. n., Jin, B. n., Xia, M. n., Liu, M. n., Zhou, X. n., Wu, Q. n., Guo, Y. n., Zhu, C. n., Li, et al  
2018; 20 (1): e22
- **Shorten Bipolarity Checklist for the Differentiation of Subtypes of Bipolar Disorder Using Machine Learning**  
Feng, C., Gao, H., Ling, X. B., Ji, J., Ma, Y., ACM  
ASSOC COMPUTING MACHINERY.2018: 162–66
- **Gene expression network analysis in aneuploid human trophoblast progenitor cells (TBPC) reveals modular structures**  
Leon-Martinez, D., Ling, X., Hao, S., Sylvester, K., Bianco, K.  
MOSBY-ELSEVIER.2018: S163–S164
- **Assessing Statewide All-Cause Future One-Year Mortality: Prospective Study With Implications for Quality of Life, Resource Utilization, and Medical Futility.** *Journal of medical Internet research*  
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