

# Stanford

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## Bruce Ling

Assistant Professor (Research) of Surgery (Pediatric Surgery)

Surgery - Pediatric Surgery

 NIH Biosketch available Online

 Curriculum Vitae available Online

### CONTACT INFORMATION

#### • Administrative Contact

Zhi Han, Ph.D. - Group leader

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### 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

- Assistant Professor (Research), Surgery - Pediatric Surgery
- 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.

## Publications

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### PUBLICATIONS

- **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
- **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
- **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., Sivilay, N., Gardiner, M. A., Kanegaye, J. T., Hogan, A. H., Salazar, J. C., Mohandas, S., Szmuszkowicz, 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
- **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., Bhama, 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., Contrepolis, K., Darmstadt, G. L., Druzin, M. L., Eisenberg, M. L., Gaudilliere, B., Gibbs, R. S., Gotlib, I. H., Gould, et al  
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
- **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
- **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
- **High-throughput quantitation of serological ceramides/dihydroceramides by LC/MS/MS: Pregnancy baseline biomarkers and potential metabolic messengers.** *Journal of pharmaceutical and biomedical analysis*  
Huang, Q. n., Hao, S. n., Yao, X. n., You, J. n., Li, X. n., Lai, D. n., Han, C. n., Schilling, J. n., Hwa, K. Y., Thyparambil, S. n., Whitin, J. n., Cohen, H. J., Chubb, et al  
2020; 192: 113639
- **Multicentre validation of a computer-based tool for differentiation of acute Kawasaki disease from clinically similar febrile illnesses.** *Archives of disease in childhood*  
Hao, S. n., Ling, X. B., Kanegaye, J. T., Bainto, E. n., Dominguez, S. R., Heizer, H. n., Jone, P. N., Anderson, M. S., Jaggi, P. n., Baker, A. n., Son, M. B., Newberger, J. W., Ashouri, et al  
2020
- **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*  
Guo, Y. n., Zheng, G. n., Fu, T. n., Hao, S. n., Ye, C. n., Zheng, L. n., Liu, M. n., Xia, M. n., Jin, B. n., Zhu, C. n., Wang, O. n., Wu, Q. n., Culver, et al  
2018; 20 (6): e10311

- **Estimating One-Year Risk of Incident Chronic Kidney Disease: Retrospective Development and Validation Study Using Electronic Medical Record Data From the State of Maine.** *JMIR medical informatics*  
Hao, S. n., Fu, T. n., Wu, Q. n., Jin, B. n., Zhu, C. n., Hu, Z. n., Guo, Y. n., Zhang, Y. n., Yu, Y. n., Fouts, T. n., Ng, P. n., Culver, D. S., Alfreds, et al  
2017; 5 (3): e21
- **Disturbance Propagation in Power System Based on an Epidemic Model**  
Wu, Q., Zhang, D., Liu, D., Liu, F., Ling, X., Li, Z., IEEE  
IEEE.2017
- **Defining and characterizing the critical transition state prior to the type 2 diabetes disease.** *PloS one*  
Jin, B. n., Liu, R. n., Hao, S. n., Li, Z. n., Zhu, C. n., Zhou, X. n., Chen, P. n., Fu, T. n., Hu, Z. n., Wu, Q. n., Liu, W. n., Liu, D. n., Yu, et al  
2017; 12 (7): e0180937
- **Unique Molecular Patterns Uncovered in Kawasaki Disease Patients with Elevated Serum Gamma Glutamyl Transferase Levels: Implications for Intravenous Immunoglobulin Responsiveness** *PLOS ONE*  
Wang, Y., Li, Z., Hu, G., Hao, S., Deng, X., Huang, M., Ren, M., Jiang, X., Kanegaye, J. T., Ha, K., Lee, J., Li, X., Jiang, et al  
2016; 11 (12)
- **Web-based Real-Time Case Finding for the Population Health Management of Patients With Diabetes Mellitus: A Prospective Validation of the Natural Language Processing-Based Algorithm With Statewide Electronic Medical Records.** *JMIR medical informatics*  
Zheng, L., Wang, Y., Hao, S., Shin, A. Y., Jin, B., Ngo, A. D., Jackson-Browne, M. S., Feller, D. J., Fu, T., Zhang, K., Zhou, X., Zhu, C., Dai, et al  
2016; 4 (4)
- **A Classification Tool for Differentiation of Kawasaki Disease from Other Febrile Illnesses.** *journal of pediatrics*  
Hao, S., Jin, B., Tan, Z., Li, Z., Ji, J., Hu, G., Wang, Y., Deng, X., Kanegaye, J. T., Tremoulet, A. H., Burns, J. C., Cohen, H. J., Ling, et al  
2016; 176: 114-120 e8
- **Prehypertension During Normotensive Pregnancy and Postpartum Clustering of Cardiometabolic Risk Factors: A Prospective Cohort Study.** *Hypertension*  
Lei, Q., Zhou, X., Zhou, Y., Mai, C., Hou, M., Lv, L., Duan, D., Wen, J., Lin, X., Wang, P. P., Ling, X. B., Li, Y., Niu, et al  
2016; 68 (2): 455-463
- **A Novel Truncated Form of Serum Amyloid A in Kawasaki Disease** *PLOS ONE*  
Whitin, J. C., Yu, T. T., Ling, X. B., Kanegaye, J. T., Burns, J. C., Cohen, H. J.  
2016; 11 (6)
- **Exploring the Role of Polycythemia in Patients With Cyanosis After Palliative Congenital Heart Surgery.** *Pediatric critical care medicine*  
Siehr, S. L., Shi, S., Hao, S., Hu, Z., Jin, B., Hanley, F., Reddy, V. M., McElhinney, D. B., Ling, X. B., Shin, A. Y.  
2016; 17 (3): 216-222
- **A Multi-Omics Analysis of Human Nucleus-Coded Mitochondrial Genes with Mouse Extraembryonic Tissue/Placenta Phenotypes: Implications in Mitochondria-Mediated Maternal and Fetal Complications.**  
Hu, G., Chen, R., Deng, X., Li, Z., Mo, L., Hao, S., Shaw, G. M., Stevenson, D. K., Cohen, H. J., Jiang, X., Sylvester, K. G., Ling, X. B.  
SAGE PUBLICATIONS INC.2016: 320A
- **Urinary Colorimetric Sensor Array and Algorithm to Distinguish Kawasaki Disease from Other Febrile Illnesses** *PLOS ONE*  
Li, Z., Tan, Z., Hao, S., Jin, B., Deng, X., Hu, G., Liu, X., Zhang, J., Jin, H., Huang, M., Kanegaye, J. T., Tremoulet, A. H., Burns, et al  
2016; 11 (2)
- **Precision test for precision medicine: opportunities, challenges and perspectives regarding pre-eclampsia as an intervention window for future cardiovascular disease.** *American journal of translational research*  
Zhou, X. n., Niu, J. M., Ji, W. J., Zhang, Z. n., Wang, P. P., Ling, X. B., Li, Y. M.  
2016; 8 (5): 1920-34
- **Prospective stratification of patients at risk for emergency department revisit: resource utilization and population management strategy implications.** *BMC emergency medicine*  
Jin, B., Zhao, Y., Hao, S., Shin, A. Y., Wang, Y., Zhu, C., Hu, Z., Fu, C., Ji, J., Wang, Y., Zhao, Y., Jiang, Y., Dai, et al  
2016; 16 (1): 10-?
- **NLP based congestive heart failure case finding: A prospective analysis on statewide electronic medical records.** *International journal of medical informatics*  
Wang, Y., Luo, J., Hao, S., Xu, H., Shin, A. Y., Jin, B., Liu, R., Deng, X., Wang, L., Zheng, L., Zhao, Y., Zhu, C., Hu, et al

2015; 84 (12): 1039-1047

- **Exploring Value in Congenital Heart Disease: An Evaluation of Inpatient Admissions.** *Congenital heart disease*  
Shin, A. Y., Hu, Z., Jin, B., Lal, S., Rosenthal, D. N., Efron, B., Sharek, P. J., Sutherland, S. M., Cohen, H. J., McElhinney, D. B., Roth, S. J., Ling, X. B.  
2015; 10 (6): E278-87
- **Novel data-mining approach identifies biomarkers for diagnosis of Kawasaki disease** *PEDIATRIC RESEARCH*  
Tremoulet, A. H., Dutkowski, J., Sato, Y., Kanegaye, J. T., Ling, X. B., Burns, J. C.  
2015; 78 (5): 547-553
- **Exploring Value in Congenital Heart Disease: An Evaluation of Inpatient Admissions** *CONGENITAL HEART DISEASE*  
Shin, A. Y., Hu, Z., Jin, B., Lal, S., Rosenthal, D. N., Efron, B., Sharek, P. J., Sutherland, S. M., Cohen, H. J., McElhinney, D. B., Roth, S. J., Ling, X. B.  
2015; 10 (6): E278-E287
- **Development, Validation and Deployment of a Real Time 30 Day Hospital Readmission Risk Assessment Tool in the Maine Healthcare Information Exchange** *PLOS ONE*  
Hao, S., Wang, Y., Jin, B., Shin, A. Y., Zhu, C., Huang, M., Zheng, L., Luo, J., Hu, Z., Fu, C., Dai, D., Wang, Y., Culver, et al  
2015; 10 (10)
- **Serological Targeted Analysis of an ITIH4 Peptide Isoform: A Preterm Birth Biomarker and Its Associated SNP Implications** *JOURNAL OF GENETICS AND GENOMICS*  
Tan, Z., Hu, Z., Cai, E. Y., Alev, C., Yang, T., Li, Z., Sung, J., El-Sayed, Y. Y., Shaw, G. M., Stevenson, D. K., Butte, A. J., Sheng, G., Sylvester, et al  
2015; 42 (9): 507-510
- **Online Prediction of Health Care Utilization in the Next Six Months Based on Electronic Health Record Information: A Cohort and Validation Study** *JOURNAL OF MEDICAL INTERNET RESEARCH*  
Hu, Z., Hao, S., Jin, B., Shin, A. Y., Zhu, C., Huang, M., Wang, Y., Zheng, L., Dai, D., Culver, D. S., Alfreds, S. T., Rogow, T., Stearns, et al  
2015; 17 (9)
- **Cerebrospinal fluid protein dynamic driver network: At the crossroads of brain tumorigenesis** *METHODS*  
Tan, Z., Liu, R., Zheng, L., Hao, S., Fu, C., Li, Z., Deng, X., Jang, T., Merchant, M., Whitin, J. C., Guo, M., Cohen, H. J., Recht, et al  
2015; 83: 36-43
- **Utility of Clinical Biomarkers to Predict Central Line-associated Bloodstream Infections After Congenital Heart Surgery.** *Pediatric infectious disease journal*  
Shin, A. Y., Jin, B., Hao, S., Hu, Z., Sutherland, S., McCammond, A., Axelrod, D., Sharek, P., Roth, S. J., Ling, X. B.  
2015; 34 (3): 251-254
- **Real-time web-based assessment of total population risk of future emergency department utilization: statewide prospective active case finding study.** *Interactive journal of medical research*  
Hu, Z., Jin, B., Shin, A. Y., Zhu, C., Zhao, Y., Hao, S., Zheng, L., Fu, C., Wen, Q., Ji, J., Li, Z., Wang, Y., Zheng, et al  
2015; 4 (1)
- **Risk prediction for future 6-month healthcare resource utilization in Maine**  
Hao, S., Sylvester, K. G., Ling, X. B., Ru, Z., Jin, B., Zhu, C., Dai, D., Stearns, F., Widen, E., Shin, A., Culver, D. S., Alfreds, S. T., Rogow, et al  
IEEE.2015: 863-66
- **Risk Prediction of Stroke: A Prospective Statewide Study on Patients in Maine**  
Zheng, L., Wang, V., Hao, S., Sylvester, K. G., Ling, X. B., Jin, B., Zhu, C., Jin, H., Dai, D., Xu, H., Stearns, F., Widen, E., Shin, et al  
IEEE.2015: 853-55
- **Pilot Application of Magnetic Nanoparticle-Based Biosensor for Necrotizing Enterocolitis.** *Journal of proteomics & bioinformatics*  
Kim, D., Fu, C., Ling, X. B., Hu, Z., Tao, G., Zhao, Y., Kastenber, Z. J., Sylvester, K. G., Wang, S. X.  
2015
- **Virtual Pharmacist: A Platform for Pharmacogenomics.** *PloS one*  
Cheng, R., Leung, R. K., Chen, Y., Pan, Y., Tong, Y., Li, Z., Ning, L., Ling, X. B., He, J.  
2015; 10 (10): e0141105
- **Development, Validation and Deployment of a Real Time 30 Day Hospital Readmission Risk Assessment Tool in the Maine Healthcare Information Exchange.** *PloS one*



- Hao, S., Wang, Y., Jin, B., Shin, A. Y., Zhu, C., Huang, M., Zheng, L., Luo, J., Hu, Z., Fu, C., Dai, D., Wang, Y., Culver, et al  
2015; 10 (10)
- **A novel urine peptide biomarker-based algorithm for the prognosis of necrotising enterocolitis in human infants.** *Gut*  
Sylvester, K. G., Ling, X. B., Liu, G. Y., Kastenberg, Z. J., Ji, J., Hu, Z., Peng, S., Lau, K., Abdullah, F., Brandt, M. L., Ehrenkranz, R. A., Harris, M. C., Lee, et al  
2014; 63 (8): 1284-1292
  - **Investigation of maternal environmental exposures in association with self-reported preterm birth.** *Reproductive toxicology*  
Patel, C. J., Yang, T., Hu, Z., Wen, Q., Sung, J., El-Sayed, Y. Y., Cohen, H., Gould, J., Stevenson, D. K., Shaw, G. M., Ling, X. B., Butte, A. J.  
2014; 45: 1-7
  - **Urine protein biomarkers for the diagnosis and prognosis of necrotizing enterocolitis in infants.** *journal of pediatrics*  
Sylvester, K. G., Ling, X. B., Liu, G. Y., Kastenberg, Z. J., Ji, J., Hu, Z., Wu, S., Peng, S., Abdullah, F., Brandt, M. L., Ehrenkranz, R. A., Harris, M. C., Lee, et al  
2014; 164 (3): 607-12 e1 7
  - **Urine protein biomarkers for the diagnosis and prognosis of necrotizing enterocolitis in infants.** *journal of pediatrics*  
Sylvester, K. G., Ling, X. B., Liu, G. Y., Kastenberg, Z. J., Ji, J., Hu, Z., Wu, S., Peng, S., Abdullah, F., Brandt, M. L., Ehrenkranz, R. A., Harris, M. C., Lee, et al  
2014; 164 (3): 607-612 e7
  - **Risk prediction of emergency department revisit 30 days post discharge: a prospective study.** *PloS one*  
Hao, S., Jin, B., Shin, A. Y., Zhao, Y., Zhu, C., Li, Z., Hu, Z., Fu, C., Ji, J., Wang, Y., Zhao, Y., Dai, D., Culver, et al  
2014; 9 (11)
  - **Pilot Application of Magnetic Nanoparticle-Based Biosensor for Necrotizing Enterocolitis** *Journal of Proteomics and Bioinformatics*  
Kim, D., Fu, C., Ling, X. B., Hu, Z., Tao, G., Zhao, Y., Kastenberg, Z. J., Sylvester, K. G., Wang, S. X.  
2014
  - **Risk prediction of emergency department revisit 30 days post discharge: a prospective study.** *PloS one*  
Hao, S., Jin, B., Shin, A. Y., Zhao, Y., Zhu, C., Li, Z., Hu, Z., Fu, C., Ji, J., Wang, Y., Zhao, Y., Dai, D., Culver, et al  
2014; 9 (11): e112944
  - **CSF protein dynamic driver network: at the crossroads of brain tumorigenesis**  
Fu, C., Tan, Z., Liu, R., Hao, S., Li, Z., Chen, P., Jang, T., Merchant, M., Whitin, J. C., Wang, O., Guo, M., Cohen, H. J., Recht, et al  
IEEE.2014
  - **A data-driven algorithm integrating clinical and laboratory features for the diagnosis and prognosis of necrotizing enterocolitis.** *PloS one*  
Ji, J., Ling, X. B., Zhao, Y., Hu, Z., Zheng, X., Xu, Z., Wen, Q., Kastenberg, Z. J., Li, P., Abdullah, F., Brandt, M. L., Ehrenkranz, R. A., Harris, et al  
2014; 9 (2)
  - **Integrating multiple 'omics' analyses identifies serological protein biomarkers for preeclampsia** *BMC MEDICINE*  
Liu, L. Y., Yang, T., Ji, J., Wen, Q., Morgan, A. A., Jin, B., Chen, G., Lyell, D. J., Stevenson, D. K., Ling, X. B., Butte, A. J.  
2013; 11
  - **AKI in Hospitalized Children: Epidemiology and Clinical Associations in a National Cohort.** *Clinical journal of the American Society of Nephrology*  
Sutherland, S. M., Ji, J., Sheikhi, F. H., Widen, E., Tian, L., Alexander, S. R., Ling, X. B.  
2013; 8 (10): 1661-1669
  - **Identification of novel biomarkers for early detection of ovarian cancer**  
Szabo, L. A., Khatri, P., Liu, X., Hu, Z., Ling, B., Butte, A. J.  
AMER ASSOC CANCER RESEARCH.2013
  - **Peptidomic Identification of Serum Peptides Diagnosing Preeclampsia.** *PloS one*  
Wen, Q., Liu, L. Y., Yang, T., Alev, C., Wu, S., Stevenson, D. K., Sheng, G., Butte, A. J., Ling, X. B.  
2013; 8 (6): e65571
  - **Peptidomic Identification of Serum Peptides Diagnosing Preeclampsia** *PLOS ONE*  
Wen, Q., Liu, L. Y., Yang, T., Alev, C., Wu, S., Stevenson, D. K., Sheng, G., Butte, A. J., Ling, X. B.  
2013; 8 (6)
  - **Integrating multiple 'omics' analyses identifies serological protein biomarkers for preeclampsia.** *BMC medicine*  
Liu, L. Y., Yang, T., Ji, J., Wen, Q., Morgan, A. A., Jin, B., Chen, G., Lyell, D. J., Stevenson, D. K., Ling, X. B., Butte, A. J.



2013; 11: 236-?

- **Transcriptomics and proteomics ensemble analyses reveal serological protein panel for preeclampsia diagnosis** *33rd Annual Pregnancy Meeting of the Society-for-Maternal-Fetal-Medicine (SMFM)*  
Liu, L., Cooper, M., Yang, T., Ji, J., Wen, Q., Chen, G., Morgan, A., Stevenson, D., Ling, X., Butte, A.  
MOSBY-ELSEVIER.2013: S272-S272
- **Cloud-based solution to identify statistically significant MS peaks differentiating sample categories.** *BMC research notes*  
Ji, J., Ling, J., Jiang, H., Wen, Q., Whitin, J. C., Tian, L., Cohen, H. J., Ling, X. B.  
2013; 6: 109-?
- **Point-of-Care Differentiation of Kawasaki Disease from Other Febrile Illnesses** *JOURNAL OF PEDIATRICS*  
Ling, X. B., Kanegaye, J. T., Ji, J., Peng, S., Sato, Y., Tremoulet, A., Burns, J. C., Cohen, H. J.  
2013; 162 (1): 183-U219
- **Correlation analyses of clinical and molecular findings identify candidate biological pathways in systemic juvenile idiopathic arthritis** *BMC MEDICINE*  
Ling, X. B., Macaubas, C., Alexander, H. C., Wen, Q., Chen, E., Peng, S., Sun, Y., Deshpande, C., Pan, K., Lin, R., Lih, C., Chang, S. P., Lee, et al  
2012; 10
- **Proteomic studies in breast cancer (Review).** *Oncology letters*  
Qin, X. J., Ling, B. X.  
2012; 3 (4): 735-743
- **Proteomic studies in breast cancer** *ONCOLOGY LETTERS*  
Qin, X., Ling, B. X.  
2012; 3 (4): 735-743
- **A diagnostic algorithm combining clinical and molecular data distinguishes Kawasaki disease from other febrile illnesses** *BMC MEDICINE*  
Ling, X. B., Lau, K., Kanegaye, J. T., Pan, Z., Peng, S., Ji, J., Liu, G., Sato, Y., Yu, T. T., Whitin, J. C., Schilling, J., Burns, J. C., Cohen, et al  
2011; 9
- **URINARY PEPTIDOMICS IN KIDNEY TRANSPLANTATION IDENTIFIES NOVEL PEPTIDE BIOMARKERS FOR ACUTE REJECTION**  
Sigdel, T., Ling, B., Lau, K., Ying, L., Lau, I., Schilling, J., Sarwal, M.  
WILEY-BLACKWELL.2011: 130-130
- **URINARY PROTEOMIC ANALYSIS TO IDENTIFY HOST RESPONSE PROTEINS IN CATHETER-ASSOCIATED URINARY TRACT INFECTION**  
Mach, K., Ling, X., Liao, J.  
ELSEVIER SCIENCE INC.2011: E474
- **Proteomics and Biomarkers in Neonatology** *NeoReviews*  
Ling, X. B., Sylvester, K. G.  
2011; 12: 585-91
- **Plasma profiles in active systemic juvenile idiopathic arthritis: Biomarkers and biological implications** *PROTEOMICS*  
Ling, X. B., Park, J. L., Carroll, T., Nguyen, K. D., Lau, K., Macaubas, C., Chen, E., Lee, T., Sandborg, C., Milojevic, D., Kanegaye, J. T., Gao, S., Burns, et al  
2010; 10 (24): 4415-4430
- **Urine Peptidomic and Targeted Plasma Protein Analyses in the Diagnosis and Monitoring of Systemic Juvenile Idiopathic Arthritis.** *Clinical proteomics*  
Ling, X. B., Lau, K., Deshpande, C., Park, J. L., Milojevic, D., Macaubas, C., Xiao, C., Lopez-Avila, V., Kanegaye, J., Burns, J. C., Cohen, H., Schilling, J., Mellins, et al  
2010; 6 (4): 175-193
- **Integrative Urinary Peptidomics in Renal Transplantation Identifies Biomarkers for Acute Rejection** *JOURNAL OF THE AMERICAN SOCIETY OF NEPHROLOGY*  
Ling, X. B., Sigdel, T. K., Lau, K., Ying, L., Lau, I., Schilling, J., Sarwal, M. M.  
2010; 21 (4): 646-653
- **Integrative Urinary Peptidomics in Renal Transplantation Identifies Novel Biomarkers for Acute Rejection** *10th American Transplant Congress*  
Sigdel, T., Ling, B., Lau, K., Ying, L., Lau, I., Schilling, J., Sarwal, M.  
WILEY-BLACKWELL.2010: 60-60

- **Urine peptidomics for clinical biomarker discovery.** *Advances in clinical chemistry.*  
Ling, X. B., Mellins, E. D., Karl, K. G., Cohen, H. J.  
2010; 51:181-213
- **URINE PEPTIDOMICS FOR CLINICAL BIOMARKER DISCOVERY** *ADVANCES IN CLINICAL CHEMISTRY, VOL 51*  
Ling, X. B., Mellins, E. D., Sylvester, K. G., Cohen, H. J.  
2010; 51: 181-213
- **Effects of moderate versus deep hypothermic circulatory arrest and selective cerebral perfusion on cerebrospinal fluid proteomic profiles in a piglet model of cardiopulmonary bypass** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*  
Allibhai, T., DiGeronimo, R., Whitin, J., Salazar, J., Yu, T. T., Ling, X. B., Cohen, H., Dixon, P., Madan, A.  
2009; 138 (6): 1290-1296
- **Plasma Biomarkers in a Mouse Model of Preterm Labor** *PEDIATRIC RESEARCH*  
Yang, Q., Whitin, J. C., Ling, X. B., Nayak, N. R., Cohen, H. J., Jin, J., Schilling, J., Yu, T. T., Madan, A.  
2009; 66 (1): 11-16
- **FDR made easy in differential feature discovery and correlation analyses** *BIOINFORMATICS*  
Ling, X. B., Cohen, H., Jin, J., Lau, I., Schilling, J.  
2009; 25 (11): 1461-1462
- **Cancer Biomarker Discovery via Targeted Profiling of Multiclass Tumor Tissue-Derived Proteomes** *Clinical Proteomics.*  
Zhou, L., Cai, M., Ling, X. B., Wang, Q., Lau, K., Zhao, J., Schilling, J., Chen, L.  
2009; 5 (3-4): 163-9.
- **Urinary peptidomic analysis identifies potential biomarkers for acute rejection of renal transplantation.** *Clinical Proteomics.*  
Sigdel, T. K., Ling, X. B., Lau, K., Schilling, J., Sarwal, M. M.  
2009; 5: 103-13.
- **Optimizing protein recovery for urinary proteomics, a tool to monitor renal transplantation** *CLINICAL TRANSPLANTATION*  
Sigdel, T. K., Lau, K., Schilling, J., Sarwal, M.  
2008; 22 (5): 617-623
- **Informed decision-making and colorectal cancer screening - Is it occurring in primary care?** *30th Annual Meeting of the Society-of-General-Internal-Medicine*  
Ling, B. S., Trauth, J. M., Fine, M. J., Mor, M. K., Resnick, A., Braddock, C. H., Berekenyi, S., Weissfeld, J. L., Schoen, R. E., Ricci, E. M., Whittle, J.  
LIPPINCOTT WILLIAMS & WILKINS.2008: S23-S29
- **Novel urinary peptidomic analysis for acute rejection monitoring** *8th American Transplant Congress*  
Sigdel, T., Ling, X., Lau, K., Schilling, J., Sarwal, M.  
WILEY-BLACKWELL.2008: 636-637
- **High throughput screening informatics** *COMBINATORIAL CHEMISTRY & HIGH THROUGHPUT SCREENING*  
Ling, X. B.  
2008; 11 (3): 249-257
- **Significance analysis and multiple pharmacophore models for differentiating P-glycoprotein substrates** *JOURNAL OF CHEMICAL INFORMATION AND MODELING*  
Li, W., Li, L., Eksterowicz, J., Ling, X. B., Cardozo, M.  
2007; 47 (6): 2429-2438
- **A novel proteomic approach for identification of biomarkers for diagnosis and monitoring of acute rejection.** *7th American Transplant Congress*  
Sigdel, T. K., Lau, K., Ling, X. B., Schilling, J., Sarwal, M.  
WILEY-BLACKWELL.2007: 149-150
- **GO-Diff: Mining functional differentiation between EST-based transcriptomes** *BMC BIOINFORMATICS*  
Chen, Z. Z., Wang, W. L., Ling, X. F., Liu, J. J., Chen, L. B.  
2006; 7
- **Multiclass cancer classification and biomarker discovery using GA-based algorithms** *BIOINFORMATICS*

- 
- Liu, J. J., Cutler, G., Li, W. X., Pan, Z., Peng, S. H., Hoey, T., Chen, L. B., Ling, X. F.  
2005; 21 (11): 2691-2697
- **A machine to make a future - Biotech chronicles.** *J Clin Invest.*  
Ling, X. B.  
2005; 115: 2303-4.
  - **Genomic resources for cancer biology researchers.** *Oncogenomics Handbook*  
Ling, X. B., Cutler, G., Hoey, T.  
Humana Press. .2004
  - **A comparative analysis of HGSC and Celera human genome assemblies and gene sets** *BIOINFORMATICS*  
Li, S. Y., Cutler, G., Liu, J. J., Hoey, T., Chen, L. B., Schultz, P. G., Liao, J. Y., Ling, X. F.  
2003; 19 (13): 1597-1605
  - **PRC17, a novel oncogene encoding a Rab GTPase-activating protein, is amplified in prostate cancer** *CANCER RESEARCH*  
Pei, L., PENG, Y., Yang, Y., Ling, X. F., van Eynhoven, W. G., Nguyen, K. C., Rubin, M., Hoey, T., Powers, S., Li, J.  
2002; 62 (19): 5420-5424
  - **Comparative analysis of human genome assemblies reveals genome-level differences** *GENOMICS*  
Li, S. Y., Liao, J. Y., Cutler, G., Hoey, T., Hogenesch, J. B., Cooke, M. P., Schultz, P. G., Ling, X. F.  
2002; 80 (2): 138-139
  - **DQ 65-79, a peptide derived from HLA class II, induces I kappa B expression** *JOURNAL OF IMMUNOLOGY*  
Jiang, Y., Chen, D., Lyu, S. C., Ling, X. F., KRENSKY, A. M., Clayberger, C.  
2002; 168 (7): 3323-3328
  - **DIAN: A novel algorithm for genome ontological classification** *GENOME RESEARCH*  
Pouliot, Y., Gao, J., Su, Q. J., Liu, G. Z., Ling, X. F.  
2001; 11 (10): 1766-1779
  - **An immunosuppressive and anti-inflammatory HLA class I-derived peptide binds vascular cell adhesion molecule-1** *TRANSPLANTATION*  
Ling, X. F., Tamaki, T., Xiao, Y., Kamangar, S., CLAYBERGER, C., Lewis, D. B., KRENSKY, A. M.  
2000; 70 (4): 662-667
  - **Proliferating cell nuclear antigen as the cell cycle sensor for an HLA-derived peptide blocking T cell proliferation** *JOURNAL OF IMMUNOLOGY*  
Ling, X. F., Kamangar, S., Boytim, M. L., Kelman, Z., Huie, P., Lyu, S. C., Sibley, R. K., Hurwitz, J., CLAYBERGER, C., KRENSKY, A. M.  
2000; 164 (12): 6188-6192
  - **All four core histone N-termini contain sequences required for the repression of basal transcription in yeast** *EMBO JOURNAL*  
Lenfant, F., Mann, R. K., Thomsen, B., Ling, X. F., Grunstein, M.  
1996; 15 (15): 3974-3985
  - **Yeast histone H3 and H4 amino termini are important for nucleosome assembly in vivo and in vitro: Redundant and position-independent functions in assembly but not in gene regulation** *GENES & DEVELOPMENT*  
Ling, X. F., Harkness, T. A., Schultz, M. C., FISHERADAMS, G., Grunstein, M.  
1996; 10 (6): 686-699
  - **HISTONE H3 AMINO-TERMINUS IS REQUIRED FOR TELOMERIC AND SILENT MATING LOCUS REPRESSION IN YEAST** *NATURE*  
Thompson, J. S., Ling, X. F., Grunstein, M.  
1994; 369 (6477): 245-247