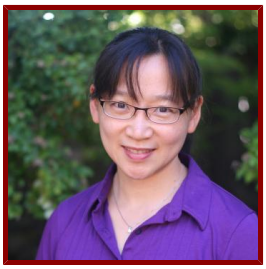
Stanford



Mei-Sze Chua

Sr Res Scientist-Basic Ls, Surgery - General Surgery

SUPERVISORS

- Samuel So

Bio

BIO

I graduated with a BSc Pharmacy (First Class Honors) degree before pursuing my graduate studies under the excellent tutelage of Professor Malcolm Stevens, inventor of temozolomide. This was followed by postdoctoral training at Stanford University, prior to embarking on liver cancer research, when I joined the Asian Liver Center's comprehensive research program. I brought to it my broad expertise encompassing experimental therapeutics, oncology drug discovery and development, genomics, and molecular biology, which appropriately matches the goals of our research on developing improved diagnostic and therapeutic approaches for liver cancer.

CURRENT ROLE AT STANFORD

I spearhead multiple projects stemming from the lab's initial genomics study on liver cancer, with the goal of translating gene expression data of liver cancer patients into improved clinical approaches for the diagnosis and therapy of this fatal disease. I have successfully led inter-disciplinary projects, mentored postdoctoral fellows and visiting scientists, and effectively worked with diverse groups of collaborators from academic and industrial settings. I am committed to help eliminate global health care burden associated with hepatitis B and liver cancer.

EDUCATION AND CERTIFICATIONS

- Postdoc, Stanford University , Pediatric Nephrology
- Postdoc, Stanford University , Molecular Pharmacology
- PhD, University of Nottingham, Nottingham, England , Drug Discovery
- Bsc (Honors), National University of Singapore, Singapore , Pharmacy

SERVICE, VOLUNTEER, AND COMMUNITY WORK

- Second Harvest Food Bank

LINKS

- Asian Liver Center: https://med.stanford.edu/liver.html

Professional

WORK EXPERIENCE

- Senior Research Scientist - Stanford University

- Basic Life Science Research Scientist - Stanford University
- Visiting Scholar - National Cancer Institute, NIH
- Pharmacy Intern - Tan Tock Seng Hospital

Publications

PUBLICATIONS

- **Magnetic Resonance Imaging Using a Chimeric Anti-Glypican-3 Antibody Conjugated with Gadolinium Selectively Detects Glypican-3-Positive Hepatocellular Carcinoma In Vitro and In Vivo.** *Cancers*
  Liu, Y., Tan, M., Chua, M. S., So, S.
  2025; 17 (20)
- **Niclosamide prodrug enhances oral bioavailability and efficacy against hepatocellular carcinoma by targeting vasorin-TGFbeta signalling.** *British journal of pharmacology*
  Tan, M., Ye, W., Liu, Y., Chen, X., Huttad, L., Chua, M., So, S.
  2025
- **Lipid-Based Self-Microemulsion of Niclosamide Achieved Enhanced Oral Delivery and Anti-Tumor Efficacy in Orthotopic Patient-Derived Xenograft of Hepatocellular Carcinoma in Mice.** *International journal of nanomedicine*
  Liu, Y., Guerrero, D. Q., Lechuga-Ballesteros, D., Tan, M., Ahmad, F., Aleiwi, B., Ellsworth, E. L., Chen, B., Chua, M., So, S.
  2024; 19: 2639-2653
- **Identification and validation of microtubule depolymerizing agent, CYT997, as a potential drug candidate for hepatocellular carcinoma.** *Liver international : official journal of the International Association for the Study of the Liver*
  Ahmad, F., Ma, L., Wei, W., Liu, Y., Hakim, I., Daugherty, A., Mujahid, S., Radin, A. A., Chua, M., So, S.
  2023
- **Rational design, synthesis and structural characterization of peptides and peptidomimetics to target Hsp90/Cdc37 interaction for treating hepatocellular carcinoma.** *Computational and structural biotechnology journal*
  Sukumaran, S., Tan, M., Ben-Uliel, S. F., Zhang, H., De Zotti, M., Chua, M. S., So, S. K., Qvit, N.
  2023; 21: 3159-3172
- **Deciphering COVID-19 host transcriptomic complexity and variations for therapeutic discovery against new variants.** *iScience*
  Xing, J., Shankar, R., Ko, M., Zhang, K., Zhang, S., Drelich, A., Paithankar, S., Chekalin, E., Chua, M. S., Rajasekaran, S., Kent Tseng, C. T., Zheng, M., Kim, et al
  2022; 25 (10): 105068
- **Exploring Biomolecular Interaction Between the Molecular Chaperone Hsp90 and Its Client Protein Kinase Cdc37 using Field-Effect Biosensing Technology.** *Journal of visualized experiments : JoVE*
  Lerner, Y., Sukumaran, S., Chua, M., So, S. K., Qvit, N.
  2022
- **NIR-II imaging of hepatocellular carcinoma based on a humanized anti-GPC3 antibody.** *RSC medicinal chemistry*
  Shi, H., Huttad, L. V., Tan, M., Liu, H., Chua, M. S., Cheng, Z., So, S.
  2022; 13 (1): 90-97
- **A Humanized Anti-GPC3 Antibody for Immuno-Positron Emission Tomography Imaging of Orthotopic Mouse Model of Patient-Derived Hepatocellular Carcinoma Xenografts.** *Cancers*
  Natarajan, A., Zhang, H., Ye, W., Huttad, L., Tan, M., Chua, M., Gambhir, S. S., So, S. K.
  2021; 13 (16)
- **Computational discovery and preclinical validation of therapeutic leads with novel MOAs for hepatocellular carcinoma and pancreatic ductal adenocarcinoma**
  Hakim, I., Chua, M., Wei, W., Ma, L., Noblin, E., So, S., Daugherty, A. C., Heuer, T. S.
  AMER ASSOC CANCER RESEARCH.2020
- **Analysis of Infected Host Gene Expression Reveals Repurposed Drug Candidates and Time-Dependent Host Response Dynamics for COVID-19.** *bioRxiv : the preprint server for biology*
  Xing, J., Shankar, R., Drelich, A., Paithankar, S., Chekalin, E., Dexheimer, T., Chua, M. S., Rajasekaran, S., Tseng, C. K., Chen, B.

2020

- **Harnessing big 'omics' data and AI for drug discovery in hepatocellular carcinoma** *NATURE REVIEWS GASTROENTEROLOGY & HEPATOLOGY*
  Chen, B., Garmire, L., Calvisi, D. F., Chua, M., Kelley, R. K., Chen, X.
  2020; 17 (4): 238–51
- **An NIR-II/MR dual modal nanoprobe for liver cancer imaging.** *Nanoscale*
  Ren, Y. n., He, S. n., Huttad, L. n., Chua, M. S., So, S. K., Guo, Q. n., Cheng, Z. n.
  2020
- **High Inflammatory Factor Grading Predicts Poor Disease-Free Survival in AJCC Stage I-II Hepatocellular Carcinoma Patients After R0 Resection.** *Cancer management and research*
  Zhang, M., Chua, M. S., Hu, J., Li, H., Zhang, S., Wu, L., Han, B.
  2019; 11: 10623-10632
- **SOCS5 inhibition induces autophagy to impair metastasis in hepatocellular carcinoma cells via the PI3K/Akt/mTOR pathway.** *Cell death & disease*
  Zhang, M., Liu, S., Chua, M., Li, H., Luo, D., Wang, S., Zhang, S., Han, B., Sun, C.
  2019; 10 (8): 612
- **An Automated, Quantitative, and Multiplexed Assay Suitable for Point-of-Care Hepatitis B Virus Diagnostics.** *Scientific reports*
  Gani, A. W., Wei, W. n., Shi, R. Z., Ng, E. n., Nguyen, M. n., Chua, M. S., So, S. n., Wang, S. X.
  2019; 9 (1): 15615
- **High Inflammatory Factor Grading Predicts Poor Disease-Free Survival in AJCC Stage I-II Hepatocellular Carcinoma Patients After R0 Resection** *CANCER MANAGEMENT AND RESEARCH*
  Zhang, M., Chua, M., Hu, J., Li, H., Zhang, S., Wu, L., Han, B.
  2019; 11: 10623–32
- **A transfer RNA derived small RNA affects translation in rapidly dividing cells and a target for hepatocellular carcinoma**
  Kim, H., Fuchs, G., Wang, S., Wei, W., Zhang, Y., Park, H., Roy-Chaudhuri, B., Li, P., Xu, J., Chu, K., Zhang, F., Chua, M., So, et al
  AMER ASSOC CANCER RESEARCH.2018
- **Computational Discovery of Niclosamide Ethanolamine, a Repurposed Drug Candidate That Reduces Growth of Hepatocellular Carcinoma Cells In Vitro and in Mice by Inhibiting Cell Division Cycle 37 Signaling.** *Gastroenterology*
  Chen, B., Wei, W., Ma, L., Yang, B., Gill, R. M., Chua, M., Butte, A. J., So, S.
  2017; 152 (8): 2022-2036
- **A 3 ' tRNA Derived Small RNA (tsRNA) Affects Translation in Rapidly Dividing Cells and a Target for Hepatocellular Carcinoma**
  Kim, H., Fuchs, G., Wang, S., Wei, W., Zhang, Y., Park, H., Roy-Chaudhuri, B., Zhang, F., Chua, M., So, S., Sarnow, P., Kay, M. A.
  CELL PRESS.2017: 34–35
- **A transfer-RNA-derived small RNA regulates ribosome biogenesis.** *Nature*
  Kim, H. K., Fuchs, G. n., Wang, S. n., Wei, W. n., Zhang, Y. n., Park, H. n., Roy-Chaudhuri, B. n., Li, P. n., Xu, J. n., Chu, K. n., Zhang, F. n., Chua, M. S., So, et al
  2017; 552 (7683): 57–62
- **5-Hydroxymethylcytosine signatures in cell-free DNA provide information about tumor types and stages.** *Cell research*
  Song, C. X., Yin, S. n., Ma, L. n., Wheeler, A. n., Chen, Y. n., Zhang, Y. n., Liu, B. n., Xiong, J. n., Zhang, W. n., Hu, J. n., Zhou, Z. n., Dong, B. n., Tian, et al
  2017
- **Reversal of cancer gene expression correlates with drug efficacy and reveals therapeutic targets.** *Nature communications*
  Chen, B. n., Ma, L. n., Paik, H. n., Sirota, M. n., Wei, W. n., Chua, M. S., So, S. n., Butte, A. J.
  2017; 8: 16022
- **Suppression of ATAD2 inhibits hepatocellular carcinoma progression through activation of p53-and p38-mediated apoptotic signaling** *ONCOTARGET*
  Lu, W., Chua, M., So, S. K.
  2015; 6 (39): 41722-41735

- **NDRG1 promotes growth of hepatocellular carcinoma cells by directly interacting with GSK-3 beta and Nur77 to prevent beta-catenin degradation** *ONCOTARGET*
  Lu, W., Chua, M., Wei, W., So, S. K.
  2015; 6 (30): 29847-29859
- **Niclosamide ethanolamine inhibits growth of patient-derived hepatocellular carcinoma xenografts**
  Chen, B., Wei, W., Chua, M., Butte, A., So, S. K.
  WILEY-BLACKWELL.2015: 459A
- **Identifying novel therapeutic targets in HCC through an integrated transcriptomics and pharmacogenomics approach**
  Chen, B., Ma, L., Chua, M., Butte, A., So, S. K.
  WILEY-BLACKWELL.2015: 460A
- **Tankyrase inhibitors attenuate WNT/ß-catenin signaling and inhibit growth of hepatocellular carcinoma cells.** *Oncotarget*
  Ma, L., Wang, X., Jia, T., Wei, W., Chua, M., So, S.
  2015; 6 (28): 25390-25401
- **Suppressing the CDC37 cochaperone in hepatocellular carcinoma cells inhibits cell cycle progression and cell growth.** *Liver international*
  Wang, Z., Wei, W., Sun, C. K., Chua, M., So, S.
  2015; 35 (4): 1403-1415
- **Imaging of hepatocellular carcinoma patient-derived xenografts using Zr-89-labeled anti-glypican-3 monoclonal antibody** *BIOMATERIALS*
  Yang, X., Liu, H., Sun, C. K., Natarajan, A., Hu, X., Wang, X., Allegretta, M., Guttmann, R. D., Gambhir, S. S., Chua, M., Cheng, Z., So, S. K.
  2014; 35 (25): 6964-6971
- **Novel celastrol derivatives inhibit the growth of hepatocellular carcinoma patient-derived xenografts.** *Oncotarget*
  Wei, W., Wu, S., Wang, X., Sun, C. K., Yang, X., Yan, X., Chua, M., So, S.
  2014; 5 (14): 5819-5831
- **Suppressing N-Myc downstream regulated gene 1 reactivates senescence signaling and inhibits tumor growth in hepatocellular carcinoma.** *Carcinogenesis*
  Lu, W., Chua, M., So, S. K.
  2014; 35 (4): 915-922
- **Epigenetics in hepatocellular carcinoma: An update and future therapy perspectives** *WORLD JOURNAL OF GASTROENTEROLOGY*
  Ma, L., Chua, M., Andrisani, O., So, S.
  2014; 20 (2): 333-345
- **Targeting activated Wnt/beta-catenin signaling by XAV939 and its derivative WXL-8 in hepatocellular carcinoma**
  Ma, L., Wang, X., Wei, W., Chua, M., So, S. K.
  WILEY-BLACKWELL.2014: 819A–820A
- **Molecular imaging of hepatocellular carcinoma xenografts with epidermal growth factor receptor targeted affibody probes.** *BioMed research international*
  Zhao, P., Yang, X., Qi, S., Liu, H., Jiang, H., Hoppmann, S., Cao, Q., Chua, M., So, S. K., Cheng, Z.
  2013; 2013: 759057-?
- **Assessment and comparison of magnetic nanoparticles as MRI contrast agents in a rodent model of human hepatocellular carcinoma** *CONTRAST MEDIA & MOLECULAR IMAGING*
  Bu, L., Xie, J., Chen, K., Huang, J., Aguilar, Z. P., Wang, A., Sun, K. W., Chua, M., So, S., Cheng, Z., Eden, H. S., Shen, B., Chen, et al
  2012; 7 (4): 363-372
- **Identification of a 14-gene signature that predicts survival in colorectal cancer with liver metastasis** *48th Annual Meeting of the American-Society-of-Clinical-Oncology (ASCO)*
  Chung, J. L., Pollack, J., Chua, M., So, S., Lin, C., Lin, A. Y.
  AMER SOC CLINICAL ONCOLOGY.2012
- **The CD47-signal regulatory protein alpha (SIRPa) interaction is a therapeutic target for human solid tumors** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Willingham, S. B., Volkmer, J., Gentles, A. J., Sahoo, D., Dalerba, P., Mitra, S. S., Wang, J., Contreras-Trujillo, H., Martin, R., Cohen, J. D., Lovelace, P., Scheeren, F. A., Chao, et al

2012; 109 (17): 6662-6667

- **Therapeutic targeting of glypican-3 using TGF-beta 2 as a novel treatment approach for HCC**
  Sun, C. K., Chua, M., So, S.
  AMER ASSOC CANCER RESEARCH.2012

- **MOLECULAR EFFECTS OF SUPPRESSING THE CDC37 COCHAPERONE IN HEPATOCELLULAR CARCINOMA INHIBITS CELL CYCLE PROGRESSION AND CELL GROWTH** *47th Annual Meeting of the European-Association-for-the-Study-of-the-Liver (EASL)*
  Wang, Z., Wei, W., Sun, K., Chua, M., So, S.
  ELSEVIER SCIENCE BV.2012: S130–S130

- **OPTICAL IMAGING OF LIVER CARCINOMA XENOGRAFTS USING EPIDERMAL GROWTH FACTOR RECEPTOR TARGETED FLUORESCENTLY LABELED AFFIBODY** *62nd Annual Meeting of the American-Association-for-the-Study-of-Liver-Diseases (AASLD)*
  Zhao, P., Yang, X., Qi, S., Cao, Q., Chua, M., Wang, J., So, S., Cheng, Z.
  WILEY-BLACKWELL.2011: 894A–894A

- **Suppression of Glypican 3 Inhibits Growth of Hepatocellular Carcinoma Cells through Up-Regulation of TGF-beta 2** *NEOPLASIA*
  Sun, C. K., Chua, M., He, J., So, S. K.
  2011; 13 (8): 735-U111

- **Hot Topic: Recent Advances Into the Molecular Mechanisms and Therapeutic Targeting of Hepatocellular Carcinoma** *ANTI-CANCER AGENTS IN MEDICINAL CHEMISTRY*
  Chua, M., Wang, L.
  2011; 11 (6): 491-492

- **In vivo MRSI of hyperpolarized [1-C-13]pyruvate metabolism in rat hepatocellular carcinoma** *NMR IN BIOMEDICINE*
  Darpolor, M. M., Yen, Y., Chua, M., Xing, L., Clarke-Katzenberg, R. H., Shi, W., Mayer, D., Josan, S., Hurd, R. E., Pfefferbaum, A., Senadheera, L., So, S., Hofmann, et al
  2011; 24 (5): 506-513

- **Comparative Profiling of Primary Colorectal Carcinomas and Liver Metastases Identifies LEF1 as a Prognostic Biomarker** *PLOS ONE*
  Lin, A. Y., Chua, M., Choi, Y., Yeh, W., Kim, Y. H., Azzi, R., Adams, G. A., Sainani, K., van de Rijn, M., So, S. K., Pollack, J. R.
  2011; 6 (2)

- **Soluble Frizzled-7 receptor inhibits Wnt signaling and sensitizes hepatocellular carcinoma cells towards doxorubicin** *MOLECULAR CANCER*
  Wei, W., Chua, M., Grepper, S., So, S. K.
  2011; 10

- **Rodent-specific hypoxia response elements enhance PAI-1 expression through HIF-1 or HIF-2 in mouse hepatoma cells** *INTERNATIONAL JOURNAL OF ONCOLOGY*
  Ahn, Y., Chua, M., Whitlock, J. P., Shin, Y., Song, W., Kim, Y., Eom, C., An, W. G.
  2010; 37 (6): 1627-1638

- **Small molecule antagonists of Tcf4/beta-catenin complex inhibit the growth of HCC cells in vitro and in vivo** *INTERNATIONAL JOURNAL OF CANCER*
  Wei, W., Chua, M., Grepper, S., So, S.
  2010; 126 (10): 2426-2436

- **Blockade of Wnt-1 signaling leads to anti-tumor effects in hepatocellular carcinoma cells** *MOLECULAR CANCER*
  Wei, W., Chua, M., Grepper, S., So, S. K.
  2009; 8

- **N-Myc down-regulated gene 1 mediates proliferation, invasion, and apoptosis of hepatocellular carcinoma cells** *CANCER LETTERS*
  Yan, X., Chua, M., Sun, H., So, S.
  2008; 262 (1): 133-142

- **Small interfering RNA targeting CDC25B inhibits liver tumor growth in vitro and in vivo** *MOLECULAR CANCER*
  Yan, X., Chua, M., He, J., So, S. K.
  2008; 7

- **Antibody Arrays Identify Potential Diagnostic Markers of Hepatocellular Carcinoma.** *Biomarker insights*
  Sun, H., Chua, M., Yang, D., Tsalenko, A., Peter, B. J., So, S.
  2008; 3: 1-18
- **Overexpression of NDRG1 is an indicator of poor prognosis in hepatocellular carcinoma** *MODERN PATHOLOGY*
  Chua, M., Sun, H., Cheung, S. T., Mason, V., Higgins, J., Ross, D. T., Fan, S. T., So, S.
  2007; 20 (1): 76-83
- **Sprouty and cancer: the first terms report.** *Cancer letters*
  Lo, T. L., Fong, C. W., Yusoff, P., McKie, A. B., Chua, M. S., Leung, H. Y., Guy, G. R.
  2006; 242 (2): 141-50
- **Gallium maltolate is a promising chemotherapeutic agent for the treatment of hepatocellular carcinoma** *ANTICANCER RESEARCH*
  Chua, M., Bernstein, L. R., Li, R., So, S. K.
  2006; 26 (3A): 1739-1743
- **Sprouty 2, an inhibitor of mitogen-activated protein kinase signaling, is down-regulated in hepatocellular carcinoma** *CANCER RESEARCH*
  Fong, C. W., Chua, M. S., McKie, A. B., Ling, S. H., Mason, L., Li, R., Yusoff, P., Lo, T. L., Leung, H. Y., So, S. K., Guy, G. R.
  2006; 66 (4): 2048-2058
- **An integrated data analysis approach to characterize genes highly expressed in hepatocellular carcinoma** *ONCOGENE*
  Patil, M. A., Chua, M. S., Pan, K. H., Lin, R., Lih, C. J., Cheung, S. T., Ho, C., Li, R., Fan, S. T., Cohen, S. N., Chen, X., So, S.
  2005; 24 (23): 3737-3747
- **Applications of microarrays to renal transplantation: Progress and possibilities** *FRONTIERS IN BIOSCIENCE-LANDMARK*
  Chua, M. S., Mansfield, E., Sarwal, M.
  2003; 8: S913-S923
- **Molecular heterogeneity in acute renal allograft rejection identified by DNA microarray profiling** *NEW ENGLAND JOURNAL OF MEDICINE*
  Sarwal, M., Chua, M. S., Kambham, N., Hsieh, S. C., Satterwhite, T., Masek, M., Salvatierra, O.
  2003; 349 (2): 125-138
- **Microarrays: new tools for transplantation research** *PEDIATRIC NEPHROLOGY*
  Chua, M. S., Sarwal, M. M.
  2003; 18 (4): 319-327
- **Increased expression of cytotoxic effector molecules: Different interpretations for steroid-based and steroid-free immunosuppression** *PEDIATRIC TRANSPLANTATION*
  Satterwhite, T., Chua, M. S., Hsieh, S. C., Chang, S., Scandling, J., Salvatierra, O., Sarwal, M. M.
  2003; 7 (1): 53-58
- **Molecular profiling of anemia in acute renal allograft rejection using DNA microarrays** *AMERICAN JOURNAL OF TRANSPLANTATION*
  Chua, M. S., Barry, C., Chen, X., Salvatierra, O., Sarwal, M. M.
  2003; 3 (1): 17-22
- **In vitro evaluation of amino acid prodrugs of novel antitumour 2-(4-amino-3-methylphenyl)benzothiazoles.** *British journal of cancer*
  Bradshaw, T. D., Chua, M. S., Browne, H. L., Trapani, V., Sausville, E. A., Stevens, M. F.
  2002; 86 (8): 1348-54
- **Antitumor benzothiazoles. 14. Synthesis and in vitro biological properties of fluorinated 2-(4-aminophenyl)benzothiazoles.** *Journal of medicinal chemistry*
  Hutchinson, I., Chua, M. S., Browne, H. L., Trapani, V., Bradshaw, T. D., Westwell, A. D., Stevens, M. F.
  2001; 44 (9): 1446-55
- **Antitumour benzothiazoles. Part 15: The synthesis and physico-chemical properties of 2-(4-aminophenyl)benzothiazole sulfamate salt derivatives.** *Bioorganic & medicinal chemistry letters*
  Shi, D. F., Bradshaw, T. D., Chua, M. S., Westwell, A. D., Stevens, M. F.
  2001; 11 (8): 1093-5
- **Role of Cyp1A1 in modulation of antitumor properties of the novel agent 2-(4-amino-3-methylphenyl)benzothiazole (DF 203, NSC 674495) in human breast cancer cells.** *Cancer research*

Chua, M. S., Kashiyama, E., Bradshaw, T. D., Stinson, S. F., Brantley, E., Sausville, E. A., Stevens, M. F.
2000; 60 (18): 5196-203

- **Mechanisms of acquired resistance to 2-(4-aminophenyl)benzothiazole (CJM 126, NSC 34445).** *British journal of cancer*
  Bradshaw, T. D., Chua, M. S., Orr, S., Matthews, C. S., Stevens, M. F.
  2000; 83 (2): 270-7

- **Antitumor benzothiazoles. 8. Synthesis, metabolic formation, and biological properties of the C- and N-oxidation products of antitumor 2-(4-aminophenyl)benzothiazoles.** *Journal of medicinal chemistry*
  Kashiyama, E., Hutchinson, I., Chua, M. S., Stinson, S. F., Phillips, L. R., Kaur, G., Sausville, E. A., Bradshaw, T. D., Westwell, A. D., Stevens, M. F.
  1999; 42 (20): 4172-84

- **Antitumor benzothiazoles. 7. Synthesis of 2-(4-acylaminophenyl)benzothiazoles and investigations into the role of acetylation in the antitumor activities of the parent amines.** *Journal of medicinal chemistry*
  Chua, M. S., Shi, D. F., Wrigley, S., Bradshaw, T. D., Hutchinson, I., Shaw, P. N., Barrett, D. A., Stanley, L. A., Stevens, M. F.
  1999; 42 (3): 381-92