

## Papers from the Sol Goldman Pancreatic Cancer Research Center

### 2020

1. Abe T, Koi C, Kohi S, Song KB, Tamura K, Macgregor-Das A, Kitaoka N, Chuidian M, Ford M, Dbouk M, Borges M, He J, Burkhardt R, Wolfgang CL, Klein AP, Eshleman JR, Hruban RH, Canto MI, Goggins M. Gene Variants That Affect Levels of Circulating Tumor Markers Increase Identification of Patients with Pancreatic Cancer. *Clin Gastroenterol Hepatol.* 18(5):1161-1169, 2020.
2. Amini N, Rezaee N, Habib JR, Blair A, Beckman RM, Manos L, Cameron JL, Hruban RH, Weiss MJ, Fishman EK, Zaheer A, Lafaro KJ, Burkhardt RA, O'Briain Lennon AM, Burns WR, He J, Wolfgang CL. Minimal main pancreatic duct dilatation in small branch duct intraductal papillary mucinous neoplasms associated with high-grade dysplasia or invasive carcinoma. *HPB (Oxford).* 2020. Online ahead of print.
3. Ardeljan D, Steranka, Liu C,...Hruban R, Boeke J, Fenyo D, Wu P-H, Smogorzewska A, Holland A, Burns K. Cell fitness screens reveal a conflict between LINE-1 retrotransposition and DNA replication. *Nat Struct Mol Biol.* 27(2):168-178, 2020.
4. Blackford A, Canto M, Klein A, Hruban R, Goggins M. Recent Trends in the Incidence and Survival of Stage 1A Pancreatic Cancer: A Surveillance, Epidemiology, and End Results Analysis. *J Natl Cancer Inst.* 112(11):1162-1169, 2020.
5. Canto MI, Kerdsirichairat T, Yeo CJ, Hruban RH, Shin EJ, Almario JA, Blackford A, Ford M, Klein AP, Javed AA, Lennon AM, Zaheer A, Kamel IR, Fishman EK, Burkhardt R, He J, Makary M, Weiss MJ, Schulick RD, Goggins MG, Wolfgang CL. Surgical outcomes after pancreatic resection of screening-detected lesions in individuals at high risk for developing pancreatic cancer. *J Gastrointest Surg.* 24(5):1101-1110, 2020.
6. Chu L, Solmaz B, Park S, Kawamoto S, Yuille A, Hruban R, Fishman E. Diagnostic performance of commercially available vs. in-house radiomics software in classification of CT images from patients with pancreatic ductal adenocarcinoma vs. healthy controls. *Abdom Radiol (NY).* 45(8):2469-2475, 2020.
7. Chu LC, Park S, Kawamoto S, Yuille AL, Hruban RH, Fishman EK. Pancreatic cancer imaging: a new look at an old problem. *Curr Probl Diagn Radiol.* 2020. Online ahead of print.
8. Cristiano S, McKean D, Carey J, Bracci P, Brennan P, Chou M, Du M, Gallinger S, Goggins MG, Hassan MM, Hung RJ, Kurtz RC, Li D, Lu L, Neale R, Olson S, Petersen G, Rabe KG, Fu J, Risch H, Rosner GL, Ruczinski I, Klein AP, Scharpf RB. Bayesian copy number detection and association in large-scale studies. *BMC Cancer.* 20(1):856. doi: 10.1186/s12885-020-07304-3, 2020.

9. Douville C, Cohen JD, Ptak J, Popoli M, Schaefer J, Silliman N, Dobbyn L, Schoen RE, Tie J, Gibbs P, Goggins M, Wolfgang CL, Wang TL, Shih IM, Karchin R, Lennon AM, Hruban RH, Tomasetti C, Bettegowda C, Kinzler KW, Papadopoulos N, Vogelstein B. Assessing aneuploidy with repetitive element sequencing. *Proc Natl Acad Sci U S A.* 117(9):4858-4863, 2020.
10. Esposito I, Hruban RH, Verbeke C, Terris B, Zamboni G, Scarpa A, Morohoshi T, Suda K, Luchini C, Klimstra DS, Adsay V, Haeberle L, Saluja A, Fernandez-Del Castillo C, Sheel A, Neoptolemos JP, Isaji S, Shimosegawa T, Whitcomb DC, Campbell F; Working group for the International (IAP – APA – JPS – EPC) Consensus Guidelines for Chronic Pancreatitis. Guidelines on the Histopathology of Chronic Pancreatitis. Recommendations From the Working Group for the International Consensus Guidelines for Chronic Pancreatitis in Collaboration With the International Association of Pancreatologists, the American Pancreatic Association, the Japan Pancreas Society, and the European Pancreatic Club. *Pancreatology.* 20(4):586-593, 2020.
11. Faghih M, Noë M, Mannan R, Kamel IR, Zaheer A, Kalyani RR, Hall E, Afghani E, Warren D, Desai N, Sun Z, Walsh C, Makary MA, Goggins M, Hruban RH, He J, Singh VK. Pancreatic volume does not correlate with histologic fibrosis in adult patients with recurrent acute and chronic pancreatitis. *Pancreatology.* 20(6):1078-1084, 2020.
12. Felsenstein M, Trujillo MA, Huang B, Nanda N, Jiang Z, Jeong YI, Pfluger M, Goggins MG, Hruban RH, Thompson ED, Heaphy CM, Roberts NJ, Wood L. Generation and characterization of a cell line from an intraductal tubulopapillary neoplasm of the pancreas. *Lab Invest.* 100(7):1003-1013, 2020.
13. Fouladi D, Raman S, Hruban R, Fishman E, Kawamoto S. Invasive Intraductal Papillary Mucinous Neoplasms: CT Features of Colloid Carcinoma Versus Tubular Adenocarcinoma of the Pancreas. *AJR Am J Roentgenol.* 214(5):1092-1100, 2020.
14. Fujikura K, Hosoda W, Felsenstein M, Song Q, Reiter JG, Zheng L, Beleva Guthrie V, Rincon N, Dal Molin M, Dudley J, Cohen JD, Wang P, Fischer CG, Braxton AM, Noë M, Jongepier M, Fernández-del Castillo C, Mino-Kenudson M, Schmidt CM, Yip-Schneider M, Lawlor RT, Salvia R, Roberts NJ, Thompson ED, Karchin R, Lennon AM, Jiao Y, Wood LD. Multi-region whole exome sequencing of intraductal papillary mucinous neoplasms reveals frequent somatic *KLF4* mutations predominantly in low-grade regions. *Gut.* 2020. Online ahead of print.
15. Fujikura K, Hutchings D, Braxton A, Zhu Q, Laheru D, Hruban R, Thompson E, Wood L. Intraductal pancreatic cancer is less responsive than cancer in the stroma to neoadjuvant chemotherapy. *Mod Pathol.* 33(10):2026-2034, 2020.
16. Gao S, Pu N, Yin H, Li J, Chen Q, Yang M, Lou W, Chen Y, Zhou G, Li C, Li G, Yan Z, Liu L, Yu J, Wang X. Radiofrequency ablation in combination with an mTOR inhibitor restrains pancreatic cancer growth induced by intrinsic HSP70. *Ther Adv Med Oncol.* 12:1758835920953728. doi: 10/1177/1758835920953728, 2020.

17. Ghoneim DH, Zhu J, Zheng W,...Klein A, Stolzenberg-Solomon R, Shu X-O, Wu L. Mendelian Randomization Analysis of n-6 Polyunsaturated Fatty Acid Levels and Pancreatic Cancer Risk. *Cancer Epidemiol Biomarkers Prev.* 29(12):2735-2739, 2020.
18. Goggins M, Overbeek KA, Brand R, Syngal S, Del Chiaro M, Bartsch DK, Bassi C, Carrato A, Farrell J, Fishman E, Fockens P, Gress TM, van Hooft JE, Hruban RH, Kastrinos F, Klein A, Lennon AM, Lucas A, Park W, Rustgi A, Simeone D, Stoffel E, Vasen HFA, Cahen DL, Canto MI, Bruno M; International Cancer of the Pancreas Screening (CAPS) consortium. Management of patients with increased risk for familial pancreatic cancer: updated recommendations from the International Cancer of the Pancreas Screening (CAPS) consortium. *Gut.* 69(1):7-17, 2020.
19. Haj-Mirzaian A, Kawamoto S, Zaher A, Hruban RH, Fishman EK, Chu LC. Pitfalls in the MDCT of pancreatic cancer: stragies for minimizing errors. *Abdom Radiol.* 45(2):457-478, 2020.
20. Hong SM, Jung D, Kiemen A, Gaida MM, Yoshizawa T, Braxton AM, Noë M, Lionheart G, Oshima K, Thompson ED, Burkhardt R, Wu PH, Wirtz D, Hruban RH, Wood LD. Three-dimensional visualization of cleared human pancreas cancer reveals that sustained epithelial-to-mesenchymal transition is not required for venous invasion. *Mod Pathol.* 33(4):639-647, 2020.
21. Hu H, Ahu Y, Pu N, Burkhart RA, Burns W, Laheru D, Zheng L, He J, Goggins MG, Yu J. Association of germline variants in human DNA damage repair genes and response to adjuvant chemotherapy in resected pancreatic ductal adenocarcinoma. *J Am Coll Surg.* 231(5):527-535, 2020.
22. Huang B, Trujillo MA, Fujkura K, Qiu M, Chen F, Felsenstein M, Zhou C, Skaro M, Gauthier C, Macgregor-Das A, Hutchings D, Hong SM, Hruban RH, Eshleman JR, Thompson ED, Klein AP, Goggins M, Wood LD, Roberts NJ. Molecular characterization of organoids derived from pancreatic Intraductal papillary mucinous neoplasms. *J Pathol.* 252(3):252-262, 2020.
23. Huang W, Navarro-Serer B, Jeong YJ, Chianchiano P, Xia L, Luchini C, Veronese N, Dowiak C, Ng T, Trujillo MA, Huang B, Pflüger MJ, Macgregor-Das AM, Lionheart G, Jones D, Fujikura K, Nguyen-Ngoc KV, Neumann N, Groot VP, Hasanain A, van Oosten AF, Fischer SE, Gallinger S, Singhi AD, Zureikat AH, Brand RE, Gaida MM, Heinrich S, Burkhardt RA, He J, Wolfgang CL, Goggins MG, Thompson ED, Roberts NJ, Ewald AJ, Wood LD. Pattern of invasion in human pancreatic cancer organoids is associated with loss of SMAD4 and clinical outcome. *Cancer Res.* 80(13):2804-2817, 2020.
24. Kim JY, Brosnan-Cashman JA, Kim J, An S, Lee KB, Kim H, Park DY, Jang KT, Oh YH, Hruban RH, Heaphy CM, Hong SM. Pancreatic acinar cell carcinomas and mixed acinar-

neuroendocrine carcinomas are more clinically aggressive than grade 1 pancreatic neuroendocrine tumors. *Pathology*. 52(3):336-347, 2020.

25. Kim J, Yuan C, Babic A, Bao Y, Clish CB, Pollak MN, Amundadottir LT, Klein AP, Stolzenberg-Solomon RZ, Pandharipande PV, Brais LK, Welch MW, Ng K, Giovannucci EL, Sesso HD, Manson JE, Stampfer MJ, Fuchs CS, Wolpin BM, Kraft P. Genetic and Circulating Biomarker Data Improve Risk Prediction for Pancreatic Cancer in the General Population. *Cancer Epidemiol Biomarkers Prev*. 29(5):999-1008, 2020.
26. Kryklyva V, Ter Linden E, Kroese LI, de Voer RM, van der Kolk BM, Stommel MWJ, Hermans JJ, Luchini C, Wood LD, Hruban RH, Nagtegaal ID, Ligtenberg MJL, Brosens LAA. Medullary pancreatic carcinoma due to somatic POLE mutation: a distinctive pancreatic carcinoma with marked long-term survival. *Pancreas*. 49(7):999-1003, 2020.
27. Lahouel K, Younes L, Danilova L, Giardiello F, Hruban R, Groopman J, Kinzler K, Vogelstein B, German D, Tomasetti C. Revisiting the tumorigenesis timeline with a data-driven generative model. *Proc Natl Acad Sci U S A*. 117(2):857-864, 2020.
28. Lee SJ, Sung YN, Kim SJ, Cho H, Hruban RH, Hong SM. Comprehensive histological evaluation with clinical analysis of venous invasion in pancreatic ductal adenocarcinoma: from histology to clinical applications. *Pancreatology*. 20(7):1486-1494, 2020.
29. Lennon AM, Buchanan AH, Kinde I, Warren A, Honushefsky A, Cohain AT, Ledbetter DH, Sanfilippo F, Sheridan K, Rosica D, Adonizio CS, Hwang HJ, Lahouel K, Cohen JD, Douville C, Patel AA, Hagmann LN, Rolston DD, Malani N, Zhou S, Bettegowda C, Diehl DL, Urban B, Still CD, Kann L, Woods JI, Salvati ZM, Vadakara J, Leeming R, Bhattacharya P, Walter C, Parker A, Lengauer C, Klein A, Tomasetti C, Fishman EK, Hruban RH, Kinzler KW, Vogelstein B, Papadopoulos N. Feasibility of Blood Testing Combined With PET-CT to Screen for Cancer and Guide Intervention. *Science*. 369(6499):eabb9601, 2020.
30. Macgregor-Das A, Yu J, Tamura K, Abe T, Suenaga M, Shindo K, Borges M, Koi C, Kohi S, Sadakari Y, Molin M, Almario JA, Ford M, Chuidian M, Burkhardt R, He J, Hruban RH, Eshleman JR, Klein AP, Wolfgang CL, Canto MI, Goggins M. Detection of Circulating Tumor DNA in Patients with Pancreatic Cancer Using Digital Next-Generation Sequencing. *J Mol Diagn*. 22(6):748-756, 2020.
31. Matsubayashi H, Notohara K, Hruban RH, Satoh T, Kaneko J, Sato J, Ishiwatari H, Ashida R, Uesaka K, Kiyozumi Y, Ono H. Multiple carcinomas and intraepithelial neoplasms in a case of familial pancreatic cancer: rapid morphological changes in the pancreatic cyst and pathological lesions undetected by clinical images. *Intern Med*. 59(8):1041-1046, 2020.

32. Mattiolo P, Fiadone G, Paolino G, Chatterjee D, Bernasconi R, Piccoli P, Parolini C, El Aidi M, Sperandio N, Malleo G, Salvia R, Brosens LA, Wood LD, Scarpa A, Lawlor RT, Luchini C. Epithelial-mesenchymal transition in undifferentiated carcinoma of the pancreas with and without osteoclast-like giant cells. *Virchows Arch.* 2020. Online ahead of print.
33. Miller DL, Roy-Chowdhuri S, Illei P, James A, Hruban RH, Ali SZ. Primary pancreatic Ewing sarcoma: a cytomorphologic and histopathologic study of 13 cases. *J Am Soc Cytopathol.* 9(6):502-512, 2020.
34. Miyabayashi K, Baker LA, Deschenes A, Traub B, Caligiuri G, Plenker D, Alagesan B, Belleau P, Li S, Kendall J, Jang GH, Kawaguchi RK, Somerville TDD, Tiriac H, Hwang GI, Burkhardt RA, Roberts NJ, Wood LD, Hruban RH, Gillis J, Krasnitz A, Vakoc CR, Wigler M, Notta F, Gallinger S, Park Y, Tuveson DA. Intraductal transplantation models of human pancreatic ductal adenocarcinoma reveal progressive transition of molecular subtypes. *Cancer Discov.* 10(10):1566-1589, 2020.
35. Mustafa S, Hruban R, Ali S. Acinar cell carcinoma of the pancreas: a clinicopathologic and cytomopholic review. *J Am Soc Cytopathol.* 9(6):586-595, 2020.
36. Nanda N, Roberts N. ATM Serine/Threonine Kinase and its Role in Pancreatic Risk. *Genes (Basel).* 11(1):108. doi: 10.3390/genes11010108, 2020.
37. Noë M, Niknafs N, Fischer CG, Hackeng WM, Beleva Guthrie V, Hosoda W, Debeljak M, Papp E, Adleff V, White JR, Luchini C, Pea A, Scarpa A, Butturini G, Zamboni G, Castelli P, Hong SM, Yachida S, Hiraoka N, Gill AJ, Samra JS, Offerhaus GJA, Hoorens A, Verheij J, Jansen C, Adsay NV, Jiang W, Winter J, Albores-Saavedra J, Terris B, Thompson ED, Roberts NJ, Hruban RH, Karchin R, Scharpf RB, Brosens LAA, Velculescu VE, Wood LD. Genomic characterization of malignant progression in neoplastic pancreatic cysts. *Nat Commun.* 11(1):4085. doi: 10.1038/s41467-020-17917-8, 2020.
38. Park S, Chu LC, Fishman EK, Yuille AL, Vogelstein B, Kinzler KW, Horton KM, Hruban RH, Zinreich ES, Fadaei Fouladi D, Shayesteh S, Graves J, Kawamoto S. Annotated normal CT data of the abdomen for deep learning: challenges and strategies for implementation. *Diagn Interv Imaging.* 101(1):35-44, 2020.
39. Park S, Chu LC, Hruban RH, Vogelstein B, Kinzler KW, Yuille AL, Fouladi DF, Shayesteh S, Ghandili S, Wolfgang CL, Burkhardt R, He J, Fishman EK, Kawamoto S. Differentiating autoimmune pancreatitis from pancreatic ductal adenocarcinoma with CT radiomics features. *Diagn Interv Imaging.* 101(9):555-564, 2020.
40. Pea A, Yu J, Marchionni L, Noe M, Luchini C, Pulvirenti A, de Wilde RF, Brosens LA, Rezaee N, Javed A, Gobbo S, Regi P, Salvia R, Bassi C, He J, Weiss MJ, Cameron JL, Offerhaus GJA, Hruban RH, Lawlor RT, Scarpa A, Heaphy CM, Wood LD, Wolfgang CL.

Genetic analysis of small well-differentiated pancreatic neuroendocrine tumors identifies subgroups with differing risks of liver metastases. Ann Surg. 271(3):566-573, 2020.

41. Pereira SP, Oldfield L, Ney A, Hart PA, Keane MG, Pandol SJ, Li D, Greenhalf W, Jeon CY, Koay EJ, Almario CV, Halloran C, Lenon AM, Costello E. Early detection of pancreatic cancer. Lancet Gastroenterol Hepatol. 5(7):698-710, 2020.
42. Pflüger M, Griffin JM, Hackeng WM, Kawamoto S, Yu J, Chianchiano P, Shin E, Lionheart G, Tsai HL, Wang H, Rezaee N, Burkhardt RA, Cameron JL, Thompson ED, Wolfgang CL, He J, Brosens LAA, Wood LD. The impact of clinical and pathological features on IPMN recurrence after surgical resection: long-term follow-up analysis. Ann Surg. 2020. Online ahead of print.
43. Pu N, Gao S, Beckman R, Ding D, Wright M, Chen Z, Zhu Y, Hu H, Yin L, Beckman M, Thompson E, Hruban RH, Cameron JL, Gage MM, Lafaro KJ, Burns WR, Wolfgang CL, He J, Yu J, Burkhardt RA. Defining a minimum number of examined lymph nodes improves the prognostic value of lymphadenectomy in pancreas ductal adenocarcinoma. HPB (Oxford). 2020. Online ahead of print.
44. Pu N, Chen Q, Gao S, Liu G, Zhu Y, Yin L, Hu H, Wei L, Wu Y, Maeda S, Lou W, Yu J, Wu W. Genetic landscape of prognostic value in pancreatic ductal adenocarcinoma microenvironment. Ann Transl Med. 7(22):645. doi: 10.21037.atm.2019.10.91, 2020.
45. Rao AD, Shin EJ, Meyer J, Thompson EL, Fu W, W, Hu C, Fishman EK, Weiss M, Wolfgang CL, Burkhardt RA, He J, Kerdsirichairat T, Herman JM, Ding K, Narang A. Evaluation of a Novel Absorbable Radiopaque Hydrogel in Patients Undergoing Image Guided Radiation Therapy for Borderline Resectable and Locally Advanced Pancreatic Adenocarcinoma. Pract Radiat Oncol. 10(6):3508-3513, 2020.
46. Román-Meléndez GD, Venkataraman T, Monaco DR, Larman HB. Protease Activity Profiling via Programmable Phage Display of Comprehensive Proteome-Scale Peptide Libraries. Cell Syst. 11(4):375-381, 2020.
47. Sagara T, Debeljak M, Wright C, Anders N, Liang H, Rudek M, Ostermeier M, Eshleman J, Matsushita Y. Successful gene therapy requires targeting the vast majority of cancer cells. Cancer Biol Ther. 21(10): 946-953, 2020.
48. Sakamoto H, Attiyeh MA, Gerold JM, Makohon-Moore AP, Hayashi A, Hong J, Kappagantula R, Zhang L, Melchor JP, Reiter JG, Heyde A, Bielski CM, Penson AV, Gonen M, Chakravarty D, O'Reilly EM, Wood LD, Hruban RH, Nowak MA, Socci ND, Taylor BS, Iacobuzio-Donahue CA. The evolutionary origins of recurrent pancreatic cancer. Cancer Discov. 10(6):792-805, 2020.

49. Seppälä TT, Zimmerman JW, Seremo E, Plenker D, Suri R, Rozich N, Blair A, Thomas DL, Teinor J, Javed A, Patel H, Cameron JL, Burns WR, He J, Tuveson DA, Jaffee EM, Eshleman J, Szabolcs A, David RP, Ting DT, Wolfgang CL, Burkhardt RA. Patient-derived Organoid Pharmacotyping is a Clinically Tractable Strategy for Precision Medicine in Pancreatic Cancer. *Ann Surg.* 2020. Online ahead of print.
50. Singhi AD, Wood LD, Parks E, Torbenson MS, Felsenstein M, Hruban RH, Nikiforova MN, Wald AI, Kaya C, Nikiforov YE, Favazza L, He J, McGrath K, Fasanella KE, Brand RE, Lennon AM, Furlan A, Dasyam AK, She HJ, Lee K, Bartlett DL, Slivka A. Recurrent rearrangements in PKRACA and PRKACB in intraductal oncocytic papillary neoplasms of the pancreas and bile duct. *Gastroenterology.* 158(3):573-582, 2020.
51. Streicher SA, Klein AP, Olson SH, Kurtz RC, Amundadottir LT, DeWan AT, Zhao H, Risch HA. A pooled genome-wide association study identifies pancreatic cancer susceptibility loci on chromosome 19p12 and 19p13.3 in the full-Jewish population. *Hum Genet.* 2020. Online ahead of print.
52. Tang H, Jiang L, Stolzenberg-Solomon R,...Klein A, Li D, Kraft P, Wei P. Genome-Wide Gene-Diabetes and Gene-Obesity Interaction Scan in 8,255 Cases and 11,900 Controls from PanScan and PanC4 Consortia. *Cancer Epidemiol Biomarkers Prev.* 29(9):1784-1791, 2020.
53. Thompson E, Roberts N, Wood L, Eshleman J, Goggins G, Kern S, Klein A, Hruban R. The genetics of ductal adenocarcinoma of the pancreas in the year 2020: dramatic progress, but far to go. *Mod Pathol.* 33(12):2544-2563, 2020.
54. Thompson E, Wood L. Pancreatic Neoplasms With Acinar Differentiation: A Review of Pathologic and Molecular Features. *Arch Pathol Lab Med.* 144 (7): 808–815, 2020.
55. Underwood P, Zhang D, Cameron M, Gerber M, Delitto D, Maduka M, Cooper K, Han S, Hughes S, Judge S, Judge A, Trevino J. Nicotine Induces IL-8 Secretion from Pancreatic Cancer Stroma and Worsens Cancer-Induced Cachexia. *Cancers (Basel).* 12(2):329. doi: 10.3390/cancers12020329, 2020.
56. Winnard P, Bharti S, Sharma R, Krishnamachary B, Mironchik Y, Penet M-F, Goggins M, Maitra A, Kamel I, Horton K, Jacobs M, Bhujwalla Z. Brain metabolites in cholinergic and glutamatergic pathways are altered by pancreatic cancer cachexia. *J Cachexia Sarcopenia Muscle.* 11(6):1487-1500, 2020.
57. Yoshizawa T, Hong S-M, Jung D, Noe M, Kiemen A, Wu P-H, Wirtz D, Hruban R, Wood L, Oshima K. Three-dimensional analysis of extrahepatic cholangiocarcinoma and tumor budding. *J Pathol.* 251(4):400-410, 2020.
58. Yu, J Gemenetzis, Kinny-Koster B,...Burkhart R, Burns W, Goggins M, He J, Wolfgang C. Pancreatic circulating tumor cell detection by targeted single-cell next-generation sequencing. *Cancer Lett.* 493:245-253, 2020.

59. Yuan, F, Hung R, Walsh N,..Goggins M,...Klein A, Stolzenberg-Solomon R. Genome-Wide Association Study Data Revel Genetic Susceptibility to Chronic Inflammatory Intestinal Diseases and Pancreatic Ductal Adenocarcinoma Risk. *Cancer Res.* 80(18):4004-4013, 2020.
60. Zhang YD, Hurson AN, Zhang H... Pancreatic Cancer Case-Control Consortium (PanC4); Pancreatic Cancer Cohort Consortium (PanScan); Prostate Cancer Association Group to Investigate Cancer Associated Alterations in the Genome (PRACTICAL); Renal Cancer GWAS; Testicular Cancer Consortium (TECAC), Chanock SJ, Chatterjee N, Garcia-Closas M. Assessment of polygenic architecture and risk prediction based on common variants across fourteen cancers. *Nat Commun.* 11(1):3353. doi: 10.1038/s41467-020-16483-3, 2020.
61. Zhang J, Lan Z, Qui G, Ren H, Zhao Y, Gu Z, Li Z, Feng L, He J, Wang C. Over-expression of ANP32E is associated with poor prognosis of pancreatic cancer and promotes cell proliferation and migration through regulating  $\beta$ -catenin. *BMC Cancer.* 20(1):1065. doi: 10.1186/s12885-020-07556-z, 2020.
62. Zhong, J, Jermusyk A, Wu, L....Goggins M,...Klein A, Smith J, Kraft P, Shi J, Petersen G, Zheng W, Amundadottir L. A Transcriptome – Wide Association Study Identifies Novel Candidate Susceptibility Genes for Pancreatic Cancer. *J Natl Cancer Inst.* 112(10):1003-1012, 2020.
63. Zhu J, Shu X, Guo X, Liu D, Bao J, Milne RL, Giles GG, Wu C, Du M, White E, Risch HA, Malats N, Duell EJ, Goodman PJ, Li D, Bracci P, Katzke V, Neale RE, Gallinger S, Van Den Eeden SK, Arslan AA, Canzian F, Kooperberg C, Beane Freeman LE, Scelo G, Visvanathan K, Haiman CA, Le Marchand L, Yu H, Petersen GM, Stolzenberg-Solomon R, Klein AP, Cai Q, Long J, Shu XO, Zheng W, Wu L. Associations between Genetically Predicted Blood Protein Biomarkers and Pancreatic Cancer Risk. *Cancer Epidemiol Biomarkers Prev.* 29(7):1501-1508, 2020.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

## 2019

1. Abe T, Blackford AL, Tamura K, Ford M, McCormick P, Chuidian M, Almario JA, Borges M, Lennon AM, Shin EJ, Klein AP, Hruban RH, Canto MI, Goggins M. deleterious Germline Mutations Are a Risk Factor for Neoplastic Progression Among High-Risk Individuals Undergoing Pancreatic Surveillance. *J Am Soc Clin Oncol.* 37(13):1070-1080, 2019.
2. Akshintala VS, Talukdar R, Singh VK, Goggins M. The Gut Microbiome in Pancreatic Disease. *Clin Gastroenterol Hepatol.* 17(2):290-295, 2019.
3. Amato E, Mafficini A, Hirabayashi K, Lawlor RT, Fassan M, Vicentini C, Barbi S, Delfino P, Sikora K, Rusev B, Simbolo M, Esposito I, Antonello D, Pea A, Sereni E, Ballotta M, Maggino L, Marchegiani G, Ohike N, Wood LD, Salvia R, Klöppel G, Zamboni G, Scarpa A, Corbo V. Molecular alterations associated with metastases of solid pseudopapillary neoplasms of the pancreas. *J Pathol.* 247(1):123-134, 2019.
4. An S, Kim MJ, Sung YN, Kim YW, Song KB, Hwang DW, Kim SC, Hruban RH, Hong SM. Multiple KRAS mutations in the nonmucinous epithelial lining in the majority of mucinous cystic neoplasms of the pancreas. *Histopathology.* 75(4):559-567, 2019.
5. Baretti M, Pulluri B, Tsai HL, Blackford AL, Wolfgang CL, Laheru D, Zheng L, Herman J, Le DT, Narang AK, de Jesus-Acosta A. The significance of Ascites in patients with pancreatic ductal adenocarcinoma. A case-control study. *Pancreas.* 48(4):585-589, 2019.
6. Blair AB, Kim VM, Muth ST, Saung MT, Lokker N, Blouw B, Armstrong RD, Jaffee EM, Tsujikawa T, Coussens LM, He J, Burkhardt RA, Wolfgang CL, Zheng L. Dissecting the stromal signaling and regulation of myeloid cells and memory effector T cells in pancreatic cancer. *Clin Cancer Res.* 25(17):5351-5363, 2019.
7. Bouchard DM, Matunis MJ. A cellular and bioinformatics analysis of the SENP1 SUMO isopeptidase in pancreatic cancer. *J Gastrointest Oncol.* 10(5):821-830, 2019.
8. Carneiro F, Hruban RH. Genomic applications in pancreatic and gastric tumors. In *Cancer: Principles & Practices of Oncology.* DeVita VT, Lawrence TS, Rosenberg SA, eds. Wolters Kluwer, 11<sup>th</sup> ed., Chapter 54, 2019.
9. Chen F, Childs EJ, Mocci E, Bracci P, Gallinger S, Li D, Neale RE, Olson SH, Scelo G, Bamlet WR, Blackford AL, Borges M, Brennan P, Chaffee KG, Duggal P, Hassan MJ, Holly EA, Hung RJ, Goggins MG, Kurtz RC, Oberg AL, Orlow I, Yu H, Petersen GM, Risch HA, Klein AP. Analysis of heritability and genetic architecture of pancreatic cancer: a PanC4 study. *Cancer Epidemiol Biomarkers Prev.* 28(7):1238-1245, 2019.

10. Chu LC, Park S, Kawamoto S, Fouladi DF, Shayesteh S, Zinreich ES, Graves JS, Horton KM, Hruban RH, Yuille AL, Kinzler KW, Vogelstein B, Fishman EK. Utility of CT radiomics features in differentiation of pancreatic ductal adenocarcinoma from normal pancreatic tissue. *AJR Am J Roentgenol.* 213(2):349-357, 2019.
11. Chu LC, Park S, Kawamoto S, Wang Y, Zhou Y, Shen W, Zhu Z, Xia L, Liu F, Yu Q, Fouladi DF, Shayesteh S, Zinreich E, Graves JS, Horton KM, Yuille AL, Hruban RH, Kinzler KW, Vogelstein B, Fishman EK. Application of deep learning to pancreatic cancer detection: lessons learned from our initial experience. *J Am Coll Radiol.* 16(9 Pt B):1338-1342, 2019.
12. Eissa MA, Lerner L, Abdelfatah E, Shankar N, Canner JK, Hasan NM, Yaghoobi V, Huang B, Kerner Z, Takaesu F, Wolfgang C, Kwak R, Ruiz M, Tam M, Pisanic TR, Iacobuzio-Donue CA, Hruban RH, He J, Wang TH, Wood LD, Sharma A, Ahuja N. Promoter methylation of ADAMTS1 and BNC1 as potential biomarkers for early detection of pancreatic cancer in blood. *Clin Epigenetics.* 11(1):59. doi: 10.1186/s13148-019-0650-0, 2019.
13. Engle DD, Hitiac H, Rivera KD, Pommier A, Shalen S, Oni TC, Alagesan B, Lee EJ, Yao MA, Lucito MS, Spielman B, Da Silva B, Schoepfer C, Wright K, Creighton B, Afinowicz L, Yu KH, Grutzmann R, Aust D, Gimotty PA, Pollard KS, Hruban RH, Goggins MG, Pilarsky C, Park Y, Pappin DJ, Hollingsworth MA, Tuveson DA. The glycan CA19-9 promotes pancreatitis and pancreatic cancer in mice. *Science.* 364(6446):1156-1162, 2019.
14. Fischer CG, Beleva Guthrie V, Braxton AM, Zheng L, Wang P, Song Q, Griffin JF, Chianchiano PE, Hosoda W, Niknafs N, Springer S, Dal Molin M, Masica D, Scharpf RB, Thompson ED, He J, Wolfgang CL, Hruban RH, Roberts NJ, Lennon AM, Jiao Y, Karchin R, Wood LD. Intraductal papillary mucinous neoplasms arise from multiple independent clones, each with distinct mutations. *Gastroenterology.* 157(4):1123-1137, 2019.
15. Gemenetzis G, Groot VP, Blair AB, Laheru DA, Zheng L, Narang AK, Fishman EK, Hruban RH, Yu J, Burkhardt RA, Cameron JL, Weiss MJ, Wolfgang CL, He J. Survival in locally advanced pancreatic cancer after neoadjuvant therapy and surgical resection. *Ann Surg.* 270(2):340-347, 2019.
16. Groot VP, Mosier S, Javed AA, Teinor JA, Gemenetzis G, Ding D, Haley LM, Yu J, Burkhardt RA, Hasanain A, Debeljak M, Kamiyama H, Narang A, Laheru DA, Zheng L, Lin MT, Gocke CD, Fishman EK, Hruban RH, Goggins MG, Molenaar IQ, Cameron JL, Weiss MJ, Velculescu VE, He J, Wolfgang CL, Eshleman JR. Circulating tumor DNA as a clinical test in resected pancreatic cancer. *Clin Cancer Res.* 25(16):4973-4984, 2019.
17. Groot VP, Gemenetzis G, Blair AB, Rivero-Soto RJ, Yu J, Javed AA, Burkhardt RA, Rinkes IHMB, Molenaar IQ, Cameron JL, Weiss MJ, Wolfgang CL, He J. Defining and predicting early recurrence in 957 patients with resected pancreatic ductal adenocarcinoma. *Ann Surg.* 269(6):1154-1162, 2019.
18. He HJ, Stein EV, Konigshofer Y, Forbes T, Tomson FL, Garlick R, Yamada E, Godfrey T, Abe T, Tamura K, Borges M, Goggins M, Elmore S, Gulley ML, Larson JL, Ringel L, Haynes BC,

- Karlovich C, Williams PM, Garnett A, Ståhlberg A, Filges S, Sorbara L, Young MR, Srivastava S, Cole KD. Multilaboratory Assessment of a New Reference Material for Quality Assurance of Cell-Free Tumor DNA Measurements. *J Mol Diagn.* 21(4):658-676, 2019.
19. Hong SM, Noë M, Hruban CA, Thompson ED, Wood LD, Hruban RH. A “clearer” view of pancreatic pathology: a review of tissue clearing and advanced microscopy. *Adv Anat Pathol.* 26(1):31-39, 2019.
20. Hruban RH, Lillemoe KD. Screening for pancreatic cancer gets a D, but the student is improving. *JAMA Surg.* 154(9):795-797, 2019.
21. Hruban RH, Gaida MM, Thompson E, Hong SM, Noë M, Brosens LA, Jongepier M, Offerhaus GJ, Wood LD. Why is pancreatic cancer so deadly? The pathologist’s view. *J Pathol.* 248(2):131-141, 2019.
22. Hruban RH. Is the early detection of pancreatic cancer possible? It is good news, bad news. *Pancreas.* 48(5):591-593, 2019.
23. Hruban RH, Klimstra DS, Zamboni G, Klöppel G. A semicentennial of pancreatic pathology: the genetic revolution is here, but don’t throw the baby out with the bath water! *Hum Pathol.* 95:99-112, 2019.
24. Hutchings D, Jiang Z, Skaro M, Weiss MJ, Wolfgang CL, Makary MA, He J, Cameron JL, Zheng L, Klimstra DS, Brand RE, Singhi AD, Goggins M, Klein AP, Roberts NJ, Hruban RH. Histomorphology of pancreatic cancer in patients with inherited ATM serine/threonine kinase pathogenic variants. *Mod Pathol.* 32(12):1806-1813, 2019.
25. Jurcak N, Zheng L. Signaling in the microenvironment of pancreatic cancer: transmitting along the nerve. *Pharmacol Ther.* 200:126-134, 2019.
26. Kim SJ, Kim MJ, Han JS, Sung YN, An S, Lee JH, Song KB, Hwang DW, Lee SS, Cho HJ, Kim SC, Eshleman JR, Hong SM. Prediction of recurrence with KRAS mutational burden using ultrasensitive digital polymerase chain reaction of radial resection margin of resected pancreatic ductal adenocarcinoma. *Pancreas.* 48:400-411, 2019.
27. Klein AP. Pancreatic cancer: a growing burden. *Lancet Gastroenterol Hepatol.* 4(12):895-896, 2019.
28. Konings IC, Canto MI, Almario JA, Harinck F, Saxena P, Lucas AL, Kastrinos F, Whitcomb DC, Brand RE, Lachter J, Malleo G, Paiella S, Syngal S, Saltzman JR, Stoffel EM, van Hooft JE, Hruban RH, Poley JW, Fockens P, Goggins MG, Bruno JM, CAPs Consortium. Surveillance for pancreatic cancer in high-risk individuals. *BJS Open.* 3(5):656-665, 2019.
29. Kuboki Y, Fischer CG, Beleva Guthrie V, Huang W, Yu J, Chianchiano P, Hosoda W, Zhang H, Zheng L, Shao X, Thompson ED, Waters K, Poling J, He J, Weiss MJ, Wolfgang CL,

Goggins MG, Hruban RH, Roberts NJ, Karchin R, Wood LD. Single-cell sequencing defines genetic heterogeneity in pancreatic cancer precursor lesions. *J Pathol.* 247(3):347-356, 2019.

30. Kudo Y, Kohi S, Hirata K, Goggins M, Sato N. Hyaluronan activated-metabolism phenotype (HAMP) in pancreatic ductal adenocarcinoma. *Oncotarget.* 10(54):5592-5604, 2019.
31. Lawlor RT, Veronese N, Nottegar A, Malleo G, Smith L, Demurtas J, Cheng L, Wood LD, Silvestris N, Salvia R, Scarpa A, Luchini C. Prognostic role of high-grade tumor budding in pancreatic ductal adenocarcinoma: a systematic review and meta-analysis with a focus on epithelial to mesenchymal transition. *Cancers (Basel).* 11(1):113. doi: 10.3390/cancers11010113, 2019.
32. Lennon AM, Hruban RH, Klein AP. Screening for pancreatic cancer—is there hope? *JAMA Intern Med.* 2019. Online ahead of print.
33. Luchini C, Veronese N, Nottegar A, Riva G, Pilati C, Mafficini A, Stubbs B, Simbolo M, Mombello A, Corbo V, Cheng L, Yachida S, Wood LD, Lawlor RT, Salvia R, Scarpa A. Perineural invasion is a strong prognostic moderator in ampulla of vater carcinoma. *Pancreas.* 48(2):70-76, 2019.
34. Luchini C, Veronese N, Nottegar A, Cappelletti V, Diadone MG, Smith L, Parris C, Brosens LA, Caruso MG, Cheng L, Wolfgang CL, Wood LD, Milelia M, Salvia R, Scarpa A. Liquid biopsy as surrogate for tissue for molecular profiling in pancreatic cancer: a meta-analysis towards precision medicine. *Cancers (Basel).* 11(8):1152. doi: 10.3390/cancers11081152, 2019.
35. Luchini C, Pea A, Yu J, He J, Salvia R, Riva G, Weiss MJ, Bassi C, Cameron JL, Hruban RH, Goggins M, Wolfgang CL, Scarpa A, Wood LD, Lawlor RT. Pancreatic cancer arising in the remnant pancreas is not always a relapse of the preceding primary. *Mod Pathol.* 32(5):659-665, 2019.
36. Maggino L, Schmidt A, Kading A, Westermark S, Ceppa EP, Falconi M, Javed AA, Landoni L, Pergolini I, Perinel J, Vollmer CM, Sund M, Gaujoux S. Reappraisal of a 2-cm cut-off size for the management of cystic pancreatic neuroendocrine neoplasms. *Ann Surg.* 2019. Online ahead of print.
37. Matsushita Y, Smith B, Delannoy M, Trujillo MA, Chianchiano P, McMillan R, Kamiyama H, Liang H, Thompson ED, Hruban RH, Matsui W, Wood LD, Roberts NJ, Eshleman JR. Biphenotypic differentiation of pancreatic cancer in 3-dimensional culture. *Pancreas.* 48(9):1225-1231, 2019.
38. Mocci E, Debeljak M, Klein AP, Eshleman JR. A new fast phasing method based on haplotype subtraction. *J Mol Diag.* 21(3):427-436, 2019.

39. Nakamura S, Sadakari Y, Ohtsuka T, Okayama T, Nakashima Y, Gotoh Y, Saeki K, Mori Y, Nakata K, Miyasaka Y, Onishi H, Oda Y, Goggins M, Nakamura M. Pancreatic juice exosomal microRNAs as biomarkers for detection of pancreatic ductal adenocarcinoma. *Ann Surg Oncol.* 26(7):2104-2111, 2019.
40. Nöe M, Hackeng WM, de Leng WJ, Vergeer M, Vleggaar FP, Morsink FH, Wood LD, Hruban RH, Offerhaus GJ, Brosens LA. Well-differentiated pancreatic neuroendocrine tumor in a patient with familial atypical multiple mole melanoma syndrome (FAMMM). *Am J Surg Pathol.* 43(9):1297-1302, 2019.
41. Pandey P, Pandey A, Luo Y, Ghasabeh MA, Khoshpouri P, Ameli S, Lennon AM, Canto M, Hruban RH, Goggins M, Wolfgang C, Kamel IR. Follow-up of incidentally detected pancreatic cystic neoplasms: do baseline MRI and CT features predict cyst growth? *Radiology.* 292(3):647-654, 2019.
42. Poruk KE, Griffin J, Makary MA, He J, Cameron JL, Weiss MJ, Wood LD, Goggins M, Wolfgang CL. Blood type as a predictor of high-grade dysplasia and associated malignancy in patients with Intraductal papillary mucinous neoplasms. *J Gastrointest Surg.* 23(3):477-483, 2019.
43. Pu N, Gao S, Yin H, Li JA, Wu W, Fang Y, Zhang L, Rong Y, Xu X, Wang D, Kuang T, Jin D, Yu J, Lou W. Cell-intrinsic PD-1 promotes proliferation in pancreatic cancer by targeting CYR61/CTGF via the hippo pathway. *Cancer Lett.* 460:42-53, 2019.
44. Pu N, Yin L, Habib JR, Gao S, Hu H, Zhu Y, Wu Y, Yu J, Lou W. Optimized modification of the eighth edition of AJCC TNM staging system for resected pancreatic ductal adenocarcinoma. *Future Oncol.* 15(30):3457-3465, 2019.
45. Pulvienti A, Javed AA, Landoni L, Jamieson NG, Chou JF, Miotto M, He J, Gonen M, Pea A, Tang LH, Nessi C, Cingarlini S, D'Angelica MI, Gill A, Kingham TP, Scarpa A, Weiss MJ, Balachandran WP, Samra JW, Cameron JL, Jarnagin WR, Salvia R, Wolfgang CL, Allen PJ, Bassi C. Multi-institutional development and external validation of a nomogram to predict recurrence after curative resection of pancreatic neuroendocrine tumors. *Ann Surg.* 2019. Online ahead of print.
46. Reiter JG, Baretti M, Gerold JM, Makohon-Moore AP, Daud A, Iacobuzio-Donahue CA, Azad NS, Kinzler KW, Nowak MA, Vogelstein B. An analysis of genetic heterogeneity in untreated cancer. *Nat Reviews.* 19(11):639-650, 2019.
47. Saung MT, Ke W, Howard GP, Zheng L, Mao HQ. Particulate carrier systems as adjuvants for cancer vaccines. *Biomater. Sci.* 7(12):4873-4887, 2019.
48. Skaro M, Nanda N, Gautheir C, Felsenstein M, Jiang Z, Qiu M, Shindo K, Yu J, Hutchings D, Javed AA, Beckman R, He J, Wolfgang CL, Thompson E, Hruban RH, Klein AP, Goggins M, Wood LD, Roberts NJ. Prevalence of germline mutations associated with cancer risk

in patients with Intraductal papillary mucinous neoplasms. *Gastroenterology*. 156(6):1905-1913, 2019.

49. Springer S, Masica DL, Dal Molin M, Douville C, Thoburn CJ, Afsari B, Li L, Cohen JD, Thompson E, Allen PJ, Klimstra DS, Schattner MA, Schmidt CM, Yip-Schneider M, Simpson RE, Fernandez-Del Castillo C, Mino-Kenudson M, Brugge W, Brand RE, Singhi AD, Scarpa A, Lawlor R, Salvia R, Zamboni G, Hong SM, Hwang DW, Jang JY, Kwon W, Swan N, Geoghegan J, Falconi M, Crippa S, Doglioni C, Paulino J, Schulick RD, Edil BH, Park W, Yachida S, Hijioka S, van Hooft J, He J, Weiss MJ, Burkhardt R, Makary M, Canto MI, Goggins MG, Ptak J, Dobbyn L, Schaefer J, Sillman N, Popoli M, Klein AP, Tomasetti C, Karchin R, Papadopoulos N, Kinzler KW, Vogelstein B, Wolfgang CL, Hruban RH, Lennon AM. A multimodality test to guide the management of patients with a pancreatic cyst. *Sci Transl Med*. 11(501):eaav4772. doi:10.1126/scitranslmed.aav4772, 2019.
50. Steranka JP, Tang Z, Grivainis M, Huang CR, Payer LM, Rego FO, Miller TL, Galante PA, Ramaswani S, Heguy D, Boeke JD, Burns KH. Transposon insertion profiling by sequencing (TIPseq) for mapping LINE-1 insertions in the human genome. *Mob DNA*. 10:8. doi:10.1186/s13100-019-0148-5, 2019.
51. Tomasetti C, Poling J, Roberts NJ, London NR, Pittman ME, Haffner MC, Rizzo A, Baras A, Karim B, Kim A, Heaphy CM, Meeker AK, Hruban RH, Iacobuzio-Donahue CA, Vogelstein B. Cell division rates decrease with age, providing a potential explanation for the age-dependent deceleration in cancer incidence. *Proc Natl Acad Sci U S A*. 116(41):20482-20488, 2019.
52. Walsh N, Zhang H, Hyland PL, Yang Q, Mocci E, Zhang M, Childs EJ, Collins I, Wang Z, Arslan AA, Beane-Freeman L, Bracci PM, Brennan P, Canzian F, Duell EJ, Gallinger S, Giles GG, Goggins M, ... Jacobs EJ, Petersen GM, Wolpin BM, Risch HA, Amundadottir LT, Yu K, Klein AP, Stolzenberg-Solomon RZ. Agnostic pathway/gene set analysis of genome-wide association data identifies associations for pancreatic cancer. *J Natl Cancer Inst*. 111(6):557-567, 2019.
53. Wong C, Chen F, Alirezaie N, Wang Y, Cuggia A, Borgida A, Holter S, Lenko T, Domecq C; Alzheimer's Disease Neuroimaging Initiative, Petersen GM, Syngal S, Brand R, Rustgi AK, Cote ML, Stoffel E, Olson SH, Roberts NJ, Akbari MR, Majewski J, Klein AP, Greenwood CMT, Gallinger S, Zogopoulos G. A region-based gene association study combined with a leave-one-out sensitivity analysis identifies SMG1 as a pancreatic cancer susceptibility gene. *PloS Genet*. 15(8):e1008344. doi: 10.1371/journal.pgen.1008344, 2019.
54. Wood LD, Yurgelun MB, Goggins MG. Genetics of familial and sporadic pancreatic cancer. *Gastroenterology*. 156(7):2041-2055, 2019.
55. Yoshida T, Hijioka S, Hosoda W, et al. Surgery for pancreatic neuroendocrine tumor G3 and carcinoma G3 should be considered separately. *Ann Surg Oncol*. 26(5):1385-1393, 2019.

## Papers from the Sol Goldman Pancreatic Cancer Research Center

### 2018

1. Attiyeh MA, Fernández-Del Castillo C, Al Efishat M, Eaton AA, Gönen M, Batts R, Pergolini I, Rezaee N, Lillemoe KD, Ferrone CR, Mino-Kenudson M, Weiss MJ, Cameron JL, Hruban RH, D'Angelica MI, DeMatteo RP, Kingham TP, Jarnagin WR, Wolfgang CL, Allen PJ. Development and validation of a multi-institutional preoperative nomogram for predicting grade of dysplasia in Intraductal papillary mucinous neoplasms (IPMNs) of the pancreas: a report from the Pancreatic Cancer Consortium. *Ann Surg.* 267(1):157-163, 2018.
2. Beger, H, Warshaw A, Hruban RH, Büchler M, Lerch M, Neoptolemos J, Shimosegawa T, Whitcomb D (eds). *The Pancreas: an integrated textbook of basic science, medicine, and surgery.* 3<sup>rd</sup> edition. John Wiley & Sons, Inc., 2018.
3. Blair AB, Groot VP, Gemenetzis G, Wei J, Cameron JL, Weiss MJ, Goggins M, Wolfgang CL, Yu J, He J. BRCA1/BRCA2 germline mutation carriers and sporadic pancreatic ductal adenocarcinoma. *J Am Coll Surg.* 226(4):630-637, 2018.
4. Canto MI, Almario JA, Schulick RD, Yeo CJ, Klein A, Blackford A, Shin EJ, Sanyal A, Yenokyan G, Lennon AM, Kamel IR, Fishman EK, Wolfgang C, Weiss M, Hruban RH, Goggins M. Risk of neoplastic progression in individuals at high risk for pancreatic cancer undergoing long-term surveillance. *Gastroenterology.* 155(3):740-751, 2018.
5. Chu LC, Goggins MG, Fishman EK. Diagnosis and detection of pancreatic cancer. *Cancer J.* 23(6):333-342, 2018.
6. Cohen JD, Li L, Wang Y, Thoburn C, Afsari B, Danilova L, Douville C, Javed AA, Wong F, Mattox A, Hruban RH, Wolfgang CL, Goggins MG, Dal Molin M, Wang TL, Roden R, Klein AP, Ptak J, Dobbyn L, Schaefer J, Silliman N, Popoli M, Vogelstein JT, Browne JD, Schoen RE, Brand RE, Tie J, Gibbs P, Wong HL, Mansfield AS, Jen J, Hanash SM, Falconi M, Allen PJ, Zhou S, Bettegowda C, Diaz LA Jr, Tomasetti C, Kinzler KW, Vogelstein B, Lennon AM, Papadopoulos N. Detection and localization of surgically resectable cancers with a multi-analyte blood test. *Science.* 359(6378):926-930, 2018.
7. Daamen LA, Groot VP, Goense L, Wessels FJ, Borel Rinkes IH, Intven MPW, van Santvoort HC, Molenaar Q. The diagnostic performance of CT versus FDG PET-CT for the detection of recurrent pancreatic cancer: a systemic review and meta-analysis. *Eur J Radiol.* 106:128-136, 2018.
8. Debeljak M, Noë M, Riel SL, Haley LM, Norris AL, Anderson DA, Adams EM, Suenaga M, Beierl KF, Lin MT, Goggins MG, Gocke CD, Eshleman JR. Validation strategy for ultrasensitive mutation detection. *Mol Diagn Ther.* 22(5):603-611, 2018.

9. Deng Y, Tu H, Pierzynski JA, Miller ED, Gu X, Huang M, Chang DW, Ye Y, Hildebrandt MAT, Klein AP, Zhao R, Lippman SM, Wu X. Determinants and prognostic value of quality of life in patients with pancreatic ductal adenocarcinoma. *Eur J Cancer*. 92:20-32, 2018.
10. Douville C, Springer S, Kinde I, Cohen JD, Hruban RH, Lennon AM, Papadopoulos N, Kinzler KW, Vogelstein B, Karchin R. Detection of aneuploidy in patients with cancer through amplification of long interspersed nucleotide elements (LINEs). *Proc Natl Acad Sci. U S A*. 115(8):187-186, 2018.
11. Efshat MA, Atiyeh MA, Eaton AA, Gönen, M, Prosser D, Lokshin AE, Fernández-del Castillo C, Lillemoe KD, Ferrone CR, Pergolini I, Mino-Kenudson M, Rezaee N, Dal Molin M, Weiss MJ, Cameron JL, Hruban RH, D'Angelica MI, Kingham PI, DeMatteo RP, Jarnagin WR, Wolfgang CL, Allen PJ. Multi-institutional validation study of pancreatic cyst fluid protein analysis for prediction of high-risk Intraductal papillary mucinous neoplasms of the pancreas. *Ann Surg*. 268(2):340-347, 2018.
12. Felsenstein M, Hruban RH, Wood LD. New developments in the molecular mechanisms of pancreatic tumorigenesis. *Adv Anat Pathol*. 23:131-142, 2018.
13. Felsenstein M, Noë M, Masica DL, Hosoda W, Chianchiano P, Fischer CG, Lionheart G, Brosens LAA, Pea A, Yu J, Gemenetzis G, Groot VP, Makary MA, He J, Weiss MJ, Cameron JL, Wolfgang CL, Hruban RH, Roberts NJ, Karchin R, Goggins MG, Wood LD. IPMNs with co-occurring invasive cancers: neighbours but not always relatives. *Gut*. 67(9):1652-1662, 2018.
14. Fischer CG, Wood LD. From somatic mutation to early detection: insights from molecular characterization of pancreatic cancer precursor lesions. *J Pathol*. 246(4):395-404, 2018.
15. Gallia GL, Zhang M, Ning Y, Haffner MC, Batista D, Binder ZA, Bishop JA, Hann CL, Hruban RH, Ishii M, Klein AP, Reh DD, Rooper LM, Salmasi V, Tamargo RJ, Wang Q, Williamson T, Zhao T, Zou Y, Meeker AK, Agrawal N, Vogelstein B, Kinzler KW, Papadopoulos N, Bettegowda C. Genomic analysis identifies frequent deletions of Dystrophin in olfactory neuroblastoma. *Nat Commun*. 9(1):5410. doi: 10.1038/s41467-018-07578-z, 2018.
16. Gemenetzis G, Groot VP, Yu J, Ding D, Teinor JA, Javed AA, Wood LD, Burkhardt RA, Cameron JL, Makary MA, Weiss MJ, He J, Wolfgang CL. Circulating tumor cells dynamics in pancreatic adenocarcinoma correlate with disease status: results of the prospective CLUSTER study. *Ann Surg*. 268(3):408-420, 2018.
17. Goggins M, Lippman SM, Constantinou PE, Jacks T, Petersen GM, Syngal S, Maitra A. Intercepting pancreatic cancer: our dream team's resolve to stop pancreatic cancer. *Pancreas*. 47(10):1175-1176, 2018.

18. Gordon-Dseagu VL, Devesa SS, Goggins M, Stolzenberg-Solomon R. Pancreatic cancer incidence trends: evidence from the Surveillance, Epidemiology and End Results (SEER) population-based data. *Int J Epidemiol.* 47(2):427-439, 2018.
19. Grant RC, Denroche RE, Borgida A, Virtanen C, Cook N, Smith AL, Connor AA, Wilson JM, Peterson G, Roberts NJ, Klein AP, Grimmond SM, Biankin A, Cleary S, Moore M, Lemire M, Zogopoulous G, Stein L, Gallinger S. Exome-wide association study of pancreatic cancer risk. *Gastroenterology.* 154(3):719-722, 2018.
20. Groot VP, Gemenetzis G, Blair AB, Ding D, Javed AA, Burkhardt RA, Yu J, Borel Rinkes IH, Molenaar IQ, Cameron JL, Fishman EK, Hruban RH, Weiss MJ, Wolfgang CL, He J. Implications of the pattern of disease recurrence on survival following pancreatectomy for pancreatic adenocarcinoma. *Ann Surg Oncol.* 25(8):2475-2483, 2018.
21. Groot VP, Wolfgang CL, He J. ASO Author reflections: do distinct patterns of recurrence impact the prognosis of patients with resected pancreatic ductal adenocarcinoma? *Ann Surg Oncol.* 25(Suppl 3):806-807, 2018.
22. Groot VP, Thakker SS, Gemenetzis G, Nöe M, Javed AA, Burkhardt RA, Noveiry BB, Cameron JL, Weiss MJ, VandenBussche CJ, Fishman EK, Hruban RH, Wolfgang CL, Lennon AM, He J. Lessons learned from 29 lymphoepithelial cysts of the pancreas: institutional experience and review of the literature. *HPB (Oxford).* 20(7):612-620, 2018.
23. Groot VP, Rezaee N, Wu W, Cameron JL, Fishman EK, Hruban RH, Weiss MJ, Zheng L, Wolfgang CL, He J. Patterns, timing, and predictors of recurrence following pancreatectomy for pancreatic ductal adenocarcinoma. *Ann Surg.* 267(5):936-945, 2018.
24. Hata T, Suenaga M, Marchionni L, Macgregor-Das A, Yu J, Shindo K, Tamura K, Hruban RH, Goggins M. Genome-wide somatic copy number alterations and mutations in high-grade pancreatic intraepithelial neoplasia. *Am J Pathol.* 188(7):1723-1733, 2018.
25. Hata T, dal Molin M, McGregor-Das A, Song TJ, Wolfgang, Eshleman JR, Hruban RH, Goggins M. Simple detection of telomere fusions in pancreatic cancer, intraductal papillary mucinous neoplasm, and pancreatic cyst fluid. *J Mol Diagn.* 20(1):46-55, 2018.
26. He J, Blair AB, Groot VP, Javed AA, Burkhardt RA, Gemenetzis G, Hruban RH, Waters KM, Poling J, Zheng L, Laheru D, Herman JM, Makary MA, Weiss MJ, Cameron JL, Wolfgang CL. Is a pathological complete response following neoadjuvant chemoradiation associated with prolonged survival in patients with pancreatic cancer? *Ann Surg.* 268(1):1-8, 2018.
27. Herman JM, Jabbour SK, Lin SH, Deek MP, Hsu CC, Fishman EK, Kim S, Cameron JL, Chekmarova M, Laheru DA, Narang AK, Pawlik TM, Hruban RH, Wolfgang CL, Iacobuzio-Donahue CA. Smad4 loss correlates with higher rates of local and distant failure in pancreatic adenocarcinoma patients receiving adjuvant chemoradiation. *Pancreas.* 47(2):208-212, 2018.

28. Hutchings D, Waters KM, Weiss MJ, Wolfgang CL, Makary MA, He J, Cameron JL, Wood LD, Hruban RH. Cancerization of the pancreatic ducts: demonstration of a common and under-recognized process using immunolabeling of paired duct lesions and invasive pancreatic ductal adenocarcinoma for p53 and Smad4 expression. *Am J Surg Pathol*. 42(11):1566-1561, 2018.
29. Ideno N, Yamaguchi H, Ghosh B, Gupta S, Okumura T, Steffen DJ, Fisher DG, Wood LD, Singhi AD, Nakamura M, Gutkind JS, Maitra A. GNAS<sup>R201C</sup> induces pancreatic cyst fluid in mice that express activated KRAS by inhibiting YAP1 signaling. *Gastroenterology*. 155(5):1593-1607, 2018.
30. Javed AA, Bleich K, Bagante F, He J, Weiss MJ, Wolfgang CL, Fishman EK. Pancreaticoduodenectomy with venous resection and reconstruction: current surgical techniques and associated postoperative imaging findings. *Abdom Radiol*. 43(5):1193-1203, 2018.
31. Kawamoto S, Fuld MK, Laheru D, Huang P, Fishman EK. Assessment of iodine uptake by pancreatic cancer following chemotherapy using dual-energy CT. *Abdom Radio*. 43(2):445-456, 2018.
32. Keutgen XM, Kumar S, Gara S, Boufraqech M, Agarwal S, Hruban RH, Nilubol N, Quezado M, Finney R, Cam M, Kebebew E. Transcriptional alterations in hereditary and sporadic nonfunctioning pancreatic neuroendocrine tumors according to genotype. *Cancer*. 24(3):636-647, 2018.
33. Klein AP, et al. Genome-wide meta-analysis identifies five new susceptibility loci for pancreatic cancer. *Nat Commun*. 9(1):556. doi:10.1038/s41467-018-02942-5, 2018.
34. Kwon JH, Kim HJ, Park DH, Lee YJ, Heaphy CM, Klöppel G, Hruban RH, Hong SM. Incidentally detected pancreatic neuroendocrine microadenoma with lymph node metastasis. *Virchows Arch*. 473(5):649-653, 2018.
35. Luchini C, Cros J, Pea A, Pilati C, Veronese N, Rusev B, Capelli P, Mafficini A, Nottegar A, Brosens LAA, Noë M, Offerhaus GJA, Chianchiano P, Riva G, Piccoli P, Parolini C, Malleo G, Lawlor RT, Corbo V, Sperandio N, Barbareschi M, Fassan M, Cheng L, Wood LD, Scarpa A. PD-1, PD-L1, and CD163 in pancreatic undifferentiated carcinoma with osteoclast-like giant cells: expression patterns and clinical implications. *Hum Pathol*. 81:157-165, 2018.
36. Makohon-Moore AP, Matsukuma K, Zhang M, Reiter JG, Gerold JM, Jiao Y, Sikkema L, Attiyeh MA, Yachida S, Sandone C, Hruban RH, Klimstra DS, Papadopoulos N, Nowak MA, Kinzler KW, Vogelstein B, Iacobuzio-Donahue CA. Precancerous neoplastic cells can move through the pancreatic ductal system. *Nature*. 561(7722):201-205, 2018.

37. Morales-Oyarvide V, Mino-Kenudson M, Ferrone CR, Warshaw AL, Lillemoe KD, Sahani DV, Pergolini I, Attiyeh MA, Al Efshat M, Rezaee N, Hruban RH, He J, Weiss MJ, Allen PJ, Wolfgang CL, Fernandez-del Castillo C. Intraductal papillary mucinous neoplasm of the pancreas in young patients: tumor biology, clinical features, and survival outcomes. *J Gastrointest Surg.* 22(2):226-234, 2018.
38. Noë M, Rezaee N, Asrani K, Skaro M, Groot VP, Wu PH, Olson MT, Hong SM, Kim SJ, Weiss MJ, Wolfgang CL, Makary MA, He J, Cameron JL, Wirtz D, Roberts NJ, Offerhaus GJA, Brosens LAA, Wood LD, Hruban RH. Immunolabeling of cleared human pancreata provides insights into three-dimensional pancreatic anatomy and pathology. *Am J Pathol.* 188(7):1530-1535, 2018.
39. Noë M, Pea A, Luchini C, Felsenstein M, Barbi S, Bhajee F, Yonescu R, Ning Y, Adsay NV, Zamboni G, Lawlor RT, Scarpa A, Offerhaus GJA, Brosens LAA, Hruban RH, Roberts NJ, Wood LD. Whole-exome sequencing of duodenal neuroendocrine tumors in patients with neurofibromatosis type 1. *Mod Pathol.* 31(10):1532-1538, 2018.
40. Pandey P, Pandey A, Varzaneh FN, Ghasabeh MA, Fouladi D, Khoshpouri P, Shao N, Zarghampour M, Hruban RH, Canto M, O'Briain-Lennon AM, Kamel IR. Are pancreatic IPMN volumes measure on MRI images more reproducible than diameters? An assessment in a large single-institution cohort. *Eur Radiol.* 28(7):2790-2800, 2018.
41. Raman A, Lennon AM. Cyst fluid biomarkers – diagnosis and prediction of malignancy for cystic lesions of the pancreas. *Visc Med.* 34(3):178-181, 2018.
42. Rao AD, Liu Y, von Eyben R, Hsu CC, Hu C, Rosati LM, Parekh A, Ng K, Hacker-Prietz A, Zheng L, Pawlik TM, Laheru DA, Jaffee EM, Weiss MJ, Le DT, Hruban RH, De Jesus-Acosta A, Wolfgang CL, Narang AK, Chang DT, Koong AC, Herman JM. Multiplex proximity ligation assay to identify potential prognostic biomarkers for improved survival in locally advanced pancreatic cancer patients treated with stereotactic body radiation therapy. *Int J Radiat Oncol Biol Phys.* 100(2):486-489, 2018.
43. Resar L, Chia L, Xian L. Lessons from the crypt: HMGA1-amping up Wnt for stem cells and tumor progression. *Cancer Res.* 78(8):1890-1897, 2018.
44. Suenaga M, Yu J, Shindo K, Tamura K, Almario JA, Zaykoski C, Witmer PD, Fesharakizadeh S, Borges M, Lennon AM, Shin EJ, Canto MI, Goggins M. Pancreatic juice mutation concentrations can help predict the grade of dysplasia in patients undergoing pancreatic surveillance. *Clin Cancer Res.* 24(12):2963-2974, 2018.
45. Suenaga M, Dudley B, Karloski E, Borges M, Canto MI, Brand RE, Goggins M. The effect of pancreatic juice collection time on the detection of KRAS mutations. *Pancreas.* 47(1):35-39, 2018.
46. Tamura K, Yu J, Hata T, Suenaga M, Shindo K, Abe T, MacGregor-Das A, Borges M, Wolfgang CL, Weiss MJ, He J, Canto MI, Petersen GM, Gallinger S, Syngal S, Brand RE,

Rustgi A, Olson SH, Stoffel E, Cote ML, Zogopoulos G, Potash JB, Goes FS, McCombie RW, Zandi PP, Pirooznia M, Kramer M, Parla J, Eshleman JR, Roberts NJ, Hruban RH, Klein AP, Goggins M. Mutations in the pancreatic secretory enzymes *CPA1* and *CPB1* are associated with pancreatic cancer. Proc Natl Acad Sci U S A. 115(18):4767-4772, 2018.

47. Young MR, Wagner PD, Ghosh S, Rinaudo JA, Baker SG, Zaret KS, Goggins M, Srivastava S. Validation of biomarkers for early detection of pancreatic cancer: summary of The Alliance of Pancreatic Cancer Consortia for Biomarkers for Early Detection Workshop. Pancreas. 47(2):135-141, 2018.

## Papers from the Sol Goldman Pancreatic Cancer Research Center

### 2017

1. Allen PJ, Kuk D, Fernandez-del Castillo C, Basturk O, Wolfgang CL, Cameron JL, Lillemoe KD, Ferrone DR, Morales-Oyarvide V, He J, Weiss MJ, Hruban RH, Gönen M, Klimstra DS, Mino-Kenudson M. Multi-institutional validation study of the American Joint Commission on Cancer (8<sup>th</sup> Edition) changes for T and N staging in patients with pancreatic adenocarcinoma. *Ann Surg.* 265(1):185-191, 2017.
2. Ayars M, Eshleman J, Goggins M. Susceptibility of ATM-deficient pancreatic cancer cells to radiation. *Cell Cycle.* 16(10):991-999, 2017.
3. Ayars M, O'Sullivan E, Macgregor-Das A, Shindo K, Kim H, Borges M, Yu J, Hruban RH, Goggins M. IL2RG, identified as overexpressed by RNA-seq profiling of pancreatic intraepithelial neoplasia, mediates pancreatic cancer growth. *Oncotarget.* 8(48):83370-83383, 2017.
4. Balachandran VP, Luksza M, Zhao JN...Australian Pancreatic Cancer Genome Initiative...Leach SD. Identification of unique neoantigen qualities in long-term survivors of pancreatic cancer. *Nature.* 551(7681):512-516, 2017.
5. Blair AB, Burkhardt RA, Griffin JF, Miller JA, Weiss MJ, Cameron JL, Wolfgang CL, He J. Long-term survival after resection of sarcomatoid carcinoma of the pancreas: an updated experience. *J Surg Res.* 219:238-243, 2017.
6. Cohen JD, Javed AA, Thoburn C...Goggins MG, Hruban RH, Wolfgang CL, Klein AP, Tomasetti C, Papadopoulos N, Kinzler KW, Vogelstein B, Lennon AM. Combined circulating tumor DNA and protein biomarker-based liquid biopsy for the earlier detection of pancreatic cancer. *Proc Natl Acad Sci U S A.* 114(38):10202-10207, 2017.
7. Chu LC, Singhi AD, Haroun RR, Hruban RH, Fishman EK. He many faces of pancreatic serous cystadenoma: radiologic and pathologic correlation. *Diagn Inter Imaging.* 98(3):191-202, 2017.
8. dal Molin M, Blackford AL, Siddiqui A, Brant A, Cho C, Rezaee N, Yu J, He J, Weiss M, Hruban RH, Wolfgang C, Goggins M. Duodenal involvement is an independent prognostic factor for patients with surgically resected pancreatic ductal adenocarcinoma. *Ann Surg Oncol.* 24(8):2379-2386, 2017.
9. Das AM, Goggins M. Diagnostic biomarkers. In *Pancreatic Cancer.* Neopolemos JP, eds., Springer. 2017.
10. Debeljak M, Mocci E, Morrison MC, Pallavajjalla A, Beierl K, Amiel M, Noë M, Wood LD, Lin MT, Gocke CD, Klein AP, Fuchs EJ, Jones RJ, Eshleman JR. Haplotype counting for

sensitive chimerism testing. Potential for early leukemia relapse detection. *J Mol Diagn.* 19(3):27-36, 2017.

11. Gemenetzis G, Bagante F, Griffin JF, Rezaee N, Javed AA, Manos LL, Lennon AM, Wood LD, Hruban RH, Zheng L, Zaheer A, Fishman EK, Ahuja N, Cameron JL, Weiss MJ, He J, Wolfgang CL. Neutrophil-to-lymphocyte ratio is a predictive marker for invasive malignancy in Intraductal papillary mucinous neoplasms of the pancreas. *Ann Surg.* 266(2):339-345, 2017.
12. Genovese G, Carugo A, Tepper J, ..., Goggins M, Wood LD, Sgambato A, Agaimy A, Maitra A, Roberts CW, Wang H, Viale A, DePinho R, Draetta GF, Chin L. Synthetic vulnerabilities of mesenchymal subpopulations in pancreatic cancer. *Nature.* 542(7641):362-384, 2017.
13. Goggins M. Circulating biomarkers to identify with resectable pancreatic cancer. *J Natl Cancer Inst.* 109(8):dix004, 2017.
14. Griffin JF, Page AJ, Samaha GJ, Christopher A, Bhajjee F, Pezhouh MK, Peters NA, Hruban RH, He J, Makary MA, Lennon AM, Cameron JL, Wolfgang CL, Weiss MJ. Patients with a resected pancreatic mucinous cystic neoplasm have a better prognosis than patients with an intraductal papillary mucinous neoplasm: a large single institution series. *Pancreatology.* 17(3):490-496, 2017.
15. Hata T, dal Molin M, Hong SM, Tamura K, Suenaga M, Yu J, Sedogawa H, Weiss MJ, Wolfgang CL, Lennon AM, Hruban RH, Goggins MG. Predicting the grade of dysplasia of pancreatic cystic neoplasms using cyst fluid DNA methylation markers. *Clin Cancer Res.* 23(14):3935-3944, 2017.
16. Hosoda W, Chianchiano P, Griffin JF, Pittman ME, Brosens LA, Nöe M...Wolfgang CL, Goggins MG, Hruban RH, Wood LD. Genetic analyses of isolated high-grade pancreatic intraepithelial neoplasia (HG-PanIN) reveal paucity of alterations in *PTEN* and *SMAD4*. *J Pathol.* 242(1):16-23, 2017.
17. Humphris JL, Patch AM, Nones K, ...Eshleman JR, Pilarsky C, Scarpa A, Musgrove EA, Gill AJ, Pearson JV, Grimmond SM, Waddell N, Biankin AV. Hypermutation in pancreatic cancer. *Gastroenterology.* 152(1):68-74, 2017.
18. Jinawath N, Shiao MS, Norris A, Murphy K, Klein AP, Yonescu R, Iacobuzio-Donahue C, Meeker A, Jinawath A, Yeo CJ, Eshleman JR, Hruban RH, Brody JR, Griffin CA, Harada S. Alterations of type II classical cadherin, cadherin-10 (CDH10), is associated with pancreatic ductal adenocarcinomas. *Gene Chromosomes Cancer.* 56(5):427-435, 2017.
19. Kim JY, Brosnan-Cashman JA, An S, Kim SJ, Song KB, Kim MS, Kim MJ, Hwang DW, Meeker AK, Yu E, Kim SC, Hruban RH, Heaphy CM, Hong SM. Alternative lengthening of telomeres in primary neuroendocrine neoplasms is associated with aggressive clinical behavior and poor survival. *Clin Cancer Res.* 23(6):1598-1606, 2017.

20. Le DT, Durham JN, Smith KN, Wang H, ..., Papadopoulos N, Kinzler KW, Eshleman JR, Vogelstein B, Anders RA, Diaz LA. Mismatch-repair deficiency predicts response of solid tumors to PD-1 blockade. *Science*. 357(6349):409-413, 2017.
21. Lee J, Snyder ER, Liu Y, Gu X, Wang J, Flowers BM, Kim YJ, Park S, Szot GL, Hruban RH, Longacre TA, Kim SK. Reconstituting development of pancreatic intraepithelial neoplasia from primary human pancreas duct cells. *Nat Commun*. 8:14686. doi: 10.1038/ncomms14686, 2017.
22. Lilo MT, VandenBussche CJ, Allison DB, Lennon AM, Younes BK, Hruban RH, Wolfgang CL, Ali SZ. Serous cystadenoma of the pancreas: potentials and pitfalls of a peroperative cytopathologic diagnosis. *Acta Cytol*. 61(1):27-33, 2017.
23. Lindström S, Finucane H, Bulik-Sullivan B...Klein AP et al. Quantifying the genetic correlation between multiple cancer types. *Cancer Epidemiol Biomarkers Prev*. 26(9):1427-1435, 2017.
24. Lu F, Soares KC, He J, Javed AA, Cameron JL, Rezaee M, Pawlik TM, Wolfgang CL, Weiss MJ. Neoadjuvant therapy prior to surgical resection for previously explored pancreatic cancer patients is associated with improved survival. *Hepatobiliary Surg Nutr*. 6(3):144-153, 2017.
25. Lu C, Huang J, Hua Y, Javed AA, He J, Wu S, Y W, Lu C. A novel technique of inserting pancreaticogastrostomy with duct-to-mucosa anastomosis can potentially reduce postoperative pancreatic fistula. *J Surg Res*. 209:79-85, 2017.
26. Luchini C, Robertson SA, Hong SM, Felsenstein, Anders RA, Pea A, Nottegar A, Veronese N, He J, Weiss MJ, Capelli P, Scarpa A, Argani P, Kapur, Wood LD. PBRM1 loss is a late event during the development of cholangiocarcinoma. *Histopathology*. 71(3):375-382, 2017.
27. Luchini C, Pea A, Lionheart G...Zamboni G, Scarpa A, Wood LD. Pancreatic undifferentiated carcinoma with osteoclast-like giant cells is genetically similar to, but clinically distinct from, conventional ductal adenocarcinoma. *J Pathol*. 243(2):148-154, 2017.
28. Makohon-Moore A, Zhang M, Reiter JG, Bozic I, Allen B, Jundu D, Chaterjee K, Wong F, Jiao Y, Kohutek ZA, Hong J, Attiyeh M, Javier B, Wood LD, Hruban RH, Nowak MA, Papadopoulos N, Kinzler KW, Vogelstein B, Iacobuzio-Donahue CA. Limited heterogeneity of known driver gene mutations among the metastases of individual patients with pancreatic cancer. *Nat Genet*. 49(3):358-366, 2017.
29. Masica DL, dal Molin M, Wolfgang CL,..., Hruban RH, Kinzler KW, Vogelstein B, Karchin R, Lennon AM. A novel approach for selecting combination clinical markers of pathology applied to a large retrospective cohort of surgically resected pancreatic cysts. *J Am Med Inform Assoc*. 24(1):145-152, 2017.

30. Mello SS, Valente LJ, Raj N, Seoane JA, Flowers BM, McClendon J, Bieging-Rolett KT, Lee J, Ivanochko D, Kozak MM, Chang DT, Longacre TA, Koong AC, Arrowsmith CH, Kim SK, Vogel H, Wood LD, Hruban RH, Curtis C, Attardi LD. A p53 super-tumor suppressor reveals a tumor suppressive p53-Ptpn14-Yap axis in pancreatic cancer. *Cancer Cell*. 32(4):460-473, 2017.
31. Mello SS, Sinow C, Raj N, Mazur PK, Bieging-Rolett K, Broz DK, Imam JF, Vogel H, Wood LD, Sage J, Hirose T, Nakagawa S, Rinn J, Attardi LD. *Neat1* is a p53-inducible lincRNA essential for transformation suppression. *Genes Dev*. 31(11):1095-1108, 2017.
32. Pea A, Yu J, Rezaee N, Luchini C, He J, dal Molin M, Griffin FJ, Fedor H, Fesharakizadeh S, Salvia R, Weiss MJ, Bassi C, Cameron JL, Zheng L, Scarpa A, Hruban RH, Lennon AM, Goggins M, Wolfgang CL, Wood LD. Targeted DNA sequencing reveals patterns of local progression in the pancreatic remnant following resection of Intraductal papillary mucinous neoplasm (IPMN) of the pancreas. *Ann Surg*. 266(1):133-141, 2017.
33. Pittman ME, Rao R, Hruban RH. Classification, Morphology, Molecular Pathogenesis, and Outcome of Premalignant Lesions of the Pancreas. *Arch Pathol Lab Med*. 141(12):1606-1614, 2017.
34. Poruk KE, Valero V, He J, Ahuja N, Cameron JL, Weiss MJ, Lennon AM, Goggins M, Wood LD, Wolfgang CL. Circulating epithelial cells in Intraductal papillary mucinous neoplasms and cystic pancreatic lesions. *Pancreas*. 46(7):943-947, 2017.
35. Rao AD, Feng Z, Shin EJ, He J, Waters KM, Coquia S, DeJong R, Rosati LM, Su L, Li D, Jackson J, Clark S, Schultz J, Hutchings D, Kim SH, Hruban RH, Wong J, Narang A, Herman JM, Ding K. A novel absorbable radiopaque hydrogel spacer to separate the head of the pancreas and duodenum in radiotherapy of pancreatic cancer. *Int J Rad Oncol*. 99(5):1111-1120. 2017.
36. Rosati LM, Kummerlowe MN, Poling J, Hacker-Prietz A, Narang AK, Shin EJ, Le DT, Fishman EK, Hruban RH, Yang SC, Weiss MJ, Herman JM. A rare case of esophageal metastasis from pancreatic ductal adenocarcinoma: a case report and literature review. *Oncotarget*. 8(59):100942-10050, 2017.
37. Shindo K, Yu J, Suenaga M, Fesharakizadeh S, Tamura K, Almario JA, Brant A, Bores M, Siddiqui A, Datta L, Wolfgang CL, Hruban RH, Klein AP, Goggins M. Lack of association between the pancreatitis risk allele CEL-HYB and pancreatic cancer. *Oncotarget*. 8(31):50824-50831, 2017.
38. Shindo K, Yu J, Suenaga M, Fesharakizadeh S, Cho C, Macgregor-Das A, Siddiqui A, Witmer PD, Tamura K, Song TJ, Navarro Almario JA, Brant A, Borges M, Ford M, Barkley T, He J, Weiss MJ, Wolfgang CL, Roberts NJ, Hruban RH, Klein AP, Goggins M. deleterious germline mutations in patients with apparently sporadic pancreatic adenocarcinoma. *J Clin Oncol*. 35(30):3382-3390, 2017.

39. Shrestha B, Sun Y, Faisal F, ..., Hruban RH, Liang T, Cameron JL, Makary M, Weiss NJ, Ahuja N, He J, Wolfgang CL, Huang CY, Zheng L. long-term survival benefit of upfront chemotherapy in patients with newly diagnosed borderline resectable pancreatic cancer. *Cancer Med.* 6(7):1552-1562, 2017.
40. Streicher SA, Klein AP, Olson SH, Amundadottir LT, DeWan AT, Zhao H, Risch HA. Impact of sixteen established pancreatic cancer susceptibility loci in American Jews. *Cancer Epidemiol Biomark Prev.* 26(10):1540-1548, 2017.
41. Suenaga M, Sadakari Y, Almario JA, Borges M, Lennon AM, Shin EJ, Canto MI, Goggins M. Using an endoscopic distal cap to collect pancreatic fluid from the ampulla (with video). *Gastroint Endosc.* 86(6):1152-1156, 2017.
42. Tanaka M, Fernandez-del Castillo C, Kamisawa T, Jang JY, Levy P, Ohtsuka T, Salvia R, Shimizu Y, Tada M, Wolfgang CL. Revisions of international consensus Fukuoka Guidelines for the management of IPMN of the pancreas. *Pancreatology.* 17(5):738-753, 2017.
43. Tang Z, Steranka JP, Ma S, Grivainis M, Rodic N, Huang CR, Shih IM, Wang TL, Boeke JD, Fenyo D, Burns KH. Human transposon insertion profiling: analysis, visualization and identification of somatic LINE-1 insertions in ovarian cancer. *Proc Natl Acad Sci U S A.* 114(5):E733-E740, 2017.
44. Todoric J, Antonucci L, Di Caro G, Li N, Wu X, Lytle NK, Dhar D, Banerjee S, Fagman JB, Browne CD, Umemura A, Valasek MA, Kessler H, Tarin D, Goggins M, Reya T, Diaz-Meco M, Moscat J, Karin M. Stress-activated NFR2-MDM2 cascade controls neoplastic progression in pancreas. *Cancer Cell.* 32(6):824-839, 2017.
45. VandenBussche CJ, Allison DB, Graham MK, Charu V, Lennon AM, Wolfgang CL, Hruban RH, Heaphy CM. Alternative lengthening of telomeres and ATRX/DAXX loss can be reliably detected in FNAs of pancreatic neuroendocrine tumors. *Cancer Cytopathol.* 125(7):544-551, 2017.
46. Wood LD, Noë M, Hackeng W, Brosens LA, Bhajee F, Debeljak M, Yu J, Suenaga M, Singhi AD, Zaheer A, Boyce A, Robinson C, Eshleman JR, Goggins MG, Hruban RH, Collins MT, Lennon AM, Montgomery EA. Patients with McCune-Albright syndrome have a broad spectrum of abnormalities in the gastrointestinal tract and pancreas. *Virchows Arch.* 470(4):391-400, 2017.
47. Yang Z, Klimstra DS, Hruban RH, Tang LH. Immunohistochemical characterization of the origins of metastatic well-differentiated neuroendocrine tumors to the liver. *Am J. Surg Pathol.* 41(7):915-922, 2017.
48. Yu J, Sadakari Y, Shindo K, Suenaga M, Brant A, Almario JA, Borges M, Barkley T, Fesharakizadeh S, Ford M, Hruban RH, Shin EJ, Lennon AM, Canto MI, Goggins M. Digital

next-generation sequencing identifies low-abundance mutations in pancreatic juice samples collected from the duodenum of patients with pancreatic cancer and Intraductal papillary mucinous neoplasms. Gut. 66(9):1677-1687, 2017.

49. Zhong Y, Macgregor-Das AM, Saunders T, Whittle M, Makohon-Moore A, Kohutek Z, Poling J, Herbst B, Javier B, Cope L, Leach SD, Hingorani SR, Iacobuzio-Donahue CA. Mutant p53 together with TGF $\beta$  signaling influence organ-specific hematogenous colonization patterns of pancreatic cancer. Clin Cancer Res. 23(6):1607-1620, 2017.

## Papers from the Sol Goldman Pancreatic Cancer Research Center

### 2016

1. Adsay V, Mino-Kenudson M, Furukawa T, Basturk O, Zamboni G, Marchegiani G, Bassi C, Salvia R, Malleo G, Paiella S, Wolfgang CL, Matthaei H, Offerhaus GJ, Adham M, Bruno MJ, Reid MD, Krasinskas A, Klöppel G, Ohike N, Tajiri T, Jang KT, Roa JC, Allen P, Fernández-Del Castillo C, Jang JY, Klimstra DS, Hruban RH; Members of the Verona Consensus Meeting, 2013. Pathologic evaluation and reporting of intraductal papillary mucinous neoplasms of the pancreas and other tumoral intraepithelial neoplasms of the pancreatobiliary tract: recommendations of Verona Consensus Meeting. *Ann Surg.* 263:162-177, 2016.
2. Bailey P, Chang DK, Nones K,..., Waddell N, Biankin AV, Grimmond SM. Genomic analyses identify molecular subtypes of pancreatic cancer. *Nature.* 531(7592):47-52, 2016.
3. Basturk O, Chung SM, Hruban RH, Adsay NV, Askan G, Iacobuzio-Donahue C, Balci S, Zee SY, Memis B, Shia J, Klimstra DS. Distinct pathways of pathogenesis of Intraductal oncocytic papillary neoplasms and Intraductal papillary mucinous neoplasms of the pancreas. *Vichows Arch.* 469(5):523-532, 2016.
4. Brosens LA, Offerhaus GJ, Canto MI, Montgomery EA, Giardiello FM. Correspondence: Simultaneous juvenile polyposis syndrome and neurofibromatosis type 1. *Histopathology.* 68(2):313-316, 2016.
5. Childs EJ, Chaffee KG, Gallinger S, Syngal S, Schwartz AG, Cote ML, Bondy ML, Hruban RH, Chanock SJ, Hoover RN, Fuchs CS, Rider DN, Amundadotti LT, Stolzenberg-Solomon R, Wolpin BM, Rische HA, Goggins MG, Petersen GM, Klein AP. Association of common susceptibility variants of pancreatic cancer in higher risk patients: A PACGENE study. *Cancer Epidemiol Biomarkers Prev.* 25(7):1185-1191, 2016.
6. dal Molin M, Brant A, Blackford AL, Griffin JF, Shindo K, Barkley T, Rezaee N, Hruban RH, Wolfgang CL, Goggins M. Obstructive sleep apnea and pathological characteristics of resected pancreatic ductal adenocarcinoma. *PLoS One.* 11:e014195. doi: 10.1371/journal.pone.014195, 2016.
7. dal Molin M, Kim H, Blackford A, Sharma R, Goggins M. Glucagon-like Peptide-1 Receptor expression in normal and neoplastic human pancreatic tissues. *Pancreas.* 45(4):613-619, 2016.
8. Fan J, Khanin R, Sakamoto H, Zhong Y, Michael C, Pena D, Javier B, Wood LD, Iacobuzio-Donaue CA. Quantification of nucleic acid quality in postmortem tissues from a cancer research autopsy program. *Oncotarget.* 7(41):66906-66921, 2016.

9. Gingras MC, Covington KR, Chang DK,..., Biankin AV, Wheeler DA, Gibbs RA. Ampullary cancers harbor ELF3 tumor suppressor gene mutations and exhibit frequent WNT dysregulation. *Cell Rep.* 14(4):907-919, 2016.
10. Griffin JF, Poruk KE, Wolfgang CL. Is it time to expand the role of total pancreatectomy for IPMN? *Dig Surg.* 33(4):335-342, 2016.
11. Hackeng WM, Brosens LA, Poruk KE, Noë M, Hosoda W, Poling JS, Rizzo A, Campbell-Thompson M, Atkinson MA, Konukiewitz B, Klöppel G, Heaphy CM, Meeker AK, Wood LD. Aberrant menin expression is an early event in pancreatic neuroendocrine tumorigenesis. *Hum Pathol.* 56:93-100, 2016.
12. Hata T, dal Molin M, Suenaga M, Yu J, Pittman M, Weiss MJ, Canto M, Wolfgang CL, Lennon AM, Hruban RH, Goggins MG. Cyst fluid telomerase activity predicts the histologic grade of cystic neoplasms of the pancreas. *Clin Cancer Res.* 22(20):5141-5151, 2016.
13. Hendley AM, Wang YJ, Polireddy K, Alsina J, Ahmed I, Lafaro KJ, Zhang H, Roy N, Savidge SG, Cao Y, Hebrok M, Maitra A, Reynolds A, Goggins MG, Younes M, Iacobuzio-Donahue CA, Leach SD, Bailey J. p120 catenin suppresses basal epithelial cell extrusion in invasive pancreatic neoplasia. *Cancer Res.* 76(11):3351-3364, 2016.
14. Hosoda W, Wood LD. Molecular Genetics of Pancreatic Neoplasms. *Surg Pathol Clin.* 9(4):685-697, 2016.
15. Jais B, Rebours V, Malleo G, Salvia R, Fontana M, Maggino L, Bassi C, Manfredi R, Moran R, Lennon AM, Zaheer A, Wolfgang C, Hruban R, ... Frulloni L, Messina O, Lévy P. Serous cystic neoplasm of the pancreas: a multinational study of 2622 patients under the auspices of the International Association of Pancreatolog and European Pancreatic Club (European Study Group on Cystic tumors of the Pancreas). *Gut.* 65(2):305-312, 2016.
16. Jhaveri DT, Kim MS, Thompson ED, Huang L, Sharma R, Klein AP, Zheng L, Le DT, Laheru DA, Pandey A, Jaffee EM, Anders RA. Using quantitative seroproteomics to identify antibody biomarkers in pancreatic cancer. *Cancer Immunol Res.* 4(3):225-233, 2016.
17. Kamisawa T, Wood LD, Itoi T, Takaori Y. Pancreatic cancer. *Lancet.* 388(10039):73-85, 2016.
18. Kleeff J, Korc M, Apte M, La Vecchia C, Johnson CD, Biankin AV, Neale RE, Tempero M, Tuveson DA, Hruban RH, Neoptolemos JP. Pancreatic cancer. *Nat Rev Dis Primers.* 2:16022. doi: 10.1038/nrdp.2016.22, 2016.
19. Ma C, Gocke CD, Hruban RH, Belchis DA. Mutational spectrum of intraepithelial neoplasia in pancreatic heterotopia. *Hum Pathol.* 48:117-121, 2016.

20. Miller MS, Allen P, Brentnall P, Goggins M, Hruban RH,..Srivastava S, Steele VE, Rinaudo JA. Pancreatic cancer chemoprevention translational workshop: Meeting report. *Pancreas*. 45(8):1080-1091, 2016.
21. Omura N, Mizuma M, MacGregor A, Hong SM, Ayars M, Borges M, Kanda M, Li A, Vincent A, Maitra A, Goggins M. Overexpression of ankyrin1 promotes pancreatic cell growth. *Oncotarget*. 7(23):34977-34987, 2016.
22. Pittman ME, Brosens LA, Wood LD. Genetic syndromes with pancreatic manifestations. *Surg Pathol Clin*. 9(4):705-715, 2016.
23. Poruk KE, Wolfgang CL. Palliative management of unresectable pancreas cancer. *Surg Oncol Clin N Am*. 25(2):327-337, 2016.
24. Poruk KE, Valero V, Saunders T, Blackford AL, Griffin JF, Poling J, Hruban RH, Anders RA, Herman J, Zheng L, Rasheed ZA, Laheru DA, Weiss MJ, Cameron JL, Goggins M, Iacobuzio-Donahue CA, Wood LD, Wolfgang CL. Circulating tumor cell phenotype predicts recurrence and survival in pancreatic adenocarcinoma. *Ann Surg*. 264(6):1073-1081, 2016.
25. Pozzessere C, Cataños Gutiérrez SL, Corona-Villalobos CP, Righi L, Xu C, Lennon AM, Wolfgang CL, Hruban RH, Goggins M, Canto MI, Kamel IR. Diffusion-weighted magnetic resonance imaging in distinguishing between mucin-producing and serous pancreatic cysts. *J Comp Assist Tomogr*. 40(4):505-512, 2016.
26. Qiu W, Tang SM, Lee S, Turk AT, Sireci AN, Qiu A, Rose C, Zie C, Kitajewski J, Wen HJ, Crawford HC, Sims PA, Hruban RH, Remotti HE, Su GH. Loss of activating receptor type 1B accelerates development of intraductal papillary mucinous neoplasms in mice with activated KRAS. *Gastroenterology*. 150(1):218-228, 2016.
27. Rezaee N, Barbon C, Zaki A, He J, Salman B, Hruban RH, Cameron JL, Herman JM, Ahuja N, Lennon AM, Weiss MJ, Wood LD, Wolfgang CL. Intraductal papillary mucinous neoplasm (IPMN) with high-grade dysplasia is a risk factor for the subsequent development of pancreatic ductal adenocarcinoma. *HPB (Oxford)*. 18(3):236-246, 2016.
28. Roberts NJ, Norris AL, Petersen GM, Bondy ML, Brand R, Gallinger S, Kurtz RC, Olson SH, Rustgi AK, Schwartz AG, Stoffel EM, Syngal S, Zogopoulos G, Ali SZ, Axilbund J, Chaffee KG, Chen YC, Cote ML, Childs EJ, Douville C, Goes FS, Herman JM, Iacobuzio-Donahue C, Kramer M, Makohon-Moore A, McCombie RW, McMahon KW, Niknafs N, Parla J, Pirooznia M, Potash JB, Rhim AD, Smith AL, Wang Y, Wolfgang CL, Wood LD, Zandi PP, Goggins M, Karchin R, Eshleman JR, Papadopoulos N, Kinzler KW, Vogelstein B, Hruban RH, Klein AP. Whole genome sequencing defines the genetic heterogeneity of familial pancreatic cancer. *Cancer Discov*. 6(2):166-175, 2016.
29. Robles AI, Traverso G, Zhang M, Roberts NJ, Khan MA, Joseph C, Lauwers GY, Selaru FM, Popoli M, Pittman ME, Ke X, Hruban RH, Meltzer SJ, Kinzler KW, Vogelstein B, Harris CC,

- Papadopoulos N. Whole-exome sequencing analyses of inflammatory bowel disease-associated colorectal cancers. *Gastroenterology*. 150(4):931-943, 2016.
30. Sacco Casamassima MG, Gause CD, Goldstein SD, Abdullah F, Meoded A, Lukish JR, Wolfgang CL, Cameron J, Hackam DJ, Hruban RH, Colombini PM. Pancreatic surgery for tumors in children and adolescents. *Pediatr Surg Int*. 32(8):779-788, 2016.
31. Sarnecki JS, Burns KH, Wood LD, Waters KM, Hruban RH, Wirtz D, Wu PH. A robust nonlinear tissue-component discrimination method for computational pathology. *Lab Invest*. 96(4):450-458, 2016.
32. Staedtke V, Roberts NJ, Bai RY, Zhou S. Clostridium novyi-NT in cancer therapy. *Genes Dis*. 3(2):144-152, 2016.
33. Su Y, Li J, Shi C, Hruban RH, Radice GL. N-cadherin functions as a growth suppressor in a model of K-ras-induced PanIN. *Oncogene*. 35(25):3335-3341, 2016.
34. Takai E, Yachida S, Shimizu K, Furuse J, Kubo E, Ohmoto A, Suzuki M, Hruban RH, Okusaka T, Morizame C, Furukawa T. Germline mutations in Japanese familial pancreatic cancer patients. *Oncotarget*. 7(45):74227-74234, 2016.
35. Valero V, Saunders TJ, He J, Weiss MJ, Cameron JL, Dholakia A, Wild AT, Shin EJ, Khashab MA, O'Broin-Lennon AM, Ali SZ, Laheru D, Hruban RH, Iacobuzio-Donahue CA, Herman JM, Wolfgang CL. Reliable detection of somatic mutations in fine needle aspirates of pancreatic cancer with next-generation sequencing: implications for surgical management. *Ann Surg*. 263(1):153-161, 2016.
36. Voltaggio L, Cimino-Mathews A, Bishop JA, Argani P, Cuda JD, Epstein JI, Hruban RH, Netto GJ, Stoler MH, Taube JM, Vang R, Westra WH, Montgomery EA. Current concepts in the diagnosis and pathobiology of intraepithelial neoplasia: a review by organ system. *CA Cancer J Clin*. 66(5):408-436, 2016.
37. Wright GP, Poruk KE, Zenati M, Steve J, Bahary N, Hogg ME, Zuriekat AM, Wolfgang CL, Zeh HJ, Weiss MJ. Primary tumor resection following favorable response to systemic chemotherapy in stage IV pancreatic adenocarcinoma with synchronous metastases: a bi-institutional analysis. *J Gastrointest Surg*. 20(11):1830-1835, 2016.
38. Wu W, Dodson R, Makary MA, Weiss MJ, Hirose K, Camerone JL, Ahuja N, Pawlik TM, Wolfgang CL, He J. A contemporary evaluation of the cause of death and long-term quality of life after total pancreatectomy. *World J Surg*. 40(10):2513-2518, 2016.
39. Xiao Q, Zhou D, Rucki AA, Williams J, Zhou J, Mo G, Murphy A, Fujiwara K, Kleponis J, Salman B, Wolfgang CL, Anders RA, Zheng S, Jaffee EM, Zheng L. Cancer-associated fibroblasts in pancreatic cancer are reprogrammed by tumor-induced alterations in genomic DNA methylation. *Cancer Res*. 76(18):5395-5404, 2016.

40. Yachida S, Wood LD, Suzuki M, Kiyone T, Hruban RH, Shibata T. Genomic sequencing identifies ELF<sub>3</sub> as a driver of ampullary carcinoma. *Cancer Cell*. 29(2):229-240, 2016.

## Papers from the Sol Goldman Pancreatic Cancer Research Center

### 2015

1. Ayars M, Goggins M. Classifying pancreatic cancer using gene expression profiling. *Nat Rev Gastroenterol Hepatol.* 12(11):613-614, 2015.
2. Basturk O, Yang Z, Tang LH, Hruban RH, Adsay V, McCall CM, Krasinskas AM, Jang KT, Frankel WL, Balci S, Sigel C, Klimstra DS. The high-grade (WHO G3) pancreatic neuroendocrine tumor category is morphologically and biologically heterogenous and includes both well-differentiated and poorly differentiated neoplasms. *Am J Surg Pathol.* 39(12):683-690, 2015.
3. Basturk O, Hong SM, Wood LD, Adsay NV, albores-Saavedra J, Biankin AV, Brosens LA, Fukushima N, Goggins M, Hruban RH, Kato Y, Klimstra DS, Klöppel G, Krasinskas A, Longnecker DS, Matthaei H, Offerhaus GH, Shimizu M, Takaori K, Terris B, Yachida S, Esposito I, Furukawa T. A revised classification system and recommendations from the Baltimore consensus meeting for neoplastic precursor lesions in the pancreas. *Am J Surg Pathol.* 39:1730-1741, 2015.
4. Boj SF, Hwang C, Baker LA...Hruban RH, Offerhaus GJ, Vries RG, Clevers H, Tuveson DA. Organoid models of human and mouse ductal pancreatic cancer. *Cell.* 160(1-2):324-338, 2015.
5. Brosens LA, Hackeng WM, Offerhaus GJ, Hruban RH, Wood LD. Pancreatic adenocarcinoma pathology: changing “landscape.” *J Gastrointest Oncol.* 6(4):358-374, 2015.
6. Canto MI, Hruban RH. Managing pancreatic cysts: less is more? *Gastroenterology.* 148(4):688-691, 2015.
7. Canto MI, Hruban RH. Diagnosis: a step closer to screening for curable pancreatic cancer? *Nat Rev Gastroenterol Hepatol.* 12(8):431-432, 2015.
8. Chen R, Dawson DW, Pan S, Otenhof NA, de Wilde RF, Wolfgang CL, May DH, Crispin DA, Lai LA, Lay AR, Waghray M, Wang S, McIntosh M, Simeone DM, Maitra A, Brentnall TA. Proteins associated with pancreatic cancer survival in patients with resectable pancreatic ductal adenocarcinoma. *Lab Invest.* 95(1):43-55, 2015.
9. Childs EJ, Moccia E, Campa D, Bracci PM, Gallinger S, Goggins M, Li D, Neale RE, Olson SH, Scelo G, Amundadottir LT, Bamlet WR, Bijlsma MF, Blackford A, Borges M, Brennan P, Brenner H, Bueno-de-Mesquita HB, Canzian F, Capurso G, Cavestro GM, Chaffee KG, Chanock SJ, Cleary SP, Cotterchio M, Foretova L, Fuchs C, Funel N, Gazouli M, Hassan M, Herman JM, Holcatova I, Holly EA, Hoover RN, Hung RJ, Janout V, Key TJ, Kupcinskas J, Kurtz RC, Landi S, Lu L, Malecka-Panas E, Mambrini A, Mohelnikova-Duchonova B, Neoptolemos JP, Oberg AL, Orlow I, Pasquali C, Pezzilli R, Rizzato C, Saldia A, Scarpa A,

Stolzenberg-Solomon RZ, Strobel O, Tavano F, Vashist YK, Vodicka P, Wolpin BM, Yu H, Petersen GM, Risch HA, Klein AP. Common variation at 2p13.3, 3q29, 7p13 and 17q25.1 associated with susceptibility to pancreatic cancer. *Nat Genet.* 47(8):911-916, 2015.

10. dal Molin M, Zhang M, de Wilde RF, Ottenhof NA, Rezaee N, Wolfgang CL, Blackford AL, Vogelstein B, Kinzler KW, Papadopoulos N, Hruban RH, Maitra A, Wood LD. Very long-term survival following resection for pancreatic cancer is not explained by commonly mutated genes: results of whole-exome sequencing analysis. *Clin Cancer Res.* 21(8):1944-1950, 2015.
11. DeWitt J, Cho CM, Lin J, Al-Haddad M, Canto MI, Salamone A, Hruban RH, Messallam AA, Khashab MA. Comparison of EUS-guided tissue acquisition using two different 19-gauge core biopsy needles: a multicenter, prospective, randomized, and blinded study. *Endosc Int Open.* 3(5):E471-478, 2015.
12. Eshleman JR, Norris AL, Sadakari Y, Debeljak M, Borges M, Harrington C, Lin E, Brant A, Barkley T, Almario JA, Topazian M, Farrell J, Syngal S, Lee JH, Yu J, Hruban RH, Kanda M, Canto MI, Goggins M. KRAS and GNAS mutations in pancreatic juice collected from the duodenum of patients at high risk for neoplasia undergoing endoscopic ultrasound. *Clin Gastorenterol. Hepatol.* 13(5):963-969, 2015.
13. Ewing AD, Gacita A, Wood LD, Ma F, Xing D, Kim MS, Manda SS, Abril G, Pereira G, Makohon-Moore A, Looijenga LH, Gillis AJ, Hruban RH, Anders RA, Romans KE, Pandey A, Iacobuzio-Donahue CA, Vogelstein B, Kinzler KW, Kazazian HH, Solyom S. Widespread somatic L1 retrotransposition occurs early during gastrointestinal cancer evolution. *Genome Res.* 25(10):1536-1545, 2015.
14. Falconi M, Crippa S, Conlon K, Kim SW, Levy P, Tanaka M, Werner J, Wolfgang CL, Pezzilli R, Fernandez-del Castillo C. Quality assessment of the guidelines on cystic neoplasms of the pancreas. *Pancreatology.* 15(5):463-469, 2015.
15. Fogelman D, Sugar EA, Oliver G, Shah N, Klein A, Alewine C, Wang H, Javle M, Shroff R, Wolff RA, Abbruzzese JL, Laheru D, Diaz LA. Family history as a marker of platinum sensitivity in pancreatic adenocarcinoma. *Cancer Chemother Pharmacol.* 76(3):489-498, 2015.
16. Gomez DL, O'Driscoll M, Sheets TP, Hruban RH, Oberholzer J, McGarrigle JJ, Shambrott MJ. Neurogenin 3 expressing cells in the human exocrine pancreas have the capacity for endocrine cell fate. *PLoS One.* 10(8):e30133862. doi: 10.1371/journal.pone.0133862, 2015.
17. Griffin JF, Poruk KE, Wolfgang CL. Pancreatic cancer surgery: past, present, and future. *Chin J Cancer Res.* 27(4):332-348, 2015.

18. Hendley AM, Provost E, Bailey JM, Wang YJ, Cleveland MH, Blake D, Bittman RW, Roeser JC, Maitra A, Reynolds AB, Leach SD. P120 catenin is required for normal tubulogenesis but not epithelial integrity in developing mouse pancreas. *Dev Biol.* 399(1):41-53, 2015.
19. Hirschey MD, DeBerardinis RJ, Diehl AM, Drew JE, Frezza C, Green MF, Jones LW, Ko YH, Le A, Lea M, Locasale JW, Longo VD, Lyssiotis CA, McDonnell E, Mehrmohamadi M, Michelotti G, Muralidhar V, Murphy MP, Pedersen PL, Poore B, Raffaghello L, Rthmell JC, Sivanand S, Vander Heiden MG, Wollen KE, Target Validation Team. Dysregulated metabolism contributes to oncogenesis. *Semin Cancer Biol.* 35 Suppl:S129-150, 2015.
20. He J, Ahuja N, Makary MA, Cameron JL, Eckhauswer FE, Choti MA, Hruban RH, Pawlik TM, Wolfgang CL. A polymeric nanoparticle formulation of curcumin in combination with sorafenib synergistically inhibits tumor growth and metastasis in an orthotopic model of human hepatocellular carcinoma. *Biochem Biophys Res Commun.* 468(4):525-532, 2015.
21. He J, Ahuja N, Makary MA, Cameron JL, Eckhauswer FE, Choti MA, Hruban RH, Pawlik TM, Wolfgang CL. 2564 resected periampullary adenocarcinomas at a single institution: trends over three decades. *HPB (Oxford).* 16(1):83-90, 2014.
22. Hu C, Dadon T, Chenna V, Yabuuchi S, Bannerji R, Booher R, Strack P, Azad N, Nelkin BD, Maitra A. Combined inhibition of Cyclin-Dependent Kinases (Dinaciclib) and AKT (MK-2206) blocks pancreatic tumor growth and metastases in patient-derived xenograft models. *Mol Cancer Ther.* 14(7):1532-1539, 2015.
23. Iansante V, Choy PM, Fund SW, Liu Y, Chai JG, Dyson J, Del Rio A, D-Santos C, Williams R, Chokski S, Anders RA, Bubici C, Papa S. PAARP14 promotes the Warburg effect in hepatocellular carcinoma by inhibiting JNK1-dependent PKM2 phosphorylation and activation. *Nat Commun.* 6:7882. doi: 10.1038/ncomms8882, 2015.
24. Javed AA, Bagante F, Hruban RH, Weiss MJ, Makary MA, Hirose K, Cameron JL, Wolfgang CL, Fishman EK. Postoperative omental infarct after distal pancreatectomy: appearance, etiology management, and review of literature. *J Gastrointest Surg.* 19(11):2028-2037, 2015.
25. Jiao Y, Lumpkins K, Terhune J, Hruban RH, Klein A, Kinzler KW, Papadopoulos N, Vogelstein B, Srauch E. Intraductal papillary mucinous neoplasm in a neonate with congenital hyperinsulinism and a de novo germline SKIL gene mutation. *Pancreatology.* 15(2):194-196, 2015.
26. Le DT, uram JN, Wang H, Bartlett BR, Kemberling H, Eyring AD, Skora AD, Luber BS, Azad NS, Laheru D, Biedrzycki B, Donehower RC, Zaheer A, Fisher GA, Crocenzi TS, Lee JJ, Duffy SM, Goldberg RM, de la Chapelle A, Koshiji M, Bhajee F, Huebner T, Hruban RH, Wood LD, cuka N, Pardoll DM, Papadopoulos N, Kinzler KW, Zhou S, Cornish TC, Taube JM, Anders RA, Eshleman JR, Vogelstein B, Diaz LA. PD-1 blockade in tumors with mismatch-repair deficiency. *N Engl J Med.* 372(26):2509-2520, 2015.

27. Lu F, Poruk KE, Weiss MJ. Surgery for oligomeastasis of pancreatic cancer. *Chin J Cancer Res.* 27(4):358-367, 2015.
28. Maker AV, Carrara S, Jamieson NG, Pelaez-Luna M, Lennon AM, dal Molin M, Scarpa A, Frulloni L, Brugge WR. Cyst fluid biomarkers for intraductal papillary mucinous neoplasms of the pancreas: a critical review from the International Expert Meeting on Pancreatic Branch-Duct-Intraductal Papillary Mucinous Neoplasms. *J Am Coll Surg.* 220(2):243-253, 2015.
29. Matthaei H, Semaan A, Hruban RH. The genetic classification of pancreatic neoplasia. *J Gastroenterol.* 50(5):520-532, 2015.
30. Norris AL, Workman RE, Fan Y, Eshleman J, Timp W. Nanopore sequencing detects structural variants in cancer. *Cancer Biol Ther.* 17(3):246-253, 2016.
31. Norris AL, Kamiyama H, Makohon-Moore A, Pallavajjala A, Morsberger LA, Lee K, Batista D, Iacobuzio-Donahue CA, Lin MT, Klein AP, Hruban RH, Wheelan SJ, Eshleman JR. Transflip mutations produce deletions in pancreatic cancer. *Gene Chromosomes Cancer.* 54(8):472-481, 2015.
32. Norris AL, Roberts NJ, Jones S, Wheelan SJ, Papadopoulos N, Vogelstein B, Kinzler KW, Hruban RH, Klein AP, Eshleman JR. Familial and sporadic pancreatic cancer share the same molecular pathogenesis. *Fam Cancer.* 14(1):95-103, 2015.
33. Pea A, Hruban RH, Wood LD. Genetics of pancreatic neuroendocrine tumors: implications for the clinic. *Expert Rev Gastroenterol.* 9(11):1407-1419, 2015.
34. Pinto SM, Manda SS, Kim MS, Taylor KO, Selvan LD, Balakrishnan L, Subbannayya T, Yan F, Prasad TS, Gowda H, Lee C, Hancock WS, Pandey A. Functional annotation of proteome encoded by human chromosome 22. *J Proteome Res.* 13(6):2749-2760, 2015.
35. Poruk KE, Kim Y, Cameron JL, He J, Eckhauser FE, Rezaee N, Herman J, Laheru D, Zheng L, Fishman EK, Hruban RH, Pawlik TM, Wolfgang CL, Weiss MJ. What is the significance of indeterminate pulmonary nodules in patients undergoing resection for pancreatic adenocarcinoma? *J Gastrointest Surg.* 19(5):841-847, 2015.
36. Raman SP, Reddy S, Weiss MJ, Manos LL, Cameron JL, Zheng L, Herman JM, Hruban RH, Fishman EK, Wolfgang CL. Impact of the time interval between MDCT imaging and surgery on the accuracy of identifying metastatic disease in patients with pancreatic cancer. *AJR Am J Roentgenol.* 204(1):W37-42, 2015.
37. Rastegar N, Matteoni-Athayde LG, Eng J, Takahashi N, Tamm EP, Mortele KJ, Syngal S, Margolis D, Lennon AM, Wolfgang CL, Fishman EK, Hruban RH, Goggins M, Canto MI, Kamel IR. Incremental value of secretin-enhanced magnetic resonance

- cholangiopancreatography in detecting ductal communication in a population with high prevalence of small pancreatic cysts. *Eur J Radiol.* 84(4):474-480, 2015.
38. Rezaee N, Khalifian S, Cameron JL, Pawlik TM, Hruban RH, Fishman EK, Makary MA, Lennon AM, Wolfgang CL, Weiss MJ. Smoking is not associated with severe dysplasia or invasive carcinoma in resected intraductal papillary mucinous neoplasms. *J Gastrointest Surg.* 19(4):656-665, 2015.
39. Rishi A, Hruban RH. Pathological and molecular evaluation of pancreatic neoplasms. *Sem Oncol.* 42(1):28-39, 2015.
40. Rodic N, Steranka JP, Makohon-Moore A, Moyer A, Shen P, Sharma R, Kohutek, ZA, Huang CR, Ahn D, Mita P, Taylor MS, Barker NJ, Hruban RH, Iacobuzio-Donahue CA, Boeke JD, Burns KH. Retrotransposon insertions in the clonal evolution of pancreatic ductal adenocarcinoma. *Nat Med.* 21(9):1060-1064, 2015.
41. Sausen M, Phallen J, Adleff V, Jones S, Leary RJ, Barrett MT, Anagnostou V, Parpart-Li S, Murphy D, Li QK, Hruban CA, Scharph R, White JR, O'Dwyer PJ, Allen PJ, Eshleman JR, Thompson CB, Klimstra DS, Linehan DC, Maitra A, Hruban RH, Diaz LA, Von Hoff DD, Johansen JS, Drebin JA, Velculescu VE. Clinical implications of genomic alterations in the tumour and circulation of pancreatic cancer patients. *Nat Commun.* 6:7686. doi: 10.1038/ncomms8686, 2015.
42. Schlitter AM, Jang KT, Klöppel G, Saka B, Hong SM, Choi H, Offerhaus GJ, Hruban RH, Zen Y, Konukiewitz B, Regel I, Allgäuer M, Balci S, Basturk O, Reid MD, Esposito I, Adsay V. Intraductal tubulopapillary neoplasms of the bile ducts: clinicopathologic, immunohistochemical, and molecular analysis of 20 cases. *Mod Pathol.* 28(9):1249-1264, 2015.
43. Singhi AD, Ishida H, Ali SZ, Goggins M, Canto M, Wolfgang CL, Meriden Z, Roberts N, Klein AP, Hruban RH. A histomorphologic comparison of familial and sporadic pancreatic cancers. *Pancreatology.* 15(4):387-391, 2015.
44. Soares KC, Rucki AA, Wu AA, Olino K, Ziao Q, Chai Q, Wamwea A, Bigelow E, Lutz E, Liu L, Yao S, Anders RA, Laheru D, Wolfgang CL, Edil BH, Schulick RD, Jaffee EM, Zheng L. PD-1/PDL1 blockade together with vaccine therapy facilitates Effector T-Cell infiltration into pancreatic tumors. *J Immunother.* 38(1):1-11, 2015.
45. Soares KC, Rucki AA, Kim V, Foley K, Solt S, Wolfgang CL, Jaffee EM, Zheng L. TGF- $\beta$  blockade depletes T regulatory cells from metastatic pancreatic tumors in a vaccine dependent manner. *Oncogarget.* 6(40):43005-43015, 2015.
46. Springer S, Wang Y, Mokin MD, Masica DL, Jiao Y, Kinde I, Blackford A, Raman SP, Wolfgang CL...Goggins Ms, Canto MI, Ahuja N, Hirose K, Makary M, Weiss MJ, Cameron J, Pittman M, Eshleman JR, Diaz LA, Papadopoulos N, Kinzler KW, Karchin R, Hruban RH, Vogelstein B, Lennon AM. A combination of molecular markers and clinical fetaures

improve the classification of pancreatic cysts. *Gastroenterology*. 149(6):1501-1510, 2015.

47. Surcel A, Ng WP, West-Foyle H, Zhu Q, Ren Y, Avery LB, Krenc AK, Meyers DJ, Rock RS, Anderson RA, Meyers CF, Robinson DN. Pharmacological activation of myosin II paralogs to correct cell mechanics defects. *Proc Natl Acad Sci U S A*. 112(5):1428-1433, 2015.
48. Tsai SD, Kawamoto S, Wolfgang CL, Hruban RH, Fishman EK. Duodenal neuroendocrine tumors: retrospective evaluation of CT imaging features and pattern of metastatic disease on dual-phase MDCT with pathologic correlation. *Abdom Imaging*. 40(5):1121-1130, 2015.
49. Wackaw B, Bozic I, Pittman ME, Hruban RH, Vogelstein B, Nowak MA. A spatial model predicts that dispersal and cell turnover limit intratumour heterogeneity. *Nature*. 525(7568):261-264. doi: 10.1038/nature14971, 2015.
50. Waddell N, Pajic M, Patch AM...Hruban RH...Biankin AV, Grimmond SM, University of California San Francisco, Greater Glasgow & Clyde National Health Service. Whole genomes redefine the mutational landscape of pancreatic cancer. *Nature*. 518(7540):495-501. doi: 10.1038/nature14169, 2015.
51. Wangjam T, Zhang Z, Zhou XC, Lyer L, Faisal F, Soares KC, Fishman E, Hruban RH, Herman JP, Laheru D, Weiss M, Li M, De Jesus-Acosta A, Wolfgang CL, Zheng L. Resected pancreatic ductal adenocarcinomas with recurrence limited in lung have a significantly better prognosis than those with other recurrence patterns. *Oncotarget*. 6(34):36903-36910, 2015.
52. Whittle MC, Izeradjene K, Rani PG, Feng L, Carlson MA, DelGiorno KE, Wood LD, Goggins M, Hruban RH, Chang AE, Calses P, Thorsen SM, Hingorani SR. RUNX3 controls a metastatic switch in pancreatic ductal adenocarcinoma. *Cell*. 161(6):1345-1360, 2015.
53. Wild AT, Dholakia AS, Fan KY, Kumar R, Moningi S, Rosati LM, Laheru DA, Sheng L, De Jesus-Acosta A, Ellsworth SG, Hacker-Prietz A, Voong KR, Tran PT, Hruban RH, Pawlik TM, Wolfgang CL, Herman JM. Efficacy of platinum chemotherapy agents in the adjuvant setting for adenosquamous carcinoma of the pancreas. *J Gastrointest Oncol*. 6(2):115-125, 2015.
54. Wood LD, Hruban RH. Genomic landscapes of pancreatic neoplasia. *J Pathol Transl Med*. 49(1):13-22, 2015.
55. Yu J, Blackford AL, dal Molin M, Wolfgang CL, Goggins M. Time to progression of pancreatic ductal adenocarcinoma from low-to-high tumour stages. *Gut*. 64(11):1783-1789, 2015.
56. Zhen D, Rabe K, Gallinger S, Syngal, Schwartz AG, Goggins MG, Hruban RH, Cote ML, McWilliams RR, Roberts NJ, Cannon-Albright LA, Li D, Moyes K, Wenstrup RJ, Hartman

AR, Seminara D, Klein AP, Petersen GM. BRCA1, BRCA2, PALB2, CDKN2A mutations in familial pancreatic cancer: a PACGENE study. *Genet Med.* 17(7):569-577, 2015.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

## 2014

1. Amato E, dal Molin MD, Mafficini A, Yu J, Malleo G, Rusev B, Fassan M, Antonello D, Sadakari Y, Castelli P, Zamboni G, Maitra A, Salvia R, Hruban RH, Bassi C, Capelli P, Lawlor RT, Goggins M, Scarpa A. Targeted next-generation sequencing of cancer genes dissects the molecular profiles of intraductal papillary neoplasms of the pancreas. *J Pathol.* 233(3):217-227, 2014.
2. Bailey JM, Alsina J, Rasheed AZ, McAllister FM, Fu YY, Plentz R, Zhang H, Pasricha PJ, Bardeesy N, Matsui W, Maitra A, Leach SD. DCLK1 marks a morphologically distinct subpopulation of cells with stem cell properties in preinvasive pancreatic cancer. *Gastroenterology.* 146(1):245-256, 2014.
3. Basturk O, Tang L, Hruban RH, Adsay V, Yang Z, Krasinskas AM, Vakiani E, La Rosa S, Jang KT, Frankel WL, Liu X, Zhang L, Giordano TJ, Bellizzi AM, Chen JH, Shi C, Allen P, Reidy DL, Wolfgang CL, Saka B, Rezaee N, Deshpande V, Klimstra DS. Poorly differentiated neuroendocrine carcinomas of the pancreas: a clinicopathologic analysis of 44 cases. *Am J Surg Pathol.* 38(4):437-447, 2014.
4. Bettegowda C, Sausen M, Leary RJ, Kinde I,...Hruban RH, Wu J, Allen PJ, Schmidt CM, Choit MA, Velculescu VE, Kinzler KW, Vogelstein B, Papadopoulos N, Diaz LA. Detection of circulating tumor DNA in early- and late-stage human malignancies. *Sci Transl Med.* 6(224):224ra24. doi: 10.1126/scitranslmed.3007094, 2014.
5. Bever KM, Sugar EA, Bigelow E, Sharma R, Laheru D, Wolfgang CL, Jaffee EM, Anders RA, De Jesus-Acosta A, Zheng L. The prognostic value of stroma in pancreatic cancer in patients receiving adjuvant therapy. *HPB (Oxford).* 17(4):292-298, 2014.
6. Bhatnagar R, Olson MT, Fishman EK, Hruban RH, Lennon AM, Zli SZ. Solid-pseudopapillary neoplasm of the pancreas: cytomorphologic findings and literature review. *Acta Cytologica.* 58(4):347-355, 2014.
7. Chen G, Mosier S, Gocke CD, Lin MT, Eshleman JR. Cytosine deamination is a major cause of baseline noise in next-generation sequencing. *Mol Diagn Ther.* 18(5):587-593, 2014.
8. Chu LC, Singhi Ad, Hruban RH, Fishman EK. Characterization of pancreatic serous cystadenoma on dual-phase multidetector computed tomography. *J Comput Assist Tomogr.* 38(2):258-263, 2014.
9. Coquia SF, Kawamoto S, Zaheer A, Bleich KB, Blackford AL, Hruban RH, Fishman EK. Intrapancreatic accessory spleen: possibilities of computed tomography in

differentiation from nonfunctioning pancreatic neuroendocrine tumor. *J comput Assist Tomogr.* 38(6):874-878, 2014.

10. Dawidczk CM, Kim C, Park JH, Russell LM, Lee KH, Pomper MG, Searson PC. State-of-the-art in design rules for drug delivery platforms: lessons learned from FDA-approved nanomedicines. *J Control Release.* 187:133-144, 2014.
11. Debeljak M, Freed DN, Welch JA, haley L, Beierl K, Iglehart BS, Pallavajjala A, Gocke CD, Leffell MS, Lin MT, Pevsner J, Wheelan SJ, Eshleman JR. Haplotype counting by next-generation sequencing for ultrasensitive human DNA detection. *J Mol Diagn.* 16(5):495-503, 2014.
12. Dogeas E, Karagkounis G, Heaphy CM, Hirose K, Pawlik TM, Wolfgang CL, Meeker A, Hruban RH, Cameron JL, Choti MA. Alternative lengthening of telomeres predicts site of origin in neuroendocrine tumor liver metastases. *J Am Coll Surg.* 218(4):628-635, 2014.
13. Ellison TA, Wolfgang CL, Shi C, Cameron JL, Murakami P, Mun LJ, Singhi AD, Cornish TC, Olino K, Meriden Z, Choti M, Diaz LA, Pawlik TM, Schulick RD, Hruban RH, Edil BH. A single institution's 26-year experience with nonfunctional pancreatic neuroendocrine tumors: a validation of current staging systems and a new prognostic nomogram. *Ann Surg.* 259(2):204-212, 2014.
14. Fan KY, Dholakia AS, Wild AT, Su Z, Hacker-Prietz A, Kumar R, Hodgin M, Hsu CC, Le DT, De Jesus-Acosta A, Diaz LA, Laheru DA, Hruban RH, Fishman EK, Brown TD, Pawlik TM, Wolfgang CL, Tran PT, Herman JM. Baseline hemoglobin-a1c impacts clinical outcomes in patients with pancreatic cancer. *J Natl Compr Canc Netw.* 12(1):50-57, 2014.
15. Guan H, Gurda G, Lennon MA, Hruban RH, Erozan YS. Intraductal tubulopapillary neoplasm of the pancreas on fine needle aspiration: case report with differential diagnosis. *Diagn Cytopathol.* 42(2):156-160, 2014.
16. Garcia-Carracedo D, Chen ZM, Qiu W, Huang AS, Tang SM, Hruban RH, Su GH. PIK3CA mutations in mucinous cystic neoplasms of the pancreas. *Pancreas.* 43(2):245-249, 2014.
17. Hruban RH, Klimstra DS. Introduction. *Semin Diagn Pathol.* 31(6):43-51, 2014.
18. Hruban RH, Klimstra DS. Adenocarcinoma of the pancreas. *Semin Diagn Pathol.* 31(6):443-451, 2014.
19. Jhaveri DT, Zheng L, Jaffee EM. Specificity delivers: therapeutic role of tumor antigen-specific antibodies in pancreatic cancer. *Semin Oncol.* 41(5):559-575, 2014.
20. Jiao Y, Yonescu R, Offerhaus GJ, Klimstra DS, Maitra A, Eshleman JR, Herman JG, Poh W, Pelosof L, Wolfgang CL, Vogelstein B, Kinzler KW, Hruban RH, Papadopoulos N, Wood

LD. Whole exome sequencing of pancreatic neoplasms with acinar differentiation. *J Pathol.* 232(4):428-435, 2014.

21. Keenan BP, Saenger Y, Kafrouni MI, Leubner A, Lauer P, Maitra A, Rucki AA, Gunderson AJ, Coussens LM, Brockstedt DG, Dubensky TW, Hassan R, Armstrong TD, Jaffee EM. A Listeria vaccine and depletion of T-regulatory cells activate immunity against early stage pancreatic intraepithelial neoplasms and prolong survival of mice. *Gastroenterology.* 146(7):1784-1794, 2014.
22. Kelkar DS, Provost E, Chaerkady R...Gowda R, Wang C, Leach SD, Pandey A. Annotation of the zebrafish genome through an integrated transcriptomic and proteomic analysis. *Mol Cell Proteomics.* 13(11):3184-3198, 2014.
23. Kim H, Saka B, Knight S, Borges M, Childs E, Klein AP, Wolfgang CL, Herman JM, Adsay V, Hruban RH, Goggins M. Having pancreatic cancer with tumoral loss of ATM and normal TP3 protein expression is associated with a poorer prognosis. *Clin Cancer Res.* 20(7):1865-1872, 2014.
24. Kim MS, Pinto SM...Hruban RH, Kerr CL, Bader GD, Iacobuzio-Donahue CA, Gowda H, Pandey A. A draft map of human proteome. *Nature.* 509(7502):575-581, 2014.
25. Kim MS, Zhong Y, Yachida S, Rajeshkumar NV, Abel ML, Marimuthu A, Mudgal K, Hruban RH, Poling JS, Tyner JW, Maitra A, Iacobuzio-Donahue CA, Pandey A. Heterogeneity of pancreatic cancer metastases in a single patient revealed by quantitative proteomics. *Mol Cell Proteomics.* 13(11):2803-2811, 2014.
26. Law JK, Stoita A, Weaver W, Gleeson FC, Dries AM, Blackford A, Kiswani K, Shi EJ, Khashab MA, Canto MI, Singh VK, Lennon AM. Endoscopic ultrasound-guided fine needle aspiration improves the pre-operative diagnostic yield of solid-pseudopapillary neoplasm of the pancreas: an international multicenter case series (with video). *Surg Endosc.* 28(9):2592-2598, 2014.
27. Law JK, Ahmed A, Singh VK, Akshintala VS, Olson MT, Raman SP, Ali SZ, Fishman EK, Kamel I, Canto MI, dal Molin M, Moran RA, Khashab MA, Ahuja N, Goggins M, Hruban RH, Wolfgang CL, Lennon AM. A systematic review of solid-pseudopapillary neoplasms: are these rare lesions? *Pancreas.* 43:331-337, 2014.
28. Layfield LJ, Ehya H, Filie AC, Hruban RH, Jhala N, Joseph L, Vielh P, Pitman MB. Utilization of ancillary studies in the cytologic diagnosis of biliary and pancreatic lesions: the Papanicolaou Society of cytopathology guidelines. *Diagn Cytopathol.* 42(4):351-362, 2014.
29. Le A, Stine ZE, Nguyen C, Afzal J, Sun P, Hamaker M, Siegel NM, Gouw AM, Kang B, Yu SH, Cochran RL, Sailor KA, Song H. Tumorigenicity of hypoxic respiring cancer cells revealed by a hypoxia-cell cycle dual reporter. *Proc Natl Acad Sci U S A.* 111(34):12486-12491, 2014.

30. Lennon AM, Manos LL, Hruban RH, Ali SZ, Fishman EK, Kamel IR, Raman SP, Zaheer A, Huffless S, Salamone A, Kiswani V, Ahuja N, Makary MA, Weiss MJ, Hirose K, Goggins M, Wolfgang CL. Role of a multidisciplinary clinic in the management of patients with pancreatic cysts: a single-center cohort study. *Ann Surg Oncol.* 21(11):3668-3674, 2014.
31. Lennon AM, Wolfgang CL, Canto MI, Klein AP, Herman JM, Goggins M, Fishman EK, Kamel I, Weiss MJ, Diaz LA, Papadopoulos N, Kinzler KW, Vogelstein B, Hruban RH. The early detection of pancreatic cancer: what will it take to diagnose and treat curable pancreatic neoplasia? *Cancer Res.* 74(13):3381-3389, 2014.
32. Lennon AM, Victor D, Zaheer A, Ostovaneh MR, Law JK, Rezaee N, dal Molin M, Ahn YJ, Wu W, Khashab MA, Girotra M, Ahuja N, Makary MA, Weiss MJ, Hirose K, Goggins M, Hruban RH, Cameron A, Wolfgang CL, Singh VK, Guraka A. Liver transplant patients have a similar risk of progression as sporadic patients with branch duct intraductal mucinous neoplasms. *Liver Transpl.* 20(12):1462-1467, 2014.
33. Lin MT, Mosier SL, Thiess M, Beierl KF, Debeljak M, T LH, Chen G, Yegnasubramanian S, Ho H, Cope L, Wheelan SJ, Gocke CD, Eshleman JR. Clinical validation of KRAS, BRAF, and EGFR mutation detection using next-generation sequencing. *Am J Clin Pathol.* 141(6):856-866, 2014.
34. Lutz ER, Wu AA, Bigelow E, Sharma R, Mo G, Soares K, Solt S, Dorman A, Wamwea A, Yager A, Laheru D, Wolfgang CL, wang J, Hruban RH, Anders RA, Jaffee EM, Zheng L. Immunotherapy converts nonimmunogenic pancreatic tumors into immunogenic foci of immune regulation. *Cancer Immunol Res.* 2(7):616-631, 2014.
35. Matthaei H, Wu J, dal Molin M, Shi C, Perner S, Kristiansen G, Lingohr P, Klaff JC, Wolfgang CL, Kinzler KW, Vogelstein B, Maitra A, Hruban RH. GNAS sequencing identifies IPMN-specific mutations in a subgroup of diminutive pancreatic cysts referred to as "Incipient IPMNs." *Am J Surg Pathol.* 38(3):360-363, 2014.
36. McAllister F, Bailey JM, Alsina J, Nirschl CJ, Sharma R, Fan H, Rattigan Y, Roeser J, Lankapalli RH, Zhang H, Jaffee EM, Drake CG, Housseau F, Maitra A, Kolls JK, Sears CL, Pardoll DM, Leach SD. Oncogenic Kras activates a hematopoietic-to-epithelial IL-17 signalling axis in preinvasive pancreatic neoplasia. *Cancer Cell.* 25(5):21-37, 2014.
37. McCall CM, Mosier S, Thiess M, Debeljak M, Pallavajjala A, Beierl K, Deak KL, Datto MB, Gocke CD, Lin MT, Eshleman JR. False positives in multiplex PCR-based next generation sequencing have unique signatures. *J Mol Diagn.* 16(5):51-59, 2014.
38. Olson MT, Harrington C, Beierl K, Chen G, Thiess M, O'Neill A, Taube JM, Zeiger MA, Lin MT, Eshleman JR. BRAF pyrosequencing analysis aided by a lookup table. *Am J Clin Pathol.* 141(5):639-647, 2014.

39. Pinto SM, Manda SS, Kim MS, Taylor K, Selvan LD, Balakrishnan L, Subbannayya T, Yan F, Prasad TS, Gowda H, Lee C, Hancock WS, Pandey A. Functional annotation of proteome encoded by human chromosome 22. *J Proteome Res.* 13(6):2749-2760, 2014.
40. Rhim AD, Oberstein PE, Thomas DH, Mirek ET, Palermo CF, Sastra SA, Dekleva EN, Saunders T, Becerra CP, Tattersall IW, Westphalen CB, Kitajewski J, Fernandez-Barrenea MG, Fernandez-Zapico ME, Iacobuzio-Donahue C, Olive KP, Stanger BZ. Stromal elements act to restrain, rather than support pancreatic ductal adenocarcinoma. *Cancer Cell.* 25(6):735-747, 2014.
41. Roberts N, Zhang L, Janku F...Papadopoulos N, Kinzler KW, Vogelstein B, Bettegowda C, Huso DL, Varterasian M, Saha S, Zhou S. Intratumoral injection of *Clostridium novyi*-NT spores induces antitumor responses. *Sci Transl Med.* 6(249):249ra111. doi: 10.1126/scitranslmed.3008982, 2014.
42. Rodić N, Sharma R, Zampella J, Dai L, Taylor MS, Hruban RH, Iacobuzio-Donahue CA, Maitra A, Torbenson MS, Goggins M, Shih IM, Duffield AS, Montgomery EA, Gabrielson E, Netto G, Lotan TL, DeMarzo AM, Westra W, Binder ZA, Orr BA, Gallia GL, Eberhart CG, Boeke JD, Harris CR, Burns KH. Long interspersed Element-1 protein expression is a hallmark of many human cancers. *Am J Pathol.* 184(5):1280-1286, 2014.
43. Rucki AA, Zheng L. Pancreatic cancer stroma: understanding biology leads to new therapeutic strategies. *World J Gastroenterol.* 20(9):2237-2246, 2014.
44. Sadakari Y, Kanda M, Maitani K, Borges M, Canto MI, Goggins M. Mutant KRAS and GNAS DNA concentrations in secretin-stimulated pancreatic fluid collected from the pancreatic duct and the duodenal lumen. *Clin Transl Gastroenterol.* 5(11):e62/ doi: 10.1038/ctg.2014.14, 2014.
45. Singhi AD, Lilo M, Hruban RH, Cressman KL, Fuhrer K, Seethala RR. Overexpression of lymphoid enhancer-binding factor 1 (LEF1) in solid-pseudopapillary neoplasms of the pancreas. *Mod Pathol.* 27(10):1355-1363, 2014.
46. Smit MD, Jaffee EM, Lutz ER. Cancer immunoprevention—the next frontier. *Cancer Prev Res (Phila).* 7(11):1072-1080, 2014.
47. Soares KC, Zheng L, Ahuja N. Overcoming immune system evasion by personalized immunotherapy. *Per Med.* 11(6):561-564, 2014.
48. Soni A, Dogeas E, Juluri KR, Wolfgang CL, Hruban RH, Weiss MJ. The tail of neuroendocrine tumors from lung to pancreas: two rare case reports. *Int J Surg Case Rpt.* 5(8):537-539, 2014.
49. Thomas JK, Kim MS, Balakrishnan L, Nanjappa V, Raju R, Marimuthu A, Radhakrishnan A, Muthusamy B, Khan AA, Sakamuri S, Tankala SG, Singal M, Nair B, Sirdeshmukh R, Chatterjee A, Prasad TS, Maitra A, Gowda H, Hruban RH, Pandey A. Pancreatic Cancer

Database: an Integrative Resource for Pancreatic Cancer. *Cancer Biol Ther.* 15(8):963-967, 2014.

50. Tosoian JJ, Cameron JL, Allaf ME, Hruban RH, Nahime CB, Pawlik TM, Pierorazio PM, Reddy S, Wolfgang CL. Resection of isolated renal cell carcinoma metastases of the pancreas: outcomes from The Johns Hopkins Hospital. *J Gastrointest Surg.* 18(3):542-548, 2014.
51. Vincent A, Hong SM, Hu C, Omura N, Young A, Kim H, Yu J, Knight S, Ayars M, Griffith M, Van Seuningen I, Maitra A, Goggins M. Epigenetic silencing of EYA2 in pancreatic adenocarcinomas promotes tumor growth. *Oncotarget.* 5(9):2575-2587, 2014.
52. Wang Z, Zhu B...Chatterjee N, Amundadottir LT. Imputation and subset-based association analysis across different cancer types identifies multiple independent risk loci in the *TERT-CLPTM1L* region on chromosome 5p15.33. *Hum Mol Genet.* 23(24):6616-6633, 2014.
53. Wenchuan W, He J, Cameron JL, Makary M, Soares K, Ahuja N, Rezaee N, Herman J, Zheng L, Laheru D, Choti MA, Hruban RH, Pawlik TM, Wolfgang CL, Weiss MJ. The impact of postoperative complications on the administration of adjuvant therapy following pancreaticoduodenectomy for adenocarcinoma. *Ann Surg Oncol.* 21(9):2873-2881, 2014.
54. Wolpin BM, Rizzato C, Kraft P...Chanock SJ, Stolzenberg-Solomon RS, Amundadotir LT. Genome-wide association study identifies multiple susceptibility loci for pancreatic cancer. *Nature Genet.* 46(9):994-1000, 2014.
55. Wood LD, Klimstra DS. Pathology and genetics of pancreatic neoplasms with acinar differentiation. *Semin Diagn Pathol.* 31(6):491-497, 2014.
56. Wright RC, Khakhar A, Eshleman JR, Ostermeier M. Advancements in the development of HIF-1 $\alpha$ -activated protein switches for use in enzyme prodrug therapy. *PLoS One.* 9(11):e114032. doi: 10.1371/journal.pone.0114032, 2014.
57. Wu W, He J, Cameron JL, Makary M, Soares K, Ahuja N, Rezaee N, Herman J, Zheng L, Laheru D, Choti MA, Hruban RH, Pawlik TM, Wolfgang CL, Weiss MJ. The impact of postoperative complications on the administration of adjuvant therapy following pancreaticoduodenectomy for adenocarcinoma. *Ann Surg Oncol.* 21(9):2873-2881, 2014.
58. Zaheer A, Haider M, Kawamoto S, Hruban RH, Fishman EK. Dual-phase CT findings of groove pancreatitis. *Eur J Radiology.* 83(8):1337-1343, 2014.
59. Zheng L, Edil BH, Soares KC, El-Shami K, Uram JN, Judkins C, Zhang Z, Onners B, Laheru D, Pardoll D, Jaffee EM, Schulick RD. A safety and feasibility study of an allogeneic colon cancer cell vaccine administered with a granulocyte-macrophage colony stimulating

factor-producing bystander cell line in patients with metastatic colorectal cancer. Ann Surg Oncol. 21(12):3931-3937, 2014.

60. Zhong Y, Naito Y, Cope L, Naranjo-Suarez S, Saunders T, Hong SM, Goggins MG, Herman JM, Wolfgang CL, Iacobuzio-Donahue CA. Functional p38 MAPK identified by biomarker profiling of pancreatic cancer restrains growth through JNK inhibition and correlates with improved survival. Clin Cancer Res. 20(23):6200-6211, 2014.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

## 2013

1. Canto MI, Harinck F, Hruban RH, Offerhaus GJ, Poley JW, Kamel I, Nio Y, Schulick RS, Bassi C, Klujt I, Levy MJ, Chak A, Fockens P, Goggins M, Bruno M; International Cancer of Pancreas Screening (CAPS) Consortium. International Cancer of the Pancreas Screening (CAPS) Consortium summit on the management of patients with increased risk for familial pancreatic cancer. *Gut*. 62(3):338-347, 2013.
2. dal Molin M, Matthaei H, Wu J, Blackford A, Debeljak M, Rezaee N, Wolfgang CL, Butturini G, Salvia R, Bassi C, Goggins MG, Kinzler KW, Vogelstein B, Eshleman JR, Hruban RH, Maitra A. Clinicopathological correlates of activating GNAS mutations in intraductal papillary mucinous neoplasm (IPMN) of the pancreas. *Ann Surg Oncol*. 20(12):3802-3808, 2013.
3. Dutta P, Le A, Jagt DL, Tsukamoto T, Martinez GV, Dang CV, Gillies RJ. Evaluation of LDH-A and Glutaminase inhibition in vivo by hyperpolarized <sup>13</sup>C-Pyruvate Magnetic Resonance Spectroscopy of tumors. *Cancer Res*. 73(14):4190-4195, 2013.
4. Funamizu N, Hu C, Lacy C, Schette A, Zhang G, He P, Gaedcke J, Ghadimi MB, Ried T, Yfantis HG, Lee DH, Subleski J, Chan T, Weiss JM, Back TC, Yanaga K, Hanna N, Alexander HR, Maitra A, Hussain SP. Macrophage migration inhibitory factor induces epithelial to mesenchymal transition, enhances tumor aggressiveness and predicts clinical outcome in resected pancreatic ductal adenocarcinoma. *Int J Cancer*. 132(4):784-794, 2013.
5. Gold DV, Gaedcke J, Ghadimi BM, Goggins M, Hruban RH, Liu M, Newsome G, Goldenberg DM. PAM4 enzyme immunoassay alone in combination with CA19-9 for the detection of pancreatic adenocarcinoma. *Cancer*. 119(3):522-528, 2013.
6. Harrington CT, Lin EI, Olson MT, Eshleman JR. Fundamentals of pyrosequencing. *Arch Pathol Lab Med*. 137(9):1296-1303, 2013.
7. He J-J, Cameron JL, Ahuja N, Makary MA, Kirose K, Choti MA, Schulick RD, Hruban RH, Pawlik TM, Wolfgang CL. Is it necessary to follow patients after resection of a benign pancreatic intraductal papillary mucinous neoplasm? *J Am Coll Surg*. 216(4):657-665, 2013.
8. Herman JM, Fan KY, Wild AT, wood LD, Blackford AL, Donehower RC, Hidalgo M, Schulick RD, Edil BH, Choti MA, Hruban RH, Pawlik TM, Cameron JL, Laheru DA, Iacobuzio-Donahue CA, Wolfgang CL. Correlation of Smad4 status with outcomes in patients receiving Erlotinib combines with adjuvant chemoradiation and chemotherapy after resection for pancreatic adenocarcinoma. *Int J Radiation Oncol Biol Phys*. 87(3):458-459, 2013.

9. Kamiyama H, Rauenzahn S, Shim JS, Karikari CA, Feldmann G, Hua L, Kamiyama M, Schuler FW, Lin MT, Beaty RM, Karanam B, Liang H, Mullendore ME, Mo G, Hidalgo M, Jaffee E, Hruban RH, Jinnah HA, Roden RB, Jimeno a, Liu JO, Maitra A, Eshleman JR. Personalized chemotherapy profiling using cancer cell lines from selectable mice. *Clin Cancer Res.* 19(5):1139-1146, 2013.
10. Kanda M, Sadakari Y, Borges M, Topazian M, Farrell J, Syngal S, Lee J, Kamel I, Lennon AM, Knight S, Fujiwara S, Hruban RH, Canto MI, Goggins M. Mutant TP53 in duodenal samples of pancreatic juice from patients with pancreatic cancer or high-grade dysplasia. *Clin Gastroenterol Hepatol.* 11(6):719-730, 2013.
11. Kanda M, Knight S, Topazian MD, Syngal S, Farrell J, Lee JH, Kamel I, Lennon AM, Borges M, Young A, Jujiwara S, Seike J, Eshleman J, Hruban RH, Canto M, Goggins M. Mutant GNAS detected in duodenal collections of secretin-stimulated pancreatic juice indicates the presence or emergency of pancreatic cysts. *Gut.* 62(7):1024-1033, 2013.
12. Kawamoto S, Johnson PT, Shi C, Singhi AD, Hruban RH, Wolfgang CL, Edil BH, Fishman EK. Pancreatic neuroendocrine tumor with cyst-like changes: evaluation with MDCT. *AJR Am J Roentgenol.* 200(3):W283-290, 2013.
13. Khalailah A, Dreazen A, Khatib A, Apel R, Swisa A, Kidess-Bassir N, Maitra A, Meyuhas O, Dor Y, Zamir G. Phosphorylation of ribosomal protein S6 attenuates DNA damage and tumor suppression during development of pancreatic cancer. *Cancer Res.* 73(6):1811-1120, 2013.
14. Khashab MA, Kim K, Lennon AM, Shin EJ, Tignor AS, Amateau SK, Singh VK, Wolfgang CL, Hruban RH, Canto MI. Should we do EUS/FNA on patients with pancreatic cysts? The incremental diagnostic yield of EUS over CT/RMI for prediction of cystic neoplasms. *Pancreas.* 42(4):717-721, 2013.
15. Klein AP. Identifying people at a high risk of developing pancreatic cancer. *Nat Rev Cancer.* 13(1):66-74, 2013.
16. Klein AP, Lindstrom S, Mendelsohn JB, et al. An absolute risk model to identify individuals at elevated risk for pancreatic cancer in the general population. *PLoS One.* 8(9):e372311. doi: 10.1371/journal.pone.0072311, 2013.
17. Law JK, Singh VK, Khashab MA, Hruban RH, Canto MI, Shin EJ, Saxena P, Weiss MJ, Pawlik TM, Wolfgang CL, Lennon AM. Endoscopic ultrasound (EUS)-guided fiducial placement allows localization of small neuroendocrine tumors during parenchymal-sparing pancreatic surgery. *Surg Endosc.* 27(10):3921-3926, 2013.
18. Law JK, Hruban RH, Lennon AM. Management of pancreatic cysts: a multidisciplinary approach. *Curr Opin Gastroenterol.* 29(5):509-516, 2013.

19. Le DT, Lutz E, Uram JN, Sugar EA, Onners B, Solt S, Zheng L, Diaz LA, Donehower RC, Jaffee EM, Laheru DA. Evaluation of Ipilimumab in combination with allogeneic pancreatic tumor cells transfected with a GM-CSF gene in previously treated pancreatic cancer. *J Immunother.* 36(7):382-389, 2013.
20. Le A, Dang CV. Studying Myc's role in metabolism regulation. *Methods Mol Biol.* 1012:213-9. doi: 10.1007/978-1-62703-429-6\_14, 2013.
21. Leenders M, Bhattacharjee S, Vineis P, Stevens V, Bueno-de-Mesquita HB, Shu XO, et al. Polymorphisms in genes related to one-carbon metabolism are not related to pancreatic cancer in PanScan and PanC4. *Cancer Causes Control.* 24(3):595-602, 2013.
22. Lewis GH, Wang H, Bellizzi AM, Klein AP, Askin FB, Schwartz LE, Schulick RD, Wolfgang CL, Cameron JL, O'Reilly EM, Yu KH, Hruban RH. Prognosis of minimally invasive carcinoma arising in mucinous cystic neoplasms of the pancreas. *Am J Surg Pathol.* 37(4):601-605, 2013.
23. Li A, Yu J, Kim H, Wolfgang CL, Canto MI, Hruban RH, Goggins M. MicroRNA array analysis finds elevated serum miR-1290 accurately distinguishes patients with low-stage pancreatic cancer from healthy and disease controls. *Clin Cancer Res.* 19(13):3600-3610, 2013.
24. Li A, Yu J, Kim H, Wolfgang CL, Canto MI, Hruban RH, Goggins M. Serum miR-1290 as a marker of pancreatic cancer – response. *Clin Cancer Res.* 19(18):5252-5253, 2013.
25. Macgregor-Das AM, Iacobuzio-Donahue CA. Molecular pathways in pancreatic carcinogenesis. *J Surg Oncol.* 107(1):8-14, 2013.
26. Makonhon-Moore A, Brosnan JA, Iacobuzio-Donahue CA. Pancreatic cancer genomics: insights and opportunities for clinical translation. *Genome Med.* 5(3):26. doi: 10.1186/gm430. eCollection, 2013.
27. Makohon-Moore A, Iacobuzio-Donahue CA. Considerations for sequencing analyses of pancreatic cancer progression and metastasis. *Methods Mol Biol.* 980:121-129, 2013.
28. Matthaei H, dal Molin M, Maitra A. Identification and analysis of precursors to invasive pancreatic cancer. *Methods Mol Biol.* 980:1-12, 2013.
29. McCall CM, Shi C, Cornish TC, Klimstra DS, Tang LH, Basturk O, Mun LJ, Ellison TA, Wolfgang CL, Choti MA, Schulick RD, Edil BH, Hruban RH. Grading of well-differentiated pancreatic neuroendocrine tumors is improved by the inclusion of both Ki67 proliferative index and mitotic rate. *Am J Surg Pathol.* 37(11):1671-1677, 2013.

30. O'Neal RL, Nam KT, LaFleur BJ, Barlow B, Nozaki K, Lee HJ, Kim WH, Yang HK, Shi C, Maitra A, Montgomery E, Washington MK, El Rifai W, Drapkin RI, Goldenring JR. Human epididymis protein 4 is up-regulated in gastric and pancreatic adenocarcinomas. *Hum Pathol.* 44(5):734-742, 2013.
31. Raman SP, Kawamoto S, Law JK, Blackford A, Lennon AM, Wolfgang CL, Hruban RH, Cameron JL, Fishman EK. Institutional experience with solid-pseudopapillary neoplasms: focus on computed tomography, magnetic resonance imaging, conventional ultrasound, endoscopic ultrasound, and predictors of aggressive histology. *J Comput Assist Tomogr.* 37(5):824-833, 2013.
32. Raman SP, Kawamoto S, Blackford A, Hruban RH, Lennon AM, Wolfgang CL, Rezaee N, Edil B, Fishman EK. Histopathologic findings of multifocal pancreatic intraductal papillary mucinous neoplasms on CT. *AJR Am J Roentgenol.* 200(3):563-569, 2013.
33. Raman SP, Salaria SN, Hruban RH, Fishman EK. Groove pancreatitis: spectrum of imaging findings and radiology-pathology correlation. *AJR Am J Roentgenol.* 201(1):W29-39, 2013.
34. Salman B, Brat G, Yoon YS, Hruban RH, Singhi AD, Fishman EK, Herman JM, Wolfgang CL. The diagnosis and surgical treatment of pancreaticblastoma in adults: a case series nad review of the literature. *J Gastrointest Surg.* 17(12):2153-2161, 2013.
35. Schueneman AJ, sugar EA, Uram J, Bigelow E, Herman JM, Edil BH, Jaffee EM, Zheng L, Laheru DA. Low total lymphocyte count is associated with poor survival in patients with resected pancreatic adenocarcinoma receiving a GM-CSF secreting pancreatic tumor vaccine. *Ann Surg Oncol.* 20 Suppl 3(0 3):S725-730, 2013.
36. Singhi AD, Norwood S, Liu TC, Sharma R, Wolfgang CL, Schulick RD, Zeh HJ, Hruban RH. Acinar cell cystadenoma of the pancreas. A benign neoplasm or nonneoplastic ballooning of acinar and ductal epithelium? *Am J Surg Pathol.* 37(9):1329-1335, 2013.
37. Sun HX, Xu Y, Yang XR, Wang WM, Bai H, Shi RY, Nayar SK, Devbhandari RP, He YZ, Zhu QF, Sun YF, Hu B, Khan M, Anders RA, Fan J. Hypoxia inducible factor 2 alpha inhibits hepatocellular carcinoma growth through the transcription factor dimerization partner 3/E2F transcription factor 1-dependent apoptotic pathway. *Hepatology.* 57(3):1088-1097, 2013.
38. Wada K, Takaori K, Traverson W, Hruban RH, Furukawa T, Brentnall TA, Hatori T, et al. Clinical importance of familial pancreatic cancer registry in Japan: a report from kick-off meeting at International Symposium on Pancreas Cancer 2012. *J Hepatobiliary Pancreat Sci.* 20(6):557-566, 2013.
39. Wolfgang CL, Herman JM, Laheru DA, Klein AP, Erdek MA, Fishman EK, Hruban RH. Recent progress in pancreatic cancer. *CA Cancer J Clin.* 63(5):318-348, 2013.

40. Wood LD. Pancreatic cancer genomes: toward molecular subtyping and novel approaches to diagnosis and therapy. *Mol Diagn Ther.* 17(5):287-297, 2013.
41. Yachida S, Iacobuzio-Donahue CA. Evolution and dynamics of pancreatic cancer progression. *Oncogene.* 32(45):5253-5260, 2013.
42. Yi JM, Guzzetta AA, Bailey VJ, Downing SR, Van Neste L, Chiappinelli KB, Keeley BP, Stark A, Herera A, Wolfgang D, Papou EP, Iacobuzio-Donahue CA, Goggins MG, Herman JG, Wang TH, Baylin SB, Ahuja N. Novel methylation biomarker panel for the early detection of pancreatic cancer. *Clin Cancer Res.* 19(23):6544-6555, 2013.
43. Yip-Schneider MT, Wu H, Hruban RH, Lowy AM, Crooks PA, Schmidt CM. Efficacy of Dimethylaminoparthenolide and Sulindac in combination with Gemcitabine in a genetically engineered mouse model of pancreatic cancer. *Pancreas.* 42(1):160-167, 2013.
44. Zhang G, he P, Tan H, Budhu A, Gaedcke J, Ghadimi BM, Ried T, Yfantis HG, Lee DH, Maitra A, Hanna N, Alexander HR, Hussain SP. Integration of metabolomics and transcriptomics revealed a fatty acid network exerting growth inhibitory effects in human pancreatic cancer. *Clin Cancer Res.* 19(18):4983-4993, 2013.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

## 2012

1. Al-Sukhni W, Joe S, Lionel AC, Zwingerman N, Zogopoulos G, Marshall CR, Borgida A, Holter S, Gropper A, Moore S, Bondy M, Klein AP, Petersen GM, Rabe KG, Schwartz AG, Syngal S, Scherer SW, Gallinger S. Identification of germline genomic copy number variation in familial pancreatic cancer. *Hum Genet.* 131(9):1481-1494, 2012.
2. Biankin AV, Waddell N, Kassahn KS, Gingras MC, Lakshmi B, Muthuswamy AL, Johns DK, Miller PJ, Wilson AP, Wu J, Chang DK, Cowley MJ, Gardiner BB, Song S, Harliwong I, et al. Pancreatic cancer genomes reveal aberrations in axon guidance pathway genes. *Nature.* 491(7424):399-405, 2012.
3. Brosnan JA, Iacobuzio-Donahue CA. A new branch on the tree: next-generation sequencing in the study of cancer. *Semin Cell Dev Biol.* 23(2):237-242, 2012.
4. Caldwell ME, DeNicola GM, Martins CP, Jocobetz MA, Maitra A, Hruban RH, Tuveson DA. Cellular features of senescence during the evolution of human and murine ductal pancreatic cancer. *Oncogene.* 31(12):1599-1608, 2012.
5. Canto MI, Hruban RH, Fishman EK, Kamel IR, Schulick R, Zhang Z, Topazian M, Takahashi N, Fletcher J, Petersen G, Klein AP, Axilbund J, Griffin C, Syngal S, Saltzman JR, Mortele KJ, Lee J, Tamm E, Vikram R, Bhosale P, Margolis D, Farrell J, Goggins M. Frequent detection of pancreatic lesions in asymptomatic high-risk individuals. *Gastroenterology.* 142(4):796-804, 2012.
6. Canto MI, Harinck F, Hruban RH, Offerhaus GJ, Poley JW, Kamel I, Nio Y, Schulick RS, Bassi C, Kluijft I, Levy MJ, Chak A, Fockens P, Goggins M, Bruno M, on behalf of the International Cancer of the Pancreas Screening (CAPS) Consortium. International Cancer of the Pancreas Screening (CAPS) Consortium summit on the management of patients with increased risk for familial pancreatic cancer. *Gut.* 62(3):339-347, 2013.
7. Chen G, Olson MT, O'Neill A, Norris A, Beierl K, Harada S, Debeljak M, Rivera-Roman K, Finley S, Stafford A, Gocke CD, Lin MT, Eshleman JR. A virtual pyrogram generator to resolve complex pyrosequencing results. *J Mol Diagnostics.* 14(2):149-159, 2012.
8. Chen R, Pan S, Ottenhof NA, de Wilde RF, Wolfgang CL, Lane Z, Post J, Bronner MP, Willmann JK, Maitra A, Brentnall TA. Stromal galectin-1 expression is associated with long-term survival in resectable pancreatic ductal adenocarcinoma. *Cancer Biol Ther.* 13(10):899-907, 2012.

9. Chenna V, Hu C, Pramanik D, Aftab BT, Karikari C, Campbell NR, Hong SM, Zhao M, Rudek MA, Khan SR, Rudin CM, Maitra A. A polymeric nanoparticle encapsulated small molecule inhibitor of hedgehog signaling (NanoHHI) bypasses secondary mutational resistance to smoothened antagonists. *Mol Cancer Ther.* 11(1):165-173, 2012.
10. Chun YS, Bisht S, Chenna V, Pramanik D, Yoshida T, Hong SM, de Wilde RF, Zhang Z, Huso DL, Zhao M, Rudek M, Stearns V, Maitra A, Sukumar S. Intraductal administration of a polymeric nanoparticle formulation of curcumin (NanoCurc) significantly attenuates incidence of mammary tumors in a rodent chemical carcinogenesis model. *Carcinogenesis.* 33(11):2242-2249, 2012.
11. Cui Y, Brosnan JA, Blackford A, Sur S, Hruban RH, Kinzler KW, Vogelstein B, Maitra A, Diaz LA, Iacobuzio-Donahue CA, Eshleman JR. Genetically defined subsets of human pancreatic cancer demonstrate unique in vitro chemosensitivity. *Clin Cancer Res.* 18(23):6519-6530, 2012.
12. Dallas MR, Chen SH, Streppel MM, Sharma S, Maitra A, Konstantopoulos K. Sialofucosylated podocalyxin is functional E- and L-selectin ligand expressed by metastatic pancreatic cancer cells. *Am J Physiol Cell Physiol.* 303(6):C616-624, 2012.
13. dal Molin M, Hong SM, Hebbar S, Sharma R, Scrimieri F, de Wilde R, Mayo SC, Goggins M, Wolfgang CL, Schulick RD, Lin MT, Eshleman JR, Hruban RH, Maitra A, Hanno M. Loss of expression of the SWI/SNF chromatin remodeling subunit BRG1/SMARCA4 is frequently observed in intraductal papillary mucinous neoplasms of the pancreas. *Hum Pathol.* 43(4):585-591, 2012.
14. de Wilde RF, Heaphy CM, Maitra A, Meeker AK, Edil BH, Wolfgang CL, Ellison TA, Schulick RD, Molenaar IQ, Valk GD, Vriens MR, Borel Rinkes IH, Offerhaus GJ, Hruban RH, Matsukuma KE. Loss of ATRX or DAXX expression and concomitant acquisition of alternative lengthening of telomeres phenotype are late events in a small subset of MEN-1 syndrome pancreatic neuroendocrine tumors. *Mod Pathol.* 25(7):1033-1039, 2012.
15. de Wilde RF, Edil BH, Hruban RH, Maitra A. Well-differentiated pancreatic neuroendocrine tumors: from genetics to therapy. *Nat Rev Gastroenterol Hepatol.* 9(4):199-208, 2012.
16. Duesberg P, Iacobuzio-Donahue CA, Brosnan JA, McCormack A, Mandrioli D, Chen L. Origin of metastases. Subspecies of cancers generated by intrinsic karyotypic variations. *Cell Cycle.* 11(6):1151-1166, 2012.
17. Goggins M. GLP-1 receptor agonist effects on normal and neoplastic pancreata. *Diabetes.* 61:989-990, 2012.

18. Gray PJ, Wang J, Pawlik TM, Edil BH, Schulick R, Hruban RH, Dao H, Cameron J, Wolfgang C, Herman JM. Factors influencing survival in patients undergoing palliative bypass for pancreatic adenocarcinoma. *J Surg Oncol.* 106(1):66-71, 2012.
19. Haeno H, Gonen M, Davis MB, Herman JM, Iacobusio-Donahue CA, Michor F. Computational Modeling of Pancreatic Cancer Reveals Kinetics of Metastasis Suggesting Optimum Treatment Strategies. *Cell.* 148(1-2):362-375, 2012.
20. Hillion J, Smail SS, Di Cello F, Belton A, Shah SN, Huso T, Schuldenfrei A, nelson DM, Cope L, Campbell N, Karikari C, derinto A, Maitra A, Huso DL, Resar LM. The HMGA1-COX-2 axis: a key molecular pathway and potential target in pancreatic adenocarcinoma. *Pancreatology.* 12(4):372-379, 2012.
21. Holmes BJ, Hruban RH, Wolfgang CL, Ali SZ. Fine needle aspirate of autoimmune pancreatitis (lymphoplasmacytic sclerosing pancreatitis): cytomorphologic characteristics and clinical correlates. *Acta Cytologica.* 56(3):228-232, 2012.
22. Hong SM, Goggins M, Wolfgang CL, Schulick RD, Edil BH, Cameron JL, Handri-Luca A, Herman JM, Hruban RH. Vascular invasion in infiltrating ductal adenocarcinoma of the pancreas can mimic pancreatic intraepithelial neoplasia: a histopathologic study of 209 cases. *Am J Surg Pathol.* 36(2):235-241, 2012.
23. Hong SM, Omura N, Vincent A, Li A, Knight S, Yu J, Hruban RH, Goggins M. Genome-wide CpG island profiling of intraductal papillary mucinous neoplasms of the pancreas. *Clin Cancer Res.* 18(3):700-712, 2012.
24. Hong SM, Vincent A, Kanda M, Leclerc J, Omura N, Borges M, Klein AP, Canto MI, Hruban RH, Goggins M. Genome-wide somatic copy number alterations in low-grade PanINs and IPMNs from individuals with a family history of pancreatic cancer. *Clin Cancer Res.* 18(16):4303-4312, 2012.
25. Hsu CC, Wolfgang CL, Laheru DA, Pawlik TM, Swartz MJ, Winter JM, Robinson R, Edil BH, Narang AK, Choti MA, Hruban RH, Cameron JL, Schulick RD, Herman JM. Early mortality risk score: identification of poor outcomes following upfront surgery for resectable pancreatic cancer. *J Gastrointest Surg.* 16(4):753-761, 2012.
26. Iacobuzio-Donahue CA. Personalized medicine in pancreatic cancer: prognosis and potential implications for therapy. *J Gastrointest Surg.* 16(9):1651-1652, 2012.
27. Iacobuzio-Donahue CA. Genetic evolution of pancreatic cancer: lessons learnt from the pancreatic cancer genome sequencing project. *Gut.* 61(7):1085-1094, 2012.
28. Iacobuzio-Donahue CA, Velculescu VE, Wolfgang CL, Hruban RH. Genetic basis of pancreas cancer development and progression: insights from whole-exome and whole-genome sequencing. *Clin Cancer Res.* 18(16):4257-4265, 2012.

29. Iwatate M, Hatushaya H, Sasaki K, Kishida N, Yoshikawa S, Ono H, Maitra A. Functional pancreatic acinar cell carcinoma extending into the main pancreatic duct and splenic vein. *J Gastrointest Canc.* 43(2):373-378, 2012.
30. Kanda M, Matthaei H, Wu J, Hong SM, Yu J, Borges M, Hruban RH, Maitra A, Kinzler K, Vogelstein B, Goggins M. Presence of somatic mutations in most early-stage pancreatic intraepithelial neoplasia. *Gastroenterology.* 142(4):730-733, 2012.
31. Kawamoto S, Johnson P, Hruban RH, Cameron JL, Fishman EK. Intrapancreatic accessory spleen: CT appearance and differential diagnosis. *Abdom Imaging.* 37(5):812-827, 2012.
32. Kim MS, Kuppireddy SV, Sakamuri S, Singal M, Getnet D, Harsha HC, Goel R, Balakrishnan L, Jacob HK, Kashyap MK, Tankala SG, Maitra A, Iacobuzio-Donahue CA, Jaffee E, Goggins MG, Velculescu VE, Hruban Rh, Pandey A. Rapid characterization of candidate biomarkers for pancreatic cancer using cell microarrays (CMAs). *J Proteome Res.* 11(11):5556-5563, 2012.
33. Klein AP. Genetic susceptibility to pancreatic cancer. *Mol Carcinog.* 51(1):14-24, 2012.
34. Le A, Rajeshkumar NV, Maitra A, Dang CV. Conceptual framework for cutting the pancreatic cancer fuel supply. *Clin Cancer Res.* 18(16):4285-4290, 2012.
35. Le DT, Brockstedt DG, Nir-Paz R, Hampl J, Mathur S, Nemunaitis J, Sterman DH, Hassan R, Lutz E, Mohyer B, Giedlin M, Louis JL, Sugar EA, Pons A, Cox AL, Levine J, Murphy AL, Illei P, Dubensky TW, Eiden JE, Jaffee EM, Laheru DA. A live-attenuated listeria vaccine (ANZ-100) and a live-attenuated listeria vaccine expressing mesothelin (CRS-207) for advanced cancers: Phase I studies of safety and immune induction. *Clin Cancer Res.* 18(3):858-868, 2012.
36. Lee KH, Galloway JF, Park J, Dvoracek CM, Dallas M, Konstantopoulos K, Maitra A, Searson PC. Quantitative molecular profiling of biomarkers for pancreatic cancer with functionalized quantum dots. *Nanomedicine.* 8(7):1043-1051, 2012.
37. Li D, Duell EJ, Yu K...Klein AP, et al. Pathway analysis of genome-wide association study data highlights pancreatic development genes as susceptibility factors for pancreatic cancer. *Carcinogenesis.* 33(7):1384-1390, 2012.
38. Matthaei H, Norris-Kirby A, Tsatsis AC, Olino K, Hong SM, dal Molin M, Goggins M, Canto M, Horton KM, Jackson KD, Capelli P, Zamboni G, Bortesi L, Furukawa T, Egawa S, Ishida M, Ottomo S, Unno M, Motoi F, Wolfgang CL, Edil BH, Cameron JL, Eshleman JR, Schulick RD, Maitra A, Hruban RH. Clinicopathological characteristics and molecular analyses of multifocal intraductal papillary mucinous neoplasms of the pancreas. *Ann Surg.* 255(2):326-333, 2012.

39. Matthaei H, Wu J, dal Molin M, Debeljak M, Lingohr P, Katai N, Klimstra DS, Adway NV, Eshleman JR, Schulick RD, Kinzler KW, Vogelstein B, Hruban RH, Maitra A. GNAS codon 201 mutations are uncommon in intraductal papillary neoplasms of the bile duct. *HPB (Oxford)*. 14(10):677-683, 2012.
40. Matthaei H, Wylie D, Lloyd MB, dal Molin M, Kemppainen J, Mayo SC, Wolfgang CL, Schulick RD, Langfield L, Andruss BF, Adai AT, Hruban RH, Szafranska-Schwarzbach AE, Maitra A. miRNA biomarkers in cyst fluid augment the diagnosis and management of pancreatic cysts. *Clin Cancer Res*. 18(17):4713-4724, 2012.
41. McCall CM, Shi C, Klein AP, Konukiewitz B, Edil BH, Ellison TA, Wolfgang CL, Schulick RD, Kloppel G, Hruban RH. Serotonin expression in pancreatic neuroendocrine tumors correlates with a trabecular histologic pattern and large duct involvement. *Hum Pathol*. 43(8):1169-1176, 2012.
42. McDonald OG, Maitra A, Hruban RH. Human correlates of provocative questions in pancreatic pathology. *Adv Anat Pathol*. 19(6):351-362, 2012.
43. Mizuma M, Rasheed ZA, Yabuuchi S, Omura N, Campbell NR, de Wilde RF, De Oliveira E, Zhang Q, Puig O, Matsui W, Hidalgo M, Maitra A, Rajeshkumar NV. The gamma secretase inhibitor MK-003 attenuates pancreatic cancer growth in preclinical models. *Mol Cancer Ther*. 11(9):1999-2009, 2012.
44. Naranjo-Suarez S, Carlson BA, Tsuji PA, Yoo MH, Gladyshev VN, Hatfield DL. HIF-independnet regulation of Thioredoxin Reductase 1 contributes to the high levels of reactive oxygen species induced by hypoxia. *PLoS One*. 7(2):e30470. doi: 10.1371/journal.pone.0030479, 2012.
45. Ohshima-Hosoyama S, Simmons HA, Goecks N, Joers V, Swanson CR, Bondarekno V, Velotta R, Brunner K, Wood LA, Hruban RH, Emborg ME. A monoclonal antibody-GDNF fusion protein is not neuroprotective and is associated with proliferative pancreatic lesions in Parkinson Monkeys. *PLoS One* 7(6):e39035. doi: 10.1371/journal.pone.0039036, 2012.
46. Panarelli NC, Park KJ, Hruban RH, Klimstra DS. Microcystic serous cystadenoma of the pancreas with subtotal cystic degeneration: another neoplastic mimic of pancreatic pseudocyst. *Am J Surg Pathol*. 36(5):726-731, 2012.
47. Penchev VR, Rasheed ZA, Maitra A, Matsui W. Heterogeneity and targeting of pancreatic cancer stem cells. *Clin Cancer Res*. 18(16):4277-4284, 2012.
48. Pramanik D, Campbell NR, Das S, Gupta S, Chenna V, Bisht S, Sysa-Shah P, Bedja D, Karikiari C, Steenbergen C, Gabrielson KL, Maitra A, Maitra A. A composit polymer nanoparticle overcomes multidrug resistance and ameliorates doxorubicin-associated cardiomyopathy. *Oncotarget*. 3(6):640-650, 2012.

49. Pérez-Mancera PA, Rust AG, van der Weyden L, Kristiansen G, Li A, Sarver AL, Silverstein KA, Grützmann R, Aust D, Rümmele P, Knösel T, Herd C, Stemple DL, Kettleborough R, Brosnan JA, Li A, Morgan R, Knight S, Yu J, Stegeman S, Collier LS, ten Hoeve JJ, de Ridder J, Klein AP, Goggins M, Hruban RH, Chang DK, Biankin AV, Grimmond SM, Australian Pancreatic Cancer Genome Initiative, Wessels LF, Wood SA, Iacobuzio-Donahue CA, Pilarsky C, Largaespada DA, Adams DJ, Tuveson DA. The deubiquitinase USP9X suppresses pancreatic ductal adenocarcinoma. *Nature*. 486(7402):266-270, 2012.
50. Qiu H, Wild AT, Wang H, Fishman EK, Hruban RH, Laheru DA, Kumar R, Hacker-Prietz A, Tuli R, Tryggestad E, Schulick RD, Cameron JL, Edil BH, Pawlik TM, Wolfgang CL, Herman JM. Comparison of Conventional and 3-Dimensional Computed Tomography against Histopathologic Examination in Determining Pancreatic Adenocarcinoma Tumor Size: Implications for Radiation Therapy Planning. *Radiother Oncol*. 104(2):167-172, 2012.
51. Rhim AD, Mirek ET, Aiello NM, Maitra A, Bailey JM, McAllister F, Reichert M, Beatty G, Rustgi AK, Vonderheide RH, Leach SD, Stanger BZ. EMT and dissemination precede pancreatic tumor formation. *Cell*. 148(1-2):349-361, 2012.
52. Roberts NJ, Jiao Y, Yu J, Kopelovich L, Petersen GM, Bondy ML, Gallinger S, Schwartz AG, Syngal S, Cote ML, Axilbund J, Schulick R, Ali SZ, Eshleman JR, Velculescu VE, Goggins M, Vogelstein B, Papadopoulos N, Hruban RH, Kinzler KW, Klein AP. ATM mutations in patients with hereditary pancreatic cancer. *Cancer Discov*. 2(1):41-46, 2012.
53. Romero Arenas MA, Singhi AD, Hruban RH, Cameron AM. Rosai-Dorfman disease (sinus histiocytosis with massive lymphadenopathy) of the pancreas: third reported occurrence. *J Gastrointest Canc*. 43(4):626-629, 2012.
54. Rudra S, Narang AK, Pawlik TM, Wang H, Jaffee EM, Zheng L, Le DT, Cosgrove D, Hruban RH, Fishman EK, Tuli R, Laheru DA, Wolfgang CL, Diaz L, Herman JM. Evaluation of predictive variables in locally advanced pancreatic adenocarcinoma patients receiving definitive chemoradiation. *Pract Radiat Oncol*. 2(2):77-85, 2012.
55. Shain AH, Giacomini CP, Matsukuma K, Karikari CA, Bashyam MD, Hidalgo M, Maitra A, Pollack JR. Convergent structural alterations define SWIitch/Sucrose NonFermentable (SWI/SNF) chromatin remodeler as a central tumor suppressive complex in pancreatic cancer. *Proc Natl Acad Sci U S A*. 109(5):E252-259, 2012.
56. Shi C, Hruban RH. Intraductal papillary mucinous neoplasm. *Hum Pathol*. 43(1):1-16, 2012.
57. Singhi AD, Chu LC, Tatsas AD, Shi C, Ellison TA, Fishman EK, Kawamoto S, Schulick RD, Wolfgang CL, Hruban RH, Edil BH. Cystic pancreatic neuroendocrine tumors: a clinicopathologic study. *Am J Surg Pathol*. 36(11):1666-1673, 2012.

58. Tanaka M, Fernandez-del Castillo F, Adsay V, Chari S, Falconi M, Jang JY, Kimura W, Levy P, Pitman MB, Schmidt CM, Shimizu M, Wolfgang CL, Yamaguchi K, Yamao K. International consensus guidelines 2012 for the management of IPMN and MCN of the pancreas. *Pancreatology*. 12(3):183-197, 2012.
59. Tatsas AD, Owens CL, Siddiqui MT, Hruban RH, Ali SZ. Fine needle aspiration of intrapancreatic accessory spleen: cytomorphologic features and differential diagnosis. *Cancer Cytopathol*. 120(4):261-268, 2012.
60. Yachida S, Vakiani E, White CM, Zhong Y, Saunders T, Morgan R, de Wilde RF, Maitra A, Hicks J, Demarzo AM, Shi C, Sharma R, Laheru D, Edil BH, Wolfgang CL, Schulick RD, Hruban RH, Tang LH, Klimstra DS, Iacobuzio-Donahue CA. Small cell and large cell neuroendocrine carcinomas of the pancreas are genetically similar and distinct from well-differentiated pancreatic neuroendocrine tumors. *Am J Surg Pathol*. 36(2):173-184, 2012.
61. Yachida S, White C, Naito Y, Zhong Y, Brosnan JA, Macgregor-Das AM, Morgan RA, Saunders T, Laheru D, Herman JM, Hruban RH, Klein AP, Jones S, Velculescu VE, Wolfgang C, Iacobuzio-Donahue CA. Clinical Significance of the Genetic Landscape of Pancreatic Cancer and Implications for Identification of Potential Long Term Survivors. *Clin Cancer Res*. 18(22):6339-6347, 2012.
62. Yu J, Li A, Hong SM, Hruban RH, Goggins M. MicroRNA alterations of pancreatic intraepithelial neoplasms (PanINs). *Clin Cancer Res*. 18(4):981-992, 2012.
63. Yu J, Walter K, Omura N, Hong SM, Young A, Li A, Vincent A, Goggins M. Unlike pancreatic cancer cells pancreatic cancer associated fibroblasts display minimal gene induction after 5-aza-2'-deoxycytidine. *PLoS One*. 7:343456. doi: 10.1371/journal.pone.0043456, 2012.
64. Zhang G, Schetter A, He P, Funamizu N, Gaedcke J, Ghadimi BM, Ried T, Hassan R, Yfantis HG, Lee DH, Lacy C, Maitra A, Hanna N, Alexander HR, Hussain SP. DPEP1 inhibits tumor cell invasiveness, enhances chemosensitivity and predicts clinical outcome in pancreatic ductal adenocarcinoma. *PLoS One*. 7(2):331507. doi: 10.1371/journal.pone.0031407, 2012.
65. Zheng L, Jaffee EM. Annexin A2 is a new antigenic target for pancreatic cancer immunotherapy. *Oncoimmunology*. 1(1):112-114, 2012.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

## 2011

1. Arnaoutakis GJ, Rangachari D, Laheru DA, Iacobuzio-Donahue CA, Hruban RH, Herman JA, Edil BH, Pawlik TM, Schulick RD, Cameron JL, Meneshian A, Yang SC, Wolfgang CL. Pulmonary resection for isolated pancreatic adenocarcinoma metastasis: an analysis of outcomes and survival. *J Gastrointest Surg.* 15(9):1611-1617, 2011.
2. DeNicola GM, Karreth FA, Humpton TJ, Gopinathan A, Wei C, Frese K, Mangal D, Yu KH, Yeo CJ, Calhoun ES, Scrimieri F, Winter JM, Hruban RH, Iacobuzio-Donahue CA, Kern SE, Blair IA, Tuveson DA. Oncogene-induced Nrf2 transcription promotes ROS detoxification and tumorigenesis. *Nature.* 375(7354):106-109, 2011.
3. Dunmartin L, Whiteman HJ, Weeks ME, Hariharan D, Dmitrovic B, Iacobuzio-Donahue CA, Brentnall TA, Bronner MP, Feakins RM, Timms JF, Brennan C, Lemoine NR, Crnogorac-Jurcevic T. AGR2 is a novel surface antigen that promotes the dissemination of pancreatic cancer cells through regulation of Cathepsins B and D. *Cancer Res.* 71(22):7091-7102, 2011.
4. Feldman G, Karikari C, dal Molin M, Durlinger S, Volkmann P, Bartsch DK, Bisht S, Koorstra JB, Brossart P, Maitra A, Fendrich V. Inactivation of Brca2 cooperates with Trp53 (R172H) to induce invasive pancreatic ductal adenocarcinoma in mice: a mouse model of familial pancreatic cancer. *Cancer Biol Ther.* 11(11):959-968, 2011.
5. Feldman G, Bisht S, Karikari C, Garrido-Laguna I, Rasheed Z, Ottenhof NA, Dadon T, Alvarez H, Fendrich V, Rajeshkumar NV, Matsui W, Brossart P, Hidalgo M, Bannergi R, Maitra A, Nelkin BD. Cyclin-dependent kinase inhibitor Dinaciclib (SCH727965) inhibits pancreatic cancer growth and progression in murine xenografts. *Cancer Biol Ther.* 12(7):598-609, 2011.
6. Fendrich V, Schneider R, Maitra A, Jacobsen ID, Opfermann T, Bartsche DK. Detection of precursor lesions of pancreatic adenocarcinoma in PET-CT in a genetically engineered mouse model of pancreatic cancer. *Neoplasia.* 13(10):180-186, 2011.
7. Fenrich V, Oh E, Bang S, Karikari C, Ottenhof N, Bisht S, Lauth M, Brossart P, Katsanis N, Maitra A, Feldmann G. Ectopic overexpression of sonic hedgehog (shh) induces stromal expansion and metaplasia in the adult murine pancreas. *Neoplasia.* 13:923-930, 2011.
8. Fishel ML, Jiang Y, Rajeshkumar NV, Scandura G, Sinn AL, He Y, Shen C, Jones DR, Pollock KE, Ivan M, Maitra A, Kelley MR. Impact of APE1/Ref-1 redox inhibition on pancreatic tumor growth. *Mol Cancer Ther.* 10(9):1698-1708, 2011.

9. Garrido-Laguna I, Uson M, Rajeshkumar NV, Tan AC, de Oliveira E, Karikari C, Villaroel MC, Salomon A, Taylor G, Sharma R, Hruban RH, Maitra A, Laheru D, Rubio-Viqueira B, Jimeno A, Hidalgo M. Tumor engraftment in nude mice and enrichment in stroma-related gene pathways predict poor survival and resistance to Gemcitabine in patients with pancreatic cancer. *Clin Cancer Res.* 17(17):5793-5800, 2011.
10. Giday SA, Khashab MA, Buscaglia JM, Krishnamurty DM, Chen T, Kalloo AN, Canto MI, Okolo PI, Hruban RH, Jagannath SB. Autoimmune pancreatitis: current diagnostic criteria are suboptimal. *J Gastroenterol Hepatol.* 26(6):970-973, 2011.
11. Goggins M. Markers of pancreatic cancer: working toward early detection. *Clin Cancer Res.* 17(4):635-637, 2011.
12. Gupta S, Pramanik D, Mukherjee R, Campbell NR, Elumalai S, de Wilde RF, Hong SM, Goggins M, De Jesus-Acosta A, Laheru D, Maitra A. Molecular determinants of retinoic acid sensitivity in pancreatic cancer. *Clin Cancer Res.* 18(1):280-289, 2011.
13. Handra-Luca A, Hong SM, Walter K, Wolfgang C, Hruban RH, Goggins M. Tumour epithelial vimentin expression and outcome of pancreatic ductal adenocarcinomas. *Br J Cancer.* 104(8):1296-1302, 2011.
14. Heaphy CM, deWilde RF, Jiao Y, Klein AP, Edil BH, Shi C, Bettegowda C, Rodriguez FJ, Eberhart CG, Hebbar S, Offerhaus GJ, Rasheed BA, He Y, Yan H, bigner DD, Oba-shinjo SM, Marie SK, Riggins GJ, Kinzler KW, Vogelstein B, Hruban RH, Maitra A, Papadopoulos N, Meeker AK. Altered telomeres in tumors with ATRX and DAXX mutations. *Science.* 333(6041):425. doi: 10.1126/science.1207313, 2011.
15. Heaphy CM, Subhawong AP, Hong SM, Goggins MG, Montgomery EA, Gabrielson E, Netto GH, Epstein JI, Lotan TL, Westra WH, Shih IeM, Iacobuzio-Donahue CA, Maitra A, Li QK, Eberhart CG, Taube JM, Rakheja D, Kurman RJ, Wu TC, Roden RB, Argani P, DeMarzo AM, Terracciano L, Torbenson M, Meeker AK. Prevalence of the alternative lengthening of telomeres telomere maintenance mechanism in human cancer subtypes. *Am J Pathol.* 179(4):1608-1615, 2011.
16. Hong SM, Li A, Olino K, Wolfgang CL, Herman JM, Schulick RD, Iacobuzio-Donahue CA, Hruban RH, Goggins M. Loss of E-caderin expression and outcome among patients with resectable pancreatic adenocarcinomas. *Mod Pathol.* 24(9):1237-1247, 2011.
17. Hong SM, Park JY, Hruban RH, Goggins M. Molecular signatures of pancreatic cancer. *Arch Path Lab Med.* 135(6):716-727, 2011.
18. Hong SM, Goggins M, Wolfgang CL, Schulick RD, Edil BH, Cameron JL, Handri-Luca A, Herman JM, Hruban RH. Vascular invasion in infiltrating ductal adenocarcinoma of the pancreas can mimic pancreatic intraepithelial neoplasia: a histopathologic study of 209 cases. *Am J Surg Pathol.* 36(2):235-241, 2012.

19. Jani N, Hani MB, Schulick RD, Hruban RH, Cunningham SC. Diagnosis and management of cystic lesions of the pancreas. *Diag Ther Endoscopy*. 2011;478913. doi: 10.1155/2011/478913, 2011.
20. Jiao Y, Shi C, Edil BH, de Wilde RF, Klimstra DS, Maitra A, Schulick RD, Tang LH, Wolfgang CL, Choti MA, Velculescu VE, Diaz LA, Vogelstein B, Kinzler KW, Hruban RH, Papadopoulos N. DAXX/ATRX, Men1, and mTOR pathway genes are frequently altered in pancreatic neuroendocrine tumors. *Science*. 331(6021):1199-203, 2011.
21. Jones S, Parsons DW, Zhang X, Wesseling J, Kristel P, Schmidt MK, Markowitz S, Yan H, Bigner D, Hruban RH, Eshleman JR, Iacobuzio-Donahue CA, Goggins M, Maitra A, Malek SN, Powell S, Vogelstein B, Kinzler KW, Velculescu VE, Papadopoulos N. Somatic mutations in the chromatin remodeling gene ARID1A occur in several tumor types. *Hum Mutat*. 33(1):100-103, 2011.
22. Kawamoto S, Scudiere J, Hruban RH, Wolfgang CL, Cameron JL, Fishman EK. Solid-pseudopapillary neoplasm of the pancreas spectrum of findings on multidetector CT. *Clin Imaging*. 35(1):21-28, 2011.
23. Kawamoto S, Shi C, Hruban RH, Choti MA, Schulick RD, Fishman EK, Siegelman SS. Small serotonin-producing neuroendocrine tumor of the pancreas associated with pancreatic duct obstruction. *AJR Am J Roentgenol*. 197(3):W482-488, 2011.
24. Kern SE, Shi C, Hruban RH. The complexity of pancreatic ductal cancers and multidimensional strategies for therapeutic targeting. *J Pathol*. 223(2):295-306, 2011.
25. Khashab MA, Shin EJ, Amateau S, Canto MI, Hruban RH, Fishman EK, Cameron JL, Edil BH, Wolfgang CL, Schulick RD, Giday S. Tumor size and location correlate with behavior of pancreatic serous cystic neoplasms. *Am J Gastroenterol*. 106(8):1521-1526, 2011.
26. Khashab M, Makary M, Hruban RH, Giday S, Singh V, Canto M. Endosonographic and elastographic features of a rare epidermoid cyst of an intrapancreatic accessory spleen. *Endoscopy*. 43 Suppl 2 UCTN:E193-194, 2011.
27. Khashab MA, Yong E, Lennon AM, Shin EJ, Amateau S, Hruban RH, Olino K, Gaday S, Fishman EK, Wolfgang CL, Edil BH, Makary M, Canto MI. EUS is still superior to multidetector computerized tomography for detection of pancreatic neuroendocrine tumors. *Gastrointest Endosc*. 73(4):691-696, 2011.
28. Kinde I, Wu J, Papadopoulos N, Kinzler KW, Vogelstein B. Detection and quantification of rare mutations with massively parallel sequencing. *Proc Natl Acad Sci U S A*. 108(23):9530-9535, 2011.

29. Kwei KA, Shain AH, Bair R, Montgomery K, Karikari CA, van de Rijn M, Hidalgo M, Maitra A, Bashyam MD, Pollack JR. SMURF1 amplification promotes invasiveness in pancreatic cancer. *PLoS One*. 6(8):323924. doi: 10.1371/journal.pone.0023924, 2011.
30. Lutz E, Yeo CJ, Lillemoe KD, Biedrzycki B, Kobrin B, Herman J, Sugar E, Piantadosi S, Cameron JL, Solt S, Onners B, Tartakovsky I, Choi M, Sharma R, Illei PB, Hruban RH, Abrams RA, Le D, Jaffee E, Laheru D. A lethally irradiated allogenic granulocyte-macrophage colony stimulating factor-secreting tumor vaccine for pancreatic adenocarcinoma: a phase II trial of safety, efficacy, and immune activation. *Ann Surg*. 253(2):328-335, 2011.
31. Matsubayashi H, Maeda A, Kanemoto H, Uesaka K, Yamazaki K, Hironaka S, Miyagi Y, Ikebara H, Ono H, Klein A, Goggins M. Risk factors of familial pancreatic cancer in Japan: current smoking and recent onset of diabetes. *Pancreas*. 40(6):974-978, 2011.
32. Matsubayashi H, Hasuike N, Onozawa Y, Kanemoto H, Ono H, Hruban RH. Autoimmune pancreatitis with response to chemoradiation therapy. *J Gastrointestin Liver Dis*. 20(3):315-319, 2011.
33. Matthaei H, Schulick RD, Hruban RH, Maitra A. Cystic precursors to invasive pancreatic cancer. *Nat Rev Gastroenterol Hepatol*. 8(3):141-150, 2011.
34. Matthaei H, Maitra A. Precursor lesions of pancreatic cancer. In: Pre-Invasive Disease: Pathogenesis and Clinical Management. Fitzgerald RC, eds., Springer, Chapter 19, pgs 395-420.
35. Matthaei H, Hong SM, Mayo SK, dal Molin M, Olino K, Venkat R, Goggins M, Herman JM, Wolfgang CL, Cameron JL, Schulick JD, Maitra A, Hruban RH. Presence of pancreatic intraepithelial neoplasia in the pancreatic transaction margin does not influence outcome in patients with R0 resection pancreatic cancer. *Ann Surg Oncol*. 18(12):3493-3499, 2011.
36. Meriden Z, Shi C, Edil BH, Ellison T, Wolfgang CL, Cornish TC, Schulick RD, Hruban RH. Hyaline globules in neuroendocrine and solid-pseudopapillary neoplasms of the pancreas: a clue to the diagnosis. *Am J Surg Pathol*. 35(7):981-988, 2011.
37. Narang AK, Miller RC, Hsu CC, Bhatia S, Pawlik TM, Laheru D, Hruban RH, Zhou J, Winter JM, Haddock MG, Donohue JH, Schulick RD, Wolfgang CL, Cameron JL, Herman JM. Evaluation of adjuvant chemoradiation therapy for ampullary adenocarcinoma: the Johns Hopkins Hospital – Mayo Clinic collaborative study. *Radiat Oncol*. 6:126, doi: 10.1186/1748-717X-6-126, 2011.
38. Ottenhof NA, de Wilde RF, Maitra A, Hruban RH, Offerhaus GJA. Molecular Characteristics of Pancreatic Ductal Adenocarcinoma. *Patholog Res Int*. 2011:620601. doi: 10.4061/2011/620601, 2011.

39. Park JY, Hong SM, Klimstra DS, Goggins MG, Maitra A, Hruban RH. Pdx1 expression in pancreatic precursor lesions and neoplasms. *Appl Immunohistochem Mol Morphol.* 19(5):444-4449, 2011.
40. Pramanik D, Campbell NR, Karikari C, Chivukula R, Kent OA, Mendell JT, Maitra A. Restitution of tumor suppressor microRNAs using a systemic nanovector inhibits pancreatic cancer growth in mice. *Mol Cancer Ther.* 10(8):1470-1480, 2011.
41. Qiu W, Sahin F, Iacobuzio-Donahue CA, Garcia-Carracedo D, Wang WM, Kuo CY, Chen D, Arking DE, Lowy AM, Hruban RH, Remotti HE, Su GH. Disruption of p16 and activation of Kras in pancreas increases ductal adenocarcinoma formation and metastasis in vivo. *Oncotarget.* 2(11):862-873, 2011.
42. Reid MD, Basturk O, Thirabanasak D, Hruban RH, Klimstra DS, Bagci P, Altinel D, Adsay NV. Tumor-infiltrating neutrophils in pancreatic neoplasia. *Mod Pathol.* 24(12):1612-1619, 2011.
43. Ryu JK, Matthaei H, dal Molin M, Hong SM, Canto MI, Schulick RD, Wolfgang C, Goggins MG, Hruban RH, Cope L, Maitra A. Elevated microRNA miR-21 levels in pancreatic cyst fluid are predictive of mucinous precursor lesions of ductal adenocarcinoma. *Pancreatology.* 11(3):343-350, 2011.
44. Scrimieri F, Calhoun ES, Patel K, Gupta R, Huso DL, Hruban RH, Kern SE. FAM190A rearrangements provide a multitude of individualized tumor signatures and neo-antigens in cancer. *Oncotarget.* 2(1-2):69-75, 2011.
45. Singhi AD, Hruban RH, Fabre M, Imura J, Schulick R, Wolfgang C, Ali SZ. Peripancreatic paraganglioma: a potential diagnostic challenge in cytopathology and surgical pathology. *Am J Surg Path.* 35(10):1498-1504, 2011.
46. Toll AD, Mitchell D, Yeo CJ, Hruban RH, Witkiewicz AK. Acinar cell carcinoma with a prominent intraductal growth pattern: case report with review of the literature. *Int J Surg Pathol.* 19(6):795-799, 2011.
47. Villarroel MC, Rajeshkumar NV, Garrido-Laguna I, De Jesus-Acosta A, Jones S, Maitra A, Hruban RH, Eshleman JR, Klein A, Laheru D, Donehower R, Hidalgo M. Personalizing cancer treatment in the age of global genomic analyses: PALB2 gene mutations and the response to DNA damaging agents in pancreatic cancer. *Mol Cancer Ther.* 10(1):3-8, 2011.
48. Vincent A, Omura N, Hong SM, Jaffe A, Eshleman JR, Goggins M. Genome-wide analysis of promoter methylation associated with gene expression profiles of pancreatic adenocarcinomas. *Clin Cancer Res.* 17(13):4341-4354, 2011.
49. Vincent A, Herman J, Schulick R, Hruban RH, Goggins M. Pancreatic cancer. *Lancet.* 378(9791):607-620, 2011.

50. von Hoff DD, Ramanathan RK, Borad MJ, Laheru DA, Smith LS, Wood TE, Korn RL, Desai N, Trieu V, Iglesias JL, Zhang H, Soon-Shiong P, Shi T, Rajeshkumar NV, Maitra A, Hidalgo M. Gemcitabine plus nab-Paclitaxel is an active regimen in patients with advanced pancreatic cancer: a phase I/II clinical trial. *J Clin Oncol.* 29(34):4548-4554, 2011.
51. Wang Q, Chaerkady R, Wu J, Hwang HJ, Papadopoulos N, Kopelovich L, Maitra A, Matthaei H, Eshleman JR, Hruban RH. Mutant proteins as cancer-specific biomarkers. *Proc Natl Acad Sci U S A.* 108(6):2444-2449, 2011.
52. Wright CM, Wright RC, Eshleman JR, Ostermeier M. A protein therapeutic modality founded on molecular regulation. *Proc Natl Acad Sci U S A.* 108(39):16206-16211, 2011.
53. Wu J, Matthaei H, Maitra A, dal Molin M, Wood LD, Eshleman JR, Goggins M, Canto MI, Schulick RD, Edil BH, Wolfgang CL, Klein AP, Diaz LA, Allen PJ, Schmidt CM, Kinzler KW, Papadopoulos N, Hruban RH, Vogelstein B. Recurrent GNAS mutations define an unexpected pathway for pancreatic cyst development. *Sci Transl Med.* 3(92):92ra66, 2011.
54. Wu J, Jiao Y, dal Molin M, Maitra A, de Wilde RF, Wood LD, Eshleman JR, Goggins MG, Wolfgang CL, Canto MI, Schulick RD, Edil BH, Choti MA, Adsay V, Kimstra DS, Offerhaus GJ, Klein AP, Kopelovich L, Carter H, Karchin R, Allen PJ, Schmidt CM, Naito Y, Diaz LA, Kinzler KW, Papadopoulos N, Hruban RH, Vogelstein B. Whole-exome sequencing of neoplastic cysts of the pancreas reveals recurrent mutations in components of ubiquitin-dependent pathways. *Proc Natl Acad Sci U S A.* 108(52):21188-21193, 2011.
55. Yachida S, Zhong Y, Patrascu R, Davis MG, Morsberger LA, Griffin CA, Hruban RH, Laheru D, Iacobuzio-Donahue CA. Establishment and characterization of a new cell line, A99, from a primary small cell carcinoma of the pancreas. *Pancreas.* 40(6):905-910, 2011.
56. Zhang YA, Maitra A, Hsieh JT, Rudin CH, Peacock CD, Karikari C, Brekken RA, Stastny V, Gao B, Girard L, Wistuba I, Frenkel E, Minna JD, Gazdar AF. Frequent detection of infectious xenotropic murine leukemia virus (XMLV) in human cultures established from mouse xenografts. *Cancer Bio Ther.* 12(7):617-628, 2011.
57. Zheng L, Foley K, Huang L, Leubner A, Mo G, Olino K, Edil BH, Mizuma M, Sharma R, Le DT, Anders RA, Illei PB, Van Eyk JE, Maitra A, Laheru D, Jaffee EM. Tyrosine 23 phosphorylation-dependent cell-surface localization of annexin A2 is required for invasion and metastases of pancreatic cancer. *PLoS One.* 6(4):e319390. doi: 10.1371/journal.pone.0019390, 2011.
58. Zhong Y, Wang Z, Fu B, Pan F, Yachida S, Dhara M, Albesiano E, Naito Y, Vilardell F, Cummings C, Martinelli P, Li A, Yonescu R, Ma Q, Griffin CA, Real FX, Iacobuzio-Donahue CA. GATA6 activates Wnt signaling in pancreatic cancer by negatively regulating the Wnt antagonist Dickkopf-1. *Plos One.* 6:322129. doi: 10.1371/journal.pone.0022129, 2011.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

## 2010

1. Basturk O, Khayyata S, Klimstra DS, Hruban RH, Zamboni G, Coban I, Adsay NV. Preferential expression of MUC6 in oncocytic and pancreatobiliary types of intraductal papillary neoplasms highlights a pyloropancreatic pathway, distinct from the intestinal pathway, in pancreatic carcinogenesis. *Am J Surg Pathol.* 34(3):364-370, 2010.
2. Bisht S, Mizuma M, Feldmann G, Ottenhof NA, Hong SM, Pramanik D, Chenna V, Karikari C, Sharma R, Goggins MG, Rudek MA, Ravi R, Maitra A, Maitra A. Systemic administration of polymeric nanoparticle-encapsulated curcumin (Nanocurc) blocks tumor growth and metastases in preclinical models of pancreatic cancer. *Mol Cancer Ther.* 9(8):2255-2264, 2010.
3. Brune KA, Lau B, Palmisano E, Canto M, Goggins MG, Hruban RH, Klein AP. Importance of age of onset in pancreatic cancer kindreds. *J Natl Cancer Inst.* 102(2):119-126, 2010.
4. Carter H, Samayoa J, Hruban RH, Karchin R. Prioritization of driver mutations in pancreatic cancer using cancer-specific high-throughput annotation of somatic mutations (CHASM). *Cancer Biol Ther.* 10(6):582-587, 2010.
5. Cai J, Zhang N, Zheng Y, de Wilde RF, Maitra A, Pan D. The Hippo signaling pathway restricts the oncogenic potential of an intestinal regeneration program. *Genes Dev.* 24(21):2383-2388, 2010.
6. Cunningham SC, Hruban RH, Schulick RD. Differentiating intraductal papillary mucinous neoplasms from other pancreatic cystic lesions. *World J Gastrointest Surg.* 2(10):331-336, 2010.
7. Feldmann G, Mishra A, Hong SM, Bisht S, Strock CJ, Ball DW, Goggins M, Maitra A, Nelkin BD. Inhibiting the cyclin-dependent kinase CDK5 blocks pancreatic cancer formation and progression through the suppression of Ras-Ral signaling. *Cancer Res.* 70(11):4460-4469, 2010.
8. Gold DV, Goggins M, Modrak DE, Newsome G, Liu M, Shi C, Hruban RH, Goldenberg DM. Detection of early-stage pancreatic adenocarcinoma. *Cancer Epidemiol Biomarkers Prev.* 19(11):2786-2794, 2010.
9. Goldstein SD, Ford EC, Duhon M, McNutt T, Wong J, Herman JM. Use of respiratory-correlated four-dimensional computed tomography to determine acceptable treatment margins for locally advanced pancreatic adenocarcinoma. *Int J Radiation Oncology Biol Phys.* 76(2):597-602, 2010.

10. Harinck F, Canto MI, Schulick R, Goggins M, Poley JW, Fockens P, Kluijt I, Bruno M. Surveillance in individuals at high risk of pancreatic cancer: too early to tell? *Gut*. 59(7):1005, 2010.
11. Hong SM, Heaphy CM, Shi C, Eo SH, Cho HJ, Meeker AK, Eshleman JR, Hruban RH, Goggins M. Telomeres are shortened in acinar-to-ductal metaplasia lesions associated with pancreatic intraepithelial neoplasia but not in isolated acinar-to-ductal metaplasias. *Mod Pathol*. 24(2):256-266, 2010.
12. Histov B, Reddy S, Lin MDSH, Cameron JL, Pawlik TM, Hruban RH, Swartz MJ, Edil GH, Kemp C, Wolfgang CL, Herman JM. Outcomes of adjuvant chemoradiation after pancreaticoduodenectomy with mesenterico-portal vein resection for adenocarcinoma of the pancreas. *Int J Radiat Oncol Biol Phys*. 76(1):176-180, 2010.
13. Hruban RH, Canto MI, Goggins M, Schulick R, Klein AP. Update on familial pancreatic cancer. *Adv Surg*. 44:293-311, 2010.
14. The International Cancer Genome Consortium. International network of cancer genome projects. *Nature*. 464(7291):993-998, 2010.
15. Kamiyama H, Kamiyama M, Hong SM, Karikari C, Lin MT, Gorges MW, Griffith M, Young A, Norris-Kirby A, Lubek C, Mizuma M, Feldmann G, Shi C, Liang H, Goggins MG, Maitra A, Hruban RH, Eshleman JR. In vivo and in vitro propagation of intraductal papillary mucinous neoplasms. *Lab Invest*. 90(5):665-673, 2010.
16. Kent OA, Chivukula RR, Mullendore M, Wentzel EA, Feldmann G, Lee KH, Liu S, Leach SD, Maitra A, Mendell JT. Repression of the miR-143/145 cluster by oncogenic Ras initiates a tumor-promoting feed-forward pathway. *Genes Dev*. 24(24):2754-2759, 2010.
17. Li A, Omura N, Hong SM, Vincent A, Walter K, Griffith M, Borges M, Goggins M. Pancreatic cancers epigenetically silence SIP1 and hypomethylate and overexpress miR-200a/200b in association with elevated circulating miR-200a and miR-200b levels. *Cancer Res*. 70(13):5226-5237, 2010.
18. Liby K, Royce DB, Risingson R, Williams CR, Maitra A, Hruban RH, Sporn MB. Synthetic triterpenoids prolong survival in a transgenic mouse model of pancreatic cancer. *Cancer Prev Res (Phila)*. 3(11):1427-1434, 2010.
19. Maitra A. Tracking down the Hedgehog's lair in the pancreas. *Gastroenterology*. 138(3): 823-851, 2010.
20. Matsubayashi H, Uesaka K, Kanemoto H, Sugiura T, Mizuno T, Sasaki K, Ono H, Hruban RH. Multiple endocrine neoplasms and serous cysts of the pancreas in a patient with von Hippel-Lindau disease. *J Gastrointest Cancer*. 41(3):197-202, 2010.

21. Omura N, Griffith M, Vincent A, Li A, Hong SM, Walter K, Borges M, Goggins M. Cyclooxygenase-deficient pancreatic cancer cells use exogenous sources of prostaglandins. *Mol Cancer Res.* 8(6):821-832, 2010.
22. Petersen GM...Klein AP, Goggins M...et al. A genome-wide association study identifies pancreatic cancer susceptibility loci on chromosomes 13q22.1, 1q32.1 and 5p15.33. *Nat Genet.* 42(3):22422-22428, 2010.
23. Poulsides GA, Reddy S, Cameron JL, Hruban RH, Pawlik TM, Ahuja N, Jain A, Edil BH, Iacobuzio-Donahue CA, Schulick RD, Wolfgang CL. Histopathologic basis for the favorable survival after resection of intraductal papillary mucinous neoplasm-associated invasive adenocarcinoma of the pancreas. *Ann Surg.* 251(3):470-476, 2010.
24. Rasheed ZA, Yang J, Wang Q, Kowalski J, Freed I, Murter C, Hong SM, Koorstra JB, Rajeshkumar NV, He X, Goggins M, Iacobuzio-Donahue CA, Berman DM, Laheru D, Jimeno A, Hidalgo M, Maitra A, Matsui W. Prognostic significance of tumorigenic cells with mesenchymal features in pancreatic adenocarcinoma. *J Natl Cancer Inst.* 102(5):340-351, 2010.
25. Redmond KJ, Wolfgang CL, Sugar EA, Ahn J, Nathan H, Laheru D, Edil BH, Choti MA, Pawlik TM, Hruban RH, Cameron JL, Herman JM. Adjuvant chemoradiation therapy for adenocarcinoma of the distal pancreas. *Ann Surg Oncol.* 17(12):3112-3119, 2010.
26. Ryu JK, Hong SM, Karikari CA, Hruban RH, Goggins MG, Maitra A. Aberrant microRNA-155 expression is an early event in the multistep progression of pancreatic adenocarcinoma. *Pancreatology.* 10(1):66-73, 2010.
27. Scudiere JR, Shi C, Hruban RH, Herman JM, Fishman EK, Schulick RD, Wolfgang CL, Makary MA, Thornton K, Montgomery E, Horton KM. Sclerosing mesenteritis involving the pancreas: a mimicker of pancreatic cancer. *Am J Surg Pathol.* 34(4):447-453, 2010.
28. Serrano OK, Chaudhry MA, Leach SD. The role of PET scanning in pancreatic cancer. *Adv Surg.* 44:313-325, 2010.
29. Singla Long S, Johnson PT, Hruban RH, Fishman EK. CT features of pulmonary artery sarcoma: critical aid to a challenging diagnosis. *Emerg Radiol.* 17(2):153-155, 2010.
30. Shi C, Klein AP, Goggins M, Maitra A, Canto M, Ali S, Schulick R, Palmisano E, Hruban RH. Increased prevalence of precursor lesions in familial pancreatic cancer patients. *Clin Cancer Res.* 15(24):7737-7743, 2010.
31. Shi C, Siegelman SS, Kawamoto S, Wolfgang CL, Schulick RD, Maitra A, Hruban RH. Pancreatic duct stenosis secondary to small endocrine neoplasms: a manifestation of serotonin production? *Radiology.* 257(1):107-114, 2010.

32. Swartz MJ, Hsu CC, Pawlik TM, Winter J, Hruban RH, Guler M, Schulick RD, Cameron JL, Laheru DA, Wolfgang CL, Herman JM. Adjuvant chemoradio-therapy after pancreatic resection for invasive carcinoma associated with intraductal papillary mucinous neoplasm of the pancreas. *Int J Radiat Oncol Biol Phys.* 76(3):839-844, 2010.
33. Vilardell F, Iacobuzio-Donahue CA. Cancer gene profiling in pancreatic cancer. In: *Cancer Gene Profiling: Methods and Protocols, Methods in Molecular Biology*, Grutzmann R, Pilarsky C, eds., vol. 576. Humana Press, Chapter 14, 2010.
34. Winter JM, Cameron JL, Olino K, Herman JM, deJong MC, Hruban RH, Wolfgang CL, Eckhauser F, Edil BH, Choti MA, Schulick RD, Pawlik TM. Clinicopathologic analysis of ampullary neoplasms in 450 patients: implications for surgical strategy and long-term prognosis. *J Gastrointest Surg.* 14(2):379-387, 2010.
35. Yachida S, Jones S, Bozic I, Antal t, Leary R, Fu B, Kamiyama M, Hruban RH, Eshleman JR, Nowak MA, Velculescu VE, Kinzler KW, Vogelstein B, Iacobuzio-Donahue CA. Distant metastasis occurs late during the genetic evolution of pancreatic cancer. *Nature.* 467(7319):1114-1117, 2010.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

## 2009

1. Amundadottir L, Kraft P, Stolzenberg-Solomon RZ, Fuchs CS, Petersen G, Arslan AA, Bueno-de-Mesquita HB, Gross M, Helzlsouer K, Jacobs EJ, LaCroix A, Zheng W, Albanes D, Bamlet W, Berg CD, Berrino F, Bingham S, Buring JE, Bracci PM, Canzian F, Clavel-Chapelon F, Clipp S, Cotterchio M, de Andrade M, Giovannucci EL, Duell EJ, Gallinger S, Gaziano JM, Goggins M, ... Hoover RN. Genome-Wide Association Study Identifies *ABO* Blood Group Susceptibility Variants for Pancreatic Cancer. *Nat Genet.* 41(9):986-990, 2009.
2. Axilbund JA, Argani P, Kamiyama M, Palmisano E, Raben M, Borges M, Brune KA, Goggins MG, Hruban RH, Klein AP. Absence of germline *BRCA1* mutations in familial pancreatic cancer patients. *Cancer Biol Ther.* 8(2):131-135, 2009.
3. Bisht S, Maitra A. Systemic delivery of curcumin: 21<sup>st</sup> solutions for an ancient conundrum. *Curr Drug Discov Technol.* 6(3):192-199, 2009.
4. Blackford A, Parmigiani G, Kensler TW, Wolfgang CL, Jones S, Zhang X, Parsons DW, Lin JC, Leary RJ, Eshleman JR, Goggins M, Jaffee EM, Iacobuzio-Donahue CA, Maitra A, Klein AP, Cameron JL, Olino K, Schulick R, Winter J, Vogelstein B, Velculescu VE, Kinzler KW, Hruban RH. Genetic Mutations Associated With Cigarette Smoking in Pancreatic Cancer. *Cancer Res.* 69(8):3681-3688, 2009.
5. Blackford A, Serrano OK, Wolfgang C, Parmigiani G, Jones S, Zhang X, Parsons DW, Lin JC, Leary RJ, Eshleman JR, Goggins M, Jaffee EM, Iacobuzio-Donahue CA, Maitra A, Cameron JL, Olino K, Schulick R, Winter J, Herman JM, Laheru D, Klein AP, Vogelstein B, Kinzler KW, Velculescu VE, Hruban RH. *SMAD4* Gene Mutations Are Associated With Poor Prognosis in Pancreatic Cancer. *Clin Cancer Res.* 15(14):4674-4679, 2009.
6. Brody JR, Costantino CL, Potoczek M, Cozzitorto J, McCue P, Yeo CJ, Hruban RH, Witkiewicz AK. Adenosquamous carcinoma of the pancreas harbors KRAS2, DPC4 and TP53 molecular alterations similar to pancreatic ductal adenocarcinoma. *Mod Pathol.* 22(5):651-659, 2009.
7. Brune K, Hong SM, Li A, Yachida S, Abe T, Griffith M, Yang D, Omura N, Eshleman J, Canto M, Schulick R, Klein AP, Hruban RH, Iacobuzio-Donahue CA, Goggins M. Genetic and epigenetic alterations of familial pancreatic cancers. *Cancer Epidemiol Biomarkers Prev.* 17(12):3536-3542, 2008.
8. Feldmann G, Rauenzahn S, Maitra A. In vitro models of pancreatic cancer for translational oncology research. *Expert Opin Drug Discov.* 4(4):429-443, 2009.

9. Habbe N, Koorstra JB, Mendell JT, Offerhaus GJ, Ryu JK, Feldman G, Mullendore ME, Goggins M, Hong SM, Maitra A. MicroRNA miR-155 is a biomarker of early pancreatic neoplasia. *Cancer Biol Ther.* 8:340-346, 2009.
10. Harsha HC, Kandasamy K, Ranganathan P, Rani S, Ramabadran S, Gollapudi S, Balakrishnan L, Dwivedi SB, Telikicherla D, Selvan LD, Goel R, Mathivanan S, Marimuthu A, Kashyap M, Vizza RF, Mayer FJ, DeCaprio JA, Srivastava S, Hanash SM, Hruban RH, Pandey A. A compendium of potential biomarkers of pancreatic cancer. *Plos Med.* 7;6(4):e1000046. doi: 10.1371/journal.pmed.1000046, 2009.
11. Hidalgo M and Maitra A. The Hedgehog pathway and pancreatic cancer. *N Engl J Med.* 361:2094-2096, 2009.
12. Hruban RH, Adsay NV. Molecular classification of neoplasms of the pancreas. *Hum Pathol.* 40(5):612-623, 2009.
13. Hruban RH, Zamboni G. Pancreatic Cancer. *Arch Pathol Lab Med.* 133(3):347-349, 2009.
14. Iacobuzio-Donahue CA, Fu B, Yachida S, Luo M, Abe H, Henderson CM, Vilardell F, Wang Z, Keller JW, Banerjee P, Herman JM, Cameron JL, Yeo CJ, Halushka MK, Eshleman JR, Raben M, Klein AP, Hruban RH, Hidalgo M, Laheru D. DPC4 gene status of the primary carcinoma correlates with patterns of failure in patients with pancreatic cancer. *J Clin Oncol.* 27(11):1806-1813, 2009.
15. Jimeno A, Feldmann G, Suárez-Gauthier A, Rasheed Z, Solomon A, Zou GM, Rubio-Viqueira B, García-García E, López-Ríos F, Matsui W, Maitra A, Hidalgo M. A direct pancreatic cancer xenograft model as a platform for cancer stem cell therapeutic development. *Mol Cancer Ther.* 8(2):310-314, 2009.
16. Jones S, Hruban RH, Kamiyama M, Borges M, Zhang X, Parsons DW, Lin JC, Palmisano E, Brune K, Jaffee EM, Iacobuzio-Donahue CA, Maitra A, Parmigiani G, Kern SE, Velculescu VE, Kinzler KW, Vogelstein B, Eshleman JR, Goggins M, Klein AP. Exomic sequencing identifies PALB2 as a pancreatic cancer susceptibility gene. *Science.* 324(5924):217. doi: 10.1126/science.1171202, 2009.
17. Karafin MS, Cummings CT, Fu B, Iacobuzio-Donahue CA. The developmental transcription factor Gata4 is overexpressed in pancreatic ductal adenocarcinoma. *Int J Clin Exp Pathol.* 3(1):47-55, 2009.
18. Kawamoto S, Siegelmann SS, Bluemke DA, Hruban RH, Fishman EK. Focal fatty infiltration in the head of the pancreas: evaluation with multidetector computed tomography with multiplanar reformation imaging. *J Comput Assist Tomogr.* 33(1):90-95, 2009.

19. Kent OA, Mullendor M, Wentzel EA, Lopez-Romero P, Tan AC, Alvarez H, West K, Ochs MF, Hidalgo M, Arkign DE, Maitra A, Mendell JT. A resource for analysis of microRNA expression and function in pancreatic ductal adenocarcinoma cells. *Cancer Biol Ther.* 8(21):46-57, 2009.
20. Klein AP, Borges M, Griffith M, Brune K, Hong SM, Omura N, Hruban RH, Goggins M. Absence of deleterious palladin mutations in patients with familial pancreatic cancer. *Cancer Epidemiol Biomarkers Prev.* 18(4):1328-1330, 2009.
21. Klimstra DS, Pitman MB, Hruban RH. An algorithmic approach to the diagnosis of pancreatic neoplasms. *Arch Pathol Lab Med.* 133(3):454-464, 2009.
22. Koorstra JB, Collins CA, Feldmann G, Bisht S, Leal Rojas P, Offerhaus GJA, Alvarez H, Maitra A. The Axl tyrosine kinase confers an adverse prognostic influence in pancreatic cancer and represents a new therapeutic target. *Cancer Biol Ther.* 8(7):618-626, 2009.
23. Koorstra JB, Hong SM, Shi C, Meeker AK, Rye JK, Offerhaus GJ, Goggins GJ, Goggins MG, Hruban RH, Maitra A. Widespread activation of the DNA damage response in human pancreatic intraepithelial neoplasia. *Mod Pathol.* 22(11):1439-1445, 2009.
24. Lee KH, Lotterman C, Karikari C, Omura N, Feldmann G, Habbe N, Goggins MG, Mendell JT, Maitra A. Epigenetic silencing of microRNA miR-107 regulates cyclin-dependent kinase 6 (CDK6) expression in pancreatic cancer. *Pancreatology.* 9(3):293-301, 2009.
25. Mullendore ME, Koorstra JB, Li Y-M, Offerhaus GJ, Fan X, Henderson CM, Matsui W, Eberhart CG, Maitra A, Feldmann G. Ligand-dependent Notch signaling is involved in tumor initiation and tumor maintenance in pancreatic cancer. *Clin Cancer Res.* 15(7):2291-2301, 2009.
26. Mundinger GS, Gust S, Micchelli ST, Fishman EK, Hruban RH, Wolfgang CL. Adult pancreatic hemangioma: case report and literature. *Gastroenterol Res Pract.* 2009:839730. doi: 10.1155/2009/839730, 2009.
27. Olive KP, Jacobetz MA, Davidson CJ, Gopinathan A, McIntyre D, Honess D, Madhu B, Goldgraben MA, Caldwell ME, Allard D, Frese KK, Denicola G, Feig C, Combs C, Winter SP, Ireland-Zecchini H, Reichelt S, Howat WJ, Chang A, Dhara M, Wang L, Rückert F, Grützmann R, Pilarsky C, Izeradjene K, Hingorani SR, Huang P, Davies SE, Plunkett W, Egorin M, Hruban RH, Whitebread N, McGovern K, Adams J, Iacobuzio-Donahue C, Griffiths J, Tuveson DA. Inhibition of Hedgehog signaling enhances delivery of chemotherapy in a mouse model of pancreatic cancer. *Science.* 324(5933):1457-1461, 2009.
28. Omura N, Goggins M. Epigenetics and epigenetic alterations in pancreatic cancer. *Int J Clin Exp Pathol.* 2(4):310-326, 2009.

29. Ottenhof NA, Milne AN, Morsink FH, Drillenburg P, Ten Kate FJ, Maitra A, Offerhaus GJ. Pancreatic intraepithelial neoplasia and pancreatic tumorigenesis: of mice and men. *Arch Pathol Lab Med.* 133(3):375-381, 2009.
30. Ranganathan P, Harsha, HC, Pandey, A. Molecular alterations in exocrine neoplasms of the pancreas. *Arch Pathol Lab Med.* 133(3):405-412, 2009.
31. Reddy S, Cameron JL, Scudiere J, Hruban RH, Fishman EK, Agrawal S, Ahuja N, Pawlik TM, Edil BH, Schulick RD, Wolfgang CL. Surgical management of solid pesuopapillary neoplasms of the pancreas (Franz or Hamoudi Tumors): a large single institutional series. *J Am Coll Surg.* 208(5):950-957, 2009.
32. Shi C, Hong SM, Lim P, Kamiyama H, Khan M, Anders RA, Goggins M, Hruban RH, Eshleman JR. KRAS2 mutations in human pancreatic acinar-ductal metaplastic lesions are limited to those with PanIN: implications for the human pancreatic cancer cell of origin. *Mol Cancer Res.* 7(2):230-236, 2009.
33. Shi C, Hruban RH, Klein AP. Familial pancreatic cancer. *Arch Pathol Lab Med.* 133(3):365-374, 2009.
34. Shi G, Zhu L, Sun Y, Bettencourt R, Damsz B, Hruban RH, Konieczny SF. Loss of the Acinar-Restricted Transcription Factor Mist1 Accelerates Kras-Induced Pancreatic Intraepithelial Neoplasia. *Gastroenterology.* 136(4):1368-1378, 2009.
35. Steinberg WM, Barkin JS, Bradley EL, DiMagno E, Layer P, Canto MI, Levy MJ. Should patients with a strong family history of pancreatic cancer be screened on a periodic basis for cancer of the pancreas? *Pancreas.* 38(5):e137-150, 2009.
36. Stewart Z, Hruban RH, Fishman E, Wolfgang C. Surgical management of giant Brunner's gland hamartoma: case report and literature review *World J Surg Oncol.* 7:68, doi: 10.1186/1477-7819-7-68, 2009.
37. Voong KR, Davison J, Pawlik TM, Uy MO, Hsu CC, Winter J, Hruban RH, Laheru D, Rudra S, Swartz M, Nathan H, Edil BH, Schulick R, Cameron JL, Wolfgang CL, Herman JM. Clinicopathologic Review of Resected Pancreatic Adenosquamous Carcinoma: Importance of Adjuvant Chemotherapy and Radiation. *Hum Pathol.* 41(1):113-122, 2009.
38. Wang L, Brune KA, Visvanthan K, Laheru D, Herman J, Wolfgang C, Schulick R, Cameron J, Goggins MG, Hruban RH, Klein AP. Elevated Cancer Mortality in the Relatives of Patients with Pancreatic Cancer. *Cancer Epidemiol Biomarkers Prev.* 18(11):2829-2834, 2009.
39. Yachida S, Iacobuzio-Donahue CA. The pathology and genetics of metastatic pancreatic cancer. *Arch Pathol Lab Med.* 133(3):413-22, 2009.

40. Yeo TP, Hruban RH, Brody J, Brune K, Fitzgerald S, Yeo CJ. Assessment of “gene-environment” interaction in cases of familial and sporadic pancreatic cancer. *J Gastrointest Surg.* 13(8):1487-94, 2009.
41. Yong KT, Ding H, Roy I, Law WC, Bergey EJ, Maitra A, Prasad PN. Imaging Pancreatic Cancer Using Bioconjugated InP Quantum Dots. *ACS Nano.* 3(3):502–510, 2009.
42. Yong KT, Hu R, Roy I, Ding H, Vathy L, Bergey E, Mizuma M, Maitra A, Prasad P. Tumor Targeting and Imaging in Live Animals with Functionalized Semiconductor Quantum Rods. *ACS Appl Mater Interfaces.* 1(3):710-719, 2009.
43. Zou GM, Karikari C, Kabe Y, Handa H, Anders RA, Maitra A. The Ape-1/Ref-1 redox antagonist E3330 inhibits the growth of tumor endothelium and endothelial progenitor cells: Therapeutic implications in tumor angiogenesis. *J Cell Physiol.* 219(1):209-218, 2009.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

## 2008

1. Berrington de Gonzalez A, Yun JE, Lee SY, Klein AP, Jee SH. Pancreatic cancer and factors associated with the insulin resistance syndrome in the Korean Cancer Prevention Study. *Cancer Epidemiol Biomarkers Prev.* 17(2):359-364, 2008.
2. Bisht S, Feldmann G, Koorstra JB, Mullendore M, Alvarez H, Karkari C, Rudek MA, Lee CK, Maitra Sr A, Maitra A. In vivo characterization of apolymeric nanoparticle platform with potential oral drug delivery capabilities. *Mol Cancer Ther.* 7(12):3878-3888, 2008.
3. Brosens LA, Keller JJ, Pohjola L, Haglund C, Morsink FH, Iacobuzio-Donahue CA, Goggins M, Giardiello FM, Ristimaki A, Offerhaus GJA. Increased expression of cytoplasmic HuR in familial adenomatous polyposis. *Cancer Biol Ther.* 7(3):424-427, 2008.
4. Cao D, Ashfaq R, Goggins MG, Hruban RH, Kern SE, Iacobuzio-Donahue CA. Differential Expression of Multiple Genes in Association with MADH4/DPC4/SMAD4 Inactivation in Pancreatic Cancer. *Int J Clin Exp Pathol.* 1(6):510-517, 2008.
5. Chen S, Auletta T, Dovirak O, Hutter C, Kuntz K, El-Ftesi S, Kendall J, Han H, Von Hoff DD, Ashfaq R, Maitra A, Iacobuzio-Donahue CA, Hruban RH, Lucito R. Copy number alterations in pancreatic cancer identity recurrent PAK4 amplification. *Cancer Biol Ther.* 7(11):1793-1802, 2008.
6. Cheung, W., Darfler, M.M., Alvarez, H., Hood, B.L., Conrads, T.P., Habbe, N., Krizman, D.B., Mollenhauer, J., Feldmann, G., Maitra, A. Application of a global proteomic approach to archival precursor lesions: deleted in malignant brain tumors 1 and tissue transglutaminase 2 are upregulated in pancreatic cancer precursors. *Pancreatology* 8(6): 608-616, 2008.
7. Chivukula RR, Mendell JT. Circular reasoning: microRNAs and cell-cycle control. *Trends Biochem Sci.* 33(10):474-81, 2008.
8. Feldman G, Maitra A. Molecular genetics of pancreatic ductal adenocarcinomas and recent implications for translational efforts. *J Mol Diagn.* 10(2):111-122, 2008.
9. Feldman G, Habbe N, Dhara S, Bisht S, Alvarez H, Fendrich V, Beaty R, Mullendore M, Karikari C, Bardeesy N, Oullette MM, Yu W, Maitra A. Hedgehog inhibition prolongs survival in a genetically engineered mouse model of pancreatic cancer. *Gut.* 57(10):1420-1430, 2008.

10. Feldmann G, Fendrich V, McGovern K, Bedja D, Bisht S, Alvarez H, Koorstra JB, Habbe N, Karikari C, Mullendore M, Gabrielson K, Sharma R, Matsui W, Maitra A. An orally bioavailable small molecule inhibitor of Hedgehog signaling inhibits tumor initiation and metastasis in pancreatic cancer. *Mol Cancer Ther.* 7(9):2725-2735, 2008.
11. Fendrich V, Esni F, Garay MV, Feldmann G, Habbe N, Jensen JN, Dor Y, Stoffers D, Jensen J, Leach SD, Maitra A. Hedgehog signaling is required for effective regeneration of exocrine pancreas. *Gastroenterology.* 135(2):621-631, 2008.
12. Fu B, Luo M, Lakkur S, Lucito R, Iacobuzio-Donahue CA. Frequent genomic copy number gain and overexpression of GATA-6 in pancreatic carcinoma. *Cancer Biol Ther.* 7(10):1593-1601, 2008.
13. Habbe N, Shi G, Meguid RA, Fendrich V, Esni F, Chen H, Feldmann G, Stoffers DA, Konieczny SF, Leach SD, Maitra A. Spontaneous induction of murine pancreatic intraepithelial neoplasia (mPanIN) by acinar cell targeting of oncogenic Kras in adult mice. *Proc Natl Acad Sci U S A.* 105(48):18913-18918, 2008.
14. Harsha HC, Jimeno A, Molina H, Mihalas AB, Goggins MG, Hruban RH, Schulick RD, Kamath U, Maitra A, Hidalgo M, Pandey A. Activated Epidermal Growth Factor Receptor as a novel target in pancreatic cancer therapy. *J Proteome Res.* 7(11):4651-4658, 2008.
15. Herman JM, Swartz MJ, Hsu CC, Winter J, Pawlik TM, Sugar E, Robinson R, Laheru DA, Jaffee E, Hruban RH, Campbell KA, Wolfgang CL, Asrari F, Donehower R, Hidalgo M, Diaz LA, Yeo CJ, Cmaeron JL, Schulick RD, Abrams R. Analysis of fluorouracil-based adjuvant chemotherapy and radiation after pancreaticoduodenectomy for ductal adenocarcinoma of the pancreas: results of a large, prospectively collected database at the Johns Hopkins Hospital. *J Clin Oncol.* 26(21):3503-3510, 2008.
16. Hong SM, Kelly D, Griffith M, Omura N, Li A, Li CP, Hruban RH, Goggins M. Multiple genes are hypermethylated in intraductal papillary mucinous neoplasms of the pancreas. *Mod Pathol.* 21(12):1499-1507, 2008.
17. Hruban RH, Maitra A, Kern SE, Goggins M. Precursors to pancreatic cancer. In *Gastroenterology Clinics of North America.* Odze RD, ed. Elsevier Saunders, 2007.
18. Hruban R, Maitra A, Goggins M. Update on pancreatic intraepithelial neoplasia. *Int J Clin Exp Pathol.* 1(4):306-316, 2008.
19. Hruban RH, Maitra A, Schulick R, Laheru D, Herman J, Kern SE, Goggins M. Emerging molecular biology of pancreatic cancer. *Gastrointest Cancer Res.* 2(4 Suppl):S10-15, 2008.
20. Hruban RH, Fukushima N. Cystic lesions of the pancreas. *Diag Histopathol (Oxf).* 14(6):260-265, 2008.

21. Hruban RH, Schulick RD. Is surgery required for patients with intraductal papillary mucinous neoplasms without mural nodules? *Nat Clin Pract Gastroenterol Hepatol.* 5(11):598-599, 2008.
22. Jimeno A, Tan AC, Coffa J, Rajeshkumar NV, Kulesza P, Rubio-Viqueira B, Wheelhouse J, Diosdado B, Messersmith WA, Iacobuzio-Donahue C, Maitra A, Varella-Garcia M, Hirsch FR, Meijer GA, Hidalgo M. Coordinated epidermal growth factor receptor pathway gene overexpression predicts epidermal growth factor receptor inhibitor sensitivity in pancreatic cancer. *Cancer Res.* 68(8):2841-2849, 2008.
23. Jones S, Zhang X, Parsons DW, Lin JC, Leary RJ, Angenendt P, Mankoo P, Carter H, Kamiyama H, Jimeno A, Hong SM, Fu B, Lin MT, Calhoun ES, Kamiyama M, Walter K, Nikolskaya T, Nikolsky Y, Hartigan J, Smith DR, Hidalgo M, Leach SD, Klein AP, Jaffee EM, Goggins M, Maitra A, Iacobuzio-Donahue C, Eshleman JR, Kern SE, Hruban RH, Karchin R, Papadopoulos N, Parmigiani G, Vogelstein B, Velculescu VE, Kinsler KW. Core signaling pathways in human pancreatic cancers revealed by Global Genomic Analyses. *Science.* 321(5897):1801-1806, 2008.
24. Karanjawala ZF, Illei PB, Ashfaq R, Infante JR, Murphy K, Pandey A, Schulick RD, Winter J, Sharma R, Maitra A, Goggins M, Hruban RH. New markers of pancreatic cancer identified through differential gene expression analyses: Claudin 18 and Annexin A8. *Am J Surg Pathol.* 32(2):188-196, 2008.
25. Koorstra JB, Feldmann G, Habbe N, Maitra A. Morphogenesis of pancreatic cancer: role of pancreatic intraepithelial neoplasia (PanINs). *Langenbecks Arch Surg.* 393(4):561-570, 2008.
26. Koorstra JB, Hustinx SR, Offerhaus GJA, Maitra A. Panreatic carcinogenesis. *Pancreatology.* 8(2):11-25, 2008.
27. Koorstra JB, Maitra A, Morsink FH, Drillenburg P, ten Kate FJ, Hruban RH, Offerhaus GJA. Undifferentiated carcinoma with osteoclastic giant cells (UCOCGC) of the pancreas associated with the Familial Atypical Multiple Mole Melanoma Syndrome (FAMMM). *Am J Surg Pathol.* 32(12):1905-1909, 2008.
28. Kristiansen TZ, Harsha HC, Grønborg M, Maitra A, Pandey A. Differential Membrane Proteomics Using (18O-Labeling To Identify Biomarkers for Cholangiocarcinoma. *J Proteome Res.* 7(11):4670-4677, 2008.
29. Kwei KA, Bashyam MD, Kao J, Ratheesh R, Reddy EC, Kim YH, Montgomery K, Giacomini CP, Choi YL, Chatterjee S, Karikari CA, Salari K, Wang P, Hernandez-Boussard T, Swarnalata G, van de Rijn M, Maitra A, Pollack JR. Genomic profiling identifies GATA6 as a candidate oncogene amplified in pancreaticobiliary cancer. *PLoS Genet.* 4(5):e1000081, 2008.
30. Laffan TA, Horton KM, KleinAP, Fishman EK, Johnson PT, Hruban RH. Prevalence of unsuspected pancreatic cysts on MDCT. *AJR Am J Roentgenol.* 191(3):802-807, 2008.

31. Laheru D, Lutz E, Burke J, Biedrzycki B, Solt S, Onners B, Tartakovsky I, Nemunaitis J, Le D, Sugar E, Hege K, Jaffee E. Allogeneic granulocyte macrophage colony-stimulating factor-secreting tumor immunotherapy alone or in sequence with cyclophosphamide for metastatic pancreatic cancer: a pilot study of safety, feasibility, and immune activation. *Clin Cancer Res.* 14(5):1455-1463, 2008.
32. Leao IC, Ganesan P, Armstrong T, Jaffee EM. Effective Depletion of Regulatory T Cells allows the Recruitments of Mesothelin-Specific CD8+ cells to the antitumor Immune Response Agains a Mesothelin-expressing Mouse Pancreatic Adenocarcinoma. *Clin Transl Sci.* 1(3):228-239, 2008.
33. Lotterman CD, Kent OA, Mendell JT. Functional integration of microRNAs into oncogenic and tumor suppressor pathways. *Cell Cycle.* 7(16):2493-2499, 2008.
34. Maitra A, Hruban RH. Pancreatic Cancer. *Annu Rev Pathol.* 3:157-188, 2008.
35. Mathivanan S... Pandey A. Human proteinpedia enables sharing of human protein data. *Nat Biotechnol.* 26(2):164-167, 2008.
36. Mendell JT. miRiad roles for the miR-17-92 cluster in development and disease. *Cell.* 133(2):217-222, 2008.
37. Offerhaus GJ, Milne AN, Oving IM, van Gijn ME, Hruban RH, Clevers H. A transgenic mouse model for “lipid hang-up,” or why pathologists need to be involved in genetically engineered mouse modeling. *Gut.* 57(12):1739-1740, 2008.
38. Omura N, Li CP, Li A, Hong SM, Walter K, Jimeno A, Hidalgo M, Goggins M. Genome-wide profiling of methylated promoters in pancreatic adenocarcinoma. *Cancer Biol Ther.* 7(7):1146-1156, 2008.
39. Park SW, Davison J, Rhee J, Hruban RH, Maitra A, Leach SD. Oncogenic KRAS induces progenitor cell expansion and malignant transformation in zebrafish exocrine pancreas. *Gastroenterology.* 134(7):2080-2090, 2008.
40. Parsi MA, Li A, Li CP, Goggins M. DNA methylation alterations in ERCP brush samples of patients with suspected pancreaticobiliary disease. *Clin Gastro Hepatol.* 6(11):1270-1278, 2008.
41. Pawlik T, Laheru D, Hruban RH, Coleman J, Wolfgang DL, Campbell K, Ali S, Fishman EK, Schulick RD, Herman JM, and the Johns Hopkins Multidisciplinary Pancreas Clinic Team. Evaluating the impact of a single-day multidisciplinary clinic on the management of pancreatic cancer. *Ann Surg Oncol.* 15(8):2081-2088, 2008.
42. Reddy S, Edil B, Cameron J, Pawlik TM, Herman JM, Gilson M, Campbell K, Schulick R, Ahuja N, Wolfgang C. Pancreatic resection of isolated metastases from nonpancreatic primary cancers. *Ann Surg Oncol.* 15(11):3199-3206, 2008.

43. Sato N, Fukushima N, Hruban RH, Goggins M. CpG island methylation profile of pancreatic intraepithelial neoplasia. *Mod Pathol.* 21(3):238-244, 2008.
44. Shi C, Daniels JA, Hruban RH. Molecular characterization of pancreatic neoplasms. *Adv Anat Pathol.* 15(4):185-195, 2008.
45. Shi C, Fukushima N, Abe T, Bian Y, Hua L, Wendelburg BJ, Yeo CJ, Hruban RH, Goggins MG, and Eshleman JR. Sensitive and quantitative detection of KRAS2 gene mutations in pancreatic duct juice differentiates patients with pancreatic cancer from chronic pancreatitis, potential for early detection. *Cancer Biol Ther.* 7(3):260-267, 2008.
46. Steinhardt AA, Gayyed MF, Klein AP, Dong JD, Maitra A, Pan D, Montgomery EA, Anders RA. Expression of Yes-associated protein in common solid tumors. *Hum Pathol.* 39(11):1582-1589, 2008.
47. van Hattem WA, Carvalho R, Li A, Offerhaus GJA, Goggins M. Amplification of EMSY in a subset of sporadic pancreatic adenocarcinomas. *Int J Clin Exp Pathol.* 1(4):343-51, 2008.
48. Walter K, Omura N, Hong SM, Griffith M, Goggins M. Pancreatic cancer associated fibroblasts display normal allelotypes. *Cancer Biol Ther.* 7(6):882-888, 2008.
49. Winter JM, Ting AH, Vilardell F, Gallmeier E, Baylin SB, Hruban RH, Kern SE, Iacobuzio-Donahue CA. Absence of E-cadherin expression distinguishes noncohesive from cohesive pancreatic cancer. *Clin Cancer Res.* 14(2):412-418, 2008.
50. Zou GM, Maitra A. Small-molecule inhibitor of the AP endonuclease 1/REF-1 E3330 inhibits pancreatic cancer cell growth and migration. *Mol Cancer Ther.* 7(7):2012-2021, 2008.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

**2007**

1. Abe T, Fukushima N, Brune K, Boehm C, Sato N, Matsubayashi H, Canto M, Petersen GM, Hruban RH, Goggins M. Genome-wide allelotypes of familial and sporadic intraductal papillary mucinous neoplasms. *Clin Cancer Res.* 13(20):6019-6025, 2007.
2. Beaty RM, Gronborg M, Pollack JR, Maitra A. Target discovery and validation in pancreatic cancer. *Methods Mol Biol.* 360:57-89, 2007.
3. Bisht S, Feldmann G, Soni S, Ravi R, Karikari C, Maitra A, Maitra A. Polymeric nanoparticle-encapsulated curcumin ("nanocurcumin"): a novel strategy for human cancer therapy. *J Nanobiotechnology.* 5:3. doi: 10.1186/1477-3155-5-3, 2007.
4. Campagna D, Cope L, Lakkur SS, Henderson C, Laheru D, Iacobuzio-Donahue CA. Gene expression profiles associated with advanced pancreatic cancer. *Int J Exp Pathol.* 1(1):32-43, 2007.
5. Chang T-C, Wentzel EA, Kent OA, Ramachandran K, Mullendore M, Lee KH, Feldmann G, Yamakuchi M, Ferlito M, Lowenstein CJ, Arking De, Beer MA, Maitra A, Mendell JT. Transactivation of miR-34a by p53 broadly influences gene expression and promotes apoptosis. *Mol Cell.* 26(5):745-752, 2007.
6. Couch FJ, Johnson MR, Rabe KG, Brune K, de Andrade M, Goggins M, Rothenmund H, Gallinger S, Klein A, Petersen GM, Hruban RH. The prevalence of BRCA2 mutations in familial pancreatic cancer. *Cancer Epidemiol Biomarkers Prev.* 16(2):342-346, 2007.
7. Dong J, Feldmann G, Huang J, Wu S, Zhang N, Comerford SA, Gayyed MF, Anders RA, Maitra A, Prasad PN. Elucidation of a universal size-control mechanism in Drosophila and mammals. *Cell.* 130(6):1120-1133, 2007.
8. Feldmann G, Dhara S, Fendrich V, Bedja D, Beaty R, Mullendore M, Karikari C, Alvarez H, Iacobuzio-Donahue CA, Jimeno A, Gabrielson KL, Matsui W, Maitra A. blockade of hedgehog signaling inhibits pancreatic cancer invasion and metastases: a new paradigm for combination therapy in solid cancers. *Cancer Res.* 67(5):2187-2196, 2007.
9. Feldmann G, Beaty R, Hruban RH, Maitra A. Molecular genetics of pancreatic intraepithelial neoplasia. *J Hepatobiliary Pancreat Surg.* 14(3):244-232, 2007.
10. Fendrich V, Waldmann J, Esni F, Ramaswany A, Mullendore M, Buchholz M, Maitra A, Feldmann G. Snail and sonic hedgehog activation in neuroendocrine tumors of the ileum. *Endocr Relat Cancer.* 14(3):865-874, 2007.

11. Fu B, Guo M, Wang S, Campagna D, Luo M, Herman JG, Iacobuzio-Donahue CA. Evaluation of GATA-4 and GATA-5 methylation profiles in human pancreatic cancers indicate promoter methylation patterns distinct from other human tumor types. *Cancer Biol Ther.* 6(10):1546-1552, 2007.
12. Gold DV, Karnjawala Z, Modrak DE, Goldenberg DM, Hruban RH. PAM4-Reactive MUC1 is a biomarker for early pancreatic adenocarcinoma. *Clin Cancer Res.* 13(24):7380-7387, 2007.
13. Hassan R, Ebel W, Routheir EL, Patel R, Kline B, Zhang, J, Qimin C, Jacob S, Turchin H, Gibbs L, Phillips MD, Mudali S, Iacobuzio-Donahue CA, Jaffee EM, Moreno M, Pastan I, Sass PM, Nicolaides NC, Grasso L. Preclinical evaluation of MORAb-009, a chimeric antibody targeting tumor-associated mesothelin. *Cancer Immun.* 7:20, 2007.
14. Hruban RH, Fukushima N. Pancreatic adenocarcinoma: update on the surgical pathology of carcinomas of ductal origin and PanINs. *Mod Pathol.* 20:S61-S70, 2007.
15. Hruban RH, Takaori K, Canto M, Fishman EK, Campbell K, Brune K, Kern SE, Goggins M. Clinical importance of precursor lesions in the pancreas. *J Hepatobiliary Pancreat Surg.* 14(3):255-263, 2007.
16. Hruban RH, Pitman MB, Klimstra DS. *Tumours of the Pancreas.* Atlas of tumor pathology, 4<sup>th</sup> series, Fascicle 6. Armed Forces Institutes of Pathology; Armed Forces Institute of Pathology, Washington, DC, 2007.
17. Infante JR, Matsubayashi M, Sato N, Tonascia J, Klein AP, Riall TA, Yeo CJ, Iacobuzio-Donahue C, Goggins M. Peritumoral fibroblast SPARC expression and patient outcome with resectable pancreatic adenocarcinoma. *J Clin Oncol.* 25(3):319-325, 2007.
18. Izeradjene K, Combs C, Best M, Gopinathan A, Wagner A, Grady WM, Deng C-X, Hruban RH, Adsay NV, Tuveson DA, Hingorani SR. Kras<sup>G12D</sup> and Smad4/Dpc4 haploinsufficiency cooperate to induce mucinous cystic neoplasms and invasive adenocarcinoma of the pancreas. *Cancer Cell.* 11(3):229-243, 2007.
19. Jimeno A, Rubio-Viqueira B, Amador ML, Grunwald V, Maitra A, Iacobuzio-Donahue C, Bouraoud N, Miyazaki K, Embuscado E, Hidalgo M. Dual mitogen-activated protein kinase and epidermal growth factor receptor inhibition in biliary and pancreatic cancer. *Mol Cancer Ther.* 6(3):1079-1088, 2007.
20. Jimeno A, Hallur G, Chan A, Zhang X, Cusatis G, Chan F, Chen R, Hamel E, Garrett-Mayer E, Khan S, Hidalgo M. Development of two novel benzoylphenylurea sulfur analogues and evidence that the microtubule-associated protein tau is predictive of their activity in pancreatic cancer. *Mol Cancer Ther.* 6(5):1509-1516, 2007.

21. Karikari CA, Roy I, Tryggestad E, Feldmann G, Pinilla C, Welsh K, Reed JC, Armour EP, Wong J, Herman J, Rakheja D, Maitra A. Targeting the apoptotic machinery in pancreatic cancers using small-molecule antagonists of the X-linked inhibitor of apoptosis protein. *Mol Cancer Ther.* 6(3):957-966, 2007.
22. Khorana AA, Ahrendt SA, Ryan CK, Francis CW, Hruban RH, Hu YC, Hostetter G, Harvey J, Taubman MB. Tissue factor expression, angiogenesis, and thrombosis in pancreatic cancer. *Clin Cancer Res.* 13(10):2870-2875, 2007.
23. Klein AP, de Andrade M, Hruban RH, Bondy M, Schwartz AG, Gallinger S, Lynch HT, Syngal S, Rabe KG, Goggins MG, Petersen GM. Linkage analysis of chromosome 4 in families with familial pancreatic cancer. *Cancer Biol Ther.* 6(3):320-323, 2007.
24. Kowalski J, Morsberger LA, Blackford A, Hawkins A, Yeo CJ, Hruban RH, Griffin CA. Chromosomal abnormalities of adenocarcinoma of the pancreas: identifying early and late changes. *Cancer Genet Cytogenet.* 178(1):26-35, 2007.
25. Lee KM, Cao D, Itami A, Pour PM, Hruban RH, Maitra A, Ouellette MM. Class III  $\beta$ -tubulin, a marker of resistance to paclitaxel, is overexpressed in pancreatic ductal adenocarcinoma and intraepithelial neoplasia. *Histopathology.* 51(4):539-546, 2007.
26. Lin MT, Rich RG, Shipley RF, Hafez MJ, Tseng LH, Murphy KM, Gocke CD, Eshleman JR. A molecular fraction collecting tool for the ABI 310 automated sequencer. *J Mol Diagn.* 9(5):598-603, 2007.
27. Lucito R, Suresh S, Walter K, Pandey A, Lakshmi B, Krasnitz A, Sebat J, Wigler M, Klein AP, Brune K, Palmisano E, Maitra A, Goggins M, Hruban RH. Copy-number variants in patients with a strong family history of pancreatic cancer. *Cancer Biol Ther.* 6(10):1569-1575, 2007.
28. Matsubayashi H, Infante JR, Winter J, Klein AP, Schulick R, Hruban R, Visvanathan K and Goggins M. Tumor COX-2 expression and prognosis of patients with resectable pancreatic cancer. *Cancer Biol Ther.* 6(10):1569-1575, 2007.
29. Pawlik TM, Gleisner AL, Cameron JL, Winter JM, Assumpcao L, Lillemoe KD, Wolfgang C, Hruban RH, Schulick RD, Yeo CJ, Choti MA. Prognostic relevance of lymph node ratio following pancreaticoduodenectomy for pancreatic cancer. *Surgery.* 141(5):610-618, 2007.
30. Qian J, Yong KT, Roy I, Ohulchanskyy TY, Bergey EJ, Lee HH, Tramposch KM, He S, Maitra A, Prasad PN. Imaging pancreatic cancer using surface-functionalized quantum dots. *J Phys Chem B.* 111(25):6969-5972, 2007.
31. Riall TS, Cameron JL, Lillemoe JK, Winter JM, Campbell KA, Hruban RH, Chang D, Yeo CJ. Resected periampullary adenocarcinoma: 5-year survivors and their 6- to 10-year follow-up. *Surgery.* 140(5):764-772, 2007.

32. Rubio-Viqueira B, Mezzadra H, Nielsen ME, Jimeno A, Zhang X, Iacobuzio-Donahue C, Maitra A, Hidalgo M, Altiek S. Optimizing the development of targeted agents in pancreatic cancer: tumor fine-needle aspiration biopsy as a platform for novel prospective ex vivo drug sensitivity assays. *Mol Cancer Ther.* 6(2):515-523, 2007.
33. Salaria SN, Illei P, Sharma R, Walter KM, Klein AP, Eshleman JR, Maitra A, Schulick R, Winter J, Ouellette MM, Goggins M, Hruban RH. Palladin is overexpressed in the non-neoplastic stroma of infiltrating ductal adenocarcinomas of the pancreas, but is only rarely overexpressed in neoplastic cells. *Cancer Biol Ther.* 6(3):324-328, 2007.
34. Singh M, Maitra A. Precursor lesions of pancreatic cancer: molecular pathology and clinical implications. *Pancreatology.* 7:9-19, 2007.
35. Tan AC, Fan J-B, Karikari C, Bibikova M, Garcia EW, Zhou L, Barker D, Serre D, Feldmann G, Hruban RH, Klein AP, Goggins M, Couch FJ, Hudson TJ, Winslow RL, Maitra A, Chakravarti A. Allele-specific expression in the germline of patients with familial pancreatic cancer. *Cancer Biol Ther.* 7(1):135-144, 2007.
36. Wang W, Chen S, Brune KA, Hruban RH, Parmigiani G, Klein AP. PancPRO: Risk assessment for individuals with a family history of pancreatic cancer. *J Clin Oncol.* 25(11):1417-1422, 2007.
37. Yong KT, Qian J, Roy I, Lee HH, Bergey EJ, Tramposch KM, He S, Swihart MT, Maitra A, Prasad PN. Quantum rod bioconjugates as targeted probes for confocal and two-photon fluorescence imaging of cancer cells. *Nano Lett.* 7(3):761-765, 2007.
38. Zhu L, Shi G, Schmidt CM, Hruban RH, Konieczny SF. Acinar cells contribute to the molecular heterogeneity of pancreatic intraepithelial neoplasia. *Am J Pathol.* 171(1):263-273, 2007.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

## 2006

1. Berman JJ, Albores-Saavedra J, Bostwick D, DeLellis R, Eble J, Hamilton SR, Hruban RH, Mutter GL, Page D, Rohan T, Travis W, Henson DE. Precancer: a conceptual working definition. Results of a consensus conference. *Cancer Detect Prev.* 30(5):387-394, 2006.
2. Bian Y, Matsubayashi H, Li C-P, Abe T, Canto MI, Murphy KM, Goggins M. Detecting low-abundance *p16* and *p53* mutations in pancreatic juice using a novel assay. *Cancer Biol Ther.* 5(10):1392-1399, 2006.
3. Brody JR, Gallmeier E, Yoshimura K, Hucl T, Kulesza P, Canto MI, Hruban RH, Schulick RD, Kern SE. A proposed clinical test for monitoring fluoropyrimidine therapy: detection and stability of thymidylate synthase ternary complexes. *Cancer Biol Ther.* 5(8):923-927, 2006.
4. Brune K, Abe T, Canto M, O'Malley L, Klein AP, Maitra A, Adsay NV, Fishman EK, Cameron JL, Yeo CJ, Kern SE, Goggins M, Hruban RH. Multifocal neoplastic precursor lesions associated with lobular atrophy of the pancreas in patients having a strong family history of pancreatic cancer. *Am J Surg Pathol.* 30(9):1067-1076, 2006.
5. Calhoun ES, Hucl T, Gallmeier E, West KM, Arking DE, Maitra A, Iacobuzio-Donahue CA, Chakravarti A, Hruban RH, Kern SE. Identifying allelic loss and homozygous deletions in pancreatic cancer without matched normals using high-density single-nucleotide polymorphism arrays. *Cancer Res.* 66:7920-7928, 2006.
6. Calhoun ES, Cunningham SC, Eshleman JR, Hruban RH, Kern SE. Copy-number methods dramatically underestimate loss of heterozygosity in cancer. *Genes Chromosomes Cancer.* 45(11):1070-1071, 2006.
7. Canto MI, Goggins M, Hruban RH, Giardiello FM, Yeo CJ, Fishman EK, Axilbund J, Griffin C, Ali S, Brune K, Richman J, Jagannath S, Kantsevoy SV, Petersen GM, Kalloo AN. Screening for early pancreatic neoplasia in high-risk individuals: a prospective controlled study. *Clin Gastroenterol Hepatol.* 4(6):766-781, 2006.
8. Cao D, Antonescu C, Wong G, Winter J, Maitra A, Adsay NV, Klimstra DS, Hruban RH. Positive immunohistochemical staining of KIT in solid-pseudopapillary neoplasms of the pancreas is not associated with KIT/PDGFR $\alpha$  mutations. *Mod Pathol.* 19(9):1157-1163, 2006.
9. Corso CD, Stubbs DD, Lee SH, Goggins M, Hruban RH, Hunt WD. Real-time detection of mesothelin in pancreatic cancer cell line supernatant using an acoustic wave immunosensor. *Cancer Detect Prev.* 30(2):180-187, 2006.

10. Gallmeier E, Calhoun ES, Rago C, Cunningham SE, Brody SR, Gorospe M, Kohli M, Lengauer C, Kern SE. Targeted disruption of *FANCC* and *FANCG* in human cancer cells provides a preclinical model for specific therapeutic options. *Gastroenterology*. 130(7):2145-2154, 2006.
11. Grønberg M, Kristiansen TZ, Iwahori A, Chang R, Reddy R, Sato N, Nolina H, Jensen ON, Hruban RH, Goggins MG, Maitra A, Pandey A. Biomarker discovery from pancreatic cancer secretome using a differential proteomics approach. *Mol Cell Proteomics*. 5(1):157-171, 2006.
12. Horton KM, Hruban RH, Yeo C, Fishman EK. Multi-detector row CT of pancreatic islet cell tumors. *Radiographics*. 26(2):253-264, 2006.
13. House MG, Cameron JL, Lillemoe KD, Schulick RD, Choti MA, Hansel DE, Hruban RH, Maitra A, Yeo CJ. Differences in survival for patients with resectable versus unresectable metastases from pancreatic islet cell cancer. *J Gastrointest Surg*. 10(1):138-145, 2006.
14. Hruban RH, Adsay NV, Albores-Saavedra J, Anver MR, Biankin AV, Boivin GP, Furth EE, Furukawa T, Klein A, Klimstra DS, Klöppel G, Lauwers GY, Longnecker DS, Lüttges J, Maitra A, Offerhaus GJA, Pérez-Gallego L, Redston M, Tuveson DA. Pathology of genetically engineered mouse models of pancreatic exocrine cancer: consensus report and recommendations. *Cancer Res*. 66(1):95-106, 2006.
15. Jimeno A, Amador ML, Kulesza P, Wang X, Rubio-Viqueira B, Zhang X, Chan A, Wheelhouse J, Kuramochi H, Tanaka K, Danenberg K, Messersmith WA, Almuete V, Hruban RH, Maitra A, Yeo CJ, Hidalgo M. Assessment of celecoxib pharmacodynamics in pancreatic cancer. *Mol Cancer Ther*. 5(12):3240-3247, 2006.
16. Josephson R, Sykes G, Liu Y, Ording C, Xu W, Zeng Z, Shin S, Loring J, Maitra A, Rao MS, Auerbach JM. A molecular scheme for improved characterization of human embryonic stem cell lines. *BMC Biol*. 4:28. doi:10.1186/1741-7007-4-28, 2006.
17. Kassaei K, Habbe N, Mullendore M, Karikari CA, Maitra A, Feldmann G. Mitochondrial DNA mutations in pancreatic cancer. *Int J Gastrointest Canc*. 37(2-3):57-64, 2006.
18. Kawamoto S, Lawler LP, Horton KM, Eng J, Hruban RH, Fishman EK. MDCT of intraductal papillary mucinous neoplasm of the pancreas: evaluation of features predictive of invasive carcinoma. *AJR Am J Roetngenol*. 186(3):687-695, 2006.
19. Koopmann J, Rosenzweig N, Xhang Z, Canto MI, Brown DA, Hunter M, Yeo CJ, Chan DW, Breit SN, Goggins M. Serum markers in patients with resectable pancreatic adenocarcinoma: macrophage inhibitory cytokine 1 versus CA19-9. *Clin Cancer Res*. 12(2):442-446, 2006.

20. Maitra A, Kern SE, Hruban RH. Molecular pathogenesis of pancreatic cancer. Best Pract Res Clin Gastroenterol. 20(2):211-226, 2006.
21. Matsubayashi H, Canto M, Sato N, Klein A, Abe T, Yamashita K, Yeo CJ, Kalloo A, Hruban RH, Goggins M. DNA methylation alterations in the pancreatic juice of patients with suspected pancreatic disease. Cancer Res. 66(2):1208-1217, 2006.
22. Matsubayashi H, Skinner HG, Iacobuzio-Donahue CA, Abe T, Sato N, Rial TS, Yeo CJ, Kern SE, Goggins M. Pancreaticobiliary cancers with deficient methylenetetrahydrofolate reductase genotypes. Clin Gastroenterol Hepatol. 3(8):752-760, 2005.
23. Mudali SV, Fu B, Lakkur SS, Luo M, Embuscado EE, Iacobuzio-Donahue CA. Patterns of EphA2 protein expression in primary and metastatic pancreatic carcinoma and correlation with genetic status. Clin Exp Metastasis. 23(7-8):357-365, 2006.
24. Nolan M, Hodgin M, Olsen S, Coleman J, Sauter P, Baker D, Stanfield C, Emerling A, Hruban RH. Spiritual issues of family members in a pancreatic cancer chat room. Oncol Nurs Forum. 33(2):239-244, 2006.
25. Petersen GM, de Andrade M, Goggins M, Hruban RH, Bondy M, Korczak J, Gallinger S, Lynch HT, Syngal S, Rabe K, Seminara D, Klein A. Pancreatic Cancer Genetic Epidemiology (PACGENE) Consortium. Cancer Epidemiol Biomarkers Prev. 15(4):704-710, 2006.
26. Rogers CD, Fukushima N, Sato N, Shi C, Prasad N, Hustinz SR, Matsubayashi H, Canto M, Eshelman JR, Hruban RH, Goggins M. Differentiating pancreatic lesions by microarray and QPCR analysis of pancreatic juice RNAs. Cancer Biol Ther. 5(10):1383-1389, 2006.
27. Rubio-Viqueira B, Jimeno A, Cusatis G, Zhang X, Iacobuzio-Donahue CA, Karkari C, Shi C, Danenberg K, Danenberg PV, Kuramochi H, Tanaka K, Singh S, Salimi-Moosavi H, Bouraoud N, Amador ML, Altiok S, Kulesza P, Yeo CJ, Messersmith W, Eshleman J, Hruban RH, Maitra Hidalgo M. An in vivo platform for translational drug development in pancreatic cancer. Clin Cancer Res. 12(15):4652-4661, 2006.
28. Sato N, Goggins M. Epigenetic alterations in intraductal papillary mucinous neoplasms of the pancreas. J. Hepatobiliary Pancreat Surg. 13(4):280-285, 2006.
29. Sato N, Goggins M. The role of epigenetic alterations in pancreatic cancer. J Hepatobiliary Pancreat Surg. 13(4):285-295, 2006.
30. Sato N, Fukushima N, Matsubayashi H, Iacobuzio-Donahue CA, Yeo CJ, Goggins M. Aberrant methylation of *Reprimo* correlates with genetic instability and predicts poor prognosis in pancreatic ductal adenocarcinoma. Cancer. 107(2):251-257, 2006.

31. Sato N, Fukushima N, Chang R, Matsabayashi H, Goggins M. Differential and epigenetic gene expression profiling identifies frequent disruption of the RELN pathway in pancreatic cancers. *Gastroenterology*. 130(2):548-565, 2006.
32. Sebastiani V, Ricci F, Rubio-Viquiera B, Kulesza P, Yeo CJ, Hidalgo M, Klein AP, Lheru D, Iacobuzio-Donahue CA. Immunohistochemical and genetic evaluation of deoxycytidine kinase in pancreatic cancer: relationship to molecular mechanisms of gemcitabine resistance and survival. *Clin Cancer Res*. 12(8):2492-2497, 2006.
33. Tassi E, Henke RT, Bowden ET, Seift MR, Kodack DP, Kuo AH, Maitra A, Wellstein A. Expression of a fibroblast growth factor-binding protein during the development of adenocarcinoma of the pancreas and colon. *Cancer Res*. 66(2):1191-1198, 2006.
34. Tuveson DA, Zhu L, Gopinathan A, Willis NA, Kachatrian L, Grochow R, Pin CL, Mitin NY, Taparowsky EJ, Gimotty PA, Hruban RH, Jacks T, Konieczny SF. *Mist1-Kras<sup>G12D</sup>* knock-in mice develop mixed differentiation metastatic exocrine pancreatic carcinoma and hepatocellular carcinoma. *Cancer Res*. 66(1):242-247, 2006.
35. van der Heijden MS, Brody JR, Elghalbouri-Maghrani E, Zdienicka MZ, Kern SE. Does tumorigenesis select for or against mutations of the DNA repair-associated genes BRCA2 and BRE11? Considerations from somatic mutations in microsatellite unstable (MSI) gastrointestinal cancers. *BMC Genet*. 7:3. doi:10.1186/1471-2156-7-3, 2006.
36. Winter JM, Cameron JL, Lillemoe DK, Campbell KA, Chang D, Riall TS, Canto M, Hruban RH, Schulick RD, Choti MA, Yeo CJ. Periampullary and pancreatic incidentaloma: a single institution's experience with an increasingly common diagnosis. *Ann Surg*. 243:673-683, 2006.

# Papers from the Sol Goldman Pancreatic Cancer Research Center

## 2005

1. Cao D, Maitra A, Saavedra J, Klimstra DS, Adsay NV, Hruban RH. Expression of novel markers of pancreatic ductal adenocarcinoma in pancreatic nonductal neoplasms: additional evidence of different genetic pathways. *Mod Pathol.* 18(6):752-761, 2005.
2. Coleman J, Olsen SJ, Sauter P, Baker D, Hodgin MB, Stanfield C, Emerling A, Hruban RH, Nolan MT. The effect of a frequently asked questions module on a pancreatic cancer Web site patient/family chat room. *Cancer Nurs.* 28(6):460-468, 2005.
3. Embuscado EE, Laheru D, Ricci F, Yun KJ, Witzel S, Seigel A, Flickinger K, Hidalgo M, Bova GS, Iacobuzio-Donahue CA. Immortalizing the complexity of cancer metastasis: genetic features of lethal metastatic pancreatic cancer obtained from rapid autopsy. *Cancer Biol Ther.* 4(5):548-554, 2005.
4. Fukushima N, Koopmann J, Sato N, Prasad N, Carvalho R, Leach SD, Hruban RH, Goggins M. Gene expression alterations in the non-neoplastic parenchyma adjacent to infiltrating pancreatic ductal adenocarcinoma. *Mod Pathol.* 18(6):779-787, 2005.
5. Furukawa T, Klöppel G, Adsay NV, Albroes-Saavedra J, Fukushima N, Horii A, Hruban RH, Kato Y, Klimstra DS, Longnecker DS, Lüttges J, Offerhaus GJA, Shimizu M, Sunamura M, Suriawinata A, Takaori K, Yonezawa S. Classification of types of intraductal papillary-mucinous neoplasm of the pancreas: a consensus study. *Virchows Arch.* 447:794-799, 2005.
6. Gallmeier E, Kern SE. Absence of specific cell killing of the *BRCA2*-deficient human cancer cell line *CAPAN1* by Poly(ADP-Ribose) polymerase inhibition. *Cancer Biol Ther.* 4(7):703-706, 2005.
7. Gallmeier E, Winter JM, Cunningham SC, Kahn SR, Kern SE. Novel genotoxicity assays identify norethindrone to activate p53 and phosphorylate H2AX. *Carcinogenesis.* 26(10): 1811-1820, 2005.
8. Goggins M. Molecular markers of early pancreatic cancer. *J Clin Oncol.* 23(20):4524-4531, 2005.
9. Hingorani SR, Wang L, Multani AS, Combs C, Deramaudt TB, Hruban RH, Rustgi AK, Chang S, Tuveson DA. *Trp53<sup>R172H</sup>* and *Kras<sup>G12D</sup>* cooperate to promote chromosomal instability and widely metastatic pancreatic ductal adenocarcinoma in mice. *Cancer Cell.* 7(5):469-483, 2005.

10. Hruban RH, Canto MI, Griffin C, Kern SE, Klein AP, Laheru D, Yeo CJ. Treatment of familial pancreatic cancer and its precursors. *Curr Treat Options Gastroenterol.* 8(5):365-375, 2005.
11. Hruban RH, Wilentz RE, Maitra A. Identification and analysis of precursors to invasive pancreatic cancer. *Methods Mol Med.* 103:1-3, 2005.
12. Hustinx SR, Hruban RH, Leoni LM, Iacobuzio-Donahue C, Cameron JL, Yeo CJ, Brown PN, Argani P, Asfaq R, Fukushima N, Goggins M, Kern SE, Maitra A. Homozygous deletion of the MTAP gene in invasive adenocarcinoma of the pancreas and in periampullary cancer. *Cancer Biol Ther.* 4(1):83-86, 2005.
13. Kawamoto S, Horton KM, Lawler LP, Hruban RH, Fishman EK. Intraductal papillary mucinous neoplasm of the pancreas: can benign lesions differentiate from malignant lesions with multidetector CT? *RadioGraphics.* 25(6):1451-1468, 2005.
14. Laheru D, Jaffee E. Immunotherapy for pancreatic cancer – science driving clinical progress. *Nat Rev Cancer.* 5(6):459-467, 2005.
15. Laheru D, Pardoll DM, Jaffee EM. Genes to vaccines for immunotherapy: how the molecular biology revolution has influenced cancer immunology. *Mol Cancer Ther.* 4(11):1645-1652, 2005.
16. Longnecker DS, Adsay NV, Fernandez-del Castillo C, Hruban RH, Kasugai T, Klimstra DS, Klöppel G, Lüttges J, Memoli VA, Tosteson TD, Yanagisawa A, Wilentz RE, Zamboni G. Histopathological diagnosis of pancreatic intraepithelial neoplasia and intraductal papillary-mucinous neoplasms: interobserve agreement. *Pancreas.* 31(4):344-349, 2005.
17. Maitra A, Arking DE, Shivapurkar N, Ikeda M, Stastny V, Kassaei K, Sui G, Cutler DJ, Liu Y, Brimble SN, Noaksson K, Hyllner J, Schulz TC, Zeng X, Freed WJ, Crook J, Abraham S, Colman A, Sartipy P, Matsui S-I, Carpenter M, Gazdar Af, Rao M, Chakravarti A. Genomic alterations in cultured human embryonic stem cells. *Nat Genet.* 37(10):1099-1103, 2005.
18. Maitra A, Fukushima N, Takaori K, Hruban RH. Precursors to invasive pancreatic cancer. *Adv Anat Pathol.* 12(2):81-91, 2005.
19. Maitra A, Hruban RH. A new mouse model of pancreatic cancer: PTEN gets its Akt together. *Cancer Cell.* 8(3):171-172, 2005.
20. Martin ST, Sato N, Dhara S, Chang R, Hustinx SR, Abe T, Maitra A, Goggins M. Aberrant methylation of the human hedgehog interacting protein (HHIP) gene in pancreatic neoplasms. *Cancer Biol Ther.* 4(7):728-733, 2005.
21. Martin ST, Matsubayashi H, Rogers CD, Philips J, Couch FJ, Brune K, Yeo CJ, Kern SE, Hruban RH, Goggins M. Increased prevalence of the BRCA2 polymorphic stop codon

- K3326X among individuals with familial pancreatic cancer. *Oncogene*. 24(22):3652-3656, 2005.
22. Matsen SL, Yeo CJ, Hruban RH, Choti MA. Hypercalcemia and pancreatic endocrine neoplasia with elevated PT-rP: Report of two cases and review of the literature. *J Gastrointest Surg*. 9(2):270-279, 2005.
23. Nowak NJ, Gaile D, Conroy JM, McQuaid D, Cowell J, Carter R, Goggins MG, Hruban RH, Maitra A. Genome-wide aberrations in pancreatic adenocarcinoma. *Cancer Genet Cytogenet*. 161(1):36-50, 2005.
24. Riall TS, Cameron JL, Lillemoe KD, Campbell KA, Sauter PK, Coleman J, Abraham RA, Laheru D, Hruban RH, Yeo CJ. Pancreaticoduodenectomy with or without distal gastrectomy and extended retroperitoneal lymphadenectomy for periampullary adenocarcinoma-Part 3: update on 5-year survival. *J Gastrointest Surg*. 9(9):1191-1206, 2005.
25. Ricci F, Kern SE, Hruban RH, Iacobuzio-Donahue CA. Stromal responses to carcinomas of the pancreas: Juxtatumoral gene expression conforms to the infiltrating pattern and not the biologic subtype. *Cancer Biol Ther*. 4(3):302-307, 2005.
26. Sato N, Matsubayashi H, Abe T, Fukushima N, Goggins M. Epigenetic down-regulation of *CDKN1C/p57KIP2* in pancreatic ductal neoplasms identified by gene expression profiling. *Clin Cancer Res*. 11(13):4681-4688, 2005.
27. van der Heijden MS, Brody JR, Dezentje DA, Gallmeier E, Cunningham SE, Swartz MJ, DeMarso AM, Offerhaus GJA, Isacoff WH, Hruban RH, and Kern SE. In vivo therapeutic responses contingent on Fanconi anemia/*BRCA2* status of the tumor. *Clin Cancer Res*. 11(20):7508-7515, 2005.
28. von Hoff DD, Evans DB, Hruban RH (editors). *Pancreatic Cancer*. Jones and Bartlett. 2005.