Novel pancreatic cancer cell lines derived from genetically engineered mouse models of spontaneous pancreatic adenocarcinoma: applications in diagnosis and therapy. [1]

Submitted by María del Pilar Torres-González [2] on 11 December 2013 - 4:24pm

 [2]

Title	Novel pancreatic cancer cell lines derived from genetically engineered mouse models of spontaneous pancreatic adenocarcinoma: applications in diagnosis and therapy.
Publication Type	Journal Article
Year of Publication	2013
Authors	Torres, MP [3], Rachagani, S [4], Souchek, JJ [5], Mallya, K [6], Johansson, SL [7], Batra, SK [8]
Journal	PLoS One
Volume	8
Issue	11
Pagination	e80580
Date Published	2013
ISSN	1932-6203

Abstract	Pancreatic cancer (PC) remains one of the most lethal human malignancies with poor prognosis. Despite all advances in preclinical research, there have not been significant translation of novel therapies into the clinics. The development of genetically engineered mouse (GEM) models that produce spontaneous pancreatic adenocarcinoma (PDAC) have increased our understanding of the pathogenesis of the disease. Although these PDAC mouse models are ideal for studying potential therapies and specific genetic mutations, there is a need for developing syngeneic cell lines from these models. In this study, we describe the successful establishment and characterization of three cell lines derived from two (PDAC) mouse models. The cell line UN-KC-6141 was derived from a pancreatic tumor of a Kras(G12D);Pdx1-Cre (KC) mouse at 50 weeks of age, whereas UN-KPC-960 and UN-KPC-961 cell lines were derived from pancreatic tumors of Kras(G12D);Trp53(R172H);Pdx1-Cre (KPC) mice at 17 weeks of age. The cancer mutations of these parent mice carried over to the daughter cell lines (i.e. Kras(G12D) mutation was observed in all three cell lines while Trp53 mutation was observed only in KPC cell lines). The cell lines showed typical cobblestone epithelial morphology in culture, and unlike the previously established mouse PDAC cell line Panc02, expressed the ductal marker CK19. Furthermore, these cell lines expressed the epithelial-mesenchymal markers E-cadherin and N-cadherin, and also, Muc1 and Muc4 mucins. In addition, these cell lines were resistant to the chemotherapeutic drug Gemcitabine. Their implantation in vivo produced subcutaneous as well as tumors in the pancreas (orthotopic). The genetic mutations in these cell lines mimic the genetic compendium of human PDAC, which make them valuable models with a high potential of translational relevance for examining diagnostic markers and therapeutic drugs.
DOI	10.1371/journal.pone.0080580 [9]
Alternate Journal	PLoS ONE
PubMed ID	24278292 [10]
PubMed Central ID	PMC3835415

Links
[1] https://www.cienciapr.org/en/novel-pancreatic-cancer-cell-lines-derived-genetically-engineered-mouse-

models-spontaneous [2] https://www.cienciapr.org/en/user/mptorres [3]
https://www.cienciapr.org/en/biblio?f%5Bauthor%5D=2727 [4]
https://www.cienciapr.org/en/biblio?f%5Bauthor%5D=2728 [5]
https://www.cienciapr.org/en/biblio?f%5Bauthor%5D=2729 [6]
https://www.cienciapr.org/en/biblio?f%5Bauthor%5D=2730 [7]
https://www.cienciapr.org/en/biblio?f%5Bauthor%5D=2731 [8]
https://www.cienciapr.org/en/biblio?f%5Bauthor%5D=2732 [9] http://dx.doi.org/10.1371/journal.pone.0080580
[10] https://www.ncbi.nlm.nih.gov/pubmed/24278292?dopt=Abstract