Recent patents in xenotransplantation

Patent number	Description	Assignee	Inventor	Date
US 9,642,899	Methods and materials involved in reducing cardiac xenograft rejection, e.g., methods and materials for preparing transgenic pigs expressing reduced or no endogenous Sd.sup.a or SDa-like glycans derived from the porcine .beta.1,4 *N*-acetyl-galactosaminyl transferase 2 (B4GALNT2) glycosyltransferase and/or reduced or no endogenous .alpha.-Gal antigens, methods and materials for modifying the xenograft recipient's immunological response to non-Gal antigens (e.g. CD46, CD59, CD9, PROCR, and ANXA2) to reduce cardiac xenograft rejection, and methods and materials for monitoring the progress of xenotransplant immunologic rejection.	Mayo Foundation for Medical Education and Research (Rochester, MN, USA)	McGregor CGA, Byrne GW	5/9/2017
US 9,376,684	Anticoagulant proteins anchored to cell membranes. The anticoagulant function is preferably provided by heparin, antithrombin, hirudin, TFPI, tick anticoagulant peptide, or a snake venom factor. Expression of these proteins renders cells, tissues and organs less vulnerable to rejection after transplantation (e.g., after xenotransplantation).	Imperial Innovations Ltd. (London)	Riesbeck K, Dorling A, George AJT, Lechler RI	6/28/2016
US 9,339,519	Animals, and in particular porcine animals, tissue and cells derived from these, which lack any expression of functional alpha 1,3 galactosyltransferase (.alpha.GT) and express one or more additional transgenes, which make them suitable donors for pancreatic islet xenotransplantation. Also, methods of treatment and prevention of diabetes using cells derived from such animals.	Revivicor (Blacksburg, VA, USA)	Ayares D	5/17/2016
US 8,142,769	A method of preparing a xenotransplantable porcine islet preparation capable upon xenotransplantation of producing porcine insulin in an appropriate recipient mammal, the method including or comprising (i) harvesting the pancreas of piglets at or near full-term gestation, and (ii) extracting pancreatic.beta.islet cells from the harvested pancreas wherein the islets (at least at some stage in the performance of the method) are exposed to nicotinamide. Also, a method of encapsulation of a xenotransplantable porcine islet preparation, and transplantation of such a preparation, or a capsule containing such a preparation, into an appropriate recipient mammal.	Diabcell Pty. Ltd. (Parkside South, Australia)	Elliott RB, Calafiore R, Basta G	3/27/2012
US 8,106,251	Tissues derived from animals which lack any expression of functional alpha 1,3 galactosyltransferase (alpha-1,3-GT); can be used in the field of xenotransplantation, such as orthopedic reconstruction and repair, skin repair and internal tissue repair or as medical devices.	Revivicor (Blacksburg, VA, USA)	Ayares D, Rohricht P	1/31/2012
US 8,088,969	Methods of selecting and maintaining a population of pigs having a low copy number of porcine endogenous retrovirus, and the use of such pigs as a source of cells, tissue and/or organs suitable for xenotransplantation. Also, methods for selecting cells, tissue and/or organs from such pigs for suitability for use in xenotransplantation.	Living Cell Products Pty Ltd. (Sydney, Australia)	Elliott RB, Garkavenko O, Ferguson AB	1/3/2012
US 8,034,330	Modified organs and cells for xenotransplantation. By eliminating certain epitopes that elicit an immune or inflammatory response immediately upon implantation into humans or contact with human serum, preferably by genetically engineering the animal so that the epitope is either not produced or is greatly reduced, or by chemical or enzymatic treatment of the animal's cells to remove the epitopes, it is possible to produce organs, tissues and cells suitable for xenotransplantation into humans.	RBC Biotechnology (New York)	Zhu A	10/11/2011
US 7,964,341	A human endogenous retrovirus (HERV) family, Type I HERV-K (HML-2), which appear to be active *in vitro* and *in vivo*, infectious, and which have the have the salient features and properties of foamy retroviruses. This non-pathogenic endogenous virus could be developed as a replication-competent gene therapy vector. It may naturally lyse tumor cells or infected cells, and thus could even be used without genetic modification. Its detection could also be used to monitor the safety of gene therapy (irrespective of vector type used), as well as other biological therapies including vaccination, blood transfusion, transplantation and xenotransplantation.	Laderoute M, Giulivi A, Diaz-Mitoma F, Larocque L	Laderoute M, Giulivi A, Diaz-Mitoma F, Larocque L	6/21/2011
US 7,795,493	A porcine animal, tissue, organ, cells and cell lines, which lack any expression of functional alpha 1,3 galactosyltransferase (alpha1,3GT); can be used in xenotransplantation and for other medical purposes.	Revivicor (Blacksburg, VA, USA)	Phelps CJ, Ayares DL	9/14/2010

Source: United States Patent and Trademark Office (http://www.uspto.gov).