

# **APPENDIX A**

## **ALLOCATION OF THE *SPECIAL STATUTORY FUNDING PROGRAM FOR TYPE 1 DIABETES RESEARCH***

The complete budget allocation of the *Special Statutory Funding Program for Type 1 Diabetes Research (Special Diabetes Program or Program)* from Fiscal Year (FY) 1998-2009 is provided in this Appendix. It is important to note that the six overarching Goals of type 1 diabetes research are interdependent. For example, “Attracting New Talent and Applying New Technologies” (Goal VI) is important for every area of type 1 diabetes research and thus relevant to all Goals. Furthermore, the scientific aims of many of the initiatives coincide with multiple Goals. However, to facilitate management of this *Program*, most initiatives have been assigned to a single, specific Goal.

### **BUDGET OF THE SPECIAL DIABETES PROGRAM**

The expenditure of funds from the *Special Statutory Funding Program for Type 1 Diabetes Research* is detailed in Table A1. Budget figures for FY 1998 through 2009 represent actual spending levels. Some of the projects received additional support from non-governmental sources and/or from funds provided to

NIH or CDC through the regular appropriations process or from the American Recovery and Reinvestment Act of 2009. Scientific descriptions of each funded initiative are located in this Appendix, Appendix C, and the 2007 “*Evaluation Report*” on the *Special Diabetes Program* ([www.T1Diabetes.nih.gov/evaluation](http://www.T1Diabetes.nih.gov/evaluation)).

**Table A1: Detailed Budget by Goal of the Special Statutory Funding Program for Type 1 Diabetes Research**

GOAL I: IDENTIFY THE GENETIC AND ENVIRONMENTAL CAUSES OF TYPE 1 DIABETES												
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Type 1 Diabetes Genetics Consortium (T1DGC) (NIDDK, NIAID, NHGRI, JDRF, Diabetes UK)	0	0	0	1,536,000	5,047,330	8,958,898	13,000,000	17,541,724	13,444,975	5,031,275	244,320	0
Repository Services for T1DGC (NIDDK)	0	0	0	0	0	0	0	1,000,000	4,500,000	500,999	0	1,000,000
Fine Mapping and Function of Genes for Type 1 Diabetes (DP3) (RFA DK08-006) (NIDDK) <sup>a</sup>	0	0	0	0	0	0	0	0	0	0	0	23,261,208
13th International Histocompatibility Working Group (NIAID, NIDDK, NCI, NHGRI, JDRF)	0	0	0	3,000,000	1,000,000	0	0	0	0	0	0	0
SEARCH for Diabetes in Youth (SEARCH) (CDC, NIDDK)	0	0	0	4,200,000	3,000,000	3,000,000	4,000,000	2,000,000	2,262,000	2,262,000	2,188,843	3,024,000
The Environmental Determinants of Diabetes in the Young (TEDDY) (RFA DK02-029; RFA DK07-500) (NIDDK, NIAID, NICHD, NIEHS, CDC, JDRF, ADA)	0	0	0	0	5,000,000	7,568,300	17,500,000	24,542,679	17,500,000	50,913,817	15,745,948	27,326,779
Repository Services for TEDDY (NIDDK)	0	0	0	0	0	0	0	0	0	0	3,000,000	4,000,000
Type 1 Diabetes Mouse Resource (NIDDK) <sup>b</sup>	0	0	0	4,000,000	0	0	0	0	0	4,478,006	0	1,150,000
Bioinformatics Integration Support Contract (RFP AI-DAIT02-16) (NIAID)	0	0	0	0	1,000,000	0	0	0	0	0	0	0
Mammalian Gene Collection (NCI, NIDDK)	0	0	0	500,000	0	0	0	0	0	0	0	0
Sequence the NOD Mouse for Immune System Genes for Type 1 Diabetes (NIAID)	0	0	0	4,500,000	0	0	0	0	0	0	0	0
Biotechnology Resource Centers (RFA DK00-002) (NIDDK)	0	0	454,575	693,750	502,250	0	0	0	0	0	0	0
Functional Genomics of the Developing Endocrine Pancreas (RFA DK99-007) (NIDDK)	0	1,500,000	3,241,602	3,081,250	0	0	0	0	0	0	0	0
Public Health Pilot Programs in Newborn Screening (CDC)	246,718	301,544	548,261	804,826	609,652	0	0	0	0	0	0	0
Proficiency Testing for Laboratory Assays of Dried Blood Spots (CDC)	0	0	0	0	0	190,256	0	0	0	0	0	0
High-Throughput, High-Sensitivity Methods for Measuring Markers of Type 1 Diabetes (CDC)	246,718	268,648	219,305	219,305	219,305	0	0	0	0	0	0	0
Cadaveric Pancreata of Autoantibody Positive Individuals (NIDDK)	0	0	0	0	0	0	308,000	0	0	0	0	0
<b>Total - Goal I:</b>	<b>493,436</b>	<b>2,070,192</b>	<b>4,463,743</b>	<b>22,535,131</b>	<b>16,378,537</b>	<b>19,717,454</b>	<b>34,808,000</b>	<b>45,084,403</b>	<b>37,706,975</b>	<b>63,186,097</b>	<b>21,179,111</b>	<b>59,761,987</b>

**GOAL II: PREVENT OR REVERSE TYPE 1 DIABETES**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Type 1 Diabetes TrialNet (RFA DK01-004; RFA DK08-011) (NIDDK, NIAID, NICHD, NCCAM, JDRF, ADA) and Immune Tolerance Network (RFP-AI-99-30) (NIAID, NIDDK, JDRF)	0	0	0	17,320,000	15,489,174	12,920,894	11,242,933	7,350,382	0	15,423,706	50,615,272	28,501,983
Repository Services: Diabetes Prevention Trial for Type 1 Diabetes (DPT-1) and Type 1 Diabetes TrialNet (NIDDK)	0	0	0	0	0	0	0	0	0	0	0	1,415,641
Recruitment for Clinical Research Studies (Matthews Media)	0	0	0	0	0	0	943,215	716,010	747,920	781,310	816,249	0
Type 1 Diabetes-Rapid Access to Intervention Development (T1D-RAID); Prevention Projects (NIDDK, NCI)	0	0	0	0	0	0	105,000	1,575,503	4,908,798	1,555,145	1,506,152	1,453,143
Type 1 Diabetes-Preclinical Testing Program: Preclinical Study of Efficacy in Animal Models of Type 1 Diabetes (RFP 05-05) (NIDDK)	0	0	0	0	0	0	0	0	2,000,000	0	767,501	1,047,335
Cooperative Study Group for Autoimmune Disease Prevention (RFA AI00-016; RFA AI05-026) (NIAID, NICHD, NIDDK, ORWH, JDRF)	0	0	0	2,154,000	2,318,796	2,336,681	2,354,595	2,392,355	2,521,427	2,936,864	2,888,196	1,802,740
Trial to Reduce IDDM in the Genetically-At-Risk (TRIGR) (NICHD, CIHR, EFSO, EU, JDRF, Mead Johnson, NDF)	0	0	0	2,000,000	500,000	500,000	3,000,000	1,799,998	2,200,000 <sup>c</sup>	2,942,000	2,883,160	2,798,000
Diabetes Autoantibody Standardization Program (DASP) (CDC, ID5)	816,680	746,014	438,609	778,609	755,199	1,158,101	675,000	566,000	675,000	675,000	675,000	675,000
C-Peptide Standardization (CDC, NIDDK)	0	0	0	0	0	57,225	64,301	34,854	37,255	37,698	76,155	62,116
Data and Biosample Repository (RFP DK02-04) (NIDDK)	0	0	0	0	0	3,000,000	0	0	0	0	0	0
Gene Therapy Approaches for Diabetes and its Complications (RFA DK01-006) (NIDDK, NHLBI, NIAID)	0	0	0	993,000	1,112,600	0	0	0	0	0	0	0
Biomarkers of Autoimmunity in Type 1 Diabetes (R21) (RFA DK06-002) (NIDDK, NIAID, NICHD)	0	0	0	0	0	0	0	0	2,000,398	1,712,411	0	0
Innovative Grants on Immune Tolerance (RFA AI00-006) (NIAID, NIDDK)	0	0	0	2,443,000	1,658,523	1,658,523	982,665	741,765	0	0	0	0
Pilot Studies for New Therapies for Type 1 Diabetes and its Complications (RFA DK99-013) (NIDDK, NIAID)	0	1,146,742	1,170,524	0	0	0	0	0	0	0	0	0
Immunopathogenesis of Type 1 Diabetes (RFA DK98-010) (NIDDK, NIAID, NICHD)	4,086,215	4,124,050	3,806,447	0	0	0	0	0	0	0	0	0
Autoantibodies in Type 1 Diabetes (NIDCR)	0	100,000	200,344	200,000	100,000	0	0	0	0	0	0	0
DPT-1 Supplements (NIDDK, NIAID, NICHD, NCRF)	3,350,000	95,000	0	0	0	0	0	0	0	0	0	0
One Year Supplements to Ongoing Projects (NIDDK, NIAID, NCRF)	994,340	0	0	0	0	0	0	0	0	0	0	0
<b>Total - Goal II:</b>	<b>9,247,235</b>	<b>6,211,806</b>	<b>5,615,924</b>	<b>25,888,609</b>	<b>21,934,292</b>	<b>21,631,424</b>	<b>19,367,709</b>	<b>15,176,867</b>	<b>15,090,798</b>	<b>26,064,134</b>	<b>60,227,685</b>	<b>37,755,958</b>

GOAL III: DEVELOP CELL REPLACEMENT THERAPY

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Beta Cell Biology Consortium (RFA DK01-014; RFA DK04-018) (NIDDK)	0	0	0	7,250,000	7,589,779	6,790,240	6,126,956	8,891,656	16,614,540	11,870,578	2,377,157	12,981,013
Clinical Islet Transplantation Consortium (RFA DK04-005; RFA DK04-004) (NIDDK, NIAID)	0	0	0	0	0	0	24,569,188	14,977,134	15,480,664	5,503,579	6,474,452	9,878,298
Toward Imaging the Pancreatic Beta Cell in People (R01) (RFA DK06-003) (NIDDK, NIA, NIAID, NIBIB)	0	0	0	0	0	0	0	0	1,575,115	1,734,810	1,887,475	0
Beta Cell Regeneration for Diabetes Therapy (RFA DK05-007) (NIDDK)	0	0	0	0	0	0	0	0	777,245	743,070	0	0
Comprehensive Programs in Beta Cell Biology (RFA DK02-014) (NIDDK)	0	0	0	0	3,154,850	3,055,850	2,393,922	1,942,751	802,420	0	0	0
Non-Human Primate Transplantation Tolerance Cooperative Study Group (RFA AI01-006; RFA AI06-018) (NIAID, NIDDK)	0	0	0	518,000	1,822,876	1,772,003	4,979,323	4,156,398	4,036,852	3,508,815	4,602,277	4,999,786
Immune Tolerance Network - Islet Transplantation (RFP A199-30) (NIAID, NIDDK, JDRF)	0	0	0	3,500,000	0	0	1,417,000	0	0	0	0	0
Immunobiology of Xenotransplantation Cooperative Research Program (RFA AI04-042) (NIAID, NIDDK)	0	0	0	0	0	0	0	1,929,129	1,909,234	1,594,071	1,467,868	0
NIDDK Intramural Program (NIDDK)	0	492,458	0	1,370,000	0	0	0	0	0	0	0	0
Islet Cell Resource Centers (RFA RR01-002) (NCCR, NIDDK)	0	0	0	5,000,000	1,999,998	5,000,000	5,000,000	5,000,000	5,000,000	4,854,996	4,757,896	0
Islet Cell Distribution Coordinating Center (NIH-NIDDK-08-099-SB) (NIDDK)	0	0	0	0	0	0	0	0	0	0	0	6,000,000
Collaborative Islet Transplant Registry (CITR) (RFP DK00-002) (NIDDK)	0	0	0	3,964,000	0	0	0	336,988	5,179,085	0	0	0
Pilot and Feasibility Program in Human Islet Biology (RFA DK03-021) (NIDDK)	0	0	0	0	0	0	2,010,158	3,830,341	1,764,903	0	0	0
Islet Encapsulation Research (NIDDK)	0	0	0	0	894,471	0	0	0	0	0	0	0
Gene Transfer Approaches to Enhance Islet Transplantation (RFA DK02-020) (NIDDK, NIAID)	0	0	0	0	1,744,423	1,727,771	0	0	0	0	0	0
Imaging Pancreatic Beta Cell Mass, Function, Engraftment, or Inflammation (RFA DK02-002) (NIDDK)	0	0	0	0	1,258,302	1,356,106	651,723	651,723	0	0	0	0
New Strategies for Treatment of Type 1 Diabetes (RFA DK00-001) (NIDDK)	0	0	1,135,749	1,107,681	882,200	0	0	0	0	0	0	0
Pilot Studies for New Therapies for Type 1 Diabetes and its Complications (RFA DK99-013) (NIDDK)	0	779,293	783,039	0	0	0	0	0	0	0	0	0
Cellular and Molecular Approaches to Achieving Euglycemia (RFA DK98-007) (NIDDK, NIAID, NICHD)	4,883,944	4,921,491	3,962,434	0	0	0	0	0	0	0	0	0
Beta Cell Proteomics (NIDDK, NHGRI)	0	0	0	2,495,000	0	0	0	0	0	0	0	0
Glucagon-like Peptide as a Differentiation Factor for Pancreatic Beta Cells (NIA)	94,379	99,995	0	0	0	0	0	0	0	0	0	0
Imaging Supplements to Diabetes Center	0	0	0	0	0	0	0	0	60,000	0	0	0
One Year Supplements to Ongoing Projects (NIDDK, NIAID, NICHD)	1,401,654	0	0	0	0	0	0	0	0	0	0	0
<b>Total - Goal III:</b>	<b>6,379,977</b>	<b>6,293,237</b>	<b>5,881,222</b>	<b>25,204,681</b>	<b>19,346,899</b>	<b>19,701,970</b>	<b>47,148,270</b>	<b>41,716,120</b>	<b>53,200,058</b>	<b>29,809,919</b>	<b>21,567,125</b>	<b>33,859,097</b>

**GOAL IV: PREVENT OR REDUCE HYPOGLYCEMIA IN TYPE 1 DIABETES**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Diabetes Research in Children Network (DirecNet) (RFA HD01-009; RFA HD06-020) (NICHD, NIDDK, NINDS)	0	0	0	2,000,000	3,148,071	1,886,158	2,500,000	2,499,994	1,401,789	2,023,663	1,983,191	2,000,001
Closed Loop Technologies: Clinical and Behavioral Approaches to Improve Type 1 Diabetes Outcomes (R01) (RFA DK08-012) (NIDDK, NICHD)	0	0	0	0	0	0	0	0	0	0	0	5,268,637
Closed Loop Technologies: Pilot and Exploratory Clinical and Behavioral Approaches to Improve Type 1 Diabetes Outcomes (R21) (RFA DK08-013) (NIDDK, NICHD)	0	0	0	0	0	0	0	0	0	0	0	192,500
Standardization Program To Improve the Measurement of Blood Glucose (CDC)	0	148,284	188,931	231,526	101,319	209,282	0	0	0	0	0	0
Hypoglycemia in Patients with Type 1 Diabetes (RFA DK03-017) (NIDDK, NINDS)	0	0	0	0	0	0	2,475,590	2,532,821	2,330,253	2,277,821	1,862,538	0
Effects of Hypoglycemia on Neuronal and Glial Cell Function (RFA NS02-008) (NINDS, NIDDK, JDRF)	0	0	0	0	1,454,310	1,438,495	646,480	645,090	0	0	0	0
Sensor Development and Validation (RFA EB02-002) (NIBIB, NIDDK)	0	0	0	0	2,091,949	2,073,237	1,405,465	641,154	0	0	0	0
Understanding Hypoglycemia Unawareness in Patients with Diabetes (RFA DK01-031) (NIDDK, NINDS, JDRF)	0	0	0	0	2,055,648	2,036,527	1,362,001	1,361,842	693,195	0	0	0
Pilot Studies for New Therapies for Type 1 Diabetes and its Complications (RFA DK99-013) (NIDDK)	0	141,408	130,216	0	0	0	0	0	0	0	0	0
Glucose Sensors in the Treatment of Diabetes (RFA DK98-008) (NIDDK, NCRR)	3,298,740	3,239,772	2,117,998	0	0	0	0	0	0	0	0	0
Developing New Tools for Detecting and Monitoring Low Blood Glucose (CDC)	0	142,548	142,548	142,548	142,548	0	0	0	0	0	0	0
Development of Surrogate Markers for Clinical Trials: Supplements (NIMH, NIDDK)	0	0	0	300,000	0	0	0	0	0	0	0	0
One Year Supplements to Ongoing Projects (NIDDK, NCRR)	172,000	0	0	0	0	0	0	0	0	0	0	0
<b>Total - Goal IV:</b>	<b>3,470,740</b>	<b>3,672,012</b>	<b>2,579,693</b>	<b>2,674,074</b>	<b>8,993,845</b>	<b>7,643,699</b>	<b>8,389,536</b>	<b>7,680,901</b>	<b>4,425,237</b>	<b>4,301,484</b>	<b>3,845,729</b>	<b>7,461,138</b>

GOAL V: PREVENT OR REDUCE THE COMPLICATIONS OF TYPE 1 DIABETES												
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Genetics of Kidneys in Diabetes (GoKinD) Study (CDC, JDRF)	921,792	872,114	974,809	1,315,827	1,315,827	1,247,536	1,500,000	1,019,150	675,000	0	0	0
GoKinD: Repository Services	0	0	0	0	0	0	0	0	1,000,000	0	1,000,000	0
GoKinD: Genotyping Services	0	0	0	0	0	0	0	0	0	968,184	0	0
Epidemiology of Diabetes Interventions and Complications (EDIC): Genetics Study and Measurement of Cardiovascular Disease, Uropathy and Autonomic Neuropathy	1,000,000	0	0	7,000,000	3,807,082	290,000	0	2,021,077	5,637,353	0	0	0
EDIC: Repository Services	0	0	0	0	0	0	0	0	1,250,000	0	0	0
Type 1 Diabetes-Rapid Access to Intervention Development (T1D-RAID): Complications Projects (NIDDK, NCI)	0	0	0	0	0	0	75,000	344,728	527,972	0	0	0
Type 1 Diabetes-Preclinical Testing Program: Preclinical Study of Efficacy in Animal Models of Diabetes Complications (RFP 05-04) (NIDDK)	0	0	0	0	0	0	0	0	1,031,117	1,015,854	1,038,629	1,065,875
Family Investigation of Nephropathy and Diabetes (FIND) (NIDDK, NEI, NCMHD)	0	0	0	500,000	500,000	500,000	500,000	500,000	488,250	0	0	0
Diabetic Retinopathy Clinical Research Network (DRCR.net) (RFA EY01-001) (NEI)	0	0	0	0	2,000,000	2,000,000	2,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Animal Models of Diabetic Complications Consortium (RFA DK01-009; RFA HL01-010; RFA DK 05-011; RFA DK05-012) (NIDDK, NHLBI, NINDS) <sup>1a</sup>	0	0	0	3,982,000	4,135,862	4,055,585	4,252,287	4,296,778	3,689,907	3,136,299	3,136,256	3,203,807
High-Density Genotyping of Diabetes and Diabetic Complications Sample Collections (R01) (RFA DK06-005) (NIDDK, NHLBI, NIAID)	0	0	0	0	0	0	0	0	1,903,002	2,101,633	1,898,360	0
Genetics of Diabetes Complications-- Genotyping (NIDDK)	0	0	0	0	0	0	0	0	2,996,821	0	0	0
Biomarker Development for Diabetic Complications (R21) (RFA DK06-004) (NIDDK, NHLBI, NEI)	0	0	0	0	0	0	0	0	0	1,689,153	1,530,798	260,680
Improving the Clinical Measurement of HbA1c (CDC)	768,092	520,848	487,537	466,649	384,903	534,825	600,000	600,000	750,000	750,000	600,000	600,000
Collaborative Studies on Angiogenesis and Diabetic Complications (RFA DK04-022) (NIDDK, NINDS, NHLBI, NEI)	0	0	0	0	0	0	0	1,736,225	1,673,307	1,337,602	1,310,868	0
Progression of Cardiovascular Disease in Type 1 Diabetes (RFA HL04-013) (NHLBI, NIDDK)	0	0	0	0	0	0	3,258,309	3,470,479	3,253,541	2,984,407	0	0
Feasibility Projects To Test Strategies for Preventing or Slowing the Progression of Diabetic Nephropathy (RFA DK02-025) (NIDDK)	0	0	0	0	1,325,273	1,190,190	0	0	0	0	0	0

**GOAL V: PREVENT OR REDUCE THE COMPLICATIONS OF TYPE 1 DIABETES (cont'd)**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Surrogate Markers for Diabetic Microvascular Complications (RFA DK02-016) (NIDDK, NEI, NINDS)	0	0	0	0	3,427,339	3,468,856	2,731,380	2,031,157	0	0	0	0
Imaging Early Markers of Diabetic Microvascular Complications in Peripheral Tissue (RFA DK02-001) (NIDDK)	0	0	0	0	1,282,371	1,288,444	729,250	729,250	0	0	0	0
Oral Microbiology/Immunology of Type 1 Diabetes (RFA DE01-001) (NIDCR)	0	0	0	645,000	500,000	0	0	0	0	0	0	0
Neurobiology of Diabetic Complications (RFA NS00-002) (NINDS, NIDDK, JDRF)	0	0	907,406	895,971	610,916	442,485	712,852	0	0	0	0	0
Pilot Studies for New Therapies for Type 1 Diabetes and its Complications (RFA DK99-013) (NIDDK, NHLBI, NEI)	0	1,174,221	1,159,255	0	0	0	0	0	0	0	0	0
Neurological Complications of Diabetes (RFA NS99-005) (NINDS, NIDDK)	0	2,243,319	2,193,073	2,007,389	1,603,619	0	0	0	0	0	0	0
Pathogenesis and Therapy of Complications of Diabetes (RFA DK98-009) (NIDDK, NEI, NHLBI, NICHD, NINDS)	6,713,260	6,914,914	5,622,671	440,431	452,086	0	0	0	0	0	0	0
Development of Clinical Markers for Kidney Disease (NIDDK)	0	0	0	834,000	0	0	0	0	0	0	0	0
Advanced Glycation Endproducts (CDC)	0	0	0	280,710	57,567	0	0	0	0	0	0	0
Development of Surrogate Markers for Clinical Trials: Supplement (NIEHS, NIDDK)	0	0	0	318,000	0	0	0	0	0	0	0	0
Administrative Supplements for a Drug Screening Program for Diabetic Complications (NIDDK, NHLBI, NCI, NEI, NINDS)	0	0	0	0	0	0	0	0	1,072,536	339,299	0	0
Functional Genomics Approaches to Diabetic Complications - IHWG SNPs (NHGRI, NIDDK)	0	0	0	750,000	0	0	0	0	0	0	0	0
One Year Supplements to Ongoing Projects (NIDDK, NEI, NIDCR, NICHD, NHLBI)	936,150	0	0	0	0	0	0	0	0	0	0	0
<b>Total - Goal V:</b>	<b>10,339,294</b>	<b>11,725,416</b>	<b>11,344,751</b>	<b>19,435,977</b>	<b>21,402,845</b>	<b>15,017,921</b>	<b>16,359,078</b>	<b>17,748,844</b>	<b>26,948,806</b>	<b>15,322,431</b>	<b>11,514,911</b>	<b>6,130,362</b>



**GOAL VI: ATTRACT NEW TALENT AND APPLY NEW TECHNOLOGIES TO RESEARCH ON TYPE 1 DIABETES**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Training Programs in Diabetes Research for Pediatric Endocrinologists (RFA DK02-024) (NIDDK, JDRF, ADA)	0	0	0	0	2,571,342	3,472,772	3,274,907	3,169,415	1,352,032	1,283,294	0	0
Innovative Partnerships in Type 1 Diabetes (RFA DK02-023) (NIDDK, NEI, NIAID)	0	0	0	0	5,778,702	5,620,843	4,337,638	4,258,939	0	0	0	0
Bench to Bedside Research on Type 1 Diabetes and its Complications (RFA DK02-022) (NIDDK, NIAID)	0	0	0	0	3,443,507	3,587,082	392,500	1,236,677	1,274,733	342,611	0	0
Bench to Bedside Research on Type 1 Diabetes and its Complications (RFA DK03-001) (NIDDK, NIAID, NEI, NHLBI)	0	0	0	0	0	3,449,975	3,415,870	1,629,440	956,405	1,008,408	0	0
Bench to Bedside Research on Type 1 Diabetes and its Complications (RFA DK03-019) (NIDDK, NIAID, NEI, NHLBI, NINDS, ODS)	0	0	0	0	0	0	4,376,639	4,184,253	1,650,918	1,396,776	1,011,645	0
Innovative Patient Outreach Programs and Ocular Screening Technologies to Improve Detection of Diabetic Retinopathy (SBIR [R43/R44]) (RFA EY09-001) (NEI)	0	0	0	0	0	0	0	0	0	0	0	1,796,756
Proteomics and Metabolomics in Type 1 Diabetes and its Complications (RFA DK03-024) (NIDDK, NIAID, NEI, NHLBI, NINDS, NICHD)	0	0	0	0	0	0	3,789,400	3,410,294	1,790,149	2,413,532	2,399,609	0
Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) RFA in Type 1 Diabetes and its Complications (RFA DK03-020) (NIDDK, NEI, NIAID, NHLBI, NINDS, NICHD, NINR) and SBIR: Measurement Tools for Altered Autonomic Function in Spinal Cord Injury and Diabetes (RFA HD04-018) (NICHD, NIDDK)	0	0	0	0	0	0	4,202,727	4,167,000	3,167,335	1,795,594	1,870,487	0
STTR to Develop New Therapeutics and Monitoring Technologies for Type 1 Diabetes and its Complications (STTR [R41/R42]) (RFA DK05-015) (NIDDK, NEI, NHLBI, NIAID, NICHD, NINDS)	0	0	0	0	0	0	0	0	552,665	447,000	447,000	447,000
SBIR to Develop New Therapeutics and Monitoring Technologies for Type 1 Diabetes and its Complications (SBIR [R43/R44]) (RFA DK05-016) (NIDDK, NEI, NHLBI, NIAID, NICHD, NINDS)	0	0	0	0	0	0	0	0	446,985	1,924,336	1,849,513	0
SBIR to Develop New Therapeutics and Monitoring Technologies for Type 1 Diabetes (T1D) Towards an Artificial Pancreas [R43/R44] (RFA DK09-001) (NIDDK, NIBIB, NICHD)	0	0	0	0	0	0	0	0	0	0	0	1,923,244
Type 1 Diabetes Pathfinder (DP2) (RFA DK08-001) (NIDDK)*	0	0	0	0	0	0	0	0	0	0	23,499,500	0
Type 1 Diabetes Pilot and Feasibility Awards (awarded through Diabetes Centers)	0	0	0	0	0	0	0	0	634,000	0	0	0
Phased Innovation Partnerships (NIDDK)	0	0	0	4,049,000	0	0	0	0	0	0	0	0
<b>Total - Goal Vi:<sup>f</sup></b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4,049,000</b>	<b>11,793,551</b>	<b>16,130,672</b>	<b>23,789,681</b>	<b>22,056,018</b>	<b>11,825,222</b>	<b>10,611,551</b>	<b>31,077,754</b>	<b>4,167,000</b>
<b>Conferences and Other Expenses</b>	<b>69,318</b>	<b>27,337</b>	<b>114,667</b>	<b>212,528</b>	<b>150,031</b>	<b>156,860</b>	<b>137,726</b>	<b>536,847</b>	<b>802,904</b>	<b>704,384</b>	<b>587,685</b>	<b>864,458</b>
<b>TOTAL</b>	<b>30,000,000</b>	<b>30,000,000</b>	<b>30,000,000</b>	<b>100,000,000</b>	<b>100,000,000</b>	<b>100,000,000</b>	<b>150,000,000</b>	<b>150,000,000</b>	<b>150,000,000</b>	<b>150,000,000</b>	<b>150,000,000</b>	<b>150,000,000</b>

**Footnotes for Table A1:**

- <sup>a</sup> FY 2009 funds provide funding for FY 2009-2013.
- <sup>b</sup> A portion of the budget from FY 2007-2009 has supported AMDCC activities.
- <sup>c</sup> In addition to the \$2.2 million shown in the table, an additional \$1 million was subcontracted from TrialNet to TRIGR in FY 2006.
- <sup>d</sup> The total yearly budget for the AMDCC for FY 2006-2009 is \$4.38 million, which includes funding that was awarded to the Type 1 Diabetes Mouse Resource (see Goal I) and used for AMDCC activities.
- <sup>e</sup> FY 2008 funds provide funding for FY 2008-2012.
- <sup>f</sup> In addition to solicitations focused exclusively on attracting new talent to type 1 diabetes research, Goal VI was addressed by solicitations for research projects that encouraged the participation of new investigators and the submission of applications for pilot and feasibility awards, as well as the development of new technology in the context of Goals I-V. These early efforts relative to Goal VI are thus embedded in other Goals during the FY 1998-2000 period of the *Program*. Starting in FY 2001, specific initiatives were also launched relative to Goal VI.

## EXTRAMURAL RESEARCH GRANTS

Extramural NIH grants, cooperative agreements, contracts, and supplements, which were awarded through the *Special Statutory Funding Program for Type 1 Diabetes Research* between FY 1998-2009, are listed in Table A2. Some initiatives supported additional awards with regularly appropriated funds; some awards were supported by both the *Special Diabetes Program* and regularly appropriated funds. Abstracts describing research topics pursued through these grants are available through the NIH Research Portfolio Online Reporting Tools Expenditures and Results (RePORTER) Web site (<http://projectreporter.nih.gov/reporter.cfm>). Bibliometric analysis of publications resulting from these awards as of January 1, 2010, is found in Appendix B.

**TABLE A2: Research Grants and Contracts Awarded with Special Diabetes Program Funds**

	Year*	Project No.	Project Title
<b>GOAL I: IDENTIFY THE GENETIC AND ENVIRONMENTAL CAUSES OF TYPE 1 DIABETES</b>			
<b>Type 1 Diabetes Genetics Consortium (T1DGC)</b>			
Donald Bowden, Wake Forest University†	2001	R01 DK056289	ID of Diabetes Genes on Human Chromosome 20Q12-Q13.1
Patrick Concannon, Virginia Mason Research Center	2001	R01 DK046635	Susceptibility Genes in Type 1 Diabetes
Stephen Rich, Wake Forest University Health Sciences	2002	U01 DK062418	Type 1 Diabetes Genetics Consortium
Johns Hopkins University	2002	N01 HG065403	Center for Inherited Disease Research
<b>Repository Services for T1DGC</b>			
Rutgers University	2005	N01 DK032610	Repository Services for T1DGC
<b>Fine Mapping and Function of Genes for Type 1 Diabetes (DP3) (RFA DK08-006)</b>			
Zhibin Chen, University of Miami School of Medicine	2009	DP3 DK085696	The Quantitative Biology of CTLA4 Splice Variants in T1D
Patrick Concannon, University of Virginia, Charlottesville	2009	DP3 DK085678	Expression and Proteomic Characterization of Risk Loci in Type 1 Diabetes
Hakon Hakonarson, Children's Hospital (Philadelphia)	2009	DP3 DK085708	Fine Mapping and Functional Evaluation of Selected Type 1 Diabetes Loci
Art Petronis, Centre for Addiction and Mental Health	2009	DP3 DK085698	DNA Methylome Study in Type 1 Diabetes
Stephen Rich, University of Virginia, Charlottesville	2009	DP3 DK085695	The Role of Copy Number Variants (CNV) in Type 1 Diabetes
<b>13th International Histocompatibility Working Group</b>			
John Hansen, Fred Hutchinson Cancer Research Center	2001	U24 AI049213	13th International Histocompatibility Working Group
<b>The Environmental Determinants of Diabetes in the Young (TEDDY) (RFA DK02-029)</b>			
William Hagopian, Pacific Northwest Research Institute	2003	U01 DK063829	Diabetes Evaluation in Washington (DEW-IT) Clinical Center
Jeffrey Krischer, Moffitt Cancer Center and Research Institute	2002	U01 DK063790	Data Coordinating Center
Ake Lernmark, University of Washington	2003	U01 DK063861	Diabetes Prediction in Skane (DiPiS)
Marian Rewers, University of Colorado Health Sciences Center	2003	U01 DK063821	Environmental Causes of Type 1 Diabetes
Jin-Xiong She, Medical College of Georgia	2003	U01 DK063865	Consortium for Identification of Environmental Triggers
Olli Simell, Turku University Central Hospital	2003	U01 DK063863	Environmental Triggers of Type 1 Diabetes
Anette Ziegler, Diabetes Research Institute	2003	U01 DK063836	Type 1 Diabetes Triggers: Diet Modification in Neonates

### Footnotes for Table A2:

\* In most cases, the year represents the first year that the project received support from the *Special Diabetes Program*. In some cases, grants are listed more than once because the grantee successfully recompeted for continued funding. For example, if a grant was initially funded in 2001, it will be listed under the relevant funding opportunity as starting in that year. If it successfully recompeted for continued funding under a new funding opportunity (e.g., RFA) in 2006, the same grant number will again be listed under that funding opportunity, with 2006 listed as the start date of the new funding period.

† Institutional affiliations at the time of the grant award are listed. Some Principal Investigators (PIs) have moved to new institutions.

	Year	Project No.	Project Title
<b>Limited Competition: The Environmental Determinants of Diabetes in the Young (TEDDY) Study (U01) (RFA DK07-500)</b>			
William Hagopian, Pacific Northwest Research Institute	2008	U01 DK063829	The Environmental Determinants of Diabetes in Youth: Washington Clinical Center
Ake Lernmark, University of Washington	2008	U01 DK063861	The Environmental Triggers of Diabetes (TEDDY) in Sweden
Marian Rewers, University of Colorado Health Sciences Center	2008	U01 DK063821	The TEDDY Study - Colorado Clinical Center
Jin-Xiong She, Medical College of Georgia	2008	U01 DK063865	The TEDDY study: Georgia/Florida clinical center
Olli Simell, Turku University Central Hospital	2008	U01 DK063863	The Environmental Determinants of Diabetes in Young (TEDDY)
Anette Ziegler, Diabetes Research Institute	2008	U01 DK063836	The Environmental Determinants of Diabetes in the Young (TEDDY) Consortium
<b>The Environmental Determinants of Diabetes in the Young (RFP NIH-NIDDK-07-01)</b>			
University of South Florida	2007	HHSN267200700014C	The Environmental Determinants of Diabetes in the Young
<b>Repository Services for TEDDY</b>			
Fisher Scientific	2008	HHSN267200800015C	Repository Services for TEDDY
<b>Uniform Population-based Approach to Case Ascertainment, Typology, Surveillance and Research on Childhood Diabetes: SEARCH for Diabetes in Youth Study (PA 00097)</b>			
Lawrence Dolan, Children's Hospital Medical Center, Cincinnati	2001	U48 CCU919219	Search for Diabetes in Youth
Richard Hamman, University of Colorado Health Sciences Center	2001	U48 CCU81924	Search for Diabetes in Youth
Elizabeth Mayer-Davis, University of South Carolina	2001	U48 CCU419249	Search for Diabetes in Youth
Diana Pettiti, Kaiser Permanente Southern California	2001	U48 CCU919219	Search for Diabetes in Youth
Catherine Pihoker, Children's Hospital and Regional Medical Center, Seattle	2001	U58 CCU019235	Search for Diabetes in Youth
Beatriz Rodriguez, Pacific Health Research Institute	2001	U58 CCU019235	Search for Diabetes in Youth
<b>Incidence, Natural History, and Quality of Life of Diabetes in Youth (SEARCH for Diabetes in Youth Study) (RFA DP05-069)</b>			
Ronny Bell, Wake Forest University Health Sciences	2005	U01 DP000250	SEARCH for Diabetes in Youth Coordinating Center
Dana Dabelea, University of Colorado at Denver Health Sciences Center	2005	U01 DP000247	SEARCH for Diabetes in Youth 2: Colorado Center
Lawrence Dolan, Children's Hospital Medical Center, Cincinnati	2005	U01 DP000248	SEARCH for Diabetes in Youth 2: Ohio Center
Jean Lawrence, Kaiser Permanente Southern California	2005	U01 DP000246	SEARCH for Diabetes in Youth 2: California Center
Elizabeth Mayer-Davis, University of South Carolina	2005	U01 DP000254	SEARCH for Diabetes in Youth 2: South Carolina Center
Catherine Pihoker, Children's Hospital and Regional Medical Center, Seattle	2005	U01 DP000244	SEARCH for Diabetes in Youth 2: Washington Site
Beatriz Rodriguez, Pacific Health Research Institute	2005	U01 DP000245	Search for Diabetes in Youth 2: Hawaii Center
<b>Type 1 Diabetes Mouse Resource</b>			
Muriel Davison, The Jackson Laboratory	2001	P40 RR009781	Transgenic and Targeted Mutant Preservation
<b>Cadaveric Pancreas of Autoantibody Positive Individuals—Supplement to Diabetes Center</b>			
John Hutton, Barbara Davis Center for Childhood Diabetes	2004	P30 DK057516	UCHSC Diabetes and Endocrinology Research Center
<b>Bioinformatics Integration Support Contract (RFP NIAID-DAIT-02-016)</b>			
Northrop Grumman	2002	N01 AI025487	Bioinformatics Integration Support Contract
Research Triangle Institute	2002	N01 AI025486	Bioinformatics Integration Support Contract

	Year	Project No.	Project Title
<b>Mammalian Gene Collection</b>			
Science Applications International Corporation	2001	N01 CO012400	Mammalian Gene Collection
<b>Sequence the NOD Mouse for Immune System Genes for Type 1 Diabetes</b>			
University of California, San Francisco	2001	N01 AI015416	Collaborative Network for Clinical Research on Immune Tolerance
<b>Biotechnology Resource Centers (RFA DK00-002)</b>			
Jin-Xiong She, University of Florida	2000	U24 DK058778	NIDDK Biotechnology Center at the University of Florida
<b>Functional Genomics of the Developing Endocrine Pancreas (RFA DK99-007)</b>			
Klaus Kaestner, University of Pennsylvania	1999	R24 DK056947	Functional Genomics of the Developing Endocrine Pancreas
Marshall Permutt, Washington University	1999	R24 DK056954	Functional Genomics of the Developing Endocrine Pancreas
<b>GOAL II: PREVENT OR REVERSE TYPE 1 DIABETES</b>			
<b>Type 1 Diabetes TrialNet (RFA DK01-004)</b>			
John Lachin, George Washington University	2001	U01 DK061055	Type 1 Diabetes TrialNet: Operations Coordinating Center
Jay Skyler, University of Miami	2002	U01 DK061041	Type 1 Diabetes TrialNet
<b>Type 1 Diabetes TrialNet: Clinical Centers (RFA DK01-003)</b>			
Dorothy Becker, Children's Hospital of Pittsburgh	2005	U01 DK061058	Prediction and Prevention of Type 1 Diabetes
Jennifer Marks, University of Miami	2005	U01 DK061037	Diabetes TrialNet
Antoinette Moran, University of Minnesota	2005	U01 DK061036	Type 1 Diabetes--A Proposal for Prevention & Intervention
Tihamer Orban, Joslin Diabetes Center	2005	U01 DK061040	Type 1 Diabetes TrialNet: Clinical Centers
Henry Rodriguez, Indiana University School of Medicine	2005	U01 DK061038	Type 1 Diabetes TrialNet Indiana University Clinical Center
Darrell Wilson, Stanford University	2005	U01 DK061042	Type 1 Diabetes TrialNet at Stanford
<b>Type 1 Diabetes TrialNet (RFP NIH-NIDDK-07-03)</b>			
University of South Florida	2008	HHSN267200800019C	The Type 1 Diabetes TrialNet Data Coordinating Center
<b>Type 1 Diabetes TrialNet: Clinical Centers (U01) (RFA DK08-011)</b>			
Dorothy Becker, Children's Hospital of Pittsburgh	2009	U01 DK061058	Prediction and Prevention of Type 1 Diabetes
Stephen Gitelman, University of California, San Francisco	2009	U01 DK061010	UCSF Trialnet: A Phase II Trial of Imatimib in New Onset Type I Diabetes
Robin Goland, Columbia University	2009	U01 DK085504	Type 1 Diabetes TrialNet: Clinical Center at Berrie Center, Columbia University
Peter Gottlieb, University of Colorado, Denver	2009	U01 DK085509	Trainet: Diabetes Type 1 Prevention
Carla Greenbaum, Benaroya Research Institute at Virginia Mason	2009	U01 DK061034	Northwest Clinical Center for Type 1 Diabetes - TrialNet
Kevan Herold, Yale University	2009	U01 DK085466	Type 1 Diabetes TrialNet: Clinical Center at Yale University (U01)
Jennifer Marks, University of Miami	2009	U01 DK085499	Type 1 Diabetes TrialNet Clinical Center: Effects of Alefacept in New Onset T1D
Antoinette Moran, University of Minnesota, Twin Cities	2009	U01 DK085476	Type 1 Diabetes-A Proposal for Prevention & Intervention
Philip Raskin, University of Texas Southwestern Medical Center	2009	U01 DK085453	Pioglitazone preserves insulin secretion in type 1 diabetes
Henry Rodriguez, Indiana University	2009	U01 DK085505	Type 1 Diabetes TrialNet at Indiana University Clinical Center
William Russell, Vanderbilt University	2009	U01 DK085465	Vanderbilt University: Clinical Center Application, Type 1 Diabetes TrialNet
Desmond Schatz, University of Florida	2009	U01 DK085461	TrialNet: University of Florida Clinical Center and Network
Diane Wherrett, Hospital for Sick Children (Toronto)	2009	U01 DK085463	Type 1 Diabetes TrialNet: Toronto Clinical Centre
Darrell Wilson, Stanford University	2009	U01 DK061042	Type 1 Diabetes TrialNet at Stanford
<b>Immune Tolerance Network - Immunomodulation (RFP NIAID-99-30)</b>			
University of California, San Francisco	2001	N01 AI015416	Collaborative Network for Clinical Research on Immune Tolerance

	Year	Project No.	Project Title
Social & Scientific Systems	2007	N01 AI040089	Immune Tolerance Network support
Eminent Services Corporation	2007	N01 AI040090	Immune Tolerance Network support
PPD Development	2007	N01 AI040070	Immune Tolerance Network support
Rho Federal Systems	2008	N01 AI080029	Immune Tolerance Network support
<b>Recruitment for Clinical Research Studies</b>			
Matthews Media	2004	N02 DK032625	Media Support Services for Type 1 Diabetes Mellitus Consortia
Matthews Media	2004	N02 DK042680	Media Support Services for Type 1 Diabetes Mellitus Consortia
<b>Type 1 Diabetes-Rapid Access to Intervention Development (Projects Relevant to Prevention)</b>			
Jeffrey Bluestone, Tolerance Therapeutics, Inc.	2005	N01 CO12400	GMP Manufacturing of hOKT3gamma1 (Ala-Ala) Monoclonal
Jerry Nadler, DiaKine Therapeutics, LLC	2005	N02 CM37005/ N02 CM27005	Purification of Lisofylline Drug Substance and Manufacture of Lisofylline Drug Product
Terry Strom, Beth Israel Deaconess Medical Center	2005	N01 CO12400	IL-2/Fc-IL15/Fc Fusion Proteins Components of the "Power Mix" Immune Modulator
<b>Repository Services for Type 1 Diabetes-Rapid Access to Intervention Development (Projects Relevant to Prevention)</b>			
Fisher Scientific	2007	N02 CM62200	Repository Services for T1D-RAID
<b>Type 1 Diabetes-Preclinical Testing Program: Preclinical Efficacy in Prevention or Reversal of Type 1 Diabetes in Rodent Models (RFP DK05-005)</b>			
Biomedical Research Models	2006	N01 DK062909	Preclinical Study of Efficacy in Animal Models
<b>Cooperative Study Group for Autoimmune Disease Prevention (RFA AI00-016)</b>			
Teodor-Doru Brumeanu, Mount Sinai School of Medicine	2001	R01 DK061927	Prevention of Type 1 Diabetes by Soluble, MHC-II Peptide
George Eisenbarth, University of Colorado Health Sciences Center	2001	U19 AI050864	Virginia Mason/UCHSC Autoimmune Prevention Center
C.Garrison Fathman, Stanford University	2001	U01 DK061934	Strategies for Prevention of Autoimmunity
C.Garrison Fathman, Stanford University	2001	U19 DK061925	CD25+ Regulator CD4+ T Cells
David Hafler, Brigham and Women's Hospital	2001	U01 DK061926	Role of Regulatory CD4+/CD25+ T Cells in Diabetes
Matthias Von Herrath, La Jolla Institute for Allergy & Immunology	2001	U19 AI051973	How Does Blockade of CD40/CD40L Prevent Autoimmunity?
<b>Cooperative Study Group for Autoimmune Disease Prevention (RFA AI05-026)</b>			
George Eisenbarth, University of Colorado Health Sciences Center	2006	U19 AI050864	Benaroya Research Institute/UCDHSC Autoimmune Cooperative Study Group
C. Garrison Fathman, Stanford University	2006	U01 DK078123	Immunoregulation of Autoimmunity
Aldo Rossini, University of Massachusetts Medical School	2006	U01 AI073871	Adaptive Immunity in Virus-induced Diabetes in BBDR Rats
Linda Sherman, Scripps Research Institute	2006	U01 AI070351	Effects of Insulin-dependent Diabetes Resistance Alleles on CD8 Tolerance in NOD
Matthias Von Herrath, La Jolla Institute for Allergy & Immunology	2006	U01 DK078013	Achieving Therapeutic Antigen-Specific Tolerance in Type 1 Diabetes
<b>Trial to Reduce the Incidence of Type 1 Diabetes in the Genetically-At-Risk (TRIGR)</b>			
Hans Akerblom, University of Helsinki	2001	U01 HD040364	Trial to Reduce IDDM in the Genetically At-Risk Study
Dorothy Becker, Children's Hospital (Pittsburgh)	2001	U01 HD042444	Nutritional Primary Prevention of Type 1 Diabetes
Jeff Krischer, University of South Florida	2006	U01 HD051997	Trial to Reduce IDDM in the Genetically at Risk (TRIGR) Data Management Unit
<b>Gene Therapy Approaches for Diabetes and Its Complications (RFA DK01-006)</b>			
George Christ, Yeshiva University	2001	R21 DK060204	Gene Therapy for Bladder Hyperactivity in Diabetic Rats
Chih-Pin Liu, Beckman Research Institute	2001	R21 DK060190	Regulation of Type 1 Diabetes Using Ribozymes

	Year	Project No.	Project Title
William Osborne, University of Washington	2001	R21 AI051637	Autoantigen Delivery to Induce Tolerance in Diabetes
Manikkam Suthanthiran, Weill Medical College	2001	R21 DK060186	Gene Therapy for Islet Transplantation
Jide Tian, University of California, Los Angeles	2001	R21 DK060209	Genetic Modification of DCs as Immunotherapy for IDDM
Roland Tisch, University of North Carolina Chapel Hill	2001	R21 AI051638	The Use of VEE Replicons Encoding GAD65 to Treat IDDM
Keith Webster, University of Miami	2001	R21 HL069812	Therapeutic Angiogenesis to Treat Ischemic Disorders
<b>Innovative Grants in Immune Tolerance (RFA AI00-006)</b>			
Adam Adler, University of Connecticut School of Med/Dnt	2001	R21 AI049813	Comparing Toleragenic Versus Immunogenic APC Function
Lin Chen, University of Colorado	2001	R21 AI049905	Develop Peptide Inhibitors of the NFAT/AP-1 Complex
Mark Crew, University of Arkansas	2001	R21 AI049885	Tolerated Xenografts Using Virus Stealth Technology
Joanna Davies, Scripps Research Institute	2001	R21 DK061334	Transplantation Tolerance Induced by Linked Suppression
Nicholas Gascoigne, Scripps Research Institute	2001	R21 DK061329	Real-Time Molecular Interactions in Tolerance Induction
Irving Goldschneider, University of Connecticut School of Med/Dnt	2001	R21 AI049882	Induction Acquired Thymic Tolerance by Regulatory APCs
Hidehiro Kishimoto, Scripps Research Institute	2001	R21 DK061332	Tolerance in NOD Mice
Mark Poznansky, Massachusetts General Hospital	2001	R21 AI049858	Movement of Recipient T-Cells Away from an Allograft
Haval Shirwan, University of Louisville	2001	R21 DK061333	Apoptosis: A Means of Immune Regulation to Treat Diabetes
Dario Vignali, St. Jude's Children's Research Hospital	2001	R21 DK061330	Tolerance Induction by Targeted Expression of GAD
<b>Innovative Grants in Immune Tolerance (RFA AI03-010)</b>			
Andrea Sant, University of Rochester	2004	R21 AI059898	Selective Presentation of Autoantigens by B Cells
Matthias Von Herrath/Douglas Green, La Jolla Institute for Allergy & Immunology	2004	R21 AI059850	Immune Tolerance Induction By Apoptotic Bodies
Chen Dong, University of Texas, MD Anderson Cancer Center	2004	R21 DK069278	Costimulatory Regulation of CD8 T Cell Tolerance
<b>Pilot Studies for New Therapies for Type 1 Diabetes and Its Complications (RFA DK99-013)</b>			
Steinunn Baekkeskov, University of California, San Francisco	1999	R21 DK055977	Generation of a Non-Human Primate Model of Type 1 Diabetes
Kevin Breuel, East Tennessee State University	1999	R21 DK057115	NF-Kappa B as a Therapeutic Target for IDDM
Alan Escher, Loma Linda University	1999	R21 DK057113	APC-Targeting Vaccine for Prevention of Type 1 Diabetes
Daniel Kaufman, University of California, Los Angeles	1999	R21 AI047773	Rational Design of Antigen-Based Immunotherapeutics
William Langridge, Loma Linda University	1999	R21 DK057206	A Targeted Plant-Based Vaccine for Type 1 Diabetes
Jon Mabley, Inotek Corporation	1999	R21 DK057239	Poly(ADP) Ribose Synthetase and Autoimmune Diabetes
Noel MacLaren, Louisiana State University Medical Center	1999	R21 DK057122	A Vaccine for Immune Mediated Diabetes
James Thomas, Vanderbilt University	1999	R21 AI047763	Selection and Regulation of B Lymphocytes in IDDM
<b>Immunopathogenesis of Type 1 Diabetes Mellitus (RFA DK98-010)</b>			
Cheong-Hee Chang, University of Michigan Ann Arbor	1998	R21 AI044454	Tolerance and Autoreactivity by Self Antigen
Patrick Concannon, Virginia Mason Research Center	1998	R01 DK055970	Immunological Candidate Genes for IDDM Susceptibility
John Corbett, St. Louis University	1998	R01 AI044458	Mechanisms of Viral-Induced Beta Cell Damage
George Eisenbarth, University of Colorado Health Sciences Center	1998	R01 DK055969	<i>In Vivo</i> NOD Evaluation of a Pathogenic Insulin Peptide
Christopher Goodnow, Australian National University	1998	R01 AI044392	Mechanisms Regulating Islet Destruction by CD4 T cells
David Hafler, Brigham and Women's Hospital	1998	R01 AI044447	The Role of Invariant T Cells and IL-4 in Type 1 Diabetes
Kathryn Haskins, University of Colorado Health Sciences Center	1998	R01 AI044482	Immunoregulation in the NOD Mouse
Jonathan Katz, Washington University	1998	R01 AI044416	Role of I-AG7 on Selecting Autoreactive T Cells
William Kwok, Virginia Mason Research Center	1998	R01 AI044443	Structure and Immunobiology of an IDDM-Protective Molecule
Paul Lehmann, Case Western Reserve University	1998	R21 AI044484	Human/Humanized T Cell Response to Islet Cell Antigens
Chih-Pin Liu, Beckman Research Institute	1998	R21 AI044429	Regulatory Mechanisms in Type 1 Diabetes
Ali Najj, University of Pennsylvania	1998	R01 HD037754	Autoimmune Diabetes-Maternal Immunoglobulin
Alberto Pugliese, University of Miami	1998	R01 AI044456	Proinsulin Expression in the Immune System
Eric Simone, University of Colorado Health Sciences Center	1998	R01 AI044466	NOD T Cell Receptors for Specific Islet Autoantigens
Grete Sonderstrup, Stanford University	1999	P01 DK055364	Autoimmune T and B Cell Responses in Type 1 Diabetes
Matthias Von Herrath, Scripps Research Institute	1998	R01 AI044451	Regulation and Immunotherapy of IDDM
Li Wen, Yale University	1998	R01 AI044427	Development of a Novel Humanized Animal Model of IDDM

	Year	Project No.	Project Title
<b>Biomarkers of Autoimmunity in Type 1 Diabetes (RFA DK06-002)</b>			
Steven Cahndy, University of California, Irvine	2006	R21 DK077553	Kv1.3 Channels: Functional Biomarker and Therapeutic Target for Type-1 Diabetes
Sofia Casares, Henry M. Jackson Foundation for the Advancement of Military Medicine	2006	R21 DK077521	Immunokinetics of Autoreactive CD4 T Cells in Blood as Biomarker for T1D
George Chessler, University of California, San Diego	2006	R21 DK077466	Serum GAD65 as a Biomarker of Islet Injury, Insulinitis, and Transplant Rejection
Debra Counts, University of Maryland, Baltimore	2006	R21 DK077529	Zonulin and Cytokines as Markers of Autoimmunity in Type 1 Diabetes
Teresa Dilorenzo, Albert Einstein College of Medicine	2006	R21 DK077500	CD8 T Cell Reactivity to IGRP as an Autoimmunity Marker in Type 1 Diabetes
Daniel Geraghty, Fred Hutchinson Cancer Research Center	2006	R21 DK077531	Diabetes and Recombination in the 8.1 MHC Haplotype
William Kwok, Benaroya Research Institute at Virginia Mason	2006	R21 DK077525	Functional HLA-A*201-peptide and DR0401-peptide Microarrays for Type 1 Diabetes
Mikael Knip, University of Helsinki	2006	R21DK077506	Identification of Biomarkers of Autoimmunity in T1D by Novel Tools
Jerry Palmer, University of Washington	2006	R21 DK077545	Identification of Islet Proteins Stimulatory to T Cells from Autoimmune Diabetic
Alberto Pugliese, University of Miami	2006	R21 DK077491	Evaluation of MicroRNA Expression in CD4 T cells in Type 1 Diabetes
<b>Diabetes Prevention Trial-Type 1 Diabetes (DPT-1) - Supplements</b>			
Nathaniel Clark, University of Vermont	1998	M01 RR000109	General Clinical Research Center: Diabetes Prevention Trial
George Eisenbarth, University of Colorado Health Sciences Center	1998	R01 AI039213	Antibodies to Recombinant Autoantigens- Prediction/Immunogenetics
Richard Jackson, Joslin Diabetes Center	1998	U01 DK046601	Diabetes Prevention Trial -Type 1
Noel MacLaren, University of Florida	1998	U01 DK046636	Diabetes Prevention Trial -Type 1
Alvin Powers, Vanderbilt University	1998	M01 RR000095	General Clinical Research Center: Diabetes Prevention Trial
Susan Ratzan, University of Connecticut Health Center	1998	M01 RR006192	General Clinical Research Center: Diabetes Prevention Trial
David Schade, University of New Mexico	1998	M01 RR000997	General Clinical Research Center: Diabetes Prevention Trial
Desmond Schatz, University of Florida	1998	M01 RR000082	General Clinical Research Center: Diabetes Prevention Trial
Stuart Weinzimer, Children's Hospital (Philadelphia)	1998	M01 RR000240	General Clinical Research Center: Diabetes Prevention Trial
<b>Repository Services for DPT-1</b>			
Fisher Scientific	2009	HHSN267200800015C	Repository Services for DPT-1
<b>One Year Supplements to Ongoing Projects</b>			
Mark Atkinson, University of Florida	1998	P01 AI042288	Immune Function and Low Risk Genotypes in IDD
Mark Atkinson, University of Florida	1998	R01 AI039250	Mechanisms of Immunotherapy in IDD Prevention Trials
William Hagopian, Pacific Northwest Research Institute	1998	P51 RR000166	Controlled Transfer Model for Autoimmune Diabetes
Laurence Turka, University of Pennsylvania	1998	P01 AI041521	Costimulation and Cytokines in Tolerance
Don Wiley, Children's Hospital (Boston)	1998	P01 AI039619	MHC Linked Susceptibility to Autoimmunity - Structure and Biology
<b>GOAL III: DEVELOP CELL REPLACEMENT THERAPY</b>			
<b>Beta Cell Biology Consortium (RFA DK01-014)</b>			
Michael German, University of California, San Francisco	2001	U19 DK061245	Molecular Control of Pancreatic Islet Development
Joel Habener, Massachusetts General Hospital	2001	U19 DK061251	Restoration of Endocrine Pancreas Function
John Hutton, University of Colorado Health Sciences Center	2001	U19 DK061248	Development and Regeneration of the Endocrine Pancreas
Mark Magnuson, Vanderbilt University	2001	U19 DK042502	Genes of Pancreas Function and Development
Catherine Verfaillie, University of Minnesota	2001	U19 DK061244	Characterization of Beta Cell Stem Cells
<b>Beta Cell Biology Consortium (U19) (RFA DK04-017)</b>			
Mark Magnuson, Vanderbilt University	2005	U19 DK042502	Mechanisms of Pancreas Development
Palle Serup, Hagedorn Research Institute	2005	U19 DK072495	Pancreatic Endocrine Development and Regeneration
<b>Beta Cell Biology Consortium (U01) (RFA DK04-018)</b>			
Markus Grompe, Oregon Health Sciences University	2005	U01 DK072477	Novel Reagents for Beta Cell Biology
Pedro Herrera, University of Geneva	2005	U01 DK072522	Transgenic Model of Inducible Diabetes
Gordon Keller, Mount Sinai School of Medicine	2005	U01 DK072513	Endoderm Induction and Pancreatic Specification from ES Cells



	Year	Project No.	Project Title
Douglas Melton, Harvard University	2005	U01 DK072505	Mechanisms of Pancreatic Beta Cell Regeneration
Lori Sussel, University of Colorado Health Science Center	2005	U01 DK072504	Defining the Roles of Nkx2.2 and NeuroD in Regulating Islet Cell Fate
Kenneth Zaret, Institute for Cancer Research, Fox Chase Cancer Center	2005	U01 DK072503	Gene Regulatory Signals for Beta Cell Development
<b>Beta Cell Biology Consortium (Coordinating Center) (RFA DK04-500)</b>			
Mark Magnuson, Vanderbilt University	2005	U01 DK072473	Coordinating Center for Beta Cell Biology Consortium
<b>Clinical Islet Transplantation Consortium (Data Coordinating Center) (RFA DK04-004)</b>			
William Clarke, University of Iowa	2004	U01 DK070431	Clinical Islet Transplantation: Data Coordinating Center
<b>Clinical Islet Transplantation Consortium (Clinical Centers) (RFA DK04-005)</b>			
Bernhard Hering, University of Minnesota	2004	U01 AI065193	Advancing Islet Transplants for Type 1 Diabetes Care
Olle Korsgren, Uppsala University	2004	U01 AI065192	Innate Immunity in Clinical Islet Transplantation
Ali Najji, University of Pennsylvania	2004	U01 DK070430	B-Lymphocyte Immunotherapy in Islet Transplantation
Camillo Ricordi, University of Miami	2004	U01 DK070460	Strategies to Improve Long Term Islet Graft Survival
Andrew Shapiro, University of Alberta	2004	U01 AI065191	Islet Transplant - Costimulatory Blockade with LEA29Y
<b>Limited Competition: Continuation of the Clinical Islet Transplantation (CIT) Consortium (U01) (RFA DK09-501)</b>			
William Clarke, University of Iowa	2009	U01 DK070431	Clinical Islet Transplantation: Data Coordinating Center
Dixon Kaufman, Northwestern University	2009	U01 AI089316	Clinical Islet Transplantation at Northwestern
Christian Larsen, Emory University	2009	U01 AI089317	Clinical Refinement of Islet Transplantation
Ali Najji, University of Pennsylvania	2009	U01 DK070430	B-Lymphocyte Immunotherapy in Islet Transplantation
Andrew Posselt, University of California, San Francisco	2009	U01 DK085531	Advancing Islet Transplant for Type 1 Diabetes Care
Camillo Ricordi, University of Miami	2009	U01 DK070460	Strategies to Improve Long Term Islet Graft Survival
<b>Pilot and Feasibility Program in Human Islet Biology (RFA DK03-021)</b>			
John Corbett, St. Louis University	2004	R21 DK068839	Unfolded Protein Response as a Regulator of Human Beta-Cell Viability
Peter Drain, University of Pittsburgh	2004	R21 DK068833	Human Beta Cell Parameters for Islet Engraftment Success
Adolfo Garcia-Ocana, University of Pittsburgh	2004	R21 DK068836	Protein Kinase B/Akt in the Human Islet
Regina Kuliawat, Albert Einstein College of Medicine	2004	R21 DK068843	Beta-Cell Granule Protein Profile by Split Reporter Assay
Alvin Powers, Vanderbilt University	2004	R21 DK068854	Pdx-1 and Maf Proteins in Human Islets
Michael Roe, University of Chicago	2004	R21 DK068822	Real-Time Analyses of Apoptosis in Human Beta Cells
Rupangi Vasavada, University of Pittsburgh	2004	R21 DK068831	Parathyroid Hormone Related Protein in the Human Islet
Luis Fernandez, University of Wisconsin	2005	R21 DK071218	Donation After Cardiac Death for Isolated Pancreatic Islet Transplantation: Biology and Predicting Factors for Success
Klaus Kaestner, University of Pennsylvania	2005	R21 DK071216	Expression Profiling of Human Islets
Charles King, University of California, San Diego	2005	R21 DK071228	Proteomic Analysis of PI 3-Kinase Signaling in Islet
Brad Marsh, University of Queensland	2005	R21 DK071236	3D Structural Biology of the Human Islet
Anna Moore, Massachusetts General Hospital	2005	R21 DK071225	Labeling Human Pancreatic Islets for Multi-Modal Imaging
John Thompson, University of Alabama-Birmingham	2005	R21 DK071300	Effects of Brain-death on Islet Recovery and Function
<b>Comprehensive Programs in Beta Cell Biology (RFA DK02-014)</b>			
Vincenzino Cirulli, University of California, San Diego	2002	R01 DK063443	Role of Connexins in Beta Cell Development and Function
Roger Davis, University of Massachusetts Medical School	2002	R01 DK063368	Functional Analysis of the Beta Cell
Peter Dempsey, Pacific Northwest Research Institute	2002	R01 DK063363	Endogenous Betacellulin Signaling in Beta Cell Biology
Kathleen Dunlap, New England Medical Center Hospitals	2002	R01 DK063344	GABA-B Receptors as Regulators of Islet Biology
Claudia Kappen, University of Nebraska Medical Center	2002	R01 DK063336	Genome-Wide Discovery of Beta Cell Gene Control Elements
Jeffrey Pessin, University of Iowa	2002	R01 DK063332	Beta Cell Insulin Granule Docking, Priming, and Fusion
Fredric Wondisford, University of Chicago	2002	R01 DK063349	Control of Beta Cell Function by Co-Activators

	Year	Project No.	Project Title
<b>Beta Cell Regeneration for Diabetes Therapy (RFA DK05-007)</b>			
Susan Bonner-Weir, Joslin Diabetes Center	2006	R01 DK074879	Strategies to Identify <i>In Vitro</i> Islet Progenitors
Lawrence Chan, Baylor College of Medicine	2006	R21 DK075002	Induced Islet Neogenesis Therapy <i>In Vivo</i>
<b>Non-Human Primate Transplantation Tolerance Cooperative Study Group (RFA AI01-006)</b>			
Hugh Auchincloss, Massachusetts General Hospital	2002	U01 AI051706	Tolerance Induction for Primate Islet Transplantation
Bernhard Hering, University of Minnesota	2002	U01 DK062932	Mixed Chimerism in Haploidentical Non-Human Primates
Christian Larsen, Emory University	2002	U19 AI051731	Transplant Tolerance
Greg Westergaard, Alpha Genesis	2000	U01 AI049916	Specific Pathogen Free Rhesus Macaque Breeding Program
Greg Westergaard, Alpha Genesis	2005	N01 AI050048	
<b>Non-Human Primate Islet/Kidney Transplantation Tolerance (U01, U19) (RFA AI06-018)</b>			
David Rothstein, Yale University	2007	U01 AI074676	Induction of Renal Allograft Tolerance in Monkeys with Anti-CD45RB Based Therapy
David Sachs, Massachusetts General Hospital	2007	U01 DK080653	Tolerance to Composite Islet-Kidney Transplants in Baboons
Terry Strom, Beth Israel Deaconess Medical Center	2007	U19 DK080652	Inflammation and T Cell Memory: Inter-related Barriers to Allograft Tolerance
<b>Immune Tolerance Network - Islet Transplantation (RFP-NIAID-99-30)</b>			
University of California, San Francisco	2001	N01 AI015416	Collaborative Network for Clinical Research on Immune Tolerance
<b>Islet Cell Resource Centers (RFA RR01-002)</b>			
A. Osama Gaber, University of Tennessee Health Sciences Center	2001	U42 RR016602	Standardization and Procedure on Islet Isolation
Ronald Gill, University of Colorado Health Sciences Center	2001	U42 RR016599	Islet Cell Resources Facility at the University of Colorado
Mark Hardy, Columbia University of Health Sciences	2001	U42 RR016629	New York Regional Islet Isolation Facility
Bernhard Hering, University of Minnesota	2001	U42 RR016598	Human Pancreatic Islet Cell Resources (ICRs)
Thalachallour Mohanakumar, Washington University	2001	U42 RR016597	Human Islet Isolation Program at Washington University
Ali Naji, University of Pennsylvania	2001	U42 RR016600	Isolation/Distribution of Human Pancreatic Islets
Jo Reems, Puget Sound Blood Center	2001	U42 RR016604	Human Islet Isolations in Seattle
Camillo Ricordi, University of Miami	2001	U42 RR016603	Islet Cell Resources for Diabetes Research and Treatment
Arthur Riggs, Beckman Research Institute	2001	U42 RR016607	Islet Cell Resources of Southern California
Gordon Weir, Joslin Diabetes Center	2001	U42 RR016606	Human Pancreatic Islet Cell Resources
<b>Islet Cell Resource Centers: Administrative and Bioinformatics Coordinating Center (RFA RR02-002)</b>			
Joyce Niland, City of Hope National Medical Center	2002	U42 RR017673	National Islet Cell Consortium Coordinating Center
<b>Human Pancreatic Islet Cell Resources (ICRs) (RFA RR05-003)</b>			
Luis Fernandez, University of Wisconsin, Madison	2006	U42 RR023240	Multi-Parametric Characterization of Human Islets: Predictor of Islet Quality
Bernhard Hering, University of Minnesota, Twin Cities	2006	U42 RR016598	Human Pancreatic Islet Cell Resources
Ali Naji, University of Pennsylvania	2006	U42 RR016600	Isolation and Distribution of high quality human pancreatic islets
Jose Oberholzer, University of Illinois, Chicago	2006	U42 RR023245	Chicago Islet Consortium ICR at UIC
Camillo Ricordi, University of Miami	2006	U42 RR016603	Human Pancreatic Islet Cell Resource to Catalyze Collaborative Diabetes Research
Arthur Riggs, City of Hope/Beckman Research Center	2006	U42 RR016607	Southern California Islet Cell Resources (SCI-ICR) Center
<b>Islets for Basic Research - NIDDK Islet Cell Distribution Coordinating Center (RFP DK 08-99SB)</b>			
Beckman Research Institute of City of Hope	2009	PUR276200900006C1	NIDDK Islet Cell Distribution Coordinating Center

	Year	Project No.	Project Title
<b>Collaborative Islet Transplant Registry (RFP NIDDK-00-002)</b>			
EMMES Corporation	2001	N01DK012472	Islet/Beta Cell Transplant Registry
<b>Immunobiology of Xenotransplantation Cooperative Research Program (RFA AI04-042)</b>			
Simon Robson, Beth Israel Deaconess Medical Center	2005	U01 AI066331	Thromboregulatory Strategies to Prolong Xenografts
<b>Islet Encapsulation Research - Pilot and Feasibility Supplements to Existing Centers</b>			
John Hutton, University of Colorado Health Sciences Center	2002	P30 DK057516	Diabetes Endocrinology Research Center
Jerry Palmer, University of Washington	2002	P30 DK017047	Diabetes Endocrinology Research Center
Robert Sherwin, Yale University	2002	P30 DK045735	Diabetes Endocrinology Research Center
Donald Steiner, University of Chicago	2002	P60 DK020595	Diabetes Research and Training Center
<b>Gene Transfer Approaches To Enhance Islet Transplantation (RFA DK02-020)</b>			
Mark Catral, Toronto General Hospital	2002	R21 AI055024	Immunomodulation of Pancreatic Islets by Adenoviral Genes
Lieping Chen, Mayo Clinic Rochester	2002	R21 AI055028	Novel Strategies to Prevent Islet Transplantation Rejection
Christiane Ferran, Beth Israel Deaconess Medical Center	2002	R21 DK062601	Gene Transfer with A20 to Improve Islet Transplantation
Donald Kohn, Children's Hospital (Los Angeles)	2002	R21 DK062649	Gene Expression in Beta Cells by Lentiviral Vectors
Joseph LeDoux, Georgia Institute of Technology	2002	R21 DK062616	Induction of Stem Cells to Adopt an Endocrine Fate
Adrian Morelli, University of Pittsburgh	2002	R21 AI055027	Dendritic Cells with Galectin-1 to Enhance Islet Grafts
Alvin Powers, Vanderbilt University	2002	R21 DK062641	Gene Transfer and Revascularization of Transplanted Islets
Paul Robbins, University of Pittsburgh	2002	R21 AI055026	Inhibition of NF-KB to Facilitate Islet Transplantation
Daniel Salomon, Scripps Research Institute	2002	R21 DK062598	Lentiviral-Transduced Endothelium for Islet Transplants
Sihong Song, University of Florida	2002	R21 DK062652	Anti-Inflammatory Serpin (AAT and Elafin) Gene Transfers
Jide Tian, University of California, Los Angeles	2002	R21 AI055025	Genetic Modification of Mouse Islets for Transplantation
Zandong Yang, University of Virginia, Charlottesville	2002	R21 DK062610	Induction of Suppression for Islet Transplantation
<b>Imaging Pancreatic Beta Cell Mass, Function, Engraftment, or Inflammation (RFA DK02-002)</b>			
Paul Harris, Columbia University Health Sciences	2002	R01 DK063567	Human Islet Antigen Discovery and Imaging
Dixon Kaufman, Northwestern University	2002	R01 DK063565	Bioluminescent Imaging of Pancreatic Islet Transplants
Wen-Hong Li, University of Texas Southwestern Medical Center	2002	R01 DK063525	Image Beta Cell Mass and Function in Implants and Pancreas
Anna Moore, Massachusetts General Hospital	2002	R01 DK063572	<i>In Vivo</i> Imaging of Autoimmune Attack in Type 1 Diabetes
Louis Philipson, University of Chicago	2002	R01 DK063493	Imaging Beta Cell Function with Biosensors
Massimo Trucco, Children's Hospital (Pittsburgh)	2002	R01 DK063335	Optical Imaging of Beta Cell Function and Engraftment
<b>Toward Imaging the Pancreatic Beta Cell in People (RFA DK06-003)</b>			
Thierry Berney, University of Geneva	2006	R01 AI074225	Islets of Langerhans Graft Monitoring by Magnetic Resonance Imaging
Jeff Bulte, Johns Hopkins University	2006	R01 DK077537	MR-Guided Delivery and Monitoring of Magnetocapsules Immunoprotecting Islet Cells
Barjor Gimi, University of Texas Southwestern Medical Center	2006	R01 EB07456	Imaging Islets in Implantable Microcapsules
Martin Gotthardt, Radboud University Nijmegen	2006	R01 AG030328	Non-invasive Beta-cell Imaging using a Ga-68-labeled Glucagon-like Peptide-1
Paul Harris, Columbia University Health Sciences	2006	R01 DK077493	PET Imaging of Human Beta Cell Mass
Eba Hathout, Loma Linda University	2006	R01 DK077541	<i>In vivo</i> Dynamic Imaging of Angiogenesis in Transplanted Islets
<b>New Strategies for Treatment of Type 1 Diabetes Mellitus (RFA DK00-001)</b>			
Paul Gores, Carolinas Medical Center	2000	R01 DK059070	Islet Transplantation in Non-Uremic Diabetic Patients
Peter Gottlieb, University of Colorado Health Sciences Center	2000	R01 DK059097	Immunotherapy Trial in New-onset Type 1 Diabetes
A. Shapiro, University of Alberta	2000	R01 DK059101	Trial of Anti-TNFalpha in Islet Transplantation

	Year	Project No.	Project Title
<b>Pilot Studies for New Therapies for Type 1 Diabetes and its Complications (RFA DK99-013)</b>			
Geoffrey Block, University of Pittsburgh	1999	R21 DK057143	Bioengineered Primary Islets for Transplantation
George Gittes, New York University School of Medicine	1999	R21 DK057224	Mesenchymal Inducers of Beta Cell Differentiation
Lawrence Olson, Michigan State University	1999	R21 DK057173	Pluripotent Human Pancreatic Ductal Cells
Vijayakumar Ramiya, Ixion Biotechnology, Inc.	1999	R21 DK057121	Islets from Islet Progenitor/Stem Cells for Implantation
Raymond Steptoe, Walter and Eliza Hall Institute	1999	R21 DK057228	Proinsulin Gene Transfer Via Bone Marrow to Prevent IDDM
Hei Sul, University of California, Berkeley	1999	R21 DK057217	Pref-1 Function in Islet Growth and Differentiation
<b>Cellular and Molecular Approaches for Achieving Euglycemia (RFA DK98-007)</b>			
Kenneth Brayman, University of Pennsylvania	1998	R21 DK055353	Adenoviral Mediated Islet Gene Transfer
Michael Brownlee, Albert Einstein College of Medicine	1998	R01 DK055299	Genetic Engineering of Beta Cells for Transplantation
Sylvia Christakos, University of Med/Dnt of New Jersey	1998	R21 DK055050	Preservation of Beta Cell Function by Calbindin-D28K
Joanna Davies, Scripps Research Institute	1998	R01 AI045488	Allograft Induced IL-4 in Pancreas Graft Protection
Herbert Gaisano, University of Toronto	1998	R21 DK055160	SNARE Regulation of B-Cell KCA and SUR Potentiates Secretion
Lakshmi Gaur, Puget Sound Blood Center and Program	1998	R01 AI045487	Induction of Tolerance to Islet Allografts in Primates
Ivan Gerling, University of Tennessee	1998	R21 DK055263	Human Leukocyte Response to Human Islets in SCID mice
Marvin Gershengorn, Cornell University of Medical College	1998	R21 DK055087	Dynorphin and Beta Cell Sensitization
Ronald Gill, University of Colorado Health Sciences Center	1998	R01 DK055333	T Cell Mediated Injury to Islet Allografts
Suzanne Ildstad, Allegheny University of Health Sciences	1998	R01 AI045486	Hematopoietic Stem Cell Chimerism to Treat Diabetes
Karen Kover, University of Kansas Medical Center	1998	R21 AI045490	The Effects of Anti-Rat CD40L on Islet Allograft Survival
Fred Levine, University of California, San Diego	1998	R01 DK055065	Inhibition of Apoptosis in Pancreatic Beta Cells
Andreas Martin, Mount Sinai School of Medicine	1998	R21 DK055277	An <i>In Vivo</i> Model of Pancreatic Islet Organoids
Albee Messing, University of Wisconsin Madison	1998	R21 DK055309	New Method for Purifying Islets from Transgenic Pancreas
Jerry Nadler, City of Hope Medical Center	1998	R01 DK055240	Lipid Mediators in Induced Pancreatic Islet Dysfunction
Christopher Newgard, University of Texas Southwestern Medical Center	1998	R01 DK055188	Engineering of Immunoprotection in Beta Cell Lines
Colin Nichols, Washington University	1998	R01 DK055282	Genetic Engineering of Glucose Regulation
Camillo Ricordi, University of Miami	1998	R01 DK055347	Immunomodulation for Islet Transplantation in Diabetes
David Rothstein, Yale University	1998	R01 AI045485	Role of CD45 in Generation of Islet Allograft Tolerance
Thomas Steinberg, Washington University	1998	R01 HD037799	P2 Receptors, Extracellular ATP, and Islet Function
<b>Beta Cell Proteomics (PAR-00-101)</b>			
Joshua LaBaer, Harvard University Medical School	2001	R01 DK061906	Manipulating the Proteome
<b>One Year Supplements to Ongoing Projects</b>			
Hugh Auchincloss, Massachusetts General Hospital	1998	R01 AI038397	Pathways of Alloreactivity
Jeffrey Bluestone, University of Chicago	1998	P01 AI029531	Immunomodulation of Transplant Rejection
Kenneth Polonsky, University of Chicago	1998	P01 DK044840	Molecular Mechanisms/Beta Cell Dysfunction in Diabetes
Daniel Salomon, Scripps Research Institute	1998	R01 AI042384	Importance of Islet Structure in Islet Transplantation
Nora Sarvetnick, Scripps Research Institute	1998	R01 HD029764	Model of Islet Regeneration and Neogenesis
Ming-Jer Tsai, Baylor College of Medicine	1998	R37 HD017379	<i>In Vitro</i> Expression of Hormone-Regulated Genes
<b>GOAL IV: PREVENT OR REDUCE HYPOGLYCEMIA IN TYPE 1 DIABETES</b>			
<b>Diabetes Research in Children Network (DirecNet) (RFA HD01-009)</b>			
Roy Beck, Jaeb Center for Health Research, Inc.	2001	U01 HD041890	Coordinating Center - Glucose Sensors in Type 1 Diabetes
Peter Chase, University of Colorado Health Sciences Center	2001	U10 HD041919	Glucose Sensors in Children with Type 1 Diabetes
William Tamborlane/Stuart Weinzimer, Yale University	2001	U10 HD041906	Yale's Center in the Children's Glucose Sensor Network
Eva Tsalikian, University of Iowa	2001	U10 HD041915	Glucose Sensors and Hypoglycemia in Children with DM
Darrell Wilson/Bruce Buckingham, Stanford University	2001	U10 HD041908	Near-Continuous Glucose Monitoring in Pediatrics
Tim Wysocki, Nemours Children's Hospital	2001	U10 HD041918	Continuous Glucose Sensors in Youth: a Biobehavioural Study

	Year	Project No.	Project Title
<b>Cooperative Multicenter Diabetes Research Network for Hypoglycemia Prevention (U10) (RFA HD06-020)</b>			
Roy Beck, Jaeb Center for Health Research, Inc.	2007	U01 HD041890	Cooperative Multicenter Diabetes Research Network for Hypoglycemia Prevention
Bruce Buckingham, Stanford University	2007	U10 HD041908	Prevention of Nocturnal Hypoglycemia: Effect on Neurologic Outcome in Toddlers
Stuart Weinzimer, Yale University	2007	U10 HD041906	Yale Study of Closed-Loop Automated Glucose Control for Hypoglycemia Prevention
Eva Tsalikian, University of Iowa	2007	U10 HD041915	Prevention of Hypoglycemia and Associated Complications in Type 1 Diabetes
Nelly Mauras, Nemours Children's Hospital	2007	U10 HD041918	Hypoglycemia in Children and Adolescents with T1DM: Mechanisms and Prevention
Neil White, Washington University in St. Louis	2007	U10 HD056526	Diabetes Research in Children Network (DirecNet)
<b>Hypoglycemia in Patients with Type 1 Diabetes (RFA DK03-017)</b>			
Stephen Davis, Vanderbilt University	2004	R01 DK069803	Hypoglycemia Associated Autonomic Failure in Type 1 DM
Rory McCrimmon, Yale University	2004	R01 DK069831	Role of AMPK in Hypoglycemia-Sensing in the VMH
Charles Mobbs, Mount Sinai School of Medicine	2004	R01 DK070057	Adenosine Receptors and Hypoglycemic Responses
Douglas Rothman, Yale University	2004	R01 NS051854	MRS Studies of Brain Metabolic Adaptations in Diabetes
Raymond Swanson, University of California, San Francisco	2004	R01 NS051855	Hypoglycemic Neuronal Death
Cornelis Tack, University Medical Center St. Radboud	2004	R21 DK069881	Brain Glucose Metabolism and Hypoglycemia Unawareness
Dennis Turner, Duke University Medical Center	2004	R01 NS051856	Lifespan Metabolic Neuroprotection During Hypoglycemia
<b>Effects of Hypoglycemia on Neuronal and Glial Cell Function (RFA NS02-008)</b>			
James Mandell, University of Virginia, Charlottesville	2002	R21 NS045300	Hypoglycemic Signaling Targets in Astrocytes
Jullie Pan, Yeshiva University	2002	R21 DK064565	Cerebral Activation in Hypoglycemia and Hyperketonemia
Scott Rivkees, Yale University	2002	R21 NS045310	The Role of Adenosine in Hypoglycemic Brain Injury
Vanessa Routh, University of Med/Dnt of New Jersey	2002	R01 DK064566	Glucosensing Neurons in Euglycemia, Hypoglycemia, and HAAF
Stephen Salton, Mount Sinai School of Medicine	2002	R01 NS045305	Mechanisms of Neuronal Hypoglycemic Injury
Dennis Turner, Duke University	2002	R21 NS045304	Lifespan Neuronal/Glial Metabolism During Hypoglycemia
<b>Sensor Development and Validation (RFA EB02-002)</b>			
Mark Arnold, University of Iowa	2002	R01 DK064569	Continuous Near Infrared Glucose Sensor
David Gough, University of California, San Diego	2002	R01 DK064570	Validation of Long-Term Glucose Sensor in Tissues
Myra Lipes, Joslin Diabetes Center	2002	R01 DK064568	A Cell-Based Glucose Sensing and Insulin Delivery System
Garry Steil, Medtronic Minimed	2002	R01 DK064567	Long Term Glucose Sensing and Physiologic Insulin Delivery
<b>Understanding Hypoglycemia Unawareness in Patients with Type 1 Diabetes (RFA DK01-031)</b>			
Casey Donovan, University of Southern California	2002	R01 DK062471	Portal Vein Glucose Sensors in Hypoglycemia
Rolf Gruetter, University of Minnesota Twin Cities	2002	R21 NS045519	NMR Measurements of Human Brain Glycogen Metabolism
Lauren Jacobson, Albany Medical College	2002	R21 DK062442	Role of Glucocorticoids in Hypoglycemia Unawareness
Dianne Lattemann, University of Washington	2002	R21 DK062446	CNS Stress Pathways and the Development of Acute HAAF
Yijun Liu, University of Florida	2002	R21 NS045518	Dynamic fMRI Analyses of Hypoglycemia Unawareness
S. Ritter, Washington State University	2002	R01 NS045520	Hindbrain Mechanisms of Hypoglycemia Unawareness
Elizabeth Seaquist, University of Minnesota	2002	R01 DK062440	Cerebral Responses to Insulin-Induced Hypoglycemia
Harry Shamoon, Yeshiva University	2002	R01 DK062463	Modulation of Hypoglycemic Counterregulatory Responses

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<b>Pilot Studies for New Therapies for Type 1 Diabetes and its Complications (RFA DK99-013)</b>			
David Gough, University of California San Diego	1999	R21 DK057109	Key Parameters for Artificial Pancreas Controller
<b>Glucose Sensors in the Treatment of Diabetes (RFA DK98-008)</b>			
Mark Arnold, University of Iowa	1998	R21 DK055255	Solid-State Optics for Non-Invasive Glucose Monitors
Sanford Asher, University of Pittsburgh	1998	R01 DK055348	Development of (Non) Invasive Real-Time Glucose Sensors
Katherine Crothall, Animas Corporation	1998	R01 DK055246	An Implantable Near IR Glucose Sensor
Casey Donovan, University of Southern California	1998	R01 DK055257	Portal Glucosensors in Hypoglycemic Detection
Dale Drueckhammer, State University of New York Stony Brook	1998	R21 DK055234	New Approaches to Fluorescence-Based Glucose Sensors
Johannes Everse, Texas Tech University	1998	R21 RR014174	Enzyme-Thermistors as Glucose Sensors
David Gough, University of California San Diego	1998	R01 DK055064	Tissue Response to Implanted Glucose Sensor
Joseph Izatt, Case Western Reserve University	1998	R21 RR014172	Pathlength-Resolved Non-Invasive Optical Glucose Sensors
John Mastrototaro, Minimed, Inc.	1998	R01 DK055242	Transdermal Glucose Sensing with Optical Amplification
Francis Moussy, University of Connecticut	1998	R01 RR014171	Control of Sensor/Tissue Interact for Extended Lifetime
Govind Rao, University of Maryland	1998	R01 RR014170	Protein Engineered Glucose Sensor
Kerstin Rebrin, Minimed, Inc.	1998	R01 DK055337	Interstitial Glucose Dynamics Using a Glucose Sensor
Christopher Saudek, Johns Hopkins University	1998	R01 DK055132	Clinical Research Toward Closed-Loop Insulin Delivery
Gary Saylor, University of Tennessee	1998	R21 RR014169	Eukaryotic Bioluminescent Integrated Circuit Sensors
Binghe Wang, North Carolina State University	1998	R21 DK055062	Glucose-Sensitive Artificial Receptors for Insulin
Joseph Wang, New Mexico State University Las Cruces	1998	R01 RR014173	Oxygen-Independent Interference-Free Glucose Sensors
George Wilson, University of Kansas Lawrence	1998	R01 DK055297	Evaluation of a Continuous Glucose Monitoring System
<b>Developing New Tools for Detecting and Monitoring Low Blood Glucose for People with Diabetes (CDC PA #99151)</b>			
Robert Langer, Massachusetts Institute of Technology	1999	R08/CCR117792	Ultrasound Mediated Transdermal Glucose Monitoring
Kenneth Ward, National Applied Science	1999	R08/CCR017796	Development of a Continuous Hypoglycemia Monitor
Suzanne Gebhart, SpectRx, Inc.	1999	R08/CCR417812	Continuous Interstitial Fluid Glucose Monitoring
<b>Closed Loop Technologies: Clinical and Behavioral Approaches to Improve Type 1 Diabetes Outcomes (RFA DK08-012)</b>			
Boris Kovatchev, University of Virginia, Charlottesville	2009	R01 DK085623	Modular Bio-behavioral closed-loop control of type 1 diabetes
Edward Damiano, Boston University	2009	R01 DK085633	Clinical Trials of a Closed-loop Control System for Type 1 Diabetes Management
Yogish Kudva, Mayo Clinic College of Medicine, Rochester	2009	R01 DK085516	Integrated Approaches To Close the Loop in Type 1 Diabetes
Roman Hovorka, University of Cambridge	2009	R01 DK085621	Home Testing of 24/7 Closed-loop Control in Children and Adolescents with Type 1 Diabetes
Roy Beck, Jaeb Center for Health Research	2009	R01 DK085591	In Home Closed Loop Reduction of Nocturnal Hypoglycemia and Daytime Hyperglycemia
Francis Doyle, University of California, Santa Barbara	2009	R01 DK085628	Closed-loop Artificial Pancreas: Algorithm Engineering and Clinical Evaluation
Ali Cinar, Illinois Institute of Technology	2009	R01 DK085611	Multivariable Closed Loop Technologies for Physically Active Young Adults
Stuart Weinzimer, Yale University	2009	R01 DK085618	Closed-Loop Effectiveness and Ambulatory Regimens (CLEAR)
Rubina Heptulla, Baylor College of Medicine	2009	R01 DK085597	Novel Glucagon Modulators and the Closed Loop System
<b>Closed Loop Technologies: Pilot and Exploratory Clinical and Behavioral Approaches to Improve Type 1 Diabetes Outcomes (RFA DK08-013)</b>			
Marc Breton, University of Virginia, Charlottesville	2009	R21 DK085641	Introduction of Heart Rate Monitoring to the Closed-loop Control of T1DM
<b>Development of Surrogate Markers for Clinical Trials: Supplements</b>			
University of Iowa	2001	N01 MH120006	Brain Molecular Anatomy Project (BMAP)

	Year	Project No.	Project Title
<b>One Year Supplements to Ongoing Projects</b>			
Peter Havel, University of California Davis	1998	R01 DK050129	ANS Hypoglycemia Induced Glucagon Secretion in Diabetes
Govind Rao, University of Maryland	1998	R01 RR010955	Minimally Invasive Glucose Monitoring

#### GOAL V: PREVENT OR REDUCE THE COMPLICATIONS OF TYPE 1 DIABETES

##### Epidemiology of Diabetes Interventions and Complications: Measurement of Cardiovascular Disease

William Dahms, Case Western Reserve University	1998	N01 DK062203	Coordinating Center - Diabetes Interventions/Complications
John Lachin, George Washington University	1998	N01 DK062204	Epidemiology of Diabetes Interventions and Complications

##### Epidemiology of Diabetes Interventions and Complications: Uropathy and Autonomic Neuropathy

William Dahms, Case Western Reserve University	1998	N01 DK062203	Coordinating Center - Diabetes Interventions/Complications
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##### Epidemiology of Diabetes Interventions and Complications: Genetics Study

William Dahms, Case Western Reserve University	2001	N01 DK062203	Coordinating Center - Diabetes Interventions/Complications
John Lachin, George Washington University	2001	N01 DK062204	Epidemiology of Diabetes Interventions and Complications

##### Epidemiology of Diabetes Interventions and Complications: Genetics Repository

Rutgers University	2006	N01 DK032610	Repository Services for EDIC Genetics
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##### Family Investigation of Nephropathy and Diabetes Study (FIND) (RFA DK99-005)

EMMES Corporation	2001	N01 EY062112	Clinical Trials and Statistical Study Monitoring and Coordination
Hanna Abboud, University of Texas Health Sciences Center	2001	U01 DK057295	Genetics of Diabetic Nephropathy in Mexican Americans
Sharon Adler, Harbor-UCLA Research and Education Institute	2001	U01 DK057249	Identification of Diabetic Nephropathy Risk Genes
Robert Elston/Sudha Iyengar, Case Western Reserve University	2004	U01 DK057292	Linkage Consortium for End-Stage Renal Disease
Barry Freedman, Wake Forest University	2001	U01 DK057298	Renal Failure Genes in the Southeastern U.S.
Susanne Nicholas/Mohammed Saad, University of California, Los Angeles	2001	U01 DK057303	Genetics of Diabetic Nephropathy in Hispanics
John Sedor, Case Western Reserve University	2001	U01 DK057329	Genetic Regulation of Renal Disease Progression
Philip Zager, University of New Mexico Albuquerque	2001	U01 DK057300	Zuni Kidney Project- Family Studies

##### Diabetic Retinopathy Clinical Research Network (RFA EY01-001)

Roy Beck, Jaeb Center for Health Research, Inc.	2002	U10 EY014231	Diabetic Macular Edema Clinical Research Network
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##### Animal Models of Diabetic Complications Consortium (RFA DK01-009, HL01-010)

Erwin Bottinger, Yeshiva University	2001	U01 DK060995	Mouse Models for Human Diabetic Nephropathy
Matthew Breyer, Vanderbilt University	2004	U01 DK061018	Generating Mouse Mutants with Diabetic Nephropathy
Jan Breslow, Rockefeller University	2001	U01 HL070524	Animal Models of Diabetic Vascular Disease
David Clemmons, University of North Carolina, Chapel Hill	2001	R01 HL069364	Atherosclerosis in Insulin-Resistant, Hyperlipidemic PTS
Thomas Coffman, Duke University	2001	U01 HL070523	Duke-UNC-Stanford AMDC Unit
Willa Hsueh, University of California, Los Angeles	2001	U01 HL070526	Novel Models of Cardiovascular Complications of Diabetes
Donald McClain, University of Utah	2001	U01 HL070525	Animal Models of Diabetic Cardiovascular Complications

##### Animal Models of Diabetic Complications Consortium (RFA DK05-011)

Erwin Bottinger, Yeshiva University	2006	U01 DK060995	Mouse Models for Human Diabetic Nephropathy
Matthew Breyer/Raymond Harris, Vanderbilt University	2006	U01 DK061018	Generating Mouse Mutants with Diabetic Nephropathy
Evan Dale Abel, University of Utah	2006	U01 HL087947	Modeling Diabetic Cardiomyopathy and Microangiopathy
Richard Davis, University of California, Los Angeles	2006	U01 HL087944	Atherosclerosis and other complications in the hyperlipidemic BKS diabetic mouse

	Year	Project No.	Project Title
Kumar Sharma, University of California, San Diego	2006	U01 DK076133	Adiponectin and Nox 4 in Diabetic Kidney Disease
Firouz Daneshgari, Case Western Reserve University	2006	U01 DK076162	Diabetic Uropathy Pathobiology Site
Thomas Coffman, Duke University	2006	U01 DK076136	Angiogenic Signals in Diabetic Complications
Oliver Smithies, University of North Carolina, Chapel Hill	2006	U01 DK076131	Bradykinin, Nitric Oxide and Mitochondrial DNA Damage in Diabetic Complications
Frank Brosius, University of Michigan	2006	U01 DK076139	Recapitulating transcriptional pathways of human diabetic nephropathy in mice
Eva Feldman, University of Michigan	2006	U01 DK076160	Mitochondrial SOD as a Target for Diabetic Neuropathy
Moshe Levi, University of Colorado, Denver	2006	U01 DK076134	Novel Models of Diabetic Nephropathy
<b>Animal Models of Diabetic Complications Consortium: Mouse Metabolic Phenotyping Centers (RFA DK05-008)</b>			
David Wasserman, Vanderbilt University	2006	U24 DK059637	Vanderbilt Mouse Metabolic Physiology Center
Patrick Tso, University of Cincinnati	2006	U24 DK059630	Cincinnati Mouse Metabolic Phenotyping Center
Renee LeBouef, University of Washington	2006	U24 DK076126	MMPC: Diabetes and Diabetic Complications
<b>Coordinating and Bioinformatics Unit for the Mouse Metabolic Phenotyping Centers and Animal Models of Diabetic Complications Consortium (RFA DK05-012)</b>			
Richard McIndoe, Medical College of Georgia	2006	U24 DK076169	Coordinating and Bioinformatics Unit for the AMDCC/MMPC
<b>Animal Models of Diabetic Complications Consortium Mouse Generation and Husbandry Core</b>			
Jackson Laboratories	2007	N01 DK075000	AMDCC Mouse Generation and Husbandry Core
<b>Genetics of Kidneys in Diabetes Study</b>			
Stacey Gabriel, Massachusetts Institute of Technology	2007	U54 RR020278	An NCRR Center for High Throughput SNP Genotyping and Analysis
<b>Repository Services for Genetics of Kidneys in Diabetes Study</b>			
Rutgers University	2006	N01 DK032610	Repository Services for GoKinD
<b>Biomarkers for Diabetic Complications (RFA DK06-004)</b>			
Fred Prior, Washington University	2007	R21 DK079457	Biomarkers for Charcot Arthropathy in Diabetic Patients
Kelvin Davies, Yeshiva University	2007	R21 DK079594	Vcsa1 (hSMR3A) as a Marker for Diabetes
Solomon Tesfaye, Sheffield Teaching Hospital NHS Trust	2007	R21 DK079657	Can dynamic pupillography and/or spectral analysis of heart rate variability prov
Matthias Kretzler, University of Michigan	2007	R21 DK079441	Identification of Biomarkers for Progressive Diabetic Nephropathy
David Sell, Case Western Reserve University	2007	R21 DK079432	Biochemical Nature and Significance of Skin Autofluorescence in Diabetes
Subramaniam Pennathur, University of Michigan	2007	R21 HL092237	Mass Spectrometry platform for Oxidative Biomarker Discovery in Type 1 Diabetes
Ho-Jin Park, Tufts University	2007	R21 DK079622	A Molecular Marker for Cardiac Autonomic Dysfunction
<b>Collaborative Studies on Angiogenesis and Diabetic Complications (RFA DK04-022)</b>			
Matthew Breyer/Chuan-Ming Hao, Vanderbilt University Medical Center	2005	R01 DK074116	Role of Cyclooxygenase Stimulated Neovascularization in Diabetic Nephropathy
Ambra Pozzi, Vanderbilt University School of Medicine	2005	R01 DK074359	Role of Cyclooxygenase Stimulated Neovascularization in Diabetic Nephropathy
Robert Cohen, University of Cincinnati	2005	R01 DK074361	Endothelial Progenitor Cell Biology in Type 1 Diabetes
Timothy Crombleholme, Cincinnati Children's Hospital	2005	R01 DK074055	Endothelial Progenitor Cell Biology in Type 1 Diabetes
Patricia Parson-Wingerter, NASA Glenn Research Center	2005	R01 EY017529	Vascular Remodeling and Effects of Angiogenic Inhibition in Diabetic Retinopathy
Peter Kaiser, Cleveland Clinic Foundation	2005	R01 EY017528	Vascular Remodeling and Effects of Angiogenic Inhibition in Diabetic Retinopathy
Geoffrey Gurtner, New York University School of Medicine	2005	R01 DK074095	Progenitor Cell Dysfunction and Impaired Vasculogenesis
Michael Brownlee, Albert Einstein College of Medicine	2005	R01 DK074153	Progenitor Cell Dysfunction and Impaired Vasculogenesis



	Year	Project No.	Project Title
<b>Progression of Cardiovascular Disease in Type 1 Diabetes (RFA HL04-013)</b>			
Zixi Cheng, University of Louisville	2004	R01 HL079636	Cardiac Neuropathy in Type 1 Diabetic and Aging Mice
Barry Goldstein, Thomas Jefferson University	2004	R01 DK071360	Adiponectin Improves Vascular Function In High Glucose
Catherine Hedrick, University of Virginia	2004	R01 HL079621	Sphingolipids and Cardiovascular Disease Type I Diabetes
George King, Joslin Diabetes Center	2004	R01 DK071359	PKC Activation and Cardiovascular Disease in Diabetes
William Mayhan, University of Nebraska Medical Center	2004	R01 HL079587	Cerebrovascular Disease in Type 1 Diabetes
Trevor Orchard, University of Pittsburgh	2004	R01 DK071487	Progression of Cardiovascular Disease in T1D: CADRE/EDC
Marian Rewers, University of Colorado Health Sciences Center	2004	R01 HL079611	Determinants of Accelerated CVD in Type 1 Diabetes
Ming-Hui Zou, University of Oklahoma	2004	R01 HL079584	Reactive Nitrogen Species and Accelerated Atherosclerosis
<b>Type 1 Diabetes-Rapid Access to Intervention Development (Projects Relevant to Complications)</b>			
Bo Hedlund, Biomedical Frontiers, Inc.	2005	N01 CO12400/ N02 CM27010	Starch-Deferoxamine (S-DFO) for Diabetic Neuropathy
<b>Type 1 Diabetes-Preclinical Testing Program: Preclinical Efficacy in Prevention or Reversal of Diabetic Complications in Rodent Models (RFP DK05-004)</b>			
Nigel Calcutt, University of California, San Diego	2006	N01 DK062889	Preclinical Study of Efficacy in Animal Models of Diabetic Complications
<b>Administrative Supplements for a Drug Screening Program for Diabetic Complications (NOT-DK-05-017)</b>			
Yuqing Chen, University of Michigan	2006	R01 HL068878	PPARgamma and Vascular Lesion Formation
David Clemmons, University of North Carolina, Chapel Hill	2006	R01 HL056850	Mechanisms by which IGF-I Stimulates Smooth Muscle Cells
Michael Brownlee, Yeshiva University	2006	R01 DK033861	Intracellular Glycation and Diabetic Complications
Ross Cagan, Washington University	2006	R21 DK069940	Drosophila Screens for Diabetes and Glucose Toxicity
Royce Mohan, University of Kentucky	2006	R21 NS053593	Novel High Content Vascular Patterning Assay(RMI)
George King, Harvard University	2006	R01 DK071359	PKC Activation and Cardiovascular Disease in Diabetes
Rosario Scalia, Thomas Jefferson University	2006	R01 DK064344	Role of Calpain in Diabetic Endothelial Dysfunction
Fred Levine, University of California, San Diego	2006	R01 DK055283	Growth Versus Differentiation in Human Beta Cells
Friedhelm Schroeder, Texas A&M University	2006	R01 DK041402	Fatty Acid Binding Proteins-Ligand Specificity
<b>Genetics of Diabetic Complications</b>			
Fisher BioServices Inc.	2007	N01 DK032608	
<b>High-Density Genotyping of Diabetes and Diabetic Complications Sample Collections (RFA DK06-005)</b>			
Nancy Cox, University of Chicago	2006	R01 DK077489	Genetic Studies of Diabetic Complications
Andrew Paterson, Hospital for Sick Children	2006	R01 DK077510	Genome-wide association of common alleles with long-term diabetic complications
Andrzej Krolewski, Harvard University	2006	R01 DK077532	Mapping Genes for End-Stage Renal Disease in Type 1 Diabetes
<b>Feasibility Projects To Test Strategies for Preventing or Slowing the Progression of Diabetic Nephropathy (RFA DK02-025)</b>			
Timothy Meyer, Stanford University	2002	R01 DK063011	Maximizing the Benefit of Ras Blockade in Diabetic Nephropathy
Kumar Sharma, Thomas Jefferson University	2002	R01 DK063017	Pirfenidone: Novel Anti-Scarring Therapy for Diabetic Nephropathy
Robert Toto, University of Texas SW Medical Center	2002	R01 DK063010	Improving Outcomes in Diabetic Nephropathy
<b>Surrogate Endpoints for Diabetic Microvascular Complications (RFA DK02-016)</b>			
Paul Beisswenger, Dartmouth College	2002	R01 DK062995	Enzymatic Controls of Nonenzymatic Glycation
Andrew Boulton, Victoria University of Manchester	2002	R01 NS046259	Non-Invasive Surrogate Markers for Diabetic Neuropathy
Robert Cohen, University of Cincinnati	2002	R01 DK063088	The Glycosylation Gap and Diabetic Complications
Jose Halperin, Harvard University Medical School	2002	R01 DK062994	Complement in the Vascular Complications of Diabetes
George King, Joslin Eye Institute	2002	R21 DK063000	Monocyte VEGF and PKC, Markers for Diabetic Complications

	Year	Project No.	Project Title
Oliver Lenz, University of Miami	2002	R21 DK063083	Clonal Selection in Diabetic Nephropathy
Mara Lorenzi, Schepens Eye Research Institute	2002	R01 EY014812	Retinal Blood Flow and Microthrombi in Type 1 Diabetes
Lois Smith, Children's Hospital (Boston)	2002	R21 EY014811	Surrogate Markers for Early Stage Diabetic Retinopathy
Kathryn Thraillkill, Arkansas Children's Hospital	2002	R01 DK062999	Matrix Metalloproteinases and Diabetic Nephropathy
Lance Waller, Emory University	2002	R21 NS046258	Assessing Spatial Patterns of Epidermal Nerve Fibers
<b>Imaging Early Markers of Diabetic Microvascular Complications in Peripheral Tissues (RFA DK02-001)</b>			
Abass Alavi, University of Pennsylvania	2002	R01 DK063579	FDG-PET Imaging in Complicated Diabetic Foot
Randall Barbour, SUNY Downstate Medical Center	2002	R21 DK063692	Functional Imaging of the Vascular Bed
Pierre Carlier, Laboratoire RMN-CEA-AFM	2002	R21 DK063496	NMR of Muscle Perfusion and Oxygenation in Diabetes
George King, Joslin Diabetes Center	2002	R21 DK063511	Retinal Imaging Tests for Microvascular Functions
Jonathan Lindner, University of Virginia, Charlottesville	2002	R01 DK063508	Contrast Ultrasound and Diabetic Microvascular Disease
Ronald Meyer, Michigan State University	2002	R21 DK063497	Functional MRI of Diabetic Peripheral Vascular Disease
<b>Oral Microbiology/Immunology of Type 1 Diabetes (RFA DE01-001)</b>			
Ashraf Fouad, University of Connecticut School of Med/Dnt	2001	R21 DE014476	Endodontic Infections in Type 1 Diabetic Hosts
Evanthia Lalla, Columbia University	2001	R21 DE014490	Periodontal Microbiota, Serum Antibody Response, and IDDM
Paul Moore, University of Pittsburgh	2001	R21 DE014472	Microbiology/Immunology of Periodontal Disease in Type 1 Diabetes
Maria Ryan, State University of New York Stony Brook	2001	R21 DE014491	Host Modulation/Periodontal Therapy Effects on Diabetes
Thomas Van Dyke, Boston University	2001	R21 DE014478	Periodontal Inflammation in Type 1 Diabetes
<b>Functional Genomics Approaches to Diabetic Complications - IHWG SNPs: Supplements</b>			
Maynard Olson, University of Washington	2001	P50 HG002351	Center for the Study of Natural Genetic Variation
Richard Spielman, University of Pennsylvania	2001	R01 HG002386	Genome-Wide Analysis of Genetic Variation and Expression
<b>Neurobiology of Diabetic Complications (RFA NS00-002)</b>			
Joseph C. Arezzo, Yeshiva University	2000	R01 NS041194	Electrophysiologic Measures in Diabetic Neuropathy
Thomas K. Baumann, Oregon Health Sciences University	2000	R21 NS041157	Dorsal Root Ganglion as Source of Neuropathic Pain
Joseph Beverly, University of Illinois	2000	R01 DK059755	Glucose Mediation of Noradrenergic Activity in VMH
Scott T. Brady, University of Texas SW Medical Center	2000	R01 NS041170	Regulation of Fast Axonal Transport Diabetic Neuropathy
Rick Dobrowsky, University of Kansas Lawrence	2000	R21 DK059749	Role of Caveolin in Schwann Cell Signal Transduction
Charlene Hafer-Macko, University of Maryland Baltimore	2000	R01 DK059758	Endothelial Dysfunction in Human Diabetic Neuropathy
Lynn Heasley, University of Colorado Health Sciences Center	2000	R01 DK059756	MAP Kinases as Mediators of Diabetic Neuropathy
William R. Kennedy, University of Minnesota Twin Cities	2000	R01 NS041163	A Thermal Probe Method for Staging Diabetic Neuropathy
Kathy J. LePard, Midwestern University	2000	R21 NS039768	Synaptic Transmission in Diabetic Enteric Nervous System
Jill Lincoln, University of London	2000	R01 DK058010	Oxidative Stress: Roles in Diabetic Autonomic Neuropathy
Charles V. Mobbs, Mount Sinai School of Medicine	2000	R01 NS041183	Autonomic Diabetic Neuropathy in Mice
Hui-Lin Pan, Pennsylvania State University	2000	R21 NS041178	Spinal Plasticity in Diabetic Neuropathic Pain
Marise B. Parent, Georgia State University Research Foundation	2000	R01 NS041173	Neurochemical and Behavioral Effects of Hyperglycemia
David C. Randall, University of Kentucky Research Foundation	2000	R01 NS039774	Sympathetic Function in Diabetes
Judith A. Richter, Indiana University	2000	R21 NS041162	Hyperglycemia-Induced Neuronal Sensitization
Nancy Tkacs, University of Pennsylvania	2000	R21 DK059754	Counterregulatory Failure and the Arcuate Nucleus
Vickery Trinkaus-Randall, Boston University	2000	R21 DK059753	Role of Growth Factors on Epidermal and Neuronal Injury
Jeffrey Twiss, University of California, Los Angeles	2000	R21 DK059752	Neurotrophic Factor Responsiveness in Diabetic Neuropathy
<b>Pilot Studies for New Therapies for Type 1 Diabetes and Its Complications (RFA DK99-013)</b>			
Maria Alexander-Bridges, Massachusetts General Hospital	1999	R21 DK057200	DAF16 Homologues and Mediating Complications of Diabetes
Deborah Ellis, Wayne State University	1999	R21 DK057212	Therapy in IDDM Adolescents in Poor Metabolic Control
Patrizia Marchese, Scripps Research Institute	1999	R21 HL065146	Mechanisms of Thrombus Formation in Type 1 Diabetes
N. Nahman, Ohio State University	1999	R21 DK057223	Alpha-Sense of Therapy of Diabetic Glomerulosclerosis
Csaba Szabo, Inotek Corporation	1999	R21 HL065145	Poly Ribose Synthetase and Endothelial Dysfunction
Benjamin Szwergold, Dartmouth College	1999	R21 DK057146	Nonenzymatic Glycation: Enzymatic Mechanism for Control
Helen Vlassara, Mount Sinai School of Medicine	1999	R21 DK057126	Gene Transfer and Diabetic Complications
Ian Zagon, Pennsylvania State University	1999	R21 EY013086	Regulation of Corneal Wound Healing in Type 1 Diabetes
Hershey Medical Center			

	Year	Project No.	Project Title
<b>Neurological Complications of Diabetes (RFA NS99-005)</b>			
Nigel Calcutt, University of California, San Diego	1999	R01 NS038855	Prosaposin and Prosaptides in Diabetic Neuropathy
Nicole Gibran, University of Washington	1999	R01 DK058007	Diabetic Neuropathy: Implications for Wound Repair
Rolf Gruetter, University of Minnesota	1999	R21 DK058004	<i>In Vivo</i> Studies of Brain Glycogen in Hypoglycemia
Jean Jew, University of Iowa	1999	R01 NS039771	Diabetic Autonomic Neuropathy and Mitral Valve Dysfunction
Phillip Low, Mayo Clinic Rochester	1999	R01 NS039722	Diabetic Autonomic Neuropathy
Anthony McCall, Oregon Health Sciences University	1999	R01 DK058006	Glucocorticoids, Hypoglycemia, and Brain Glucose Transport
Jose Ochoa, Emanuel Hospital and Health Center	1999	R01 NS039761	New Approaches to C Nociceptors in Diabetic Neuropathy
Kaushik Patel, University of Nebraska Medical Center	1999	R01 NS039751	Altered Nitric Oxide Mechanisms in PVN During Diabetes
Timothy Raabe, St. Mary's University	1999	R21 NS039748	Role of Neuregulin on Axon/Glia Interactions in Diabetes
Mark Yorek, University of Iowa	1999	R01 DK058005	Vascular Disease in Diabetic Neuropathy
<b>Pathogenesis and Therapy of Complications of Diabetes (RFA DK98-009)</b>			
Evan Abel, Beth Israel Deaconess Medical Center	1998	R21 HL062886	The Role of GLUT4 in the Pathogenesis of Diabetic Cardiomyopathy
Lloyd Aiello, Joslin Diabetes Center	1998	R01 EY012603	Systemic VEGF and Diabetic Retinopathy: Clinical Trials
Mark Alliegro, Louisiana State University	1998	R01 EY012602	Control of VEGF-Stimulated Endothelial Proliferation
Karin Bornfeldt, University of Washington	1998	R01 HL062887	Hyperglycemia, Protein Kinases, and Smooth Muscle Growth
Marshall Corson, University of Washington	1998	R21 HL062885	Endothelial-Fibronectin Interactions in Diabetes
Arup Das, University of New Mexico Albuquerque	1998	R01 EY012604	Extracellular Proteinases in Retinal Neovascularization
Eva Feldman, University of Michigan, Ann Arbor	1998	R01 NS038849	Glucotoxicity Mediates Apoptosis in Diabetic Neuropathy
Martin Friedlander, Scripps Research Institute	1998	R01 EY012599	Cell-Based Ocular Delivery of Anti-Angiogenics for PDR
Kenneth Gabbay, Baylor College of Medicine	1998	R01 DK055137	Species Susceptibility to Diabetic Complications
Gary Gibbons, Brigham and Women's Hospital	1998	R01 HL062884	Diabetic Macrovascular Disease: Role of Apoptosis
Jonathan Glass, Emory University	1998	R01 NS038848	Calpains in the Pathogenesis of Diabetic Neuropathy
Maria Grant, University of Florida	1998	R01 EY012601	Nitric Oxide in the Pathogenesis of Diabetic Retinopathy
Jose Halperin, Harvard University	1998	R01 DK052855	The Role of Complement in the Complications of Diabetes
William Haynes, University of Iowa	1998	R21 NS038846	Sympathetic Neurovascular Function in Diabetes Mellitus
Cinda Helke, Henry M. Jackson Foundation	1998	R01 NS038845	Neurotrophins and Visceral Afferent Neurons in Diabetes
Michael Humphreys-Beher, University of Florida	1998	R01 DE013290	Factor Effects on Oral Complications of Diabetes
Claudia Kappen, Mayo Foundation	1998	R01 HD037804	Molecular Mechanisms in Diabetic Embryopathy
Francis Kappler, Fox Chase Cancer Center	1998	R21 DK055079	Isolation of a Novel Enzymatic Activity
Alexander Ljubimov, Cedars-Sinai Medical Center	1998	R01 EY012605	Growth-Factor Induced Tenascin-C in Diabetic Retinopathy
Jian-Xing Ma, Medical University of South Carolina	1998	R01 EY012600	Retinal Capillaries in Diabetic Retinopathy
Ramesh Nayak, Tufts University	1998	R21 EY012607	Immunogenetic Mechanisms in Diabetic Retinopathy
Ted Reid, Texas Tech University	1998	R21 NS038847	Role of Substance P in Diabetes-Impaired Wound Healing
David Sane, Wake Forest University	1998	R21 HL062891	Role of Vitronectin in the Vascular Complications of Diabetes
Richard Schaeffer, University of Arizona	1998	R01 DK055151	VEGF-Induced Modulation of Endothelial Structure and Function
Gina Schatteman, University of Iowa	1998	R01 DK055965	Adult Angioblasts in Vascular Maintenance and Repair
Richard Spielman, University of Pennsylvania	1998	R01 DK055227	Genetic Studies of Diabetic Nephropathy
James Beach/James Tiedeman, University of Virginia	1998	R01 EY012606	Role of Vascular Autoregulation in Diabetic Retinopathy
Philip Tsao, Stanford University	1998	R01 HL062889	Signaling Mechanisms in Glucose-Induced MCP-1 Expression
Gordon Williams, Brigham and Women's Hospital	1998	R01 HL062888	Mechanisms Underlying Cardiovascular Risks in Diabetes
Douglas Wright, University of Kansas Medical Center	1998	R21 NS038844	GDNF and Nociceptive Primary Sensory Neurons in Diabetes
<b>Development of Clinical Markers for Kidney Disease: Supplements</b>			
Erwin Bottinger, Yeshiva University	2001	U24 DK058768	Albert Einstein Biotechnology Center
Alfred George, Vanderbilt University	2001	U24 DK058749	Vanderbilt NIDDK Biotechnology Center
Steven Gullans, Brigham and Women's Hospital	2001	U24 DK058849	DNA Microarray Biotechnology Center
Raymond Harris, Vanderbilt University	2001	P50 DK039261	Biology of Progressive Destruction
Arthur Matas, University of Minnesota	2001	P01 DK013083	Organ Transplantation in Animals and Man
Richard Quigg, University of Chicago	2001	U24 DK058820	Massively Parallel Gene Expression Analysis
John Sedor, Case Western Reserve University	2001	P50 DK054178	CWRU O'Brien Renal Research Center
<b>Development of Surrogate Markers for Clinical Trials: Supplement</b>			
Christopher Bradfield, University of Wisconsin	2001	R01 ES005703	Characterization of the AH Receptor Signaling Pathway

	Year	Project No.	Project Title
<b>One Year Supplements for Ongoing Projects</b>			
Robert Eckel, University of Colorado Health Sciences Center	1998	R01 DK042266	Nutrition, Lipoprotein Lipase, and Body Weight Regulation
Martin Friedlander, Scripps Research Institute	1998	R01 EY011254	Integrins and Ocular Angiogenesis
Anthony Iacopino, Texas A & M Baylor College of Dentistry	1998	R29 DE011553	Impaired Wound Signaling in Diabetic Periodontitis
Timothy Kern, Case Western Reserve University	1998	R01 EY000300	Diabetic Retinopathy
George King, Joslin Diabetes Center	1998	R01 EY005110	Cell Biology Approach to Diabetic Retinopathy
Trevor Orchard, University of Pittsburgh	1998	R01 DK034818	Epidemiology of Diabetic Complications
Ann Schmidt, Columbia University	1998	R01 DE011561	Glycation, Receptors, Cytokines in Periodontal Disease
William Tamborlane, Yale University	1998	R01 HD030671	Effects of Puberty on Metabolism and Body Composition
Russell Tracy, University of Vermont and St. Agric College	1998	R01 HL058329	Epidemiology of Impaired Coagulant Balance in Diabetes

#### GOAL VI: ATTRACT NEW TALENT AND APPLY NEW TECHNOLOGIES TO RESEARCH ON TYPE 1 DIABETES

##### Training Programs in Diabetes Research for Pediatric Endocrinologists (RFA DK02-024)

Silva Arslanian, Children's Hospital of Pittsburgh	2003	T32 DK063686 K12 DK063704	Research and Academic Training in Pediatric Diabetes Academic Career Development in Pediatric Diabetes (K12)
Morey Haymond, Baylor College of Medicine	2002	T32 DK063873 K12 DK063691	Baylor Pediatric Diabetes Research Training Program Baylor Mentored Diabetes Investigator Award
Georgeanna Klingensmith, University of Colorado Health Sciences Center	2002	T32 DK063687 K12 DK063722	Training Program in Diabetes Research Diabetes Research for Pediatric Endocrinologists
Lori Laffel/Joseph Majzoub, Joslin Diabetes Center	2002	T32 DK063702 K12 DK063696	Training Grant in Diabetes for Pediatric Endocrinologists Career Development in Diabetes for Pediatric Endocrinologists
Charles Stanley, Children's Hospital (Philadelphia)	2002	T32 DK063688 K12 DK063682	Ped Endocrine Fellowship Training in Diabetes Research Ped Endocrine Career Development in Diabetes Research
William Tamborlane, Yale University	2002	T32 DK063703 K12 DK063709	Training in Pediatric Endocrinology/Diabetes Research Pediatric Endocrine/Diabetes Physician Scientists
Neil White, Washington University, St. Louis	2003	T32 DK063706 K12 DK063683	Fellowship Training in Pediatric Diabetes at WUMS Career Development in Pediatric Diabetes at WUMS

##### Innovative Partnerships in Type 1 Diabetes (RFA DK02-023)

Pamela Carmines, University of Nebraska Medical Center	2002	R21 DK063416	Renal Cortical Oxidative and Nitrosative Stress in IDDM
Alexander Chervovsky, The Jackson Laboratory	2002	R21 DK063452	Role of Innate Immunity in Type 1 Diabetes
Craig Crews, Yale University	2002	R21 DK063404	Pancreatic Stem Cell Induction by Small Molecules
Maria Grant, University of Florida	2002	R21 EY014818	CXCR4/SDF-1 Axis in Proliferation of Diabetic Retinopathy
Wayne Hancock, Children's Hospital (Philadelphia)	2002	R21 DK063591	Modulation of Chemokine-Dependent Islet Injury
William Langridge, Loma Linda University	2002	R21 DK063576	Vaccinia Virus Vaccine for Type 1 Diabetes
Sigurd Lenzen, Hannover Medical School	2002	R21 AI055464	Pathophysiological and Genetic Characterization of IDDM Rats
Diane Mathis, Joslin Diabetes Center	2002	R21 DK063660	Diabetes Susceptibility Genes through Zebrafish Genetics
Jaime Modiano, AMC Cancer Research Center	2002	R21 DK063410	Role of Negative Regulation in Development of Diabetes
Marcus Peter, University of Chicago	2002	R21 AI055465	Fas Internalization and Beta Cells
Alvin Powers, Vanderbilt University	2002	R21 DK063439	Molecular Determinants of Vascularization in Islets
Marian Rewers, University of Colorado Health Sciences Center	2002	R21 AI055466	Viral Triggers of Type 1 Diabetes
Alexander Rudensky, University of Washington	2002	R21 AI055463	Role of Cathepsins S, L, and B in Type 1 Diabetes
Doris Stoffers, University of Pennsylvania	2002	R21 DK063467	cAMP Signaling in the Pancreatic Beta Cell
Michael Uhler, University of Michigan, Ann Arbor	2002	R21 DK063340	Postgenomic Approaches to Diabetic Complications
Elena Zhukova, University of California, Los Angeles	2002	R21 DK063607	Models of Insulin Production in Enteroendocrine Cells

##### Innovative Partnerships in Type 1 Diabetes (RFA DK03-015)

Stelios Andreadis, State University of New York at Buffalo	2004	R01 DK068699	Regulated Insulin Delivery From Tissue Engineered Skin for Treatment of Type 1 Diabetes
David Antonetti, Pennsylvania State University	2004	R01 EY016413	Drug Discovery for Diabetic Retinopathy
Anil Bhushan, University of Southern California	2004	R01 DK068763	Cell Cycle Control of Beta-Cell Mass
Jeffery Chalmers, Ohio State University	2004	R01 DK068757	Magnetic Separation of Liberated Islets During Isolation
Gay Crooks, Children's Hospital, Los Angeles	2004	R01 DK068719	Cell Cycle Control of B-Cell Mass
Nika Dania/Stanley Korsmeyer, Dana Farber Cancer Institute	2004	R01 DK068781	Dissecting the Death Pathway in the Islet beta cell
Teresa Dilorenzo, Albert Einstein College of Medicine	2004	R01 AI064422	Prevention of Diabetes with Lipid Immunomodulators
Francis Doyle, University of California, Santa Barbara	2004	R01 DK068706	A Run-to-Run Algorithm for Glucose Regulation

	Year	Project No.	Project Title
John Gore, Vanderbilt University	2004	R01 DK068751	Pancreatic Islet Imaging and Blood Flow
Kevan Herold, Columbia University	2004	R01 DK068678	Islet Growth in NOD Mice Tolerant to Autoimmune Diabetes
Lois Jovanovic, Sansum Medical Research Institute	2004	R01 DK068663	A Run-to-Run Algorithm for Glucose Regulation
Keith Kirkwood, University of Michigan	2004	R01 DK068673	Regulated Insulin Delivery From Tissue Engineered Skin for Treatment of Type 1 Diabetes
Rohit Kulkarni, Joslin Diabetes Center	2004	R01 DK068721	Dissecting the Death Pathway in Islet Beta Cells
Suzanne Laychock, State University of New York at Buffalo	2004	R01 DK068700	Regulated Insulin Delivery From Tissue Engineered Skin for Type 1 Diabetes
Fred Levine, University of California, San Diego	2004	R01 DK068754	Small Molecule Regulation of Beta-Cell Differentiation
Mark Mercola, Burnham Institute	2004	R01 DK068715	Small Molecule Regulators of Beta-Cell Differentiation
Virginia Papaioannou, Columbia University	2004	R01 DK068661	Islet Growth in NOD Mice Tolerant to Autoimmune Diabetes
Klearchos Papas, University of Minnesota	2004	R01 DK068717	Magnetic Separation of Liberated Islets During Isolation
Steven Porcelli, Albert Einstein College of Medicine	2004	R01 AI064424	Prevention of Diabetes with Lipid Immunomodulators
Alvin Powers, Vanderbilt University	2004	R01 DK068764	Pancreatic Islet Imaging and Blood Flow
Charles Smith, Pennsylvania State University	2004	R01 EY016448	Drug Discovery for Diabetic Retinopathy
Richard Young, Whitehead Institute for Biomedical Research	2004	R01 DK068655	Transcriptional Regulatory Networks in Pancreatic Islets

#### **Bench to Bedside Research on Type 1 Diabetes (RFA DK02-022)**

Christophe Benoist, Joslin Diabetes Center	2002	R21 AI055467	High Sensitivity Detection of Autoimmune T Cells in Type 1 DM
David Bleich, Beckman Research Institute	2002	R21 DK063351	Prevention of Type 1 Diabetes with MMP Inhibitors
Michael Clare-Salzler, University of Florida	2002	R21 DK063422/ R33 DK063422	Dendritic Cells and the Prevention of Type 1 Diabetes
C. Fathman, Stanford University	2002	R21 AI055468/ R33 AI055468	Adoptive Cellular Gene Therapy in Type 1 Diabetes
Peter Gottlieb, University of Colorado Health Sciences Center	2002	R21 DK063518	Human TCR/HLA Transgenic Mice to Prevent Type 1 Diabetes
Zhiguang Guo, University of Minnesota	2002	R21 AI055469	A Strategy to Cure Type 1 Diabetes
Kevin Lemley, Stanford University	2002	R21 DK063456	Urinary Podocyte Excretion Using FACS Methodology
Jerry Nadler, University of Virginia, Charlottesville	2002	R21 DK063521	New Anti-Inflammatory Agents to Prevent Damage to Islets
Gerald Nepom, Virginia Mason Research Center	2002	R21 DK063423	Treatment of Type 1 Diabetes with hGAD65 Altered Peptide Ligand
David Sachs, Massachusetts General Hospital	2002	R21 DK063503	Islet-Kidney Transplants for Treatment of Diabetic ESRD
Massimo Trucco, Children's Hospital (Pittsburgh)	2002	R21 DK063499/ R33 DK063499	Gene-Engineered Dendritic Cell Therapy for Diabetics

#### **Bench to Bedside Research on Type 1 Diabetes (RFA DK03-001)**

Sofia Casares, Mount Sinai School of Medicine	2003	R21 DK066421	HLA Chimeric-Based Interventions in Type 1 Diabetes
Alessio Fasano, University of Maryland	2003	R21 DK066630	Gut Permeability in the Pathogenesis of Type 1 Diabetes
Ronald Gill, University of Colorado Health Sciences Center	2003	R21 AI060349	Correcting Dysregulated Peripheral Tolerance in NOD Mice
Raimund Hirschberg, University of California, Los Angeles	2003	R21 DK063360	Prevention of Diabetic Nephropathy by BMP7
Jian-Xing Ma, University of Oklahoma Health Sciences Center	2003	R21 EY015650/ R33 EY015650	A New Therapy for Diabetic Macular Edema
Alvin Powers, Vanderbilt University	2003	R21 DK066636/ R33 DK066636	GLP-1 to Enhance Islet Transplantation
Bellur Prabhakar, University of Illinois at Chicago	2003	R21 AI060386	Induction of Tolerance to Islet Cell Transplants
Nora Sarvetnik, Scripps Research Institute	2003	R21 DK066511	Engraftment of Pancreatic Progenitors
Andrew Shapiro, University of Alberta	2003	R21 DK066512	ICOS-B7h in Islet Transplant Rejection and Autoimmunity
Andrew Stewart, University of Pittsburgh	2003	R33 DK066127	Islet Allograft Gene Therapy for Primate Diabetes

#### **Bench to Bedside Research on Type 1 Diabetes (RFA DK03-019)**

Sridevi Devaraj, University of California, Davis	2004	R21 DK069801	Cellular Pathways of Inflammation in Type 1 Diabetes
Francis Doyle, University of California, Santa Barbara	2004	R21 DK069833	Model-Based Advanced Control of Insulin in T1DM
Kevan Herold, Columbia University	2004	R21 DK069872	Combination of Anti-CD3 and Ag-Specific Immunotherapy
Daniel Kaufman, University of California, Los Angeles	2004	R21 DK069839	Noninvasive PET Imaging of Islet Grafts
David Kurnit, University of Michigan	2004	R21 DK069877	Detection and Treatment of Nephropathy in DM Type 1
Timothy Lyons, University of Oklahoma Health Sciences Center	2004	R21 HL080921	Apolipoproteins and the Complications of Type 1 Diabetes
Ali Najj, University of Pennsylvania	2004	R33 AI065356	B Cell Immunomodulation in Islet Transplantation
David Sachs, Massachusetts General Hospital	2004	R33 DK069827	Islet-Kidney Transplants for Treatment of Diabetic ESRD
Jin-Xiong She, Medical College of Georgia	2004	R21 DK069878	Development of Microarray-Based Biomarkers for Type 1 Diabetes
Rusung Tan, BC's Children's Hospital	2004	R21 AI065179	Detecting Beta Cell Specific T Cells in Type 1 Diabetes
Ian Zagon, Pennsylvania State University	2004	R21 EY016666	Naltrexone as a Novel Treatment for Diabetic Keratopathy

	Year	Project No.	Project Title
<b>Type 1 Diabetes Pathfinder Award (RFA DK08-001)</b>			
Brian Brown, Mount Sinai School of Medicine of NYU	2008	DP2 DK083052	Novel Strategy to Induce Islet Protective Regulatory T Cells and Prevent Diabetes
Deyu Fang, Northwestern University	2008	DP2 DK083050	A Novel Target for Type 1 Diabetes
John Hollander, West Virginia University	2008	DP2 DK083095	Mechanisms of Diabetic Cardiomyopathy: Mitochondria Subpopulations Brought to Foc
Kenneth Liechty, University of Mississippi	2008	DP2 DK083085	Extracellular matrix structure and function in diabetic wound healing
Xunrong Luo, Northwestern University	2008	DP2 DK083099	ECDI Coupled Cells for Tolerance in Allogeneic Islet Cell Transplantation for T1D
Edward Mitre, Uniformed Services University of Health Sciences	2008	DP2 DK083131	Protection against Type I diabetes by parasitic helminths
Cherie Stabler, University of Miami	2008	DP2 DK083096	Functionalized, Nanoscale Coatings for Islet Encapsulation
Ben Stanger, University of Pennsylvania	2008	DP2 DK083111	An <i>In Vivo</i> Approach to Cell-Based Therapy for Type 1 Diabetes
Bridget Wagner, Massachusetts Institute of Technology	2008	DP2 DK083048	Small-molecule approaches to restore glycemic control in type 1 diabetes
Xingxing Zang, Yeshiva University	2008	DP2 DK083076	New T Cell Coinhibitory Pathway and Type 1 Diabetes
<b>SBIR and STTR RFA in Type 1 Diabetes and Its Complications (RFA DK03-020)</b>			
William Beschoner, Ximerex, Inc.	2004	R44 DK057986	Islet Transplantation with Chimeric Donor Pigs
John Centanni, Stratatech Corporation	2004	R44 DK069924	Antimicrobial, Angiogenic Skin Substitutes for Diabetic Ulcers
Jenny Freeman, HyperMed, Inc.	2004	R41 DK069871	Hyperspectral Imaging to Predict and Assess Foot Ulcers
Joseph Lucisano, Glysens, Inc.	2004	R44 EB005174	Robust Signal Processing for Tissue Glucose Sensor
Uwe Staerz, Isogenis, Inc.	2004	R43 DK069618	Protecting Pancreatic Islet Grafts from Rejection
Rebecca Tirabassi, Biomedical Research Models, Inc.	2004	R43 DK069733	Neurogenic Compounds for Treating Diabetic Complications
John Wilson, Wilson Wolf Manufacturing Corp.	2004	R43 DK069865	Islet Culture, Shipping, and Infusion Device
Todd Zion, Smartcells, Inc.	2004	R43 DK069870	Glucose-Responsive Self-Regulated Insulin Delivery
<b>SBIR: Measurement Tools For Altered Autonomic Function In Spinal Cord Injury And Diabetes (RFA HD04-018)</b>			
Firouz Daneshgari, Neurotron, Inc.	2005	R41 DK074987	Assessment of Altered Function in Diabetic Bladder
<b>SBIR and STTR: New Therapeutics and Monitoring Technologies for Type 1 Diabetes and its Complications (RFA DK05-015, DK05-016)</b>			
Robert Van Buskirk, Cell Preservation Services Inc.	2006	R43 DK077240	Improving Pancreas/Islets Preservation HTS/CryoStor
Shay Soker, Plureon Corporation	2006	R41 DK077256	Cell therapy of diabetes using broad spectrum multipotent stem cells
Mark Arnold, ASL Analytical	2007	R41 DK077252	Noninvasive Nocturnal Hypoglycemic Alarm
Joseph Lucisano, GlySens, Inc.	2007	R43 DK077254	Pre-Clinical Validation & Ultimate Lifetime of Long Term Implanted Glucose Sensor
Ernest Guignon, Ciencia, Inc.	2007	R43 DK077291	MHC Array T Cell Assay System for Monitoring Immune Status in Type 1 Diabetes
Cathy Swindlehurst, NovoMedix	2007	R43 DK077285	Discovery and Development of Compounds to Enhance b-cell Number and Function
Todd Zion, SmartCells, Inc.	2007	R43 DK077292	Multimeric RNA Aptamers for Glucose-Responsive Insulin Formulations
Uwe Staerz, Isogenis, Inc.	2006	R44 DK069618	Protecting Pancreatic Islet Grafts from Rejection
<b>Omnibus Solicitation of the NIH, CDC, and FDA for Small Business Innovation Research Grant Applications (Parent SBIR [R43/R44]) (PA07-280, PA07-281)</b>			
William Beschoner, Ximerex, Inc.	2008	R43 DK082122	Ex Vivo Induction of Tolerance for Autoimmune Diabetes
Meera Saxena, Luminomics Inc.	2009	R41 DK082060	Type I Diabetes Model in Zebrafish
<b>Omnibus Solicitation of the NIH for Small Business Technology Transfer Grant Applications (Parent STTR [R41/R42]) (PA08-051)</b>			
Michael Weiss, Thermalin Diabetes Incorporated	2009	R41 DK081292	Clinical Testing of an Insulin Analog

	Year	Project No.	Project Title
<b>SBIR and STTR: New Therapeutics and Monitoring Technologies for Type 1 Diabetes and its Complications (RFA DK09-001)</b>			
Joseph Lucisano, GlySens, Inc.	2009	R43 DK077254	Pre-Clinical Validation & Ultimate Lifetime of Long Term Implanted Glucose Sensor
Ioannis Tomazos, Biorasis, Inc.	2009	R43 EB011886	Needle-Implantable, Wireless Multi-Sensor for Continuous Glucose Monitoring
Ralph Ballerstadt, Biotex, Inc.	2009	R43 DK085892	Assay for Monitoring Glycemic Control in Diabetics
David Vachon, Aegis Biosciences LLC	2009	R43 DK085957	Novel Approaches to Extending Glucose Sensor Lifespan
<b>SBIR: Innovative Patient Outreach Programs and Ocular Screening Technologies to Improve Detection of Diabetic Retinopathy (RFA EY09-001)</b>			
Peter Soliz, Visionquest Biomedical LLC	2009	R43 EY020015	Automated Diabetic Retinopathy Screening System
Matthew Muller, Aeon Imaging, LLC	2009	R44 EY020017	System for Increasing Patient Access to Eye Exams for Diabetic Retinopathy
Kevin Hsu, Micron Optics, Inc.	2009	R44 EY017212	OCT Imaging of Diabetic Retinopathy in 1060nm Spectral Range
Gary Gregory, Advanced Diagnostics, LLC	2009	R43 EY020028	Innovative Systems & Educational Tools to Advance an Established Diabetic Retinopathy
Randal Chinnock, Optimum Technologies, Inc.	2009	R43 EY020034	Easy-to-Use, Low-Cost, Handheld Retinal Camera for Screening for Diabetic Retinopathy
<b>Proteomics and Metabolomics in Type 1 Diabetes and Its Complications (RFA DK03-024)</b>			
M. Amin Arnaout/Darryl Palmer-Toy, Massachusetts General Hospital	2004	R21 DK070212	Metabolomic Analysis of Type 1 Diabetic Nephropathy
Helene Bour-Jordan, University of California, San Francisco	2004	R21 NS052132	Autoimmune Basis of Diabetic Neuropathy
Mark Chance, Albert Einstein College of Medicine	2004	R21 DK070229	Proteomic Approaches to Type I Diabetes Progression
Paul Harris, Columbia University	2004	R21 DK070192	Soluble Protein Markers of T1D Progression
Kathryn Haskins, University of Colorado Health Sciences Center	2004	R21 AI065355	Proteomics Analysis of T Cell Autoantigens in T1D2
Michael Mauer, University of Minnesota	2004	R21 DK070210	Proteomics in Type 1 Diabetes and its Complications
Sreekumaran Nair, Mayo Clinic	2004	R21 DK070179	Plasma Protein Synthesis and Abundance in T1 Diabetes
Mark Nicolls, University of Colorado	2004	R21 DK070203	Viability Assay for Human Islet Transplantation
Jin-Xiong She, Medical College of Georgia	2004	R21 HD050196	Proteomic Changes/Progression of Human Type 1 Diabetes
Richard Smith, Battelle Pacific Northwest National Laboratory	2004	R21 DK070146	Proteomics and Metabolomics Studies of Type 1 Diabetes
Forest White, Massachusetts Institute of Technology	2004	R21 AI065354	Proteomics of Central Tolerance in NOD vs B6 Mice
<b>Phased Innovation Partnerships - Supplements to Centers</b>			
Yaakov Barak, University of Massachusetts Medical School	2001	P30 DK032520	PPAR Gamma KO and Insulin Resistance
Giacomo Basadonna, Yale University	2001	P30 DK045735	Glucose Responsive Transgene
James Callis, University of Washington	2001	P30 DK017047	Islet Purification
Shaoping Deng, University of Pennsylvania	2001	P30 DK019525	Gene Therapy with PDX
Denise Faustman, Massachusetts General Hospital	2001	P30 DK057521	TNF Apoptosis
Eva Feldman, University of Michigan, Ann Arbor	2001	P60 DK020572	Postgenomic Approaches to Complications
Yang-Xin Fu, University of Chicago	2001	P60 DK020595	Lymphotoxin
Mark Geraci, University of Colorado Health Sciences Center	2001	P30 DK057516	RNA Profile of Islet Development
Wouter Hoff, University of Chicago	2001	P60 DK020595	Glucose Sensing Fusion Proteins
Shin-Ichiro Imai, University of Washington	2001	P30 DK017047	Sir2a in Beta Cell Differentiation
Klaus Kaestner, University of Pennsylvania	2001	P30 DK019525	Islet Stem Cells
Myra Lipes, Joslin Diabetes Center	2001	P30 DK036836	Optimize Gene Expression in Surrogate Beta Cells
Diane Mathis, Joslin Diabetes Center	2001	P30 DK036836	Imaging Inflammation
Ruslan Medzhitov, Yale University	2001	P30 DK045735	Innate Immunity in Type 1 Diabetes
Mark Nicolls, University of Colorado Health Sciences Center	2001	P30 DK057516	Proteomics and Transplantation

	Year	Project No.	Project Title
William Osborne, University of Washington	2001	P30 DK017047	Glucose Regulated Insulin Delivery
Sunhee Park, University of Massachusetts Medical School	2001	P30 DK032530	ART2 Ligands
Alvin Powers, Vanderbilt University	2001	P60 DK020593	<i>In Vivo</i> Assessment of Transplanted Islets
Alexander Rudensky, University of Washington	2001	P30 DK017047	Cathespins
Jaromir Ruzicka, University of Washington	2001	P30 DK017047	GAD Assay
Harry Shamoon, Yeshiva University	2001	P60 DK020541	Liver Glycogen Metabolism/Hypoglycemia
Li Wen, Yale University	2001	P30 DK045735	Dendritic Cell Therapy
Burton Wice, University of Washington	2001	P30 DK017047	Gut Stem Cells
John Wiley, University of Michigan, Ann Arbor	2001	P60 DK020572	Neuropathy
Kelvin Yamada, University of Washington	2001	P30 DK017047	Hypoglycemia

**Type 1 Diabetes Pilot & Feasibility Studies Through Diabetes Centers**

Aldo Rossini, University of Massachusetts Medical School	2006	P30 DK032520	Diabetes Endocrinology Research Center
Willa Hsueh, University of California, Los Angeles	2006	P30 DK063491	Diabetes Endocrinology Research Center
Robert Sherwin, Yale University	2006	P30 DK045735	Diabetes Endocrinology Research Center
William Herman, University of Michigan	2006	P60 DK020572	Michigan Diabetes Research and Training Center



## DESCRIPTION OF NON-CONSORTIA RESEARCH EFFORTS SUPPORTED BY THE SPECIAL DIABETES PROGRAM (FY 2006-2009)

In addition to supporting numerous consortia focused on type 1 diabetes and its complications, which are discussed in the main section of this document and in Appendix C, funds for the *Special Diabetes Program* were deployed to support numerous other initiatives. These initiatives have promoted a broad spectrum of research projects in areas identified as of particular opportunity or challenge to complement the efforts of the research consortia. This Appendix includes descriptions of non-consortia initiatives from March 1, 2006 through September 30, 2009. Initiatives released prior to March 1, 2006 can be found in the 2007 "Evaluation Report" on the *Special Diabetes Program* (<http://www.T1Diabetes.nih.gov/evaluation>).

### Goal I: Identify the Genetic and Environmental Causes of Type 1 Diabetes

#### ***Fine Mapping and Function of Genes for Type 1 Diabetes (DP3) RFA DK-08-006***

This program brings together investigators with experience in genetics, immunology, and biochemistry to pinpoint the exact genes in regions of DNA that are known to influence type 1 diabetes and to study their biological role in health and disease. This research may allow future health care to be more personalized, based on a patient's genetic profile. Grants were awarded in 2009.

### Goal II: Prevent or Reverse Type 1 Diabetes

#### ***Agents To Be Tested for Pre-clinical Efficacy in Prevention or Reversal of Type 1 Diabetes in Rodent Models. Type 1 Diabetes Pre-clinical Testing Program (T1D-PTP) RFP DK-05-05***

This Pre-clinical Testing Program was established to provide the means to perform pre-clinical efficacy testing of promising agents for type 1 diabetes prevention or reversal. The program is supporting the Type 1 Diabetes-Rapid Access to Intervention

Development (T1D-RAID) program, which independently provides more advanced pre-clinical studies and drug manufacturing services, and for which a need to test compounds after manufacturing was predicted. In addition, the contract is supporting NIH clinical trials networks considering drug therapies deemed promising for clinical development, but which require additional pre-clinical testing in animals. Finally, the scientific community has been invited to propose promising drug candidates that require additional animal testing (<http://grants.nih.gov/grants/guide/notice-files/NOT-DK-09-006.html>).

#### ***Testing for Pre-clinical Efficacy in Prevention or Reversal of Diabetic Complications in Rodent Models RFP DK-05-04***

The objective of this contract is to support NIDDK in its mission to develop safe and effective drugs for the prevention and treatment of the complications of diabetes. The contractor performs pre-clinical studies of potential new therapeutics for the prevention or treatment of diabetic complications. The contract assesses the efficacy of new drugs that are under consideration for further development by the T1D-RAID program, and new

drugs being developed by the diabetes complications research community at-large (<http://grants.nih.gov/grants/guide/notice-files/NOT-DK-09-009.html>).

***Biomarkers of Autoimmunity in Type 1 Diabetes (R21) RFA DK-06-002***

This initiative was developed to promote progress in the development of biomarkers of autoimmunity in type 1 diabetes, which are critically needed in three areas: to predict disease risk; to monitor disease initiation or progression in people at high risk for developing the disease; and to monitor autoimmune responses during therapeutic intervention. Grants were awarded in 2006.

**Goal III: Develop Cell Replacement Therapy**

***Toward Imaging the Pancreatic Beta Cell in People (R01) RFA DK-06-003***

The ability to image or otherwise directly monitor beta cells in people would greatly enhance understanding of the causes and progression of diabetes and the life cycle of the islet. Furthermore, it would also improve the ability of clinicians to study the beta cell in human health and disease, as well as to monitor therapy, particularly islet transplantation. This initiative was designed to provide resources to propel research progress on imaging the pancreatic beta cell, beta cell function, or inflammation *in vivo*, using approaches that would be clinically applicable. Grants were awarded in 2006.

**Goal IV: Prevent or Reduce Hypoglycemia in Type 1 Diabetes**

***Small Business Innovation Research To Develop New Therapeutics and Monitoring Technologies for Type 1 Diabetes Towards an Artificial Pancreas (SBIR [R43/R44]) RFA DK-09-001***

Clinical trials have demonstrated significant reductions in rates of complications of type 1 diabetes through intensive control of blood glucose levels. However, despite the availability of increasingly effective treatments, a substantial proportion of people with type 1 diabetes cannot achieve optimal blood glucose control despite enormous efforts. A promising therapeutic option for the treatment of diabetes is a system (termed an artificial pancreas or closed-loop) that can mimic normal pancreatic beta cell function. However, important technological obstacles exist, such as glucose-sensing inaccuracies, imperfect algorithms for calculating the appropriate dose of insulin taking into consideration diet and physical activity, insulin pump mechanical problems, time delay from subcutaneous insulin infusion to pharmacologic effect, and biocompatibility issues that impede a long-term use of invasive or minimally invasive devices. The broad scope of this solicitation encompassed research to further address these obstacles. Grants were awarded in 2009.

***Closed-Loop Technologies: Clinical and Behavioral Approaches To Improve Type 1 Diabetes Outcomes (R01) RFA DK-08-012***

***Closed-Loop Technologies: Pilot and Exploratory Clinical and Behavioral Approaches To Improve Type 1 Diabetes Outcomes (R21) RFA DK-08-013***

These programs support development of tools for glucose sensing and insulin delivery in order to provide automated glucose control. These studies are focused on enhancing the application of new technology to improve glucose control and reduce hypoglycemia in people with type 1 diabetes by considering clinical and behavioral factors that may enhance or constrain their sustained use. Grants were awarded in 2009.

**Goal V: Prevent or Reduce the Complications of Type 1 Diabetes**

***Innovative Patient Outreach Programs and Ocular Screening Technologies To Improve Detection of Diabetic Retinopathy (SBIR [R43/R44]) RFA EY-09-001***

Diabetes is the leading cause of blindness in working age adults in the United States.<sup>29</sup> This program supports the development of: (1) educational outreach programs to create a greater awareness of the risk of diabetic retinopathy in people with type 1 and type 2 diabetes; and (2) tools and systems to be used for increasing patient access to eye exams for detecting diabetic retinopathy. Grants were awarded in 2009.

***High-density Genotyping of Diabetes and Diabetic Complications Sample Collections (R01) RFA DK-06-005***

This initiative supports large-scale studies using samples from the Diabetes Control and Complications Trial (DCCT)/Epidemiology of Diabetes Interventions and Complications (EDIC) study or the Genetics of Kidneys in Diabetes (GoKinD) study to identify genes and specific genetic variants that confer susceptibility or resistance to diabetic complications. Grants were awarded in 2006.

***Biomarker Development for Diabetic Complications (R21) RFA DK-06-004***

Recent advances in understanding the mechanisms of diabetic complications have led to the potential development of new therapeutics that delay or reverse the complications. A significant obstacle in developing drugs that modulate these targets is the paucity of biomarkers for diabetic complications. Biomarkers are needed as surrogate end-points for pilot studies on new therapeutics. Biomarkers could also be used in patient care to determine an individual's risk of developing certain complications and response to interventions. This initiative supports studies to develop and validate biomarkers and surrogate endpoints for the complications of diabetes. Grants were awarded in 2007.

<sup>29</sup> Centers for Disease Control and Prevention. National diabetes fact sheet: national estimates and general information on diabetes and prediabetes in the United States 2011. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011.

**Goal VI: Attract New Talent and Apply New Technologies to Research on Type 1 Diabetes**

***Type 1 Diabetes Pathfinder Award (DP2)***  
***RFA DK-08-001***

The Type 1 Diabetes Pathfinder Award supports exceptional new investigators who proposed highly innovative new research approaches that have the potential to produce a major impact on important problems in biomedical and behavioral research related to type 1 diabetes and its complications. Grants were awarded in 2008.

***Small Business Innovation Research To Develop New Therapeutics and Monitoring Technologies for Type 1 Diabetes and its Complications (SBIR [R43/R44])***  
***RFA DK-05-016***

***Small Business Technology Transfer To Develop New Therapeutics and Monitoring Technologies for Type 1 Diabetes and its Complications (STTR [R41/R42])***  
***RFA DK-05-015***

These parallel initiatives support innovative research on type 1 diabetes and its complications in the biotechnology industry. Grants were awarded in 2006.