BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Barry Byrne, M.D., Ph.D.	Professor of Pediatrics Associate Chair for Research
eRA COMMONS USER NAME (credential, e.g., agency login) BBYRNE	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Denison University, Granville, OH	B.S.	1978	Chemistry
University of Illinois, Chicago, IL	M.D., Ph.D.	1984	Microbiology and Immunology
Johns Hopkins University, Baltimore, MD		1981	Resident and Postdoctoral Fellow

A. Personal Statement

My laboratory is focused on understanding the pathophysiology of inherited cardioskeletal myopathies and therapeutic strategies using gene therapy. The strategies being used bridge the spectrum of pre-clinical to first in human studies investigating the safety and efficacy of gene therapy. As a pediatric clinician scientist, I have a strong training record and have mentored both graduate students and postdoctoral fellows with clinical and basic science backgrounds. Additionally, I currently serve as a mentor on four approved institutional T32 programs and I am the co-Director of a T32 in rehabilitation science. In my role as Associate Chair for research I will commit the necessary effort to ensure success of the current application.

B. Positions and Honors

Positions and Employment

1997-1999 Asst. Professor of Pediatrics, Mol. Genetics & Microbiology, Univ. of Fla., Gainesville, FL
1999-2002 Assoc. Professor of Pediatrics, Mol. Genetics & Microbiology, Univ. of Fla.., Gainesville, FL
2002-present Professor of Pediatrics, Molecular Genetics & Microbiology, Univ. of Florida, Gainesville, FL
2002-present Associate Chair for Research, Department of Pediatrics, Univ. of Florida, Gainesville, FL
2002-present Director, Powell Gene Therapy Center, University of Florida, Gainesville, FL
2003-present Virginia Root Sutherland Professor of Cardiology, University of Florida, Gainesville, FL
2003-2006 UF Research Foundation Professor, University of Florida, Gainesville, FL
2012-present Earl and Christy Powell University Professor of Genetics

Other Experience and Professional Memberships

1993-present American Academy of Pediatrics – Fellow
1997-present American Society of Gene and Cell Therapy, Member
2000-present American Pediatric Society/Society for Pediatric Research, Member
2006-2009 NIH Study Section Chair, Skeletal Muscle Biology
2012-2015 American Society of Gene and Cell Therapy, Board of Directors

Honors

1983 James Scholar, University of Illinois, Chicago, IL
1994 Clinician Scientist Award, Johns Hopkins University, Baltimore, MD
2007 Faculty Research Prize in Clinical Research, University of Florida, Gainesville, FL

C. Selected Peer-Reviewed Publications (Selected from 145 peer-reviewed publications)

Most relevant to the current application:

1. Smith BK, Collins SW, Conlon TJ, Mah CS, Lawson LA, Martin AD, Fuller DD, Cleaver BD, Clement N, Phillips D, Islam S, Dobjia N, Byrne BJ. Phase I/II trial of adeno-associated virus-mediated alpha-glucosidase gene therapy to the diaphragm for chronic respiratory failure in Pompe disease: initial safety and ventilatory outcomes. Human gene therapy. 2013;24(6):630-40. doi: 10.1089/hum.2012.250. PubMed PMID: 23570273; PubMed Central PMCID: PMC3689178.
2. Fuller DD, ElMallah MK, Smith BK, Corti M, Lawson LA, Falk DJ, Byrne BJ. The respiratory neuromuscular system in Pompe disease. Respiratory physiology & neurobiology. 2013;189(2):241-9. Epub 2013/06/26. doi: 10.1016/j.resp.2013.06.007. PubMed PMID: 23797185.
3. Forbes SC, Walter GA, Rooney WD, Wang DJ, Devos S, Pollaro J, Triplett W, Lott DJ, Willcocks RJ, Senesac C, Daniels MJ, Byrne BJ, Russman B, Finkel RS, Meyer JS, Sweeney HL, Vandenborne K. Skeletal Muscles of Ambulant Children with Duchenne Muscular Dystrophy: Validation of Multicenter Study of Evaluation with MR Imaging and MR Spectroscopy. Radiology. 2013;269(1):198-207. doi: 10.1148/radiol.13121948. PubMed PMID: 23696684; PubMed Central PMCID: PMC3781359.
4. Falk DJ, Mah CS, Soustek MS, Lee KZ, Elmallah MK, Cloutier DA, Fuller DD, Byrne BJ. Intrapleural administration of AAV9 improves neural and cardiorespiratory function in Pompe disease. Molecular therapy : the journal of the American Society of Gene Therapy. 2013;21(9):1661-7. Epub 2013/06/05. doi: 10.1038/mt.2013.96. PubMed PMID: 23732990; PubMed Central PMCID: PMC3776643.
5. Elder ME, Nayak S, Collins SW, Lawson LA, Kelley JS, Herzog RW, Modica RF, Lew J, Lawrence RM, Byrne BJ. B-Cell depletion and immunomodulation before initiation of enzyme replacement therapy blocks the immune response to acid alpha-glucosidase in infantile-onset Pompe disease. The Journal of pediatrics. 2013;163(3):847-54 e1. doi: 10.1016/j.jpeds.2013.03.002. PubMed PMID: 23601496.

Additional recent publications of importance to the field:

6. Byrne BJ. Pathway for approval of a gene therapy orphan product: treading new ground. Molecular therapy : the journal of the American Society of Gene Therapy. 2013;21(8):1465-6. doi: 10.1038/mt.2013.157. PubMed PMID: 23903569; PubMed Central PMCID: PMC3734657.
7. Hwu WL, Muramatsu S, Tseng SH, Tzen KY, Lee NC, Chien YH, Snyder RO, Byrne BJ, Tai CH, Wu RM. Gene therapy for aromatic L-amino acid decarboxylase deficiency. Science translational medicine. 2012;4(134):134ra61. doi: 10.1126/scitranslmed.3003640. PubMed PMID: 22593174.
8. Forbes SC, Lott DJ, Finkel RS, Senesac C, Byrne BJ, Sweeney HL, Walter GA, Vandenborne K. MRI/MRS evaluation of a female carrier of Duchenne muscular dystrophy. Neuromuscular disorders : NMD. 2012;22 Suppl 2:S111-21. doi: 10.1016/j.nmd.2012.05.013. PubMed PMID: 22980762; PubMed Central PMCID: PMC3458312.
9. ElMallah MK, Falk DJ, Lane MA, Conlon TJ, Lee KZ, Shafi NI, Reier PJ, Byrne BJ, Fuller DD. Retrograde gene delivery to hypoglossal motoneurons using adeno-associated virus serotype 9. Human gene therapy methods. 2012;23(2):148-56. doi: 10.1089/hgtb.2012.009. PubMed PMID: 22693957.
10. Byrne BJ, Falk DJ, Clement N, Mah CS. Gene therapy approaches for lysosomal storage disease: next-generation treatment. Human gene therapy. 2012;23(8):808-15. doi: 10.1089/hum.2012.140. PubMed PMID: 22794786; PubMed Central PMCID: PMC3413894.
11. Pacak CA, Byrne BJ. AAV vectors for cardiac gene transfer: experimental tools and clinical opportunities. Molecular therapy : the journal of the American Society of Gene Therapy. 2011;19(9):1582-90. doi: 10.1038/mt.2011.124. PubMed PMID: 21792180; PubMed Central PMCID: PMC3182350.
12. Byrne BJ, Kishnani PS, Case LE, Merlini L, Muller-Felber W, Prasad S, van der Ploeg A. Pompe disease: design, methodology, and early findings from the Pompe Registry. Molecular genetics and metabolism. 2011;103(1):1-11. doi: 10.1016/j.ymgme.2011.02.004. PubMed PMID: 21439876.
13. Byrne BJ, Falk DJ, Pacak CA, Nayak S, Herzog RW, Elder ME, Collins SW, Conlon TJ, Clement N, Cleaver BD, Cloutier DA, Porvasnik SL, Islam S, Elmallah MK, Martin A, Smith BK, Fuller DD, Lawson LA, Mah CS. Pompe disease gene therapy. Human molecular genetics. 2011;20(R1):R61-8. doi: 10.1093/hmg/ddr174. PubMed PMID: 21518733; PubMed Central PMCID: PMC3095055.
14. Mendell JR, Rodino-Klapac LR, Rosales XQ, Coley BD, Galloway G, Lewis S, Malik V, Shilling C, Byrne BJ, Conlon T, Campbell KJ, Bremer WG, Taylor LE, Flanigan KM, Gastier-Foster JM, Astbury C, Kota J, Sahenk Z, Walker CM, Clark KR. Sustained alpha-sarcoglycan gene expression after gene transfer in limb-

girdle muscular dystrophy, type 2D. Annals of neurology. 2010;68(5):629-38. doi: 10.1002/ana.22251. PubMed PMID: 21031578; PubMed Central PMCID: PMC2970162.
15. Mah CS, Falk DJ, Germain SA, Kelley JS, Lewis MA, Cloutier DA, DeRuisseau LR, Conlon TJ, Cresawn KO, Fraites TJ, Jr., Campbell-Thompson M, Fuller DD, Byrne BJ. Gel-mediated delivery of AAV1 vectors corrects ventilatory function in Pompe mice with established disease. Molecular therapy : the journal of the American Society of Gene Therapy. 2010;18(3):502-10. doi: 10.1038/mt.2009.305. PubMed PMID: 20104213; PubMed Central PMCID: PMC2839425.

D. Research Support

Ongoing Research Support

U01 HL087366 Pepine (PI) 01/01/2007 – 2/28/2019 0.29 calendar
NIH/NHLBI
UFCC for Cardiovascular Cell Therapy Research Network
The objective of this application is to establish a University of Florida Clinical Center (UFCC) for the Cardiovascular Cell Therapy Research Network (CCTRN).

PO1 HL059412 Byrne (PI) 09/01/2008 – 06/30/2015
NIH/NHLBI
Project 3: Correction of Inherited Cardiomyopathy Using AAV Vectors
The project aims to extend previous studies on approaches and mechanisms of AAV-mediated correction of cardiorespiratory failure in Pompe disease.

R01 AR056973 Vandenborne (PI) 5/5/2010 – 4/30/2015 0.60 calendar
NIH/NIAMS
Magnetic Resonance Imaging and Biomarkers for Muscular Dystrophy
The overall objective of this study is to validate the potential of noninvasive magnetic resonance imaging (MRI) and spectroscopy (MRS) to monitor disease progression and to serve as a surrogate outcome measure for clinical trials in Duchenne muscular dystrophy (DMD).

R01 HL107406 Cade (PI) 04/1/2012 – 03/31/2017 0.60 calendar
NIH/NHLBI
Heart and Skeletal Muscle Metabolism, Energetics and Function in Barth Syndrome
Enhance knowledge and understanding of amino acids metabolism, nutrient metabolism and energetic leading to potential treatments for Barth Syndrome and other cardioskeletal disorders resulting from dysfunctional amino acid/nutrient metabolism.

U54 AR052646 Sweeney (PI) 04/01/2005 – 07/31/2015 0.24 calendar
NIH/NIAMSD
Failed Regeneration in the Muscular Dystrophies: Inflammation, Fibrosis and Fat
Wellstone Center for evaluation of muscle regeneration in CMD and DMD.

R01 HD052682-06 Byrne/Fuller (MPI) 09/01/2012 – 08/31/2017 0.40 calendar
NIH/NICHD
Control of Breathing and Pompe Disease
This renewal application targets optimization of adeno-associated virus (AAV) based therapies to treat respiratory neurons in Pompe disease.

1 R21 NS081431-01 Byrne/Fuller(MPI) 09/01/2012 – 09/01/2014 0.60 calendar
NIH/NINDS
Spinal and Brainstem Respiratory Neurons in Pompe Disease
This project will use a “cre-lox” approach to selectively inactivate the GAA gene in respiratory control regions of the medulla and respiratory motoneurons in the spinal cord. The goal is to determine the relative

importance of brainstem vs. spinal respiratory regions in respiratory dysfunction in Pompe disease.

W81XWH-12-1-0387 Walter (PI) 09/15/2012 – 09/14/2015 0.60 calendar
DOD
Optical Imaging of Dystrophic and Damaged Muscle
Develop NIR optical imaging methods to monitor therapeutic intervention for muscular dystrophy.

Social Scientific Systems Byrne (PI) 08/01/2013-10/31/2014 1.20 calendar
CRB-SSS-S-13-0032721
Phase I/II Trial of Diaphragm Delivery of Recombinant Adeno-Associated Virus Acid Alpha-Glucosidase (rAAV1-CMV-GAA) Gene Vector in Patients with Pompe Disease.
To assess the safety of diaphragm administration of recombinant adeno-associated virus gene vector, rAAV1-CMV-GAA, in children with Pompe Disease and ventilator dependence.

W81XWH-13-1-0283 Byrne(PI) 08/15/2013-8/14/2016 0.72 calendar
DOD
Advanced Gene Therapy for Treatment of Cardiomyopathy and Respiratory Insufficiency in Duchenne Muscular Dystrophy
The focus of the project is to develop and evaluate a novel therapeutic approach to restore dystrophin level in DMD dog model by gene transfer using recombinant adeno-associated virus (rAAV) vectors.

Completed Research Support

5 P01 DK058327-10 Byrne (PI) 09/01/00 – 07/01/11
Recombinant AAV for Correction of Genetic Abnormalities
This multiple-project proposal is dedicated to understanding the mechanism by which AAV vectors can permanently transduce hepatocytes for correction of metabolic abnormalities of glycogen metabolism.
Role: PI

CRB-HLBI-S-10-00223 Byrne (PI) 12/01/10 – 06/30/12
Phase I/II Trial of Diaphragm Delivery of Recombinant Adeno-Associated Virus Acid Alpha-Glucosidase (rAAV1-CMV-GAA) Gene Vector in Patients with Pompe Disease.
To assess the safety of diaphragm administration of recombinant adeno-associated virus gene vector, rAAV1-CMV-GAA, in children with Pompe Disease and ventilator dependence.
Role: PI

HD052682-04 Fuller (PI) 02/01/07 – 01/31/12
Control of Breathing & Glycogen Storage Disease
The objective of this study is to test the hypothesis that CNS GAA deficiency impairs respiratory motor output, and therefore respiratory insufficiency associated with systematic GAA deficiency reflects both neural and muscular pathology.
Role: Co-PI