BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
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NAME	POSITION TITLE
Grabczyk, Edward L.	Associate Professor of Genetics
eRA COMMONS USER NAME (credential, e.g., agency login) egrabc	

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
University of California, Los Angeles CA	B.S.	06/82	Psychology-Biology
Harvard University, Cambridge MA	Ph.D.	06/92	Cell & Developmental Biology
Massachusetts General Hospital, Boston MA	Postdoctoral	02/95	Neuroscience
National Institutes of Health, Bethesda MD	IRTA Fellow	01/2000	DNA Repeat Expansion

A. Personal Statement

The ultimate goal of the training I provide for graduate students — and others interested in science — is to provide a lasting framework for scientific inquiry. This includes approaches to rational and ethical scientific analysis that translate to most any endeavor and can help make the student a good scientific citizen. In addition, of course, I teach them the tools, techniques, and knowledge set more specific to molecular and cellular biomedical research. I have mentored four graduate students to the Ph.D. in the last six years, and have advised several others as a committee member. In each of the last five years I have also trained an undergraduate summer student, two of those years my student won the overall prize for presentation in the combined Tulane- LSUHSC competition at the end of the summer training period.

The long-term goal of my research is to develop therapies for degenerative conditions associated with aging. The current focus is to understand why GAA•TTC DNA repeats expand with age, and how DNA expansion impairs gene expression in Friedreich ataxia (FRDA). My experience makes me uniquely suited to this project. In graduate school, I studied the molecular and cell biology of neuronal plasticity and regeneration with a focus on regulation of the neuronal growth associated protein, GAP-43. As a post-doctoral fellow at MGH I extended that work into a mouse model. While at NIH I used in vitro approaches, tissue culture and mouse models to investigate the molecular biology of trinucleotide repeat diseases with an emphasis on the role of unusual DNA structures. My background in neuroscience and transcription regulation, coupled with understanding DNA structure has provided synergy in the study of neurodegenerative diseases caused by DNA expansion. My successful completion of an R01 grant addressing how DNA expansion impairs gene expression in FRDA attests to my ability to administer a grant. The grant was completed despite the destruction of my lab and all its contents at the outset of that grant period by hurricane Katrina. The current application builds logically on my past and recent work in transcription mediated DNA structures and DNA instability.

B. Positions and Honors

Positions and Employment

2000-2001 Staff Fellow, National Institute of Diabetes and Digestive and Kidney Diseases
National Institutes of Health, Bethesda, Maryland

2001-2008 Assistant Professor, Department of Genetics
Louisiana State University Health Sciences Center, New Orleans, Louisiana

2008- Associate Professor, Department of Genetics
Louisiana State University Health Sciences Center, New Orleans, Louisiana

Other Experience and Professional Memberships

2006-	Institutional Biosafety Committee	LSUHSC
2002-2004	Core Labs Steering Committee	LSUHSC
2003-2005	Research Space Advisory Committee	LSUHSC
2002-	Member, American Association for the Advancement of Science	
2002-	Member, American Society for Biochemistry & Molecular Biology	
2002-2004	Member, American Society of Human Genetics	
2003-2004	Member, Society for Neuroscience	

Honors

National Institutes of Health Fellows Award for Research Excellence 1997
Grant Reviewer: Friedreich's Ataxia Research Alliance, Ataxia UK
Journal Reviewer: Analytical Biochemistry, Biochemical Pharmacology, BioTechniques, Genomics, Neuroscience Letters, Nucleic Acids Research, PLoS Computational Biology

C. Selected Peer-reviewed Publications (Most relevant to the current application marked "••")

1. Vanselow, J., Grabczyk, E., Ping, J., Baetscher, M., Teng, S., and Fishman, M. C. (1994) GAP-43 transgenic mice: Dispersed genomic sequences confer a GAP-43-like expression pattern during development and regeneration. J. Neurosci. 14, 499-510
2. •• Grabczyk, E. and Fishman, M. C. (1995) A long purine•pyrimidine homopolymer acts as a transcriptional diode. J. Biol. Chem. 270, 1791-1797
3. •• Lavedan, C., Grabczyk, E., Usdin, K., and Nussbaum, R. L. (1998) Long uninterrupted CGG repeats within the first exon of the human FMR-1 gene are not intrinsically unstable in transgenic mice. Genomics 50, 229-240
4. •• Grabczyk, E. and Usdin, K. (1999) Generation of microgram quantities of trinucleotide repeat tracts of defined length, interspersion pattern and orientation. Analytical Biochemistry, 267, 241-243
5. •• Grabczyk, E. and Usdin, K. (2000a) The GAA•TTC triplet repeat expanded in Friedreich's ataxia impedes transcription elongation by T7 RNA polymerase in a length and supercoil dependent manner. Nucleic Acids Research, 28, 2815-2822. PMCID: PMC102661.
6. •• Grabczyk, E. and Usdin, K. (2000b) Alleviating transcript insufficiency caused by Friedreich's ataxia triplet repeats. Nucleic Acids Research, 28, 4930-4937. PMCID: PMC115239.
7. Grabczyk, E., Kumari, D. and Usdin, K. (2001) Fragile X syndrome and Friedreich's ataxia: Two different paradigms for repeat induced transcript insufficiency. Brain Research Bulletin, 56, 367–373
8. Sammarco, M. C. and Grabczyk, E. (2005) A series of bidirectional tetracycline-inducible promoters provides coordinated protein expression. Analytical Biochemistry, 346, 210-216
9. •• Entezam, A., Biacsi, R., Orrison, B., Saha, T., Hoffman, G.E., Grabczyk, E., Nussbaum, R.L. and Usdin, K. (2007) Regional FMRP deficits and large repeat expansions into the full mutation range in a new Fragile X premutation mouse model. Gene, 395, 125-134. PMCID: PMC1950257.
10. •• Grabczyk, E., Mancuso, M., and Sammarco, M. C. (2007) A persistent RNA•DNA hybrid formed by transcription of the Friedreich ataxia triplet repeat in live bacteria, and by T7 RNAP in vitro. Nucleic Acids Research, 35, 5351-5359. PMCID: PMC2018641.
11. Sammarco, M.C., Ditch, S., Banerjee, A. and Grabczyk, E. (2008) Ferritin L and H Subunits Are Differentially Regulated on a Post-transcriptional Level. J. Biol. Chem., 283, 4578-4587.
12. •• Banerjee*, A., Sammarco*, M. C., Ditch, S., Wang, J. and Grabczyk, E. (2009) A Novel Tandem Reporter Quantifies RNA Polymerase II Termination in Mammalian Cells. PLoS ONE 4(7): e6193. PMCID: PMC2702688.
13. Banerjee, A., Sammarco, M. C., Ditch, S., and Grabczyk, E. (2009) A dual reporter approach to quantify defects in mRNA processing. Analytical Biochemistry, 395, 237-243. PMCID: PMC2760683.
14. •• Ditch, S., Sammarco, M. C., Banerjee, A. and Grabczyk, E. (2009) Progressive GAA•TTC Repeat Expansion in Human Cell Lines. PLoS Genet 5(10): e1000704. PMCID: PMC2760145.
15. •• Mancuso, M., Sammarco, M.C. and Grabczyk, E. (2010) Transposon Tn7 Preferentially Inserts into GAA•TTC Triplet Repeats under Conditions Conducive to Y•R•Y Triplex Formation. PLoS One, 5, e11121. PMCID: PMC2886061

D. Research Support

Ongoing Research Support

Friedreich's Ataxia Research Alliance Grabczyk (PI) 01/01/11-12/31/11
Transcription-coupled GAA•TTC expansion in human cells.
The long-term objective of this project is to investigate in human cells the role of transcription and DNA repair in progressive expansion of the GAA•TTC repeats that cause Friedreich ataxia.
Role: PI

Completed Research Support

Friedreich's Ataxia Research Alliance Grabczyk (PI) 11/01/09-12/31/10
Transcription-coupled GAA•TTC expansion in human cells.
The long-term objective of this project is to investigate in human cells the role of transcription and DNA repair in progressive expansion of the GAA•TTC repeats that cause Friedreich ataxia.
Role: PI

R01 NS046567 Grabczyk (PI) 9/01/05-07/31/10
Mechanisms contributing to frataxin deficiency.
The long-term objective of this project is to investigate ways to alleviate the reduction in frataxin gene expression caused by expanded GAA•TTC trinucleotide tracts in Friedreich's ataxia.
Role: PI

R01 NS046567-03S1 Grabczyk (PI) 9/01/07-07/31/09
NIH Administrative Supplement in response to NOT-NS-08-009: "Administrative Supplements for High-Quality Low-Cost Monoclonal Antibodies for Studies of the Nervous System"
Role: PI

R01 NS046567-04S1 Grabczyk (PI) 07/21/09-07/31/10
NIH Administrative Supplement: ARRA summer supplement. In response to NOT-OD-09-060: Recovery Act Administrative Supplement to Provide Summer Research Experiences for Undergraduate Students.
Role: PI