BIOGRAPHICAL SKETCH

NAME Giangrande, Paloma Hoban	**POSITION TITLE** Assistant Professor
eRA COMMONS USER NAME (credential, e.g., agency login) Giangrande	

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**
Wheaton College, Norton MA	BA	05/1994	Biochemistry
Dartmouth College, Hanover, NH	HHMI Internship	08/1992	Chemistry
Duke University, Durham, NC	PhD	12/1999	Pharmacology
Duke University, Durham, NC	Postdoctoral	02/2004	Molecular Genetics
Duke University, Durham, NC	Postdoctoral	02/2007	Surgery

PERSONAL STATEMENT

The central goal of my research program is to develop synthetic targeted RNA reagents (ex. aptamers) to (1) elucidate signaling pathways that regulate pathological proliferation and promote cell survival, (2) modulate signaling in cells for therapeutic intervention and (3) image targeted delivery of therapeutic agents in vivo. I am an internationally recognized expert in oligonucleotide therapeutics and delivery. I was the first to demonstrate that RNA aptamers can be used to deliver therapeutic siRNAs to target cells. I continue to pioneer efforts to optimize the aptamer delivery technology and have developed novel cell-based methodologies and bioinformatics approaches to implement the broad application of the aptamer delivery approach. One of the primary research efforts in my laboratory includes targeting therapeutic siRNAs/miRNAs to specific cell-types/tissues in vivo. Toward this end, my work with aptamer-based cell-type specific siRNA/miRNA delivery is currently focused on targeting *multiple disease pathways* with one reagent. This is expected to reduce or eliminate off-target effects, while increasing therapeutic efficacy. In addition, these multifunctional inhibitors are coupled with imaging and/or sensing capabilities to facilitate tracking of delivery and assessment of therapeutic efficacy and safety. For this application, I will develop RNA reagents as tools for research and therapy of Ewing's sarcoma. In collaboration with Dr. Oscar Martinez Tirado (Idibell Research Institute, Barcelona, Spain), I am currently extending these efforts in RNA technologies to develop cell-specific reagents for the control of Ewing's sarcoma.

POSITIONS

03/2007 – present	Assistant Professor, Department of Internal Medicine, University of Iowa, IA. (Primary appointment)
09/2008 – present	Assistant Professor**,** Department of Radiation Oncology, University of Iowa, IA (Secondary appointment)

PROFESSIONAL ORGANIZATIONS

1998 – 2000	Endocrine Society (Associate Member)
2005 – present	American Society for Gene and Cell Therapy (ASGCT) (Member)
	ASGCT Website Taskforce (Member)
2007 – present	American Association for Cancer Research (AACR) (Member)
2010 – present	American Association for the Advancement of Science (AAAS)
2012 – present	American Heart Association (AHA)

HONORS

1990	Recipient of the F.J. Kristianson Scholarship, Wheaton College
1992 – 1994	Wheaton Scholar
1992	Howard Hughes Biological Science Internship Award
1993	Julia R. Lange Fellowship in Chemistry
1993	Farber Fellowship Grant
1993	Sigma Xi Award
1994	Recipient of the American institute of Chemists Award
1994	Phi Beta Kappa
1998 – 2001	Breast Cancer Grant U.S. Army Medical Research Acquisition Activity (USAMRAA), Predoctoral Fellowship
1998	Associate member of the Endocrine Society
2000	Recipient of the American Association for Cancer Research AFLAC Award
2000 – 2004	Howard Hughes Medical Institute Postdoctoral Fellowship
2007	Presidential Biological Scholars Award from University of Iowa
2013	Outstanding New Investigator Award, American Society for Gene and Cell Therapy (ASGCT)

SELECTED PEER-REVIEWED PUBLICATIONS (selected from 32 total)

1. Thiel WH, Bair T, Peek AS, Liu X, Dassie J, Stockdale KR, Behlke MA, Miller FJ Jr, **Giangrande PH**. Rapid identification of cell-specific, internalizing RNA aptamers with bioinformatics analyses of a cell based aptamer selection. *PLoS One*. 2012;7(9):e43836. Epub 2012 Sep 4. PubMed PMID: 22962591; PubMed Central PMCID: PMC3433472.

2. Huang YZ, Hernandez FJ, Gu B, Stockdale KR, Nanapaneni K, Scheetz TE, Behlke MA, Peek AS, Bair T, **Giangrande PH**, McNamara JO 2nd. RNA Aptamer-Based Functional Ligands of the Neurotrophin Receptor, TrkB. *Mol Pharmacol*. 2012 Oct;82(4):623-35. Epub 2012 Jun 29. PubMed PMID: 22752556; PubMed Central PMCID: PMC3463223.

3. Thiel KW, Hernandez LI, Dassie JP, Thiel WH, Liu X, Stockdale KR, Rothman AM, Hernandez FJ, McNamara JO 2nd, **Giangrande PH**. Delivery of chemo-sensitizing siRNAs to HER2+-breast cancer cells using RNA aptamers. *Nucleic Acids Res*. 2012 Jul;40(13):6319-37. Epub 2012 Mar 30. PubMed PMID: 22467215; PubMed Central PMCID: PMC3401474.

4. Berezhnoy A, Stewart CA, McNamara Ii JO, Thiel W, **Giangrande PH**, Trinchieri G, Gilboa E. Isolation and Optimization of Murine IL-10 Receptor Blocking Oligonucleotide Aptamers Using High-throughput Sequencing. *Mol Ther.* 2012 Jun;20(6):1242-50. PubMed PMID:22434135; PubMed Central PMCID: PMC3369303.

5. Rockey WM, Hernandez FJ, Huang SY, Cao S, Howell CA, Thomas GS, Liu XY, Lapteva N, Spencer DM, McNamara JO, Zou X, Chen SJ, **Giangrande PH**. Rational truncation of an RNA aptamer to prostate-specific membrane antigen using computational structural modeling. *Nucleic Acid Ther*. 2011 Oct;21(5):299-314. doi: 10.1089/nat.2011.0313. PubMed PMID: 22004414; PubMed Central PMCID: PMC3198747.

6. Thiel WH, Bair T, Wyatt Thiel K, Dassie JP, Rockey WM, Howell CA, Liu XY, Dupuy AJ, Huang L, Owczarzy R, Behlke MA, McNamara JO, **Giangrande PH**. Nucleotide bias observed with a short SELEX RNA aptamer library. *Nucleic Acid Ther*. 2011 Aug;21(4):253-63. Epub 2011 Jun 28. PubMed PMID: 21793789; PubMed Central PMCID: PMC3198618.

7. Rockey WM, Huang L, Kloepping KC, Baumhover NJ, **Giangrande PH**, Schultz MK. Synthesis and radiolabeling of chelator-RNA aptamer bioconjugates with copper-64 for targeted molecular imaging. *Bioorg Med Chem*. 2011 Jul 1;19(13):4080-90. Epub 2011 May 14. PubMed PMID: 21658962.

8. Thiel KW, **Giangrande PH**. Intracellular delivery of RNA-based therapeutics using aptamers. *Ther Deliv.* 2010 Dec;1(6):849-61. Review. PubMed PMID: 21643487; PubMed Central PMCID: PMC3106310.

9. Pastor F, Kolonias D, **Giangrande PH**, Gilboa E. Induction of tumour immunity by targeted inhibition of nonsense-mediated mRNA decay. *Nature.* 2010 May 13;465(7295):227-30. PubMed PMID: 20463739; PubMed Central PMCID: PMC3107067.

10. Dassie JP, Liu XY, Thomas GS, Whitaker RM, Thiel KW, Stockdale KR, Meyerholz DK, McCaffrey AP, McNamara JO 2nd, **Giangrande PH**. Systemic administration of optimized aptamer-siRNA chimeras promotes regression of PSMA-expressing tumors. *Nat Biotechnol*. 2009 Sep;27(9):839-49. Epub 2009 Aug 23. PubMed PMID: 19701187; PubMed Central PMCID: PMC2791695.

11. Thiel KW, **Giangrande PH**. Therapeutic applications of DNA and RNA aptamers. *Oligonucleotides*. 2009 Sep;19(3):209-22. Review. PubMed PMID: 19653880.

12. McNamara JO, Kolonias D, Pastor F, Mittler RS, Chen L, **Giangrande PH**, Sullenger B, Gilboa E. Multivalent 4-1BB binding aptamers costimulate CD8+ T cells and inhibit tumor growth in mice. *J Clin Invest.* 2008 Jan;118(1):376-86. PubMed PMID: 18060045; PubMed Central PMCID: PMC2104483.

13. Mi J, Zhang X, Rabbani ZN, Liu Y, Reddy SK, Su Z, Salahuddin FK, Viles K, **Giangrande PH**, Dewhirst MW, Sullenger BA, Kontos CD, Clary BM. RNA aptamer-targeted inhibition of NF-kappa B suppresses non-small cell lung cancer resistance to doxorubicin. *Mol Ther*. 2008 Jan;16(1):66-73. Epub 2007 Oct 2. PubMed PMID: 17912235.

14. **Giangrande PH**, Zhang J, Tanner A, Eckhart AD, Rempel RE, Andrechek ER, Layzer JM, Keys JR, Hagen PO, Nevins JR, Koch WJ, Sullenger BA. Distinct roles of E2F proteins in vascular smooth muscle cell proliferation and intimal hyperplasia. *Proc Natl Acad Sci U S A*. 2007 Aug 7;104(32):12988-93. Epub 2007 Jul 25. PubMed PMID: 17652516; PubMed Central PMCID: PMC1941807.

15. McNamara JO 2nd, Andrechek ER, Wang Y, Viles KD, Rempel RE, Gilboa E, Sullenger BA, **Giangrande PH**. Cell type-specific delivery of siRNAs with aptamer-siRNA chimeras. *Nat Biotechnol*. 2006 Aug;24(8):1005-15. Epub 2006 Jun 25. PubMed PMID: 16823371.

PATENT APPLICATIONS

1. **Giangrande PH**, Miller FJ Jr, Thiel WH.
   NUCLEIC ACID APTAMERS
   PRV No. 61/682,055

2. **Giangrande PH** and Rockey WM
   PSMA RNA APTAMERS FOR TARGETED THERAPEUTICS AND DIAGNOSTICS
   PRV No. 61/509,938

3. **Giangrande PH**, McNamara JO, Thiel WK, Thiel WH, Rockey WM.
   HER2 NUCLEIC ACID APTAMERS
   PCT/US2011/034169

4. **Giangrande PH**, McNamara JO, McCaffrey AP.
   NUCLEIC ACIDS APTAMERS
   PCT/US09/53023

RESEARCH SUPPORT

Ongoing

The Mary Kay Foundation 033-12 (Giangrande)
Multifunctional RNA-based reagents for the treatment of ovarian cancer
This project examines the effects of multifunctional RNA inhibitors on ovarian cancer growth and survival
08/01/2012- 07/31/2014
Role: PI

NIH/NCI 1R01 CA138503 (Giangrande)
Aptamer-siRNA Chimeras Targeting HER2-Positive Breast Cancers
This project examines the effects of aptamer-siRNA chimeras on growth and survival of HER2+ breast cancers
07/10/2009 - 05/31/2014
Role: PI

NIH/NIDDK R21 DK090762-01A1 (Kolodny)
Noninvasive measurement of UCP1 in Brown Adipose Tissue
This project examines the use of aptamers as diagnostic tools for UCP1
07/01/2012 - 06/31/2013
Role: Sub-contract co-Investigator

Elsa U Pardee Foundation (Giangrande)
Multifunctional RNA-based therapy for advanced cancers of the breast
This project examines the effects of multifunctional RNA inhibitors on malignant breast cancers
01/01/2013 – 12/31/2014
Role: PI

Pending

NIH/NCI 1R01 CA168683 (Giangrande)
Aptamer-siRNA chimeras targeting castration resistant prostate cancer
This project examines the effects of multifunctional RNA inhibitors on castration resistant prostate cancer
04/01/2013 – 03/31/2018
Role: PI

AHA Grant-in-Aid (Giangrande)
Smooth Muscle Cell Targeted RNA Aptamers for the Treatment of Vascular Disease
This project examines the effects of RNA inhibitors smooth muscle cell remodeling
07/01/2013 – 06/30/2015
Role: PI