

Biomedical Engineering

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Our work involves the development of gene-based probes and therapeutics and applying these entities to functional genomics, tissue engineering and cancer. We perform both modeling and experimental studies of oligonucleotide interactions with polymeric delivery agents and target mRNA species. We are using antisense oligonucleotides and short interfering RNAs to modulate integrated molecular systems, such as (1) transcription factors controlling inflammatory and differentiation states of hepatocytes and (2) signal transduction pathways controlling the response of tumors to chemotherapy.



Recent Papers:

1. Roth CM. Quantitative measurements and rational materials design for intracellular delivery of oligonucleotides. *Biotechnol. Prog.*, 2008; 24:23-28.
2. Sundaram S, Lee LK, Roth CM. Interplay of polyethyleneimine molecular weight and oligonucleotide backbone chemistry in the dynamics of antisense activity. *Nucleic Acids Res.*, 2007; 35:4396-4408.
3. Burley MR, Roth CM. Effects of retinoic acid on the proliferation and differentiation of HepG2 cells. *Open Biotechnol. J.* 1:47-51 (2007).

For more information: <http://www.rci.rutgers.edu/~cmroth>



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