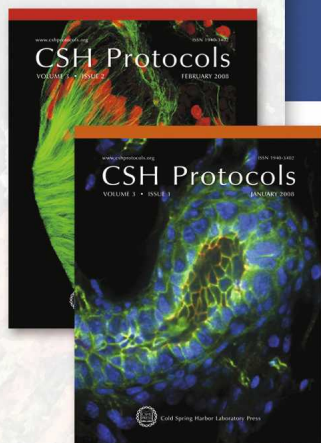


# Cold Spring Harbor Protocols



- A new online source of trusted techniques in molecular and cellular biology
- Contains cutting-edge and classic protocols presented step-by-step with cautions and troubleshooting
- Frequently updated and annotated
- Interactive, customizable, and fully searchable

## Subject Coverage

Antibodies  
Bioinformatics/Genomics  
Cell Biology  
Chromatography  
Computational Biology  
DNA Delivery/Gene Transfer  
Electrophoresis  
Genetics  
High Throughput Analysis  
Imaging/Microscopy  
Immunology  
Laboratory Organisms  
Molecular Biology  
Neuroscience  
Newly Added Protocols  
Plant Biology  
Polymerase Chain Reaction (PCR)  
Proteins and Proteomics  
RNA Interference (RNAi)/siRNA  
Stem Cells  
Transgenic Technology

## Online. Authoritative. Indispensable.

Cold Spring Harbor Laboratory is renowned for its teaching of biomedical research techniques. For decades, participants in its celebrated, hands-on courses and users of its laboratory manuals have gained access to the most authoritative and reliable methods in molecular and cellular biology. Now that access has moved online.

Visit *Cold Spring Harbor Protocols* today and discover a rich, interactive source of new and classic research techniques. The site is fully searchable, with many tools that can be customized by users, including topic-based alerting and personal folders. Through a web-based editorial process, users also have the opportunity to add refereed comments to each protocol. Links in the online protocols offer additional resources, and step-by-step instructions print out in a convenient form, complete with materials, cautions, and troubleshooting advice. Each protocol is citable and presented and edited in the style that has made *Molecular Cloning*, *Antibodies*, *Cells*, and many other Cold Spring Harbor manuals essential to the work of scientists worldwide. The current collection of more than 1000 protocols is continuously expanded, updated, and annotated by the originators and users of the techniques.

*CSH Protocols* is created by Cold Spring Harbor Laboratory Press in association with HighWire Press of Stanford University.

Cold Spring Harbor Protocols

Executive Editor: Dr. David Crotty • ISSN 1559-6095 / online, monthly

Available exclusively via institutional site license

Request a Free Trial for Your Institution

[www.cshprotocols.org](http://www.cshprotocols.org)

The First Choice in Protocols.



For pricing information or to request a free trial, visit the website or:

Phone: 1-800-843-4388 (Continental US and Canada) or 516-422-4100 (all other locations)

Fax: 516-422-4097 E-mail: [cshpress@cshl.edu](mailto:cshpress@cshl.edu) or Website: [www.cshlpress.com](http://www.cshlpress.com)

Write: Cold Spring Harbor Laboratory Press, 500 Sunnyside Blvd., Woodbury, NY 11797-2924



# Vivo-Morpholinos

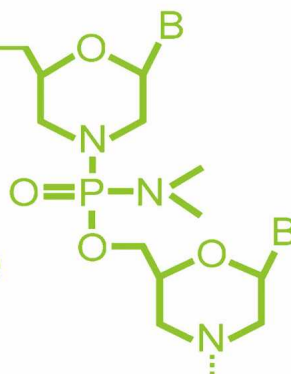


The Key to safe & effective  
gene knockdowns in vivo

**GENE TOOLS, LLC**

[www.gene-tools.com/vivomorpholinos](http://www.gene-tools.com/vivomorpholinos)

**Superior technology,  
Comprehensive service**





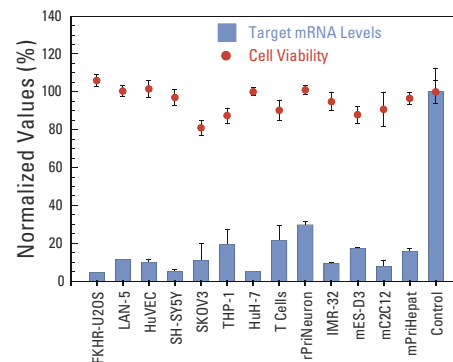
## The siRNA breakthrough that changes the world of RNAi.

RNAi research is no longer constrained by cell types that are resistant to conventional lipid-based delivery reagents. Thermo Scientific Dharmacon® Accell™ siRNA provides a breakthrough in siRNA delivery. It is specially modified for delivery into any cell type, without the use of a transfection reagent or viral vector, for unprecedented experimental flexibility and discovery.

- Delivery into any cell type, including primary cells
- Free from toxic delivery effects for pure silencing results
- Two-step protocol for extraordinary ease-of-use
- Effective, specific silencing from the RNAi experts

### Learn More Today

For more information, call 800-235-9880 or  
visit us at [www.thermo.com/dharmacon](http://www.thermo.com/dharmacon)  
In Europe visit [www.thermo.com/perbio](http://www.thermo.com/perbio)



### Dharmacon Accell siRNA delivers target knockdown to any cell type

Thirteen difficult-to-transfect cell lines were treated with Accell Cyclophilin B siRNA in delivery media and assayed for mRNA levels and cell viability after 72 hours. Effective silencing and low cytotoxicity was achieved without delivery optimization.





design>delivery>purification>assessment>detection

## More. Silence. Longer.

*Bio-Rad's powerful siLentMer™ siRNA duplexes keep genes silenced longer using lower concentrations. And they're validated.*

siLentMer siRNA duplexes are a new class of dsRNA molecules with increased length and altered end structure, capable of initiating an enhanced, more specific silencing compared to traditional siRNAs.

- **Lower usage amounts** — effective at concentrations as low as 5 nM, reducing the risk of off-target effects
- **High purity** — HPLC purification ensures specific gene silencing
- **Validated qPCR primers** — included to help assess knockdown with qPCR assays using SYBR® Green

For information on products and promotions that support your RNAi research, visit us on the Web at [www.bio-rad.com/ad/RNAi/](http://www.bio-rad.com/ad/RNAi/)

### Potent Silencing



Achieve greater, longer-lived silencing. siLentMer siRNA duplexes are fully validated to achieve at least 85% knockdown for up to 9 days.

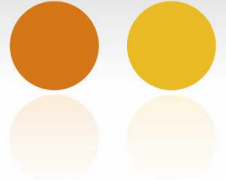
SYBR is a trademark of Invitrogen Corporation.  
Practice of the polymerase chain reaction (PCR) may require a license.

High Quality Custom

# Antisense - RNAi

## Oligonucleotides

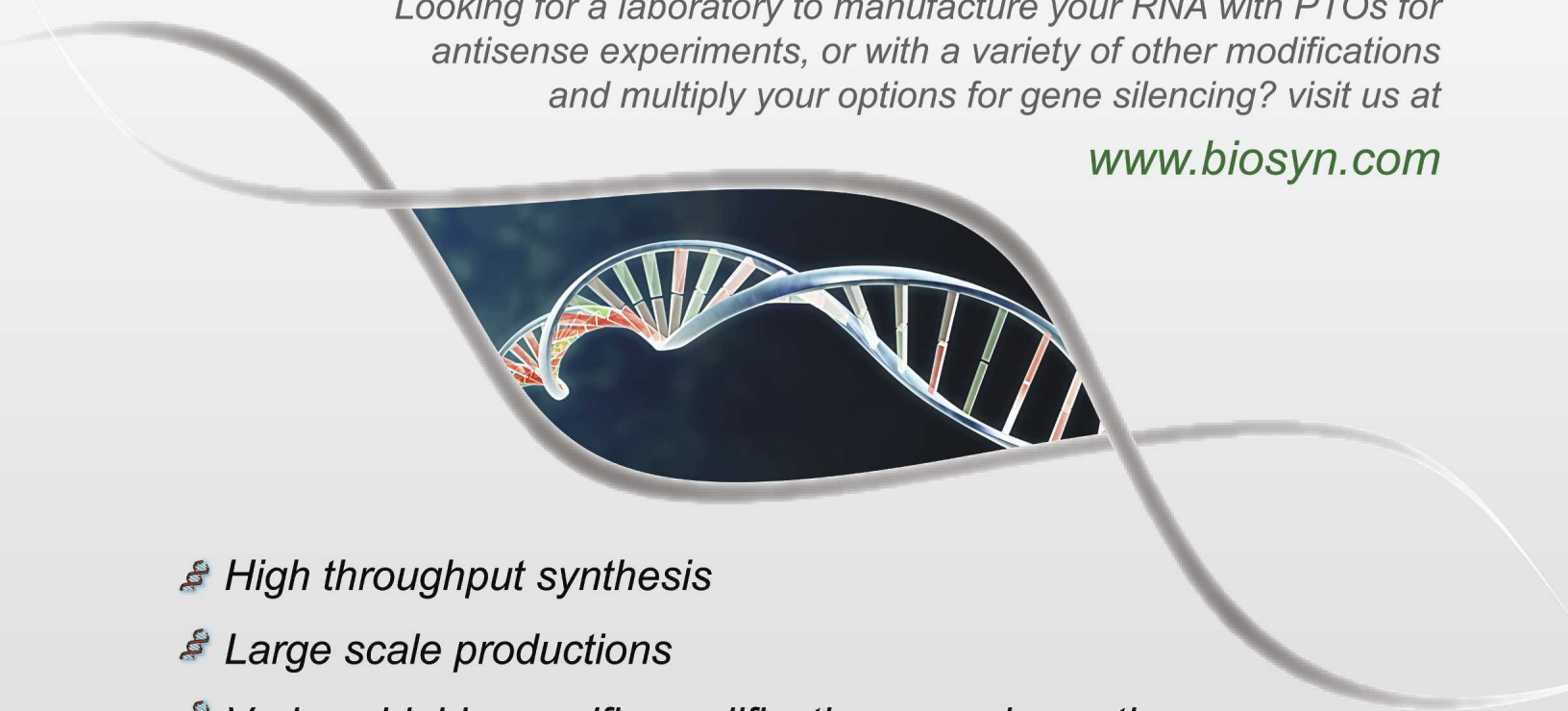
A strong parallel approaches for your gene silencing expedition.



*Why should you accept less? Choose from a complete range of quality ready-2-use custom RNA and duplex RNAi services delivered, when and where they're needed from a trusted brand with fully deprotected, desalted and MS controlled products.*

*Looking for a laboratory to manufacture your RNA with PTOs for antisense experiments, or with a variety of other modifications and multiply your options for gene silencing? visit us at*

[www.biosyn.com](http://www.biosyn.com)

- 
-  *High throughput synthesis*
  -  *Large scale productions*
  -  *Various highly specific modifications, service options*
  -  *Dual fluorophore labelings*
  -  *ASR or cGMP oligonucleotide manufacturing*



*The most trusted name in Quality Custom Synthesis*



*American Association  
for Cancer Research*

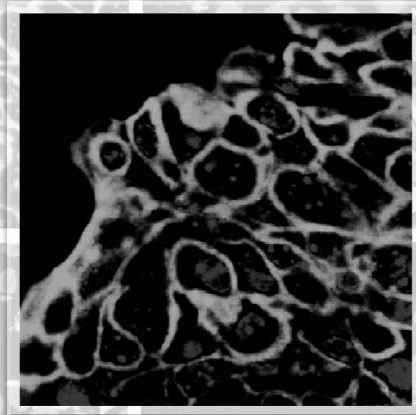
An AACR Special Conference in Cancer Research

## Targeting the PI3-Kinase Pathway in Cancer

**November 11-14, 2008**

**Hyatt Regency Cambridge • Cambridge, MA**

Don't miss this chance to meet with leading investigators to discuss the role of the PI3K signaling pathway in cancer and the implementation of PI3K inhibitors in the clinic.



Conference Chairpersons:

**Lewis C. Cantley**  
Harvard Medical School  
Boston, MA

**Charles L. Sawyers**  
Memorial Sloan-Kettering Cancer Center  
New York, NY

Abstract Submission, Award Application, and  
Early Registration Deadline: **September 15, 2008**

[www.aacr.org](http://www.aacr.org)



## APBC2009

The Seventh Asia Pacific Bioinformatics Conference  
Beijing, China, 13-16 January 2009

Conference co-chairs:

Michael Q. Zhang, CSHL, USA and Tsinghua University, China  
Yanda Li, Tsinghua University, China  
Xuegong Zhang, Tsinghua University, China

Program Co-chairs:

Michael S. Waterman, University of Southern California, USA  
Michael Q. Zhang, CSHL, USA and Tsinghua University, China  
Xuegong Zhang, Tsinghua University, China

Confirmed Invited Speakers:

David J. Lipman, Director of NCBI, USA (Keynote)  
David Botstein, Princeton University, USA (Keynote)  
Martin Vingron, Max-Planck Institute for Molecular Genetics, Germany  
John Mattick, University of Queensland, Australia  
Michael B. Eisen, Lawrence Berkeley National Lab and UC Berkeley, USA  
Bailin Hao, Fudan University and CAS, China  
Chunting Zhang, Tianjin University, China

Steering Committee:

|                         |                               |
|-------------------------|-------------------------------|
| Phoebe Chen, Australia  | Sang Yup Lee, Korea           |
| Satoru Miyano, Japan    | Mark Ragan, Australia         |
| Limsoon Wong, Singapore | Michael Q. Zhang, China & USA |

**Call for Papers**

**Call for Posters**

**Call for Tutorials**

**Call for Industry Sponsors**

The Asia Pacific Bioinformatics Conference (APBC) series, founded in 2003, is an annual international forum for exploring research, development and applications of Bioinformatics and Computational Biology. The Seventh Asia-Pacific Bioinformatics Conference, APBC2009, will be held in Beijing, China in January 13-16, 2009, following the 2008 Olympic Games.

APBC2009 invites high-quality original papers and posters on any topic related to Bioinformatics and Computational Biology. Accepted papers will be invited for publication in the journal of *BMC Bioinformatics*, and abstracts of accepted posters will be published in the conference proceedings.

APBC2009 invites scientists and professionals working in the fields of bioinformatics and computational biology to submit proposals for high quality tutorials.

Industry sessions will be hosted at APBC2009 and we invite industry partners to participate in this great conference.

[bioinfo.au.tsinghua.edu.cn/apbc2009](http://bioinfo.au.tsinghua.edu.cn/apbc2009) [www.apbc09.org](http://www.apbc09.org)

Sponsors: Tsinghua University, Beijing, China

National Natural Science Foundation of China (NSFC)



# THE HOME FOR RNA SCIENTISTS

**The RNA Society is an interdisciplinary, cohesive intellectual home for those interested in all aspects of RNA Science.**

**We welcome new members from all areas of scientific research and we look forward to sharing the new perspectives they bring to the Society. There are many benefits to being a member of the RNA Society.**

## **These include:**

- Print copies and web access to the Society journal, *RNA* (Impact factor of 6.1 and an excellent immediacy index)
- Reduced costs for publishing your papers in *RNA*.
- The RNA Society Newsletter, a forum for disseminating information to members and discussing issues affecting the Society and RNA Science
- Reduced registration fees for the annual meeting of the Society
- Numerous opportunities for junior scientists to become involved in the Society
- The Directory of Members, available on the web and in print
- Free job postings on the Society Employment and Careers website
- Opportunities to request Travel Fellowship and Meeting Support for RNA-related meetings you are organizing.

**VISIT US AT [WWW.RNASOCIETY.ORG](http://WWW.RNASOCIETY.ORG) AND BECOME  
A MEMBER OF THE RNA SOCIETY TODAY!**

---

THE RNA SOCIETY, 9650 ROCKVILLE PIKE, BETHESDA, MD 20814-3998 USA

PHONE: 301-634-7120 FAX: 301-634-7420

EMAIL: [RNA@FASEB.ORG](mailto:RNA@FASEB.ORG)

[HTTP://WWW.RNASOCIETY.ORG/](http://WWW.RNASOCIETY.ORG/)

# Do more with proven miRCURY LNA™ tools for microRNA research



miRCURY LNA™ tools from Exiqon give you the reliability and specificity you need to trust your results. We've got the data to prove it. Learn more on these pages.

Henrik M. Pfundheller, Ph.D., VP Sales & Marketing





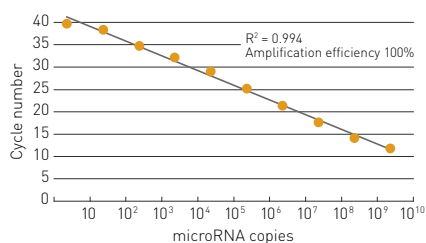
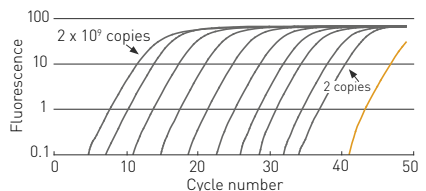
## Detect more: PCR-based microRNA discovery starts from a single cell

Ina K. Dahlsveen, Ph. D., Product Manager.

With the miRCURY LNA™ microRNA PCR system, your discovery starts from 10 pg total RNA – you only need a single cell. You can even detect high and low expressed microRNAs from the same sample in your experiment, as the dynamic range is up to 8 logs wide.

Our new PCR system combines microRNA-specific primers and SYBR® Green detection.

### Unmatched quantitation



Accurate microRNA quantitation over a wide dynamic range of microRNA copy numbers. Hsa-miR-100 (2 x 10<sup>8</sup> copies) input was used to generate cDNA. A ten-fold serial dilution ranging from 2 x 10<sup>9</sup> copies to 2 copies cDNA was amplified by real-time PCR. **A.** The amplification curves and **B.** the standard curve show excellent linear correlation between the decreasing cycle numbers and the logarithm of the microRNA copy number, proving the assay enables sensitive microRNA detection down to less than 10 copies with a wide dynamic range of at least 8 orders of magnitude.

Learn more: Visit [exiqon.com/pcr](http://exiqon.com/pcr)

NOTICE TO PURCHASER: LIMITED LICENSE. Purchase of this product includes an immunity from suit under patents specified in the product insert to use only the amount purchased for the purchaser's own internal research. No other patent rights are conveyed expressly, by implication, or by estoppel. Further information on purchasing licenses may be obtained by contacting the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA. SYBR® Green is a trademark of Invitrogen

## View more: Stunning visualization of microRNAs in tissue

The miRCURY LNA™ microRNA Detection Probes for *in situ* hybridization of microRNAs have been used successfully in both animal and plant species. Several peer-reviewed publications have demonstrated the excellent performance of these probes by showing highly specific microRNA expression pattern in different tissues and cells. These probes address the “when” and “where” a particular microRNA is expressed

Specific *in situ* detection of microRNA is possible in whole mounts, thin sections, single cells, frozen samples and in formalin-fixed, paraffin-embedded tissue sections (including archived samples).

We also provide detection probes for Northern blotting.

### Unrivalled visualization



Specific detection of mir-206 in *Gallus gallus* embryo using a miRCURY LNA™ microRNA Detection probe. Mir-206 is expressed in all skeletal muscle cells, appearing at the onset of myogenic cell differentiation. At the pictured stage in embryonic development, mir-206 is detected in the myotomal muscle cells.

From Ason, *et al.*, Proceedings of the National Academy of Sciences 2006, v103;39, p. 14385-14389

Learn more: Visit [exiqon.com/ish](http://exiqon.com/ish)



## Profile more: miRCURY LNA™ microRNA Arrays

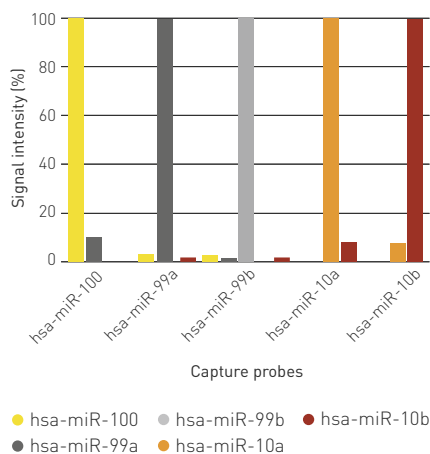
Carsten Alsbo, Ph. D., Product Manager.

We are now shipping version 11.0 of our popular Locked Nucleic Acid-based arrays for microRNA research. With more sensitivity and specificity than ever before, you can conduct expression profiling of a comprehensive range of microRNAs from human, mouse and rat - **from just 30 ng total RNA**. You even have access to proprietary microRNAs available nowhere else (miRPlus™).

### Unparalleled specificity: Single mismatch discrimination

| miR         | Sequence                    |
|-------------|-----------------------------|
| hsa-miR-100 | 5'-aaccg-gtagatccgaacttg-3' |
| hsa-miR-99a | 5'-aaccg-gtagatccgatcttg-3' |
| hsa-miR-99b | 5'-aaccg-gtagaacgacottg-3'  |
| hsa-miR-10a | 5'-aacctgtagatccgaatttg-3'  |
| hsa-miR-10b | 5'-aacctgtagaacgaatttg-3'   |

Single mismatch discrimination. Closely related microRNA family members can be distinguished using miRCURY LNA™ microRNA Arrays.



The miRCURY LNA™ Arrays outperform other leading arrays on key parameters.

Learn more: Visit [exiqon.com/array](http://exiqon.com/array)

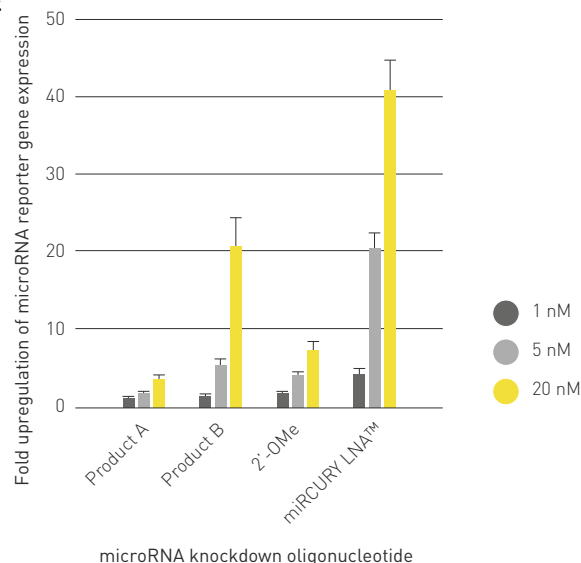


## Silence more: best-in-class microRNA inhibition with miRCURY LNA™ probes

Niels Frandsen, Ph. D., Product Manager.

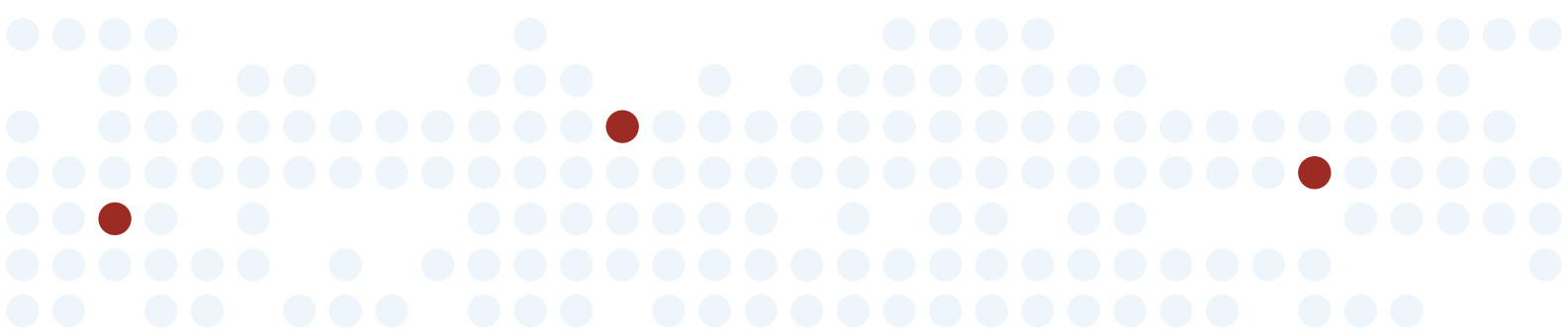
With Exiqon's miRCURY LNA™ Knockdown Probes, you can achieve effective inhibition of microRNA activity, due to our superior locked nucleic acid (LNA™) technology. Several studies have shown conclusive results, published in high impact journals. We offer probes for specific microRNAs as well as our new comprehensive miRCURY LNA™ Knockdown libraries, ideal for genome-wide high throughput screening.

### Unmatched potency



With Exiqon's miRCURY LNA™ Knockdown Probes, you can achieve comprehensive inhibition of microRNA activity. Knockdown probes based on DNA or 2'-O-methyl chemistries have proven ineffective.

Learn more: Visit [exiqon.com/knockdown](http://exiqon.com/knockdown)



## Discover more on [Exiqon.com](http://Exiqon.com)

- View a 3-D animation of the research benefits of our LNA™ technology
- Get microRNA booklets
- Contact our global team of Research Specialists  
- we offer Profiling Services too

