miRCURY LNA™ Detection Probes for *In Situ* Hybridization

Publications are sorted into the following categories:

Tip: You can also search for your tissue/organism or microRNA of interest

Selected publications — FFPE

Kappelmann *et al.* MicroRNA miR-125b controls melanoma progression by direct regulation of c-Jun protein expression. Oncogene. 2013. 32: 2984-91. PMID: 22797068
Source: Human melanoma and normal skin
Targets: miR-125b

Ranganathan *et al.* Regulation of acute graft-versus-host disease by microRNA-155. Blood. 2012. 119: 4766-97. PMID: 22408260
Source: human gut tissue and mouse liver
Targets: miR-155

Hanna *et al.* Quantitative analysis of microRNAs in tissue microarrays by in situ hybridization. Biotechniques. 2012. 52: 235-45. PMID: 22482439
Source: Human breast cancer tissue, breast cancer cell lines, and mouse k.o.
Targets: miR-21, miR-92a, miR-34a, miR-221

Kjaer-Frifeldt *et al.* The prognostic importance of miR-21 in stage II colon cancer: a population-based study. Br J Cancer. 2012. 107: 1169-74. PMID: 23011541
Source: Human colon cancer tissue
Targets: miR-21

Ma *et al.* Elevated oncofoetal miR-17-5p expression regulates colorectal cancer progression by repressing its target gene P130. Nat. Commun. 2012. 3: 1291. PMID: 23250421
Source: Human colorectal tissue and cells
Targets: miR-17-5p

Jones *et al.* miRNA signatures associate with pathogenesis and progression of osteosarcoma. Cancer Res. 2012. 72:1865-77. PMID: 22350417
Source: Human osteosarcoma tissue
Targets: miR-181b, miR-29b

Majid *et al.* miR-23b represses proto-oncogene Src kinase and functions as methylation-silenced tumor suppressor with diagnostic and prognostic significance in prostate cancer. Cancer Res. 2012. 72: 6434-46. PMID: 23074286
Source: Human prostate cancer tissue and cells
Targets: miR-23b

Teta *et al.* Inducible deletion of epidermal Dicer and Drosha reveals multiple functions for miRNAs in postnatal skin. Development. 2012. 139:1405-16. PMID: 22434867
Source: Mouse skin
Targets: miR-205, miR-34c

Zhang *et al.* MicroRNA-26a promotes cholangiocarcinoma growth by activating β-catenin. Gastroenterology. 2012. 143:246-56. PMID: 22484120
Source: Human bile duct tissue & mouse tumor xenograft tissue
Targets: miR-26a

Puerta-Gil *et al.* miR-143, miR-222, and miR-452 are useful as tumor stratification and noninvasive diagnostic biomarkers for bladder cancer. Am J Pathol. 2012. 180:1808-15 PMID: 22426337
Source: Human bladder cancer
Targets: miR-143, miR-222, mir-452

Li *et al.* miR-21 as an independent biochemical recurrence predictor and potential therapeutic target for prostate cancer. J Urol. 2012. 187:1466-72 PMID: 22341810
Source: Human prostate cancer
Targets: miR-21

Fassina *et al.* Epithelial-mesenchymal transition in malignant mesothelioma. Mod. Pathol. 2012. 25:86-99. PMID: 21983934
Source: Human malignant mesotheliomas
Targets: miR-205

Chang *et al.* HIV-1 Tat promotes neuronal dysfunction through disruption of microRNAs. J. Biol. Chem. 2011. 286:41125-34. PMID: 21956116
Source: Human & mouse brain tissue
Targets: miR-34a

Donnem *et al.* Independent and tissue-specific prognostic impact of miR-126 in nonsmall cell lung cancer: co-expression with vascular endothelial growth factor-A predicts poor survival. Cancer. 2011. 117: 3193-200. PMID: 21264844
Source: Human primary lung tumor tissue (NSCLC)
Targets: miR-126a

Ichii *et al.* Altered expression of microRNA miR-146a correlates with the development of chronic renal inflammation. Kidney Int. 2011. 81:280-92 PMID: 21975861
Source: Paraformaldehyde fixed mouse kidney
Targets: miR-146a

Kang *et al.* Kaposi's sarcoma-associated herpesviral IL-6 and human IL-6 open reading frames contain miRNA binding sites and are subject to cellular miRNA regulation. J. Pathol. 2011. 225: 378-89. PMID: 21984125
Source: Human lymph node
Targets: miR-155, miR-1293

Larsen *et al.* Expression and Localization of microRNAs in Perinatal Rat Pancreas: Role of miR-21 in Regulation of Cholesterol Metabolism. PLoS One. 2011. 6: e25997. PMID: 22022489
Source: Rat pancreas
Targets: miR-21, miR-23a, miR-29a, miR-125b-5p, miR-141, miR-376a, miR-376b-3p, miR-451

Nielsen *et al.* High levels of microRNA-21 in the stroma of colorectal cancers predict short disease-free survival in stage II colon cancer patients. Clin Exp Metastasis. 2011, 28:27-38. PMID: 21069438.
Source: Human colorectal cancer tissue
Target: miR-21

Park *et al.* miR-221 silencing blocks hepatocellular carcinoma and promotes survival. Cancer Res. 2011. 71:7606-16 PMID: 22009537
Source: Mouse liver
Targets: miR-221 (CISH)

Song *et al.* MicroRNA-148b suppresses cell growth by targeting cholecystokinin-2 receptor in colorectal cancer. Int. J. Cancer. 2011. 31:1042-51. PMID: 22020560
Source: Paraffin human colorectal cancer tissue
Targets: miR-148b

Wach *et al.* MicroRNA profiles of prostate carcinoma detected by multiplatform microRNA screening. Int. J. Cancer. 2011. 30:611-21. PMID: 21400514
Source: Human prostate
Targets: miR-143, miR-145, miR-375

Ryu *et al.* Aberrant MicroRNA-155 expression is an early event in the multistep progression of pancreatic adenocarcinoma. Pancreatology. 2010;10:66-73. PMID: 20332664
Source: Human pancreas
Targets: miR-155

Cittelly *et al.* Downregulation of miR-342 is associated with tamoxifen resistant breast tumors. Mol Cancer. 2010 Dec 20;9:317. PMID: 21172025.
Source: Human breast tumors
Target: miR-342

Yelamanchili *et al.* MicroRNA-21 dysregulates the expression of MEF2C in neurons in monkey and human SIV/HIV neurological disease. Cell Death Dis. 2010;1:e77. PMID: 21170291.
Source: Human and monkey (rhesus macaques) brain
Targets: miR-21

Voortman *et al.* MicroRNA expression and clinical outcomes in patients treated with adjuvant chemotherapy after complete resection of non-small cell lung carcinoma. Cancer Res. 2010, 70:8288-98. PMID: 20978195
Source: Human lung (NSCLC)
Targets: miR-21, miR-34a, miR-155, let-7a

Wu *et al.* MiR-339-5p inhibits breast cancer cell migration and invasion in vitro and may be a potential biomarker for breast cancer prognosis. BMC Cancer 2010, 10: 542. PMID: 20932331
Source: Human breast tissue
Targets: miR-339-5p

Nuovo. In situ detection of microRNAs in paraffin embedded, formalin fixed tissues and the co-localization of their putative targets. Methods. 2010, 52:307-15. PMID: 20723602
Source: FFPE general
Targets: general

Balaguer *et al.* Epigenetic silencing of miR-137 is an early event in colorectal carcinogenesis. Cancer Res. 2010, 70:6609-18. PMID: 20682795
Source: Human colon and CRC
Target: miR-137

Bandres *et al.* MicroRNA-451 regulates macrophage migration inhibitory factor production and proliferation of gastrointestinal cancer cells. Clin. Cancer Res. 2009, 15: 2281-90. PMID: 19318487
Source: Human gastric mucous glands
Targets: miR-451

Foshay & Gallicano. miR-17 family miRNAs are expressed during early mammalian development and regulate stem cell differentiation. Dev. Biol. 2009, 326: 431-43. PMID: 19073166
Source: Paraformaldehyde fixed mouse blastocysts. Immunostaining.
Targets: miR-17-5p, miR-20a, miR-93 and miR-106

Hiyoshi *et al.* MicroRNA-21 regulates the proliferation and invasion in esophageal squamous cell carcinoma. Clin. Cancer Res. 2009, 15: 1915-22. PMID: 19276261
Source: Human esophageal tissue
Targets: miR-21

Liu *et al.* Uncovering growth-suppressive MicroRNAs in lung cancer. Clin. Cancer Res. 2009, 15: 1177-83. PMID: 19228723
Source: Mouse FFPE lung sections.
Targets: miR-21, miR-34c, miR-145

Nuovo *et al.* A methodology for the combined in situ analyses of the precursor and mature forms of microRNAs and correlation with their putative targets. Nat Protoc. 2009, 4: 107-15. PMID: 19131963
Source: FFPE samples

Pena *et al.* miRNA in situ hybridization in formaldehyde and EDC-fixed tissues. Nat. Methods. 2009, 6: 139-41. PMID: 19137005
Source: Formaldehyde and EDC-fixed tissues

Robertus *et al.* Specific expression of miR-17-5p and miR-127 in testicular and central nervous system diffuse large B-cell lymphoma. Mod. Pathol. 2009, 22: 547-55. PMID: 19287466
Source: Human B-cell lymphoma
Targets: miR-17-5p, miR-127-3p

Yamamichi *et al.* Locked nucleic acid in situ hybridization analysis of miR-21 expression during colorectal cancer development. Clin. Cancer Res. 2009, 15: 4009-16. PMID: 19509156
Source: human colorectal tissue
Targets: miR-21

Zhao *et al.* Identification of miRNAs associated with tumorigenesis of retinoblastoma by miRNA microarray analysis. Childs. Nerv. Syst. 2009, 25: 13-20. PMID: 18818933
Source: FFPE human retinal tissue sections
Targets: miR-9, miR-21, miR-124a, miR-125b, miR-26a, miR-320

Kong *et al.* MicroRNA-155 is regulated by the transforming growth factor beta/Smad pathway and contributes to epithelial cell plasticity by targeting RhoA. Mol. Cell Biol. 2008, 28: 6773-84. PMID: 18794355
Source: FFPE human breast tissue sections
Targets: miR-155

Monzo *et al.* Overlapping expression of microRNAs in human embryonic colon and colorectal cancer. Cell Res. 2008, 18: 823-33. PMID: 18607389
Source: FFPE human colon tissue sections
Targets: miR-17-5p

Navarro *et al.* MicroRNA expression profiling in classic Hodgkin lymphoma. Blood 2008, 111: 2825-32. PMID: 18089852
Source: FFPE human lymph node tissue
Targets: miR-21, miR-134, miR-138, miR-155

Nuovo. In situ detection of precursor and mature microRNAs in paraffin embedded, formalin fixed tissues and cell preparations. Methods. 2008, 44: 39-46. PMID: 18158131
Source: FFPE tissues and cells

Yang *et al.* MicroRNA expression profiling in human ovarian cancer: miR-214 induces cell survival and cisplatin resistance by targeting PTEN. Cancer Res. 2008, 68: 425-33. PMID: 18199536
Source: FFPE human ovarian tissue sections
Targets: miR-214

Zhao *et al.* MicroRNA-221/222 negatively regulates estrogen receptor alpha and is associated with tamoxifen resistance in breast cancer. J. Biol. Chem. 2008, 283: 31079-86. PMID: 18790736
Source: FFPE human breast tissue sections
Targets: miR-221, miR-222

Sempere *et al.* Altered MicroRNA expression confined to specific epithelial cell subpopulations in breast cancer. Cancer Res. 2007, 67: 11612-20. PMID: 18089790
Source: FFPE human breast tissue
Targets: let7-a, miR-21, miR-141, miR-145, miR-205, miR-214

Shi *et al.* An androgen-regulated miRNA suppresses Bak1 expression and induces androgen-independent growth of prostate cancer cells. Proc. Natl. Acad. Sci. USA 2007, 104: 19983-8. PMID: 18056640
Source: Human prostatic cell lines: Cds1, LNCaP, pRNS-1-1-ARWT / Human FFPE CaP tissue
Targets: miR-125b

Nelson *et al.* RAKE and LNA-ISH reveal microRNA expression and localization in archival human brain. RNA 2006, 12: 187-91. PMID: 16373485
Source: FFPE human brain tissue
Targets: miR-9, miR-122a, miR-124a, miR-125b

Selected publications — cryosections

Plummer *et al.* MicroRNAs regulate tumor angiogenesis modulated by endothelial progenitor cells. Cancer Res. 2013. 73: 341-52. PMID: 22836757
Source: Mouse breast tumor model
Targets: miR-10b, 196b

Medrano *et al.* Two microRNAs, miR-330 and miR-125b-5p, mark the juxtaglomerular cell and balance its smooth muscle phenotype. Am J Physiol Renal Physiol. 2012. 302:29-37. PMID: 21993888
Source: Mouse kidney tissue
Targets: miR-330; miR-125b-5p

Cao *et al.* miR-129-3p controls cilia assembly by regulating CP110 and actin dynamics. Nat Cell Biol. 2012. 14:697-706. PMID: 22684256
Source: Zebrafish and mouse tissues
Targets: miR-129-3p

Zhang *et al.* MiR-155 is a liposarcoma oncogene that targets casein kinase-1α and enhances β-catenin signaling. Cancer Res. 2012. 72:1751-62. PMID: 22350414
Source: Human adipose tissue
Targets: miR-155

Thomas *et al.* MicroRNA changes in rat mesentery and serum associated with drug-induced vascular injury. Toxicol Appl Pharmacol. 2012. 262:310-20. PMID: 22627061
Source: Rat vascular vessels
Target: miR-134

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Yu ***et al.*** miR-182 inhibits Schwann cell proliferation and migration by targeting FGF9 and NTM, respectively at an early stage following sciatic nerve injury. Nucleic Acids Res. 2012. 40:10356-65. PMID: 22917588
Source: Rat sciatic nerves
Targets: miR-182

Bao ***et al.*** microRNA-449 and microRNA-34b/c function redundantly in murine testes by targeting E2F transcription factor-retinoblastoma protein (E2F-pRb) pathway. J Biol Chem. 2012. 287: 21689-98 PMID: 22570483
Source: Mouse testis
Targets: miR-449a, miR-34a

Li ***et al.*** A microRNA, mir133b, suppresses melanopsin expression mediated by failure dopaminergic amacrine cells in RCS rats. Cell Signal. 2012. 24: 685-98. PMID: 22101014
Source: Rat retina
Targets: miR-133b

Malmevik ***et al.*** Identification of the miRNA targetome in hippocampal neurons using RIP-seq. Sci Rep. 2015. 5:12609. PMID: 26219083
Source: Mouse brain
Targets: miR-124 and miR-125

Ahmed ***et al.*** MicroRNA-21 is an important downstream component of BMP signalling in epidermal keratinocytes. J. Cell Sci. 2011. 124: 3399-404. PMID: 21984808
Source: Human skin
Targets: miR-21

Kuwabara ***et al.*** Increased microRNA-1 and microRNA-133a levels in serum of patients with cardiovascular disease indicate myocardial damage. Circ. Cardiovasc. Genet. 2011. 4: 446-54. PMID: 21642241
Source: Mouse hearts
Targets: miR-133a

Noorbakhsh ***et al.*** Impaired neurosteroid synthesis in multiple sclerosis. Brain. 2011. 134: 2703-21. PMID: 21908875
Source: Human white matter blocks
Targets: miR-338, miR-159, U6snRNA

Schneider ***et al.*** Cell-specific detection of microRNA expression during cardiomyogenesis by combined in situ hybridization and immunohistochemistry. J. Mol. Histol. 2011. 42: 289-99. PMID: 21643937
Source: Mouse hearts and embryoid bodies
Targets: miR-1, miR-30b, miR-106b, miR-125b, miR-127, miR-193, miR-199a

Song ***et al.*** In situ hybridization detection of microRNAs. Methods Mol Biol. 2010;629: 287-94. PMID: 20387156
Source: Mouse testis
Target: miR-92a-3p

Karali ***et al.*** miRNeye: a microRNA expression atlas of the mouse eye. BMC Genomics. 2010, 11: 715. PMID: 21171988.
Source: Mouse eye (embryonic, postnatal and adult)
Targets: Over 220 miRs (see http://mirneye.tigem.it.)

Correa-Medina ***et al.*** MicroRNA miR-7 is preferentially expressed in endocrine cells of the developing and adult human pancreas. Gene Expr. Patterns 2009, 9: 193-9. PMID: 19135553
Source: Human (adult and fetal) pancreatic tissue sections.
Targets: miR-7, sense miR-159 (control)

Dharap *et al.* Transient focal ischemia induces extensive temporal changes in rat cerebral MicroRNAome. J. Cereb. Blood Flow Metab. 2009, 29: 675-87. PMID: 19142192
Source: Rat brain sections
Targets: miR-137, miR-145

Duisters *et al.* miR-133 and miR-30 regulate connective tissue growth factor: implications for a role of microRNAs in myocardial matrix remodeling. Circ. Res. 2009, 104: 170-8. PMID: 19096030
Source: Frozen sections from normal rat heart
Targets: miR-133

Dyrskjøt *et al.* Genomic profiling of microRNAs in bladder cancer: miR-129 is associated with poor outcome and promotes cell death in vitro. Cancer Res. 2009, 69: 4851-60. PMID: 19487295
Source: Frozen human bladder tissue sections
Targets: miR-21, miR-145, miR-129

Friedman *et al.* MicroRNAs are essential for development and function of inner ear hair cells in vertebrates. Proc. Natl. Acad. Sci. USA 2009, 106: 7915-20. PMID: 19416898
Source: Mouse and zebrafish inner ear
Targets: Mouse: miR-15a, miR-18a, miR-30b, miR-99a, miR-199a, zebrafish: miR-15a, miR-18a

Huse *et al.* The PTEN-regulating microRNA miR-26a is amplified in high-grade glioma and facilitates gliomagenesis in vivo. Genes Dev. 2009, 23: 1327-37. PMID: 19487573
Source: Frozen mouse brain sections
Targets: miR-26a

Lian *et al.* Altered microRNA expression in patients with non-obstructive azoospermia. Reprod. Biol. Endocrinol. 2009, 7: 13. PMID: 19210773
Source: Frozen sections of human testis
Targets: miR-383

Liu *et al.* A Necessary Role of miR-221 and miR-222 in Vascular Smooth Muscle Cell Proliferation and Neointimal Hyperplasia. Circ. Res. 2009, 104: 476-87. PMID: 19150885
Source: Frozen rat vessel (carotid arteries) sections
Targets: miR-221, miR-222

Segura *et al.* Aberrant miR-182 expression promotes melanoma metastasis by repressing FOXO3 and microphthalmia-associated transcription factor. Proc. Natl. Acad. Sci. USA 2009, 106: 1814-9. PMID: 19188590
Source: Human skin sections (tissue microarray slides)
Targets: miR-182

Siegel *et al.* A functional screen implicates microRNA-138-dependent regulation of the depalmitoylation enzyme APT1 in dendritic spine morphogenesis. Nat. Cell Biol. 2009, 11: 705-16. PMID: 19465924
Source: Frozen mouse brain sections
Targets: miR-9, miR-138, miR-218

Silahtaroglu *et al.* Detection of microRNAs in frozen tissue sections by fluorescence in situ hybridization using locked nucleic acid probes and tyramide signal amplification. Nat. Protoc. 2007, 2: 2520-8. PMID: 17947994
Source: Animal tissue cryosections, human tumor biopsies

Song *et al.* Many X-linked microRNAs escape meiotic sex chromosome inactivation. Nat. Genet. 2009, 41: 488-93. PMID: 19305411
Source: Mouse testis
Targets: miR-883-3p, miR-833-5p, miR-718

Choi *et al.* Members of the miRNA-200 family regulate olfactory neurogenesis. Neuron 2008, 57: 41-55. PMID: 18184563
Source: Mouse main olfactory epithelium (MOE) tissue sections / Whole mount zebrafish
Targets: miR-34b, c, miR-96, miR-125b, miR-139, miR-140*, miR-141, miR-182, miR-183, miR-191, miR-199a, a*, miR-199b, miR-200a, b, miR-205, miR-429, miR-449 / miR-200 family members

Elmén *et al.* LNA-mediated microRNA silencing in non-human primates. Nature 2008, 452: 896-9. PMID: 18368051
Source: Frozen liver sections from African green monkeys
Targets: miR-122

Hébert *et al.* Loss of microRNA cluster miR-29a/b-1 in sporadic Alzheimer's disease correlates with increased BACE1/beta-secretase expression. Proc. Natl. Acad. Sci. USA 2008, 105: 6415-20. PMID: 18434550
Source: Frozen mouse brain sections
Targets: miR-29a, b-1

Yi *et al.* A skin microRNA promotes differentiation by repressing 'stemness'. Nature 2008, 452 :225-9. PMID: 18311128
Source: Mouse (K14-miR-203) skin sections
Targets: miR-203

Chakrabarty *et al.* MicroRNA regulation of cyclooxygenase-2 during embryo implantation. Proc. Natl. Acad. Sci. USA 2007, 104: 15144-9. PMID: 17848513
Source: Frozen mouse uterine sections
Targets: miR-101a, miR-199a*

Christoffersen *et al.* miR-200b mediates post-transcriptional repression of ZFHX1B. RNA 2007, 13: 1172-8. PMID: 17585049
Source: Frozen tissue sections from adult mouse brain
Targets: miR-200b

Obernosterer *et al.* Locked nucleic acid-based in situ detection of microRNAs in mouse tissue sections. Nat. Protoc. 2007, 2: 1508-14. PMID: 17571058
Source: Mouse tissue sections

Wulczyn *et al.* Post-transcriptional regulation of the let-7 microRNA during neural cell specification. FASEB J. 2007, 21: 415-26. PMID: 17167072
Source: Whole mount mouse embryos. Sections of third ventricles, cortex, striatum and midbrain, anterior spinal cord and dorsal root ganglia, jaw primordia and tongue, left ventricle, lung and pleural cavity, liver, stomach, and hind limb
Targets: miR-1, miR-124, miR-125, miR-128, miR-140, let-7

Selected publications — multiplex

Hanna *et al.* Quantitative analysis of microRNAs in tissue microarrays by in situ hybridization. Biotechniques. 2012. 52: 235-45. PMID: 22482439
Source: Human breast cancer tissue, breast cancer cell lines, and mouse k.o.
Targets: miR-21, miR-92a, miR-34a, miR-221

Toledano *et al.* Dual fluorescence detection of protein and RNA in Drosophila tissues. Nat Protoc. 2012. 7:1808-17. **PMID: 22976352**
Source: Drosophila tissues
Targets: miR-let-7

Jones *et al.* miRNA signatures associate with pathogenesis and progression of osteosarcoma. Cancer Res. 2012. 72:1865-77. PMID: 22350417
Source: Human osteosarcoma tissue
Targets: miR-181b, miR-29b

Li *et al.* A microRNA, mir133b, suppresses melanopsin expression mediated by failure dopaminergic amacrine cells in RCS rats. Cell Signal. 2012. 24:685-98. PMID: 22101014
Source: Rat retina
Targets: miR-133b

Dajas-Bailador *et al.* microRNA-9 regulates axon extension and branching by targeting Map1b in mouse cortical neurons. Nat Neurosci. 2012. 15:697-9 PMID: 22484572
Source: Mouse neurons
Targets: miR-9, miR-1

Selected publications — automation

Zhang *et al.* MiR-155 is a liposarcoma oncogene that targets casein kinase-1α and enhances β-catenin signaling. Cancer Res. 2012. 72:1751-62. PMID: 22350414
Source: Human adipose tissue
Targets: miR-155

Thomas *et al.* MicroRNA changes in rat mesentery and serum associated with drug-induced vascular injury. Toxicol Appl Pharmacol. 2012. 262:310-20. PMID: 22627061
Source: Rat vascular vessels
Target: miR-134

Selected publications — cells

Hanna *et al.* Quantitative analysis of microRNAs in tissue microarrays by in situ hybridization. Biotechniques. 2012. 52: 235-45. PMID: 22482439
Source: Human breast cancer tissue, breast cancer cell lines, and mouse k.o.
Targets: miR-21, miR-92a, miR-34a, miR-221

Cardoso *et al.* miR-155 modulates microglia-mediated immune response by down-regulating SOCS-1 and promoting cytokine and nitric oxide production. Immunology. 2012. 135: 73-88. PMID: 22043967
Source: Mouse primary microglia
Targets: miR-155

Majid *et al.* miR-23b represses proto-oncogene Src kinase and functions as methylation-silenced tumor suppressor with diagnostic and prognostic significance in prostate cancer. Cancer Res. 2012. 72:6434-46. PMID: 23074286
Source: Human prostate cancer tissue and cells
Targets: miR-23b

Dajas-Bailador *et al.* microRNA-9 regulates axon extension and branching by targeting Map1b in mouse cortical neurons. Nat Neurosci. 2012. 15:697-9 PMID: 22484572
Source: Mouse neurons
Targets: miR-9, miR-1

Schneider *et al.* Cell-specific detection of microRNA expression during cardiomyogenesis by combined in situ hybridization and immunohistochemistry. J. Mol. Histol. 2011. 42: 289-99. PMID: 21643937
Source: Mouse hearts and embryoid bodies
Targets: miR-1, miR-30b, miR-106b, miR-125b, miR-127, miR-193, miR-199a

Barrey *et al.* Pre-miRNA and Mature microRNA in Human Mitochondria. PLoS One. 2011. 6: e20220. PMID: 21637849
Source: Human skeletal muscle myoblast
Targets: miR-let-7b, miR-365, pre-miR-let-7b, pre-miR-302a (FISH)

Ugras *et al.* Small RNA sequencing and functional characterization reveals MicroRNA-143 tumor suppressor activity in liposarcoma. Cancer Res. 2011. 71: 5659-69. PMID: 21693658
Source: Liposarcoma cells (DDLS & ASC)
Targets: miR-143, miR-124

Collino *et al.* Microvesicles derived from adult human bone marrow and tissue specific mesenchymal stem cells shuttle selected pattern of miRNAs. PLoS One. 2010, 5:e11803. PMID: 20668554
Source: Human stem cells (MSCs and HLSCs) and microvesicles
Target: miR-24

Debernardi and Dixon-McIver. MicroRNA detection in bone marrow cells by LNA-FISH. Methods Mol Biol. 2010. 667: 33-45. PMID: 20827525
Source: Human bone marrow cells (AML)
Targets: miR-127, miR-154

Katakowski *et al.* Functional microRNA is transferred between glioma cells. Cancer Res. 2010, 70:8259-63. PMID: 20841486
Source: Rat 9L gliosarcoma cells
Target: cel-miR-67, miR-21

Fiore *et al.* Mef2-mediated transcription of the miR379-410 cluster regulates activity-dependent dendritogenesis by fine-tuning Pumilio2 protein levels. EMBO J. 2009, 28: 697-710. PMID: 19197241
Source: Rat brain (hippocampal neuron) cells
Targets: miR-134

Kocerha *et al.* MicroRNA-219 modulates NMDA receptor-mediated neurobehavioral dysfunction. Proc. Natl. Acad. Sci. USA 2009, 106: 3507-12. PMID: 19196972
Source: Fixed P19 (mouse embryonic carcinoma) cells.
Targets: miR-219

Nathans *et al.* Cellular microRNA and P bodies modulate host-HIV-1 interactions. Mol. Cell 2009, 34: 696-709. PMID: 19560422
Source: 293T cells
Targets: miR-18a, HIV-1 nef RNA

Xu *et al.* MicroRNA-145 regulates OCT4, SOX2, and KLF4 and represses pluripotency in human embryonic stem cells. Cell 2009, 137: 647-58. PMID: 19409607
Source: Human embryonic stem (hESC) cells
targets: miR-145

Dixon-McIver *et al.* Distinctive patterns of microRNA expression associated with karyotype in acute myeloid leukaemia. PLoS ONE 2008, 3: e2141. PMID: 18478077
Source: Cryopreserved human bone marrow cells
Targets: miR-127, miR-154

Nuovo. In situ detection of precursor and mature microRNAs in paraffin embedded, formalin fixed tissues and cell preparations. Methods. 2008, 44: 39-46. PMID: 18158131
Source: FFPE tissues and cells

Rybak *et al.* A feedback loop comprising lin-28 and let-7 controls pre-let-7 maturation during neural stem-cell commitment. Nat. Cell Biol. 2008, 10: 987-93. PMID: 18604195
Source: p19 EC (embryonic carcinoma) cells
Targets: let-7a, pre-let-7a

Shi *et al.* An androgen-regulated miRNA suppresses Bak1 expression and induces androgen-independent growth of prostate cancer cells. Proc. Natl. Acad. Sci. USA 2007, 104: 19983-8. PMID: 18056640
Source: Human prostatic cell lines: Cds1, LNCaP, pRNS-1-1-ARWT / Human FFPE CaP tissue
Targets: miR-125b

Politz *et al.* MicroRNA-206 colocalizes with ribosome-rich regions in both the nucleolus and cytoplasm of rat myogenic cells. Proc. Natl. Acad. Sci. USA 2006, 103: 18957-62. PMID: 17135348
Source: L6 rat myogenic cells
Targets: let-7a, miR-206, pre-miR-206

Schratt *et al.* A brain-specific microRNA regulates dendritic spine development. Nature 2006, 439: 283-9. PMID: 16421561
Source: Rat hippocampal neuron cells
Targets: miR-134

Selected publications — whole mount

Toledano *et al.* Dual fluorescence detection of protein and RNA in Drosophila tissues. Nat Protoc. 2012. 7:1808-17. **PMID: 22976352**
Source: Drosophila tissues
Targets: miR-let-7

Rebustini *et al.* miR-200c regulates FGFR-dependent epithelial proliferation via Vldlr during submandibular gland branching morphogenesis. Development. 2012. 139:191-202 PMID: 22115756
Source: Mouse submandular glands
Targets: miR-159 + miR-200c (FISH & CISH)

Sweetman. In situ detection of microRNAs in animals. Methods Mol. Biol. 2011. 732: 1-8. PMID: 21431701
Source: Mouse-, Chicken-, Zebrafish-, Xenopus embryos
Targets: general

Hinits *et al.* Defective cranial skeletal development, larval lethality and haploinsufficiency in Myod mutant zebrafish. Dev. Bio. 2011. 358: 102-12. PMID: 21798255
Source: Zebrafish
Targets: miR-206

Goljanek-Whysall *et al.* MicroRNA regulation of the paired-box transcription factor Pax3 confers robustness to developmental timing of myogenesis. Proc. Natl. Acad. Sci. U S A. 2011. 108: 11936-46. PMID: 21730146
Source: Mouse skeletal muscle
Targets: miR-1, miR-206

Daubas *et al.* The regulatory mechanisms that underlie inappropriate transcription of the myogenic determination gene Myf5 in the central nervous system. Dev. Biol. 2009, 327: 71-82. PMID: 18593903
Source: Mouse embryos
Targets: miR-31

Du *et al.* Experimental validation and complexity of miRNA-mRNA target interaction during zebrafish primitive erythropoiesis. Biochem. Biophys. Res. Commun. 2009, 381: 688-93. PMID: 19254693
Source: Whole mount zebrafish
Targets: miR-451

Flynt *et al.* miR-8 microRNAs regulate the response to osmotic stress in zebrafish embryos. J. Cell Biol. 2009, 185: 115-27. PMID: 19332888
Source: Whole mount zebrafish embryos
Targets: miR-200b

Fu *et al.* Mir-144 selectively regulates embryonic alpha-hemoglobin synthesis during primitive erythropoiesis. Blood 2009, 113: 1340-9. PMID: 18941117
Source: Whole mount zebrafish
Targets: miR-144

Kloosterman *et al.* In situ detection of miRNAs in animal embryos using LNA-modified oligonucleotide probes. Nat. Methods 2006, 3: 27-9. PMID: 16369549
Le *et al.* MicroRNA-125b is a novel negative regulator of p53. Genes Dev. 2009, 23: 862-76. PMID: 19293287
Source: Zebrafish embryos
Targets: miR-125b (double DIG labeled probes)

Lee *et al.* Twist-1 regulates the miR-199a/214 cluster during development. Nucleic Acids Res. 2009, 37: 123-8. PMID: 19029138
Source: Whole mount mouse embryos
Targets: miR-199a-5p, miR-199a-3p, miR-214

Pase *et al.* miR-451 regulates zebrafish erythroid maturation in vivo via its target gata2. Blood 2009, 113: 1794-804. PMID: 18849488
Source: Whole mount zebrafish embryos and adult tissues
Targets: miR-144, miR-451, miR-206

Qiu *et al.* Misexpression of miR-196a induces eye anomaly in Xenopus laevis. Brain Res. Bull. 2009, 79: 26-31. PMID: 19146930
Source: Whole mount Xenopus embryo
Targets: miR-196a

Redshaw *et al.* microRNA-449 is a putative regulator of choroid plexus development and function. Brain Res. 2009, 1250: 20-6. PMID: 19056356
Source: Whole mount and mouse embryo sections
Targets: miR-449 (double DIG labeled probes)

Rosa *et al.* The miR-430/427/302 family controls mesendodermal fate specification via species-specific target selection. Dev. Cell 2009, 16: 517-27. PMID: 19386261
Source: Whole-mount Xenopus embryos
Target: miR-427

Roy *et al.* MicroRNA expression in response to murine myocardial infarction: miR-21 regulates fibroblast metalloprotease-2 via phosphatase and tensin homologue. Cardiovasc. Res. 2009, 82: 21-9. PMID: 19147652
Source: Mouse heart FFPE sections
Targets: miR-21

Shkumatava *et al.* Coherent but overlapping expression of microRNAs and their targets during vertebrate development. Genes Dev. 2009, 23: 466-81. PMID: 19240133
Source: Whole mount zebrafish embryos
Targets: mir-124, mir-206

Soukup *et al.* Residual microRNA expression dictates the extent of inner ear development in conditional Dicer knockout mice. Dev. Biol. 2009, 328: 328-41. PMID: 19389351
Source: Whole mount mouse embryos
Targets: miR-124, miR-183

Eberhart *et al.* MicroRNA Mirn140 modulates Pdgf signaling during palatogenesis. Nat Genet. 2008, 40: 290-8. PMID: 18264099
Source: Whole mount and frozen sections of zebrafish embryos
Targets: miR-140

Leucht *et al.* MicroRNA-9 directs late organizer activity of the midbrain-hindbrain boundary. Nat. Neurosci. 2008, 11: 641-8. PMID: 18454145
Source: Whole mount zebrafish embryos and sections
Targets: miR-9

Morton *et al.* microRNA-138 modulates cardiac patterning during embryonic development. Proc. Natl. Acad. Sci. USA 2008, 105: 17830-5. PMID: 19004786
Source: Whole mount zebrafish embryos
Targets: miR-138

Sweetman *et al.* Specific requirements of MRFs for the expression of muscle specific microRNAs, miR-1, miR-206 and miR-133. Dev. Biol. 2008, 321: 491-9. PMID: 18619954
Source: Whole mount chicken embryos
Targets: miR-1, miR-133, miR-206 (double DIG labeled probes)

Woltering & Durston. MiR-10 represses HoxB1a and HoxB3a in zebrafish. PLoS ONE 2008, 3: e1396. PMID: 18167555
Source: Whole mount zebrafish embryos
Targets: miR-10a, b, c, d

Kapsimali *et al.* MicroRNAs show a wide diversity of expression profiles in the developing and mature central nervous system. Genome Biol. 2007, 8: R173. PMID: 17711588
Source: Larval and adult zebrafish brain and retinal sections
Targets: let-7b, miR-9, miR-34, miR-92b, miR-96, miR-124, miR-125b, miR-132, miR-137, miR-138, miR-153a, miR-181a, b, miR-182, miR-183, miR-218a, miR-219, miR-222, miR-454a

Wulczyn *et al.* Post-transcriptional regulation of the let-7 microRNA during neural cell specification. FASEB J. 2007, 21: 415-26. PMID: 17167072
Source: Whole mount mouse embryos. Sections of third ventricles, cortex, striatum and midbrain, anterior spinal cord and dorsal root ganglia, jaw primordia and tongue, left ventricle, lung and pleural cavity, liver, stomach, and hind limb
Targets: miR-1, miR-124, miR-125, miR-128, miR-140, let-7

Kloosterman *et al.* Cloning and expression of new microRNAs from zebrafish. Nucleic Acids Res. 2006, 34: 2558- 69. PMID: 16698962
Source: Whole mount zebrafish embryos and sections
Targets: miR-34c-5p, miR-92b, miR-135, miR-429, miR-451, miR-454a, miR-455, miR-459, miR-499, miR-733, miR-735-3p

Sweetman *et al.* FGF-4 signaling is involved in mir-206 expression in developing somites of chicken embryos. Dev. Dyn. 2006, 235: 2185-91. PMID: 16804893
Source: Whole mount chicken, mouse and Xenopus embryos
Targets: miR-124, miR-206

Ason *et al.* Differences in vertebrate microRNA expression. Proc. Natl. Acad. Sci. USA 2006, 103: 14385-9. PMID: 16983084
Source: Whole mount chicken, mouse, medaka, zebrafish
Targets: miR-1, miR-125b (all org.); let-7a, miR-107, miR-146, miR-199a (chick. & med.); miR-145, miR-205, miR-454a (zeb. & med.); miR-7, miR-34a, miR-140, miR-200b, miR-206 (med.)

Darnell *et al.* MicroRNA expression during chick embryo development. Dev. Dyn. 2006, 235: 3156-65. PMID: 17013880
Source: Whole mount chicken embryos
Targets: let-7a, b, k, miR-1, b, miR-9, miR-10b, miR-15a, miR-17-5p, miR-18b, miR-19a, miR-20a, b, miR-21, miR- 30a, e, miR-34a, miR-106, miR-124a, b, miR-125b, miR-126, miR-128, miR-130b, miR-133a, miR-135, miR-140, miR-144, miR-153, miR-183, miR-184, miR-187, miR-199a, miR-200b, miR-204, miR-205a, b, miR-206, miR-218, miR-219, miR-222b, miR-307, miR-363, miR-367, miR-375, miR-449

Sokol & Ambros. Mesodermally expressed Drosophila microRNA-1 is regulated by Twist and is required in muscles during larval growth. Genes Dev. 2005, 19: 2343-54. PMID: 16166373
Source: Whole mount Drosophila embryos
Targets: miR-1

Wienholds *et al.* MicroRNA expression in zebrafish embryonic development. Science 2005, 309: 310-1. PMID: 15919954
Source: Whole mount zebrafish
Targets: miR-7, miR-30c, miR-122, miR-124a, miR-126, miR-140, miR-200a, miR-206, miR-217

Selected publications — plants

Wong et al. MicroRNAs in the shoot apical meristem of soybean. J Exp Bot. 2011, 62:2495-506. PMID: 21504877
Source: soybean shoot apices
Target: miR166a/b, miR166a/b*, miR159, miR4422a

Douglas *et al.* ragged seedling2 Encodes an ARGONAUTE7-like protein required for mediolateral expansion, but not dorsiventrality, of maize leaves. Plant Cell. 2010, 22:1441-51. PMID: 20453116
Source: Zea Mays (seedling sections)
Targets: miR166, miR390

Havelda. In situ detection of miRNAs using LNA probes. Methods Mol Biol. 2010;592:127-36. PMID: 19802593

Rodriguez *et al.* Control of cell proliferation in Arabidopsis thaliana by microRNA miR396. Development. 2010, 137(1):103-12. PMID: 20023165
Source: Arabidopsis (paraffin sections)
Target: miR396

Chitwood *et al.* Pattern formation via small RNA mobility. Genes Dev. 2009, 23: 549-54. PMID: 19270155
Source: Arabidopsis
Targets: miR-390, tasiR-ARFs (trans-acting siRNA)

Nogueira *et al.* Regulation of small RNA accumulation in the maize shoot apex. PLoS Genet. 2009, 5: e1000320. PMID: 19119413
Source: Tissue sections from maize shoot apices
Targets: miR-166, miR-390

Wang *et al.* Dual effects of miR156-targeted SPL genes and CYP78A5/KLUH on plastochron length and organ size in Arabidopsis thaliana. Plant Cell 2008, 20: 1231-43. PMID: 18492871
Source: Arabidopsis thaliana leaf sections
Targets: miR-156

Kutter *et al.* MicroRNA-mediated regulation of stomatal development in Arabidopsis. Plant J. 2007, 19: 2417-29. PMID: 17704216
Source: Whole mounts of leaves from Arabidopsis and Brassica rapa
Targets: miR-824, miR-824*

Sieber *et al.* Redundancy and specialization among plant microRNAs: role of the MIR164 family in developmental robustness. Development 2007, 134: 1051-60. PMID: 17287247
Source: Tissue sections of Arabidopsis inflorescences
Targets: miR-164

Válóczi *et al.* Spatio-temporal accumulation of microRNAs is highly coordinated in developing plant tissues. Plant J. 2006, 47: 140-51. PMID: 16824182
Source: FFPE Nicotiana benthamiana and Arabidopsis thaliana sections
Targets: miR-156a, miR-159a, miR-160, miR-164a, miR-167a, miR-171a, miR-319a