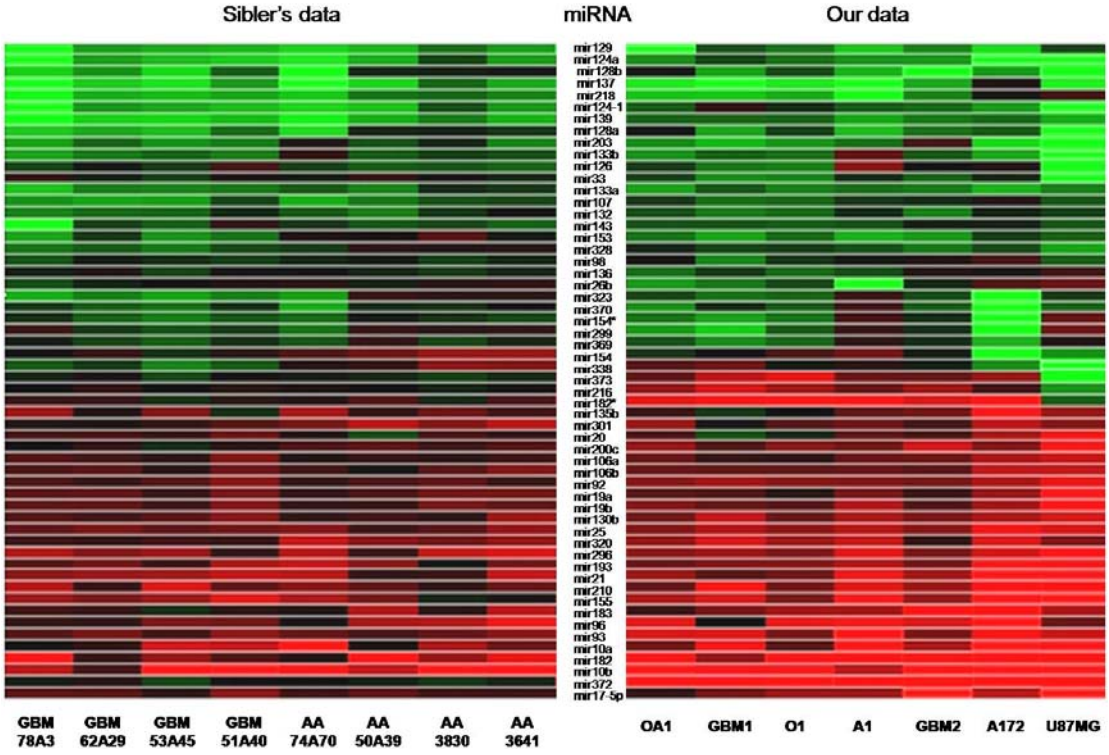
Supplementary Figure S1: The results obtained from the analysis of the raw data of the current study and those of the Silber et al [7] publication.

A heat map displays the expression of 56 out of the 71 miRNAs that showed a distinct expression in gliomas, ESCs and NPCs when compared with normal adult brains.

The heat map was generated using Spotfire software (Spotfire Inc., MA, USA). Colour intensities represent log_2-fold changes of gliomas, relative to normal brain.



Supp Table 2: Summary of the genetic aberrations on chromosome 14q commonly found in different types of cancers.

References	Chromosome aberrations	Human cancer
Brownlee NA[1]	del(14)(q24.1q31.1)	Clear cell sarcoma of the kidney
Simon M[2], Lusis EA[3], Perry A [4], Al-Mefty O[5], Perry A [6], Leone PE [7], Tse JY[8], Simon M [9].	losses on chromosome 14q	Meningiomas
Dinjens WN[10], Yanagi M [11], Orita H[12], Dai YC[13], Cazals-Hatem D [14], Chen Y[15], Fukasawa T[16], Breiner JA[17], El-Rifai W[18], El-Rifai W[19], el-Rifai W[20], Diep CB[21],Thorstensen L[22], Shao L[23], Ookawa K[24], Ookawa K[24], Kang YK[25], Bando T[26] ,Yokota J[27].	7.1-mega base pairs minimal deletion at 14q31.1-32.11, LOH 14q, deletion 14q32, losses on chromosome 14q, allelic imbalance (AI) 14q	Colon and lower gastrointestinal tract cancer
Strefford JC[28], Gallou C[29], Béroud C[30], Thrash-Bingham CA(I)[31], Thrash-Bingham CA(II)[32], Bulashevska S[33], Peres EM [34], Tzai TS[35], Nakayama K[36], Phillips JL[37], Schwerdtle RF[38],	LOH 14q, losses on chromosome 14q	Kidney and bladder cancer

Herbers J[39], Tsai YC[40].		
Dichamp C[41], Ransom DT[42]. Hu J[43].	Loss of 14q chromosome and methylation deletion 14q13-31, 14q32.1, 14q11	Oligodendroglial and astrocytic tumours
Pang A[44], Piao Z[45] , Nagai H[46].	losses on chromosome 14q	Liver cancer
Cheng Y[47], Fang Y[48], Lo KW[49] Shao J [50], Yan J[51], Chen YJ[52], Mutirangura A[53], Mutirangura A[54], Wei F[55],Ihara Y[56], Hu N[57].	extensive and multiple regions of allelic loss occur on chromosome 14	Upper gastrointestinal tract cancer
Kwong FM[58].	LOH 14q	Non-small cell lung carcinoma
Pylkkänen L[59], De Rienzo A[60].	LOH 14q	Human malignant mesothelioma (MM)-(asbes)
Thompson PM[61], Hoshi M[62], ,Grosfeld JL[63], Theobald M[64], Takita J[65], Takayama H[66], Fong CT[67], Brodeur GM[68].	LOH 14q	Neuroblastoma
Mori N[69]	LOH 14q	Myelodysplastic

		syndrome (MDS)(blood stem cells)
Wong KF[70].	Inv(14q)	T-cell prolymphocytic leukaemia (T-PLL)
Döhner H[71], Dierlamm J[72].	Trisomy 12 and the "14q+" marker	B-cell chronic lymphocytic leukaemia (B-CLL)
Bandera CA[73], Cliby W[74].	LOH 14q	Ovarian carcinomas Primary epithelial ovarian tumours
Nawroz H[75]	LOH 14q	Head and neck squamous cell carcinoma

References:

.1 Brownlee NA, Perkins LA, Stewart W, et al. Recurring translocation (10;17) and deletion (14q) in clear cell sarcoma of the kidney. *Arch Pathol Lab Med.* Mar 2007;131(3):446-451.

.2 Simon M, Bostrom JP, Hartmann C. Molecular genetics of meningiomas: from basic research to potential clinical applications. *Neurosurgery.* May 2007;60(5):787-798; discussion 787-798.

.3 Lusis EA, Watson MA, Chicoine MR, et al. Integrative genomic analysis identifies NDRG2 as a candidate tumor suppressor gene frequently inactivated in clinically aggressive meningioma. *Cancer Res.* Aug 15 2005;65(16):7121-7126.

.4 Perry A, Gutmann DH, Reifenberger G. Molecular pathogenesis of meningiomas. *J Neurooncol.* Nov 2004;70(2):183-202.

.5 Al-Mefty O, Kadri PA, Pravdenkova S, Sawyer JR, Stangeby C, Husain M. Malignant progression in meningioma: documentation of a series and analysis of cytogenetic findings. *J Neurosurg.* Aug 2004;101(2):210-218.

.6 Perry A, Giannini C, Raghavan R, et al. Aggressive phenotypic and genotypic features in pediatric and NF2-associated meningiomas: a clinicopathologic study of 53 cases. *J Neuropathol Exp Neurol.* Oct 2001;60(10):994-1003.

.7 Leone PE, Bello MJ, de Campos JM, et al. NF2 gene mutations and allelic status of 1p, 14q and 22q in sporadic meningiomas. *Oncogene.* Apr 1 1999;18(13):2231-2239.

.8 Tse JY, Ng HK, Lau KM, Lo KW, Poon WS, Huang DP. Loss of heterozygosity of chromosome 14q in low- and high-grade meningiomas. *Hum Pathol.* Jul 1997;28(7):779-785.

.9 Simon M, von Deimling A, Larson JJ, et al. Allelic losses on chromosomes 14, 10, and 1 in atypical and malignant meningiomas: a genetic model of meningioma progression. *Cancer Res.* Oct 15 1995;55(20):4696-4701.

.10 Korpershoek E, Petri BJ, van Nederveen FH, et al. Candidate gene mutation analysis in bilateral adrenal pheochromocytoma and sympathetic paraganglioma. *Endocr Relat Cancer.* Jun 2007;14(2):453-462.

.11 Yanagi M, Keller G, Mueller J, et al. Comparison of loss of heterozygosity and microsatellite instability in adenocarcinomas of the distal esophagus and proximal stomach. *Virchows Arch.* Dec 2000;437(6):605-610.

.12 Orita H, Sakamoto N, Ajioka Y, et al. Allelic loss analysis of early-stage flat-type colorectal tumors. *Ann Oncol.* Jan 2006;17(1):43-49.

.13 Dai YC, Ho CL, Tsai YC, et al. Allelic loss of 14q32 in the pathogenesis of gastrointestinal and ampullary malignancies: mapping of the target region to a 17 cM interval. *J Cancer Res Clin Oncol.* Feb 2005;131(2):94-100.

.14 Cazals-Hatem D, Rebouissou S, Bioulac-Sage P, et al. Clinical and molecular analysis of combined hepatocellular-cholangiocarcinomas. *J Hepatol.* Aug 2004;41(2):292-298.

.15 Chen Y, Tzeng CC, Liou CP, Chang MY, Li CF, Lin CN. Biological significance of chromosomal imbalance aberrations in gastrointestinal stromal tumors. *J Biomed Sci.* Jan-Feb 2004;11(1):65-71.

.16 Fukasawa T, Chong JM, Sakurai S, et al. Allelic loss of 14q and 22q, NF2 mutation, and genetic instability occur independently of c-kit mutation in gastrointestinal stromal tumor. *Jpn J Cancer Res.* Dec 2000;91(12):1241-.1249

.17 Breiner JA, Meis-Kindblom J, Kindblom LG, et al. Loss of 14q and 22q in gastrointestinal stromal tumors (pacemaker cell tumors). *Cancer Genet Cytogenet.* Jul 15 2000;120(2):111-116.

.18 El-Rifai W, Sarlomo-Rikala M, Andersson LC, Miettinen M, Knuutila S. High-resolution deletion mapping of chromosome 14 in stromal tumors of the gastrointestinal tract suggests two distinct tumor suppressor loci. *Genes Chromosomes Cancer.* Apr 2000;27(4):387-391.

.19 El-Rifai W, Sarlomo-Rikala M, Andersson LC, Knuutila S, Miettinen M. DNA sequence copy number changes in gastrointestinal stromal tumors: tumor progression and prognostic significance. *Cancer Res.* Jul 15 2000;60(14):3899-3903.

.20 el-Rifai W, Sarlomo-Rikala M, Miettinen M, Knuutila S, Andersson LC. DNA copy number losses in chromosome 14: an early change in gastrointestinal stromal tumors. *Cancer Res.* Jul 15 1996;56(14):3230-3233.

.21 Diep CB, Thorstensen L, Meling GI, Skovlund E, Rognum TO, Lothe RA. Genetic tumor markers with prognostic impact in Dukes' stages B and C colorectal cancer patients. *J Clin Oncol.* Mar 1 2003;21(5):820-829.

.22 Thorstensen L, Qvist H, Nesland JM, Giercksky KE, Lothe RA. Identification of two potential suppressor gene regions on chromosome arm 14q that are commonly lost in advanced colorectal carcinomas. *Scand J Gastroenterol.* Dec 2001;36(12):1327-1331.

.23 Shao L, Lai M, Huang Q. Mutagen sensitivity and p53 expression in colorectal cancer in China. *Postgrad Med J.* Nov 2001;77(913):713-716.

.24 Ookawa K, Sakamoto M, Hirohashi S, et al. Concordant p53 and DCC alterations and allelic losses on chromosomes 13q and 14q associated with

liver metastases of colorectal carcinoma. *Int J Cancer.* Feb 1 1993;53(3):382-387.

.25 Kang YK, Kim YI, Kim WH. Allelotype analysis of intrahepatic cholangiocarcinoma. *Mod Pathol.* Jun 2000;13(6):627-631.

.26 Bando T, Kato Y, Ihara Y, Yamagishi F, Tsukada K, Isobe M. Loss of heterozygosity of 14q32 in colorectal carcinoma. *Cancer Genet Cytogenet.* Jun 1999;111(2):161-165.

.27 Yokota J, Ookawa K, Nishikawa R, Sameshima Y. Tumor suppressor genes involved in metastasis of lung and colorectal carcinomas. *Princess Takamatsu Symp.* 1991;22:71-76.

.28 Strefford JC, Stasevich I, Lane TM, Lu YJ, Oliver T, Young BD. A combination of molecular cytogenetic analyses reveals complex genetic alterations in conventional renal cell carcinoma. *Cancer Genet Cytogenet.* May 2005;159(1):1-9.

.29 Gallou C, Mejean A, Bouvier R, et al. Delineation of a 2.8 megabases region harboring a potential tumor suppressor gene involved in renal cell carcinoma, that is commonly deleted from chromosome 14. *Anticancer Res.* Nov-Dec 2003;23(6C):4865-4870.

.30 Beroud C, Fournet JC, Jeanpierre C, et al. Correlations of allelic imbalance of chromosome 14 with adverse prognostic parameters in 148 renal cell carcinomas. *Genes Chromosomes Cancer.* Dec 1996;17(4):215-224.

.31 Thrash-Bingham CA, Salazar H, Freed JJ, Greenberg RE, Tartof KD. Genomic alterations and instabilities in renal cell carcinomas and their relationship to tumor pathology. *Cancer Res.* Dec 15 1995;55(24):6189-6195.

.32 Thrash-Bingham CA, Greenberg RE, Howard S, et al. Comprehensive allelotyping of human renal cell carcinomas using microsatellite DNA probes. *Proc Natl Acad Sci U S A.* Mar 28 1995;92(7):2854-2858.

.33 Bulashevska S ,Szakacs O, Brors B, Eils R, Kovacs G. Pathways of urothelial cancer progression suggested by Bayesian network analysis of allelotyping data. *Int J Cancer.* Jul 20 2004;110(6):850-856.

.34 Peres EM, Savasan S, Cushing B, Abella S, Mohamed AN. Chromosome analyses of 16 cases of Wilms tumor: different pattern in unfavorable histology. *Cancer Genet Cytogenet.* Jan 1 2004;148(1):66-70.

.35 Tzai TS, Chen HH, Chan SH, et al. Clinical significance of allelotype profiling for urothelial carcinoma. *Urology.* Aug 2003.378-384:(2)62;

.36 Nakayama K, Konno M, Kanzaki A, et al. Allelotype analysis of gallbladder carcinoma associated with anomalous junction of pancreaticobiliary duct. *Cancer Lett.* May 26 2001;166(2):135-141.

.37 Phillips JL, Ghadimi BM, Wangsa D, et al. Molecular cytogenetic characterization of early and late renal cell carcinomas in von Hippel-Lindau disease. *Genes Chromosomes Cancer.* May 2001;31(1):1-9.

.38 Schwerdtle RF, Winterpacht A, Storkel S, et al. Loss of heterozygosity studies and deletion mapping identify two putative chromosome 14q tumor suppressor loci in renal oncocytomas. *Cancer Res.* Nov 15 1997;57(22):5009-5012.

.39 Herbers J, Schullerus D, Muller H, et al. Significance of chromosome arm 14q loss in nonpapillary renal cell carcinomas. *Genes Chromosomes Cancer.* May 1997;19(1):29-35.

.40 Tsai YC, Nichols PW, Hiti AL, Williams Z, Skinner DG, Jones PA. Allelic losses of chromosomes 9, 11, and 17 in human bladder cancer. *Cancer Res.* Jan 1 1990;50(1):44-47.

.41 Dichamp C, Taillibert S, Aguirre-Cruz L, et al. Loss of 14q chromosome in oligodendroglial and astrocytic tumors. *J Neurooncol.* May 2004;67(3):281-285.

.42 Ransom DT, Ritland SR, Moertel CA, et al. Correlation of cytogenetic analysis and loss of heterozygosity studies in human diffuse astrocytomas and mixed oligo-astrocytomas. *Genes Chromosomes Cancer.* Nov 1992;5(4):357-374.

.43 Hu J, Jiang C, Ng HK, Pang JC, Tong CY, Chen S. Genome-wide allelotype study of primary glioblastoma multiforme. *Chin Med J (Engl).* Apr 2003;116(4):577-583.

.44 Pang A, Ng IO, Fan ST, Kwong YL. Clinicopathologic significance of genetic alterations in hepatocellular carcinoma. *Cancer Genet Cytogenet.* Oct 1 2003;146(1):8-15.

.45 Piao Z, Park C, Park JH, Kim H. Allelotype analysis of hepatocellular carcinoma. *Int J Cancer.* Jan 5 1998;75(1):29-33.

.46 Nagai H, Emi M, Terada Y, et al. DNA alterations during multi-step development of human hepatocellular carcinomas revealed by laser capture microdissection. *Hepatol Res.* Jul 2003;26(3):199-208.

.47 Cheng Y, Ko JM, Lung HL ,Lo PH, Stanbridge EJ, Lung ML. Monochromosome transfer provides functional evidence for growth-suppressive genes on chromosome 14 in nasopharyngeal carcinoma. *Genes Chromosomes Cancer.* Aug 2003;37(4):359-368.

.48 Fang Y, Guan X, Guo Y, et al. Analysis of genetic alterations in primary nasopharyngeal carcinoma by comparative genomic hybridization. *Genes Chromosomes Cancer.* Mar 2001;30(3):254-260.

.49 Lo KW, Teo PM, Hui AB, et al. High resolution allelotype of microdissected primary nasopharyngeal carcinoma. *Cancer Res.* Jul 1 2000;60(13):3348-3353.

.50 Shao J, Li Y, Wu Q, et al. High frequency loss of heterozygosity on the long arms of chromosomes 13 and 14 in nasopharyngeal carcinoma in Southern China. *Chin Med J (Engl).* Apr 2002;115(4):571-575.

.51 Yan J, Fang Y, Liang Q, Huang Y, Zeng Y. Novel chromosomal alterations detected in primary nasopharyngeal carcinoma by comparative genomic hybridization. *Chin Med J (Engl).* Apr 2001;114(4):418-421.

.52 Chen YJ, Ko JY, Chen PJ, et al. Chromosomal aberrations in nasopharyngeal carcinoma analyzed by comparative genomic hybridization. *Genes Chromosomes Cancer.* Jun 1999;25(2):169-175.

.53 Mutirangura A, Charuruks N, Shuangshoti S, et al. Identification of distinct regions of allelic loss on chromosome 13q in nasopharyngeal cancer from paraffin embedded tissues. *Int J Cancer.* Oct 8 1999;83(2):210-214.

.54 Mutirangura A, Tanunyutthawongese C, Pornthanakasem W, et al. Genomic alterations in nasopharyngeal carcinoma: loss of heterozygosity and Epstein-Barr virus infection. *Br J Cancer.* 1997;76(6):770-776.

.55 Wei F, Ni J, Wu SS, et al. Cytogenetic studies of esophageal squamous cell carcinomas in the northern Chinese population by comparative genomic hybridization. *Cancer Genet Cytogenet.* Oct 1 2002;138(1):38-43.

.56 Ihara Y, Kato Y, Bando T, et al. Allelic imbalance of 14q32 in esophageal carcinoma. *Cancer Genet Cytogenet.* Jun 2002;135(2):177-181.

.57 Hu N, Roth MJ, Polymeropolous M, et al. Identification of novel regions of allelic loss from a genomewide scan of esophageal squamous-cell carcinoma in a high-risk Chinese population. *Genes Chromosomes Cancer.* Mar 2000;27(3):217-228.

.58 Kwong FM, Wong PS, Lung ML. Genetic alterations detected on chromosomes 13 and 14 in Chinese non-small cell lung carcinomas. *Cancer Lett.* Mar 31 2003;192(2):189-198.

.59 Pylkkanen L, Sainio M, Ollikainen T, et al. Concurrent LOH at multiple loci in human malignant mesothelioma with preferential loss of NF2 gene region. *Oncol Rep.* Sep-Oct 2002;9(5):955-959.

.60 De Rienzo A, Jhanwar SC, Testa JR. Loss of heterozygosity analysis of 13q and 14q in human malignant mesothelioma. *Genes Chromosomes Cancer.* Jul 2000;28(3):337-341.

.61 Thompson PM, Seifried BA, Kyemba SK, et al. Loss of heterozygosity for chromosome 14q in neuroblastoma. *Med Pediatr Oncol.* Jan 2001;36(1):28-31.

.62 Hoshi M, Otagiri N, Shiwaku HO, et al. Detailed deletion mapping of chromosome band 14q32 in human neuroblastoma defines a 1.1-Mb region of common allelic loss. *Br J Cancer.* Jun 2000;82(11):1801-1807.

.63 Grosfeld JL .Risk-based management: current concepts of treating malignant solid tumors of childhood. *J Am Coll Surg.* Oct 1999;189(4):407-425.

.64 Theobald M, Christiansen H, Schmidt A, et al. Sublocalization of putative tumor suppressor gene loci on chromosome arm 14q in neuroblastoma. *Genes Chromosomes Cancer.* Sep 1999;26(1):40-46.

.65 Takita J, Hayashi Y, Kohno T, et al. Allelotype of neuroblastoma. *Oncogene.* Nov 2 1995;11(9):1829-1834.

.66 Takayama H, Suzuki T, Mugishima H, et al. Deletion mapping of chromosomes 14q and 1p in human neuroblastoma. *Oncogene.* Jun 1992;7(6):1185-1189.

.67 Fong CT, White PS, Peterson K, et al. Loss of heterozygosity for chromosomes 1 or 14 defines subsets of advanced neuroblastomas. *Cancer Res.* Apr 1 1992;52(7):1780-1785.

.68 Brodeur GM. Neuroblastoma--clinical applications of molecular parameters. *Brain Pathol.* Sep 1990;1(1):47-54.

.69 Mori N, Morosetti R, Hoflehner E, Lubbert M, Mizoguchi H, Koeffler HP. Allelic loss in the progression of myelodysplastic syndrome. *Cancer Res.* Jun 1 2.3039-3042:(11)60;000

.70 Wong KF, Chan JK, Sin VC. T-cell prolymphocytic leukemia with a novel translocation (6;11)(q21;q23). *Cancer Genet Cytogenet.* Jun 1999;111(2):149-151.

.71 Dohner H, Stilgenbauer S, Dohner K, Bentz M, Lichter P. Chromosome aberrations in B-cell chronic lymphocytic leukemia: reassessment based on molecular cytogenetic analysis. *J Mol Med.* Feb 1999;77(2):266-281.

.72 Dierlamm J, Michaux L, Criel A, Wlodarska I, Van den Berghe H, Hossfeld DK. Genetic abnormalities in chronic lymphocytic leukemia and their clinical and prognostic implications. *Cancer Genet Cytogenet.* Mar 1997;94(1):27-35.

.73 Bandera CA, Takahashi H, Behbakht K, et al. Deletion mapping of two potential chromosome 14 tumor suppressor gene loci in ovarian carcinoma. *Cancer Res.* Feb 1 1997;57(3):513-515.

.74 Cliby W, Ritland S, Hartmann L, et al. Human epithelial ovarian cancer allelotype. *Cancer Res.* May 15 1993;53(10 Suppl):2393-2398.

.75 Nawroz H, van der Riet P, Hruban RH, Koch W, Ruppert JM, Sidransky D. Allelotype of head and neck squamous cell carcinoma. *Cancer Res.* Mar 1 1994;54(5):1152-1155.