**ПРИЛОЖЕНИЕ 1**

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**Известные по литературным данным потенциальные РНК-биомаркеры РПЖ и их представленность в анализируемых образцах.**

| **Потенциальный РНК-биомаркер РПЖ** | **Образцы** | | | | **Источник** |
|---|---|---|---|---|---|
| | **П1** | **П2** | **М3** | **М4** | |
| MALAT1 | + | + | + | + | 1 |
| NCOR1 | + | + | + | + | 2 |
| NEAT1 | + | + | + | + | 3 |
| ATM | + | + | - | + | 4 |
| NCOA1 | + | + | - | + | 5 |
| NCOA2 | + | - | + | + | 6 |
| NCOR2 | + | + | - | + | 7 |
| PRKDC | + | - | + | + | 8 |
| PTEN | + | + | - | + | 9 |
| IGF1R | - | - | + | + | 10 |
| MAGI2 | - | + | - | + | 11 |
| MED12 | - | - | + | + | 12 |
| PHLPP1 | - | + | - | + | 13 |
| PRUNE2 | - | - | + | + | 14 |
| SPOP | - | - | + | + | 15 |
| APC | + | - | - | + | 16 |
| CHD1 | + | - | - | + | 17 |
| GREB1 | + | - | - | + | 18 |
| PIK3CA | + | - | - | + | 19 |
| RB1 | + | - | - | + | 20 |

| | | | | | |
|---|---|---|---|---|---|
| ACPP | - | - | - | + | 21 |
| AKT1 | - | - | - | + | 22 |
| AMACR | - | - | - | + | 23 |
| AR | - | - | - | + | 24 |
| BMI1 | - | - | - | + | 25 |
| BRAF | - | - | - | + | 26 |
| CADM2 | - | + | - | - | 27 |
| CTNNB1 | - | - | - | + | 28 |
| CYP17A1 | - | - | - | + | 29 |
| EGFR | - | - | - | + | 30 |
| ERCC4 | - | - | + | - | 31 |
| ERCC5 | - | - | - | + | 31 |
| EZH2 | - | - | - | + | 25 |
| FOXA1 | - | - | - | + | 32 |
| GSTP1 | - | - | - | + | 33 |
| KLK3 | - | - | - | + | 34 |
| MYC | - | - | - | + | 35 |
| NCOA3 | - | - | - | + | 36 |
| NDRG1 | - | - | - | + | 37 |
| NKX3-1 | - | - | - | + | 38 |
| PCAT1 | - | - | - | + | 3 |
| PMEPA1 | - | - | - | + | 39 |
| RHOB | - | - | - | + | 40 |
| SRC | - | - | - | + | 41 |
| TMPRSS2 | - | - | - | + | 42 |
| TNK2 | - | - | - | + | 43 |
| TP53 | - | - | - | + | 44 |
| TP53INP2 | - | - | - | + | 45 |

| | | | | | |
|---|---|---|---|---|---|
| AURKA | - | - | - | - | 46 |
| BMP7 | - | - | - | - | 47 |
| CDK1 | - | - | - | - | 48 |
| CDK2 | - | - | - | - | 49 |
| ERCC2 | - | - | - | - | 50 |
| FGF8 | - | - | - | - | 51 |
| FGFR1 | - | - | - | - | 52 |
| MIR1825 | - | - | - | - | 45 |
| MIR484 | - | - | - | - | 45 |
| MIR498 | - | - | - | - | 53 |
| MYCN | - | - | - | - | 46 |
| PCA3 | - | - | - | - | 3 |
| PCGEM | - | - | - | - | 3 |
| PRNCR1 | - | - | - | - | 54 |
| PTENP1 | - | - | - | - | 55 |
| SCHLAP1 | - | - | - | - | 56 |
| SPINK1 | - | - | - | - | 57 |
| XRCC4 | - | - | - | - | 58 |

Литература


1. Ren S. et al. Long non-coding RNA metastasis associated in lung adenocarcinoma transcript 1 derived miniRNA as a novel plasma-based biomarker for diagnosing prostate cancer //European Journal of Cancer. – 2013. – Т. 49. – №. 13. – С. 2949-2959.
2. Linja M. J. et al. Expression of androgen receptor coregulators in prostate cancer //Clinical Cancer Research. – 2004. – Т. 10. – №. 3. – С. 1032-1040.
3. Zhang H. et al. Long non-coding RNA: a new player in cancer //J Hematol Oncol. – 2013. – Т. 6. – №. 1. – С. 1-7.
4. Fan R. et al. Defective DNA strand break repair after DNA damage in prostate cancer cells implications for genetic instability and prostate cancer progression //Cancer research. – 2004. – Т. 64. – №. 23. – С. 8526-8533.
5. Perry A. S. et al. The epigenome as a therapeutic target in prostate cancer //Nature Reviews Urology. – 2010. – Т. 7. – №. 12. – С. 668-680.
6. Taylor B. S. et al. Integrative genomic profiling of human prostate cancer //Cancer cell. – 2010. – Т. 18. – №. 1. – С. 11-22.

7. Kohli M. et al. Biomarker-based targeting of the androgen-androgen receptor axis in advanced prostate cancer //Advances in urology. – 2012. – Т. 2012.
8. Fraser M. et al. PTEN deletion in prostate cancer cells does not associate with loss of RAD51 function: implications for radiotherapy and chemotherapy //Clinical Cancer Research. – 2012. – Т. 18. – №. 4. – С. 1015-1027.
9. Cuzick J. et al. Prognostic value of PTEN loss in men with conservatively managed localised prostate cancer //British journal of cancer. – 2013. – Т. 108. – №. 12. – С. 2582-258.
10. Hellawell G. O. et al. Expression of the type 1 insulin-like growth factor receptor is up-regulated in primary prostate cancer and commonly persists in metastatic disease //Cancer research. – 2002. – Т. 62. – №. 10. – С. 2942-2950.
11. Roychowdhury S., Chinnaiyan A. M. Advancing precision medicine for prostate cancer through genomics //Journal of Clinical Oncology. – 2013. – Т. 31. – №. 15. – С. 1866-1873.
12. Roychowdhury S., Chinnaiyan A. M. Advancing precision medicine for prostate cancer through genomics //Journal of Clinical Oncology. – 2013. – Т. 31. – №. 15. – С. 1866-1873.
13. Mukherji D., Eichholz A., De Bono J. S. Management of Metastatic Castration-Resistant Prostate Cancer //Drugs. – 2012. – Т. 72. – №. 8. – С. 1011-1028.
14. Clarke R. A. et al. New genomic structure for prostate cancer specific gene PCA3 within BMCC1: implications for prostate cancer detection and progression //PloS one. – 2009. – Т. 4. – №. 3. – С. e4995.
15. Beltran H. et al. Targeted next-generation sequencing of advanced prostate cancer identifies potential therapeutic targets and disease heterogeneity //European urology. – 2013. – Т. 63. – №. 5. – С. 920-926.
16. Phé V., Cussenot O., Rouprêt M. Methylated genes as potential biomarkers in prostate cancer //BJU international. – 2010. – Т. 105. – №. 10. – С. 1364-1370.
17. Beltran H., Rubin M. A. New strategies in prostate cancer: translating genomics into the clinic //Clinical cancer research. – 2013. – Т. 19. – №. 3. – С. 517-523.
18. Ferreira L. B. et al. PCA3 noncoding RNA is involved in the control of prostate-cancer cell survival and modulates androgen receptor signaling //BMC cancer. – 2012. – Т. 12. – №. 1. – С. 507.
19. Sarker D. et al. Targeting the PI3K/AKT pathway for the treatment of prostate cancer //Clinical Cancer Research. – 2009. – Т. 15. – №. 15. – С. 4799-4805.
20. Ludwig J. A., Weinstein J. N. Biomarkers in cancer staging, prognosis and treatment selection //Nature Reviews Cancer. – 2005. – Т. 5. – №. 11. – С. 845-856.
21. Sardana G. et al. Proteomic analysis of conditioned media from the PC3, LNCaP, and 22Rv1 prostate cancer cell lines: discovery and validation of candidate prostate cancer biomarkers //Journal of proteome research. – 2008. – Т. 7. – №. 8. – С. 3329-3338.
22. Ayala G. et al. High levels of phosphorylated form of Akt-1 in prostate cancer and non-neoplastic prostate tissues are strong predictors of biochemical recurrence //Clinical Cancer Research. – 2004. – Т. 10. – №. 19. – С. 6572-6578.
23. Rogers C. G. et al. Prostate cancer detection on urinalysis for α methylacyl coenzyme a racemase protein //The Journal of urology. – 2004. – Т. 172. – №. 4. – С. 1501-1503.
24. Taplin M. E. et al. Mutation of the androgen-receptor gene in metastatic androgen-independent prostate cancer //New England Journal of Medicine. – 1995. – Т. 332. – №. 21. – С. 1393-1398.
25. van Leenders G. J. L. H. et al. Polycomb-group oncogenes EZH2, BMI1, and RING1 are overexpressed in prostate cancer with adverse pathologic and clinical features //European urology. – 2007. – Т. 52. – №. 2. – С. 455-463.
26. Beltran H. et al. Targeted next-generation sequencing of advanced prostate cancer identifies potential therapeutic targets and disease heterogeneity //European urology. – 2013. – Т. 63. – №. 5. – С. 920-926.

27. Fraser M. et al. Genomic, pathological, and clinical heterogeneity as drivers of personalized medicine in prostate cancer //Urologic Oncology: Seminars and Original Investigations. – Elsevier, 2015. – Т. 33. – №. 2. – С. 85-94.
28. Whitaker H. C. et al. Alterations in β-catenin expression and localization in prostate cancer //The Prostate. – 2008. – Т. 68. – №. 11. – С. 1196-1205.
29. Wadelius M. et al. Prostate cancer associated with CYP17 genotype //Pharmacogenetics and Genomics. – 1999. – Т. 9. – №. 5. – С. 635-640.
30. Di Lorenzo G. et al. Expression of epidermal growth factor receptor correlates with disease relapse and progression to androgen-independence in human prostate cancer //Clinical Cancer Research. – 2002. – Т. 8. – №. 11. – С. 3438-3444.
31. Hümmerich J. et al. Constitutive mRNA expression of DNA repair-related genes as a biomarker for clinical radio-resistance: A pilot study in prostate cancer patients receiving radiotherapy //International journal of radiation biology. – 2006. – Т. 82. – №. 8. – С. 593-604.
32. Wang Q. et al. Androgen receptor regulates a distinct transcription program in androgen-independent prostate cancer //Cell. – 2009. – Т. 138. – №. 2. – С. 245-256.
33. Cairns P. et al. Molecular detection of prostate cancer in urine by GSTP1 hypermethylation //Clinical Cancer Research. – 2001. – Т. 7. – №. 9. – С. 2727-2730.
34. Ren S. et al. Long non-coding RNA metastasis associated in lung adenocarcinoma transcript 1 derived miniRNA as a novel plasma-based biomarker for diagnosing prostate cancer //European Journal of Cancer. – 2013. – Т. 49. – №. 13. – С. 2949-2959.
35. Yang G. et al. Combined c-Myc and caveolin-1 expression in human prostate carcinoma predicts prostate carcinoma progression //Cancer. – 2005. – Т. 103. – №. 6. – С. 1186-1194.
36. Karantanos T., Corn P. G., Thompson T. C. Prostate cancer progression after androgen deprivation therapy: mechanisms of castrate resistance and novel therapeutic approaches //Oncogene. – 2013. – Т. 32. – №. 49. – С. 5501-5511.
37. Pflueger D. et al. N-myc downstream regulated gene 1 (NDRG1) is fused to ERG in prostate cancer //Neoplasia. – 2009. – Т. 11. – №. 8. – С. 804-W18.
38. Bowen C. et al. Loss of NKX3. 1 expression in human prostate cancers correlates with tumor progression1, 2 //Cancer research. – 2000. – Т. 60. – №. 21. – С. 6111-6115.
39. Xu L. L. et al. A novel androgen-regulated gene, PMEPA1, located on chromosome 20q13 exhibits high level expression in prostate //Genomics. – 2000. – Т. 66. – №. 3. – С. 257-263.
40. Kleer C. G. et al. RhoC-GTPase is a novel tissue biomarker associated with biologically aggressive carcinomas of the breast //Breast cancer research and treatment. – 2005. – Т. 93. – №. 2. – С. 101-110.
41. Tatarov O. et al. SRC family kinase activity is up-regulated in hormone-refractory prostate cancer //Clinical Cancer Research. – 2009. – Т. 15. – №. 10. – С. 3540-3549.
42. Laxman B. et al. A first-generation multiplex biomarker analysis of urine for the early detection of prostate cancer //Cancer research. – 2008. – Т. 68. – №. 3. – С. 645-649.
43. Mahajan K., Mahajan N. P. ACK1/TNK2 tyrosine kinase: molecular signaling and evolving role in cancers //Oncogene. – 2014.
44. Bauer J. J. et al. Elevated levels of apoptosis regulator proteins p53 and bcl-2 are independent prognostic biomarkers in surgically treated clinically localized prostate cancer //The Journal of urology. – 1996. – Т. 156. – №. 4. – С. 1511-1516.
45. Haj-Ahmad T. A., Abdalla M. A. K., Haj-Ahmad Y. Potential urinary protein biomarker candidates for the accurate detection of prostate cancer among benign prostatic hyperplasia patients //Journal of Cancer. – 2014. – Т. 5. – №. 2. – С. 103.
46. Mosquera J. M. et al. Concurrent AURKA and MYCN gene amplifications are harbingers of lethal treatmentrelated neuroendocrine prostate cancer //Neoplasia. – 2013. – Т. 15. – №. 1. – С. 1-IN4.

47. Dai J. et al. Prostate cancer induces bone metastasis through Wnt-induced bone morphogenetic protein-dependent and independent mechanisms //Cancer research. – 2008. – Т. 68. – №. 14. – С. 5785-5794.
48. Xiao D. et al. Allyl isothiocyanate, a constituent of cruciferous vegetables, inhibits proliferation of human prostate cancer cells by causing G2/M arrest and inducing apoptosis //Carcinogenesis. – 2003. – Т. 24. – №. 5. – С. 891-897.
49. Sivaprasad U., Abbas T., Dutta A. Differential efficacy of 3-hydroxy-3-methylglutaryl CoA reductase inhibitors on the cell cycle of prostate cancer cells //Molecular cancer therapeutics. – 2006. – Т. 5. – №. 9. – С. 2310-2316.
50. Agalliu I. et al. Genetic variation in DNA repair genes and prostate cancer risk: results from a population-based study //Cancer Causes & Control. – 2010. – Т. 21. – №. 2. – С. 289-300.
51. Rajan P. et al. Alternative splicing and biological heterogeneity in prostate cancer //Nature Reviews Urology. – 2009. – Т. 6. – №. 8. – С. 454-460.
52. Giri D., Ropiquet F., Ittmann M. Alterations in expression of basic fibroblast growth factor (FGF) 2 and its receptor FGFR-1 in human prostate cancer //Clinical Cancer Research. – 1999. – Т. 5. – №. 5. – С. 1063-1071.
53. Shi X. B. et al. MicroRNAs and prostate cancer //Journal of cellular and molecular medicine. – 2008. – Т. 12. – №. 5a. – С. 1456-1465.
54. Chung S. et al. Association of a novel long non-coding RNA in 8q24 with prostate cancer susceptibility //Cancer science. – 2011. – Т. 102. – №. 1. – С. 245-252.
55. Martens-Uzunova E. S. et al. Long noncoding RNA in prostate, bladder, and kidney cancer //European urology. – 2014. – Т. 65. – №. 6. – С. 1140-1151.
56. Prensner J. R. et al. The long noncoding RNA SChLAP1 promotes aggressive prostate cancer and antagonizes the SWI/SNF complex //Nature genetics. – 2013. – Т. 45. – №. 11. – С. 1392-1398.
57. Laxman B. et al. A first-generation multiplex biomarker analysis of urine for the early detection of prostate cancer //Cancer research. – 2008. – Т. 68. – №. 3. – С. 645-649.
58. Fan R. et al. Defective DNA strand break repair after DNA damage in prostate cancer cells implications for genetic instability and prostate cancer progression //Cancer research. – 2004. – Т. 64. – №. 23. – С. 8526-8533.