CV: Prof. Ondřej SLABÝ, Ph.D. (15.6.1981)

EDUCATION:

2005 M.Sc. (Biochemistry), Masaryk University, Faculty of Science, Brno, CZ
2008 RNDr. (Biochemistry), Masaryk University, Faculty of Science, Brno, CZ
Rigorous thesis „Usage of gene expression profiles for prognosis prediction of colorectal cancer patients“
2008 PhD (Oncology), Masaryk University, Faculty of Medicine, Brno, CZ
Dissertation thesis: „Usage of DNA microarrays and microRNA profiling in the colorectal cancer research“
Supervisor: prof. Rostislav Vyzula, M.D., Ph.D.
2013 Associated Professor of Biochemistry, Masaryk University, Faculty of Science, Brno, CZ
2017 Elected as a Fellow of Royal Society of Biology 2016 (entitled to use designatory letters FRSB after my name)
2018 Professor of Medical Biochemistry, Charles University, Prague, CZ

PROFESSIONAL EXPERIENCE:

2003-2005	Diploma thesis, Laboratory of Molecular Psychiatry, Masaryk University, Faculty of Science, Brno, CZ
2005-2009	research assistant, Masaryk Memorial Cancer Institute (MMCI), Department of Oncological and Experimental Pathology, Laboratory of Predictive Oncology, Brno, CZ
2008-to present	Lecturer, Masaryk University, Faculty of Science, Brno, CZ Course: Introduction to Molecular Medicine + Practical Course
2009-to present	Research assistant, Associated Professor (since 2013), Professor (since 2018) at Department of Comprehensive Cancer Care, MMCI, Brno, CZ
2010-to present	Science Secretary of MMCI, Brno, CZ
2011-to present	CEITEC – research group leader (programme: Molecular Medicine)
2015-to present	Associated Professor (2015-2018), Professor (since 2018), Charles University, 1st Faculty of Medicine Course: Molecular Medicine
2016 (Mar-Jun)	Visiting Professor at Rockefeller University, NY (Laboratory of prof. Vince Fischetti)
2016-to present	Professor, Department of Pediatric Oncology, Institutions shared with the Faculty Hospital Brno (paediatric medicine), Faculty of Medicine
2016-to present	Professor, Department of Surgery, Institutions shared with the Faculty Hospital Brno, Adult Age Medicine, Faculty of Medicine

RESEARCH INTEREST AND RELEVANCE FOR THE PROJECT:

Professor of Medical Chemistry and Biochemistry
PhD in Oncology
Group leader – CEITEC Masaryk University, CZ; Programme Molecular medicine, Ondrej Slaby Research Group
Research areas: Non-coding RNAs: their biology and involvement in carcinogenesis, their significance in solid cancer pathogenesis and identification of new therapeutic targets, their application in solid cancer diagnostics and individualization of therapy
Holder of the Certificate of competency according to § 17 of the Act No. 246/1992 coll. on protection animals against cruelty in present statues at large

PUBLICATION SUMMARY (JULY 2018):

ResearcherID: E-1082-2012
Number of papers (WoS): 173
Times cited (WoS): 3463
Times cited without self-citations (WoS): 3330
H-index (WoS): 30

PRIZES AND AWARDS:

2010, 2012	Annual Award of the Czech Society for Oncology
2014	Czech Minister of Health Award
2015	Award of the rector of Masaryk University, Brno
2016	Czech Minister of Health Award
2016	Elected as a Member of the Clinical and preclinical research, experimental medicine grant committee of Czech Science Foundation
2017	Elected as a Fellow of Royal Society of Biology 2016 (entitled to use designatory letters FRSB after my name)
2017	Annual Novartis Discovery Award

AD HOC REFEREE FOR:

Journals:

Peer-reviewer: Nature Communication, Cancer Research, European Journal of Cancer, British Journal of Cancer, PLoS ONE, Expert Opinion on Therapeutic Targets, Expert Review of Anticancer Therapy, Expert Review of Molecular Diagnostics, Oncology, Annals of Surgical Oncology, Cancer Science, Human Pathology, Endocrine, Tumor Biology, Bioanalysis, Biomarkers in Medicine, Current Pharmacogenomics and Personalized Medicine, World Journal of Gastrointestinal Oncology, Cellular Immunology, Klinická onkologie, Recent Patents on DNA and Gene Sequence, Cancer Epidemiology, Journal of Clinical and Experimental Cancer Research.

Grant agencies:

AZV MZ ČR (Czech Health Research Council, Ministry of Health of the Czech Republic), GAČR (Czech Science Foundation), MŠMT ČR (Ministry of education, youth and sports of the Czech Republic, Cancer Research UK, WellcomeTrust, Worldwide Cancer Research (former AICR), The Netherlands ZonMw, Hungarian OTKA, Health Research Board (HRB) Ireland, Broad Medical Research Program (BMRP), VEGA SAV SK, GAUK etc.

COMMISSIONS OF TRUST:

Journals:

Editorial Board Member: PLoS ONE (IF=2.766), World Journal of Gastroenterology (IF=2.25), World Journal of Gastrointestinal Oncology, Current Pharmaceutical Design (IF=2.611), MicroRNA, Cancer Translational Medicine, Biomarker Research and Klinicka onkologie.

PROFESSIONAL MEMBERSHIPS

Head of the Czechoslovak Biological Society
Head of the Cancer Biology Section of the Czechoslovak Biological Society
Scientific secretary of the Neurooncological section of Czech Oncological Society
Member of the Scientific Board at Masaryk Memorial Cancer Institute
Member of the evaluation of committee of Czech Grant Agency for Health Research (Oncology board)
Member of the Scientific Board at 1st Faculty of Medicine, Charles University, Prague
Member of the Oncological board for PhD studies at Masaryk University, Brno

Member of:

American Association for Cancer Research
European Association for Cancer Research
Czech Society of Oncology (co-founder of Neurooncology division)
Czech Society for Analytical Cytology
Czechoslovak Biological Society (founder of Cancer biology division)
Czech Society for Biochemistry and Molecular Biology (member of FEBS)
Member of Genetical Society of Gregor Mendel

CONFERENCES & MEETINGS:

Since 2010 I have organized and coordinated internal seminars at Masaryk Memorial Cancer Institute, Brno, CZ.
Last five years I am a member of organizing and programme committee of the national conference: The Days of Diagnostic, Predictive and Experimental Oncology in Olomouc and Brněnské onkologické dny in Brno.
In 2014 I was a president of XXI. Biological days conference, Brno, CZ.

More than 300 lectures and poster communications on the Czech and International Conferences and Workshops.

SELECTED ORIGINAL PAPERS:

1. Pichler M, Stiegelbauer V, Vychytilova-Faltejskova P, Ivan C, Ling H, Winter E, Zhang X, Goblirsch M, Wulf-Goldenberg A, Ohtsuka M, Haybaeck J, Svoboda M, Okugawa Y, Gerger A, Hoefler G, Goel A, **Slaby O**, Calin GA. Genome-Wide miRNA Analysis Identifies miR-188-3p as a Novel Prognostic Marker and Molecular Factor Involved in Colorectal Carcinogenesis. Clin Cancer Res. 2017 Mar 1;23(5):1323-1333. doi: 10.1158/1078-0432.CCR-16-0497. Epub 2016 Sep 6. PubMed PMID: 27601590.

   Times cited: 17 IF: 10,199

2. Mlcochova H, Machackova T, Rabien A, Radova L, Fabian P, Iliev R, Slaba K, Poprach A, Kilic E, Stanik M, Redova-Lojova M, Svoboda M, Dolezel J, Vyzula R, Jung K, **Slaby O**. Epithelial-mesenchymal transition-associated microRNA/mRNA signature is linked to metastasis and prognosis in clear-cell renal cell carcinoma. Sci Rep. 2016 Aug 23;6:31852. doi: 10.1038/srep31852. PubMed PMID: 27549611; PubMed Central PMCID: PMC4994011.

   Times cited: 16 IF: 4,122

3. Vychytilova-Faltejskova P, Radova L, Sachlova M, Kosarova Z, Slaba K, Fabian P, Grolich T, Prochazka V, Kala Z, Svoboda M, Kiss I, Vyzula R, **Slaby O**. Serum-based microRNA signatures in early diagnosis and prognosis prediction of colon cancer. Carcinogenesis. 2016 Oct;37(10):941-50. doi: 10.1093/carcin/bgw078. Epub 2016 Aug 1. PubMed PMID: 27485599.

   Times cited : 32 IF : 5,072

4. Thorenoor N, Faltejskova-Vychytilova P, Hombach S, Mlcochova J, Kretz M, Svoboda M, **Slaby O**. Long non-coding RNA ZFAS1 interacts with CDK1 and is involved in p53-dependent cell cycle control and apoptosis in colorectal cancer. Oncotarget. 2016 Jan 5;7(1):622-37. doi: 10.18632/oncotarget.5807. PubMed PMID: 26506418; PubMed Central PMCID: PMC4808022.

   Times cited : 68 IF : 5,168

5. Mlcochova J, Faltejskova-Vychytilova P, Ferracin M, Zagatti B, Radova L, Svoboda M, Nemecek R, John S, Kiss I, Vyzula R, Negrini M, **Slaby O**. MicroRNA expression profiling identifies miR-31-5p/3p as associated with time to progression in wild-type RAS metastatic colorectal cancer treated with cetuximab. Oncotarget. 2015 Nov 17;6(36):38695-704. doi: 10.18632/oncotarget.5735. PubMed PMID: 26497852; PubMed Central PMCID: PMC4770730.

   Times cited : 29 IF : 5,008

6. **Slaby O**, Srovnal J, Radova L, Gregar J, Juracek J, Luzna P, Svoboda M, Hajduch M, Ehrmann J. Dynamic changes in microRNA expression profiles reflect progression of Barrett's esophagus to esophageal adenocarcinoma. Carcinogenesis. 2015 May;36(5):521-7. doi: 10.1093/carcin/bgv023. Epub 2015 Mar 16. PubMed PMID: 25784377.

   Times cited : 22 IF : 4,874

7. Sana J, Radova L, Lakomy R, Kren L, Fadrus P, Smrcka M, Besse A, Nekvindova J, Hermanova M, Jancalek R, Svoboda M, Hajduch M, Slampa P, Vyzula R, **Slaby O**. Risk Score based on microRNA expression signature is independent prognostic classifier of glioblastoma patients. Carcinogenesis. 2014 Dec;35(12):2756-62. doi: 10.1093/carcin/bgu212. Epub 2014 Oct 16. PubMed PMID: 25322872.

   Times cited : 14 IF : 5,334

8. **Slaby O**, Redova M, Poprach A, Nekvindova J, Iliev R, Radova L, Lakomy R, Svoboda M, Vyzula R. Identification of MicroRNAs associated with early relapse after nephrectomy in renal cell carcinoma patients. Genes Chromosomes Cancer. 2012 Jul;51(7):707-16. doi: 10.1002/gcc.21957. Epub 2012 Apr 10. PubMed PMID: 22492545.

   Times cited : 68 IF : 4,898

9. Redova M, Poprach A, Nekvindova J, Iliev R, Radova L, Lakomy R, Svoboda M, Vyzula R, **Slaby O**. Circulating miR-378 and miR-451 in serum are potential biomarkers for renal cell carcinoma. J Transl Med. 2012 Mar 22;10:55. doi: 10.1186/1479-5876-10-55. PubMed PMID: 22440013; PubMed Central PMCID: PMC3340316.

   Times cited : 145 IF : 2,799

10. **Slaby O**, Svoboda M, Fabian P, Smerdova T, Knoflickova D, Bednarikova M, Nenutil R, Vyzula R. Altered expression of miR-21, miR-31, miR-143 and miR-145 is related to clinicopathologic features of colorectal cancer. Oncology. 2007;72(5-6):397-402. doi: 10.1159/000113489. Epub 2008 Jan 15. PubMed PMID: 18196926.

Times cited : 465 IF : 2,605

REVIEW:

1. **Slaby O**, Bienertova-Vasku J, Svoboda M, Vyzula R. Genetic polymorphisms and microRNAs: new direction in molecular epidemiology of solid cancer. J Cell Mol Med. 2012 Jan;16(1):8-21. doi: 10.1111/j.1582-4934.2011.01359.x. Review. PubMed PMID: 21692980; PubMed Central PMCID: PMC3823089.
2. **Slaby O**, Svoboda M, Michalek J, Vyzula R. MicroRNAs in colorectal cancer: translation of molecular biology into clinical application. Mol Cancer. 2009 Nov 14;8:102. doi: 10.1186/1476-4598-8-102. Review. PubMed PMID: 19912656; PubMed Central PMCID: PMC2780389.
3. Redova M, Sana J, **Slaby O**. Circulating miRNAs as new blood-based biomarkers for solid cancers. Future Oncol. 2013 Mar;9(3):387-402. doi: 10.2217/fon.12.192. Review. PubMed PMID: 23469974.
4. Sana J, Faltejskova P, Svoboda M, **Slaby O**. Novel classes of non-coding RNAs and cancer. J Transl Med. 2012 May 21;10:103. doi: 10.1186/1479-5876-10-103. Review. PubMed PMID: 22613733; PubMed Central PMCID: PMC3434024.

MONOGRAPHY:

1. **Slaby O**, Calin G (Eds.). Non-coding RNAs in colorectal cancer. Springer International Publishing, 2016. 205 s. ISBN 978-3-319-42057-8.
2. **Slaby O (Ed.).** MicroRNAs in Solid Cancer: From Biomarkers to Therapeutic Targets. New York: Nova Science Publishers, Inc., 2012. 192 p. ISBN 978-1-61324-514-9.
3. **Slaby O**, Svoboda M (Eds.). MikroRNA v onkologii. 1.vyd. Praha: Galén, 2012. 324 s. ISBN 978-80-7262-587-1.
4. Foretova L, Svoboda M, **Slaby O**. Molekulární genetika v onkologii. Praha: Mladá fronta a.s., 2014. 183 s. ISBN 978-80-204-3236-0.

BOOK CHAPTER:

1. Vychytilova-Faltejskova P, **Slaby O**. Circulating Blood-Borne microRNAs as Biomarkers in Solid Tumors. In Peter Igaz. Circulating microRNAs in Disease Diagnostics and their Potential Biological Relevance. Basel: Springer, 2015. p. 75-122, 48 p. Experientia Supplementum, Volume 106. ISBN 978-3-0348-0953-5.
2. Mlcochova H, Hezova R, Meli A, **Slaby O**. Urinary MicroRNAs as a New Class of Noninvasive Biomarkers in Oncology, Nephrology, and Cardiology. In Sioud M. RNA Interference. Challenges and therapeutic opportunities. USA: Springer New York, 2015. p. 439-463, 25 p. Methods in Molecular Biology, 1218. ISBN 978-1-4939-1537-8.
3. Sana J, Besse, **Slaby O**. MicroRNAs in the molecular pathology of gliomas. In Sedo A, Mentlein R (Eds.). Glioma Cell Biology. 1st Ed. Springer-Verlag Wien, 2014. p. 77-116, 40 p. ISBN 978-3-7091-1430-8.
4. Redova M, Mlcochova H, **Slaby O**. Circulating miRNA biomarkers in various solid cancers. In Barh D. *et al*. Cancer Biomarkers: Minimal and Noninvasive Early Diagnosis and Prognosis. Boca Raton: CRC Press, Taylor & Francis Group, 2014. p. 115-142, 28 p. ISBN 9781466584280.
5. Juracek J, Iliev R, Svoboda M, **Slaby O**. Long Noncoding RNAs in Breast Cancer: Implications for Pathogenesis, Diagnosis, and Therapy. In Debmalya Barh. Omics Approaches in Breast Cancer: Towards Next-Generation Diagnosis, Prognosis and Therapy. Springer, 2014. p. 153-170, 17 p. ISBN 978-81-322-0842-6.
6. Sana J, Hajduch M, **Slaby O**. MicroRNA and Glial Tumors: Tiny Relation with Great Potential. In Prof. Faris Farassati. Novel Therapeutic Concepts in Targeting Glioma. InTech, 2012. p. 59-74, 16 p. ISBN 978-953-51-0491-9.
7. **Slaby O**, Svoboda M, Michalek J, Vyzula R. MicroRNAs in Colorectal Cancer. In MicroRNAs in Cancer Translational Research. 1st ed.: Springer, 2011. p. 107-133, 27 p. ISBN 978-94-007-0297-4.
8. Svoboda M, Fabian P, **Slaby O**. Nádory neznámé primární lokalizace. In Klinická a radiačná onkologia. Jurga L.M. a kolektív. Prvé vyd. Martin: Vydavatelstvo Osveta, 2010. p. 1246-1255, 10 p. ISBN 978-80-8063-302-8.

9. **Slaby O**, Svoboda M, Michalek J, Vyzula R. MicroRNAs in colorectal cancer. In Cho W.C.S. (Ed.). MicroRNAs in cancer translational research. Springer Netherlands, 2011. p. 107-133, 27 p. ISBN 978-94-007-0297-4.

10. **Slaby O**, Ondracek J, Slavik M. Molekulární patologie nádorů hlavy a krku. In Slampa P., Smilek P. *et al.* Nádory hlavy a krku – Přehled diagnostiky a léčby maligních nádorů horních dýchacích a polykacích cest, hrtanu, slinných žláz a kůže. 1. vyd. Praha: Mladá fronta a.s., 2016. s. 22-33, 12 s. ISBN 978-80-204-3743-3.

11. Svoboda M, Halamkova J, Fabian P, **Slaby O**. Nádory neznámé primární lokalizace. In Kubackova K. *et al*. Vzácné nádory v onkologii. 1.vyd. Praha: Mladá fronta, a.s., 2015. s. 293-310, 18 s. ISBN 978-80-204-3658-0.

12. Svoboda M, **Slaby O**, Foretova L. Molekulární genetika a individualizovaný přístup v onkologii. In Molekulární genetika v onkologii. 1 vyd. Praha: Mladá fronta a.s., 2014. s. 12-37, 26 s. ISBN 978-80-204-3236-0.

13. **Slaby O**, Svoboda M, Foretova L. Perspektivy molekulární genetiky v onkologii. In Molekulární genetika v onkologii. 1 vyd. Praha: Mladá fronta a.s., 2014. s. 157-170, 14 s. ISBN 978-80-204-3236-0.

14. Novak J, Bienertova-Vasku J, **Slaby O**. MikroRNA a diabetes mellitus. In Kvapil M. Diabetologie 2014. 1.vyd. Praha: Triton, 2014. s. 225-233, 9 s. ISBN 978-80-7387-755-2.

15. **Slaby O**, Besse A, Sana J. Molekulární patologie gliálních nádorů. In Slampa P. et al. Gliomy - současná diagnostika a léčba. 1. vyd. Praha: Maxdorf, 2013. s. 89-113, 25s. ISBN 978-80-7345-321-3.

16. Chumchalova J, Horky D, **Slaby O**. Základy molekulární biologie buňky. In Šárka Pospíšilová, Dana Dvořáková, Jiří Mayer et al. Molekulární hematologie. 1. vyd. Praha: Galén, 2013. s. 1-9, 9 s. ISBN 978-80-7262-942-8.

17. Sebejova L, Chumchalova J, **Slaby O**. Detekce vitality a poškození buněk. In Šárka Pospíšilová, Dana Dvořáková, Jiří Mayer et al. Molekulární hematologie. 1. vyd. Praha: Galén, 2013. s. 139-143, 5 s. ISBN 978-80-7262-942-8.

PATENT FAMILIES:

EUROPEAN PATENT

Title: Method of diagnosis of colorectal cancer
Holder: Masaryk University, Brno, CZ
Authors: doc. RNDr. Ondřej Slabý, Ph.D., Brno
doc. MUDr. Marek Svoboda, Ph.D., Syrovice
Number: EP17181646
Date: 14.9.2015

UTILITY MODELS

Title: Set for prediction of response to cetuximab treatment
Holder: Masaryk University, Brno, CZ
Authors: doc. RNDr. Ondřej Slabý, Ph.D., Brno
Mgr. Jitka Mlčochová, Zlín
Doc. MUDr. Marek Svoboda, Ph.D., Syrovice
Number: 28636
Date: 14.9.2015

Title: Set for non-invasive detection of bladder cancer by use of urinary microRNAs
Holder: Masaryk University, Brno, CZ
Authors: doc. RNDr. Ondřej Slabý, Ph.D., Brno
Mgr. Jaroslav Juráček, Loděnice
MUDr. Michal Staník, Ph.D., Brno
Number: 32893
Date: 31.1.2017

MAJOR GRANTS:

1. **NV17-29389A**, Sequential FDG-PET and plasma and tissue miRNA as a biomarker of preoperative treatment strategy in locally advanced oesophagogastric cancer (2017-2020)
   PI: prof. MUDr. Rostislav Vyzula, CSc. (ID: 2912589, Masaryk Memorial Cancer Institute), **Co-Investigator: Assoc. Prof. O. Slabý, Ph.D.** (ID: 5974291, Masaryk University, CEITEC)
   The aim of the project is to set up a personalized treatment approach for patients with localized oesophagogasric adenocarcinoma. For this purpose, preoperative treatment (chemotherapy versus chemoradiotherapy) will be stratified in a phase II clinical trial according to FDG-PET early metabolic response assessment and tumor tissue/blood plasma miRNA will be explored as a biomarker of response and prognosis.

2. **GA16-18257S**, Uncovering the mechanism underlying the tumor-suppressive effects of miR-215 and its substitution as new therapeutic strategy in colorectal cancer (2016-2018)
   PI: Assoc. Prof. O. Slabý, Ph.D. (ID: 5974291, Masaryk University, CEITEC)
   (1) To uncover the mechanism underlying the tumor-suppressive effect of miR-215 in colorectal cancer. (2) To establish delivery system for miR-215 mimic based on chitosan-coated SPIO nanoparticles. (3) To assess the optimal dose and therapeutic efficacy of miR-215 mimic delivered by SPIO nanosystem.

3. **NV16-33209A**, Genome-wide expression profiling and mutation analysis as the diagnostic basis for personalized pediatric cancer treatment plans: a feasibility study (2016-2019)
   PI: Prof. MUDr. Jaroslav Štěrba, Ph.D. (ID: 1398954, Masaryk University, Faculty of Medicine), **Co-Investigator: Assoc. Prof. O. Slabý, Ph.D.** (ID: 5974291, University Hospital Brno)
   This is an observational feasibility study to evaluate whether comprehensive biological characterization of the tumor is a suitable strategy to design personalized combinatorial therapies for pediatric patients with poor prognosis solid cancer.

4. **NV16-31314A**, Usage of circulating microRNAs for the diagnosis of pancreatic cancer and identification of patients who will not benefit from the surgical resection (2016-2019)
   PI: Prof. MUDr. Zdeněk Kala, CSc. (ID: 8614628, University Hospital Brno), **Co-Investigator: Assoc. Prof. O. Slabý, Ph.D.** (ID: 5974291, Masaryk University, CEITEC)
   (1) To find out the effect of hyperbilirubinemia on miRNA expression profiles in blood plasma and to analyze its influence on miRNA quantification. (2) To develop the classifier enabling the precise classification of pancreatic lesions based on the expression profiles of miRNAs in the blood plasma collected at the time of diagnosis with the special focus on the identification of cystic lesions of the pancreas. (3) To establish prognostic miRNA panel enabling the identification of PDAC patients who will not profit from the surgical resection (Phase 1 – Exploratory phase). (4) To validate and analytically characterize established prognostic panel of circulating miRNAs on independent cohorts of patients (Phase 2 and 3 – Training phase and Validation phase) in agreement with REMARK and STARD standards for biomarker studies. (5) To design prospective clinical trial verifying the clinical benefit of implementation of established prognostic panel in the management of patients with borderline resectable PDAC.

5. **NV15-34678A**, Prognostic and predictive molecular factors in patients with metastatic renal cell carcinoma treated with tyrosine kinase inhibitors (2015-2018)
   PI: MUDr. Tomáš Büchler, Ph.D. (ID: 1447033, Thomayer Hospital), **Co-Investigator: Assoc. Prof. O. Slabý, Ph.D.** (ID: 5974291, Masaryk University, CEITEC)
   (1) Initiation of prospective clinical data collection and serum sample collection from patients with mRCC before the start of the first-line therapy with sunitinib or pazopanib and during the treatment. (2) Exploratory phase: a) Identification of tissue miRNA profiles associated with the response to TKI treatment in the first line (sunitinib, pazopanib) in a retrospective cohort of patients with mRCC b) Definition of the miRNA panels predictive of therapeutic response to sunitinib and pazopanib. (3) Training phase: a) Verification of the prognostic and predictive potential of defined miRNA panels on a large independent cohort of patients with mRCC treated with sunitinib and pazopanib b) Reduction and optimization of the number of miRNA in the panels, if possible. (4) Validation phase: Evaluation and analytical characterisation (AUC, sensitivity, specificity) of miRNA panels in an independent set of samples from mRCC patients acquired prospectively in the first and second year of the project. (5) Analysis of global expression profiles of circulating miRNAs in blood serum samples of patients with mRCC (see Point 1). (6) Measurement of plasma sunitinib or pazopanib concentrations in the steady state

(CSS) in serum samples taken during the treatment (see Point 1). (7) Design of a multicentre clinical trial evaluating the possibility of implementation of discovered miRNA panels into the clinical practice.

6. **NV15-34553A**, Usage of cerebrospinal fluid microRNAs in diagnosis of brain tumors (2015-2018)
PI: MUDr. Pavel Fadrus, Ph.D. (ID: 3479714, University Hospital Brno), **Co-Investigator: Assoc. Prof. O. Slabý, Ph.D.** (ID: 5974291, Masaryk University, CEITEC)
(1) To optimize an isolation and analysis of CSF miRNAs in glioma and control patients. (2) To identify of CSF miRNAs profiles specific for the particular glioma types defined according the grade (LGG, HGG WHO III, and HGG WHO IV); exploratory phase. (3) To verify the diagnostic potential of defined CSF miRNA panel on large independent cohort of glioma patients; training phase. (4) To evaluate and analytically characterize (AUC, sensitivity, specificity) of CSF miRNA diagnostic panel in an independent set of CSF samples obtained from glioma patients; validation phase. (5) To design potential implementation of the CSF miRNA diagnostic panel into clinical management of glioma patients.

7. **NV15-33158A**, New level of glioblastoma molecular taxonomy based on the expression profiling of long non-coding RNAs: implications for diagnosis and therapy (2015-2018)
PI: Doc. MUDr. Radim Lipina, Ph.D. (ID: 4297024, University Hospital Ostrava), **Co-Investigator: Assoc. Prof. O. Slabý, Ph.D.** (ID: 5974291, Masaryk University, CEITEC)
(1) To identify lncRNAs differentially expressed in GBM compared to non-tumor brain tissue using Next-Generation Sequencing (NGS) analysis (Phase I - exploratory phase). (2) To integrate lncRNA expression data (aim 1) with the clinico-pathological features of GBM patients using multidimensional biostatistical approaches. (3) To develop a panel of lncRNAs associated with a prognosis of GBM patients (aim 2) and validate this panel on the two independent sets (Phase II - training set, Phase III - validation set) of GBM patients in relation to the therapeutic response (RT/temozolomide), time to progression and overall survival. (4) To verify the ability of identified lncRNAs (aims no. 1 and 3) to affect GBM cells phenotype using functional analysis in vitro (proliferation, apoptosis, migration, and invasiveness) and in vivo (tumor growth in orthotopic GBM mice model). (5) To reveal mechanism function of GBM-related lncRNAs (aim no. 4) in GBM cells in vitro. (6) To design the possible implementation of lncRNA panel (aim no. 3) in treatment decision process in GBM patients; and for selected lncRNAs (aims no. 4 and 5) their possible use as a novel therapeutic targets in GBM.

8. **NV15-31627A**, Molecularly guided radiotherapy or radiochemotherapy based on mikroRNA profile in head and neck cancer patients- a feasibility study (2015-2018)
PI: Prof. MUDr. Pavel Šlampa, CSc. (ID: 7721706, Masaryk Memorial Cancer Institute), **Co-Investigator: Assoc. Prof. O. Slabý, Ph.D.** (ID: 5974291, Masaryk University, CEITEC)
(1) To create a retrospective, thoroughly characterized cohort of patients with head and neck tumors with available FFPE material, and divede the patients into the test and validation cohort proportionally to their clinico-pathological features. (2) Enrolment of patients with head and neck cancer prospectively, collection and archiving of tumour biopsies before treatment and blood serum, saliva, and cytological smear before, during and after treatment and during follow-up. (3) Comparative analysis of global miRNA expression profiles in the retrospective cohorts of patients stratified accordingly to EGFR positivity, HPV status and CD44 positivity. (4) Identification of predictive miRNA enabling prediction of radiological response to radiotherapy, disease-free and overall survival. (5) Create a diagnostic miRNA panel enabling more accurate prognostic and predictive description of the response to treatment and to define its analytic properties in a validation cohort of patients (AUC, sensitivity, specificity, and diagnostic prediction). (6) Analysis of miRNAs in biopsies and body fluids collected from prospectively enrolled patients. (7) Validation of diagnostic panel of miRNA in prospectively enrolled patients and its possible implementation to clinical practice - to determine the group of patients with better and worse prognosis on the basis of differences in miRNA profiles at the level of body fluids, which could further lead to the adaptation of the treatment - increasing the dose in the tumour or considering accelerated radiotherapy, evaluates the necessity of concomitant chemotherapy.

9. **NV15-31071A**, Study of urinary/tissue microRNAs as potential biomarkers of urothelial carcinoma of the urinary bladder (2015-2018)
PI: Doc. MUDr. Jan Doležel, Ph.D. (ID: 9537554, Masaryk Memorial Cancer Institute), **Co-Investigator: Assoc. Prof. O. Slabý, Ph.D.** (ID: 5974291, Masaryk University, CEITEC)
(1) To identify miRNA expression profiles in paired tumor/non-tumor tissue and urine of UCUB patients with detailed clinical records. (2) To correlate miRNA profiles (aim 1) with clinical and pathological

features (superficial/muscle invasive tumor, grade, prognosis, therapy response) in order to establish urinary-based diagnostic miRNA panel, and also tissue-based prognostic miRNA panel enabling the assessment of individual risk of progression to invasive UCUB (Phase 1 – Exploratory phase). (3) To validate miRNA panels in diagnosis of UCUB patients (aim 2), histopathological and prognostic stratification in tumor tissue and urine in an independent group of patients with UCUB (Phase 2 – Training phase). Evaluate specificity of urinary miRNA panel in healthy subjects, urinary tract infections, renal cell carcinoma and in the preoperative and postoperative urinary samples of patients with UCUB. (4) To validate and analytically characterize miRNA diagnostic panels for the diagnosis, early detection of relapse and the progression of superficial to invasive tumors in the context of current diagnostic procedures and prognostic nomograms (Phase 3 – Validation phase). (5) To design a prospective trial for evaluation and analytical characterization of urinary and tissue miRNA panels in diagnosis, early detection of recurrence or progression of noninvasive UCUB patients enabling their clinical implementation.

10. **TE02000058**, Competence centre for molecular diagnostics and personalized medicine (2014-2019)
PI: Doc. MUDr. Marián Hajdúch, Ph.D. (ID: 7608543 Palacky University Olomouc), **Co-Investigator: Assoc. Prof. O. Slabý, Ph.D.** (ID: 5974291, Masaryk University, CEITEC)

11. **NT13860**, Analysis of EGFR signalling and microRNA expression profiles in prediction of response to anti-EGFR therapy in colorectal cancer patients with wild-type KRAS (2012-2015)
PI: Prof. MUDr. Rostislav Vyzula, Ph.D. (Masaryk Memorial Cancer Institute), **Co-Investigator: RNDr. O. Slabý, Ph.D.** (ID: 5974291, Masaryk Memorial Cancer Institute)
The project was aiming idetification of the new molecular markers (effector molecules of EGFR signalling, microRNAs) enabling response prediction to anti-EGFR therapy in patients with metastastic colorectal cancer carrying wild-type oncogene KRAS, which can lead not only to better understanding of molecular mechanisms of resistance, but also to individualization of therapy and therefore achievement of better therapeutical results and higher quality of life in patients with metastatic colorectal cancer.

12. **NT13585**, Development of microRNA diagnostic panel for identification Barret esophagus patients at high-risk of progression to adenocarcinoma (2012-2014)
PI: Prof. MUDr. Jiří Ehrmann, Ph.D. (Palacky University Olomouc, Faculty of Medicine), **Co-Investigator: RNDr. O. Slabý, Ph.D.** (ID: 5974291, Palacky University Olomouc, Faculty of Medicine, Dept. of molecular and translational medicine)
The main goal of this project was the identification of microRNAs (miRNAs) which enable the prediction of Barrett esophageus (BE) progression to adenocarcinoma and also finding the high-risk subgroup of BE patients who need to be on intensified monitoring. Results of this project might be used as new molecular diagnostic markers enabling individualization of therapy for BE patients, decreasing the invasivity of methods employed in BE patients monitoring which could consequently lead to better therapeutic results and higher quality of life of these patients.

13. **NT13581** Comprehensive characterization of molecular and genetic alterations in glioblastoma multiforme and its relapse, and evaluation of the these changes potential for diagnosis and therapy (2012-2015)
PI: Doc. MUDr. Marián Hajdúch, Ph.D. (Palacky University Olomouc, Faculty of Medicine), **Co-Investigator: RNDr. O. Slabý, Ph.D.** (ID: 5974291, Palacky University Olomouc, Faculty of Medicine)

14. **NT13549**, Development of diagnostic panel of circulating microRNAs for non-invasive early diagnostics and follow-up of colorectal cancer patients (2012-2015)
PI: RNDr O. Slabý, Ph.D. (ID: 5974291, Masaryk University, CEITEC)
The main aim of the project was to identify diagnostic panel of circulating microRNAs by use of high-throughput molecular-genetic techniques enabling early detection of CRC from blood serum in asymptomatic patients for colorectal cancer (CRC) screening or for monitoring of CRC patients with hereditary syndromes, as well as sensitive detection of the disease progression during follow-up of CRC patients. Successful solution of this project and identification of diagnostic miRNA panel might lead to decrease in CRC mortality as consequence of good curability of early clinical stages of the disease and decrease of the costs associated with treatment of CRC patients in advanced clinical stages. Early detection of progression could enable higher quality of life and improved survival of patients advanced clinical stages.

15. **NT13547**, Study od epithelial-to-mesenchymal transition associated microRNAs and genes as potential markers for prediction of risk and early detection of metastatic disease in renal cell carcinoma patients (2012-2015)
PI: Mgr. Martina Rédová, Ph.D. (Masaryk University, CEITEC), **Co-Investigator: RNDr. O. Slabý, Ph.D.** (ID: 5974291, Masaryk University, CEITEC)
The EMT status reflecting miRNAs identified by expression profiling analysis using Real-Time PCR miRNA Arrays or their target molecules on protein level will enable to identify RCC patients with increased risk of metastatic disease, and by that will improve the treatment strategy by individualizing RCC patients therapy.

16. **NT13514**, MicroRNA analysis in glioblastoma stem cells: prediction of therapy response and identification of new therapeutic targets in glioblastoma patients (2012-2015)
PI: Mgr. Jiří Šána (Masaryk University, CEITEC), **Co-Investigator: RNDr. O. Slabý, Ph.D.** (ID: 5974291, Masaryk University, CEITEC)
The main aim of the project was to contribute to the molecular characterization of glioblastoma stem cells (GSCs) which are responsible for resistance to the therapy and relapse of glioblastoma (GBM). MiRNA expression profiles of GSCs and non-GSCs were and the obtained data were used for development of the predictive miRNA panel that will enable prediction of therapy response and prognosis of patients with GBM.

17. **NT11214**, Identification and functional characterization of microRNAs with predictive significance in patients with glioblastoma (2010-2013)
PI: RNDr. O. Slabý, Ph.D. (ID: 5974291, Masaryk Memorial Cancer Institute)
The main goal of the project was to extend knowledge about molecular mechanisms involved in glioblastoma carcinogenesis and invasiveness by analysis of microRNA expression profiles in primary tumors and use our findings for prediction of response to temozolomide and immunotherapy in patients with glioblastoma.

18. **NS9814**, Identification and functional studies of microRNAs with predictive and prognostic significance in patients with colorectal cancer (2009-2011)
PI: RNDr. O. Slabý, Ph.D. (ID: 5974291, Masaryk Memorial Cancer Institute)
The main goal of our project is contribution to the knowledge of molecular biology of colorectal carcinoma by analysis of microRNA expression profiles of the primary colorectal tumors and utilization of our results for improvement of recent TNM staging and better prediction of disease outcome.

19. **NS10361**, Identification of new prognostic markers and update on staging of locally advanced renal cell carcinoma by microRNA expression profiles analysis (2009-2011)
PI: RNDr. O. Slabý, Ph.D. (ID: 5974291, Masaryk Memorial Cancer Institute)
Prognostic miRNAs, identified by analysis of miRNAs expression profiles obtained by use of Real-Time PCR miRNA Arrays or their targets on the protein level, enable identification of patients with LARC at high risk of disease progression and individualization of their therapy.

20. **NS10352**, MicroRNAs significance in chemoprotective effects of phytochemicals contained in Brassica vegetables and association of their binding sites polymorphisms with risk of colorectal cancer (2009-2011)
PI: RNDr. O. Slabý, Ph.D. (ID: 5974291, Masaryk Memorial Cancer Institute)
The study was based on the new microRNA-based methodical approach to identification of new genetic factors with potential to attenuate or enhance cancer-preventive effects of Brassica phytochemicals in the human. Laboratory evaluation of these factors enables formulation of appropriate dietetic recommendations according to consumption of Brassica vegetables and prevention of colorectal cancer in the future.

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCS:

Current PhD students (Masaryk University):

Ahmad, Parwez, M.Sc.	Faculty of Science, Biochemistry
Mgr. Zbyněk Čech	Faculty of Medicine, Oncology
Mgr. Natalia Anna Gabło	Faculty of Science, Biochemistry

Mgr. Iveta Hynštová	Faculty of Medicine, Oncology
Mgr. Robert Iliev	Faculty of Science, Molecular and Cellular Biology
Mgr. Alena Kopková	Faculty of Science, Biochemistry
Mgr. Júlia Kováčová	Faculty of Science, Molecular and Cellular Biology
Mgr. Táňa Macháčková	Faculty of Science, Biochemistry
MUDr. Ivana Rošková	Faculty of Medicine, Surgery
Mgr. Karolína Trachtová	Faculty of Science, Life Sciences, Bio-omics
Mgr. Marek Večeřa	Faculty of Science, Biochemistry

Consultant of PhD students (Masaryk University):

Mgr. Jaroslav Juráček	Faculty of Medicine, Oncology
MUDr. Marek Slávik	Faculty of Medicine, Oncology

Current postdocs:
MUDr. Tomáš Kazda, Ph.D.
Mgr. Anna Konieczna, Ph.D.
Mgr. Tomáš Loja, Ph.D.
Mgr. Martina Lojová, Ph.D.
Mgr. Hana Nosková, Ph.D.
Mgr. Kamila Součková, Ph.D.
Mgr. Jiří Šána, Ph.D.
Mgr. Petra Vychytilová, Ph.D.

Former PhD students:

Mgr. Jiří Šána, Ph.D.	Faculty of Science, Molecular biology
Mgr. Petra Vychytilová, Ph.D.	Faculty of Science, Biochemistry
Mgr. Hana Mlčochová, Ph.D.	Faculty of Science, Molecular biology
Mgr. Jitka Vaňáčková, Ph.D.	Faculty of Science, Biochemistry
Mgr. Jana Merhautová, Ph.D.	Faculty of Medicine, Oncology (Consultant)

Former postdocs:
Nithya Thorenoor, Ph.D.

INTERNATIONAL CONTACTS AND RECOGNITION:
Prof. George Calin, MD Anderson Cancer Center, TX, USA
Assoc. Prof. Martin Pichler, MD, MSc, PhD, Medical University of Graz, Austria
Prof. Vince Fischetti, Rockfellerova Univerzita, NY, USA
Dr. Markus Kretz, University of Regensburg, Regensburg, Germany
Dr. Massimo Negrini, University of Ferrara, Ferrara, Italy