
Laboratory of Pharmacogenomics

Offer

- Research in pharmacogenetics and genomics from the clinical and academic point of view
- Isolation of nucleic acids from different types of tissues and cells, especially from clinical specimens
- Detection of single nucleotide polymorphisms and mutations by allelic discrimination, HRM, and sequencing
- Quantitative PCR in real-time (qPCR) design and gene expression analysis
- Help with interpretation of results of studies on metabolism and transport of anticancer drugs

Expertise

- Laboratory of Pharmacogenomics is involved in the study and development of prognostic and predictive biomarkers for more refined evaluation of survival of cancer patients and the response of tumor cells to the therapy. Genomic, epigenomic, proteomic, and metabolomic analyses of tissue preparations from cancer patients provided by clinical collaborators from the Czech Republic are performed for this purpose.
- Predictive biomarkers may help clinicians in the stratification of patients into different therapeutic regimens.
- Discovery and validation of prognostic biomarkers may also contribute to the invention of drugs for targeted therapy.
- Our team has experience in this area for more than 20 years.
- Research activities are supported by a number of grants including Center of Excellence awarded by Czech Science Foundation.
- Lab members regularly publish our results in publicly accessible scientific journals and collaborate with several highly respected foreign partners.

Members

- Assoc. Prof. Pavel Souček, Ph.D., M.Sc. – Research Group Leader
- Veronika Brynychová, Ph.D., M.Sc.
- Pavel Dvořák, Ph.D., M.Sc.
- Marie Ehrlichová, M.Sc.
- Kateřina Elsnerová, M.Sc.
- Viktor Hlaváč, Ph.D., M.Sc.
- Simona Šůsová, M.Sc.
- Radka Václavíková, Ph.D., M.Sc.

Selected Publications

- Hubackova M, Vaclavikova R, Ehrlichova M, Mrhalova, Kodet R, Kubackova K, Vrána D, Gut I, Soucek P. Association of superoxide dismutases and NAD(P)H oxidoreductases with prognosis of patients with breast carcinomas. *Int J Cancer* 2012; 130: 338–348
- Hlavata I, Mohelnikova-Duchonova B, Vaclavikova R, Liska V, Pitule P, Novak P, Bruha J, Vycital O, Holubec L, Treska V, Vodicka, P, Soucek P. The role of ABC transporters in progression and clinical outcome of colorectal cancer. *Mutagenesis* 2012; 27: 187–96
- Vaclavikova R, Ehrlichova M, Hlavata I, Pecha V, Kozevnikovova R, Trnkova M, Adámek J, Edvardsen H, Kristensen VN, Gut I and Soucek P. Detection of frequent ABCB1 polymorphisms by high-resolution melting curve analysis and their effect on breast carcinoma prognosis. *Clin Chem Lab Med* 2012; 50: 1999–2007 - Brynychová V, Hlaváč V, Ehrlichová M, Václavíková R, Pecha V, Trnková M, Wald M, Mrhalová M, Kubáčková K, Pikus T, Kodet R, Kovář J, Souček P. Importance of transcript levels of caspase-2 isoforms S and L for breast carcinoma progression. *Future Oncol* 2013; 9: 427–38
- Hlaváč V, Brynychová V, Václavíková R, Ehrlichová M, Vrána D, Pecha V, Koževnikovová R, Trnková M, Gatěk J, Kopperová D, Gut I, Souček P. The expression profile of ABC transporter genes in breast carcinoma. *Pharmacogenomics* 2013; 14: 515–29
- Mohelnikova-Duchonova B, Brynychova V, Oliverius M, Honsova E, Kala Z, Muckova K, Soucek P. Differences in transcript levels of ABC transporters between pancreatic adenocarcinoma and non-neoplastic tissues. *Pancreas* 2013; 42: 707 16

- Ehrlichova M, Mohelnikova-Duchonova B, Hrdy J, Brynychova V, Mrhalova M, Kodet R, Rob L, Pluta M, Gut I, Soucek P, Vaclavikova R. The association of taxane resistance genes with the clinical course of ovarian carcinoma. *Genomics*. 2013; 102: 96–101
- Mohelnikova-Duchonova B, Brynychova V, Hlavac V, Kocik M, Oliverius M, Hlavsa J, Honsova E, Mazanec J, Kala Z, Melichar B, Soucek P. The association between the expression of solute carrier transporters and the prognosis of pancreatic cancer. *Cancer Chemother Pharmacol*. 2013; 72: 669–82
- Kunická T, Souček P. Importance of ABCC1 for cancer therapy and prognosis. *Drug Metab Rev*. 2014; 46: 325–342
- Kunická T, Václavíková R, Hlaváč V, Vrána D, Pecha V, Rauš K, Trnková M, Kubáčková K, Ambruš M, Vodičková L, Vodička P, Souček P. Non-coding polymorphisms in nucleotide binding domain 1 in ABCC1 gene associate with transcript level and survival of patients with breast cancer. *Plos One* 2014; 9: e101740
- Hlaváč V, Brynychová V, Václavíková R, Ehrlichová M, Vrána D, Pecha V, Trnková M, Kodet R, Mrhalová M, Kubáčková K, Gatěk J, Vážan P, Souček P. The role of cytochromes P450 and aldo-keto reductases in prognosis of breast carcinoma patients. *Medicine* 2014; 93 (28): e2552014

Are you interested in this expertise?

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Experts and their Department

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