INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Název: **Antisense oligonucleotides towards estrogen receptor proteins of breast tumor cells**

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Reg.č.projektu: CZ.1.07/2.4.00/31.0023
Název projektu: Partnerská síť centra excelentního bionanotechnologického výzkumu

NanoBioMetalNet

β-estradiol

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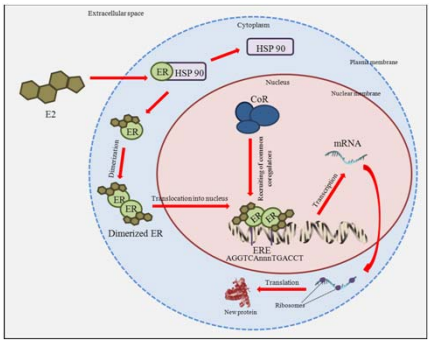

Heger *et al.*: Molecular biology of β-estradiol-estrogen receptor complex binding to estrogen response element and the effect on cell proliferation. *Neuroendocrinology Letters*, **(In press)**.

β-estradiol

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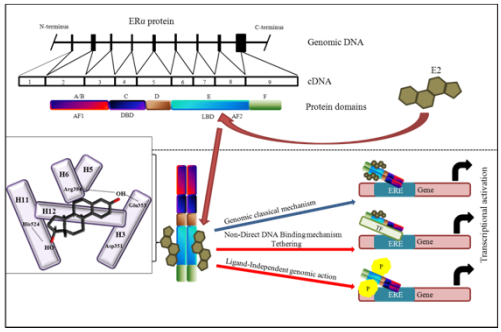

Heger *et al.*: Identification of estrogen receptor proteins in breast cancer cells using MALDI-TOF mass spectrometry. *Oncology Letters*, **(In press)**.

Aims and Hypotheses

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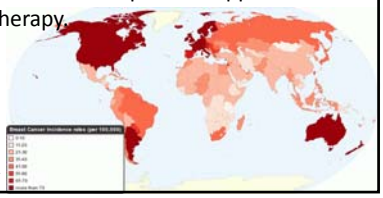
- *In vitro* interaction of estradiol with DNA (miRNA, siRNA?) as a potential carcinoma initiator.
- Adducts formation?
- Construction of estradiol-based liposome applicable in breast tumor gene therapy.



Siegel *et al.*: Cancer Statistics, 2013. *CA Cancer Journal for Clinicians*, 63: 11-30, 2013.

In vitro interactions

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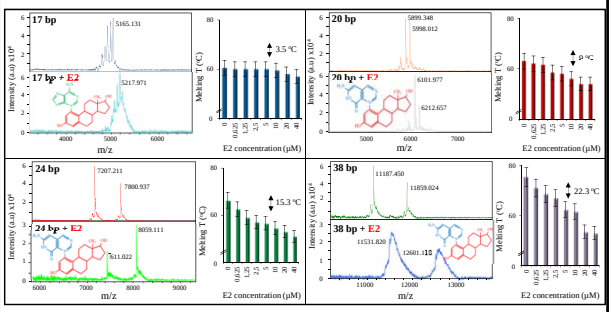

Antisense therapy mechanism

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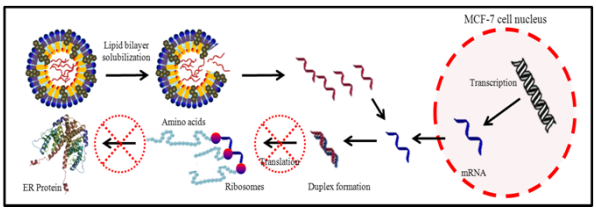

Liposomes construction and application

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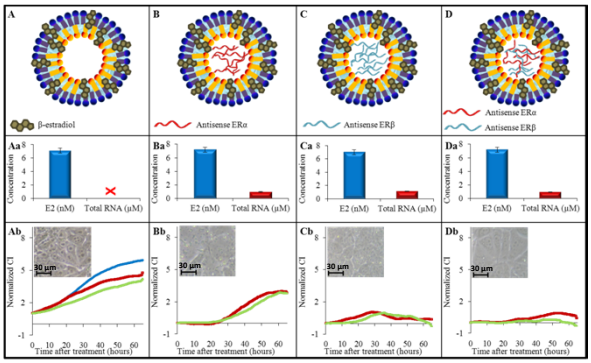

Gene expression

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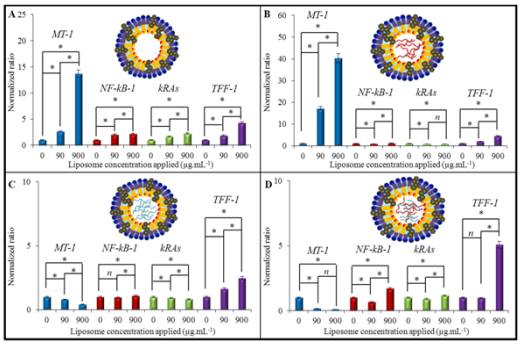

Oxidative stress markers

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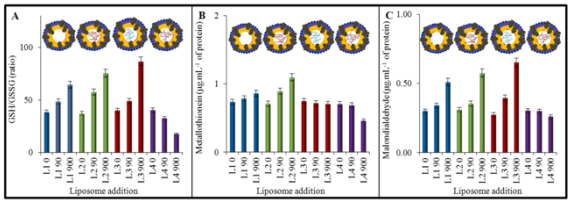

Conclusion

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- Direct interaction between nucleic acids and increased concentrations of estradiol (contraceptives) may be one of the breast tumorigenesis initiators (A and G adducts).
- ERβ was shown to play major role in breast cancer treatment, but synergic effect of both antisense sequences exhibited the largest effect.
- In the future our estradiol based liposome may be one of the possible way of ER+ breast tumors treatment.

Acknowledgment

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Thank you for your attention