

Jméno: **Modifikace nanočástic pro senzitivní
využití technikami PET**

Školitel: **Vojtěch Adam**

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Positron emission tomography

- Positron emission tomography (PET) is a nuclear medical imaging technique that produces a three-dimensional image or picture of functional processes in the body. The system detects pairs of gamma rays emitted indirectly by a positron-emitting radionuclide (tracer), which is introduced into the body on a biologically active molecule.
- Three-dimensional images of tracer concentration within the body are then constructed by computer analysis. In modern scanners, three dimensional imaging is often accomplished with the aid of a CT X-ray scan performed on the patient during the same session, in the same machine.

Applications

- **Oncology**
- **Neuroimaging**
- **Cardiology**
- **Pharmacokinetics**
- **Small animal imaging**
- **Musculo-skeletal imaging**

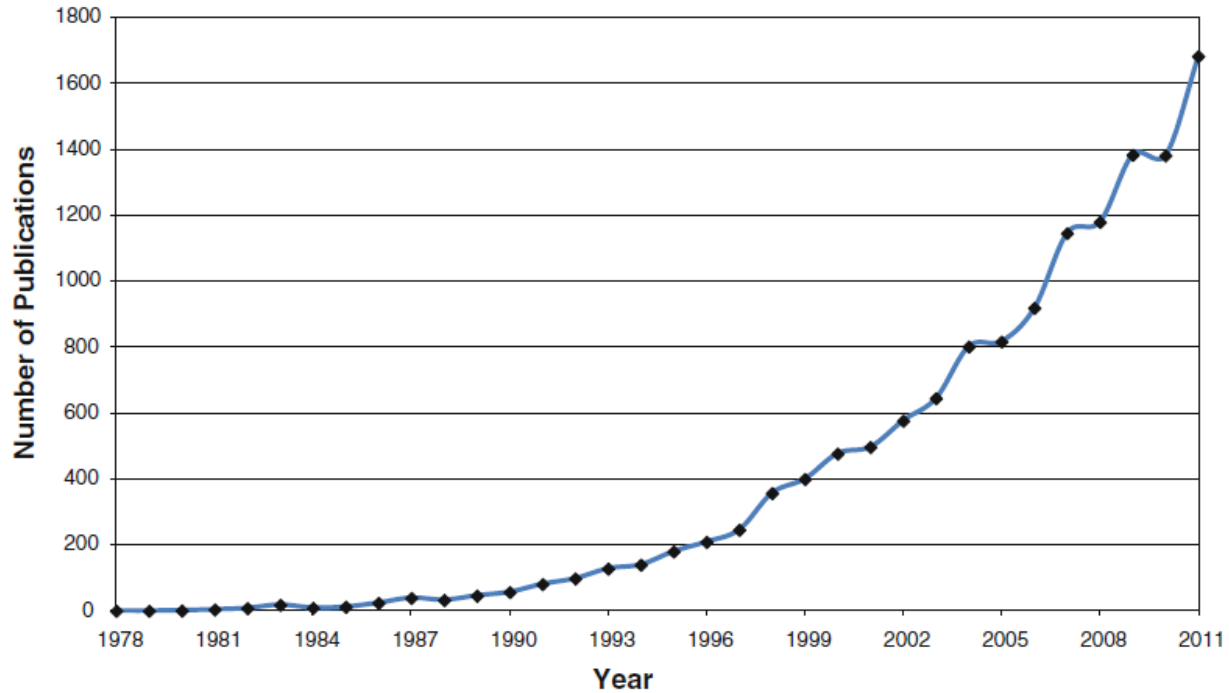
Images



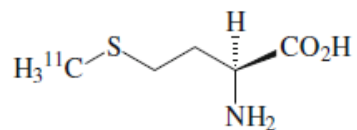
Radionuclides

Radionuclide	Type of target	Target material	Nuclear reaction(s)	Chemical form
^{15}O	Gas	$\text{N}_2 + \text{O}_2$	$^{14}\text{N} (\text{p},\alpha)^{15}\text{O}$ $^{15}\text{N} (\text{p},\alpha)^{15}\text{O}$	Oxygen-15 gas
^{13}N	Liquid	H_2O	$^{16}\text{O} (\text{d},\alpha)^{13}\text{N}$	Aqueous [^{13}N]nitrogen oxides
^{11}C	Gas	$\text{N}_2 + \text{O}_2$ $\text{N}_2 + \text{H}_2$	$^{14}\text{N} (\text{p},\alpha)^{11}\text{C}$	[^{11}C]carbon dioxide [^{11}C]methane
^{18}F	Liquid or gas	H_2^{18}O	$^{18}\text{O} (\text{p},\text{n})^{18}\text{F}$ $^{20}\text{Ne} (\text{d},\alpha)^{18}\text{F}$	Aqueous [^{18}F]fluoride [^{18}F]fluorine gas
^{64}Cu	Solid	^{64}Ni	$^{64}\text{Ni} (\text{p},\text{n})^{64}\text{Cu}$	[^{64}Cu]CuCl ₂
^{124}I	Solid	^{124}Te	$^{124}\text{Te} (\text{p},\text{n})^{124}\text{I}$	Solid [^{124}I]iodine or sodium [^{124}I]iodide

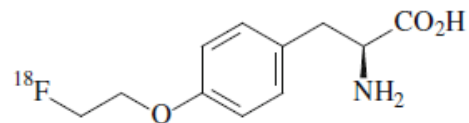
[18F]2-fluoro-2-deoxy-D-glucose ([18F]FDG)



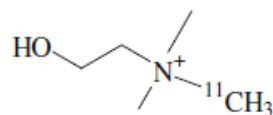
Others



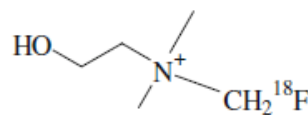
[^{11}C]-methionine



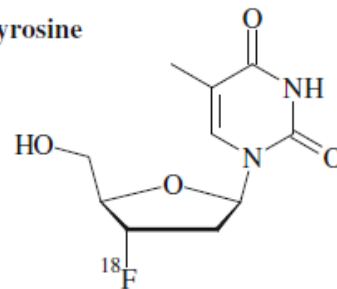
O-(2-[^{18}F]fluoroethyl)-L-tyrosine



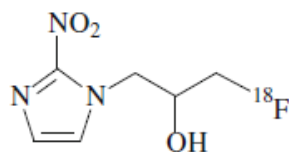
[^{11}C]-choline



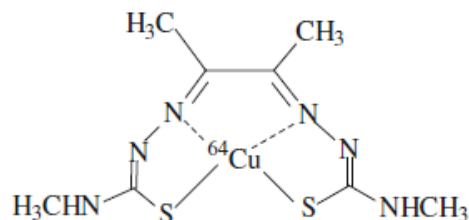
[^{18}F]-fluoromethylcholine



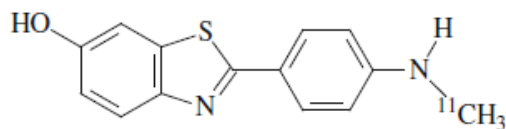
[^{18}F]-fluorothymidine



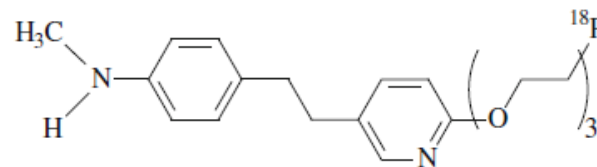
[^{18}F]-fluoromisonidazole



[^{64}Cu]-ATSM

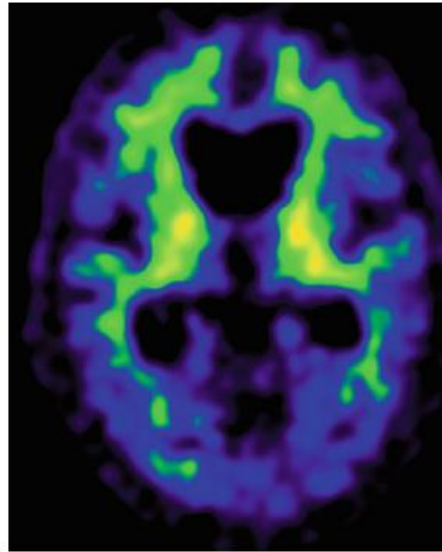


[^{11}C]-PIB

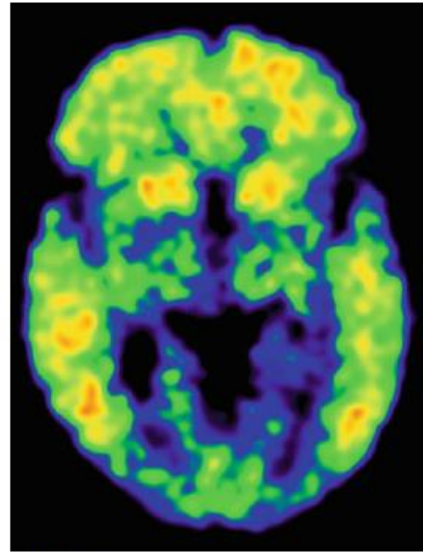


[^{18}F]-Florbetapir

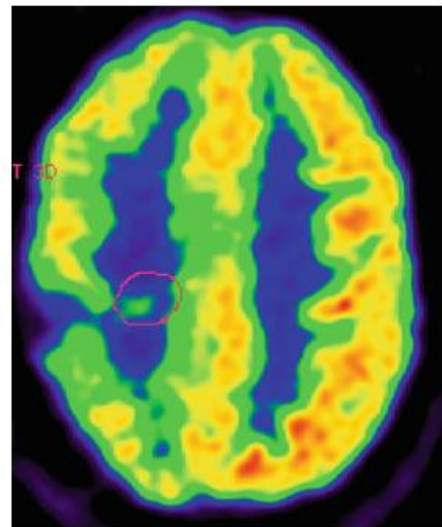
Results



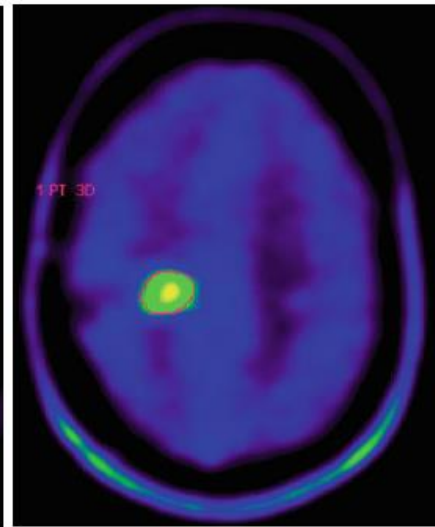
[¹¹C]PIB, normal



[¹¹C]PIB, Alzheimer



[¹⁸F]FDG



[¹⁸F]FET



evropský
sociální
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EVROPSKÁ UNIE



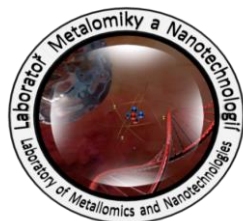
MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY



OP Vzdělávání
pro konkurenceschopnost

INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Děkuji Vám za pozornost.



Reg.č.projektu: CZ.1.07/2.3.00/20.0148

Název projektu: Mezinárodní spolupráce v oblasti "in vivo" zobrazovacích technik

