

## Home task 2 – Radionuclide production

Following radionuclides are of interest in PET

$^{11}\text{C}$ ,  $^{18}\text{F}$ ,  $^{68}\text{Ga}$  and  $^{124}\text{I}$

For these radionuclides

- Give suitable nuclear reaction(s). Aim for high specific radioactivity, high radionuclide purity and technical feasibility.
- Give a suitable energy window for the production.
- Give the energy threshold for the reaction.
- Give threshold energies for ev disturbing reactions.
- Give suitable irradiation times for optimal yield and purity.

You have at your disposal an accelerator that delivers 16 MeV protons and 8 MeV, deuterons with a beam current of 100  $\mu\text{A}$ .

To your help you have two internet addresses

<http://www-nds.iaea.org/medical/>

<http://nucleardata.nuclear.lu.se/database/masses/>