Drug development in Boron Neutron Capture Therapy (BNCT)

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Boron Neutron Capture Therapy (BNCT) is an innovative, targeted treatment modality for cancer the potential of which is yet to be fully explored. Its binary approach combining two components, the ^{10}B enriched drug and the thermal neutron radiation, results in the nuclear reaction $^{10}B(n, \alpha)\ ^{7}Li$ which hypothetically could be used to selectively destroy tumour cells.

To the final success of BNCT both components are equally essential. There exist around the world several well designed (epi)thermal neutron beams, dedicated to BNCT.

However there are no really selectively tumour targeting ^{10}B enriched drugs available. To develop new drugs and to substitute the actually used poorly selective BSH and BPA with would mean giant efforts but also a tremendous financial investment.

Drug development in BNCT is a fully novel task for several reasons, but especially because of the vast interdisciplinarity in the field and because of its complexity deriving from its binary nature. Together with the relevant regulatory authorities, a general strategy on how to develop drugs for BNCT has to be created. Such a well-defined policy will ease the coordination of efforts and the communication between experts from different areas within BNCT. It will also help in addressing the unprecedented operational and regulatory questions, which need to be answered to permit an increasing involvement of public funding and to attract private funding in the search for new tumour targeting ^{10}B enriched drugs.